Webbed Feet: Navigating the Net

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The authors provide some basic background on the Internet as a prelude to introducing its main areas of interest and value to archivists. These are illustrated by reference to six World Wide Web home page 'sites'. More specialised sites covering areas such as preservation, electronic document management, specific archival institutions' and associations' sites, and even a journal are also described. They conclude by focusing on the Internet's potential for enhancing accessibility to information about archives and their collections and by highlighting opportunities in the virtual world of the future.

THE INTERNET IS THE BUZZWORD of the 1990s. Articles are written about it, magazines and television shows devoted to it, cyber cafes established to enable access to it and everyone seems to be talking about 'surfing the net', Netscape, HTML, URLs, Yahoo, Jughead and Veronica. But how relevant is the Internet to archivists and records managers? Is it just another trend we should let pass us by or should we become active participants both at an institutional and an individual level? What can we gain as a profession and as professionals from leaping onto the Internet?

What is the Internet

The Internet began in the 1960s as an American military communications system called ARPANet. Under this system all computers in the network had equal status and each had its own authority to originate, pass and receive messages. These computers transmitted data in small pieces each with its own 'forwarding address' to let several users share one communications line. Inactive computers would be noted by the computer transmitting data and bypassed until the situation was rectified, thus eliminating the need for a central controlling computer and totally decentralising the operation of the network. The common language developed for the Internet to enable the transfer of data between computers was Transmission Control Protocol/Internet Protocol (TCP/IP).

In the 1990s the Internet has become a worldwide network connecting millions of computers with a spectacular growth rate of approximately twenty per cent per month. The number of 'host' machines with direct connections to TCP/IP has doubled each year since 1988. Australia is a high rating 'strider' on the information highway and is rated sixth out of fifty-five countries according to the Information Imperative Index which measures the ability of individuals to access, adopt and absorb information and information technology.[1]

In Australia during the past year an estimated 3.5 million people, or twenty per cent of the population, have used the Internet. This is an increase of eight per cent over the previous year. Forty-one per cent of Australians over the age of eighteen have access to a computer at home. This equates to 5.5 million Australians. General web surfing is the most popular application.

The Internet[2] offers a myriad of services including:

- Electronic Mail—this has concepts parallel to those of regular mail; it allows almost instantaneous exchange of letters and messages around

the world; each person connected has their own unique electronic mailbox and address from which they can send and receive electronic mail;

• File Transfer Protocol (FTP)—the primary method of transferring or copying files over the Internet;

• Usenet News—bulletin board style discussions organised in approximately 5 000 different categories; it enables the exchange of ideas and debate between groups of people with similar interests from around the world;

• Mailing Lists[3] are another way to interact with other Net users; unlike Usenet messages, which are stored in a central location on a host system's computer, mailing list messages are delivered right to the e-mail box of the receiver; for archivists and records managers there is a range of Listservs including the Archives Listserv (US), the Records Management (US), STAMA (Science, Technology & Medicine Archives), ARCAN-L (Canadian Archives) and Aus-Archivists (Australian Archivists);

• Telnet, a program that lets you use the power of the Internet to connect to database and other information resources around the world where you can use the interactive services they offer, for example searching library catalogues; and

• Internet Relay Chat (IRC)—CB radio style interactive discussions.

Search tools make traversing the Net easier. There is so much information on the Net it is impossible to know where everything is, or even how to begin looking for what you need. Search tools have been developed to assist in information retrieval on the Net, for example: Archie, Gopher, Veronica, WAIS and the World Wide Web. Archie is used as a search tool and was developed to catalogue and explore enormous archives of file names maintained at Internet FTP sites. Gopher and WAIS (Wide Area Information Servers) are search tools that preceded the Web. Search tools take a request for information and then scan the Net for it. They may also work through menus.

The easiest way to enter the Internet, and the most widely used in recent times, is the World Wide Web (WWW). The Web, as it is most commonly termed, is a graphical user interface to information on the Internet. The ease of use of the Web lies in its 'point and click' graphical software.

The Web has evolved around the concept of hypertext which enables text to be displayed in a manner that emulates the thought process. As David Wallace explains, 'Certain portions of the text are differentiated by bolding and underlining. The user can select the highlighted text within a document and once chosen be automatically routed to a new yet related document'.[4] One can move backwards and forwards through documents, images, audiovisual files and links to other sites. A specific Web page is identified by a Uniform Resource Locator (URL) which is a unique address for every Web page, e.g. http://www.asap.unimelb.edu.au/. 'The main idea behind the Web is that computer accessed information can easily be associated or linked to other information regardless of where that other information is located.'[5]

The software needed to view these links and find information on the Web are called *browsers*. These browsers interpret the links embedded in documents and access related documents. The most popular of these programs are Netscape and Mosaic. Given keywords, search engines find related information. A few of the more commonly recognised are Einet, Galaxy, Webcrawler, Lycos and Yahoo. The Web is not limited to displaying documents. A link can contain commands instructing a Web browser to access other Web sites or Gopher or Archie sites, to make a Telnet or FTP connection or link to Usenet groups, thus making it simpler to understand and access all the diverse services of the Internet.

Archives and Records on the Web

In the past eighteen months the number of sites relating to archives, records management and special collections has increased substantially. At the time of writing there were approximately 680 sites covering these areas. The vast majority of these sites are North American institutions and cover special collections rather than archives and records management programs. However, in the past year there has been an increasing number of European, Asian and Australian archives institutions establishing an Internet presence.

Several lists of archival or records management sites are maintained with hypertext links. However, these lists can contain superseded links and this can be a particularly frustrating aspect of using the Internet. The best and most up-to-date list is Repositories of Primary Sources. This list, maintained by the University of Idaho, can be found at URL 1*. The list contains links to

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* Web site addresses throughout the article appear following endnotes at pages 350–1.

North American, South American, Asian, African and European institutions and has hypertext links to other lists such as Canadian Archival Repositories (URL 2), Archives on Merseyside (URL 3) and Archives in Germany (URL 4). Archives of Australia also has links to other sites of interest (URL 5).

The differences in sites are evident from a quick scan of a small number. There are many sites that function mainly as on-line brochures and offer only basic information such as contact details, location and general information on holdings. At the other extreme are complex sites with multiple pages and multiple purposes including archival documentation, exhibitions and archival items available on-line. Some institutions target content towards the researcher, others towards internal clients and others towards both external and internal clients. In developing a Web site an awareness that the Web is not just a publishing tool is important. Much more can be done using the Web than making a paper brochure available on-line. Unlike publishing in a paper format, 'the sense of connection between publisher and the reader is more immediate, more direct. Once the leaflet has been taken, scrunched into a pocket or bag the connection is broken. On the WWW, your readers are your guests...When you publish on the WWW you don't just distribute information you open a pathway for communication'.[6]

There are many reasons for developing a Web site and it does require time, commitment and planning. Technical aspects are not difficult but many sites stagnate or disappear for lack of continuity. Content becomes non-current. For those institutions and individuals prepared to spend the time a Web site can be an effective means of disseminating information, providing services to customers (for example reference services, collection information, notices concerning moves and closures), developing a higher profile, marketing services, publications and other items. Information can be disseminated to clients within your organisation (policies, procedures, disposal schedules) or to external clients such as researchers (user education, archival documentation, reference services). On-line newsletters, publications and exhibitions can be used to increase the profile of your unit/organisation internally and externally.

The most successful Web sites are a blend of good (useful and current) content, excellent design, layout and structure including effective use of graphics, images and colour, and search facilities. Web sites should provide opportunities for feedback from visitors, links should be current and where appropriate electronic mail links should be included. For frequent visitors the inclusion of a 'What's New?' page or the identification of new material will be of great benefit.

Listed below are details of six sites that are representative of the hundreds of archives and records sites that we have viewed. In selecting the sites we have chosen sites from several countries and focused on government and university archives and records management programs. We have not included special collections sites although many of these sites are great examples of effective use of graphics. We have also not included sites that function as an on-line brochure.[7]

The *Oregon State University Archives* Web site is located at URL 6. The site is aimed at both the external and the internal client. The site has multiple entry levels for most information ensuring that items do not get 'buried'. This means that items such as retention schedules can be accessed from the home page or via links from subsidiary pages. There are links to related institutions for professional development.

The home page contains links to: Archives Brochure, Program Overview, What's New?, Historical Records, Records Management, Retention Schedules as well as: exhibits, people, location, OSU Record, gopher, links. The Program Overview links the visitor to archives and records management policies and the Policies and Procedures Handbook.

The Archives brochure gives an excellent introduction to the program with the appropriate links to more detailed information on holdings and collection descriptions. Many institutions when developing a Web page view items such as brochures as a quick way of putting text on the Web. However, developing a Web site is not the same as publishing a brochure and developing appropriate and multiple linkages within a brochure or existing publication is crucial. Lengthy textual documents should be broken up into smaller files by inserting a menu of hypertext links.

The Archives section contains collection descriptions as well as directions on how to transfer materials and reference and duplication services. A summary of holdings is divided into subject areas for ease of reference e.g. Institutional Records, Publications, Photographs, Visual and Sound Recordings, Manuscript Collections, Oral History Collections and Memorabilia Collections. Each of these has a brief but concise summary of the collection providing the researcher with the scope of collections and sufficient detail for them to know if they wish to investigate further. An on-line exhibit gallery is also contained in the Archives section.

The Records Management Section contains a general overview of the program including details of locations and hours of operation. Further links

lead to services, University Records Management Officers Responsibilities, the Archives and Records Management Handbook. The table of contents is a hypertext document which links to more specific information such as: principles of records management, records retention and disposition schedules, electronic records, digital imaging, confidentiality and access as well as details of services provided to departments of the university. A flow chart for the disposal of electronic records is included. Selecting 'yes' or 'no' in response to a specific question leads you to a subsidiary page with a further 'yes' or 'no' question and so on.

Photographs are used widely to illustrate pages. This has the effect of adding interest but it does take longer to load such pages. Each photograph used has an identifying number so if one is of particular interest the number can be recorded and tracked to a collection.

The Web site is graphical intensive and for those users without a graphical browser there is an alternative text only version. User statistics indicate there were 581 items accessed in the four-day period 29 June – 1 July 1996. Of these 103 accesses were between 7.00pm and 7.00am.[8]

Overall it is a comprehensive learning and educational tool for both the professional and the novice user as well as an invaluable aid to those who require information within the organisation.

The *University Of Missouri System Records Management* Web site is located at URL 7 and is aimed at the internal client of the records management program.

The home page has a graphic representing the records management program of the University. From the home page you can select links to Records Management Mission, Records Management Policy, Records Management Service, Records Management Staff, Records Retention Guide, Records Center, Microfilm, Form Management (the latter two were under construction). Records Management Policy leads to the Business Policy Manual which includes general policy, storage of inactive records, records disposal, vital records, records audit, electronic records administration, standard file system.

The *UK Public Record Office* is located at URL 8. Unlike the previous two sites examined, this site is directed towards the researcher. The opening page is very text intensive giving a general introduction (lasting over a page) to the Public Record Office. It may have been more 'user friendly' to provide a link to this text from the opening page. The home page includes details of the

PRO locations and links to other areas that may be of interest, e.g. PRO e-mail experiment, information on family fact sheets (a series of information sheets for genealogical research), PRO Publications, Changes at KEW, closure dates and dates to avoid (particularly useful), Irish Famine Exhibition, and WWI service records. A search engine is provided for the use of those visitors who want to go straight to a particular subject without having to follow a series of links.

As mentioned above, this site is targeted towards the researcher and provides detailed and useful information for people planning a visit to the PRO, for example what to bring, hours of operation, information on free induction sessions including times and dates. Details of records that have been removed for any period of time, new records and developments in filming various collections are included, as are details of exhibitions. The Web site provides a large amount of information and aims to ensure that researchers are well prepared for their visit to the PRO. This information is presented clearly and concisely.

In keeping with their reputation as entrepreneurs the *Australian Science Archives Project* (ASAP) was amongst the first, if not the first, archives institution in Australia to develop a Web site. A great deal of time and effort has gone into the site, located at URL 9 and this is reflected in the content, graphics, structure and style. It serves a dual focus: to promote and disseminate information on the activities of ASAP and to play host to resources relating to the history and philosophy of science.

There are three sections of content: Information about ASAP; ASAP's WWW Resources and ASAP's Guests (including Australian Academy of Science, Australian Foundation for Science, Australasian Association for the History, Philosophy and Social Studies of Science). The site also includes the History of Australian Science Newsletter, the Science Technology and Medicine Special Interest Group of the Australian Society of Archivists (newsletter and Listserv), and resources for the History of Australian Science and Technology. A search agent, Excite, enables the user to search the contents of the whole site.

Information about ASAP provides a general introduction to the history, activities and services of ASAP and information on the archives of science.

ASAP Publications leads you to a list of approximately twenty-two different guides to collections—four of which are electronic publications. The electronic publication *Guide to the Records of CSIRAC* is an excellent example of an electronic guide and contains instructions on use, a series listing providing a

summary of contents of each series and an overview of the collection contents and structure, historical notes, accession information (linear metres, number of items). Within the electronic guide by selecting individual series you can progress to the inventory of items documenting each file or record in the series. The inventory of items can also be accessed from the initial page of the Guide. From the Series Description or the Inventory of Items you can use the search mechanism Excite to conduct a keyword search.

A Photo Gallery is included in the electronic guide with the option to make images larger, and a description and copyright information accompanies the images.

Other ASAP guides were originally published in hard copy and an ASCII version is used for the Web site. For the first and second series of guides a brief biographical note, contents listing, price and on-line ordering service is available.

Bright SPARCS is a program undertaken by ASAP to make information about Australian scientists available through the Internet. Hypertext links connect data, documents and images into a biographical network. One can move from a biographical summary of a specific scientist to an article, guide to archival records or photographs; browse, using the Excite search agent, scientist by scientist or search for a specific individual or a concept search, e.g. Botanist, and then access contact details of repositories holding relevant archival sources.

The WWW Virtual Library for the History of Science, Technology and Medicine was established in September 1994 to keep track of information facilities in the field of history of science, medicine and technology. Resources includes lists, collections, bibliographies, specialised collections and documents, electronic journals, museums, exhibitions and images, e-mail discussion lists and newsgroups.

The *Australian Archives* Web site, located at URL 10 like those of other large institutions, is divided into sections which includes, Services, Holdings, Publications, Exhibitions and Events, and Gopher access.

About Us? provides general information about Australian Archives and the records (including use of the records). Under Services We Provide are three services: Australian Archives Library; Australian Archives Public Reference Services; and World War I records. At this stage there is no reference or links to services to agencies such as records evaluation and disposal. The

Australian Archives Library page contains links to Internet Resource Tools, Current Archival Literature in Electronic Format (including newsletters, Guide to On-Line Exhibits, articles), lists of archival sites and connections to other archival libraries.

Information under Public Reference Service provides advice on making a reference inquiry and links to holdings, service dossiers, published guides, and facts sheets.

The link from World War I Service Records is excellent. It has good graphics, layout and links to examples of Attestation Paper, Services & Casualty Form, Military Correspondence—a good introduction for the novice researcher.

Select Holdings includes text outlining examples of records (including a Curtin/Churchill cablegram, a Johnson/Menzies letter, and an illuminated address presented on the occasion of the opening of Parliament House, Canberra, 9 May 1927), another link to WWI records, information on genealogical records and photographs of the development of Canberra. A small image can be selected to retrieve a larger image and the accompanying text provides context and a link to the specific series. In relation to photographic records there is a link to the Mildenhall pictures but no other information on photographic holdings.

Accessing Our Holdings contains information on the Australian Archives database that allows users access to detailed information about the records held and the agencies that created them. The Web version allows for searching through indexes to functions, agencies or persons. It includes information on agency and series information, item information, using the Web to find information (including a good diagram of linkages), the record series, Commonwealth Organisation, Commonwealth Agencies, Persons and Records Series.

There are five methods of entry—functions index; agencies index; persons index; organisations index; control number query—and it is possible to move easily between agency information, details of records series, inventories of agencies and series. Whilst a prior knowledge of functions and agencies is important a good comprehensive overview is provided to assist researchers.

Exhibitions and Events includes details of past and current exhibitions. Unlike many large North American institutions there are no electronic exhibits.

The Gopher includes much of the professional development information including information on electronic records (policy, papers presented, bibliography); information for Commonwealth Agencies; Custody and Preservation Information (Preservation Products Catalogue; Thermal Paper; Guidelines on Papers for Use by Commonwealth Agencies); Records Control & Description Information (Summary of the CRS Review Report; the Commonwealth Record Series System); and Records Evaluation & Disposal Information (Advanced Appraisal Techniques; Corporate Archives; Disposal Practices at Australian Archives).

The absence of a search engine for the whole site means that interesting information such as electronic versions of *Documentation Standards*, *Keeping Electronic Records,* and *Managing Electronic Records* is difficult to locate. It is generally hidden under several layers and is not immediately identifiable. For several items you would need either the specific URL address or the knowledge that it is located on the Gopher or under the Library.

The *New York State Archives and Records Administration* Web site (URL 11), contains an array of information of interest to New York State Government agencies, researchers, and archivists and records management professionals in the USA and overseas. The home page links to SARA Holdings, Services and Publications and a search function which enables the SARA On-Line Catalogue and databases to be searched. The layout is clear and concise leading the user to the next option.

The Web site contains basic information on SARA (Who We Are) and their services (What We Offer). From here you can locate Services for Local Governments; for Researchers; for Teachers; for State Government Agencies and download copies of records management publications for local government on establishing a records management program, electronic document imaging, optical storage systems, administration of inactive records. Services for State Government Agencies also has links to publications on Managing Records in Automated Office Systems and Managing Records in E-Mail Systems. Researcher services information includes access policies, Copying Fees, Hours and information on holdings.

The entries for SARA Holdings are arranged in three categories: records relating to special subjects (e.g. military service records; women; WWI; Native Americans); records created by individual state agencies; and special media including electronic records, microfilm, photographic collections.

One progress is through the Guides by clicking on specific sections in the Table of Contents or the whole document can be downloaded in ASCII format or accessed by FTP. The electronic records systems are described in detail and instructions are provided as to obtaining data sets and Users' Guides. SARA's On-Line Catalogue can be searched and the entire Web site can be searched by a key word. Although it was under further construction the facility is usable.

The Web site makes little use of images to enhance textual material and does not have electronic exhibitions. This is an excellent site particularly in relation to client services and information for client agencies.

As these six sites show, there is an increasing number of archival programs (and significantly fewer records management programs) establishing Web sites. New sites are announced daily and further developments of existing sites are frequent. A site can change dramatically within a few months of establishment. The sites that have already been established are early adopters of the technology and a great deal can be learnt from viewing selected sites.

Australian Archives provides a good example of accessing holdings on-line via a database and ASAP provides a different method of access in terms of electronic guides. SARA and the US National Archives (URL 12) are good examples of providing information for clients (government agencies) as are the UK Public Record Office (researchers), Oregon State University and the University of Missouri.

The University of Virginia Special Collections Department (URL 13) demonstrates the power of the electronic exhibit[9] and the National Archives of Canada (URL 14) shows what is possible in relation to dual languages.

British Columbia Archives and Records Services (URL 15) has been one of the earliest and perhaps most discussed Web sites. It is an outstanding site containing a virtual reference room (as an aid to researchers), institutional policies and procedures. As of March 1996

> over 105 000 textual descriptions of photographs, paintings, drawings and prints... are available for access. Of these approximately 12 500 items have images on-line for viewing... The majority of all catalogue cards (over 2 500) and finding aids (over 1000) for government records are available on-line... selected publications and research guides are available on-line in electronic form... portion of the cartographic catalogue...45 sample digital images of maps...sample clips of digital audio files and digital motion pictures are available.[10]

During the period 1 January – 30 July 1996 there were 669 732 items accessed at an average of 3 174 per day. Whilst the majority of requests came from Canada requests were received from Argentina, Brazil, Czech Republic, Israel, Sweden and almost every other country in the world including Australia.[11]

Professionally Oriented Information

Traditionally reading a professional journal or publication or attending a conference or seminar has been the primary means of professional development. The Internet provides access to a variety of professionally oriented information for archivists and records managers and visiting an institution's Web site can also be a mechanism for professional development. As a visitor to Web sites one can identify what similar organisations are doing, develop new policies, procedures and services, undertake informal benchmarking, identify 'best practice' and make new professional contacts.[12]

Preservation

Archivists can obtain access to a variety of preservation information via the Internet. One of the best known is Conservation On-line – COOL – (URL 16) is a project of the Preservation Department of Stanford University Libraries. It is a full text database of conservation information and includes topics such as digital imaging, disaster planning and response, electronic media, mass deacidification, bibliographies and links to other Internet resources. COOL has a link to the Commission on Preservation and Access home page (URL 17). The Commission on Preservation and Access directs much of its programmatic focus towards digital technology. Available from the home page are policies and procedures associated with videotapes, compact discs and responses to 'Ensuring the Longevity of Digital Documents' by Jeff Rothenberg in the January 1995 issue of *Scientific American*. There is also the National Media Laboratory site (URL 18) which provides technical assessments of a variety of media which may be of use to archivists, e.g. magnetic tape storage, disaster recovery of magnetic tape and optical disk media.

Closer to home the National Preservation Office of the National Library of Australia (URL 19) has information concerning preservation of archival materials, books, electronic media, photographs, sound recordings and care of artworks on paper. Also available is the Draft Statement of Principles on the Preservation of and Long Term Access to Australian Digital Objects; Information Sheets on preserving photographs and disaster planning and recovery; professional conservation services and conservators; conservation

suppliers and links to electronic sources of preservation information such as e-mail discussion lists and Internet resources. As well the site includes information on annual conferences and many of the papers presented at the 1995 conference on Multimedia Preservation are available on-line.

Legal

Commonwealth and New South Wales legislation can be accessed via the Internet and facilities such as keyword searching make locating the required item of legislation a relatively simple task (see URL 20). Victorian legislation is available (from URL 21) although the number of Acts currently available is small.

Electronic Document Management and Imaging

The American Memory Project at the Library of Congress (URL 22) is a five year project to develop a digital library of primary source and archival materials relating to American culture and history. From this Web site one can search American Memory collections or access the collections by type: prints and photographs, documents, films, sound recordings. Of great interest are the background papers and technical information based on the experience gained during the digital conversion.

Similarly the Getty Information Institute (URL 23) is working on digitising images of works from museum and archival collections and standards-based approaches to the creation and dissemination of digital archives. There are many discussion papers; for example, covering the conversion of traditional data formats into digital media, and archiving and authenticity.

There are numerous document management and records management software companies providing product information on the Web including ForeMost, PC Docs, Filenet, Documentum and TRIM. The Association of Information & Image Management International (URL 24) has information on the Document Management Alliance and links to the AIIM Buying Guide— a guide to companies, products and services in the areas of imaging and document management.

Professional Associations

Professional associations for archives and records management have seized the opportunity to disseminate information to members, provide services to their membership and to promote themselves to prospective members with varying degrees of success. The major difficulty is that most professional associations are run by volunteers and therefore the maintenance and addition of information to the Web site can become an additional burden. Among the most useful are those of the ASA (URL 25), the RMAA (URL 26), the Society of American Archivists (URL 27), Association of Canadian Archivists (URL 28), and the International Council on Archives (URL 29).

Current Research

A further benefit of the Internet is in identifying current research, projects and activities that are being undertaken in Australian and overseas institutions. Finding these sites is often as a result of subscribing to Listservs, following links from a different site, using Internet search engines or sheer good luck!

The results can certainly repay effort. For example Finding Aids for Archival Collections (URL 30) has information on the Berkeley Finding Aids Project. This is a project to develop a prototype standard for encoding archival and library finding aids called Standard Generalised Markup Language Document Type Definition (SGML DTD).

Another is the Pittsburgh Project on Functional Requirements for Evidence in Recordkeeping which is widely known to archivists in Australia through the writings and visits of David Bearman and Richard Cox. Its site at URL 31 has publications and reports, bibliography and the following products:

- Literary Warrant Supporting Functional Requirements

- Functional Requirements for Evidence in Recordkeeping

- Production Rules Version of the Functional Requirements, and

- Metadata Specifications Derived from the Functional Requirements.

The site also links to applications and tests of the functional requirements including Indiana University (URL 32), the Philadelphia Electronic Records Project (URL 33) and the World Bank (URL 34).

Finally, there is a whole Web site dedicated to the PROFS case (URL 35) including transcripts of court hearings and links to related information such as NARA e-mail regulations.

Institutional Sites and Professional Development

Institutional sites are also a rich source of information for professional development particularly in relation to electronic records policies and projects, e.g. the New York State Archives and Records Administration (URL 36), National Archives of Canada (URL 37), Australian Archives (URL 38), US Department of Defense (URL 39) and the US National Archives (URL 40). The Office of Human Radiation Experiments (URL 41) is a great example of using the Internet to facilitate access to records.

For those developing a Web site in their own institution all sites are an invaluable resource. Whilst content is important in developing sites, equally important is design, layout and style and by browsing through other sites you can quickly learn what works and what does not.

Electronic Magazines

Finally PROVENANCE (URL 42) is an electronic magazine for information professionals. Issue two was specifically dedicated to archives and each issues contains items of interest to archivists.

Future Directions

In a series of articles concerning museums and archives on the Internet, David Wallace stated that 'archivists have to more systematically ask themselves "Who is the customer, what benefit accrues to institutions creating a world wide web site and what is the outcome desired from creating an institutional world wide web site".'[13] He concluded that much work needs to be done in this area by archivists: 'If the promise of hypertext and hypermedia is achieved, users will be able to leap from one site and collection to the next, tracing their unique research, education and accountability needs across state and national borders without having to punch in a new URL or conduct stop and start searching'.[14]

A recent post to the Archives listserv confirms this as a researcher outlined how he had identified relevant institutions, isolated collections and used e-mail to establish contact with archivists across the world by using the Internet. All of this could have been done via snail mail, the telephone and a

research assistant or by planning a much longer research trip but these alternatives would have cost money, energy and time. Historians have recently been agitating for easier access to the archives at the UK Public Record Office including electronic access to the catalogue to allow researchers to do basic preparatory work before going to London.[15]

Web sites are an ideal arena in which to explain not only what archives are but also what archivists actually do. Few institutions use their Web site as an educational and outreach tool yet not everyone who looks at an archival Web site has previous experience with archives or is an archivist. In his analysis of museum sites David Wallace found that there was a lack of documentation available on the Web site. Museum professionals in developing Web sites have focused on images and on-line exhibitions and have a far stronger sense of the Web as an educational and outreach tool and are 'considerably in advance of ... archival repositories'.[16] Within the last few years, imaging and scanning technology have combined to bring museums closer to people who may never have had the opportunity to view many of the great items. 'Only a small percentage of ... extensive collections can be displayed in our galleries: electronically we can open a window into our storage spaces and research files, providing an invigorating context for visitors on-site and distant.'[17]

Whilst museum professionals developing Web sites have not moved to make documentation available on-line neither, with a few exceptions, have archival institutions. Is this because our documentation is not in electronic format or because archival institutions do not have the resources required to convert guides into HTML or does it demonstrate a reluctance by archivists to embrace the Internet as a means of delivering customer service?

Web sites will increasingly be relied upon to disseminate information and facilitate access by clients particularly clients who may be in geographically remote locations, disabled or unable to physically visit the archives. Whilst the current generation of archives users may be willing to visit the repository to consult finding aids future generations of users will not be as willing. Users will increasingly demand to be able to access archival documentation at their convenience—at home, at night, on the weekend. It is not the current generation of clients we need to plan for but future generations.

In this regard the University of Saskatchewan's Canadian Archival resources listing on the Web provides some interesting statistics. The listing was announced with limited advertising—a notice on the ARCAN-L listserv. In August 1995, shortly after the listing commenced, there were 520 users at an average of seventeen requests per day. By December 1995 that had increased

to 2 038 users at an average of sixty-five requests per day. Although weekdays predominate weekend access accounts for approximately twenty-five per cent of the usage. One hundred and four people are accessing the page at 10.00pm.[18]

In a recent paper Tim Sherratt examined how the Web might be used to facilitate access to Australia's archival resources. He identified four levels of information:[19]

- contact details—where are the repositories?

- summaries of their holdings—what is in the repositories?

- finding aids—what is really in the repositories?, and

- items from the collections—why don't you show me?

The Web version of the ASA's *Directory of Archives in Australia* (URL 43) to a certain extent satisfies level one and from this general information in relation to level two can be obtained. Finding aids need to be available on-line and linked and in the case of high use collections items may be digitised and available on-line. This would facilitate distributed and multiple access. The Web is an 'opportunity to provide a new level of access to this country's archival resources via finding aids, educational and outreach tools such as teaching resources and on-line exhibitions'.[20]

One of the most exciting developments of recent years is the introduction of Virtual Reality (a three dimensional view of images/documents etc.) on the Web. This has been made possible with the development of VRML—virtual reality modelling language. VRML follows the same principles as HTML—documents are encoded with VRML in the same way that documents are encoded with HTML. 3D graphics are able to be created; this includes geometry, transformations, attributes, lighting, shading and textures to otherwise 2D items on your screen. Regular Web browsers such as Netscape and Mosaic are moving to support VRML directly but currently a stand-alone browser (available as freeware on the net) is required to provide value to users visiting sites using VRML.

The ideals of VRML have been advanced one step further with the development of VRBL—Virtual Reality Behaviour Language. This offers the viewer a truer form of virtual reality. Moving images will appear differently according to where the virtual inhabitant is situated within the 3D world.

Extraordinary processing power is required for dynamic 3D and it is not yet available on personal computers but confined to the more sophisticated and powerful Unix workstations. Given the pace at which the Internet and software are developing this technology will be available to the average user sooner rather than later and could become as familiar as today's dragable, clickable 2D icons we take for granted.[21]

Virtual reality and other 3D technologies will enable visitors to experience deeper and richer immersion into on-line exhibits.[22] The issue is not to understand how 3D worlds can be assembled—that is the easy part; 'it is to understand what users might want from database or spreadsheet information mapped three dimensionally, how they would drive and navigate around it and how it could be manipulated'.[23]

Intelligent search agents have recently been released. Users will be able to write a few sentences about any subject they wish to research and then the agent will trawl the Net for any relevant information and return it to a user's computer without the user having to search the Web at all.[24]

Eventually a visitor to an archive will be able to sit at their own workstation either at home or in an archive and 'virtually visit' almost any part of the archive without moving from their seat. They will be able to see inside the 'stacks' and locate information they wish to access. They will be able to move about in this virtual space and view their surroundings as if they were physically standing there, zooming in and selecting objects for a closer look for more information and making copies of relevant documents all within a virtual world. The role of the archivist may become one of an overseer of virtual access to the archive.

Conclusion

The Internet offers many opportunities to archivists and records managers. It facilitates the dissemination of information to our clients and provides a new mechanism for service delivery. It can be used as a tool for professional development and networking within the archival community and allied professions. It has the potential to change the way we interact as a profession and within the community. We can use the Internet to educate the community about archives and to increase public awareness. We can play host to people who would never visit an archival institution, find new and diverse clients and demonstrate the importance and significance of personal, corporate and social memory.

Endnotes

1. Mark Lawrence, 'Surf's Up — 20% Take to the Internet', *The Age*, 23 July 1996, pp. 1–2.

2. For further information on the Internet see Kevin Hughes, 'Entering the World Wide Web: A Guide to Cyberspace' available at http://www.its.unimelb.edu.au:801/courses/wwwintro/guide.61/guide.toc.html; Jean Armour Polly, *Surfing the Internet: An Introduction*, 1993; Mark Neely, *Australian Beginner's Guide to the Internet*, Maximedia, 1995; David Wallace, 'Basic Navigation and Resources', *Archives & Museum Informatics*, vol. 8, no. 1, 1994, pp. 13–23.

3. See David Wallace, 'Listservs', *Archives & Museum Informatics*, vol. 8, no. 2, 1994, pp. 107–123.

4. David Wallace, 'The World Wide Web and Mosaic', *Archives & Museum Informatics*, vol. 8, no. 3, 1994, p. 205.

5. Evan Ramstad, 'Web's Creator Plans It's Next Step', *The Australian*, 14 November 1995, p. 35.

6. Tim Sherratt, 'A World to Win — The WWW Experience of a Small Organisation with Big Dreams', paper given at AusWeb95 URL http://www.asap.unimelb.edu.au/confs/apwww/wwwtalk.htm.

7. For an analysis of other archives sites see David Wallace's articles 'Museums and Archives on the World wide Web: Resource Guides and the Emerging State of Practice', *Archives & Museum Informatics*, vol. 9, no. 1, 1995, pp. 5–30 and 'Archival Repositories on the WWW: A Preliminary Survey and Analysis', *Archives & Museum Informatics*, vol. 9, no. 2, 1995, pp. 150–69.

8. See Oregon State University Statistics at http://www.ORST.EDU/Dept/archives/archivestat.html.

9. For links to electronic exhibits see Carol Prietto, 'Virtual Exhibits on the World Wide Web', available from http://library.wustl.edu/~prietto/exhibits/.

10. See 'Electronic Access/Imaging Project—Background Information' available from http://www.bcars.gs.gov.bc.ca/.

11. See 'WWW & Gopher Statistics for BCARS Electronic Access Project' available from http://www.bcars.gs.gov.bc.ca/general/stats/ongoing.html.

12. For specific instances of using the WWW for professional development see Veronica Keraitis, 'Using the Internet for Your Professional Development', a paper presented at *The Internet. What Can it Do for the Archivist?* workshop on 26 July 1995 sponsored by ASA, ACA, and Australian Archives. Available at http://www.aa.gov.au/AA_WWW/AA_Sect_Serv/AA_Library/VCTalk.html.

13. David Wallace, 'Archival Repositories on the WWW: A Preliminary Survey and Analysis', *Archives & Museum Informatics*, vol. 9, no. 2, 1995, p. 169.

14. ibid., p. 168.

15. Huw Richards, 'Electronic Access to Public Records Office Plea', *Times Higher Education Supplement*, 1 August 1995, p. 44.

16. David Wallace, 'Museums on the World Wide Web: A Survey and Analysis of Sixteen Institutions', *Archives & Museum Informatics*, vol. 9, no. 4, 1995, pp. 388–424.

17. David R. Noack, 'Visiting Museums Virtually', *Internet World*, October 1995 (http://pubs.iworld.com/iw-online/Oct95/museums.html).

18. Association of Canadian Archivists, University & College Special Interest Section, *Archademe*, vol. 10, no. 1, May 1996, p. 8.

19. Tim Sherratt, Pathways to Memory—Accessing Archives on the WWW. Paper given at AusWeb96. Available from http://www.scu.edu.au/ausweb96/cultural/sherratt/
20. ibid.
21. Julie Robotham, 'The Next Step: 3D on PCs', *The Age*, 18 June 1996, p. C12.
22. David R. Noack, op. cit.
23. Julie Robotham, op. cit.
24. Christopher Lloyd, 'Sniffing Out Information on the Net', *The Sunday Times*, 14 July 1996.

Website addresses

URL 1.   http://www.uidaho.edu/special~collections/Other.Repositories.html
URL 2.   http://www.usask.ca/archives/menu.html
URL 3.   http://www.liv.ac.uk/~archives/mersey2.htm
URL 4.   http://www.bawue.de/~hanacek/info/earchive.htm
URL 5.   http://www.aa.gov.au/AA_WWW/OthersAs.html
URL 6..   http://www.ORST.EDU/Dept/archives/
URL 7.   http://www.system.missouri.edu:80/records/welcome.htm
URL 8.   http://www.open.gov.uk/pro/prohome.htm
URL 9.   http://www.asap.unimelb.edu.au/
URL 10.   http://www.aa.gov.au/AA_WWW/A_Home_Page.html
URL 11.   http://www.sara.nysed.gov/default.htm
URL 12.   http://www.nara.gov/
URL 13.   http://www.lib.virginia.edu/speccol/
URL 14.   http://www.archives.ca/
URL 15.   http://www.bcars.gs.gov.bc.ca/
URL 16.   http://palimpsest.stanford.edu/
URL 17.   http://www-cpa.stanford.edu/cpa/index.html
URL 18.   http://www.nml.org/
URL 19.   http://www.nla.gov.au/3/npo/
URL 20.   http://austlii.law.uts.edu.au/primary.html
URL 21.   http://www.vicnet.net.au/vicnet/vicleg.html
URL 22.   http://lcweb2.loc.gov/ammem/ammemhome.html
URL 23.   http://www.gii.getty.edu/
URL 24.   http://www.aiim.org/
URL 25.   http://www.aa.gov.au/AA_WWW/ProAssn/ASA/ASA.html
URL 26.   http://www.aa.gov.au/AA_WWW/ProAssn/RMAA/RMAA.html
URL 27.   http://volvo.gslis.utexas.edu/~us-saa/
URL 28.   http://www.archives.ca/aca/
URL 29.   http://www.archives.ca/ica/
URL 30.   http://sunsite.berkeley.edu/FindingAids/
URL 31.   http://www.lis.pitt.edu/~nhprc/
URL 32.   http://www.indiana.edu/~libarche/index.html
URL 33.   http://www.lis.pitt.edu/~nhprc/perp.html
URL 34.   http://www.lis.pitt.edu/~nhprc/reb-wb.html
URL 35.   http://www.cpsr.org/cpsr/government_info/info_access/PROFS_CASE/

URL 36.   http://www.sara.nysed.gov/default.htm
URL 37.   http://www.archives.ca/
URL 38.   http://www.aa.gov.au/AA_WWW/AA_Home_Page.html
URL 39.   http://www.dtic.dla.mil/c3i/recmgmt.html
URL 40.   http://www.nara.gov/
URL 41.   http://www.ohre.doe.gov/
URL 42.   http://www.intergate.bc.ca/netpac/provenance/
URL 43.   http://www.asap.unimelb.edu.au/asa/directory/