SERVING THE MILLENNIAL GENERATION:  
MANAGEMENT CHALLENGES FOR THE MODERN ACADEMIC LIBRARY

By

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ABSTRACT

This paper will explore some of the challenges faced by academic library managers in trying to serve a new generation of techno-savvy users known as the Millennials. The challenges, which are in large part defined by the Internet, include:

• the availability of search engines which provide alternative pathways to digital information resources;
• programmes to digitize analogue materials by non-traditional providers of library services, such as Google and Microsoft;
• the ability of publishers or producers of digital information resources to bypass libraries and target end users directly through pay-per-view services;
• social networking and virtual world sites where the Millennials gather.

Some possible responses to these challenges are discussed. These include the establishment of “intelligent portals”; participating in national and international programmes to deal with the scholarly information crisis, promoting the academic library in the virtual environment where the millennial generation gather, and changing the physical environment of libraries to take account of the flexible learning requirements of the information age. It is only by successfully confronting these challenges that academic library managers will ensure the continuing relevance and survival of libraries in institutions of higher education.

INTRODUCTION

The development of the Internet has been a boon for libraries. It has permitted the online access of digital information resources, and has allowed academic libraries to provide services to their users without the constraints of space and time, effectively becoming 24/7 libraries without walls. As a consequence, it has facilitated the provision of services to support distance education and open learning programmes. There is, however, a flipside to the Internet for libraries. It has given rise to competition for the attention of library users, especially the users who have been identified as belonging to the millennial generation. This competition includes:

• search engines, such as Google or Yahoo – which provide alternative pathways to web-based information resources;
• programmes to digitize analogue materials by non-traditional providers of library services, such as Google and Microsoft;
• the ability of publishers or producers of digital information resources to bypass libraries and target end users directly through pay-per-view services;
• social networking and virtual world sites where the Millennials gather, and where they spend an inordinately large portion of their waking life.

These competitive threats are real, as a survey conducted by OCLC in 2005 has demonstrated. In June of 2005, OCLC conducted a survey of over 3,300 college students in Australia, Canada, India, Singapore, the United Kingdom and the United States to ascertain their perceptions of libraries. This survey revealed that college students typically began an information search using a search engine (84%) rather than the library’s catalogue, databases and website. Only 1% of the respondents selected the library website as the source to begin an information search. Even more worrying was the fact that the vast majority of students (61%) learned about electronic information resources from friends, while “the librarian was ranked lowest, at 8 percent, as a source of information about electronic resources for the total respondents”. (OCLC, 2005)

The OCLC survey illustrates the many challenges faced by the modern academic library in its attempt to serve the new generation of Internet savvy users. The challenges are many and varied and run the gamut of issues that have to be dealt with in a coherent and structured manner by academic libraries if they are to remain relevant in the 21st century. The key issues appear to be:

• how to serve effectively the Millennial generation who, unlike previous generations of library users, have a short attention span, are seasoned Internet users, embrace multiple identities both real and virtual, and are impervious to traditional methods of communication;
• how to continue to remain relevant in the age of the Internet and the threats posed by search engines such as Google;
• how to deal with the scholarly information crisis;
• the challenges posed by the rapid migration of scholarly materials to digital formats, their long term preservation, and the potential loss of control over the provision of scholarly information services which has for long been seen as the main responsibility of academic libraries;
• how to respond effectively to these challenges.
THE MILLENNIAL GENERATION

Social commentators and demographers tend to categorise the social groups that they study in relatively simplistic terms, perhaps to make it easier to generalise about the characteristics of these groups, and differentiate them from other groups. From the 18th to the 20th centuries, it was fashionable to delineate society in terms of a hierarchical class structure. While the notion of upper, middle and lower classes still exist, it seems more fashionable today to group people according to the age or generation into which they were born, the assumption being that each generation has distinctive social characteristics and behavioural patterns. This trend probably started when demographers identified the Baby Boomers (i.e. those born after World War II) who have had considerable political and economic influence in the last sixty years. Businesses, in particular, are interested in the consumer behaviour of different “generations” since this would allow them to target their markets more specifically. The generations after the Baby Boomers have usually been categorised as Generation X and Generation Y. The latter has been most closely identified with the Millennial generation. It should be noted, however, that there is no consensus regarding the periods, which cover each of the generations identified. Nevertheless, from a sociological and economic perspective, there appears to be some general characteristics that differentiate one generation from the next.

The term “Millennials” was first used by Neil Howe and William Strauss in their book titled Millenials Rising: The Next Great Generation. (New York :Vintage Books, 2000). The term refers to the cohort born between 1982 and 2002. The authors predict that the Millennials will be a can-do generation filled with "technology planners, community-shapers, institution-builders and world leaders." While Howe and Strauss are speaking mainly of the American demographics, there is no question that many of the characteristics they describe also apply to the youths from a similar generation in other countries, where they have been called Generation Y, the Net Generation, or Citizen 2.0.

There are some common traits that seem to pervade the Millennial generation. For one thing, they are less hooked on television, and are less susceptible to the communication techniques used by modern advertisers. They tend to want to watch television at a time that is convenient to them rather than what broadcasters dictate. They are also technologically very literate, and as many were born during the period when the personal computer and the Internet became widely used, they view technological developments not as a source of wonderment, but merely as a natural part of their environment. A survey by Junco and Mastrodicasa (2007) shows that 97% of college students own a computer and are logged on to the Internet 24/7. Most use Instant Messaging, access websites as their primary source of news and information, own a blog, and have accounts in various social networking sites like Facebook, MySpace and YouTube.
The difference between the Millennials and previous generations of students has been succinctly identified by Lippincott (2005) as follows:

“Given that this generation of college students has grown up with computers and video games, the students have become accustomed to multimedia environments: figuring things out for themselves without consulting manuals, working in groups and multitasking. These qualities differ from those found in traditional library environments which, by and large, are text-based, require learning the system from experts (librarians), were considered for individual use, and assume that work progresses in a logical, linear fashion.”

The Millennial generation have multiple identities. They are as comfortable in the real world with their real world identities, as they are in the virtual world of Second Life and Entropia Universe using their avatar identities. Most spend an inordinate amount of time living a virtual life, playing games or socialising. Indeed, one in five gamers say that the virtual world is their primary place of residence. “The real world…..is where you sleep and eat.” (Getler, 2007)

It is not easy to capture the attention of this cohort of library users. Muller (2007) says that the approach will have to be highly targeted to the individual concerned. It is the individual who determines what he or she wants (the “pull” approach) rather than what the library determines (the “push” approach). The Millennial generation will expect “harmonised instant service and highly tailored solutions. Their tolerance for today’s slow, siloed approaches will be low.”

Lippincott (2005) has pointed out that there is a disconnect between academic libraries and the Millennial students. She has identified three:

- students’ dependence on Google
- digital library resources are frequently not located in the course management systems that are the students’ “digital home”
- Library services are not presented in a user-centred mode.

The management strategies to be implemented must therefore be aimed at removing the disconnect between academic libraries and the Millennial generation. These will be discussed in a later section of this paper.
THE GOOGLE CHALLENGE

The OCLC survey mentioned above suggests that search engines such as Google have increasingly become the primary choice of library users seeking information rather than the library’s catalogue, website and databases. Perhaps the most dramatic development in the last couple of years has been the launch by Google of a programme to collaborate with a number of major research universities (e.g. Harvard, Oxford, Stanford and Michigan) to digitize their large research collections and make these available through Google Books Search. Initially, it was not clear how Google would address the copyright issues arising from this programme. After considering protests from copyright owners, Google has decided that it would be necessary to deal with the digitized material in three different ways. For out of copyright books, it will display the book’s in full without any advertisements. For copyrighted material, it has negotiated with the copyright owners to display either snippets with bibliographic details or a larger portion, such as a chapter, with the latter being provided with sponsored links that will include some payment to the copyright owner.

As a defence mechanism, Microsoft has also gone into partnership with a number of libraries to digitize public domain material for its Live Book Search Portal. It is also a member of the Open Content Alliance, comprising a group of about 50 libraries, museums and information technology companies, which have banded together to undertake mass digitization of library collections.

While digitization of library collections is hardly novel, the significance of the agreement between the major research libraries and Google is the scale of the investment that the Google behemoth will bring to the project and the rapidity with which it hopes to achieve it. There are, however, potential dangers when libraries go into partnership with commercial organizations. For example, libraries may lose control of the digitized material, thus further weakening the links with their users. Furthermore, as Johnson (2007) has pointed out:

“In most respects than just scale, Google’s plan was fundamentally different from most of the digitization projects undertaken previously by libraries. Google brought more than money to the task; they also brought the imperatives of business – in particular, the need to protect their investment and erect barriers to competitive efforts.”

Google has gone even further than its commercial competitors like Microsoft and Yahoo, and has developed partnerships with a number of database vendors to provide access by Google Scholar to their proprietary database content – content that has traditionally been made available by libraries to their users. What makes Google Scholar unique is that it aims to be a single repository for scholarly information,
providing access to “free” web-based scholarly information as well as authorized commercial databases and links to library holdings. It will rank the results of a search by relevance according to specified criteria like the number of times an item has been cited in scholarly literature. While Google Scholar is still in beta version, its simple interface and its aim to maintain broad coverage of the scholarly literature will (combined with Google Books) eventually make it effectively a global digital library.

While some libraries have cooperated with Google Scholar by allowing links to their holdings of subscription databases via the OpenURL framework, other libraries are less sanguine about these developments. Thus, some libraries are still wary of cooperating with Google, citing as a reason the requirement that a library should have full control over the user experience in the delivery of library services. They also have questions concerning the business model that Google Scholar will adopt. In spite of these concerns, a recent development further enhances the value of the Google brand. In this development Google Scholar has provided a link to the British Library Direct pay-per-view service. Using this document delivery service, end users have access to more than 9 million articles from 5 years’ worth of approximately 20,000 STM journals (Quint, 2006).

It is not the intention of this paper to discuss in detail the pros and cons of the mass digitization of library collections on a commercial basis, or of the trend that will enable standard Internet search engines to provide access to proprietary databases. There are obviously major benefits in having major research collections available online. But there are also some worrying trends which librarians should be aware of. For example, Rory Litwin (2004) worries about “the loss of privacy, the introduction of commercial bias, questions about democratization and equity of access, the issues of disintermediation, the decontextualization of knowledge, and the closing of the information commons.”

From a management point of view, what does the migration of large research collections to electronic formats signify? In the traditional print based environment, the academic library was a place where users had to come if they wished to consult a serial or borrow a book. The library was effectively a monopoly, and very few users had the resources or the inclination to build personal collections that would meet all their teaching, learning and research needs. By moving into an area that has traditionally been considered the province of research libraries, Google is effectively challenging the relevance of academic libraries. Thus, in the future, users can bypass their institutional library by searching for information online. They need not even search for collections owned by the library, since Google Search, Google Books, or Google Scholar might provide them with access to the information that they require. This effectively reduces the importance of the physical library as well as increases the process of “disintermediation”. The OCLC survey has already revealed that “Information seekers often choose the convenience of the Internet over consultation with an information professional, or even the consultation of a bibliography or
index”. (Litwin, 2004). But librarians worry that “so much of this material requires expert knowledge even to comprehend, let alone situate in its proper context, that disintermediated access can in some cases be worse than no access at all.” (Ibid, 2004). Millennial generation students already clearly perceive the Web as their major information environment. At one time, librarians were concerned that many of the resources appearing in websites were not credentialed, and that students’ unthinking reliance on such resources might compromise the quality of their research and coursework. However, developments such as Google Books and Google Scholar might obviate this problem in the future.

THE SCHOLARLY INFORMATION CRISIS

Libraries have one major advantage over “free” web-based information resources. They provide access to expensive scholarly information resources in digital form. In spite of their preferences for using Google to search for information, the Millennial generation students will still have to use the resources provided by their library for some of their coursework and research. It is inconceivable, despite the development of Google Scholar and the desire of some scholarly publishers to bypass libraries, that scholarly resources will be made available free of charge in the foreseeable future. Some publishers have introduced a limited per-pay-view service for individual full text articles and book chapters. Elsevier, for example, allows guest users and registered users at subscribing institutions to purchase articles and book chapters from their ScienceDirect database using their credit card. But the cost is still prohibitively high, and it is unlikely that the Millennial users, who are used to downloading music, movies and TV programmes free of charge, will use this service extensively, if at all. Even those who have experience downloading programmes from sites such as iTunes for a small fee will probably continue to rely on their library to provide them with the scholarly access that they need. Unfortunately in recent years, academic libraries are finding it increasingly difficult to continue to subscribe to scholarly information resources for budgetary and other reasons.

There is considerable evidence that government support for higher education in the developed world is diminishing, and that universities increasingly have to shift their operational costs to their students rather than rely on governmental funding. In Australia, for example, governmental funding represents only 40% of the operating revenue of universities. It should, however, be noted that this statistics might not be applicable to some countries like Singapore and Malaysia, where governments continue to provides 90% or more of the operating expenditure of universities. But with the global trend towards the privatization of higher education, it is not incorrect to postulate that an increasing number of universities are facing financial pressures because of their heavy reliance on student fees and other income for their existence. In that environment, academic libraries face the twin pressures of reduced financial
support from their parent institutions in real terms, and increasing cost of scholarly information at a rate that is considerable higher than the inflation rate.

Commercial publishers of scholarly information, especially STM (scientific, technical and medical) serials, continue to make large profits averaging about 25% annually, as prices continue to rise and they continue to sell their bundled content of digital serials to individual libraries and consortia. This has resulted not only in tying up the budgets of these libraries and consortia, but has also disrupted the traditional relationship between publishers and subscription agents – since contracts for bundled content are now negotiated directly by publishers with libraries. According to Library Journal’s Periodicals Price Survey 2007, the average rate of inflation between 2003 and 2007 for North America was 39%, Europe 33%, Asia 26%, Australia and New Zealand 51%, South America 13%, and Africa 43%.

The so-called scholarly information crisis is not merely the result of the exponential rise in the price of serials, which has not been alleviated by the move towards digitalization. It reflects several changes to the pattern of information access and library ownership. For instance, most libraries no longer “own” the serials that they subscribe to. Access to remote databases is now licensed, and many libraries have relinquished responsibility for data storage to the publishers of the databases. Secondly, as mentioned above, the licensing is for bundled access to a group of resources rather than for access to individual titles selected by the libraries. As a result, collection development is now a lesser priority than access to a group of resources, often made available through consortial database licensing. Thirdly, users are beginning to ignore those publications (such as books and other analogue resources) which are not instantly available in full text online much to the detriment of future scholarship. All these factors add to the challenges that academic libraries face in providing access to scholarly information to the Millennial generation.

ESTABLISHMENT OF INTELLIGENT PORTALS

The above sections outline the major challenges faced by academic libraries in trying to serve the Millennial generation well and effectively. The responses that they make will ensure their continued relevance in the 21st century. In the sections that follow, an outline of some of the actions and strategies that should be adopted by academic library managers is discussed.
Hawkins (2000) in his keynote address at the Australian Library and Information Association Conference stated that the current library model is no longer affordable intellectually or economically. Thus a new type of library has to be constructed to meet the future requirements of students and scholars. Other writers have commented that the traditional library model is based on the concept of "acquire-catalogue-store-lend", but what users in the flexible learning environment now demand is something quite different - "discover-locate-request and deliver".

The new model has to take into account a number of preferences of the Millennial learners. These learners generally working part-time, and so would prefer access to virtual learning and information resources. They demand convenience because they are time-poor, and they want courses that are tailored to suit them, as well as access to information resources, both analogue and digital, without having to visit a physical site.

Thus the traditional “bricks and mortar” model which is built around site-based services must be replaced by the “clicks and mortar” model, which is built around the e-commerce model of library service delivery. The key e-commerce technology that libraries should adopt is the portal.

A library portal is not merely a web-based site. It uses the interactive technologies of Web 2.0¹, and is “intelligent”. The portal will allow the library to know who its users are. This in turn will allow the library to inform the users of relevant information resources which fit the profile of the user, when the latter logs on to the portal. At the same time, the portal will allow users to customize their interface so that they need only view those resources in which they have an interest. The portal has the capability of providing “human interaction” through instant messaging, email and video conferencing facilities. Most important of all the portal can provide the user with a “Google like” search experience through the provision of metasearching or federated searching (i.e. the capability of searching multiple resources with a single query). While most definitions see metasearching and of federated searching as synonyms, Sadeh (2006) differentiates between metasearching and federated searching. To her metasearching is “just-in-time processing”. That is to say, the data is only processed when the user’s query is launched. In this process, “the user’s query is broadcast to each resource, and results are returned to the user” without any pre-processing. In federated searching, which is akin to just-in-case processing, the information is processed prior to the user’s query and is “incorporated into a single repository that can be searched”.

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¹ There are many definitions of Web 2.0, but essentially the term does not describe an improved version of the World Wide Web; it usually refers to the technologies used in social networking sites and also “a social phenomenon embracing an approach to generating and distributing Web content itself, characterized by open communication, decentralization of authority, freedom to share and re-use.”
Boss (2005) points out that portals also have the ability to provide link resolution, for example, providing a menu of services that permits the user to navigate from a reference citation to full-text, “from an abstract in a database to a catalogue search for materials about the same topic”, or even to generate an interlibrary loan request for an item. Some portals also allow for relevancy ranking of the search results, by “filtering for relevancy and ranking the search results according to pre-determined criteria”

Many Australian university libraries have adopted the portal using commercial software such as Metalib. However, their implementation has been varied. Many of the institutions concerned have given prominence to the metasearching features of the portal, and ignored other aspects such as the intelligent features of the portal, including the “push and pull technologies” which allow the tailoring of services for individual users. The group of university libraries that have been most active in promoting portal technologies in Australia is AARLIN (the Australian Academic and Research Library Network). This is a consortium of more than a dozen universities that have collaborated in establishing individualized portals within a national framework.

The AARLIN service model is built around a framework, which is linked to the local authentication systems of the participating universities. When a user logs on, the portal ensures that the user is an authorized user by communicating with that user's authentication system. At the same time, the authentication service passes to the portal the "user's profile" – which would include information such as the subject interests of the user and his/her status (e.g. undergraduate, postgraduate, academic staff). On the basis of that profile, the portal "pushes" to the user a suite of relevant information resources (also called information landscape). Thus all users would actually have access to a different set of information resources, according to their profile. Individual users can further refine their access to the relevant resources by adding or deleting individual items from their list of favourite resources.

The portal includes a search engine, which allows parallel searching of a diverse range of databases, information resources and websites using multiple protocols. These protocols include Z39.50, HTTP, SQL and XML gateways. Consequently, it would be possible for a user with a single search argument to search across citation and full text databases, online library catalogues, Internet search engines, websites and subject gateways, and to get a uniform search outcome from this parallel search.

In addition to being able to conduct parallel searches, the portal can pass relevant metadata to openlinking software using the OpenURL protocol. The openlinking software will use the metadata to "resolve" what types of extended services the user is entitled to according to the user context. For instance, it might display links to full text resources, which the user's library system has subscribed to, but not to other relevant resources, which the user is not entitled to use. Similarly, if there is no full
text access, the openlinking software might display a document request form, if the user is an academic staff, but will not display this form if the user is an undergraduate and not entitled to document delivery services.

Finally, the portal also has an SDI or Alerting service, which users can utilize to be kept informed of new information resources in their fields of interest. Among the AARLIN members, many different approaches have been taken to emphasize the primacy of the portal. For example, La Trobe University Library gives prominence to the portal by making it the main hub for access to all its digital resources, while Monash University uses the portal as one of many possible ways of searching for its resources.

In October 2006, AARLIN conducted a survey of a small group of users of the portals in their respective universities to find out to what extent they appreciate the features. The survey respondents comprised 502 undergraduates (62%), 224 postgraduates (27%), 91 academic staff (11%), and 15 TAFE students (2%). The findings were very encouraging in that the majority of the users liked using their library’s portal. The following is a brief summary of the results, which shows general acceptance of metasearching by the cohort that was surveyed:

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Somewhat Agree</th>
<th>Do Not Agree</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information found</td>
<td>18%</td>
<td>41%</td>
<td>20%</td>
<td>15%</td>
<td>6%</td>
</tr>
<tr>
<td>Searching multiple DB’s useful</td>
<td>28%</td>
<td>41%</td>
<td>13%</td>
<td>11%</td>
<td>7%</td>
</tr>
<tr>
<td>Would use this again</td>
<td>35%</td>
<td>40%</td>
<td>8%</td>
<td>8%</td>
<td>9%</td>
</tr>
</tbody>
</table>

I used to be of the view that a single library portal within an institution would be more than adequate. The problem with this is that the library portal may reside outside the “digital home” of the Millennial students. This might be their coursework portal, the university-wide portal or their faculty’s portal, which they use to re-enroll, pay their fees, obtain information about examination results and course requirements, etc. There is usually a multiplicity of portals within a university environment, and the library should seek to ensure that it has a presence in all if not most of these portals.

The library portal, if properly developed, should provide the library with a competitive edge – for it will not only simulate the simple interface and ease of use of Internet search engines like Google; it will through the use of push and pull technologies meet the specific needs of the Millennial generation.
NATIONAL AND INTERNATIONAL COLLABORATION

To maintain their relevance and perhaps future survival, academic libraries must participate in national and international collaborative projects (a) to ensure the long-term preservation of digital materials and (b) to deal with the scholarly information crisis by supporting the Open Access movement

Digital Preservation

Academic libraries have always had control over the development of their collections. Through their collection development policies, they have painstakingly built up over the years collections that reflect the teaching, learning and research needs of their users. However, the migration of print to electronic formats has sometimes made it difficult for the libraries concerned to collect specific items. Rather, they have been forced by publishers to purchase or subscribe to bundled serials collections, and even, in some cases, to collections of digital books rather than individual items. Even more problematic has been the fact that they no longer purchase these digital collections outright, but rather purchase the right to access these collections, and their access licence is valid for as long as their payment continues.

Furthermore, most academic libraries appear no longer to take responsibility for preserving these digital collections, but rely on the publishers to preserve them for posterity. This assumes that the publisher can be relied upon for long-term preservation and values the archived material as a business asset or has the public good in mind. This assumption is optimistic, and over time the publisher might be taken over by a private equity fund or corporate raider who may have no interest in preserving material that may have lost its economic value and thus affect the bottom line. It is, for this reason, that Arms has suggested that “Long-term preservation requires organizations that are committed to the long-term. Candidates include the national libraries, scholarly societies, charitable foundations, and major university libraries. It is no accident that these are all not-for-profit. Preservation is a service to the future that cannot depend on financial rewards.” (Arms, 1999).

A number of projects have been developed to ensure the long-term preservation of digital objects. Examples include

- The LOCKSS ("Lots of Copies Keep Stuff Safe") program under the auspices of Stanford University, which is based on a distributed network of digital repositories (http://www.lockss.org/lockss/Home);

- The Library of Congress’s National Digital Information Infrastructure and Preservation Program (http://www.digitalpreservation.gov/) as well as those
of a number of national libraries around the world that are focused on preserving and safe-guarding the digital heritage of their respective countries;


Academic libraries should monitor these closely, and participate where it is financially feasible to do so. In particular, they should participate in national initiatives, which attempt to preserve the national cultural and documentary heritage.

**Digital Repositories and the Open Access Movement**

Academic libraries want relief from the unreleenting increases in the price of serials, which have caused many to predict that the current system of journal publication is unsustainable in the long run. The Open Access movement is the response supported by librarians and researchers worldwide as a possible alternative to the current journal publishing paradigm. There are two prongs in the Open Access movement:

The first is self-archiving, where the author publishes in a scholarly journal, but retains the copyright and also deposits a copy of his/her article in an institutional or central repository, which can then be accessed online, free of charge. These articles can be pre-print or post-print and may or may not be peer reviewed. Open Access archives may be institutional based or discipline based. Australian university libraries have embraced the model of institutional based repositories through a Commonwealth Government funded initiative called the Arrow (Australian Research Repositories Online to the World) Project. Monash University is the lead institution in the consortium (http://www.arrow.edu.au/). The software selected and being tested is provided by VTLS. It is unclear why Arrow does not use DSpace, an open source software solution for accessing, managing and preserving scholarly works in a digital archive. DSpace was jointly developed by HP and the MIT Libraries in 2002, and is used by more than 200 projects worldwide. The main advantage of DSpace is that it “can support a wide variety of artifacts, including books, theses, 3D digital scans of objects, photographs, film, video, research data sets and other forms of content. Archives created using DSpace can be federated, linking to each other so that researchers in one location can easily and quickly search and view pieces of another archive's collection, thus enabling researchers to utilize remote collections without having to travel to the archive where they are stored.” (DSpace Foundation Launches, 2007)

The second prong is Open Access publishing, whereby authors publish peer reviewed articles in Open Access journals, which are accessed over the Internet freely without charge. Examples include BioMed Central and the Public Library of Science. However, this model of publishing relies on fees charged to the submitting authors or their sponsors (e.g. employers). The Public Library of Science, for example,
charges authors of accepted papers US$1500, while BioMed Central charges between US$1410 and US$1690 for an accepted paper. In March 2006, the Directory of Open Access Journals (http://www.doaj.org) listed over 2,000 open access titles across all fields. McCabe and Snyder (2006) have questioned the economics of open access journals. They state

“First, it is not obvious that profit-maximizing journals would ever voluntarily choose to have open access... Second, it is not obvious that a non-profit journal with the objective of introducing open access would be competitively viable. If open access only leads to a slight increase in readership and impact, authors may choose to stay with traditional journals and avoid the open-access journal’s higher author fees. Third, it is not obvious that social welfare is enhanced by open access. True, it reduces any deadweight loss on the reader side. But if author fees need to be raised to pay for publication costs and to provide a profit margin, it may increase deadweight loss on the author side, leading to the publication of less research.”

In spite of the above qualification, a study by Harnad and Brody (2004) showed that open access articles when freely available have a significantly higher citation rate than formally published articles. Support for Open Access is increasing, and the role of academic libraries in bringing this issue to the attention of scholars has increased awareness of the predatory nature of serial publishers.

TARGETTING THE MILLENNIALS IN THE VIRTUAL WORLD

Millennials spend an inordinate amount of time in the virtual world of the Internet. Many not only have a blog, a MySpace page, a Facebook entry, or a YouTube video upload, they also spend time in virtual worlds like Second Life or Entropia. According to the Second Life website (http://secondlife.com/whatis/), this is a 3-D virtual world inhabited by nearly 10 million residents. In this virtual world, “teeming with people, entertainment experience and opportunity”, residents, using their self-created avatars, can play games, purchase land to build a house, a shopping mall or a business, gamble, participate in all forms of entertainment, and trade with other residents – all using a currency called Linden dollars, which can be converted into real US dollars. There are reports of people making a living doing business in Second Life, and some government have begun to study the feasibility of taxing such earnings.

To catch the attention of the Millennial generation, it will be necessary for academic libraries to maintain a presence in these virtual worlds. This is not such a radical idea as it might seem at first sight. For example, politicians in the USA and Australia have begun to promote themselves in social networking sites, particularly in an election year. Gartner, the technology analysis company, has predicted that 80% of active
Internet users will have a “second life” by the end of 2011, and is advising companies to consider Second Life as space to do business (Gettler, 2007). Many small businesses and large corporations have begun to maintain a presence in Second Life, e.g. Reuters, Reebok, Toyota, Sony BMG, and Telstra. Even some Singapore government agencies, like Infocomm Development Authority, the Singapore Tourism Board and the Economic Development Board, have purchased “real estate” in Second Life to reach an audience that spends several hours in cyberspace, and also to explore the commercial possibilities in that virtual world. Alliance Library System and OPAL, an international collaborative effort by libraries and other organizations to provide web-based programmes and training for library users and library staff members, have collaborated to establish a virtual library called “Second Life Library 2.0”. (http://infoisland.org/about/)

Academic libraries can take a leaf out of businesses by considering the feasibility of marketing their services not only in the real world but also in the virtual world where the Millennials gather. The library is a well known brand. However, its image needs to be updated from one of comprising shelves of books to one of providing a gee-whiz online service. This is not a simple task and requires the assistance of professionals in the advertising and marketing services.

**CHANGING THE PHYSICAL ENVIRONMENT**

The increasing migration of print to digital formats, and the successful provision of online access by academic libraries, have led to questions by college and university administrators as to the need for physical libraries, or the allocation of prime space for seating and the storage of low use “analogue” collections. To combat this perceived threat to the physical building, some academic library managers have successfully refurbished book storage and reader spaces to accommodate the new information technologies as well as the new teaching learning requirements of their parent institution. In most cases, they have integrated library services with other campus functions, and made the spaces more attractive to students by providing more comfortable, attractive and better equipped facilities. The names of the new spaces -- Information Commons, Academic Resource Centre, Learning Resource Centre -- clearly emphasize the new roles that libraries play in the university’s teaching and learning environment and the connection between the library and information technology. Facilities provided include teaching and learning spaces, computer workstations to access online resources, wireless networks for people who prefer to use their own laptops, instant messaging services or video conferencing facilities to permit instantaneous communication between students and librarians and/or their lecturers, group study facilities to cater for the new Millennial students who thrive in the group environment, and even a coffee shop à la Borders. There is considerable anecdotal evidence that the reinvention of library spaces to meet the needs of the Millennials has not only stemmed the drop in the number of visitors to
the library building, but has actually led to increasing number using the new facilities.

In spite of the new digital environment, the continuing importance of the library as place cannot be over-emphasized. The following quotation from Freeman (2006, p.9) aptly sums up the current thinking about the library as place:

“The academic library as place holds a unique position on campus. No other building can so symbolically and physically represent the academic heart of an institution. If the library is to remain a dynamic life force, however, it must support the academic community in several new ways. Its space must flexibly accommodate evolving information technologies and their usage as well as become a “laboratory” for new ways of teaching and learning in a wired or wireless environment. At the same time, the library, by its architectural expression and siting, must continue to reflect the unique legacy and traditions of the institution of which it is part. It must include flexible spaces that “learn” as well as traditional reading rooms that inspire scholarship. By embracing these distinct functions, the library as a place can enhance the excitement and adventure of the academic experience, foster a sense of community, and advance the institution into the future. The library of the future remains irreplaceable.”

CONCLUSION

Serving the Millennial generation is a challenge that all academic libraries have to now confront. They are a difficult cohort to serve, largely because they are an elusive group – having both real and virtual world identities. They are more comfortable in the digital environment of the Internet than they are in the analogue world of print. Keeping them as clients in the age of Google will be difficult. But while the challenges are many, it is not beyond the ingenuity of academic librarians to respond to these challenges in innovative ways. Librarians are by no means strangers to change. The move from closed access to open access, the adoption of the “supermarket model” to replace the small “retail shop model”, and the adoption of many modern business practices, to improve the provision of library services, testify to the continuing ability of librarians to evolve, adapt and change.

In the current environment, librarians have to adopt some of the strategies of commercial organizations by establishing intelligent portals to simulate a “Google-like” experience for their users. They have to participate in international and national initiatives to preserve digital materials. They have to tackle the scholarly information crisis by becoming “publishers” and creating digital repositories, as well as encouraging the development of the Open Access movement. They must maintain a presence in the virtual worlds where the Millennials gather, while at the same time
try to attract this generation back to the physical building by undertaking refurbishments of traditional library spaces to meet the new requirements of the information age.

Academic librarians need to gain a better understanding of the learning and information seeking behaviour of the Millennial generation. It is important to recognise that post-secondary education is changing. Consequently, academic librarians should work with university teachers to create new learning environments to maintain the interests of the Millennial generation. In this respect, academic libraries must become more than peripheral players in the teaching and learning efforts of their parent institution. They should strive to become a core part of this effort through the provision of information literacy programmes and flexible learning spaces in their physical buildings. The environment in which librarians work is currently very unstable, and there is no guarantee that academic libraries will continue to survive in their current form. But there is one certainty. Academic libraries that fail to innovate must surely die a slow death.

REFERENCES


