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Archives and Museum Informatics carries news, opinion and reports on information technologies, techniques and theories relevant to archives and museums.

Submissions of press releases, publications and software for review, articles, and letters to the editor are welcomed. Copy is preferred double-spaced. Longer articles will be requested in machine-readable form if accepted for publication. Deadlines for contributed articles and press releases are the 15th of March, June, September and December.

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A Note From the Editor

Seven years ago when I began issuing what was then called the *Archival Informatics Newsletter*, I never imagined that it would continue as long as it has. Now that the journal is entering its eighth year, I'm surprised to find myself still publishing it and more committed than ever to the role it plays in bringing extremely current information to a specialized group of professionals. With this issue I am changing the format but not the focus on timely information and critical analysis.

The format change reflects the fact that the distribution of the journal is finally adequate to pay for a little more paper so as to be a bit more readable. It is accompanied by the introduction of some new contributing editors who will provide regular reviews of developments in their areas of expertise. This issue contains the second contribution by Xavier Perrot on European museums, the first of a series of articles by David Wallace on the Internet, and the first of a series of archives software reviews by Marion Matters. I hope to introduce additional special section editors over time, and hope that readers will propose other topics that need to be covered on a regular basis and that individuals willing to write for the journal on a regular basis will suggest themselves.

Archives and Museum Informatics continues to be interested in receiving news, conference reports, and articles from anyone willing to submit the occasional manuscript. Upcoming deadlines for volume 8 are June 15, September 15, and December 15. The first issue of each year has a March 15 deadline. In general, articles will be published within two months of being accepted so as to preserve their timeliness.

Archives & Museum Informatics is also changing the character of its Technical Reports. Future volumes will be issued in a more book-like format, be given separate ISBN numbers, and distributed as trade paperbacks. These changes are designed to increase sales and broaden our audience. Prospective authors of monographs which convey technical information of importance to cultural heritage informatics professionals are strongly urged to submit manuscripts or manuscript ideas for consideration.

Submissions should be sent to Archives & Museum Informatics, 5501 Walnut Street, Suite 203, Pittsburgh, PA 15232-2311. Tel. (412) 683-9775, fax 412-683-7366.

EDITORIAL

Experience Delivery Services

By the turn of the century, just a few years from now, the digitization of information currently held by libraries, archives and museums will have proceeded far enough that it might be possible to access much of the cultural heritage of our civilization without leaving home. The effect on the social institutions which have been custodians of these cultural resources could be tremendous. Forms of material such as books, archives and artifacts previously considered "properly curated" in libraries, archives and museums will be integrated into a single digital format. Users, previously provided with standardized products in response to their queries or visits, could receive more individuated information packages. With this, the role of the curators in interpreting information should become more important as their direct intermediation recedes. While automation has to date merely improved practices within libraries, archives and museums, the new communications and computing developments of the 1990's could transform the services from information dissemination to experience delivery in a way that fundamentally transforms the role of these institutions in society.

To date the changes in the organization and function of archives and museums have been less profound than in libraries, although there are certainly signs in the credentials being sought from archivists and in the curricula being proposed for their education, that archivists, like librarians, are well on their way towards being information professionals. The museum changes have been even more modest and it would be an exaggeration to suggest a transformation, but nevertheless the elevation of the role of "documentalist" or "registrar" in museums in the past twenty years has been pronounced and the creation of information management programs is, of

course, a new feature. What has not yet changed in museums is the fundamental curatorial culture, corresponding roughly to the bibliographic and historical traditions which dominated libraries and archives respectively until relatively recently. I predict however that this will change during this decade as museums discover the powerful extension of their activity provided by interactive multimedia.

What all three kinds of institutions will respond to in the coming decade is the opportunity to service information needs of a changing, but potentially expanded, clientele which is less interested in using these institutions to find out about information than to find the information itself. In place of delivering lists of books and citations to records or data on specimens the library, archives and museum staff will want to deliver information in response to the users stated information need, in an individuated package, directly to the user. Libraries are moving towards full-text deliver of journal articles and even of books. Archives are examining document management facilities to delivery images of records. And museums are exploring remote access to museum exhibits and even to the raw information about collection objects.

Each of the three types of institutions hold materials that are traditionally associated with the collections of the other two. All three therefore have an incentive to develop mechanisms to deliver information about and from publications, archival records and objects. The Library of Congress has launched the American Memory project to deliver information often thought of as archival, and digital library projects such as that recently announced for the Leonard Bernstein archive are traditionally associated with museums. The National Archives, as well as archives in most other countries, provides electronic access to publications such as the census and statistical compilations published by the government which might at one time have been the province of the library, and produces multimedia exhibits and optical disc publications regarding objects and their museum interpretation. Museums are publishing reference works with texts and images on their holdings and supporting computerized access to archival information on the provenance of collections.

As the boundaries between these institutions are being relaxed, each is trying to secure the allegiance of a public which is in part being wooed by the prospect of not having to visit the physical site of the library, archive or museum to get the information they want. As the physical site becomes less closely identified in the minds of patrons with the types of materials they

expect to find there, their allegiance to particular forms of the cultural institutions we currently recognize as libraries, archives and museum will weaken. In response, each institution will need to try to make its role more than simply providing facts or references to information. This is why we see libraries trying to move beyond citations to content, archives moving from content to context, and museums from context (or interpretation) to experience.

At the same time, and because they are moving beyond their own walls, libraries, archives and museums are encountering competition from other players - the mass media, educational institutions, the entertainment industry - which have operated in the larger cultural sphere delivering similar services to the same audiences and are making rapid strides towards expanding their own range. The communications opportunities which are beginning to affect cultural repositories are being spearheaded by the private sector, which will probably define for most individuals in developed societies what these technologies really do and what can be expected from them.

In an age of multi-billion dollar corporate acquisitions and mergers inspired by visions of truly immense profits to be won by delivering information to consumers, it may appear that libraries, archives and museums have no chance of emerging from the coming fray except as fodder. Yet all is not as it appears at first and it may well be that cultural heritage repositories, if they build from their strengths, could emerge as major players in the infotainment industry of the twenty first century. What we need now is an aggressive campaign to ensure that the network services of the future support the kind of two-way broadband communications that are essential for experience delivery, and for cultural institutions to play an active role in implementing standards to provide direct remote access to their data, rather than continuing to expend the majority of their "retrospective conversion" resources making surrogates.



From MARC to Mosaic: Progressing toward Data Interchangeability at the Oregon State Archives

Dan Cantrall, Oregon State Archives

This article is chiefly devoted to explaining the technology used by the Oregon State Archives to realize the goal of data interchangeability. The ability to present information in a variety of formats, unconstrained by technological barriers is a worthy goal. This goal is worth pursuing because new exciting mediums of electronic information delivery are rapidly being developed and used by higher education and business. Archivists have a "product" that is by definition unique. The information contained in our collective holdings enriches our cultural experience, documents our legal rights, and provides entertainment. We already have the "product", and we now have the opportunity to be on the forefront of information delivery. Our information is too valuable and interesting to be left only to MARC-based electronic finding aids.

Learning theorists emphasize that each person absorbs information differently. Some people are more comfortable with a highly structured, hierarchical-based model of knowledge. This "left-brained" approach to learning finds expression in traditional library science concepts. Librarians, on the whole, have categorized and dissected knowledge into discrete parcels. This attempt to classify finds its most vivid expression in the ambitious, but ultimately arcane and idiosyncratic Library of Congress Subject Headings and the Anglo American Cataloging Rules (AACR2).

The MARC format is an expression of this world-view. In addition to being a vehicle to deliver text-based information in a prescribed way so data can be pooled into large information systems, the format also effectively

prescribes what information will be collected. The "local option" fields appear almost as an afterthought, or concession to diversity. Archivists have understandably experienced difficulty fitting their unique records into this construct.

Electronic finding aids built to disseminate this information largely reflect this highly structured approach. MARC based OPACS are primarily text based with multiple layers of menu screens, each theoretically bringing the researcher closer to the information sought. They also require that the user spend significant time learning how the system operates. It may be argued that the reason these finding aids are the way they are is that the profession hasn't yet caught up with latest technology. This may be a partial explanation, but equally the structure can be explained as a logical adjunct or culmination to a highly systematized view of knowledge.

However, another model of learning and information delivery is emerging. It has been pioneered not by the library community, but by information systems technicians. This model encourages and accommodates the learner who is more comfortable in a free-form, visual environment. It emphasizes and provides for multimedia content, allows decentralized information collection and delivery, uses a hypertext interface, and accepts local content standards.

An excellent example of this new paradigm of information delivery is the World Wide Web on the Internet. The World Wide Web is a rapidly expanding collection of electronic information, stored on thousands of computers located world-wide, all linked by a similar information exchange protocol (TCP/IP) and a common document language (Hypertext Markup Language or HTML). There are other information delivery vehicles on the Internet such as Gopher and library OPACS. They represent the more traditional text based, hierarchical menu style of information delivery. However, the World Wide Web, accessed most often by the software client Mosaic, is the fastest growing segment of the Internet information highway and is generating much excitement among Internet users. To put the "icing on the cake" Mosaic also incorporates and uses other popular Internet tools from within the program such as Gopher (standardized menu-based system from University of Minnesota), telnet (remote login), and ftp (file transfer).

In fact, Mosaic is the first "killer app" of network computing -- an applications program so different and so obviously useful that it became an industry standard overnight. The first beta versions of Mosaic appeared

from NCSA (National Center for Supercomputing Applications) in the Summer of 1993. By December 1993, editions for Unix computers, Windows, and Macintosh were completed and debugged. Using a point and click interface, Mosaic combines hypertext with pictures, sound, and movies (supported in some clients) in a rich text document metaphor.

In this client-server arrangement, each Mosaic page may contain any of these multimedia elements and the embedded hypertext links may point to, and access, any other document on any World Wide Web Server. There is no top or bottom to this "web" of information, allowing for creative links to a multitude of information resources. This flexibility and diversity, combined with a truly user-friendly interface, generate much user excitement, and begin to accommodate even the hardened "left-brain" user. The ability to view a picture of a person, listen to a sound recording of one of their speeches, and click on highlighted text to read background material mimics an authentic encounter.

The capabilities and features of Mosaic are much easier to demonstrate and use than describe. Mosaic is so different from common text-based menu interfaces that perhaps a good analogy is the similarity between its capabilities and the capabilities of the new multimedia CDROM encyclopedias such as Encarta (Microsoft Corporation) and Groliers. Designing interfaces in Mosaic becomes a creative challenge because so many elements can be used to present information. The best World Wide Web servers make use of all these features with clickable maps, pictures, sounds, movies, and links to other pertinent information world-wide.

The World Wide Web, accessed by Mosaic, is an exciting part of our information delivery strategy. Creating MARC records is also a part of that strategy. Before discussing in detail the development and implementation of our World Wide Web server, the following explains the steps we took to simplify the creation of MARC records. Our goal is data interchangeability; the ability to present information in the traditional MARC format and also use new methods of information delivery such as the World Wide Web. The MARC format certainly gives archivists the opportunity for uniformity of descriptive practices, and the ability to pool data into large bibliographic networks. However, getting the information into the format often requires a return to old and proprietary technology. Furthermore, getting the information back out to reuse in another venue is often problematic or very labor-intensive.

Probably one of the most frustrating aspects of the profession's march toward MARC description is that the tools necessary to accomplish the task are few, relatively outdated, and don't easily mesh with standard database systems such as Paradox, FoxPro, Filemaker Pro, and Oracle. In addition, MARC software created for the general library market often doesn't support AMC very well in either the variety of information required or the larger size of records encountered.

The Oregon State Archives now uses Filemaker Pro on the Macintosh platform for description, appraisal, records transmittal, shelf locator, scheduling, and billing. It seems that every other month we find a new way to use the database to simplify our lives. Although Filemaker doesn't have some of the capabilities of more complex relational databases, it has an extremely friendly user interface. It also requires practically no programming expertise to set up, is easily customizable, exports to industry standard formats, and is cross platform compatible with a Windows version.

For several years, we used MicroMARC to create MARC records of our holdings and Filemaker for almost everything else. An administrative decision was made to make all our descriptive practices conform to the MARC standard. This included both descriptions of in-house records and agency-held records. The thought of typing over 15,000 series into MicroMARC was a daunting prospect. However, MicroMARC had the flexibility we required in that it allowed any MARC field with any text length, i.e., a blank screen.

This flexibility, however, exacted a price. The user was required to type most field numbers and indicators, and put up with nuisances such as no spell checking and primitive text editing, in addition to watching to make sure that the text didn't "fall off" the bottom of the entry screen. On the other hand, if we were going to go the MARC route, we didn't see that we had many other alternatives. Other software vendors promised to customize their products to meet our requirements, but also wanted to charge us thousands of dollars for the privilege. The possibility of data interchange between MicroMARC and Filemaker was not even on the horizon.

I experimented with several options to bring these two data "worlds" together. One solution utilized the mail merge feature of the word processor we were using. The process evolved as follows: The information was entered into Filemaker and exported as a merge file. All the MARC field

numbers and delimiters were hard-coded into a word processing mail merge template that accepted "if, then" clauses, i.e., if there's text in this field, put 520\$a in front of that text. After the output was merged into a composite word processing document and saved as ASCII text, it was pasted screen by screen into MicroMARC using the software utility Outside In for DOS. The header information still needed to be entered manually for each record. This was faster and more accurate than straight data entry into MicroMARC, but still was not the transparent, clean solution that I had hoped for.

The solution came in an inexpensive (around \$300.00) DOS software program called The Data Magician. The program is targeted and marketed towards users of large library systems such as Inmagic, Library Master, and ProCite, who need to convert one system's output to the system they are running. It is sold, marketed, and supported by Robert Folland, a software programmer, as a home-based business. (Folland Software Services, 6 Chartwell Crescent, Guelph, Ontario N1G2T7 Telephone: 519-836-3453) The little time I invested learning the capabilities of the program and customizing it for our institution's use was well spent. The result is an almost "magical" transformation of our database data into the MARC format. The program will also read existing MARC files and convert the information back to traditional database format. I've used this option to convert existing MicroMARC records back into the Filemaker database.

The Data Magician is a very flexible program and allows for many combinations of input and output formats. It accepts input from traditional database and spreadsheet formats such as delimited and DBF. In addition, it also will read unconventional formats such as STAR and MARC Communications Format. Once the information is input into the program, the user has a multitude of data conversion possibilities. It allows for combining or breaking apart fields; adding text; performing field specific and global wildcard search and replace functions; conditional processing; letter case conversion; and many others.

One of the export options of Data Magician is MARC Communications Format. The program effectively solves the two major elusive missing links in former conversion solutions. It creates all the necessary leader information such as DCF, and allows for the proper input of 008 field character position data. Simply described, I set up fields in the Filemaker database that corresponded to the MARC fields we use. The next step was to export

the data from Filemaker in the DBF format. The advantage to this export option is that the Data Magician program automatically identifies and places DBF records. Most of our record descriptions (520s) include considerably more data than 256 characters. I've gotten around this DBF limitation by setting up calculation fields that split long text fields into character blocks. However, if the primary database is a true XBase program (i.e., DBASE, Paradox) the Data Magician will automatically identify and import any associated memo fields that contain additional information.

After importing data into the Data Magician, the program must be customized by entering processing codes for each field on both the input and output side. These codes may range from a simple code such as F 520 \$a "descrip" (i.e., if there's data in the description field, put 520\$a in front of it), to more complicated search and replace features. The manual supplied with the program gives many examples of conversions, and is quite detailed about the capabilities of the various conversion options. The file exported from Data Magician can be read by any MARC based software program that has import capability as standard MARC communications format. The inevitability of moving toward a unified MARC format will only require some minor recoding of the program's processing codes. In other words, once the unified format standard is established we will be able to implement it quickly.

Much field information is reused throughout the MARC record and is also used for other purposes such as finding aids and records retention schedules. For example, the MARC entries for agency name, series title, and description consist of the same information reused in records retention schedules, finding aids, and shelf locators. This saves much data entry time. I designed the Filemaker user interface to be user-friendly, with common information grouped on specific data entry screens in a logical arrangement. It isn't necessary to arrange the data entry sequence to match the MARC field number sequence. In fact, users of the Filemaker database would not even suspect they were also creating MARC records, if not for required entry of specific MARC fields such as Library of Congress terms.

Thus, the Data Magician frees us from the most onerous aspects of doing MARC and allows us to retain our data in an interchangeable format. Some of this data is reused in our World Wide Web Server. We decided to research the possibility of setting up our own server after we used Mosaic for several months and became excited about its potential. The server was

easier to set up than expected. We downloaded a copy of the public domain program MacHTTP, which allows any Macintosh computer connected to the Internet to function as a World Wide Web Server. Setting up the server involved learning the rudiments of the HTML language to create virtual pages of information that are embedded with hypertext links to other pages.

The opening, or "home" page of the "Oregon State Archives Public Information Server" contains a picture of our new building underscored by the text, "Services, Holdings, and Happenings at the Oregon State Archives". The rest of the page contains links to the following areas: an introduction to the services, purpose, and mission of the Archives; lists of records of interest to genealogists arranged by type of record (probate, naturalization, etc.); an electronic exhibition of artwork commissioned as part of the construction of our building; and the latest monthly edition of the Oregon Bulletin. The Oregon Bulletin is a publication of the Administrative Rules unit of the Oregon State Archives. It contains a synopsis of state agency administrative rule changes and executive orders. To access our home page, you need WWW client software such as Mosaic. Mosaic is ftp-available from ncsa@uiuc.edu. Our WWW address is <http://159.121.28.251>.

Of all the server offerings, I had the most fun and experienced the most challenge creating the art exhibition. Mosaic showcases visual information by automatically displaying color pictures. Getting the photographs and slides of the artwork into electronic format involved finding appropriate color scanners, tracking down image software that exported to the proper format, and properly sizing the pictures for maximum effect. It is no accident that the major players on the World Wide Web in the area of the Humanities have been museums rather than archives. It is a logical extension of their push toward interactive multimedia projects documented recently in the article "Museum Interactives" by David Bearman, *Archives and Museum Informatics* 7(Summer 1993):6

Converting the lists of our records to the HTML format and converting the Oregon Bulletin also proved to be a simple operation. Using the freeware program RTFtoHTML, we automatically converted RTF (Rich Text Format) text output to the HTML language. HTML is a simple formatting language that indicates text style, type, font and format by codes inserted in text documents. For example, the code `<p>` would signify a paragraph break. Text found between the codes `` and `` would

be displayed in bold. Other HTML commands tell the program to do such things as load and display a picture, access another file, or download and play a sound file. All HTML documents are served as plain text so they can be accessed by multiple computing platforms. Simple key word text searching is available on any Mosaic document. More sophisticated full text searching capabilities are planned by the developers.

We went online with the World Wide Web server on January 27, 1994, and were definitely surprised by the amount of interest it generated. In one week we had logged in over 1500 accesses from all over the world, primarily from users with business and academic Internet addresses. We have plans to add interesting information to the server regularly. The next project will be to create an online version of an exhibit created by the staff of the Oregon State University Archives featuring aspects of the World War II homefront in Oregon.

The technology represented by Mosaic is still in its infancy. The main downside to its greater use remains the relative paucity of high-speed Internet connections. Multimedia content uses up many electronic bytes. For example, accessing a 60k image file over a 2400 baud modem takes what seems like an eternity, very unlike the almost instantaneous display seen on a high speed connection. However as these slower modems are retired in favor of new technology, and the main high-speed trunks of the Internet "pipes" are made accessible to more people, these limitations will diminish.

In light of these limitations, and to accommodate users with slower connections, we plan to reuse much of the text information provided in the Mosaic Server in a Gopher Server. The Gopher server will also contain other large text files such as agency records retention schedules, legislative committee minutes, and administrative rules. Users will be able to query the server using Applesearch, a sophisticated full-text searching engine that allows natural language querying and presents "hits" in order of relevancy. Users may access the server by means of Gopher client software, or through hypertext links programmed into our Mosaic server.

In summary, we have benefited greatly from searching out technology that keeps our data in an interchangeable format. From MARC to Mosaic, The Oregon State Archives is now presenting valuable electronic information to a variety of users. These users have access to varying levels of technology, and employ different learning styles. We are excited about future technology, and are prepared to meet the challenges of the information age.

For more information on the Oregon State Archives Internet publishing program contact Dan Cantrall, Oregon State Archives, 800 Summer St. NE, Salem, OR 97310; Telephone: 503-373-0701; Fax: 503-378-4118; Internet e-mail: cantrall_daniel_e@oslmac.osl.or.gov.



The Internet

Basic Navigation & Resources

David Wallace, University of Pittsburgh

[EDITOR'S NOTE: This essay is the first in a regular column for *Archives and Museum Informatics*.]

Introduction

Recent figures have estimated that there are up to 20 million internet users across the globe, the result of a dramatic and continual rise concentrated over the past few years. Not surprisingly, this growth has led to a phenomenal expansion in the number of resources available. For example, a recently updated guide to government information on the internet lists over 325 separate sources, a 200% jump over the previous edition which was published less than a year ago!

Included among this growing population of internet users are an increasing number of archivists and museum professionals. These disciplines are not only getting hooked up to the internet, they are also contributing information resources of their own, from discussion groups to finding aids to exhibits replete with images.

As a way to cut through the accumulating bramble, this initial essay will point to some key resources that will assist both novices and more experienced users to get acclimated to the internet. The first section will introduce the Gopher navigation software, one of several internet interface software tools, and then demonstrate it by visiting a couple of sites that provide valuable basic orientation and reference material. The second

section will use Gopher to examine a few of the emerging resources that are of specific interest to archives and museum professionals.

The philosophy advocated for this issue's column is that the user learns much more by connecting to the selected sites and browsing through them, rather than by being given a detailed summary of each site's contents. As a consequence, visited sites will be briefly described regarding both the variety of information available and their organization. Readers are encouraged to conduct more detailed explorations of the sites examined in the text that follows.

Later installations of this column will provide more critical discussion and analysis of other internet search and retrieval software tools, internet-related publications, and both established and new resources as they appear.

GOPHER

One of the most user friendly and heavily trafficked interfaces for navigating within the internet has been provided by the University of Minnesota via its Gopher software. This software was developed in 1991 by the university's Microcomputer, Workstation, Networks Center as a means for handling user computer queries and for organizing the computer resources throughout different parts of the university. Its wider potential was soon realized and it quickly developed into a global information access system. An obvious play on words, the Gopher software has been developed as a means for "tunneling through" the internet.

In essence, Gopher provides a centralized access point to the thousands of internet resources distributed across the planet. Instead of requiring you to have prior knowledge of both the address for a specific server site and the resources resident on it, Gopher's logical, multi-level hierarchical menu system enables you to browse across sites through either geographic or subject area access. Gopher's popularity among internet users is confirmed by statistics maintained at the University of Illinois at Urbana-Champaign for its Gopher gateway. Between March 5 and March 11, 1994, over 130,000 connections (a connection being the occurrence of viewing a file or menu, or when a search is performed) were reported. Over the course of this week over 6,000 different directories and over 8,000 files were accessed, and over 25,700 files were retrieved. Users also conducted over 680 database searches within Gopher.

To access Gopher you need to access the Gopher software. Any of the widely available internet reference guide books will discuss this process in detail. Here at the University of Pittsburgh's School of Library and Information Science, our systems administrator has chosen the University of Illinois at Urbana-Champaign (UIUC) as our gopher gateway. At the UNIX prompt ("%") we merely have to type "GOPHER" (excluding the quotation marks) and are automatically presented with UIUC's root Gopher server. Another way to access this Gopher client is to Gopher directly to the UIUC address by typing:

GOPHER gopher.uiuc.edu

Either way of accessing UIUC's root Gopher server will present you with the following top-level menu:

- /1. Welcome to the University of Illinois at Urbana-Champaign Gopher
- /2. Campus Announcements
- /3. What's New?
- /4. Information about Gopher
- /5. Keyword Search of Gopher Menus ?
- /6. Univ. of Illinois at Urbana-Champaign Campus Information
- /7. Champaign-Urbana & Regional Information
- /8. Computer Documentation, Software, and Information
- /9. Libraries and Reference Information
- /10. Newspapers, Newsletters, and Weather
- /11. Other Gopher and Information Servers
- /12. Phone Books (ph)
- /13. Internet File Server (ftp) Sites

As is readily apparent, much of the information listed is specific to UIUC. However, two items within this main menu stand out for other purposes. Selecting item /4. *Information about Gopher* (item selection can be made either by using the up and down arrow key to mark a particular menu item and then hitting the enter key, or by typing in the number of the menu item - i.e., typing "4" to get to "Information about Gopher") presents you with 17 new menu choices about Gopher itself, ranging from /3. *Frequently Asked Questions about Gopher* to /9. *Gopher at the U of I - How to Contribute Your Info and Access*.

The second menu entry of interest at UIUC's root gopher server is item /11. *Other Gopher and Information Servers*. Here you are provided with a

two screen listing of other Gopher and information servers available at UIUC and over the internet. The second screen within this menu provides a global view of available internet resources:

- /19. Search titles in Gopherspace using Veronica
- /20. Recommended Gopher Servers for Exploration
- /21. All the Gopher Servers in the World
- /22. USA
- /23. Africa
- /24. Asia
- /25. Canada
- /26. Europe
- /27. International Organizations
- /28. Middle East
- /29. North America
- /30. Pacific
- /31. South America
- /32. Terminal Based Information
- /33. WAIS Based Information

Selecting menu item /20. *Recommended Gopher Servers for Exploration* pulls up 27 Gopher sites notable for their unique resources. Item /21. *All Gopher Servers in the World*, pops up a 76 screen alphabetical listing of the 1362 Gopher servers currently available across the internet. These range from logically named Gopher's such as the "American Chemical Society" to more cryptic ones such as "CANARIE Gopher" (which is a site for the Canadian Network for the Advancement of Research, Industry and Education). Selecting any of the geographical region or organizational menu items (/22. - /31.) provides an alphabetical listing of Gopher servers within that area of the world. Interestingly, this geographical distribution listing also provides an indication of where the internet is most robust. For example, menu item /23. *Africa* lists only seven sites for the entire continent, whereas, menu item /22. *USA* lists 953 separate items that are further classified by state (meaning that the USA hosts 70% of all the Gopher servers on the planet!).

Fortunately, for non-geographic retrieval purposes, lies /19. *Search titles in Gopherspace using Veronica*. VERONICA (an acronym for the very odd "Very Easy Rodent-Oriented Net-Wide Index to Computerized Archives") is a software tool that allows you to keyword (or keywords) search a title index of menu and sub-menu items within Gopher servers. In response to a

query, Veronica compiles a customized response menu of titles that match the sought term(s). At this point you can select any menu item and it will be retrieved for your perusal. Unfortunately, there is no single Veronica server, rather there are several publicly-accessible ones whose information content do not completely overlap. As a consequence, it is recommended that one perform their Veronica search across more than one of these sites to broaden their retrieval. The UIUC Gopher server's Veronica search function allows one to search six separate Veronica sites.

Those interested in receiving information about new gopher servers and software should consider subscribing to the free gopher-news mailing list. To subscribe, send e-mail to: gopher-news-request@boombox.micro.umn.edu

Internet Reference Information and Key Resources

Any local chain bookstore most likely has several of the most popular internet books in stock. Browsing through any one of these should provide you with enough information to get you hooked up and running. Your local library should have a good internet reference collection as well. You might want to use library resources and save yourself some money, since once you get connected you can browse and download a wealth of free internet reference and use material from the internet itself.

A key site for internet reference materials is housed at Indiana University. What follows is a simple step-by-step process for accessing this site. I have encased descriptive and logical follow-thorough steps within "[|]". To begin, access the root gopher server at the University of Illinois at Urbana-Champaign (UIUC) (see discussion above for doing this), then select:

- /9. Libraries and Reference Information [This will pop-up a 27 item menu of sources that UIUC has placed within this category. At this point select:]
- /6. Virtual Reference Desk - from UC Irvine [This will pop-up a 71 item menu of common and not so common ready reference information sources. At this point select:]
- /3. Internet Assistance [This will pop-up a 74 item menu of sources and tools to assist information gathering on the internet itself. At this point select:]
- /54. Internet for the Beginners (via Indiana University) [This will pop-up a 21 item menu of basic orientation and reference material about the internet. Items within this menu include:

- /1. What is the Internet by Krol and Hoffman
- /2. What is the Internet by Paul Jones
- /3. Internet Etiquette by Rinaldi
- /4. Where to Start for the New Internet User by Jim Milles
- /5. Bibliography of Introductory Internet Books
- /6. History of Internet
- /7. Internet Basics by Tennant
- /8. Network Knowledge for the Neophyte by Raish
- /9. The Big Dummy's Guide to the Internet (v.2.2)
- /10. Internet Connections: A Librarians Guide to DIALUP Access and Use
- /11. Networking on the Network by Agre
- /12. Surfing the Internet by Polly
- /13. Introducing the Internet from Merit Network
- /14. IETF For Your Information (FYI) RFC Series
- /15. Comparison: mailing lists, listservs, usenet news, gopher
- /16. The Public Dialup Internet Access List (PDIAL)
- /17. FAQ: Anonymous FTP
- /18. The Freclore Project List of Top Ten Things to get by Email
- /19. Introduction to Gopher by Rich Wiggins
- /20. Let's Go Gopherin': Learning to Navigate the Internet
- /21. Windows and TCP/IP for Internet Access

Item /9. *The Big Dummy's Guide to the Internet*, is a book length instruction manual and reference guide that will answer most of your start-up questions and facilitate your navigation around the internet. Item /13. *Introducing the Internet from Merit Network* contains 11 sub-menu items, ranging from /1. *A Short Bibliography of Readings for the Network Novice* to /11. *Internet User's Glossary*.

Item /16. *The Public Dialup Internet Access List (PDIAL)* provides key source material on getting hooked up to the internet. And item /20. *Let's Go Gopherin'*, enables the user to take a free multi-lesson educational course on using Gopher. Each of the items listed in the Internet for the Beginners (via Indiana U) are worth examining and a few hours spent here will probably save a lot of frustration later on.

In addition to viewing these files, you can have them sent to your e-mail account through use of the "M" command (which I have found to work in all other Gopher environments I have tried.) Typing "M" brings up a window which asks for your internet address. After entering your address and hitting

the enter key, a copy of the current file is sent to your account. Remember, though, that most of these items are copyrighted by authors who often request that their copyright mark remain on all copies downloaded and subsequently distributed.

Given the heterogeneous environments that archives and museum professionals find themselves operating within, the University of Michigan's Clearinghouse of Subject-Oriented Internet Resources Guides provides a valuable database of internet resources on a wide diversity of topics. Sponsored by the university's Library and School of Information and Library Studies, this resource provides a central location for subject-oriented guides produced by internet users. Each guide serves as an internet reference source for a particular subject. To get there you can either Gopher directly to the University of Michigan by typing:

GOPHER una.hh.lib.umich.edu, and then selecting menu item /9. inctdirs

Or, you can get there through the UIUC Gopher server following the steps described above. If you choose to access it the second way you would follow this sequence. First select:

/11. Other Gopher and Information Servers [from UIUC's root gopher server. This will pop-up a 33 item menu of sources. At this point select:]

/20. Recommended Gopher Servers for Exploration [This will pop-up a 27 item menu of gopher sites notable for their content. At this point select:]

/7. Clearinghouse of Subject-Oriented Internet Resource Guides (UMich) [This will pop-up a 10 item menu specific to this resource. Within this sub-menu lie the following:]

- /1. About the Clearinghouse (UMich)
- /2. Search full texts of these Guides ?
- /3. The Internet Resource Discovery Project (UMich)
- /4. Helpful Information on Using the Internet
- /5. All Guides
- /6. Guides on the Humanities
- /7. Guides on the Sciences
- /8. Guides on the Social Sciences
- /9. Guides with Coverage of Multiple Subjects
- /10. Clearinghouse Updates (last updated 3/6) (UMich)

There are currently a total of 75 individual subject guides within this resource, and you are given the option of keyword searching across these guides, viewing an alphabetical list of all the guides, or viewing narrower subject classified lists of these guides. Examples of some of the individual subject guides that may be of interest to readers of this column include: Archaeology and Historic Preservation; Archives; Conservation; Medical History; Popular Music; and Theater. The university encourages internet users who create their own subject guides to contribute them to the Clearinghouse and it is anticipated that new and updated guides will appear regularly.

Archives on the Internet

Archivists have a growing number of discipline-specific internet resources available to them. These range from discussion groups (known as listservs - to be discussed in a future column) to repository guides and finding aids. For example, Johns Hopkins University has a Gopher site that provides listings for 18 different university manuscripts and archives repositories. To get there, Gopher to UIUC, as described above. Then select:

/9. Libraries and Reference Information [This will pop-up 27 item menu of sources that UIUC has placed within this category. At this point select:]

/12. Internet Library Catalogs (from Yale) [This will pop-up an 8 item menu of a collaborative Gopher site which strives to maintain "the most current possible list of all library catalogs accessible on the Internet." At this point select:]

/6. Manuscripts and Archives Repositories - at Johns Hopkins [This will pop-up an 18 item menu of manuscripts and archival repositories that have placed their finding aids on the internet.]

Once here, the user can browse guides from locations as diverse as item /2. *Louisiana Tech University*, item /9. *University of California, San Diego*, item /12. *University of Missouri -- St. Louis*, and item /18. *Yale University*.

As would be expected, individual repositories present their information in diverse ways and make different provisions for user access to their contents. Information from Johns Hopkins University includes 143 archival inventories, and 153 manuscript registers. After selecting either category,

the user is given the option of keyword searching through them or viewing a listing of their constituent holdings. The University of California at San Diego finding aid uses a subject classification for organizing its collections (differentiating between Historical, Literary, Science and Technology, Social Sciences, Fine Arts, and Photography collections) and allows the user to perform keyword searching across all of these collections' finding aids. The University of Missouri at St. Louis also categorizes its collections into subject classifications (22 separate ones, including such diverse topics as African American History, Immigration, Lesbian and Gay, Media, Military, and the Peace Movement). It additionally provides a listing of its microfilmed collections that are available through interlibrary loan. Unfortunately, this university does not provide for keyword searching either across or within its subject collections. Yale University's Gopher site contains three entries at this point in time, all of which are keyword searchable - one for the Beinecke Manuscripts Collections (193 separate collections) one for its Beinecke Papyrus Collection and one for its Beinecke Pre-1600 Collections.

Archivists considering placing their findings aids on the internet would do well to evaluate each of these 18 institutions' online access facilities, and should consider such issues as keyword searching and authority control, as well as the inclusion of an institutional policies directory and other non-finding aid information that would be of value to users and other archivists.

Museums on the Internet

As with archivists, museum professionals are making concerted strides in placing their materials on the internet. A dramatic difference with museums, of course, is the use of image files, though some special archival exhibits, most notably the Library of Congress's exhibits, are loading up document images as well.

One valuable Gopher site which gives a flavor of the types of museum-related information appearing on the internet is located in the University of Colorado at Boulder. To get there, use the following command:

GOPHER gopher.colorado.edu

In the root Gopher server choose:

/12. Other Gophers (by subject) [This pops-up a 64 item subject listing. At this point select:]

/51. Museums, Exhibits and Special Collections [This pops-up a 22 item listing of specific exhibits, as well as information on individual and regional museums]

One here you can browse through a variety of diverse museum resources. Four Library of Congress exhibits are mounted here, including item /1. *1492 Exhibit*, item /6. *Dead Sea Scrolls Exhibit*, item /17. *Soviet Archive*, and item /22. *Vatican Exhibit*.

Gophers for specific museums are resident here as well, including item /5. *Dallas Museum of Art*, item /10. *Museum of Paleontology Gopher (UC Berkeley)* [ucmpl.berkeley.edu], and item /9. *Museum of New Zealand*. Regional museum guides residing here include item /4. *Chicago Galleries and Museums - Northwestern University* and item /14. *Museums, Galleries, Perf. Arts - Rochester NY Area - University of Roche....* These mostly include simple text files on hours of operation and information on specific exhibits.

The Dallas Museum of Art site also includes general information about the museum. But in stark contrast, and indicative of the types of possibilities for the internet, it contains sub-menu items of image files from the gallery that are associated with text extension blocks which contain written comments on specific pieces of art owned by the museum. Another sub-menu item for this museum includes downloadable image viewing software that enables the user to view images (which are appearing on the internet in increasing numbers.)

Several sites offer search engines to collections, such as item /7. *Missouri Botanical Garden*, item /16. *Slater Museum of Natural History* [nhh.harvard.edu], and item /19. *Texas Natural History Collection Fishes - University of Texas*.

As with the archives and manuscripts gopher sites examined above, the formatting, descriptions, and search and retrieval aspects of these museum sites vary widely. The model presented by the Dallas Museum of Art should be closely examined by any repository considering entering their information onto the internet. Each of the other selections listed in the Gopher site should be perused as well, especially the sub-menu items within each of the other 21 choices located here.

Conclusion

The anarchic nature of the internet and the organization of the resources on it makes it great fun to browse. However, it can also prove frustrating when a particular source is desired - since you don't know if what you want exists, and you don't necessarily know how to find it if it does. The internet provides the online community with a double-edged sword. On one hand the plethora of free resources enables the user to access so much information that its wealth has been likened to drinking from a firehose. On the other hand, the haphazard growth of server sites and the non-standard language used to describe the resources resident on them makes this network akin to an enormous library that has forgotten to hire any librarians - the shelves are full, but a professionally developed card catalog doesn't exist. This has resulted in the erratic description of resources and wide duplication of resources across various servers. Despite these complications, however, the above explorations using Gopher have amply demonstrated the value of the internet to both the archives and museum professions. And in light of the growth of the internet over the past few years and of the United States' avowed commitment to developing an information infrastructure, much more information will undoubtedly be entered into this virtual library. It is therefore contingent upon archives and museum professionals to not only become fluent in internet resource search and retrieval, but to also represent their repositories' resources on the internet in a user friendly manner.

As an exercise to bring home some of the tools explored here, users may wish to perform a Veronica keyword search for terms related to archives and museums (However, be warned that the term "archives" has a much wider meaning than archivists' understanding and use of the term. In the electronic realm, the term "archives" is generally used for any collection of electronic files, hence a search of this term will retrieve far more items than a list of archives repositories.)

On a final note, please e-mail me regarding any internet projects you may be personally involved in and feel free to pass along any interesting sites you run across related to archives and museums as you surf along the network (I can be e-mailed at DAVIDW@LIS.PITT.EDU).



Reunion des Musees Nationaux's Multimedia Projects: Meeting with Joel Poix

Xavier Perrot, University of Paris

There are 34 "National Museums" in France, including well known ones such as the Louvre, Orsay, Rodin museum, and Picasso museum, and less well known ones such as the Prehistory museum (St Germain en Laye) and Bonaparte's Native House in Ajaccio (Corsica). The Reunion des Musees Nationaux (RMN) is a public corporation, with four main objectives: acquiring works, producing temporary exhibits, welcoming the public, publishing. Jacques Sallois, Directeur des Musees de France, is also the RMN's chairman.

The RMN's sales and publishing departments are involved in publications and derivative products from national museums. They also collaborate more and more with other museums, whether they are French or foreign. In 1992, these RMN departments had a \$50 million turnover with fast-growing activity, as shown by the 163 books published that year, some of them in partnership with Hachette, Gallimard and Yale University Press.

Joel Poix is in charge of interactive multimedia at RMN.

Xavier Perrot: **Mr. Poix, what is your role in the Reunion des Musees Nationaux?**

Joel Poix: Together with Jean-Francois Chougnat, director of sales and publishing activities, I coordinate the electronic publishing projects, and I submit development strategies in the field of interactive multimedia.

XP: What is the RMN's multimedia publishing policy today?

JP: We have two principles in our current actions: dynamism and caution. As any publisher, RMN is paying attention to all that goes on in this new industry of electronic publishing. We are attentive, because today one talks much more about marketing and media issues rather than contents. What will be the contribution of these new media? Will they favor access to culture or, on the contrary, will they increase the gap between those who may access knowledge and others? What is the significance for a publisher to invest, and to commit himself to a market which today exists only in the dreams of industrial electronic manufacturers. The true revolution will not come from media, but from interactive contents. The technical environment is unsettled, jurisdiction is not defined, and the licensing constraints are very heavy.

XP: What kinds of publics are you addressing?

JP: We must address four main types of publics: general audience, kids, educators and scientists. We must imagine either collections catalogs, or guides for "visitors in a hurry," visit souvenirs, thematic programs, famous people monographs, orientation activities or even games. Look at paperback books for kids: they are already designed as chunks of information, with multiple links, rich illustrations and an attractive layout. They allow readers different information levels, according to their interest, knowledge and abilities to understand. For education, under the pressure of what we learned from Sega and Nintendo, big opportunities for multimedia "edutainment" are showing up. It's a risky challenge, but it's a chance to make more kids sensitive to art. For the scientists, we favor the implementation of databases available on optical storage or through networks.

XP: How do you plan to reach these publics?

JP: Programs must be designed for sensory and intellectual pleasure. We have to invent a new ergonomic design for these programs. This means working on new publishing concepts, and improving graphic quality, content structures, and interactivity. We must not be content with simple adaptation from paper publications. We don't know yet what the publishing of multimedia programs will be tomorrow. Nothing that exists today really satisfies us.

XP: Do you include in your publics those from foreign countries? What multilingual/multicultural approach is in your products? What are your aims concerning the US market?

JP: In fact, our multimedia strategy is more aimed at foreign countries than France, where the market is too small to recover production costs. Making a CD-ROM requires from \$150 K to \$300 K. It's between \$250 K and \$350 K for a CD-I, and a CD-Photo might start from \$10 K to \$50 K. The installed base of players for CD-ROM, CD-I, or CD-Photo doesn't make it possible to amortize in France the needed investment for a title. That's why we are thinking in terms of three main economic regions: North America, Western Europe and Japan. Our products are at least bilingual (English/French), and we tend to take care of multicultural issues as soon as the designing stage. This led us, for the Japanese market, to consider selling licenses for specific products made there. We don't have special aims concerning the US where, as elsewhere, we hope to get a market share while we keep learning .

XP: In your field, what are the main constraints and advantages for producing multimedia content in France today?

JP: There are no specific constraints when you produce in Europe for the western markets. It doesn't matter where the technology advantage might be: here, in the States or in Japan, because the tools are available everywhere almost simultaneously. What is at stake regards the invention of contents. And we are not lacking ideas in France. Let us not forget that Europe, and particularly France, might claim to be the "Museum of the World." We sit on a treasure!

XP: What is your strategy concerning media and collections?

JP: We will choose the most widely sold media and systems. It is not our business to promote specific platforms. Hachette had a bad experience in that domain, with Commodore CD-TV in Italy. Regarding the investment costs, we give greater place to programs that allow co-production or co-distribution with French or foreign partners. They might be all sorts of partners: financiers, developers, vendors, computer companies, creators, publishers, museums, collectors ... About the media, we see that 8 out of 10 are CD-ROMs. Eighty percent of them are runnable on PCs, and 20% for Macintoshes only (60/40 in France). CD-I met a good success in France with more than 25,000 players sold within one year. For the two forthcoming

years, most of our products will be CD-ROMs you can read both on Mac or PC, some CD-Photos and one or two CD-I, in which we are very interested because of the Full Motion Video feature. Concerning the collections, we are currently preparing a series of museum guided tours (Louvre, Versailles, Orsay), great places or people stories (Versailles during Louis the XIV's century, Napoleon and the First Empire), discovery programs for kids about History and Art, programs for French schools, (Renaissance, Baroque art), programs on the main temporary exhibits (Cezanne, Poussin, Corot), and finally, scientific catalogues such as "porcelain from the Guimet museum" ...

As for data banks, many press articles let people believe that Microsoft, or Bill Gates in person, has acquired, or was buying most, if not all, the rights of French museums' collections. This is not true. French museums are, and will remain the owners of the digital files that have been, or will be, created. We wish to deal with third parties, whether they be French or foreigners, only for licenses with determined length, networks, and locations.

XP: Have you signed agreements with American organizations for the selling, the co-production, or the design of digital data banks that might be put on-line?

JP: No, but we are seeking distributors and co-producers, and some contracts are currently being drafted.

XP: If a US institution or museum wishes to set up a multimedia project that might be of interest for French museums, whom should they talk to?

JP: I am entirely at their disposal for studying our collaboration opportunities. We imagine two approaches. First, an institutional relationship to exchange information about our experiences, or the projects we develop. Then a pragmatic approach to turn multimedia publishing into a real business. For instance, we are going to open a specialized store in the new public space of the Grand Louvre. We are ready to welcome high quality American products there. Your readers should not hesitate contacting or meeting us!

REUNION DES MUSEES NATIONAUX, 49 rue Etienne Marcel,
75039 Paris Cedex, France. Phone: (33) 1 40 13 47 97 - FAX: (33) 1 40 13 48 1



Working Meeting of CIMI & Z39.50 Experts

The Consortium for Computer Interchange of Museum Information (CIMI) held a working meeting of its museum members and experts in the Z39.50 information retrieval protocol to discuss steps towards defining an international standard profile for museum catalogs so that they can be accessed transparently from the information systems of other museums. The one day meeting, which was attended by representatives of the museum community from the United States, Canada and Europe, clarified the nature of the Z39.50 protocols and their potential, the concrete steps that CIMI needs to take to lay the foundation for retrieval using Z39.50, and the roles that the CIMI partners and the experts could play.

The meeting was a tremendous success and bodes well for similar efforts by CIMI to focus expertise on areas of museum data representation and linkage such as the use of SGML and EDI. By working their way through an agenda with numerous technically complex issues, the museum participants in the consortium were able to identify their needs for and interest in a Z39.50 based protocol. The European Union RAMA (Remote Access to Museum Information) project, for example, decided as a consequence of the meeting to adopt Z39.50 as the underlying information retrieval protocol in their model and concentrate their energies on the user interface layer where they have prototyped some valuable ideas. Representatives of the Canadian Heritage Information Network returned to Ottawa to study the protocol further and determine if it could be the basis for inter-museum information retrieval in their environment. Consequently, CIMI Project Director John Perkins was left with concrete tasks to pursue along these lines in the coming months.

Now that the Consortium for CIMI is funded by institutions interested in making interchange a reality, we can expect forward progress to be continuous. For information contact John Perkins, Internet jperkins@fox.nstn.ns.ca.



Working Meeting on the Getty Art History Information Program (AHIP), Initiative for Information and Image in Art

Early in 1993 the J. Paul Getty Trust Art History Information Program (AHIP) began planning a new Initiative in Information and Image Standards for the Arts. Pacific Visions Inc. was contracted to conduct a survey of individuals in the field to identify what they believed the problems and opportunities were and whether the area was ripe for action. The study indicated an international initiative on electronic imaging was "not only viable, but necessary". Michael Ester, the previous Director of AHIP, was commissioned to write a white paper identifying the issues. Planning began to hold a consultative meeting to "help AHIP design and shape the direction" of the new initiative.

The decision to invite twenty five individuals with extensive experience in the area, who represented a range of institutions, professions and perspective to help plan the initiative, rather than defining the focus and activities of such an undertaking internally, reflected AHIP's determination to undertake activities that would be seen as timely, appropriate to AHIP's mission and strategically important to the community. The survey and white paper identified a range of unresolved issues and potential inhibitors to the emergence of new modes of scholarship, teaching and enjoyment of art based on the promises of digital technologies, but they did not indicate priorities.

The statements prepared by participants in advance of the meeting, which summarized their assessment of the primary barrier to "universal and comprehensive access to images and information in art", elicited responses that can be classified as falling under three principle categories. Because many respondents proceeded to identify one or more of the other categories as secondary barriers, the sum of these responses was to focus attention on all three of the perceived barriers.

Intellectual Property

The most commonly cited barrier was intellectual property, but the expression of the nature of the problem varied. The frustration of information providers in universities was expressed by John McCredie (U.C. Berkeley) who said "the fundamental barrier is the lack of agreement on how to handle digital images as intellectual property" and Donald Spicer (University of Notre Dame) "intellectual property rights laws have not kept pace with technology". The desire by museums to benefit from their intellectual property was expressed by Maxwell Anderson (Michael C. Carlos Museum) who stated that "a primary barrier is the (legitimate) protectionist instinct of U.S. based image holders -- i.e. museums, libraries, universities, research institutions and other repositories of images and information about art".

Others focussed more directly on the potential economic benefit of controlling rights. Richard Snyder (National Gallery of Art) saw the barrier as "lack of operating funds" and a "methodology to produce . . . an electronic repository of digital images to be used as a basis for revenue producing projects". Czeslaw Jan Grycz (U.C.) expressed it as "the absence of a compelling economic force required to justify the effort for many individual collections and repositories". Kent Lydecker (Metropolitan Museum of Art) stated more broadly that "the legal and economic issues large and small museums encounter are great". Lyn Elliot Sherwood (Canadian Heritage Information Network) put it more bluntly that "the underlying barrier . . . is resource limitations" but identified copyright and licensing as only one of three immediate impediments.

Some respondents emphasized the lack of understanding of the existing intellectual property laws by stakeholders in the exchange. Christine Sundt (University of Oregon) saw the barrier as "the absence of a basic understanding of many important intellectual property issues related to the use of images". Jennifer Trant (Arts Information Management) identified the "lack of understanding of legal issues results in unnecessary fear and resistance . . . to outside use of electronic images and to the development of electronic archives".

All the threads of this area of concern were pulled together in the statement by Christine Steiner (Smithsonian Institution) who located the

problem in "the perceived uncertainty surrounding rights and uses and the absence of a system for simplified permission, fulfillment and fee collection".

Common Standards and Practices

The second most frequently cited barrier perceived by respondents was the absence of common cataloging and capture, storage and transmission standards for image and information in art and, the resulting lack of additivity of disparate resources or even of linkage between them. Stephen Desselle (WLN) decried the absence of "a common standard for cataloging, storage, and transmission of art information and images" as "a barrier that grows larger every day". Susan Hockey (Center for Electronic Text in the Humanities) expressed it as "different groups of people in different places are creating electronic images and other data without a clear understanding of all the implications". Professions concerned with collating documentation expressed frustration at "the absolute lack of common standards" and "the difficulty of linking a large number of existing databases with different systems and data structures", (Serenita Papaldo, Istituto Centrale per il Catalogo e la Documentazione) and the absence of "consistent and sound documentation of our cultural heritage" (Kathleen McDonnell, Getty Conservation Institute). Jane Sunderland (Fox Studios) identified "technical limitations on the user's ability to retrieve information efficiently from the ocean of information available".

The effect of not being able to make a sum even as great as the parts or of linking between collections was eloquently identified by Peter Lyman (U.Southern Cal.) who stated that "the barrier is the lack of a critical mass collection of high quality digital images sufficiently large and of sufficient quality to change the way art history is taught and the way research is conducted".

A Community with a Plan

A third theme which emerged from the pre-conference submissions was the absence of a concrete, shared vision of both the current state of activity and its lacunas, and the desired end result for the art information community. George Farr, National Endowment for the Humanities, expressed this as a need to know "the meaning and practical implications of the concept of universal and comprehensive access' among scholars and those who will be responsible for providing and ensuring access to research materials in

digitized form." James Hemsley (Brameur/VASARI) decried poor "communication and flow of useful information . . . 'wheel reinvention'. John Perkins (Consortium for Computer Interchange of Museum Information) saw the barrier as the "lack of detailed, specific descriptions from the artistic and cultural heritage communities of who wants what types of information, in what forms, how and for what reasons."

The sentiment of this concern was ably expressed by Patricia McClung and James Michalko of the Research Libraries Group, who called for "a coherent plan, endorsed and understood by the broad community concerned with images and art information, that describes a coordinated, effective campaign to improve and expand access to this information".

The first session of the meeting was devoted to self-introductions of participants and their informal re-statement of their assessment of the issues confronting the field in attempting to provide access to image and information in art. Not surprisingly, the issues raised in the prepared statements were echoed in these remarks, but a number of important nuances were added and a variety of mechanisms were introduced which deserve mention since they contributed to subsequent discussion.

Enhancing the ability of large numbers of diverse institutions with art image and information holdings to conduct projects that add to the accessible pool of knowledge was a frequently voiced objective. This would be achieved by clarifying the issues, articulating norms, defining content standards and project guidelines.

Coordinating work underway in various places and providing a means of assessing what new efforts would be important was a second theme. This would be achieved through inventorying existing efforts, communicating about known activity, and defining frameworks for mapping the unresolved questions and the efforts underway to solve them.

Relieving the gridlock of competing intellectual property interests remained a central concern. There was considerable concern expressed about commercial vendors rushing to license collections, setting standards or driving the law and about users not understanding intellectual property issues. Objectives of an AHIP program were seen as analyzing the issues, convening forums for stakeholders from different sectors to meet, formulating model agreements, articulating norms, and encouraging collective registration and licensing mechanisms.

Introduced in the informal statements were criteria such as "cost-effective", building on AHIP's past strengths, leveraging resources, encouraging synergy, coordinating investment, catalyzing, collaboration, framing narrowly focussed projects, partnerships and consortia, ability to change existing practices, and risk reduction.

Mechanisms included:

- defining best practices,
- providing user models,
- articulating project guidelines,
- developing model agreements, model legislation and model RFP's,
- formulating content standards including minimum data categories,
- implementing registries and directory services,
- establishing quality standards,
- holding methods seminars,
- developing conversion and interchange toolsets,
- identifying common interfaces and layered architectures,
- conducting demonstrations,
- creating de facto standards,
- undertaking technology assessment,
- promoting technology transfer models, and
- defining internet protocols and reference standards.

Summarizing the morning discussion, David Bearman suggested that participants had identified nine missing ingredients necessary to drive change in the status quo: information about on-going activity, necessary financial resources, technology and data standards, clear intellectual property law, defined user needs, appropriate socio-economic mechanisms for image interchange, adequate art data and documentation, effective education and an overall strategic direction or vision.

General discussion of the objectives of the AHIP Initiative during the afternoon moved the conferees towards a common model of types of endeavors that AHIP might undertake and their products. Several ideas introduced in the morning session proved infectious including the metaphor of "critical mass" introduced by Peter Lyman, the concept of "perturbing existing funding streams" suggested by Stuart Lynn, and the notion of a roadmap or community sustained strategic plan introduced by Jim Michalko. These formulations were picked up by the group in the afternoon discussion and are reflected in nearly every plan suggested by the breakout groups on the second day of the meeting.

By the end of the general discussion, the group identified four areas in which the initiative might focus which, for convenience of reference were labeled strategy, market, standards and research. An effort in each area was envisioned as beginning with an inventory of the existing state of affairs and the communication of that understanding was considered an important objective of each project. The foci of the inventories envisioned was different however. For formulating a community strategy, the focus was on activities. For influencing the market, the focus was on identifying problems and options. For establishing standards, the focus was on existing models and guidelines. And for research, the inventory would address user requirements.

Each of the four project areas was seen to require AHIP to develop new and improved methods. The focus on defining a strategy for the community required methods for visualizing the relationship between projects. The effort to affect the market required methods for licensing, contracting, pricing and using images and information. The standards approach required methods for content capture and representation. And the research focus required the Getty to develop methods for shaping research and development activity being undertaken throughout the high technology community so that it would take into consideration requirements of the arts.

Participants spent the bulk of the second day working in four breakout groups to propose a mission for the AHIP initiative and define projects with tactics by which to realize that mission, products, audiences, schedules and milestones. In the final session of the day, the breakout groups reported back to the reconvened conference on their suggestions.

While each of the four groups described a series of distinctive activities that it felt complemented each other, the combination of projects from the four overlapped greatly. Despite differences in how they stated the mission, each group fundamentally accepted that the purpose of the AHIP program should be to contribute to the achievement of a usable critical mass of image and information sufficient to support a change in scholarship, teaching and public access to art.

The first group was "mechanism-oriented". It envisioned AHIP engaged in a proof-of-concept that demonstrated how distributed information and image resources could be accessed and used as a virtual database and used that demonstration effort to explore user requirements for a variety of user

communities. It recommended AHIP support the creation of a registry or directory to available images and information that would serve as a "one-stop shopping" catalog for users interested in art images whether for study, commercial use or simple enjoyment. And it urged the development of project guidelines, including detailed checklists and decision trees to support common methods of conducting imaging projects so that the resulting information would be added to the pool of usable critical mass.

The second group was "analysis-oriented". It recommended the development of taxonomies of use as a basis for model intellectual property agreements, typologies of users as a basis for articulating requirements of the user community, frameworks or architectures for presentation of data content and technical interchange standards, and conceptual schemes to support useful inventories of activities, projects and resources devoted to art information and image projects.

The third group could be characterized as "information-oriented". It called for publishing project guidelines, pertinent standards and principles, guidelines on ethical use of images and case studies, and for holding awareness and training sessions in the community around issues relating to rights and to data and project standards.

The fourth group adopted a "process-oriented" series of recommendations. To them the most important activity was to create a common vision of the future and foster a community of practice. Like the other groups they saw promotion of good practices and models for how an institution might conduct image and information projects as important ingredients and recognized the need for consensus in the property rights area, but the methods they proposed and products they envisioned were designed to create and build a shared commitment.

The Getty AHIP Program will be assessing the recommendations of these groups in the coming months to determine a direction for its initiative. For the cultural heritage community as a whole, the meeting had the value of bringing a broad spectrum of players together and exposing their common interests and needs.



MUSE Museum Multimedia Study Group

A meeting in New York City on March 11 brought together representatives of the twelve museums and museum associations participating in an informal study of multimedia licensing issues with expert advisors and representatives of commercial interests, who have been attempting to use museum images and data in publications or provide access to it through online services. The face to face meeting built on results of a survey questionnaire which the museums had already completed describing their needs and concerns.

Institutions represented included the American Federation of Arts, American Museum of Natural History, Erie County Historical Society, Isabella Stewart Gardner Museum, Metropolitan Museum of Art, Museum of Modern Art, Museum Trustee Association, National Gallery of Art, Pierpont Morgan Library, Shelburne Museum, and Yale University Art Gallery. The Brooklyn Museum, which is also a member of the study group, was unable to attend.

The meeting was opened by Jane Lytle, producer with MUSE, which she described as a young, non-profit organization devoted to video and film documentation of art, which was spun off of the film and television office of the Metropolitan Museum of Art. She explained MUSE's interest in rights by providing an example of the problems she was having with a movie they made of the exhibit on "Degenerate Art" for PBS. After securing the rights for the PBS showings, they were approached to distribute the product worldwide and possibly to make an interactive multimedia product. Just getting worldwide television rights required returning to over 140 rights holders; no effort was made to try to get multimedia rights because of the number of holders involved in the numerous archival materials that one would want to incorporate.

She explained that as they were struggling with this issue, Geoffrey Samuels approached them about establishing a study group. In exploring opportunities for producing museum CD's, Samuels had encountered the concerns, suspicions and fears of museum staff. He imagined that a collective of museums could define the issues more clearly and seek better answers.

The museum attendees around the table introduced themselves and their specific concerns. In particular, they were all seeking clarification of roles and licensing practices but recognized in their statements that they were rights holders, non-commercial users and even potentially commercial users in their roles as publishers.

Four of seven advisors were in attendance. Brian Kahin, General Counsel to the Interactive Multimedia Association and director of the Harvard University, John F. Kennedy School of Government, Information Infrastructure Project noted his own background in video production. Selwyn Goldberg, a lawyer with Weil, Gotschal & Manges in New York, explained that he had previously been with Christie's and had taken up law as a consequence of emerging rights issues. Jonathan Franklin, a lawyer specializing in copyright and art law, and David Bearman rounded out the advisors present. As the only non-lawyer in this group, Bearman explained that his interests in rights developed as the technical problems of interchanging information and image were solved and the social and economic barriers became more evident. He explained, as had many of the museum staff, that the aggressive activity of Continuum Productions to line up what amounted to perpetual ownership of image rights from museums over the past four years had made critical the need to define a museum community consensus on how to license rights.

These preliminaries were followed by presentations from three commercial representatives with different interests in museum rights discussions. Chris Holden, Vice President for Advanced Media of the publisher Harper Collins, had the most straightforward need - he is a publisher who would like to publish museum multimedia CD's. In particular he wanted to enter into partnership arrangements and to be able to exploit the imprimatur of major museums. While he didn't say so directly, the obvious desire was to reduce his risks by sharing in future revenues rather than incurring up front costs and to use the names of major museums as a drawing card to a line of products. While he expressed a desire to have short term exclusive rights,

he put these in the context of the museums interest in the success of the joint venture.

Bob Stein, President of Voyager, a multimedia producer, expressed great concern over museums, or anyone else, signing exclusive agreements which he thought worked against the best interest of the public. He himself stopped trying to develop museum projects a number of years ago because of the uncertainties surrounding rights, but he has seen two kinds of projects tried by others since then. The first type, a broad survey drawn from the holdings of many institutions, is virtually impossible due to rights negotiation requirements. The second type, in which museums and publishers co-partner, is problematic because the promise of profits to split down the road is illusive. He strongly recommended to museums straightforward licensing of rights to use information for specific products, markets, and periods of time. He also added that the real value of multimedia is not in the raw resources but in the interpretation and presentation.

Nathan Benn, President of Picture Network International, recounted his own experience as a photographer for National Geographic when, several years ago, he was asked to sign over his digital rights. Realizing that he didn't know the implications of what he was being asked, Benn and a number of other professional photographers began to explore the issues and ultimately decided that they needed to protect the "small rights" in the photographs. These rights were involved in uses that were too minimal to pay the \$100 + transaction costs associated with negotiating rights under current agency arrangements, but which Benn speculated would become very prevalent in the digital image environment because of the ease of publishing in volumes of 10-1,000 copies, and the prevalence of image displays and huge multimedia databanks in which the individual object plays a tiny role. Modeling themselves on ASCAP and BMI, the photographers created Picture Network International to provide a low transaction cost, end-to-end delivery environment for images and licensing agreements.

Questions to the speakers clarified many of the points they were making and the attendees were able to see the systems and products under discussion over lunch. Following lunch, Brian Kahin suggested that it might be useful to introduce some clarifying assumptions before trying to sort out the issues: in particular he suggested separating commercial use (and issues such as pricing and contract terms) from non-commercial uses by other museums and scholars.

After considerable discussion (which Bearman attempted to record and categorize on flip charts as it proceeded) two foci for further study emerged from the afternoon:

1) Defining how museums would like to allow other museums and educational institutions to use their images and related data for non-commercial purposes and what kinds of protections needed to be established around such uses

2) Identifying the concrete issues that need to be negotiated in conjunction with book, television or film contracts to assure that interactive multimedia rights will be acquired or reserved.

The museum participants asked the advisors to restate these two study group charges and suggest how they thought each study ought best be pursued. Over the next several months the study groups will seek to clarify each of these areas. Jane Lytle will report on the findings of the study groups at the June meeting of the Association of Art Museum Directors (AAMD).

Since the March meeting in New York, Bearman presented the plans for the non-commercial, educational uses working group to a session at the Coalition for Networked Information meeting and asked for universities interested in participating in the refinement of licensing terms for such uses of museum data. Geoffrey Samuels, on behalf of MUSE and the museums involved, has contacted these universities, and an examination of the issues that need to be resolved by both sides in order to implement higher education site licensing of museum information and images for purposes of research and education is underway.



CALENDAR

June 9-11 Nashville TN; American Institute for Conservation of Historic and Artistic Works [AIC, 1717 K St., NW #301, Washington DC 20006; 202-452-9545; fax 202-452-9328]

June 14-16 Washington DC; Cohasset Associates Legality of Optical Storage Conference [Cohasset Associates Inc., 3806 Lake Point Tower, 505 N.Lake Shore Dr., Chicago IL 60611; 800-200-7667; fax 800-329-7667]

June 20-24 London, England; A Window to the Future: Conference on Managing Electronic Information (June 22-24 on Managing Electronic Records) [School of Library, Archive and Information Studies, University College London, Gower St., London WC1E 6BT, UK; fax +44-71-383-0557]

July 20-23 Salt Lake City UT; NAGARA Annual Meeting [Steve Grandin; 48 Howard St., Albany NY 12207; 518-463-8644; fax 518-463-8656]

July 26-27 Vancouver BC; First International Conference on the Application of HYTIME [Graphic Communications Association, 100 Daingerfield Rd., Alexandria VA 22314-2888; 703-519-8160; fax 703-548-2867]

INBOX

Reference Works

- **Image Technology in European Museums and Art Galleries Database (ITEM #6)** edited by Isobel Pring (Ipswich, International Visual Arts Information Network, Nov. 1993) 176 pp.

The 6th edition contains only new and updated entries since #5 and demonstrates the considerable amount of work that is going on in this field; (#7 is designed again to be cumulative). It is of considerable value to those of us on the side of the Atlantic because of its detailed descriptions of numerous European Union funded projects otherwise not well known here, but it remains somewhat uneven in covering CD's, videodiscs, research projects, prototypes, books, conference proceedings and even unpublished articles indiscriminately.

- **Standards for Archival Description: A Handbook**, compiled by Victoria Irons Walch for the Working Group on Standards for Archival Description, with contributions by Marion Matters (Chicago, Society of American Archivists, 1994) 320pp.

On one level this is a listing with detailed descriptions of 86 technical standards and a cursory review of an

additional 157 which are germane in some way to the task of archival description. In this sense, Vicki Walch could be reported as the compiler and Marion Matters as a contributor. Looked at in another way, this is the first systematic effort to explain how archives relate to the universe of information standards and how the existing standards could be brought to bear on the activity of archives, fundamentally transforming the task of archival description. In this sense Vicki Walch's introduction and essay preceding each chapter stand as original, synthetic, challenging outlines of a future barely perceived by most archivists, which will shortly transform their professional lives. Vicki Walch has brought forth yet another milestone report in her continuing role as mid-wife to the communal efforts of the profession. Hopefully, her modesty will not keep archivists from reading this volume rather than just using it for reference. Unfortunately the details on each standard will soon make the volume obsolete as a reference work, although Vicki's contextualization of these standards will maintain its value for a longer time.

Reports

- **A Decade of Sponsored Research: The Research Fellowship Program for Study of Modern Archives** (Ann Arbor, Bentley Historical Library, University of Michigan, March 1994) 19pp.

This pamphlet describes research undertaken during the first decade of the Bentley fellowship program, making it clear what an important contribution to the profession the Mellon Foundation and NEH have made in funding this summer institute. The introduction announces that NEH has matched the remaining Mellon funds, assuring the continuity of this tradition through the end of the millennium!

- **Electronic Access to Information: A New Service Paradigm**, edited by Win-Shin S. Chiang and Nancy E. Elkington (Mountain View CA, Research Libraries Group, 1994) 84pp. \$10 prepaid

These proceedings from a July 23-24 1993 symposium held by the Research Libraries Group include papers by Douglas Van Houweling, Nancy Cline, Jerry Campbell, Kathryn Downing, Robert Berring and Kathleen Price on the changing opportunities for libraries in a world in which methods of electronic dissemination and publishing are very

much in flux and the role of the library is undergoing review.

- **Information Technology in Humanities Scholarship: British Achievements, Prospects and Barriers** (London, British Library Research and Development Department and the British Academy, 1993) 50pp. +

This is an exceptionally rich report both in its information content, analysis and illustration. It not only provides a broad and useful survey of the state of computing in the humanities in the UK, it does a better job of illustrating the value of computers in scholarship worldwide than any other single report we have had to date. Instead of asserting that value, it describes projects and activities that are underway which demonstrate the value. It's even handsomely bound for a paperback.

- **Optical Character Recognition in the Historical Discipline: Proceedings of an International Workgroup organized by the Netherlands Historical Data Archive, Nijmegen Institute for Cognition and Information, Halbgraue Reihe zur historischen Fachinformatik, Serie A: Historische Quellenkunden Band 18, 1993**

This volume from the Max Planck Institute reports, in English, on a wide range of optical character recognition issues relating to historical documents including handwriting recognition, non-latin fonts, and post-processing issues.

- **Technological Strategies for Protecting Intellectual Property in the Networked Multimedia Environment**, Proceedings Voll, #1 January 1994 [Interactive Multimedia Association, Intellectual Property Project, 3 Church Circle, Suite 800, Annapolis MD 21401-1933; 410-626-1380]

This is a critical volume in the increasingly sophisticated discussion of electronic intellectual property. Despite its title, it deals with social and economic issues that go far beyond purely technological means of protection. Articles by Brian Kahin, Henry Perritt and Peter Graham address broad issues and a variety of concrete mechanisms advanced by others demonstrate that the area is far from intractable. Articles by Marvin Sirbu, Robert Kahn, Benoit Macq and others document implemented methods of copy protection and property use tracking for networks.

Special Issues of Journals

- **American Archivist**, vol 56#3, Summer 1993 is entitled Special Issue: Committee on Automated Records and Techniques (CART) and is devoted largely to papers given at a conference on curriculum development sponsored by the SAA CART in March 1991 and to the final report of the project. Papers on archival education in electronic records by the professions' leading educators, Richard Cox and Terry Eastwood, and articles on the diffusion of innovation by Victoria Walch and the use of the case study method to teach archival practices by Richard Kesner, along with a bibliographic essay by Anne Gilliland-Svetland and Tom Ruller, fill out the issue. While the issue synthesizes a number of historical trends in teaching archivists, it doesn't seem to break any new ground in defining what needs to be taught or how. To my taste, it suffers from having been born so late and from being too serious. The simple truth is that training archivists for electronic records management has failed utterly until now. Probably the better strategy will be to train technologists in the functional re-

quirements for recordkeeping systems.

- **Archivaria**, #36, Autumn 1993 contains dozens of articles on electronic records, including "Recordkeeping Systems" by David Bearman, "Archivists and Records Managers in the Information Age" by Charles Dollar, "Descriptive Practices for Electronic Records" by Margaret Hedstrom, "Metadata and the Archival Management of Electronic Records" by David Wallace and the results of a survey conducted by the ACA Select Committee on Electronic Records, as well as numerous other articles on matters of archival education for electronic records, hypertext and its implications for archives, and various electronic records project reports. Bearman's statements in "Recordkeeping Systems" are intended to create a new focus for the community and are supported by the positions taken in the articles by Hedstrom and Wallace. The thrust of these pieces is to move the community to a proactive role in assuring that information systems make and keep records. They collectively suggest methods that might be attempted (and are now being tested) to control evidence.

● **Archives & Manuscripts**, vol.22#1, May 1994 is entirely devoted to electronic records. David Roberts leads off with "Defining Electronic Records, Documents and Data" in which he makes essential distinctions between the three and provides archivists with a clear mandate to address records. David Bearman follows with "Managing Electronic Mail" in which he applies the functional requirements for recordkeeping systems framework developed in earlier articles to the arena of electronic mail, and discusses how to define business applications, determine retention requirements based on them, and execute these using the Open Systems Environment model. Anne Picot describes existing applications in "Electronic Records Systems in the Roads & Traffic Authority, NSW," and makes it clear that data processing transactions are not the same as business transactions and that even routine software applications do not necessarily create records. In "The Medium is NOT the Message" Greg O'Shea provides a history of the Australian Archives practices in appraising electronic records. Adrian Cunningham tackles the emerging issue of "Archival Management of Personal Records in Electronic Form",

noting correctly that little of the work to date helps manuscript repositories struggling with the reality that private records are now being created and sometimes maintained electronically. Accidentally underscoring Cunningham's point, Dagmar Parer and Keith Parrott follow with a description of the information management methodologies used by Australian Archives for management of electronic records. Two review essays, one assessing my Monash University two week course on electronic records and the other evaluating Margaret Hedstrom's recent A&MI Technical Report on *Electronic Records Program Strategies*, wrap up the issue, which is another critical volume in the growing literature of the field.

● **Information Services & Use** (ISSN 0167-5265) vol.13#4, 1993 contains many of the papers given at the second Electronic Imaging and the Visual Arts conference held in London in July 1993. Since no proceedings were published, this volume serves as the best record of what was obviously a fabulously rich menu of papers, including Jeremy Rees on the Brancusi project, Mary Bryden on the Discovery room at the National Museum of Scotland, the

team that developed the electronic guide at the Museum of Dion in Northern Greece, the Getty Conservation Institute on conservation systems, Dominique Delouis on the RAMA project, Jan van der Starre on the Van Eyck Project, further developments from the VASARI project (dubbed MARC), the Wellcome Iconographic collection videodisc, Anthony Cawkell on developments in picture indexing, a report on the CITED project and protection of electronic art rights, David Clarke on the New Museum of Scotland, and a final report on the interactive visitor facilities developed by the European Museum Network. The overall quality of these papers is very high and the depth allowed for authors is adequate to a full exposition. This issue will repay a careful reading.

Articles and Books

● **Richard Cox**, "The Record: Is It Evolving?", **The Records & Retrieval Report** vol.10 #3, March 1994, 16pp.

Following a whirlwind historical tour of the evolution of the concept of records, Richard Cox delves into the functional requirements for recordkeeping and puts into the

context of understanding what makes records different from data, information or documents. The treatment is clear and concise, which makes it a great article for teaching.

● **Jerome McGann**, "The Complete Writings and Pictures of Dante Gabriel Rossetti: A Hypermedia Research Archive", **Art Documentation** vol.12#4 1993, p.155-158

The author reports on a testbed for SGML text and images of a major artist being constructed to explore the applicability of hypertext and to develop a framework for editing of similar archives.

● **Sul H. Lee** editor, **The Role and Future of Special Collections in Research Libraries: British and American Perspectives** (New York, Haworth Press, 1994) 98pp., \$24.95

These proceedings of a seminar held at Oxford University in September 1992 were previously published as an issue of the *Journal of Library Administration* (vol.19, #1 1993). With the exception of Douglas Greenberg's concluding piece "Get out of the way if you can't lend a hand" the contributions fail to see the evolving worldwide special collection and the importance of facilitating electronic access to it.

Journals/Newsletters

- **Craft, The Newsletter of the CTI Centre for History with Archaeology and Art History** (ISSN 0958-8183) is a computing oriented humanities newsletter out of the University of Glasgow which, despite its somewhat odd title, carries a wide range of reviews, travel accounts, electronic resources reports and conference news of interest to archives and museum informatics. The price is ten pounds sterling a year. [For information and samples contact CTICH@glasgow.ac.uk or write them at University of Glasgow, 1 University Gardens, Glasgow G12 8QQ UK]
- **Political Advertising Research Reports** [Political Communications Center, Dept. of Communications, University of Oklahoma, Norman OK 73019; 405-325-3114; fax 405-325-7625] published its first issue in 1993 reporting on the Political Commercial Archive (radio and television commercials from 1936- the present). Free.
- **MuseumMedia** ends with vol.3 #5-6 (Nov./Dec.1993) and will merge into the new tabloid style publication **Museum Source Marketplace**, which is intended to be published quarterly by the same company. the final issue

contained a useful article by Deborah Seid Howes on interactive multimedia at the Art Institute of Chicago, but it also confirmed in way that the journal never really became a comprehensive listing, a source for in-depth analysis or a newsy report. Hopefully the tabloid can do one of these.

- **TULIP (The University Licensing Program) Newsletter** [Elsevier Science, 655 Avenue of the Americas, New York, NY 10010] is an update on the status of the TULIP experiment, which involves nine U.S. universities which are making bit-mapped images of 43 Elsevier scientific publications available on their campus networks. Additional work is going on in the area of SGML encoding and ASCII text distribution, and the results of different schemes for distributing current journal literature are being studied. The newsletter reports from project participants in considerable detail.

Ephemera

- **The January/February issue of Exhibit Builder Magazine** is, as usual, the Source Book Directory issue containing listings of hundreds of companies doing business in the area of exhibit

design and installation, including numerous multimedia and informatics firms.

- **Department of Defense (DoD), "Records Management Functional Process Improvement (FPI) TO-BE Report" January 14, 1994, 32pp.** [from Captain Daryll Prescott, DoD Records Management FPI Project Manager; prescott@saf3.hq.af.mil]

To understand the military jargon TO-BE Report, we must begin with the AS-IS Model. This report describes the way records management is supposed to be re-engineered to function by the year 2003. The presentation is as a series of IDEF-1 diagrams (information flow models) with explanatory prose; those who have followed archival information flow modeling from the first NISTF report in 1982 to the information architecture study group working models of 1992 will find the DoD model pretty tame stuff. Essentially they don't get the reason for re-engineering yet.

- **National Archives of Canada and Treasury Board Secretariat; Information Management: Guide to the Review of the Management of Government Information Holdings, Exposure Draft January 1994 34pp.** in each of English & French

This Guide is designed to assist government agencies in Canada to assess the effectiveness of their implementation of the Treasury Board policy on Management of Government Information Holdings. It can be used for self-assessment, but was particularly designed for auditors and program evaluators. The guide sets out policies, criteria by which to assess them, and questions that should be asked in a review to determine how well the criteria are met. While some of the policies are in some way specific to Canada, most are not and the document could be of assistance to senior managers and auditors everywhere. [Contact John McDonald, 613-947-1510]

- **World Bank, Information Technology and Facilities Department; Information Management Architecture - FY94** (World Bank, Washington DC, 1993) 109pp.

This report presents a framework for managing all the corporate data of the World Bank and linking it to the business processes in which the Bank is engaged. It begins with an expression of business information requirements of a set of information services (which are not business functions per se), which are to be satisfied through a unified data network in conjunction with a common tool set of utilities. It outlines a combination of local and

central support functions required for implementation of the Information Management Architecture. The document confuses software applications and business applications, software functional requirements and business functional requirements, and information systems and business systems, but it contains much interesting analysis of e-mail, document management, information retrieval and overall

needs for records throughout the organization. [It is particularly useful to read this document if you are in possession of the "Electronic Document Management System Functional Requirements" Working Draft circulated by Karl Lawrence of the World Bank for comment on the Electronic Records Listserv, April 19, 1994.]

PLANNING FOR MUSEUM AUTOMATION: TEACHERS GUIDE AND STUDENT WORKBOOK

by John Perkins No. 17 (1993)

A guide intended to be a resource for the teaching of museum automation, from initial requirements through implementation and ongoing evaluation. It takes the perspective that the museum's total information resources include information management techniques, systems and data.

*Chapter 1 - Context: Overview of
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Chapter 2 - The Museum Market

Chapter 3 - Getting Started

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Chapter 8 - Resource File

The Teachers Guide is \$40.00 and includes one student workbook and reproducible overheads. The Student Workbook is \$15.00 with a minimum order of 10 copies. Include \$10.00 per item for shipping outside the Western Hemisphere. A \$5.00 handling fee is assessed billed orders. For ordering information, contact Archives & Museum Informatics (412) 683-9775 or fax412-683-7366. .

Multimedia Titles

● Microsoft Art Gallery: A Review of a Review

The MicroGallery at the National Gallery of Art in London is not news to readers of this journal, where it has been described in detail by its developer Ben Rubinstein (vol.6, Summer 1992, pp.5-10) and reviewed, but the CD publication of the MicroGallery by Microsoft, and its review in the *New York Times Book Review* on March 6, is news.

Bernard Sharratt, chairman of the department of communications and image studies at the University of Kent was given two full pages including illustrations to review the CD which, as far as I recall, is the first CD-ROM to be given a full review by the prestigious weekly. In itself, this means that the multimedia CD has become a form of literature and is as significant to the genre as the lengthy review of hypertext fiction was last summer.

But what does Sharratt say? Like so many reviewers who approach a multimedia product for the first time, Sharratt can't decide whether to review the publication he has in hand, the National Gallery of London itself, or the medium CD-ROM. So he hops around between them, attributing to the CD design choices made by Cognitive Applications for the National Gallery or by Microsoft for the CD-ROM, and crediting the National Gallery for browse features built for the application or technical capabilities such as simulation and downloading that are supported by the platform. He toys with saying a little about the technology, only to say too little or too much, and he speculates on the next generation of "virtual reality" museums somewhat rhapsodically without returning to the one subtle and interesting general observation in the article, that reproduction technology over the past hundred years has enabled us "to approach art as a domain of cultural information, reserving the experience itself for an actual visit to the gallery".

Sharratt doesn't pronounce the Philistine's damning value judgment in his observation. But his favor is not extended by the editors who place in the center of the first page, in large font type "THE UPSIDE IS WE GET THE WHOLE NATIONAL GALLERY ON ONE DISK. THE DOWNSIDE IS IT TEMPTS US TO DEVALUE ART AS MERE CULTURAL INFORMATION." Poppycock. We neither get the whole National Gallery nor are intended to. And we aren't tempted to devalue art, but to understand and appreciate it when we have an opportunity to see it. Would the editors of the *New York Times Book Review* suggest that a critical assessment of the

works of D.H.Lawrence or a selection from the poetry of Shakespeare "tempts us to devalue art as mere cultural information"?

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NEWS

President Asserts NSC is not a Federal Agency

In an extraordinary reversal of forty years of policy and legal precedent, the White House declared that the National Security Council is not a Federal Agency and is therefore not subject to FOIA, and that all its records are Presidential records under the terms of the Presidential Records Act. The action came in a March 24 memo from President Clinton to Anthony Lake and William Itoh after several months of negotiations between the White House and the plaintiffs in *Armstrong vs. EOP* broke down over the definition of Presidential advisors. Given the lengthy history of the NSC coming under Federal agency guidelines, the case history of the FOIA and the previous briefs to the court in *Armstrong vs. EOP*, it is highly likely that the court will dismiss the claim, but it is much less clear what the Administration's reason for making it is and whether they want to push the underlying division of powers issue to the Supreme Court. Meanwhile this action reverses much of the progress made in the resolution of the case since the Appeals Court ruling this summer.

NARA Issues Draft E-Mail Rules

After months of drafts, the National Archives has finally issued a proposed rule on Electronic Mail Systems under 36 CFR 1234 to supplement (and indeed significantly amend), its instructional guide *Managing Electronic Records*. The immediate context for the new rules is compliance with the court decision in *Armstrong v. EOP*, although NARA places it in its broader context in the conclusion to the rule which states:

E-mail systems provide unprecedented communications convenience. However agencies must take the necessary measures to ensure that there is no diminution of their records resulting from the use of E-mail systems. E-mail systems have become important tools for the transmission of substantive information, and, therefore, they create Federal records. Agencies must take special care that employees understand their responsibilities when using E-mail to ensure adequate creation and proper maintenance and disposition of Federal records.

As specified in 44 U.S.C. 3102, NARA and the agencies shall cooperate in the implementation of NARA standards. Agencies should amend their recordkeeping policies

and procedures where necessary to meet these standards. NARA will assist agencies in implementing these standards by reviewing agency directives concerning e-mail and by participating in agency considerations of maintaining permanent E-mail records electronically. NARA and the agencies will work together to ensure that recordkeeping policies and programs for E-mail records serve the needs of agencies and the needs of future researchers.

The major developments in this policy are that it recognizes that most electronic mail is a record, that it is best to retain electronic mail electronically, and that contextual information about senders, recipients and transmission are essential to maintaining the meaning of electronic mail. The limitations are that NARA still sees electronic mail as a software application rather than as a means of transmitting of communication and that they want to exclude from the definition of Federal records anything that has not been "deliberately filed, stored or otherwise systematically maintained as evidence of the organization, functions, policies, decisions, procedures, operations or other activities of the Government..." while the law says nothing about deliberate or systematic. Indeed because it has two clauses, "preserved or suitable for preserva-

tion", the law suggests that records might include some things probably not very suitable, deliberately kept or systematically filed, but just things that happen to be kept. NARA also fails to understand that the examples given by the court of contextual information in the form of "transmission and receipt" data are simply that - examples of kinds of information required to understand the context of a transaction and the record which documents it - rather than exhaustive listings of the elements of information that are required to be kept. Instead of making the larger point that the functional requirements for recordkeeping include retention of content, structure and context as necessary for complete and understandable records, NARA articulates the most minimal demand, that records be "intelligible", a new and not very useful criterion. In the process they frequently forget that the purpose of this data is to establish, and hence maintain, a link between the record and the transaction so they advise, for example, that "Agencies should maintain such receipts and acknowledgements associated with Federal records for the same period as the electronic message to which they refer" but they neglect to note that the link should be retained and its executability maintained.

None of the limitations noted above are in this draft because NARA didn't think about them. In each case, specific ways to fix the proposed rule to make it correct and implementable were proposed to NARA and rejected before the draft was published. In order to make NARA revise the rule to reflect these concerns, archivists will need to provide examples of how such guidelines can be and are being implemented. Without those, the national rule will inhibit states and local governments from establishing appropriate local rules. [For further information or comments, contact James Hastings, Director, Records Appraisal and Disposition Division, National Archives, Washington DC 20408; 301-713-7096].

Government Information Locator Service

On January 22 the Office of Management and Budget issued its essentially complete draft of the Information Infrastructure Task Force (IITF) report on the Government Information Locator Service designed to "help the public locate and access information throughout the U.S. Government". Noting that "Agencies are already required to create and maintain an inventory of the information systems and infor-

mation dissemination products under 44 U.S.C., FOIA, and OMB Circular A-130", it states that "the incremental cost of making those inventories accessible though GILS is expected to be minimal. Accordingly, the participation of agencies in establishing and maintaining the GILS Core may be accomplished as a collective effort executed within existing funds and authorities". OMB expects to publish guidelines "specifying agency responsibilities to participate in GILS and setting performance measures" in 1994.

In a related effort, an OMB grant to Syracuse University to define the Z39.50 protocols required to implement GILS as a distributed directory included funds to define the requirements of a variety of user communities. Under contract to Syracuse, David Bearman identified requirements for the archives and records management communities and for the individual citizen, which included comprehensive listing of all government records whether open or restricted, and navigability from the GILS Core into metadata maintained by agencies at the system level for description of record series. In addition I proposed replacement of the cumbersome SF115 records scheduling process with online inquiry and posting of scheduling data directly within agency GILS databases. [For copies

of the OMB report, use anonymous ftp via Internet at 130.11.48.107/pub/gils.txt (for ASCII) or dial Fed-World bulletin Board at 703-321-8020]

Commission on Preservation and Access Future

In December, the Commission on Preservation and Access published a Working Paper for the Future adopted by the Board of Directors in October to provide a strategic framework for the Commission as its program emphasis shifts "from preservation of recorded knowledge originally issued in print form to the preservation of access to recorded information in all formats." The Commission is a five year old non-profit originally organized to support libraries and archives in paper preservation through coordination, advocacy and exploration of issues. It has been responsible for the Brittle Book program, now at NEH, for research on digitization as a conservation and reformatting technology and for a variety of preservation advocacy efforts. Although it will retain its structure as a small, focussed, sunset activity, the Commission has dramatically changed its focus in the new working paper.

Asserting a need for an "affordable and orderly transition into the

digital library of the future", the Commission has set itself the task of dealing with copyright standards and electronic archives through coordinated pilot projects and public relations activity and the support of scientific research. Its plans involve broadening the base of scholarly input and international involvement, in addition to shifting its gaze from paper to the full range of human created artifacts embodying information. [For further information contact: Commission on Preservation and Access, 1400 16th St., NW, Suite 740, Washington DC 20036-2217; 202-939-3400; 202-939-3407]

NHPRC Grant Deadline

The National Historical Publications & Records Commission announced a June 1 deadline for grant proposal that carry out the recommendations in the Research Issues in Electronic Records report. [For more information contact: Lisa Weber or Nancy Sahli at NHPRC, National Archives Bldg., Room 607, Washington DC 20408; 202-501-5610]

NYSARA Builds Partnerships with Agencies

Pursuing a policy of identifying good information management

practices in place in New York State agencies, the New York State Archives and Records Administration is completing several case studies of agency practices. These include systems development practices, metadata management approaches and business requirements designed to replace ineffective records retention and reporting mandates with more effective joint ventures to achieve accountability.

In a separate project, the NYSARA is jointly developing a Statewide Information Locator System for State Government Information with the New York State Library. "The ILS will describe State agency programs, provide listings of government services personnel and other directory information, and help users locate a wide variety of useful government information." [For more information on both projects, contact Margaret Hedstrom, NYSARA, Cultural Education Bldg. 10A, Albany NY 12230; 518-474-6771; fax 518-473-7573]

National Initiative for Humanities & Arts Computing

The steering committee of the National Initiative for Humanities and Arts Computing has established two working groups of nationally recognized experts in scholarly, in-

structional and creative computing to identify issues and opportunities. The Working Group on Technical Requirements for Humanities and Arts Computing will specify the technical challenges that must be met to enable arts and humanities to play a vital role in the National Information Infrastructure. The Working Group on Electronic Resources will identify existing and planned arts and humanities resources that could become available through the NII. [For further information contact Dr. Charles Henry, Director of Libraries, Vassar College, Poughkeepsie NY 12601 or chhenry@vassar.edu or Susan Siegfried, Getty AHIP, 401 Wilshire Blvd., Suite 1100, Santa Monica CA 90401 or ssiegfried@getty.edu.

Clearinghouse on Art Information Adopts New Plan

At its meeting on February 13 in Providence, the Advisory Committee to the Clearinghouse on Art Information at the Metropolitan Museum of Art concurred in the recommendations presented by Clearinghouse Director Pat Barnett that future activity should be directed towards creation of a virtual clearinghouse through cooperative activity of all interested parties and utilization of the Internet. The database is being trans-

ferred to a virtual address and the physical facilities of the Clearinghouse will be suspended except as a special collection of the Watson Library.

Research Libraries Group Growth & New Services

The Research Libraries Group had a successful membership drive last year, netting dozens of new members including the American Academy in Rome, Lawrence Berkeley Laboratory, Chicago Historical Society, New York Botanical Gardens, North Carolina State Archives and the United States Holocaust Memorial Museum, along with the usual large universities in the U.S. and the nine largest libraries in the UK.

RLG also announced that its Zephyr Z39.50 service now has subscribers in the Netherlands and Canada. This makes Zephyr, one of the first Z39.50 servers to be placed into production, the first to be used internationally, giving both RLG and the standard a considerable boost.

Early in March the Consortium of European Research Libraries selected RLG to supply database support to the Hand Press Book Database covering all European handpress printing from c.1455-

1830. At the same time, RLG announced that users of the University of California Melvyl system on all nine campuses and in the Office of the President could link directly to RLIN and the CitaDel document delivery service through the Eureka front-end supported by RLG. *[For more information contact Research Libraries Group, 1200 Villa St., Mountain View CA 94041-1100; fax 415-964-0943]*

AAUP and CNI Cooperate in Scholarly Electronic Publishing

The Association of American University Presses (AAUP) and the Coalition for Networked Information (CNI) have selected thirteen university presses to work on an initiative to develop resources, improve infrastructures and experiment with production and dissemination mechanisms for electronic scholarly texts on the network in response to a call for statements of interest issued in August. A progress report is due December 31, 1994. *[For further information, contact Peter Grenquist, Executive Director, Association of American University Presses; 212-941-6610; aaupct@world.std.com]*

Electronic Government is Everywhere

A task force of the Nuclear Information and Records Management Association (NIRMA) on Electronic Information Interchange is defining mechanisms for electronic reporting by nuclear licensees to the NRC and other regulators. If these efforts succeed, they should generate one of the most significant sets of electronic records ever, with extra-ordinary requirements for longevity! *[For more information contact chairperson, Linda Eiland Clark, 10440 Little Patuxent Pkwy., Suite 870, Columbia MD 21044; 410-964-9700]*

NEH Awards in Preservation

In mid-February the National Endowment for the Humanities announced 26 grants of \$6.5M to preservation and access projects, including renewals to the Yale University Project Open Book (directed by Paul Conway) and Cornell University digitization studies (directed by Anne Kenney).

Demonstration & Planning Grants for the NII

The National Telecommunications Information Agency, a branch

of the U.S. Department of Commerce, has announced the competitive award of \$26M in matching grants for non-profit organizations, and state or local governments concerned with the provision of education, culture, health care or community information services. Grants will be given to 1) demonstration projects that permit interconnection among and between user communities and national or international backbone networks (60% of funds) and 2) planning infrastructure development projects (40% of funds). Applications are due by May 12, 1994. *[For more information contact Dr. Charles Rush at 202-482-2048; fax 202-482-2156; or TIIAP@NTIA.doc.gov]*

Joint Chiefs of Staff Destroy All Minutes

On January 25, 1993 the Joint Chiefs of Staff confirmed in a letter to the National Archives that all minutes of JCS meetings going back to 1947 had been destroyed on the order of the Secretary of the JCS who declared them to be working papers, without a NARA approved schedule, in August 1974. This action was apparently taken in the face of Congressional action on FOI which would have made them subject to release. The practice of

taking minutes at all was terminated in August 1978 and all subsequent minutes were destroyed. In effect, the Department of Defense has thereby confirmed that there are no records pertaining to actions taken at the very highest level of the U.S. military and that it destroyed them without permission from the National Archives. *[For more information, contact Thomas Blanton, Executive Director, National Security Archives, 1755 Massachusetts Ave. NW, Suite 500, Washington DC 20036; 202-797-0882 who made the letter available, or James Hastings, Director, Records Appraisal and Disposition Division, National Archives, to whom the January 25 memo was addressed].*

Human Radiation Interagency Working Group

On January 3 1994, the White House called for formation of a Human Radiation Interagency Working Group to coordinate government-wide efforts to uncover the nature and extent of any government sponsored experiments on individuals involving intentional exposure to ionizing radiation. Christine Varney, Secretary of the Cabinet, issued a memorandum on January 19 calling on Federal agencies to inventory records on human radiation experiments and establish

procedures for document handling and review. Members of the working group include the Secretaries of Energy, Defense, Health and Human Services, and Veterans Affairs, the Attorney General, Administrator of NASA, Director of CIA and the Director of OMB. The Archivist of the United States is not a member!

Interaction of Color on CD-ROM

The publication by Yale University Press and the Josef Albers Foundation of Albers' classic text *Interaction of Color* in a CD-ROM version breaks new ground in the appropriate use of interactivity in art reference tools. The publication has interactive functionality permitting students to experiment with color settings and combinations Unfortunately only for Macintosh computers as of now. *[For more information contact YUP, P.O. Box 209040, New Haven, CT 06520; 203-432-0912; fax 203-432-2394]*

NARA Employee Survey

The National Archives and Records Administration conducted a survey of its staff early this year which documented exceptionally low morale, lack of cohesion or goals, and a general sense of

despair. Of the more than 2100 employees, many wrote extensive comments that are reproduced in a published account of the study, available from NARA and summarized on the archives listserv by Jim Whittington of the EPA.

Access Minnesota

The Governor of Minnesota has recommended \$550,000 for the state Information Policy Office to develop a statewide, comprehensive, coordinated electronic access system for government information and services in FY 1995. Citing a need for timely and inexpensive access by citizens and business in the state and the opportunity to seek Federal matching funds under NTIA, Governor Arne Carlson launched a series of demonstration projects to provide for more open government through networked access. *[For more information contact STEVEN.CLIFT@STATE.MN.US or phone him at 612-297-5561]*

InfoWorks MARC Management and OPAC System: A Review

Marion Matters

Company: InfoWorks Technology Company
Address: P.O. Box 128, New Wilmington, PA 16142-0128
Telephone: 412/946-8561 *Fax:* 412/946-8561
E-mail: jsong@hoyt.westminster.edu
Developer: Jesse (Jizhong) Song
Price: \$350-399 (has been offered until 30 April 1994 at an introductory price of \$149)

DOS Version 1.0 (demo copy)
System requirements: IBM compatible (absolute minimum, 286, 16 MHz); 1 MB RAM; hard disk (size required will vary); DOS 3.0 or later

System used for testing: stand-alone IBM compatible, 486, 33MHZ, 8 MB RAM, SuperVGA color monitor, DOS 6.0 and Windows 3.1.
Printer: HP LaserJet IIP with Postscript cartridge.

InfoWorks MARC Management and OPAC System, according to product literature, is designed for "libraries, archives, and museums, which are cataloging on OCLC, RLIN, local systems, or other cataloging utilities." It would provide a small institution with an inexpensive and easy-to-use basic online catalog. It handles records of any size and type--as long as it's MARC.

The program exhibits a pronounced "library" orientation, however, both in terminology and functionality. Searching in the OPAC (online public access catalog) module is limited to author, title, subject, and publisher. In

the Search and Maintain Database module, those searches are augmented with several number searches--record ID number, LCCN, ISBN, ISSN, CODEN, and call number. The reporting module is titled "Generate bibliography or report" and the output is in ISBD (International Standard Bibliographic Description) card-style format.

This is a program without elaborate bells and whistles, but it does the job it sets out to do. The prospective buyer must then ask: Is that the job I need done?

Installation

Put a disk in the A: drive, type "install," and less than two minutes later you are ready to go.

The program files take up only about 700KB. The database and index files, of course, vary with the number of records loaded. My test database, containing 435 MARC records (many of them long), and its related index files took up a total of almost 4 MB.

I ran the program directly from DOS and also as a DOS application under Windows with no apparent problems. This version is not designed for network use.

Starting the Program

Following an initial title screen, the user is prompted for a password. Successful password entry brings up the main menu with the following options:

1. Import RLIN records
2. Import OCLC records
3. Search and maintain database
4. Generate bibliography and report (Printer)
5. Generate bibliography and report (Disk)
6. Start OPAC
7. Exit

But forget not thy password. You get three tries. After the third attempt to enter the wrong password, a fairly loud siren sounds for 5-10 seconds. The idea is to prevent or detect attempts by unauthorized persons to break into the system. (Headlines: Archivist reports cyberpunk hijacking on the infor-

mation highway). Apparently you would require vendor assistance to change or recover passwords.

Importing MARC records

InfoWorks is intended to work with records downloaded from OCLC, RLIN or some other source of MARC records. The ONLY way to create a database in this version of InfoWorks is to import existing MARC records.

The InfoWorks demonstration version was accompanied by several small MARC record source files, each containing 12-15 bibliographic records--half from RLIN, half from OCLC.

The user may choose "quick" (i.e., batch) import, in which all records in a source file are processed automatically. The alternative is to import records from a file individually. In the record-at-a-time method, the system displays each record prior to processing and prompts the user to keep or skip the record. Both methods worked well with the small test files. At the end of an import session, the system tells you how many records have been imported. As far as I could tell, that is the only time you get any information about the number of records in the database. There seems to be no way to get an up-to-date record count.

During the import process, a new import record is compared (using the record ID number, I presume) with records already in the InfoWorks database. If ID numbers match, the new record automatically overwrites the existing record.

Besides the source files supplied with the demo, I also tried to import three additional source files.

One file contained 25 book and serial records downloaded to disk from an OCLC "save file" using the export function in Prism. InfoWorks is designed to work with just such records: the import process added them to the database without error and all system functions seemed to work with them.

The second file contained 91 records representing various formats (archival collections, museum objects, photograph collections, fine art, sound recordings, and videotapes of various kinds), all downloaded to disk from the PALS online bibliographic system using the MARC export function of its "MARC editor." The vendor strongly recommends that before counting

on being able to load MARC records from a source other than OCLC or RLIN you send him a test file, but I thought I'd give these records a try first.

The third file contained 319 agency history records, also downloaded from PALS. I thought that if the system would choke on anything, it might choke on these. [Note: the fully functioning demo version of InfoWorks is normally limited to 200 records; the vendor extended the limit to 500 records in the copy I reviewed.]

InfoWorks appeared successfully to import all the records. I say "appeared" because several of the records caused display problems in both the OPAC and the Search and Maintain Database modules. However, except for the few anomalous records, InfoWorks was able to handle the variety of formats and record lengths.

I sent copies of the PALS export files to InfoWorks, as recommended. The vendor quickly discovered the problem. These records had been through the MARC mill: originally created in RLIN, loaded into the PALS database (which was designed for OCLC records), output from the PALS database, and imported into InfoWorks using the "OCLC" import. A few subfields unique to RLIN records had been passed through the PALS system unchanged, and the InfoWorks OCLC import program was not expecting them. Once the source of the problem was evident, the fix was easy.

OPAC Module

The OPAC (Online Public Access Catalog) seems fairly easy to use--that is, when it comes to entering a search and displaying the results.

The promotional literature states that "patrons do not have to read a manual in order to search the online catalog"--and that's true. But successful searching requires the user to know at least the first character or two of the exact title, author heading, or subject heading. When searching for authors who are individual persons that is not really a problem, but for titles, subject headings, and some corporate names, it could be a real liability. The online search instructions tell you to enter the first word or first few words of a subject heading and "to find the authorized form of a subject heading to use, check the subject lists (LCSH, MSH, etc.) or ask a librarian or an archivist for help." The problem is that few people know what LCSH is, and fewer

would trouble to ask for help. Left-to-right searching of exact headings is a prescription either for frustration or outright failure for many users.

Searching in the OPAC

After you enter a word or phrase to search, the system displays what the documentation calls a truncated entry list. The order of elements in the list depends on the type of search. For example, an author search results in a truncated entry list sorted by author (the contents of 1XX and 7XX fields), with screen display columns headed:

Author	Title	Publisher	Date
--------	-------	-----------	------

For the results of a title search, the truncated entry list has the same elements, but "Title" is leftmost

With my small test file of 435 records, display was nearly instantaneous.

Navigating the truncated entry lists and record displays is straightforward as long as you pay attention to the key instructions given at the bottom of every screen display.

In InfoWorks, the result of a search (i.e., the truncated entry list) does not appear to be a set of records matching the search request, but a position in the appropriate index. In effect, an InfoWorks search places you in the midst of a virtual list of the entire database, sorted by the search element (author, title, subject heading, publisher, etc.).

If you search for the subject word "pollution" and none of the records in your database contains a subject heading beginning with the word pollution, you will see a truncated entry list representing the subject heading index, beginning with the subject heading alphabetically following "pollution." If you displayed the previous screen, you would see subject headings alphabetically preceding "pollution." Similarly, if you do a subject search for "critic," the truncated list might display the headings:

CRITICISM
CURRICULUM PLANNING
DEATH IN LITERATURE
[etc., in alphabetical order]

A user might have difficulty interpreting such results.

InfoWorks never gives a "nothing found" result, but you don't always know why your search has retrieved what it has retrieved.

The Card Format Record Display in the OPAC Module

One potential problem with the card format display in this module is that added entries in the 7XX sequence are not displayed--though they are searchable. You could search for an author's name, find it in a truncated entry list, display the associated record, and not find the name listed anywhere. When this happens to me, I tend to wonder if there is an error in the record. In this case I know there is not, but only because the 7XX fields are displayed in the MARC format display in the Search and Maintain Database module.

By default, InfoWorks also displays in the card format three kinds of data that probably should not be displayed except in the internal MARC format display: the contents of subfield \$2 in subject headings (codes for thesauri or subject lists); the OCLC-specific subfield \$w (AACR2 verification) in a name heading; and the "x" in some OCLC 090 fields ("x suppression" is used in OCLC when the cataloging institution does not want any call number to display or print on cards). The display of "x" as the call number is potentially confusing to users. The vendor is willing to customize the display, however, so an individual purchaser could suppress these.

Exiting the OPAC

Once you are in the OPAC, you cannot get out of it except by a key sequence given only in the printed documentation, and presumably known only to staff. Thus OPAC users cannot inadvertently (or intentionally) get into any of the other modules (such as Search and Maintain Database, where they might blithely delete records). Even if you know the key sequence to exit the OPAC, the exit takes you all the way back to the initial password prompt, so you would also have to know the password to re-enter InfoWorks. For the average user who is not intent on wreaking havoc, this minimal security may be sufficient.

Search and Maintain Database Module

Database maintenance couldn't be easier--there are only two things you can do. You can import MARC records (as explained above), and you can

delete records individually. You cannot enter original records nor edit existing records, although InfoWorks intends eventually to market software that will provide this capability.

The searching offered in this module is that same as is offered in the OPAC module, with the addition of several number searches (mentioned above). When you order the software, you specify which MARC field(s) you use for call numbers; the system is then set up to index that field (or those fields) for call number searches.

While the author, title, subject, publisher, and call number searches each retrieve an index of the entire database in a truncated entry list, as described above, a number search brings up only one record. There is no truncation in the number searches; they are only useful if you are looking for an exact number. The odd thing is that even though a single record is displayed, the "next" and "previous" record keys seem to bring up additional records--but I can't tell whether or how they relate to the record sought. They don't seem to be in order by ISBN or LCCN or ISSN, according to the search done.

MARC-Tagged Displays in the Search and Maintain Database Module

The default display in this module is a MARC-tagged display in which the fixed fields appear in RLIN-style mnemonics (which will be unfamiliar to OCLC users). The documentation does not contain a translation table, which might have been useful. A single keystroke toggles to a card format display--the same display format used in the OPAC module.

Generate Bibliography and Report (Printer)

Bibliography and report options are extremely limited. You can:

- Print the 300 and 490 fields--or not
- Print 310 to 350 and 500 to 590--or not (i.e., you get all the 5XX fields or none)
- Print subjects--or not (i.e., you get all the 6XX fields or none)
- Print call number--or not
- Specify the number of characters per printed line

You make these simple yes/no selections on a setup menu. Then it gets more complex. (This is really the only InfoWorks process that requires attention to the instructions in the written documentation.) You may select the records you want to print using one or more commands. You may

combine commands with a Boolean "and" operator (|); you may use truncation (#) in the search string; and you may use "all" as the search string to retrieve all records with a particular feature. The first (or only) command determines the sort order. You may select records by date or format, but you cannot sort by date or format. I couldn't tell from my results what the default sort is in such cases, and the documentation did not say. It may be call number, which may or may not be a useful arrangement.

The system documentation is completely silent on the subject of printers, which surprised me. When I contacted the vendor about the lack of printer documentation, he said that InfoWorks would work with any installed printer. But my printer would not print. Further communication with the vendor revealed that HP printers with Postscript cartridges will not accept plain "text" files; which is about what I had figured. The solution for me is either to remove the Postscript cartridge (it worked, but I wouldn't want to do it all the time) or "print" the bibliography to a file for manipulation in a word processor--which I usually prefer anyway.

As the bibliography/report "prints," it also displays on the screen. The documentation states that "the generating process can be suspended temporarily by pressing < pause > key." Unfortunately, I persist in using an ancient keyboard (from a 1987 model AT) that does not have such a key. The more up-to-date person should not have this problem! I could, however, stop the printing entirely with the < Alt > < s > combination, following an instruction that stays on the screen during the print process.

You apparently cannot print a report in MARC tagged format. And unfortunately there doesn't seem to be a way to do a quick print of a single record or a single screen. (The print-screen key didn't work for me, even when the PostScript cartridge was out of my printer; it may work for others.)

Generate Bibliography and Report (Disk)

This module works exactly like the Generate Bibliography and Report (Printer) module, except that you can specify a DOS file to receive the output (which is an ASCII file with carriage return/line feeds at the end of each line). The process for generating a bibliography or report is otherwise exactly the same.

There were a few problems--and some things I didn't like--in this module.

The program had not anticipated that a user might enter only a path name when asked for a file name. When I inadvertently entered only "C:\ " at the prompt for a file name, I got the message: Unknown error!! press any key to continue. Unfortunately, whatever key I pressed caused the program to close unceremoniously and return to DOS. When that happened, of course I tried to make it happen again--and I did, this time with "C:\DOCS." The problem appears simply to be the result of inadequate error trapping for an unanticipated "error" (although I prefer to call it "creative input"). The vendor has already corrected the problem.

If you enter the name of a file that already exists, the process simply overwrites the existing file. It would be better if the system advised you and let you make the decision to overwrite or give the file a new name.

I didn't like the fact that if you got the bibliography request (i.e., the bibliography selection specifications) wrong, you'd have to start again at the beginning, re-entering the output format specifications and the file name. That can get pretty boring if it happens twice in succession. It would be better, I think, if a "bad" request sent you back to the request prompt, rather than to the beginning.

Also, the text on the screen is positioned so that the file name prompt displays fairly far right on the screen. If you have to enter a long path name preceding the file name, the text you input wraps to the far left of the screen, making it look like a mistake. It isn't a mistake, but it looks like one.

Documentation

The system is simple and its operation is simple. The documentation is really only required for the import module and the bibliography module. For these, the documentation appears adequate to explain the process, but it does not always explain some of the underlying defaults.

MARC compatibility

As Walt Crawford points out in *MARC for Library Use: Understanding Integrated USMARC* (Boston: G.K. Hall, 1989), each MARC-compliant system is compliant in a slightly different way. This makes it hard for any vendor to guarantee successful direct import of MARC records from all other systems. InfoWorks can successfully and directly import and work with records exported from RLIN and OCLC, the largest bibliographic utilities. According to product literature, it can also successfully import and work

with files exported by Minaret. But, as my test files demonstrated, you should take the vendors advice and send a test file if you expect to use MARC records produced by another system.

Summary

This program is, indeed, very easy to use. It could be suitable for a small online public catalog in a situation where records exported from OCLC, RLIN, or another MARC system were available on disk. Once you have the source files to import, setting up the program requires little or no knowledge of MARC--it is practically "plug and play."

On the other hand, there are very few options in searching, displaying, and printing records. Given present limitations, it would not be ideal for internal collection management in an archives or museum--but that is not what it was designed for.

Is it a bit too simple? As usual, it depends.

Several features would make it a somewhat more complex but much more desirable product for some uses. The vendor has considered some of them, and some may be available as customization options if you discuss them with the vendor at the time of purchase.

1. Keyword searching of any term (word) in indexed fields

I think it is unrealistic to expect OPAC users to know or even to look up exact Library of Congress subject headings before searching. They won't do it. Systems have to be able to deal with any words users can think of that may be associated in some way with what they think they're looking for. This feature would not make the system more complex to the user. As usual, there is a trade-off. Keyword searching would require substantially more hard disk space, and InfoWorks was designed for the small institution with small computer resources. According to the vendor, keyword searching has been considered as an eventual enhancement.

2. Searching on any field

Archives and museum users would want to be able to search on various 5XX fields in particular. This would increase the hard disk storage space required and probably also the time required for record import. The vendor is willing to do some customization on request.

3. Choice of fields for OPAC display

Archives and museums often require information for internal poses that is unsuitable for public display--especially information about acquisition and management actions (generally confined to MARC fields 541 and 583). It would be desirable to be able to suppress display for selected fields and/or subfields. This feature would introduce some complexity for the staff managing the OPAC, but not for the user. Again, the vendor has expressed willingness to customize the display for individual users.

4. Option to include/exclude individual fields in bibliographies or reports, and to sort on any field

The bibliography/report module currently is unsuitable for the kinds of internal management reporting that are typically required in archives and museums. There would be no way, for example, to create a list of the previous year's accessions sorted by donor name (541 \$a) or by accession number (541 \$e). Again, this introduces complexity for staff users, but not for public users.

With some customization by the vendor--adding a few more searchable fields, suppressing display of some fields--InfoWorks could be the right choice for a small institution that has MARC records to load into it.

SOFTWARE NOTES

Museum Multimedia Award

The MUSE Awards committee of the American Association of Museum has recognized several museum interactive multimedia products in its annual judging of the best audio-visual productions of the year. This year's MUSE Multimedia award jury was chaired by Howard Besser (Canadian Center for Architecture). Other members were David Bearman, Roberta Binder, Kathy Garmil, and Steven Gong.

First place was awarded to the New England Technology Group production, "Timeline" installed at the Museum of Tolerance in Los Angeles. The interactive deals with the LA riots following the court ruling in the beating trial of Rodney King and allows users to explore attitudes of hundreds of members of the Los Angeles community at various points in the evolution of events and to view footage on the events as they unfolded. Second place was awarded to the St. Louis Zoo for its production "Exploring Missouri Streams". Third place was won by the Royal Ontario Museum for "Light & Gemstones" which interactively explores how the structure of gems determines the reflectivity and refraction of light.

Other multimedia awards that museums might be interested in applying for include:

- Association of Visual Communicators CINDY Award [CSIL, Jim Griffith, Pasadena Media Center, 1492 West Colorado Blvd., Pasadena CA 91105; 818-449-0006]
- Clio Awards Festival for best advertising industry interactives [CAL, Suite 401, 276 Fifth Ave., New York, NY 10001; 212-683-4300]
- Canadian Academy of Multimedia Arts & Sciences (CAMAS) [302-317 Adelaide St. West, Toronto M5V 1P9 Canada, 416-340-8070]
- National Educational Film and Video Festival [NEFVF, 655 Thirteenth St., Oakland CA 94612-1220]

Networked Multimedia

Stentor, an alliance of Canada's telecommunications providers, has teamed up with kiosk based multimedia information companies in a project at the Canadian National Aviation Museum to access full motion video and sound in addition to still image and text across a network. The project employs PC's on Ethernet LAN running Novell. Audio and video are digitized in MPEG, images are stored in Photo-CD format

and the application was written using Icon Author. The application collects user statistics. In 1994 Stentor will be exploring Wide Area Network access and Video on Demand. The WAN trial test is now running in six locations in Toronto and Ottawa.

Rights & etc.

Total Clearance [P.O.Box 836, Mill Valley CA 94942; 415-389-1531] has been formed to help multimedia producers clear rights. The principal in the firm is Jill Alofs, previously with Lucasfilm Ltd. [For more information, contact Victoria Dickenson, Director of Public Programmes, National Aviation Museum, P.O.Box 9724 Ottawa K1G 5A3; 613-990-5881; fax 613-990-3655]

Multimedia Explosions

- Apple Computer announced Quicktime 2.0 to be available in mid-1994 with MPEG support, 30 frames per second video, time codes and 3MB per second data throughput
- **Graphic Detail** [WestChase One, Suite 500, 4020 WestChase Blvd., Raleigh NC 27607-3942; 919-833-3366; fax 919-234-8635] is advertising its ThumbsUp "Media Resource Server & Database" as an off the shelf

image library for 24 bit color images on Ethernet or Token Ring networks with a JPEG acceleration board.

- **Optimage Interactive Services Company** [Suite 100, 1501 50th St. West, Des Moines IA 50266; 515-225-7000] introduced the MacImagination Pak for CD-I authoring including a Nu-Bus card, which integrates the functions of a CD-I player, allowing the Mac to playback CD-I's from a CD-ROM drive and Media-Mogul authoring software.
- **Saskia Ltd** [2721 NW Cannon Way, Portland OR 97229; 503-520-8855; fax 503-626-1162] has started issuing a newsletter, Cultural Documentation, in which it reports on company projects in creating and publishing digital photography collections on CD-ROM and soon, on the network using Mosaic. Current titles include Old Masters and Greek Civilization.
- **Summit Authoring Systems** [Conceptual Systems Inc., 1010 Wayne Ave., Suite 1420, Silver Spring MD 20910; 301-589-1800; fax 301-589-8932] is advertising the ease with which its authoring tool can support playback under MS DOS or Windows, the fact that Summit for DOS applications can be played back without modification on a Macintosh, the ability to make applications memory resident via the POPUP

delivery program, and the free run-time distribution license available to all developers of Summit applications.

- **VTLS Inc.** [1800 Kraft Dr., Blacksburg VA 24060-6351; 703-231-3605; fax 703-231-3648] has announced that its Z39.50 client now interfaces with WorldWide-Web browsers, such as NCSA Mosaic for MS Windows, with only a simple change in the Mosaic configuration. This gives users the advantage of creating WWW hypermedia links to Z39.50 servers which, can then be incorporated into WWW hypertext documents. The library automation company, which has more than 260 installed sites worldwide, is providing a service that its users doubtless consider a necessary next step in network functionality. Archivists may want to read the announcement carefully for what it implies for their future: "The interface gives users the advantage of creating WWW Hypermedia links to Z39.50 servers, which can then be incorporated into WWW hypertext documents." Such documents are going to be very interesting to deal with as archival objects!

Dallas Museum of Art Online

The Dallas Museum of Art has implemented **Questor Systems** new Public Access Information System in its new 32,000 sq.ft. Education Resource Center as part of a recent expansion. It has also made museum information and digital images available in GIF89 format over the North Texas University gopher site (gopher.unt.edu). [For further information, contact Kevin Comerford, Director of Information Technology, Dallas Museum of Art, 1717 North Harwood, Dallas TX 75201; 214-922-1367; fax 214-954-0174; or via Internet - czbb020@access.texas.gov]

Issues Involved in Using SGML for Data Interchange

David Bearman, Archives & Museum Informatics

Two years ago I prepared a briefing paper for the CIMI committee on SGML. Many people have asked me about SGML and its suitability for archives and museums since then. To make the information more widely known, the text that follows reprints parts of that briefing. I think it is increasingly relevant to cultural documentation to look to methods of "marking up" existing information resources rather than to making surrogate records or catalogs of all the objects of our heritage. The value of making documentation which already exists in literature, research files, card catalogs and the full-texts of the documentary objects themselves available for research far exceeds the potential value of creating new records, and could be realized for a tiny part of the cost of retrospective cataloging.

Data Comprehensiveness

SGML can accommodate any length of data (the OED was tagged with SGML) and any data formats. It carries data represented in other standards and therefore can accommodate both the specific raster, vector and sound standards which CIMI has adopted (CCITT G4, CGM, JPEG, IGES, CD quality digital sound) and any future standards. HyTime, an extension of SGML currently under development as an international standard, can accommodate hypermedia and the synchronization of sound, motion image, graphics and text which is required for linear multi-media.

SGML has the inherent capability of marking intellectually significant shifts within data streams, not just the data streams themselves. Thus,

SGML can mark the usage of a proper noun or foreign language term in a text, background and foreground noises in a sound track representation, active buttons in a hypermedium or captions in a cartoon, in addition to and at the same time that it marks fields in a textual database. Thus, an SGML tagged data stream can indicate when data is part of a different field, and within that field whether it is of a logical type which the receiving system might define as to be indexed, output in a special font, linked actively to a system function, etc.

Software Requirements/Availability

SGML tags can be output by virtually any database management system without programming and can be added to any word processing file without programming. SGML editors, which are word processors that automatically put SGML encoded tags onto output files, are available commercially for about \$1000. In the past several years they have begun to approach in functionality the quality of WordPerfect and similar software. In addition, the major word processing vendors are working on versions of their systems which will have SGML tagged output as a standard option, just as they now provide for output in a variety of page definition languages. Software to mark up multimedia objects in SGML has not yet reached the commercial market, but standard SGML editors allow for carrying multimedia objects that are not internally marked up.

When input to a receiving system, SGML is read by an SGML parser, a piece of software which recognizes the SGML delimiters (classically these are angle brackets, but they could be anything) and checks to see that the usage of these conforms to the rules of the DTD (which can be sent with the communication or registered outside the transaction). SGML parsers are available for all types of operating systems. Some are in the public domain, others cost about \$1000 although this usually includes an SGML editor (word processing system) as well. Published projections on SGML software suggest that both word processors and database management systems will increasingly be equipped with SGML editors and parsers.

Development and Maintenance Effort

SGML is a fully developed standard which the archives and museum communities could use for data interchange without having to go through any further standards acceptance process.

To use SGML effectively for interchange of its data, the archives and museum communities would need to define their own Document Type Definitions (DTD's), which are content specifications for particular purposes. These DTD's would establish the tagging conventions to be used by these communities, and could easily also be constructed to accommodate the American Association of Publishers (AAP) tag set for modern documents and the Text Encoding Initiative tag set for ancient documents. The advantages of incorporating these other tag sets are discussed later.

The definition of a tag set is a non-technical task. The major challenge is to reach consensus in the user community about which elements of information should be identified as logically distinct from others.

There is no external body responsible for the maintenance of SGML DTD's and none is required. The museum community could determine on its own the degree of coordination desired between DTD's developed by different sub-communities, after CIMI established a general framework for art, history and science data and demonstrated its extensibility to the needs of conservation and exhibit loan.

Usability

SGML markup labels data with easily recognized delimiters. This does not involve any concepts which archives and museum staff would find confusing and SGML tagged data is easy to read.

However, the use of SGML to mark logical elements in data is a novel concept to most people who are comfortable with the concept of physical markup. The ability of SGML to provide for logical markup is one of the most compelling reasons to use it, so it is worthwhile trying to explain it here.

Markup languages have been used in typesetting for centuries. Typographers mark segments of text to indicate its placement, size and font. Thus we might mark the title of an article in a way that indicates 40 point Gothic bold type and the name of the author in a way that indicate 24 point Gothic bold type. If the markup physically drives the typesetting, we could use `<40Gb>` and `<20GB>` as labels or tags. But imagine that we want to produce not only the journal, but also a table of contents and an index, and that our choice of the typesetting fonts and sizes for the title and author will be different for these than they were in the layout of the article. Then we might tag these text segments as `<title>` and `<author>` and write a

separate typesetting routine which says that these tags are one size in the table of contents, another in the article layout and a third in the index. We have now separated the logical markup from the physical markup and are entering the realm where SGML shines.

Now we can begin to use logical markup to make rules for data interchange. We could say, for instance, that citation to a published article must include `<author>`, `<title>`, `<journal>`, `<volume>`, `<year>`, `<pages>` and specify the order of these elements. Now we have a Document Type Definition (DTD) for a citation. Because we might want to manipulate the author's name for the purposes of the index, we could further specify that the author element may consist of logically marked data indicating author's last name and author's first name.

In the SGML DTD, the fact that the author's name may have first and last name elements does not require that it have these elements, but it does mean that the last name element could not be present except within the author name element. Thus, the citation will parse satisfactorily if the name is written out either as `<author> John C. Jones <author>` or as `<author> <first name> John C. <last name> Jones <author>`. This feature of SGML allows us to use it to define the most complex breakout of data required by a discipline using the DTD, while allowing others with less complex requirements to use the same DTD. For example, a museum which specializes in photography might identify dozen of physical characteristics of the photograph which it felt needed to be logically marked (e.g. separately identified). Other users would be satisfied by indicating the form alone (negative, print, Daguerreotype etc.). Each could use the same DTD because the elements for emulsion and film type would be allowed only within the description of the photograph but not required. The DTD for museum data could allow some museums to identify the geological strata and location on an archaeological site in which an artifact was found while others recorded the provenance by simply recording the country of origin. A properly defined DTD would recognize that the archaeological site need not even be located entirely within one country.

Implications for Telecommunication Protocols

SGML encoded documents are no different from mail messages in telecommunications system. They can be transmitted using existing x.400 protocols or exchanged as files on any medium. When opened, an SGML

document consists of ASCII text and the files for sound, image, graphics, CAD/CAM, motion image etc., which are encoded in whatever standard representations are used widely in the commercial sphere. No special software or networks are required to manage them.

Other Benefits and Drawbacks

Perhaps the greatest benefit of SGML is that it was developed for just the kinds of applications most prevalent in museums - the movement of a combination of structured and unstructured data into a large variety of different output products with a minimum of added effort. SGML would enable museums not only to store and interchange their data efficiently but also to generate printed and electronic products for a variety of different purposes from a single data file. The in-house definition of a variety of output formats would enable a museum to automatically make schedules, catalogs, timelines, exhibition hanging lists etc. from data that could be exported in SGML. Demonstrations of these capabilities, including those associated with multimedia and hypermedia tools, are inevitably the greatest selling point for SGML. A related benefit of SGML is that instructions can be given to publishers and printers in SGML or other page description languages without any new encoding, especially if the museum DTD incorporates the AAP DTD, which it probably should for unstructured texts.

A secondary benefit of SGML is that logic checking for SGML encoded data can be conducted automatically using off the shelf parsers. Such logic can force the recording of missing data (USA is the implied value of country when zip code is present) and correct inaccuracies (certain state and city values correspond to given zip codes.) It can also be linked to external files, such as thesauri and terminology lists assigned similar logical structures, for authority control.

A tertiary benefit is that full text data marked in SGML can be searched as if it was fielded, saving much effort and time and improving searches dramatically. For example, we could search for Arizona in the SGML tag area for the provenance of the object without picking up Arizona as the place of residence of the donor, the name of the tribe of the artist, or the site of a traveling exhibition in which the piece was displayed (to say nothing of the name of a ship in Pearl Harbor on December 7, 1941.

A final benefit is the existence of visual recognition engines attached to scanners which allow for the location of elements that might have SGML tags even if they cannot be optically recognized and translated in ASCII.

SGML is not without its drawbacks and detractors. It has been slow to earn recognition as more than a language for typography, in part because its name suggests that it belongs to a family of markup languages rather than to a logical and generalizable data interchange language. The adoption of SGML by the CALS initiative (See *Archives and Museum Informatics* 5, Winter 1991:5-10), however, has speeded the development of off the shelf tools and of integrated technical solutions employing SGML.

SGML is also being challenged by another standard, Office Document Architecture/ Office Document Interchange Format (ODA/ODIF, often referred to simply as ODA) which does everything SGML does and more. Unfortunately ODA is at an early stage of adoption, and because of its intrinsic complexity many people doubt that tools for ODA will ever really be developed. If they are, in a decade or more the museum community could easily transfer to ODA without losing the benefits of SGML logical tagging of its data, and without taking the risk of endorsing something today which does not have any practical means of implementation.

SGML use means abandoning ISO 2709 and MARC as an interchange approach. ISO 2709 data can, however, be represented in SGML at the field and subfield level, gaining for the data all the benefits relating to output to other formats and printing of other materials that would be present for SGML. SGML can also be used to send and receive MARC documents as they are by simply defining a tag for a MARC record and placing the entire contents of the 2709 record, fully encoded, within that tag.

Multi-Level Description

David Bearman, Archives & Museum Informatics

This note continues the discussion initiated at the Association of Canadian Archivists and Society of American Archivists meetings in Montreal in 1992 and continued in the last several issues of this journal. At the 1992 meeting, Hugo Stibbe explained the way in which Canadian archivists expected to represent "multi-level description" in RAD records was essentially the same question I asked of SPINDEX ten years earlier: What advantages were there to defining special record contents for each level of description, and what was the logical relationship between levels which justified the hierarchical organization of these records rather than simply providing for links between contents of fields in one record and another in the manner of a straightforward relational database? The disadvantages of the hierarchical linkages between records which needed to have different contents defined for them are substantial: they add to the complexity of the database, introduce problems in searching, and creates expectations of inheritance which are unfulfilled.

So what is the use of hierarchy in description anyway? Certainly it is to be able to associate attributes of a lower level entity with those of a higher level one in a meaningful way, so as to be able to avoid redundant description at each level. How does fonds as a highest level of archival description do this? In my opinion, very poorly and in a misleading way at that.

As a general rule, hierarchy is valuable in representations of reality when the properties of things lower in a hierarchy are directly inherited from those higher in the hierarchy. Thus we understand that it is very useful to know that dogs are mammals because it saves us having to say of them that they have hair or give birth to live young. And it is equally valuable to know that a cocker spaniel is a dog since it inherits all the characteristics of canines. It

is not very useful to represent attributed, as opposed to inherent, properties in hierarchical relationships. Knowing that I own the cocker spaniel doesn't tell us anything about the dog except that I own it. We can't even be sure it lives where I do.

It is useful to extend this principle to our description practices. In the Art & Architecture Thesaurus we have an example of an exceptionally useful hierarchy of materials for anyone describing materials in order to plan their conservation, exhibition, or storage, which is, after all, the point of describing material composition. From this hierarchy we know that sitka spruce is a variety of spruce, which is a softwood like cedar or pine, which is a wood, which is a plant material, which is in turn an organic material. As a consequence, the sitka, like the dog, inherits properties from the class to which it belongs.

Inheritance is not limited to biological taxonomies. In a different hierarchy of the AAT we discover that a squinch is a kind of arch, distinguished by its location or context rather than its form, while a counter arch is distinguished by its function and a corbel arch is distinguished by its form of construction. These are all spanning and projecting structural elements which are architectural elements. Spanning and projecting structural elements share properties which they inherit from being members of this class.

These hierarchies are useful because they tell us some things about the lower level entities which are inherited from properties of the higher level entities. But compare the value of these hierarchies with what is achieved if we build a hierarchy in which spruce is a species of tree in the Monongahela National Forest which was administered by the National Park Service. While this hierarchy might be equally true, the nature of the relationship between levels (attribution rather than whole/part relations) makes it impossible to say anything useful about conserving a spruce object. The properties of spruce which are relevant to its management are not based on provenance. Without beating a dead horse, the same goes for the arch if it is in the same forest. Nor are there any useful things we can say about the arch and spruce based on this "relationship" except that they are both found in the Minnesota Forest which is what the attribute "provenance" means. We might just as well know that each was cited in a book on the Minnesota Forest by John Doe; surely another relationship, but again one across which no inferences of any use about the spruce or the arch can be made.

In an organization, activities such as recording orders are part of larger processes like fulfillment which in turn are part of a process called retailing which is part of a function called sales. We can use this knowledge to understand inherent aspects of the order recording activity and the role of the record called an order in documenting transactions of this type. But Canadian archivists are arguing for a hierarchy based not on function but on structure of organizations where the fonds is the highest level entity in a multi-level description. Belonging to the fonds, which involves having been created or received during the course of existence of the agency, does not create a hierarchical relationship between things in the fonds. Yes, they are all (circularly) part of the same fonds. So what? We cannot say anything meaningful to connect the personnel recordkeeping system of fonds A to that of fonds B by knowing this. We cannot judge how to appraise, manage, document or retrieve from them. The dates of creation of the fonds (an agency) don't even necessarily bear any relationship to the dates of creation of the records, just as the date of founding of the National Forest doesn't help us to date the trees. It is knowledge that the tree is a spruce, and 54" in diameter, that gives us a very close approximation of its age and height.

Don't get me wrong - I am in no way saying that records are not a product of transactions undertaken in concrete circumstances. I am not eschewing provenance. I am trying to locate the representation of provenance in such a way that it can do useful work as an hierarchical descriptor. Representations of reality don't alter reality - the dog has just as much hair whether we know it by its being inherited from its "mammalness" or its "cocker spanielness", by its being stated within the record for my dog, Joey. What is different is whether the representation does useful work. In constructing information systems, representations of reality are what we are manipulating, so the way that reality is represented determines what we can do with the data. Building "hierarchies" in which fonds or record groups are at the top with sous-fonds and sub-groups beneath them, series under that, followed by folders and records, is like representing a city as having postal districts, within which are the neighborhoods, which have apartment buildings in which are floors. None of the properties of floors, apartment buildings, neighborhoods, or postal districts are inherited from cities.

The way to represent archives in descriptions that use the convenience of hierarchies is to seek inherited properties that are meaningfully related to the work we do. This requires us to represent recordkeeping systems and

organizational functions in our documentation, not fonds or records groups. Organizational functions (missions, business areas, processes, activities, and ultimately transactions) are directly related to why records are created and the work that they do as evidence, and are relevant to every aspect of appraisal, documentation and access. Recordkeeping systems (corporate filing schemes, registries, and series) are directly related to how records are used in their active life and what meanings they have. Traditionally, we referred to the meaning inherent in "arrangement" (a property of the recordkeeping system), while we now tend to associate it because of electronic systems with "functionality", "permissions", or "views", which are likewise properties of the recordkeeping system. Thus, representation of archival holdings or active records as belonging in hierarchies organized around functions of organizations or of systems buys us inherited attributes and gives us powerful intellectual tools, while representation of records as belonging to hierarchies of structures of organizations (fonds, offices) or of systems (boxes, folders) buys us accidental linkages with no more power than is obtained by recording the fact of their being the source or the current locus of a record in a field without such "hierarchical" relations.

STANDARDS NOTES

Deja vue All Over Again

The Canadian archives community apparently is going to be allowed to experience the same silly battles we had in the U.S. over standards. The ACA Bulletin in January 1994 carried an article expressing concern that the Canadian Council of Archives was likely to try to use its funding powers to enforce the use of the RAD standard by archives receiving its funds. Instead of asking why have funding agencies if they won't enforce best practices, or why have a standard of practice if the funding agencies are going to subvert it, the Bulletin editor chooses to give the concern credence. The reason for standards is to follow them. That's what professionals do. If you don't like the standard then change it. Or live without official blessing and money.

Getty AHIP Vocabularies

The Art & Architecture Thesaurus, 2nd edition in 5 vols. and the Authority Reference Tools (AAT:ART) version 2.0 (New York, Oxford University Press, 1994) Print edition, including the Guide to Indexing \$375; Electronic Edition single user \$195; network license \$475; combined print and

electronic \$570 (demo version free from 212-679-7300 x.7370). The new edition of The Art & Architecture Thesaurus contains twice as many terms and descriptors, half again as many hierarchies and is as "complete" as an on-going reference tool ever gets. The AAT is now available in revised print and electronic editions for a reasonable price. What more is there to say except, use it?

The Union List of Arts Names in the ART reference tool and in book format will be released by G.K.Hall in the spring. [For a demonstration diskette of the ULAN, contact the Getty, Jim Bowers, VCG, AHIP, 401 Wilshire Blvd., Suite 1100, Santa Monica CA 90401]

The Thesaurus of Geographic Names gathers 300,000 contemporary and 15,000 historical place names into hierarchical structures. It will appear on CD-ROM in late 1994.

Archaeological Data Interchange

The Archaeological Institute of America has endorsed the Archaeological Data Archive Project of the Center for the Study of Architecture at Bryn Mawr. The principal goal of the project is to provide a long-term repository for excavation information which includes

data sets from DBMS's, CAD, GIS and other special data types. In order to function, the project must, of course, develop some standards, or standard frameworks for interchange of archaeological data. The search for standards has just begun. [For further information or to participate, contact Harrison Eiteljorg II, CSA, Box 60, Bryn Mawr, PA 19010; 215-526-7925; or on the Internet: neiteljo@brynmawr.edu]

AACR2 Revision for Art Reproductions

An initiative in the United Kingdom has proposed changes to the Anglo-American Cataloging Rules 2nd ed. to accommodate cataloging art reproductions. The proposal to the Library Association/British Library Committee is reprinted in full in the *VRA Bulletin* vol. 20 (Winter 1993): 19-27. The rules would apply to slides, prints, photoCD and videodisc images with emphasis, regardless of reproduction medium, on the original art work reproduced. This of course introduces the first problem with AACR2, which instructs that description should be based on the 'work in hand'. Other problem areas include assigning a title where none has been given, anonymity of creators, multiple images of a single original, and need for a copyright

notice. Lesser modifications would probably be required for description, choice of access points, uniform titles, addition of location following title, and information about editions.

The debate is likely to move into the U.S. and the AACR2 revision process.

SAA Guidelines for Master Degree

The SAA Standards Board has published the final draft "Guidelines for the Development of a Curriculum for a Master of Archival Studies Degree", asking for comments on the process by which it was adopted. Presumably if they think the process was fair, they will recommend adoption by the Council. The only interesting question, is what do the Deans of schools that might plausibly want to implement such a program think has been left completely out of the deliberations.

Application Portability Profile Version 2.0

The latest edition of the U.S. Government's Open Systems Environment Profile (OSE/1 Version 2, June 1993) definition of application portability profiles for open systems is available from the Superintendent of Documents,

Washington DC 20402 for \$6.50; cite order # SN003-003-03222-1.

E-Mail Guidelines for the NSC and EOP

The National Security Council and the Office of Administration, Executive Office of the President have issued revised guidelines for White House management of electronic mail communications in response to the rulings in *Armstrong v. EOP*. The new guidelines require employees to determine the record/non record status of each communication at the time of creation or transmission, to request read receipts when it is important to confirm receipt, and to print and file read receipts and calendar authorizations. All other actions will be taken automatically by the staff of the records management divisions. The EOP guidelines formally define the concept of recordkeeping systems and distinguish between the electronic mail application and the recordkeeping system.

Collectively these three sets of guidelines represent a major step forward in White House, U.S. government and general records keeping practices and should be studied carefully. Each of the guidelines is well over 25 pages of double-spaced type; anyone inter-

ested in these will obviously want to obtain the policies themselves. *[For more information contact William T. Itoh, National Security Council; Director, Office of Administration, Executive Office of the President]*

Canadian Museum of Civilization Joins CIMI

The Canadian Museum of Civilization, which is currently collaborating in a range of high technology projects with DEC and Kodak, has agreed to join the CIMI Consortium to further its agenda of defining mechanisms for data interchange. John Lomoro, New Technology advisor to the museum and a principal staff person in the Digimuse project, is the contact for the museum. *[For more information contact jlomoro@muse.cmc.doc.ca]*

RAD Update

The Bureau of Canadian Archivists has distributed an update (March 30, 1994) to its Rules for Archival Description, including a revision of Chapter 1 and an updated Glossary. *[For further information, copies or to comment on the current version contact: Kent Haworth, Chairman, The Planning Committee on Descriptive Standards, c/o National Archives of*

Canada, 344 Wellington St., Room 5078, Ottawa K1A 0N3]

Semi-conductor Industry SGML DTD for Standards

Semiconductor Equipment and Materials International (SEMI), the trade association of the semiconductor industry, has demonstrated an on-line documentation development and delivery standard based on SGML. The standard will enable SEMI to manage dozens of standards development working groups and the numerous versions of their documents from the inception of a standards development activity through approval and dissemination of the standard. The SGML database for standards, developed by Michael Vulpe of Infrastructures for Information in Toronto, has the potential of transforming standards development practices for IEEE, NISO, ANSI and other national and international standards development bodies. If they adopted the software, such groups would be enabled to conduct their discussions and votes electronically, which could speed up the overall process while reducing staff overheads. *[For more information contact Scott Young or Vicki Hadfield, SEMI, 2000 L St. N.W., Suite 200, Washington DC 20036; 202-457-9584; fax 202-659-8534]*

Universal Data Element Identifiers

The Defense Center for Information Management (CIM) is circulating a document entitled the NDAC Management Plan for Integration of External Data (Sept. 30, 1993), which outlines a strategy for improving data shareability based on developing a taxonomy for tagging the 5-10,000 data elements which are common to most organizations. The approach is thought to also be a means of developing a set of common "data solutions" that could be shared across dissimilar organizations. The proposal is tied explicitly to the Clinton Administration's Reinventing Government initiative, and calls for the creation of a National Data Administration Council (NDAC) to be led by CIM (a branch of the Defense Information Systems Agency).

The concept is that aliases in use throughout the public and private sector would be voluntarily registered and aligned by NDAC with data elements defined according to the National Institute for Standards and Technology Guide on Data Entity Naming Conventions [NBS Publication 500-149] and the ANSI X3H4.4 Naming Convention Verification Methodology by the NDAC. Data elements thus registered would be given the

Universal Identifier of the data element with which they were synonymous. The proposal suggests eight "Prime Words" (a sort of macro-entity class) Document, Enterprise, Program, Product, Process, Human, Asset, Law/Rule. Something tells me we will end up with prime words which are similar to those suggested by Ranganathan forty years ago! *[For more information, contact Dennis Van Langen, Defense Center for Information Management (DISA-JIEO (CIM)), Data Administration Program Management Office; 703-285-5381; vanlangd@cc.ims.disa.mil]*

Interactive Multimedia Association

In the March 1994 issue of **Multimedia Monitor**, Brian Marquardt, Director of the Interactive Multimedia Association Compatibility Project, reports on a variety of IMA standards activities.

A Multimedia Data Exchange Request for Technology is moving towards adoption as a recommended practice (expected next fall). In conjunction with the data exchange recommendation, IMA will establish a data type registry, replacing existing registries at Apple, Microsoft and Avid Technology, thereby allowing a multimedia developer to register new

data types in a single place and receive widespread recognition and acceptance of their data type.

Another group is working on a RFT to enable various proprietary Digital Signal Processing software to communicate with any application. The proposed API would virtualize access to difference DSP's. A third effort, which led to a Recommended Practice for Multimedia Portability (v.1.1) adopted 12/90, has made possible the interoperability of DOD courseware. It is currently supported by products from six vendors. A fourth effort, to develop Recommended Practices for Digital Audio Portability (v.2.14 - 11/92) is supported by more than a dozen firms, incorporated into the MPCII specification, and under consideration by the Internet Engineering Task Force.

Finally, and most important, the Interactive Multimedia Association Architectural Reference Model, Revision 3.1 (11/92) previously available only in the IMA Compatibility Project Proceedings, is reprinted in full as an extended sidebar in the **Multimedia Monitor**. The central concept is to enable a "Multimedia Digital Data Stream Interface which is device independent a a consequence of building on application compatibility layer and system compatibility layer services. A must read for systems architects.