

# ARCHIVES AND MUSEUM INFORMATICS

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*Cultural Heritage Informatics Quarterly*

VOLUME 8 • NUMBER 3 • 1994

**Archives and Museum Informatics**  
*Cultural Heritage Informatics Quarterly*

Volume 8 Number 3 1994

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*Archives and Museum Informatics: Cultural Heritage Informatics Quarterly* (ISSN 1042-1467) is published by Archives & Museum Informatics, 5501 Walnut St., Suite 203, Pittsburgh PA 15232-2311; (412)683-9775, fax 412-683-7366.

The journal is edited by David Bearman, whose authorship may be presumed for all items not otherwise attributed.

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## **Copyright is the Regime We Want, Let's Not Sacrifice It**

The debate over intellectual property protection in the electronic environment has heated up substantially in the United States with the submission of the NII Task Force recommendations for changes in the copyright laws (see "Intellectual Property Task Force Draws Comment" on page 268 of this issue). Several stories in this issue, and the end note by Christine Steiner, testify to the importance of the issue. I believe the public policy questions will be resolved one way or the other in the next twelve months, and I am concerned that the attitude towards fair use being taken by many individuals and organizations in the library and academic communities will result in their winning the battle and losing the war.

Let me explain why I am worried. In my opinion, creators and distributors of valuable information will choose to make that information available under terms that ensure them an adequate amount of control and an adequate reward. Copyright has served well for published works in this regard in the past and patent protection has worked well for ideas. The new technologies for transmitting information and digital copying seriously threaten the publishing community because many users, including much of the library and academic community, are insisting on the concept that they can make copies of digitally transmitted publications without payment of fees to authors under the terms of the "first sale" doctrine and "fair use" exemption of the copyright law. The effect of insisting on this so-called "right" to date has been to make publishers, authors, image creators, and others with intellectual property rights reluctant to give permission to convert books and images into digital form at all.

I am convinced from my experience monitoring multimedia product development in the past few years that unless we give up the concepts of first sale and fair use under copyright, we will be the victims of them. We will continue to see virtually all digitized intellectual property seek other regimes of protection, such as licensing, patents, and trade secrecy, that are much more restrictive than copyright. In the end, we will drive the good information into protective regimes that will not be available to the general public and defeat the first purpose of copyright which was to enable the public to benefit from knowledge created in the society.

The superficial virtues of the idea of fair use, and the power of the academic and library communities in this debate, are unfortunately likely to carry the day and preserve some arena of use that is outside of protection under copyright. Because of the impossibility of monitoring use in an environment where some unauthorized copying is permitted, and the attitude of certain sectors of the buying community that their uses are exempted, publishers and rights holders will seek other forms of protection. The Museum Educational Site Licensing project, with which I am deeply involved, is one such mechanism that I hope will succeed in defining a social contract that can ensure the availability of huge collections of digitized museum information to universities and schools. Given the current environment surrounding digital use of copyright material, I think this project is essential in part as an experiment at funding the continued digitization of our cultural heritage and making it available under contract, but note that museums are not relying on the copyright regime, but on licensing.

The critical difference between copyright and contract has received less recognition than it should. Libraries acquired copies of works to make available to their users. Under the first sale doctrine of copyright they owned that copy and could do with it as they liked. For the reasons argued by the NII Task Force, the first sale doctrine is not acceptable in an environment where a user can make hundreds of copies of information "purchased" electronically and transmit them to colleagues. If each transmission or other act of copying that results in creation of an additional physical representation is not considered a copy for which fees are payable to the copyright holder, information will cease to be "sold" under copyright. Under licensing agreements or other contracts, licensees do not "own" copies in their possession. Their use of the copy is restricted by the terms of the licensing agreement. Owners of the information (the publishers or creators) can withdraw the information at any time. Libraries will find that they can no longer provide access to content that was available from them last year. Collections development takes on a new cast!

Libraries and academics have argued that they cannot afford such a regime. This argument strikes me as both irrelevant and wrong. It costs a library nearly \$x (a figure which, depending on what study we use, is around \$100) to place a book on its shelf if we include the purchase price, binding/labeling costs, and cataloging. The average book has y users over its life (and y is a very small number!). Thus the cost of lending the volume is approximately \$100/y. The cost of each interlibrary loan transaction, according to a recent ARL/RLG study, is \$30. Electronic publication reduces acquisition and binding costs to virtually nil and could eliminate cataloging too. (Indeed, one consideration is that in an electronic environment publishers might pay libraries to include their works in the library online catalogue, and pay extra for the library to place more complete cataloging, with addi-

tional tracings, in their system; after all, they will only receive payments for works that are borrowed).

Electronic access to publications is not going to greatly impact the number of users over time. It does not change the value of the work. Thus there is no reason to believe the price of a copy will not continue to be set at close to \$100/y. The difference is that the "purchase price" will be paid over time, on the basis of royalties for use. There is no public policy reason why public libraries could not pay these costs on a per use basis. No law says that they have to charge users now that the cost is being incurred at the time of use rather than at acquisition. In theory academics pay the Copyright Clearance Center for copies of articles and books they make for distribution in their classes or for any other reason other than personal study. Now that copies are available immediately there is no longer an excuse for not paying royalties simply because the article was published in yesterday's newspaper or encountered after the reading list was drawn up. There is no reason why an electronic version of such payments should have to be passed along to students, unless of course universities have been avoiding legitimate payments under the guise of fair use.

I hope that the users of information, and particularly the organized interests such as libraries and academics who will influence the changes being made in the copyright law, realize that the moment is critical. In the past few years we have seen increasing quantities of current and valuable information seek protections outside of the copyright regime. If the regime is not strengthened to meet the requirements of rights holders, the fair use proponents are likely to win a very hollow victory. We will all suffer greatly if contracts, patents, and trade secrets control a larger and larger proportion of information in electronic form. As the announcement by the Library of Congress of its intention to digitize five million items in its collections over the next five years demonstrates, the digital universe will consist predominantly of items that are out of copyright unless an equitable agreement is reached to revise the law. Archives and libraries hoping to make their holdings available digitally will be shortsighted indeed if, by succeeding in getting permission to make digital copies without recompense to rights holders, they end by starving themselves of all future copyright-protected materials and find that they are only able to obtain new holdings under license agreements. And that is, I'm afraid, where we will end up without compromise.

David Bearman, Editor

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## LETTER TO THE EDITOR

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### From Luke Gilliland-Swetland, Head, Research and Access Programs, Henry Ford Museum & Greenfield Village

David Bearman's recently published *Guidelines for Protecting Intellectual Property* (Vol.8 #2) provides those of us in the field with a much needed overview of the essential points that should comprise an institution's approach to protecting and making accessible its physical and intellectual assets. Speaking from the perspective of one who negotiates access to and use of the holdings of a large history museum on a daily basis, I would like to support, reiterate, and expand upon several of Mr. Bearman's points.

At Henry Ford Museum & Greenfield Village, we have, for several years now, worked with an intellectual property attorney who reviews both particular use agreements and provides opportunities for open discussions with Museum staff who find themselves negotiating use of the organizations's assets on a regular basis. While I am not qualified to offer legal counsel, I can respond to particular points in the *Guidelines* based upon discussions I have had with our attorney.

I would suggest that it is not enough for an institution to only consider copyright law in negotiating use of its assets. While copyright provides perhaps the most powerful form of protection to the individual or organization holding it, property laws and contract laws also provide mechanisms for museums to control the use of their assets. These latter forms of protection are especially important in history museums where many of the items in the collection are in the public domain as far as copyright is concerned, yet the museum still wants to control the use of those items. Conversely, a museum must understand what restrictions on use (e.g., donor restrictions, trademarks, rights of publicity and privacy, patents, etc.) a particular artifact carries with it, before it can effectively and legally negotiate the use of that artifact.

Unfortunately, it is unclear to what extent an institution can rely upon its "Use Agreement," which is a form of contract law, to preserve the kinds of exclusive rights which are granted under copyright law after the copyright period has expired. We do get many patrons who question our restriction that they not further reproduce or distribute copies of out-of-copyright materials which we provide to them. On the advice of our attorney, we respond to these questions not by focusing on our legal rights to restrict the use of our property (because these are exactly the restrictions that may not hold up in court), but by justifying those restrictions in terms of our responsible stewardship of cultural resources: for example, by asking every patron to obtain their copies from us we can insure that current and correct

contextual information is provided, that the copies are authentic, etc... The point here is that if we should ever find our restrictions challenged in a court of law, we stand a much better chance of coming out a winner if we can demonstrate that our reason for imposing those restrictions derives from our basic educational and cultural mission to assist patrons rather than from our attempts to restrict use of public domain materials for our own financial benefit.

In a similar vein, Mr. Bearman suggests in his *Guidelines* that an institution never grant "exclusive, perpetual, or transferable rights." I would suggest that an institution should further restrict rights to a "one-time" use only. Increasingly, clients are asking us to grant all rights in all technologies both known and unknown in perpetuity; these requests are simply not acceptable. At Henry Ford Museum, our "one-time" restriction, requires clients to apply and pay for additional or subsequent uses of images every time they wish to re-use that image in a different edition, format, or platform. Again, we would argue that our "one-time" restriction provides us with a mechanism that enables us to provide the most current and accurate information about the image being used.

Mr. Bearman suggests that part of an institution's approach to protecting its intellectual property involves alerting visitors to the restrictions on the use of any photographs they may take during their visit. We have just recently posted notices encouraging visitors to take as many pictures as they like while reminding them that uses other than personal viewing require the written permission of the Museum. Unfortunately, we only posted those notices after we discovered a number of cases where visitors had used their personal photographs in a number of editorial, advertising, and commercial applications without our prior permission and without the payment of any use fee. We believe that our notices now provide us with some legal recourse in the event we discover future infractions.

Interestingly, we considered, but ultimately decided against, requiring all visitors wishing to take photographs to sign an agreement at the door. We felt that visitors would probably universally respond negatively to such a requirement. This is a good example of how the expectations of visitors to history museums differs from their expectations when they visit other museums, particularly art museums. I suspect that visitors to an art museum would be more likely to agree to sign such an agreement because they understand the "value" of art; visitors to a history museum are less likely to understand the need for such restrictions because historical artifacts are not usually viewed as "valuable" in the same way as are works of art.

The unclear and ever-shifting legalities involved in all of these policies reinforces our shared need to maintain an active discussion of these issues within our institutions and with the assistance of qualified legal counsel. With his *Guidelines*, Mr. Bearman has helped us to initiate this dialogue; we all must continue it.

## Preserving Evidential Value in Geographic Information Systems<sup>1</sup>

Daniel Jansen, National Archives at College Park

With roots in 30 years of work, geographic information system (GIS) technology is not new. However, in the last few years its use has exploded. The Office of Management and Budget recently estimated that federal agencies spend \$4 billion annually to manage their geospatial data.<sup>2</sup> Perhaps more importantly, organizations that once employed their systems to monitor and analyze existing geospatial conditions, essentially inventory functions, are now engaging in complex map analysis and modeling that was never before possible or even considered. Accompanying this evolution in GIS applications are numerous efforts on the part of users to better document their geospatial data. The best example of this, the recently implemented Spatial Data Transfer Standard (SDTS), promises to facilitate the transfer of spatial data and thus ensure the preservation of its informational value. Although the spatial data user and archival communities have agreed upon the need to preserve the informational value of spatial data, neither has adequately addressed the issue of evidential value in a GIS. In this paper, I

1 This paper was written as a training assignment for the National Archives and Records Administration's (NARA) Archivist Career Training Program, formerly called the Career Intern Development System (CIDS). The paper originally referred throughout to NARA, but because it is generally applicable these references to the agency have been changed.

2 Federal Geographic Data Committee (FGDC), "The 1994 Plan for the National Spatial Data Infrastructure: Building the Foundation of an Information Based Society" (Washington, DC, March 2, 1994): 23. National public expenditures on GIS could be as high as \$7.1 billion annually. See Lisa Warnecke, "A National Approach to Geographic Information . . . Will 1994 Make the Difference?" *Government Imaging* 3 (March/April 1994): 21.

will make a case for evidential value in a GIS and investigate the options archivists have for its preservation.

The first generation of GIS combined computer mapping and database management techniques to organize, update, and query spatial and related non-spatial data. As GIS expert Joseph Berry described such a system, "You use your computer to link your file cabinets to your map sheets -- it's automation of your daily routine."<sup>3</sup> As a result of increasing quantification of GIS map analysis procedures and a general movement away from fitting information systems to business methods rather than vice versa, the new generation of GIS has moved from mapping and basic data management to innovative types of geospatial analysis and data modeling.<sup>4</sup> As more organizations apply their GISs to these activities, the systems have become as valuable in supporting policy decisions as they had once been in map-making or spatial data management.<sup>5</sup> Berry notes:

A GIS takes us beyond mapping to application modeling. Our attention increasingly focuses on the considerations embedded in the derivation of the "final" map. The map itself is valuable, but the thinking behind its creation provides real insights for decision-making. From this perspective, the model becomes even more useful than the graphic output.<sup>6</sup>

3 Joseph K. Berry, "Coming to Terms with Terminology," *GIS World* 6 (July 1993): 2628.

4 "This movement away from using GIS 'to do familiar things better' towards employing it to 'assimilate data in ways for which there is no human analogue' was identified as early as 1990. See National Research Council, Mapping Sciences Committee, *Spatial Data Needs: The Future of the National Mapping Program* (Washington, DC, 1990): 18. In the same year, another study listed some of the federal bodies that use their GIS technology for complex analysis and modeling applications. These include Department of Energy (DOE) agencies such as the Bonneville Power Administration (BPA), which employs GIS for "environmental impact analysis and prediction"; and Lawrence Livermore National Laboratory, which uses it for "atmospheric modeling and radiological emergencies." For others, see Federal Interagency Coordinating Committee on Digital Cartography, Reports Working Group, *A Summary of GIS Use in the Federal Government* (Washington, DC, 1990): 5-9.

5 See Daniel L. Falbo, Lloyd P. Queen, and Charles R. Blinn, *Introduction to Data Analysis Using Geographic Information Systems* (St. Paul, 1993): 10-11.

6 Joseph K. Berry, "GIS Mirrors Perceptions of Decision Criteria," *GIS World* 6 (February 1993): 28-29.

Informational value exists in such a system's spatial data, but archivists should be aware that a system employed in a decision-support capacity will also possess evidential value beyond that located in the data. Proof of the "organization and functioning" of the system, the traditional definition of evidential value, is not found solely in the spatial data but in the system itself.<sup>7</sup>

How should archivists ensure the documentation of such GIS activities? The option at one extreme is to select hardcopy output of a system for retention. This approach would result in a major loss of informational value because saving hardcopy does not preserve the spatial data relationships or related attribute data that would allow future researchers to engage in spatial analysis and modeling.<sup>8</sup> Moreover, a big part of evidential value in a GIS is its function, particularly when it comes to modeling and analysis applications. Without saving the software, and in some cases the hardware, there really is no way to completely preserve this functionality. Because of resource and proprietary concerns, archives generally do not accession and preserve hardware or software; therefore, it is impossible to achieve the other extreme, maintaining the GIS and its data as the creating agency maintained them.

In order to preserve data relationships, the archival community's solution to the GIS problem at the least will have to involve saving unique baseline spatial data in a software and hardware independent format.<sup>9</sup> This tactic accomplishes the goal of preserving informational content in data so that they

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7 For T. R. Schellenberg's definition of evidential value, see "The Appraisal of Modern Public Records," in Maygene Daniels and Timothy Walch, eds., *A Modern Archives Reader: Basic Readings on Archival Theory and Practice* (Washington, D.C., 1984): 58-62. Charles M. Dollar predicted that "as archivists increasingly recognize the importance of documenting program accountability, the informational value (or secondary use) of information systems will be eclipsed by the evidential value of information systems." See Dollar, *Archival Theory and Information Technologies: The Impact of Information Technologies on Archival Principles and Methods* (Italy, 1992): 59.

8 For a more in-depth description of the qualities of GIS data, see James Whittington, "Archives and the New Geography," (unpublished CIDS paper, NARA, June 18, 1990): 2-7.

9 This policy was proposed by NARA's Center for Electronic Records (NSX) in a recent appraisal of a GIS maintained by the Bonneville Power Administration (BPA). See NSX Request for Records Disposition Authority, job number N1-305-91-1.

may be analyzed by another system.<sup>10</sup> However, it does not document how the GIS was used in decision making. Discovering where in the GIS to isolate such evidential value will require that archivists obtain a greater understanding of GIS structure and use.

The most common representation of a GIS is a stack of coregistered layers (see Figure 1). Each layer contains spatial and attribute data describing a geographic theme (for example, hydrography) and is registered to the other layers in the GIS by control points and a common coordinate system. The total geographic area represented by a layer in a particular GIS is referred to as a tile (see Figure 2). While descriptive of how a GIS can relate different layers of data, this conceptual model can be misleading. Layers are not necessarily stored or manipulated in their entirety. For example, a tile may not be stored as one continuous file by the GIS. Instead, it can be comprised of a number of files representing the geographic sections contained in the tile (see Figure 2). The hydrography layer of a normal 1:100,000-scale United States Geological Survey (USGS) Digital Line Graph (DLG) consists of eight such files, each containing data for a section of the tile represented by the DLG.<sup>11</sup> When beginning a GIS project, a user will employ GIS utilities to merge sections together into tiles and "window" or clip from each tile the area that is needed for further manipulation. This clipped area is saved as another file and is referred to as a coverage (see Figure 2). It is the coverage that is the basic unit manipulated by a GIS.<sup>12</sup>

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10 Complicating the archiving of any GIS data, is the proprietary nature of data structures, which often results in a loss of data in converting to and from an archival format. This is changing slowly. In a discussion of data migration from one system to another, one expert argued that transfers that were impossible five years ago, now are "not only possible, but desirable" due to standardization, open systems, and other factors. See Bob Montgomery, "Protecting Data Assets Tops GIS Migration Concerns," *GIS World* 7 (April, 1994): 38.

11 Joseph K. Berry, "Terminology Accelerates Your Intellectual Depletion Allowance," *GIS World* 6 (September 1993): 26. 1:100,000-scale DLGs are sets of files produced by the USGS to provide baseline geospatial data in five categories: hydrography, transportation, hypsography, boundaries, and the Public Land Survey System. Each DLG covers an area 30 degrees latitude by 60 degrees longitude. The categories of data in each correspond to the cartographic features one finds on hardcopy 1:100,000-scale published USGS topographical quadrangles. Earth Resources Observation System Data Center (EDC), "100K DLG Guide Information," (ftp file obtained from the EDC Global Land Information System, March 8, 1994).

12 The term "coverage" can also refer to a composite layer of data for the area of interest. In other words, it can contain more than one theme or category of data. Most GISs are coverage-based, including Arc/INFO, arguably the most popular GIS package on the market. See Environmental Systems Research Institute, *Understanding GIS: The Arc/INFO Method* (Redlands, Ca., 1992): 2.17. However, archivists will have to be aware of differences in semantics and systems. For example, certain coverage-based GISs may not use the term "coverage" to refer to a working layer, although that is what it is. Moreover, certain GISs are not coverage-based and will require a different appraisal approach than that proposed here.

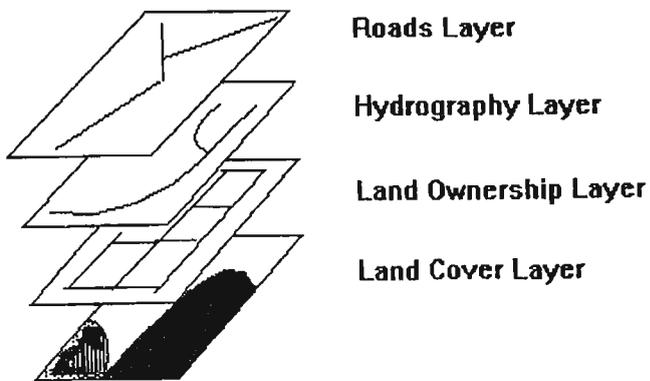


FIGURE 1

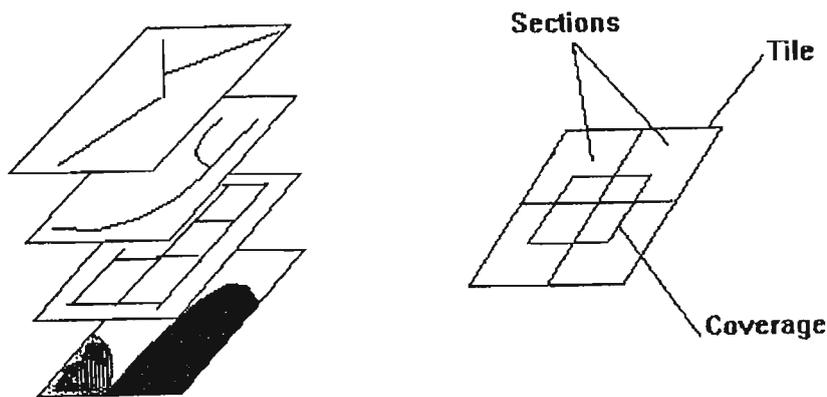


FIGURE 2

GIS users create new coverages by applying software tools to existing coverages. Most of these software tools fall into six categories of utilities: spatial transformation; retrieval, classification, and measurement; overlay; proximity and network; algebra; and output generation.<sup>13</sup> By applying a spatial transformation utility, a user can reprocess data to a new coordinate system or projection. Spatial retrieval, classification, and measurement utilities let the user query, "window," and aggregate data, and measure such things as lengths, areas, and density of features in a GIS coverage. Overlaying utilities allow superimposing of coverages and storing of the results as new composite coverages. Proximity and network utilities can be used to create buffer zones around geographical objects and to determine optimal paths, such as the shortest transportation routes across an area. Map algebra utilities construct new layers through the addition, subtraction, multiplication, or division of other layers (for example, determining the depth to ground water by subtracting a water table depth coverage from an elevation coverage). Output generation utilities allow for the creation of hardcopy maps, digital map files, and statistical summaries or reports on the geospatial data.

The following example demonstrates the use of some of the above utilities in a common GIS application: the creation of a suitability model.<sup>14</sup> In this case, the project involves determining the ideal place to locate a sewage treatment plant. The user's criteria for the ideal site include: gentle or no slope, for ease of construction of the plant; maximum distance from lakes and rivers, for environmental reasons; and maximum depth to ground water, to allow for the construction of deep treatment reservoirs. The user begins by clipping or copying from source layers source coverages depicting elevation (ELEV), hydrography (HYDRO), and average level of the water table (WATER LEVEL) in the area of interest (see Figure 3). Using a map algebra utility, the user calculates from the elevation coverage the slopes in the area of interest, and saves it as a derived coverage (SLOPE). Using a proximity utility, the user then derives and saves from the hydrography source coverage a new coverage (PROX-HYDRO) showing various buffer zones around lakes and rivers. Finally, returning to the map algebra tool, the user subtracts the average water table level coverage from the elevation coverage and creates a derived coverage displaying the depth to the water table (DEPTH TO WATER).

From the original source coverages, the user has created three derived coverages that contain data relating to the criteria upon which the decision is to be made. The next step involves using GIS utilities to interpret the data

<sup>13</sup> This and the following discussion of GIS analysis tools is taken from Falbo, Queen, and Blinn, *Introduction to Data Analysis*.

<sup>14</sup> This example is based on one given by Joseph K. Berry in "GIS Mirrors Perceptions," pp. 28-29.

in these derived coverages. Using a map algebra utility, the user derives from the slope coverage an interpreted coverage (SLOPE-PREF) with all of the slopes calibrated with grades. Locations with a slope between 0% and 2% are assigned a rank of "10," those between 2% and 4% a rank of "9," and so on. Similarly, the user derives from the depth to water derived coverage an interpreted coverage (DEPTH-PREF) ranking as "10" all locations with 30-foot depths, while locations with lesser depths are assigned lesser ranks. Finally, the user creates an interpreted coverage (HYDRO-PREF) based on proximity to water in a similar manner. By using a map algebra utility to calculate the average grades for locations based on the grades assigned in the interpreted coverages, it can be determined where, if anywhere, the criteria for the ideal plant location is met. A final composite suitability coverage (SITES) that describes perfect locations is then created using an overlay utility. If no perfect area exists, the user assigns weights to the interpreted coverages using a map algebra utility. For example, if a gentle slope is five times as important as the depth to the water table and the distance from lakes and rivers, the slope interpreted coverage is weighted by a factor of five before averaging. This weighting results in a final composite suitability coverage (SITES-A) that emphasizes locations with a gentle slope. At this point, the user can also generate hardcopy maps using output generation utilities.

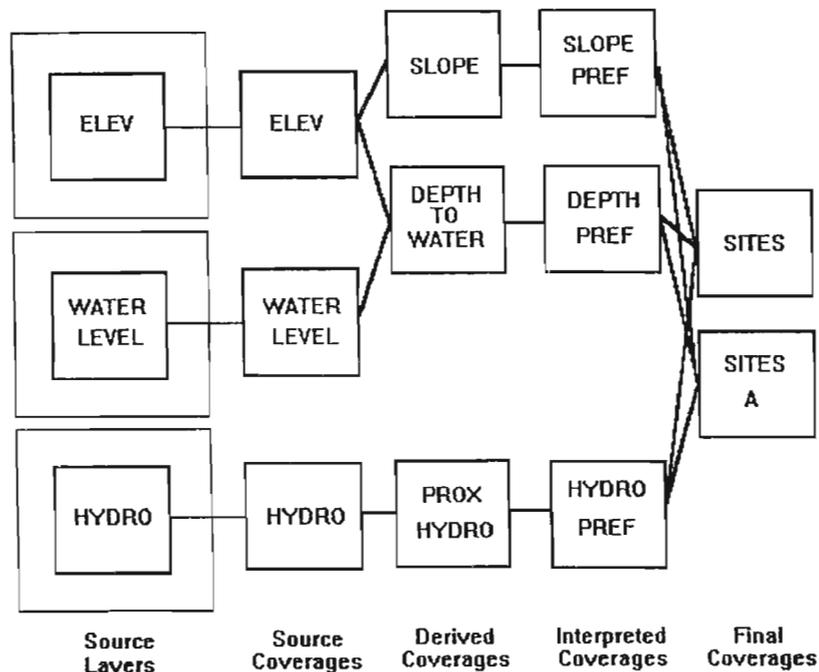


FIGURE 3

How should an archives document GIS activity such as that described in the above example? At first glance, the best solution seems to be saving the source layers and all of the coverages created in the GIS. This strategy would preserve informational value and what evidential value could be found in the coverages as records of the transformations undergone by the data in the GIS. However, unless it is described in related records or metadata, or can be determined from the existence of the coverages themselves, much of the context in which the coverages were created is lost. Moreover, while not a problem in our hypothetical example, which involves a single GIS project, data volume is a major concern.<sup>15</sup> In reality, agencies use GISs to undertake multiple projects resulting in hundreds or thousands of coverages.<sup>16</sup> Some coverages will be used as source coverages in several projects, and the final coverages from certain projects could easily reappear as source coverages in others. Updating and replacement of source layers could also increase the number of coverages in a system and result in redundancy in archival accessions.<sup>17</sup>

One proposed solution to the volume problem is to require an agency to transfer only source layers containing data generated in-house.<sup>18</sup> On the positive side, this would allow the archival repository to avoid redundancy in its holdings and relieve organizations of the burden of transferring data that could be accessioned from a more logical creator. Archivists could also weed out proprietary layers in this way.<sup>19</sup> However, while this transferring of

15 A GIS "project," as I use the term, is comparable to a single database query or report. Usually, all of the coverages created and manipulated in the production of a GIS map, model, or tabular statistical report would constitute a GIS "project."

16 Data volume is a concern in the accessioning of data from the aforementioned BPA GIS. That agency estimates that transferring all of the 1,500 coverages currently in its system will require 300-350 nine-track magnetic tapes and 750 hours of work. As one DOE official noted, "BPA does not have the luxury of supporting such a project with ostensibly no tie to BPA's essential mission." See Mary Ann Wallace, Director, Records Management Division, DOE, to James Hastings, Director, Records Appraisal and Disposition, NARA, February 23, 1994.

17 A GIS user can modify or replace source layers in a project, propagate the changes through all of the derived coverages, and save them as new ones. This potentially could be a problem if new coverages are saved over old coverages.

18 This proposal appeared in NARA's appraisal report on the BPA GIS. This report is rather confusing due to the agency's fundamental misconceptions on matters of GIS structure and use. The appraisal report appears to be concerned only with the source "layers" and not source coverages (which would have been clipped or copied from the layers for use in a specific project) or the coverages derived from them. The report mentions nothing about documenting the use of the GIS by saving coverages' relation to specific projects. BPA and NARA are currently in an "apples and oranges" type argument, because BPA has taken this to mean that they must transfer all of their coverages, as opposed to just their source layers. See NSX Request for Records Disposition Authority, job number NI-305-91-1; and Wallace to Hastings, February 23, 1994.

19 The report on BPA's GIS recommended that two source layers be excluded from transfer, one that was already in NARA's holdings and one that was commercially produced. See Request for Disposition Authority, job number NI-305-91-1.

unique sources layers preserves the baseline data used by an agency, it does not adequately document how the GIS was used.<sup>20</sup>

Another approach to appraisal that reduces data volume would entail saving source layers when unique and not represented in an archives holdings and appraising coverages on a project-by-project basis. Appraisal at this level will require adequate descriptions of each GIS project, including a list of the coverages involved. With such information, an archivist can make appraisal decisions based on the nature and importance of each project. NARA could then accession only coverages from well-documented projects deemed important enough for permanent retention, for example, those involving spatial analysis and modeling as opposed to those involving traditional map production.

Project-level appraisal preserves some evidential value in that it places accessioned coverages in some sort of context. However, coverage-level appraisal, with adequate documentation of how individual coverages were created, would be even more desirable. To a degree, such an approach may be possible if all coverages meet the provisions of the recently implemented SDTS. This standard requires that all transfers contain a data quality report which includes in it a section describing the lineage of the data.<sup>21</sup> Those involved in the creation of the SDTS stressed that data lineage could be described at the lowest possible level. For example, an agency could indicate not only the history of a coverage but also that of the individual features in a

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20 On the matter of the BPA appraisal, David Bearman has argued that "the result is likely to be that BPA geographic evidence will not be reconstructable since that data from other agencies would not necessarily be available, and even if it was, would not be reconstructable the way it actually looked and was linked in the BPA system." See Bearman, "NAGARA," *Archives and Museum Informatics* 7 (Summer 1993):11.

21 Lineage information might include descriptions of source and update material, and of the methods of derivation and transformations applied to data. See Robin G. Feagas, Janette L. Cascio, and Robert A. Lazar, "An Overview of FIPS 173, the Spatial Data Transfer Standard," *Cartography and Geographic Information Systems* 19 (December 1992): 278-293. See also the proposed metadata requirements in FGDC, "Content Standards for Digital Spatial Metadata," (unpublished draft report, FGDC, March 31, 1994).

coverage, which would be necessary for appraising composite coverages created by the merging of other coverages.<sup>22</sup> With this level of description, archivists could appraise as permanent only the source layers and final coverages from each project, thereby reducing data volume, and still assure that some evidential value is preserved in the lineage metadata for the final coverage.<sup>23</sup>

It is not likely that SDTS-quality spatial data will be described at the level desired by archivists. Those organizations with GISs already in use will find it time-consuming to recreate the lineage of individual coverages and will probably include the bare minimum of description.<sup>24</sup> Moreover, narrative lineage information is more likely to describe the source coverages used to create a final coverage and not the analysis that resulted in its creation. Current research in the generation of lineage information may remedy this. Such research is focused on preserving the analytical model for each project, which exists in the form of macros, or portions of the computer code, that represent the types of utilities used and the parameters under which they were employed.<sup>25</sup> For example, in ARC/INFO, a popular GIS software package, these macros exist in what is referred to as a "log file," a running list of commands and parameters employed in the completion of each project. By requiring the transfer of the macros themselves, an archival repository could afford to be selective in what coverages it would accession for important projects and thereby reduce the volume of data. For example, it is conceiv-

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22 Feagas, Cascio, and Lazar, "An Overview of FIPS 173," p.281.

23 Depending on the reduction in data volume, an archives might also want to request the transfer of reference copies of the final coverages in the software and hardware dependent format of some popular GIS package. This would give researchers with minimal GIS experience access to "user-friendly" coverages.

24 As of February 15, 1994, compliance with SDTS is required of all federal agencies in their transfers of spatial data. See "SDTS Goes Into Effect," *GIS World* 7 (April 1994): 16. A recent Executive Order on the National Spatial Data Infrastructure (NSDI), requires that agencies standardize the documentation of their new spatial data and set a schedule for retrospectively documenting their old data. However, the old data need only be described "to the extent practicable." See "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," (Executive Order issued April 11, 1994).

25 Berry, "GIS Mirrors Perceptions," p. 29; and Berry, "Toward a Humane and Honest GIS: Traditional Mapping in Triage," (paper presented at GIS '94 Symposium, Decision Making with GIS--The Fourth Dimension, February 21-24, 1994, Vancouver, British Columbia, Canada): 2-4. Research into preserving macros as evidence of the transactional management of various types of databases is flourishing. Joseph Berry has been an advocate for similar research in the GIS field. He has proposed affixing a graphic flowchart to each coverage. This flowchart would describe the source coverages, logic (commands), and specifications (command parameters) used to create the coverage. Berry believes that the establishment of such a "map pedigree" is necessary to establish a "general structure for spatial modeling which is not directly tied to individual GIS systems."

able that one day an archives may accession source data alone because derived coverages could be reconstructed by re-executing the macros. The drawbacks to saving these macros are that it is akin to saving software, and that extensive knowledge of the particular software package would be necessary to understand them.

A compromise solution to software dependency in GIS macros may be found in a lineage information program (LIP). A product of recent market demands for a means of determining the fitness for use of spatial data, LIP software documents both data sources and the transformations that are applied to derive GIS coverages.<sup>26</sup> Using artificial intelligence techniques, such software can read the macros created by a GIS, establish relationships between coverages, and create metadata tables describing the contents and processing history of source, derived, and final coverages. The metadata generated by the LIP can then be saved in a software and hardware independent format such as an ASCII file.<sup>27</sup> It should be noted that this ASCII file would contain merely a description of the commands and the coverages to which they were applied and not the commands themselves, which would be needed to recreate the derived coverages.<sup>28</sup> Despite this drawback, LIP-generated descriptions of the commands used to create a coverage might be adequate for appraisal purposes, provided that the appraising archivist knows enough about the GIS software to understand what types of transformations those commands represent.

The use of LIP software by organizations operating GISs would help the archival community in a number of ways. With the level of description

26 Currently, there is at least one GIS LIP on the market, Geolineus, produced by Geographic Designs Inc. It works with the ARC/INFO-GRID GIS software package. As of January 19, 1994, at least four federal GIS labs were using or testing this package. These include: Geographic Data Systems Section, Oak Ridge National Laboratory; the Management Systems Office, U.S. Department of Agriculture (USDA) Forest Service Region 8; Francis Marion and Sumter National Forest, USDA Forest Service; and Office of Geographic and Cartographic Research, USGS. See "Geolineus 3.0: Functional Overview," (Rev. 3 of a pamphlet received from Geographic Designs Inc., Santa Barbara, California, March 1994).

27 For a discussion of the conceptual design of an LIP, see David P. Lanter, "Design of a Lineage-Based Meta-Data Base for GIS," *Cartography and Geographic Information Systems*, 18 (October 1991): 255-261.

28 Special thanks to Bob Chaddock of NSX, who explained this distinction to me.

afforded by a LIP, archivists could better appraise an organization's GIS at the project level, thereby affording an opportunity to cull out unimportant projects. LIP metadata could also allow archivists to track redundant coverages and coverages that have been updated or replaced. Finally, and perhaps most importantly, a LIP would reveal which coverages are not adequately documented and should not be accessioned. If LIPs prove to have potential as a records management and appraisal tool, perhaps they could be incorporated into future GISs during the design phase.<sup>29</sup>

The value of lineage information software is apparent in a recent study that was done of GIS data processing by researchers from the University of California-Santa Barbara and Southern California Edison (SCE), an electrical utility.<sup>30</sup> In this study, researchers used a LIP to reverse engineer ARC/INFO projects completed by SCE's GIS lab. The lab creates deliverable data products for other departments in the organization. By collecting and examining the ARC/INFO log files created for each project, the researchers were able to create metadata that described not only the input layers but the commands used and the parameters entered within commands to create 806 coverages, 487 source and 319 derived.<sup>31</sup> This level of description of the processing history of such a large number of coverages is not likely to be achieved without a LIP.

This SCE study is valuable not only for its discussion of documenting GIS processing history but also for its revelation of the complexity in retrospectively collecting GIS metadata. The SCE lab's documentation of its data was woefully inadequate. The source coverages discovered in the study were copied from fifty-four source data layers in the GIS. When the researchers examined these source layers, they discovered the following:

68% were from unknown source agencies; 70% were of unknown scales; 79% were of unknown publication dates; and 89% were of unknown projections. In addition, 27% were associated with some spatial or thematic coding error and 30% of the data were of unknown accuracy. The remaining 43% were assumed adequate for use, although their spatial, thematic, and temporal attributes had not been tested.

29 The original paper recommended that "NARA's Office of Records Administration, Technology Research Staff, Center for Electronic Records, and Cartographic and Architectural Branch should explore the results of tests involving emerging data lineage software."

30 See David P. Lanter and Chris Surbey, "Metadata Analysis of GIS Data Processing: A Case Study," (unpublished paper, Geographic Designs Inc., Santa Barbara, CA, 1994).

31 The researchers also evaluated the diversity and complexity of ARC/INFO commands used in each project. They subsequently classified the projects as either "map-in/map-out" or "analytic." Use of a LIP in such a way may help NARA cull out coverages that have undergone only basic transformations and keep those that are "analytic" and thus exhibit some of the values of the user. See *ibid.*, pp. 4-7.

The researchers judged that the data was "not fit for reuse within future deliverables for decision makers" because of the inadequacy of the source documentation.<sup>32</sup>

If the above predicament occurs regularly in organizations employing GIS, it will be a major records management failure. Archivists must take an active role in preventing such situations by continuing to remind GIS users of the need to properly document their spatial data activities. Fortunately, the GIS community recognizes this need. Federal agencies have moved towards the standardization of spatial data, which will facilitate their transfer, and of related metadata, which will facilitate the archival evaluation of spatial data at the project or coverage level and help preserve evidential-value laden processing history. Most spatial data is too unique and too expensive to toss around indiscriminately.

Encouraging agencies to document their spatial data is not enough. In order to properly document how a GIS was used, archivists must continue to reevaluate traditional archival theory as it applies to electronic records. Thus far, archives have accessioned primarily database flat files in a software and hardware independent format. This approach is adequate for preserving informational content in a database, but the revolution in use of systems of all kinds, not just GIS, has integrated the major activities of agencies with their information systems to such a degree that preservation of evidential value now requires documentation of the functioning of the systems themselves. The traditional archivists' reliance on a "record" as the only evidence of function will have to change. In a GIS, evidence is found not only in the record of the transaction (a derived coverage), but in the rules which governed the transaction itself (the macros that helped create that coverage). The latter not only may provide the means with which to recreate the traditional record, it should be considered a record itself.



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<sup>32</sup> *Ibid.*, p. 4.

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## THE INTERNET

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### The World Wide Web & Mosaic

David A. Wallace

#### INTRODUCTION

The rate at which the Internet has grown over the past four years is truly staggering. Equally staggering, and encouraging, is the pace of change associated with user interfaces for resources residing on the Internet. From ftp to Gopher to Veronica searching, each successive change has made it easier for the average person to load, locate, and retrieve relevant information. The need to create even better unified access to and retrieval of Internet resources has led to the development of the World Wide Web (alternatively known as the "WWW," "W3," or the "Web") and its associated browser software, Mosaic. According to CERN (the European Laboratory for Particle Physics which initiated the WWW Project), the "Web" is a "universe of network-accessible information, an embodiment of human knowledge." In more concrete terms it is a "wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents." A recent article on the WWW clarifies the meaning even more, defining the WWW as:

a set of protocols that (i) allow for the location of any document on the Net through a naming system based on Universal Resource Locators (URLs); (ii) describe a way of explaining links using URLs within text documents, called Hypertext Markup Language (HTML); and (iii) specify a way to request and send a document over the network, the Hypertext Transfer Protocol (HTTP).<sup>1</sup>

The WWW uses hypertext functionality to link resources and enable user navigation. The term "hypertext" was first uttered in 1965 by Ted Nelson, who used it to refer to "non-sequential writing." In the body of a hypertext document, certain portions of the text are differentiated by bolding and/or underlining. The user can select the highlighted text within a document and, once chosen, be automatically routed to a new, yet related, document. Hypertext Markup Language (HTML) provides a means for formatting

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<sup>1</sup> Bruce R. Schatz and Joseph B. Hardin, "NCSA Mosaic and the World Wide Web: Global Hypermedia Protocols for the Internet," *Science* 265 (August 12, 1994): 895-901.

WWW "Home Page" layouts and allows creators to select text to serve as hypertext links to other sites, documents, and objects maintained both locally and remotely. Point to

<http://info.cern.ch/hypertext/WWW/MarkUp/MarkUp.html>

for information on HTML, including links to two guides on understanding and writing HTML. Address assignments on the WWW are called Uniform Resource Locator (URL) identifications. With a little practice, what at first seems like a random string of characters comes to be seen as having a certain logic -- URLs usually note the source site and its file menu hierarchy. Like all other growth statistics associated with the Internet, WWW usage is growing at a phenomenal rate, 11% per week by some estimates. The

#### **World Wide Web Initiative site**

<http://info.cern.ch/hypertext/WWW/TheProject.html>

provides an encyclopedic review of the WWW ("[e]verything there is to know about W3..."). It maintains links to WWW resources, servers, software products, technical information, bibliographical items (including manuals), specs, tutorials, and the like. It is the prime site for orienting oneself to the WWW.

The richness, diversity, and speed with which the World Wide Web has grown is reflected in the results of the

#### **1994 Best of the Web**

<http://wings.buffalo.edu/contest/awards/index.html>

contest. Recognition was given to: Best Overall Site; World Wide Web Hall of Fame; Best Campus-Wide Information System; Best Commercial Service; Best Educational Service; Best Entertainment Site; Best Professional Service; Best Navigation Aid (See World Wide Web Worm below); Most Important Service Concept; Best Document Design; Best Use of Interaction; Best Use of Multiple Media; and Most Technical Merit. The Best of the Web Site is as good a place as any to get a feel for the state of the art and the promise of the WWW.

The Mosaic browser client software provides an intuitive, user friendly interface to the WWW. Developed by the National Center for Supercomputing Applications (NCSA) in early 1993 (and formally released for the Macintosh, DOS Windows, and X Windows platforms in November 1993), Mosaic uses simple point and click technology familiar to all users of either Macintosh or Windows applications. NCSA explicitly defines Mosaic as an "Internet-based global hypermedia browser that allows you to discover, retrieve, and display documents and data from all over the Internet." Valuable introductory information about Mosaic can be found at

#### **NCSA Mosaic**

<http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/Docs/help-about.html>

Anyone who has used a windows interface will immediately recognize and adapt easily to the operating logic of Mosaic. Mosaic features include a top-of-the-screen menu bar for file operations, editing, navigating, annotating, listing starting points, and help. Online visual cues inform users of the number of bytes being transferred when jumping between sites.

Two of the most apparent benefits of the Mosaic interface, aside from the obvious hypertext and hypermedia functionality it provides, are the capability to scroll backwards and forwards through any single session's previously viewed screens, and the development of a "Hotlist" of key sites one happens to stumble across. The Hotlist frees the user from having to remember how they got to a specific site and from having to rekey the lengthy URL. Some configurations of the Mosaic software also keep an audit trail of all hypertext links you have chosen in past sessions.

Pitfalls of Mosaic resemble the pitfalls of using the Internet in general: the frequent down time during transfers, especially for visual images; failed connections; and, attempting to locate specific items, a measure of the WWW's non-existent naming conventions and authority control. However, despite these barriers, Mosaic is clearly the single best widely-available user interface to the Internet today.

The Mosaic software is available via anonymous ftp from the NCSA server at <ftp.ncsa.uiuc.edu>

In order to get a sense of the breadth and depth with which Mosaic has developed over the past year, readers are encouraged to explore the Home Page of the "Second International World Wide Web Conference on Mosaic and the Web" that was held on October 17-21 in Chicago, at

<http://www.ncsa.uiuc.edu:80/SDG/IT94/IT94Info.html>

By the week before the conference over 200 individual conference papers had been submitted in HTML and available over the WWW at

<http://www.ncsa.uiuc.edu/SDG/IT94/Agenda/Papers-received-author.html>

A sampling of titles includes "The File Room: An Interactive Archive of Cultural Censorship;" "Putting Paper Documents in the World Wide Web;" "The Oregon State Archives on the World Wide Web: A Case Study in Building a New User Base for Government Services;" "A Word is Worth a 1000 Pictures: Natural Language Access to Digital Libraries;" "Museums, Public Lands, and Billboards: Toward a Philosophy of the World Wide Web;" and, "The Internet Sampler: A Mosaic-Based Museum Kiosk About

the Internet." The Conference held over 70 sessions on such topics as: Searching; Library Applications; Delivery of Library Services on the Web; Campus Wide Information Systems; Corporate Information Systems; Commercial Transactions of the WWW; K-12 Education; Distance Education; Computer Supported Cooperative Work; Arts and Humanities; and Museums.

Early multi-media archival and museum applications, such as the Library of Congress' Vatican, Soviet Archives, Dead Sea Scrolls, and 1492 exhibits (see EXPO site below) drew much initial interest regarding the potential of remote delivery of multimedia cultural resources over electronic networks. [Since then the Library has announced plans to digitize upwards of 5 million of its items in order to make them available over electronic networks by the year 2000.] Despite the admirable growth of museum and archives resources on the WWW over the past twelve months (see some of the key indices to such sites below), much work needs to be done. The recent announcement of an international Imaging Initiative by the Getty Art History Information Program points to the strategies being developed to take advantage of electronic networks and speaks to the requirements for institutions to become content contributors to the WWW. The Getty is slated to examine issues regarding the use of digital images in the arts and humanities. According to a press release, the initiative will "foster the development of standards necessary to ensure that scholars, teachers, students, and the general public have access to images of art and cultural objects over electronic communications networks."

The next section provides a summary catalog/description of the major navigational tools -- searchable indexes, subject indexes, server indexes, and other access gateways to the WWW. Readers are strongly encouraged to spend a few hours visiting these sites in order to get a handle of the promise and perils associated with the WWW and Mosaic, and to discover for themselves the diversity of institutional applications currently being employed by a slew of archives and museums.

#### **STARTING POINTS -- KEY NAVIGATIONAL TOOLS**

What follows is a listing of the key indexes to resources on the World Wide Web. Readers should note that there are degrees of redundancy between these resources, wherein one would contain information found in another, or one which actually incorporates the contents of another index. For example, the World Wide Web Catalog uses the Virtual Library Subject Catalog to update its contents. Despite this redundancy, it is recommended that readers scan through these sites in order to get a sense of the functionalities that exist for locating information on the WWW.

##### **Internet Resources Meta-Index**

<http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/MetaIndex.html>

This resource bills itself as a "loosely categorized meta-index of the various resource directories and indexes available on the Internet." It provides numerous searchable indexes for navigational interfaces such as the World Wide Web, WAIS, Gopher, Telnet, and FTP. An interesting geographical user interface -- the "metamap" -- is also provided, as is an "Experimental Search Engine Meta-Index." The Search Engine provides multiple search interfaces within a single screen. Search interfaces are provided here for the CUI World Wide Web Catalog, the Global Network Academy Meta-Library, The Whole Internet Catalog, Veronica, Jughead, and WAIS.

##### **Searchable World Wide Web indices provided through the Meta- Index include:**

###### **\* W3 Catalog**

[http://cui\\_unige.ch/w3catalog](http://cui_unige.ch/w3catalog)

This searchable catalog of World Wide Web resources is updated daily from a number of sources. Retrieved items are returned as date-ordered paragraph-length descriptions, the most recent at the top. These are normally followed by subject and/or geographically arranged resources. Each of these descriptive formats has at least one hypertext link to the item described, allowing the user to jump directly to the desired source. When I looked at this site in mid-October it held just over 10,000 entries. Searching "exhibits" here returned nine screens worth of information, from art museum exhibits to science museum exhibits to special exhibits at libraries. Searching "copyright" returned five screens worth of information.

A link to the second WWW user adaptive survey is provided here as well (An "adaptive" survey takes the answers you provide to particular questions to determine the next set of questions to present to you.) It is designed to elicit "who is using the Web and why." Results from the first survey are also available here.

###### **\* World Wide Web Worm**

<http://www.cs.colorado.edu/home/mcbryan/www.html>

The "Worm," or WWWW, claims that it has found "almost all Web resources that are out there." It *has* found an impressive 300,000+ multimedia objects residing on the internet, and a newly completed run should be completed in the very near future. Such diligence has earned it the "Best of the Web" Best Navigational Aid for 1994. Within the WWWW one can search the master list in: citation hypertext; titles of citing documents; names of URLs; or names of citing documents. Five sample searches are provided in this page to orient the searcher.

**\* Meta-Library**

<http://uu-gna.mit.edu:8001/cgi-bin/meta>

This resource is put together by the Globewide Network Academy (GNA), a non-profit corporation residing in Texas. The GNA's long-term plans call for the creation "of a fully accredited online university." The Meta-Library lets users compose a case-sensitive substring of the GNA's "internet reference table" containing roughly 4,000 entries. An alphabetically or numerically arranged thesaurus is provided for browsing purposes. A search of the term "copyright" returned sixteen structured records providing information on, among other things, each source's topic, title, URL (with built in hypertext linkage available), keywords, and a description.

**World Wide Web subject indexes provided through the Meta-Index include:**

**\* Whole Internet Catalog**

<http://nearnet.gnn.com/wic/newrescat.toc.html>

This resource contains several entry points under each of the following categories: Arts & Humanities; Business; Current Affairs; Government & Politics; The Internet; Libraries, Reference; & Education; Recreation; Science; and, Technology.

Selecting Arts under the Arts & Humanities subject heading provides the user with over fifteen collection choices, including Ansel Adams photographs, Black Artists at the National Museum of American Art, and Japanese Art. Selecting History & Civilization under the Arts & Humanities subject heading provides twelve choices including the Mississippi State History Archives, the U.S. National Archives, and the Smithsonian Institution.

**\* Global Network Navigator Home Page**

<http://nearnet.gnn.com/gnn.html>

The GNN home page contains entries for the Whole Internet Catalog (see below); the GNN Business Pages for information on businesses on the internet; and GNN NetNews for reporting on key Internet news. It also provides a list of special interest publications -- Travelers' Center; Personal Finance Center; I-media Center (publishing on the Internet); the Digital Drive-In (multimedia resources on the Internet); and, the Dianne Feinstein for Senate Home Page.

**\* WWW Virtual Library**

<http://info.cern.ch/hypertext/DataSources/bySubject/Overview.html>

This tool provides a subject catalog to over ninety topics, such as: Archaeology; Art; Culture; History of Science, Technology & Medicine;

Libraries; Museums; Music; Social Sciences; and Sumeria. The Museum list provides the following:

**\* Museums**

<http://www.comlab.ox.ac.uk/archive/other/museums.html>

Accessed some 300+ times every day, this home page contains a diverse collection of WWW sites on museums, galleries, and archives. Major sub-sections on this page include: Museums and Exhibitions (over thirty sites); Library Exhibits; Art Galleries (nearly twenty sites); Museum Information; and Further Links (to other online exhibitions and images).

**\* Clearinghouse for Subject-Oriented Internet Resources Guides**

<http://www.lib.umich.edu/chhome.html>

In the first installment of this column (*Archives and Museum Informatics*, v. 8, n. 1), the University of Michigan's Clearinghouse was introduced. Since then several of their resource guides have been coded in HTML, making their contents vastly easier to access and navigate across. Among those in hypertext that may be of interest to readers of this column include:

**\* Early Church Documents**

<ftp://iclnet93.iclnet.org/pub/resources/christian-history.html>

**\* Film and Video**

<http://http2.sils.umich.edu/Public/fvl/film.html>

**\* Gopher Jewels**

<http://galaxy.einet.net/GJ/Index.html>

Includes pointers to 55 subject-specific areas such as:

- 5 Anthropology and Archaeology
- 6 Architecture
- 7 Arts and Humanities
- 12 Fun Stuff & Multimedia
- 18 History
- 33 Library Information and Catalogs
- 41 Museums, Exhibits and Special Collections

<http://galaxy.einet.net/GJ/museums.html>

(links to nearly forty sites, including archives, such as the U.S. National Archives, the Lyndon B. Johnson Presidential Library, and the Polish Archives at UC Berkeley.)

\* **Heritage Conservation, Historic Preservation, and Archaeology**  
[http://npb.hwc.ca:7002/Internet\\_Resource\\_Guide.html](http://npb.hwc.ca:7002/Internet_Resource_Guide.html)

\* **History of Science, Technology, and Medicine**  
[http://coombs.anu.edu.au/SpecialProj/ASAP/asap\\_hstm.html](http://coombs.anu.edu.au/SpecialProj/ASAP/asap_hstm.html)

\* **Indigenous Peoples**  
<ftp://ftp.halcyon.com/pub/FWDP/WWW/fwdp.html>

\* **Library and Information Science, Librarianship**  
<http://www.ub2.lu.se/lisres.html>

\* **Multimedia Information Sources**  
[http://cui\\_www.unige.ch/OSG/MultimediaInfo/index.html](http://cui_www.unige.ch/OSG/MultimediaInfo/index.html)

This index provides a wealth of information on multimedia, including sections on Current Events; Rating and Guides; FAQs (frequently asked questions); Software; Media Delivery Services; Companies; Media Archives (33 entries); Research; Conference Announcements (through the end of 1995); Bibliographies; Newsgroup Archives; Standards; The CD Family; Digital Galleries and Museums (35 entries); Educational Information; Commercial Services; Magazines, Books and Journals; Publishers; Hypertext and Hypermedia; and Miscellaneous.

**World Wide Web server indexes provided through the Meta-Index include:**

\* **Central Index of WWW Servers**  
<http://info.cern.ch/hypertext/DataSources/WWW/Geographical.html>

This source provides a global listing of registered World Wide Web servers, arranged alphabetically by continent, country, and state. As to be expected, this file is rather large. To simplify matters, a summary listing has been newly created

<http://info.cern.ch/hypertext/DataSources/WWW/Servers.html>

containing only the broader geographical breakdowns (continent, country, and state). Clicking on any of these broader geographical entities provides the full number of registered, and in some cases unregistered, sites within that geographical region. For example selecting the state Texas drew up a file containing 80+ registered and 23 unregistered sites. Some sites provide a "sensitive map" of a particular geographical region. These allow the user to click on, for example, a city, in order to draw up a listing of WWW sites within that city.

\* **Index of Resources by Protocol**  
<http://info.cern.ch/hypertext/DataSources/ByAccess.html>

This site provides the user with a listing of Internet resource access protocols for retrieving information. Included are World Wide Web servers, WAIS servers, Network News, Gopher, Telnet access, Anonymous FTP, TechInfo, X.500, WHOIS, and other protocols.

**Miscellaneous World Wide Web indexes and listings provided through the Meta-Index includes, among other sites:**

\* **NCSA Mosaic**  
<http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/Docs/help-about.html>

This site provides a wealth of primary source material and documentation on Mosaic for the X Window System, including online documentation, as well as information on copyright and availability. Within this resource lies:

\* **NCSA What's New**  
<http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/Docs/whats-new.html>

This site offers a catalog of "recent changes and additions to the universe of information available to Mosaic and the World Wide Web." The entries are paragraph description of sites, with hypertext links built-in, that are ordered by date of compilation (the most recent lying at the top of this listing.) When I checked this site the most recent update was for September 27, 1994. The archive to this resource is searchable through the WWW Catalog (see above) which provides for keyword searching for all words within the descriptive paragraphs. This site also contains a pointer to current announcements regarding Mosaic.

\* **NCSA Mosaic Demo Document**  
<http://www.ncsa.uiuc.edu/demoweb/demo.html>

This site provides an "interactive hypermedia tour of Mosaic's capabilities," allowing the user to sample some of the more intriguing hypermedia sites and applications. After providing a succinct summary of Mosaic and global hypermedia, this resource goes on to list "exemplary applications" in the following areas: U.S. High Performance Computing and Communications; University of Illinois at Urbana-Champaign; Arts and Humanities - Education and Research; Government and the Clinton/Gore Administration; Industry, Business, and Publishing; NASA and Government laboratories; Science, Technical, and Professional Information; Other Prototypical Hypermedia Applications; Experimental/Advance Hypermedia Demos; and, Other Internet Information Sources.

#### \* Network Starting Points

<http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/StartingPoints/NetworkStartingPoints.html>

This site provides a rather long listing of key access points and gateways to the Internet -- including WWW home pages, WAIS, Gopher, FTP, Usenet, Finger, etc. Additional items at this site that may be of use to readers of this column include:

\* *HyTelnet Gateway* - a comprehensive index of publicly accessible electronic library catalogs. <http://info.cern.ch:8002/w3start.txt>

\* *ANU Art History Exhibit* (Australian National University). <http://www.ncsa.uiuc.edu/SDG/Experimental/anu-art-history/home.html>

\* *Los Alamos Physics Papers* - collection of physics papers held at Los Alamos. <http://xxx.lanl.gov>

\* *White House Papers* - WAIS server of "all of the papers from the Clinton Administration from Day 1 to about two days ago." <http://www.ncsa.uiuc.edu:8001/sunsite.unc.edu:210/%2Fhome3%2Fwais%2FWhite-House-Papers>

#### \* EXPO

[http://sunsite.unc.edu/expo/ticket\\_office.html](http://sunsite.unc.edu/expo/ticket_office.html)

Expo is a global exhibition of sites that is set-up as though it was a single museum complex. Visitors (a running count is kept -- I was number 104,218) can take a "shuttle bus" to the various "pavilions" (which are mostly Library of Congress online exhibits -- Vatican Exhibit, Soviet Archive Exhibit, 1492 Exhibit, and the Dead Sea Scrolls Exhibit. Also included are the Paleontology Exhibit from the University of California at Berkeley, and the Spalato exhibit of the Diocletian Palace at Split). Odd diversions are also provided such as an Expo restaurant, post office, book store, and bulletin board.

#### \* Hypermedia exhibitions

<http://155.187.10.12/fun/exhibits.html>

This site provides a diverse listing of online exhibits, including eight biological and natural history exhibitions and twenty-three more general exhibitions, such as: Art History Exhibit, History of Medicine Exhibits, Mathematical Art, Gallery of Fractal Art, and the Museum of Early Instruments of the Institute of Physics of Naples.

#### Other World Wide Web Access Tools

##### \* W3 Search Engines

[http://cui\\_www.unige.ch/meta-index.html](http://cui_www.unige.ch/meta-index.html)

This resource provides a centralized repository of search engines available over the World Wide Web. I counted upwards of 45 separate search engines. Multiple search interfaces are provided for each of the following categories: Information Servers; Software; People; Publications; News/FAQs; Documentation; and Other Interesting Things. The Experimental Search Engine Meta-Index (see above) served as the inspiration to this tool.

##### \* NCSA Mosaic

<http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/NCSAMosaicHome.html>

This site provides a useful introduction to Mosaic, including information on each of the three platforms ("flavors") for which it is available -- X Windows, Apple Macintosh, and Microsoft Windows. This site also provides a gateway to key starting points (noted elsewhere in this column) and special notices related to Mosaic.

##### \* Worldwide Arts Resources

<http://www.cgrg.ohio-state.edu/Newark/artsres.html>

Aside, from the specialized museum lists noted above, readers should also visit this site. It contains links to over 45 museums worldwide, as well as covering art galleries, commercial arts resources, and institutions.

##### \* Guide to Archives on the Internet

<gopher://una.lib.umich.edu:70/0R0-32901-/inetdirsstacks/archives%3akaynthony>

Now in its second release, this University of Michigan School of Library and Information Studies product is part of the university's Clearinghouse of Subject-Oriented Internet Resources Guides. It provides addresses to archival collections on the internet through WWW, Gopher, and Telnet. Unfortunately, no hypertext links are built into this document.

#### CONCLUSION

Despite Congress's recent failure to pass sweeping telecommunications reform legislation, change is coming. Networks will increasingly come to be relied upon not only by professionals, but also by citizens seeking entertainment and edification. Such change provides cultural institutions an unprecedented opportunity to place far greater amounts of their holdings online, reengineering their notions of public service. Kevin J. Comerford of the Dallas Museum of Art, which has over 9,000 accesses per month, recently noted the impact that the Internet has had on his institution. It has facilitated

communication with students and educators within their immediate area, and has enabled the museum to "provide information about our collections to people who, because of disabilities, geographical distance, or other reasons, would otherwise never get a chance to see the [museum]. If anything, we have found that the Internet increases people's desire to come to the museum."

Cognizance of the growth and utility of the Internet and the WWW will allow archives and museum professional's to cast towards such service functionalities as 24-hour-a-day remote access to primary source documentary materials and art objects, and providing simultaneous access to multiple users.

The next column will review several archives and museum WWW applications, focusing upon their diversity and pointing out impressive innovations and designs.



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## EUROPEAN MUSEUM REPORTS

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### European Policies Towards Interactive Multimedia for Museums: Part I - National Support for Cultural Multimedia

Xavier Perrot

It's hard to find any trend in European national policies towards museum multimedia. It's more or less like looking at a 2,000 piece puzzle with no clue of what the whole image might represent. Only a few countries (England, France, The Netherlands) have representative and effective bodies in position to lead or direct a national policy. In other countries, even the people officially in charge of the issue could hardly answer basic questions. Nowhere was a simple document able to state the government's position. This is why the first part of this paper summarizes perceptions of national policies by well placed individuals, on a country-by-country basis, rather than comparing and analyzing formal policy directives and programs.

In contrast to national officials, European Union (EU) representatives were incredibly effective and willing to help. They quickly identified institutions and people to contact and often gathered and forwarded related documentation. At the "not yet federal" Union level, several directorates of the Union expressed their committment to develop a European information market, in which cultural "goods and services" will be included. The second part of this paper (to be published in the next issue) will examine how European museums are involved in these EUs initiatives.

**DENMARK.** Peter Olaf Looms, Planning and Evaluation Officer at the interactive media unit of Denmark's Radio, is working with the Ministry of Education Committee for Open and Distant Learning Systems, and is a specialist in introducing technological innovations in education and museums. He reports that "there is no centrally dictated policy, but rather central government funding for a number of pilot initiatives which are then to be followed up with a mixture of public and private sponsorship." For the last decade, the Ministry of Culture has been funding the modernization of selected museums and pilot studies on the use of technology. "Although the word 'multimedia' does not usually appear in these policy documents, modernization usually implies the computerization of collection management and

the institution's administrative systems, so indirectly this facilitates any plans the institution may have to work on multimedia."

The recently created Ministry of Tourism (which was previously part of the Ministry of Communications) is also involved in multimedia projects to promote the cultural dimension of tourism. "Sun, beaches, clean sea water and summer weather are giving way to a less-seasonal, more differentiated range of services, including the plastic and performing arts," comments Peter Olaf Looms. Civil servants from both Tourism and Culture have been exploring initiatives in this cultural tourism area. Multimedia seems to play a role in terms of point of information systems, interactive exhibits in Denmark or abroad, and multimedia titles for sale to tourists.

Major initiatives led by the Ministry of Culture have taken place at the Danish National Museum (Nationalmuseet) and the Royal Museum of Fine Arts (Statens Museum for Kunst). Modernization of Nationalmuseet goes back ten years. It was funded by the Egmont Foundation, which matched contributions from the Ministry of Culture, bringing the total budget up to nearly 400 million Danish kroner. The project is developing an image database for collection management (currently 180,000 images on videodiscs linked to Unix Workstations with two screens), a fiber-optic network throughout the museum, and the creation of interactive exhibits and educational products for institutions. The image database is being converted to a distributed digital image database. Interactive multimedia exhibits include "Ethnology of Greenland," in the Ethnographical Department of the museum, allowing visitors to access several thousand related artifacts not on display; and "The World of the Vikings," an interactive exhibit developed in conjunction with the York Archaeological Trust (UK), as part of a major Viking exhibition which also visited Paris and Berlin in 1992. Spinoff products are available on LaserDisc and CD-ROM.

Statens Museum for Kunst received funding from 1993 until May 1994 for experimental work on digital imaging, which involved experimentation with scanning, image compression, and ISDN transmission within Scandinavia. (The status of three multimedia projects being pursued by Boris Otovic, budget 4.9 million Danish kroner, due to start this autumn is not known). Statens Museum is responsible for KID, Kunst Indeks Danmark, a national register of the Danish works of art, and in this capacity the museum acts as the focus of much of the awareness creation in the 40 percent or so art museums in Denmark.

In addition to projects of these two ministries, there are developments in the telecoms area to promote the use of ISDN in the form of MOSART, an online image database about artists based at the Aarhus Museum of Fine Arts. EU shows interest in promoting a related concept as part of its RACE program. "For a variety of reasons this project seems to have unravelled. The networked dimension seems likely to retain a high profile due to political discussions on New Information Initiatives," concludes Peter Olaf Looms.

**ENGLAND.** "In England there is no government policy towards developing (or not) multimedia and information systems for museums," says Jeremy Rees, arts management consultant and currently director of IVAIN (International Visual Arts Information Network). "Many museums are either 'independant' (including the large national museums, as of the last couple of years), or financed by local (not national) government." The government department responsible for museums is the Department of National Heritage. "The government in this country cannot manage to digest, or promote, the word ARTS," underlines Jeremy Rees.

The Arts Council has dipped its finger into multimedia and its impact; in 1992, they published the well known "Very Spaghetti" report on the potential of interactive multimedia in art galleries. Bary Lane, Senior Visual Arts Officer, nonetheless confirms that "as far as I know, our government has no policy in this area but our British Library has been undertaking research."

Jeremy Warren, Assistant Director of the Museum Galleries and Commission (MGC) at the Department of National Heritage, admits that "at the present, there is no overall or co-ordinated government policy towards museums and galleries." They are currently in the process of a museum policy review, instigated by the former Minister of National Heritage. "He wrote on May 11 to many organizations, inviting comments and submissions in response to a series of questions on museum policy -- which did not include any direct reference to multimedia or information systems," says Jeremy Rees. In fact, the policy statement published by MGC in July 1994 includes few recommendations about technology. And they are as vague as, "by the year 2000, all museums should have an up-to-date, accessible inventory record for the collections they hold. Wherever possible, this should be computerised to provide a basis for information sharing and scholarly access."

The MGC's report points out that "other countries (e.g., Canada, Denmark, France) have recognized before us the value of concerted, centrally inspired policies to exploit new technologies in museums. This is partly a question of funding, but also one of pooling resources and effort effectively." MGC believes that the private sector might contribute to museum development, "provided it is accepted at the outset that museums' primary objectives are not commercial." In practice, we all know the case of the "Micro Gallery" application at the National Gallery in London, from which the CD-ROM published by Microsoft was derived (under a deal that has proven to be inconceivable to French major establishments such as "Musée d'Orsay or "Le Louvre"). MGC affirms that they cannot over-estimate the potential importance of interactive technology development and its opportunities for museums: "The MDA (Museum Documentation Association) has, with interest in museum information and collections management, begun to address this challenge. But we believe there is a need for a broader concerted national strategy for IT development in museums."

**FINLAND.** Sirkka Valanto of the central Art Archives, Finnish National Gallery in Helsinki, provided a pithy summary on what is going on in Finland. "As far as I know, there has not been any government policy in Finland towards developing multimedia for museums. But of course, multimedia can be seen as a part of information systems, in some cases."

Only 4 percent of Finnish museums are governmental, e.g., the National Board of Antiquities and the Finnish National Gallery, both of which have an official role with the responsibility of promoting development in the museum field. Most of the establishments are owned by municipalities (40%) or private foundations and associations (56%). They get subsidies from the governmental budget via the National Board of Antiquities, but in practice they are dependent on their owner's policies. For example, in the case of the National Art Register, the FNG has no authority to make municipal art museums join in. "They do it because they find it important," says Sirkka Valanto.

Lately, the governmental policy towards information systems has included museums. In recent committee deliberations (e.g., the government's report on cultural policy to the Parliament in 1993), considerable attention was paid to information resources in museums along with traditional archives and libraries. Promoting synergy and cooperation between these institutions was seen to be important. There have been visions of common information systems in the future but a change in the cultural administration has taken place with a trend away from central direction by the Ministry of Education to more freedom for institutions. "Consequently, there is a positive climate for this kind of effort in museums, but the responsibility for creating new systems is up to institutions themselves. The Ministry in some cases supports them by extra grants," notes Sirkka Valanto. For example, the National Art Register, a common database of all Finnish art museums, was created in the Finnish National Gallery. "The biggest part of the finances came from the FNG's own budget. The FNG gets the finances from the government budget via the Ministry of Education, but it is the FNG who decides what to do with the money. In this case additional support was received from the Ministry of Education's special grants aiming to advance information systems."

**FRANCE.** In this country most of the major museums are "nationaux." Two central organizations play a key role: the DMF, Direction des Musées de France and the RMN, Réunion des Musées Nationaux. In the field of multimedia, RMN happens to be mostly a co-producer and a publisher of electronic titles. [See "Réunion des Musées Nationaux's Multimedia Projects: Meeting with Joel Poix," *Archives and Museum Informatics* Vol.8 #1 (Spring 1994): 24-27] At DMF, Bernadette Goldstein, who is in charge of the "interactifs" at the Department of Publics, conducted an extensive study on the state of the art last year. She has set up an expert team which follows and advises projects on interactive applications in public spaces. [See "Use of New Technologies in the French Museums" *Archives and Museum*

*Informatics* Vol.8 #2 (Summer 1994): 124-129] From the conservation point of view, Christian Lahanier at the Laboratoire de Recherche des Musées de France, DMF, is project director of a key European funded project: Narcisse. [See "NARCISSE" *Archives and Museum Informatics* Vol. 7 #4 (Winter 1993/94): 4-6]

In 1991, the French Ministry of Culture launched the Videomuseum Association, which gathers information from museums and other public collectors to exhaustively document and present the 20th century art works belonging to the national patrimony. So far, forty institutions (soon to be forty-three), have been working on the project. A software application has been provided to each of them, including in-house collection management features and documentary capabilities. In December 1993, the different databases referenced 40,000 items. Eighty thousand are expected by the end of 1994. From this, Videomuseum compiles a LaserDisc that museum professionals and "professional publics" (including students) might access the members' documentary centers. (An abroad experience will soon be attempted at the French Institute in Kolgong, Germany). Because these images exist in both analog and digital formats, the Videomuseum database is a means for producing derivative products, such as the CD-ROM "Dictionnaire multimedia de l'art moderne et contemporain," developed under the EU Impact 2 program.

In July 1994, Françoise Cachin, new director of DMF and former curator at Musée d'Orsay, said that legal considerations about multimedia products are a top priority for museums. Her position reflected that of the minister "de la Culture et de la Francophonie." Jacques Toubon, who in October 1993 asked the law professor Pierre Sirinelli to study the effects of new technologies on "juridical concepts," especially those of intellectual property, as well as the protection of cultural industries. This very conservative approach sounds very "old world," as Nicholas Negroponte stigmatized it. "Many artistic, industrial, and intellectual movements are driven by distinctly national and ethnic forces. The digital revolution is not one of them. Its ethos is generational and young. The demographics of computing are much closer to rock music than theater. . . . If Europe wishes to remain at the vanguard of culture, it must step off its horse and look more imaginatively at the future. Maybe it is time to discontinue ministries of culture." [*Wired*, Vol. 2 #9, September 1994]. The Sirinelli report, published this summer, cannot pretend to be very imaginative. Its main conclusions were:

It is preferable to wait before fundamental intervention because the social, business, and technical situation is evolving and it is necessary to understand it better in order to frame a suitable international response.

- Create a central file for identification of works and copyright owners;
- Organize a set of compulsory technical choices (!);

- Create a legal oversight team;
- Organize a worldwide effort to reform copyright; and
- Create a research center for the Law of Intellectual Property.

These considerations seem thousands of miles away from . . . say Spokane, Washington, where the two brothers Rand and Robyn Miller, free of any institutional links, produced "Myst," the CD-ROM smash hit that is part of our worldwide multimedia culture.

But even if it's still more defensive than imaginative, the French Ministry of Culture is aware of the importance of content. As Jacques Toubon put it last August during the "Universite d'été de la communication," "If we do not take our place, today, in the creation of works and products suited to these new uses [of IT], there is a great risk for an overwhelming Japanese and American domination."

No doubt there is a willingness for a global policy on creation, production, and distribution of multimedia. Its first demonstration was the "conference" on the cultural stakes of multimedia, September 26-27 in Paris. In the concluding keynote, Jacques Toubon began to underline the importance of content, especially for the forthcoming info-highways. He stressed the fact that there is a little time for debating the problem, as the content fray has already begun. Mr Toubon noted that France has many trump cards, among them "a tradition of state intervention in cultural affairs." This mainly consists of allowing cultural goods to escape the strict rules of business, as they are supposed to have transcendent values. This year, the support for multimedia production provided by the ministry was FF50 million. Sixty percent of the French multimedia production is said to be "exported." Using as an example the French cinema industry which cannot access the American market, Mr. Toubon declared a very important effort should be made to address the distribution issue.

The minister reminded participants that there is no other choice than using all the existing media: CDI, CD-ROM, French "Minitel," ISDN, and Interact. His ministry is one of the first to be wired. You can actually write to him at [ministre@culture.fr](mailto:ministre@culture.fr). This conference served as the opportunity for Bruno Mannoni ([mannoni@culture.fr](mailto:mannoni@culture.fr)) to unveil new Internet applications, such as a virtual exhibit on 18th century paintings in French museums ([web http://dmf.culture.fr](http://dmf.culture.fr)). Internet hackers and curators will be pleased to learn they can now access the databases JOCONDE and MERIMEE at [gopher cyr.culture.fr](http://gopher.cyr.culture.fr). Note that [web http://www.culture.fr](http://www.culture.fr) describes the ministry and some exhibitions.

Mr. Toubon believes that measures have to be taken on a European scale, and hopes that France will be able to set up some incentive mechanisms for multimedia production when it assumes the presidency of the Union from January until June 95. Giving his personal credo in the multimedia domain,

Jacques Toubon said he is convinced that ". . . we must prove the motion by walking, we should not try to solve theoretical problems first, but we should begin to solve concrete problems, so that the social and cultural changes generated by multimedia will be favorable to us." The minister concluded that his ministry is not the one of "pensée[thought]," but "ministère de l'avenir [action]."

**GERMANY.** There is a great lack of information on national policies from the largest European economic power. Projects we identified were either part of EU programmes, or funded by local organizations or "lander" governments. Among them are the now completed "European Museum Network," directed by Achim Lipp which was reported at the first International Conference on Hypermedia and Interactivity in Museums, and the Aquarius Wassermuseum which made the long-closed water reservoir in Mulheim into an interactive multimedia reservoir of knowledge about water.

Apparently the only national project is at the Deutsches Museum. There is a main research and educational programme in Karlsruhe at the Zentrum für Kunst und Medientechnologie (ZKM). Jeffrey Shaw, famous researcher in the area of VR, works on museum applications as director of the Institute of Image Media. Bernhard Screxhe, associate director of the Media Museum, another part of the ZKM, will give us an extensive interview in a forthcoming issue.

**GREECE.** "Relatively speaking, I do not believe that our cultural sector can be considered less developed, in terms of IT use, than the European 'average'," says Dr. Nikitas Kastis, from the Lambrakis Research Foundation (LRF). He continues, "a considerable number of museums -- with the exception of the state-owned ones -- have been involved in development projects, national or European." Costis Dallas, Chair of the CIDOC Multimedia Working Group and past Director of the Benaki Museum where he developed the pilot "Sacred Way" educational application, notes that in Greece "support for Cultural IMM is being offered by the Ministry of Research and Technology."

The Greek Ministry of National Economy, considering the cultural goods market as a very dynamic one, commissioned a study of "New Technologies in Culture" from LRF. The study has been completed but "unfortunately, the Greek Ministry of Culture has not yet adopted the idea to go on with the implementation," regrets Nikitas Kastis. The LRF seems very close to the European Commission approach, and promotes the idea that museums must be considered as one type of cultural information provider in an open information market. Nikitas Kastis believes that "one of the most effective driving factors for cultural information market evolution could be the funding of educational goods development. It has to be considered of high priority in national and European cultural policy making in the area of IT&T applications."

**THE NETHERLANDS.** "The use of multimedia is not systematically supported. The Dutch are more or less allergic to cultural guidance and to nationalism or centralism. So that explains something, I guess. Municipalities go their own way on museum policy. But again no policy on multimedia here," says Jeanne Hogenboom, Bureau for Automated Information Management in Museums and Other Cultural Institutions (IMC).

There are at least 800 museums in The Netherlands, and 200 of them might be considered "automated," as a result of an effort that begun in the 1970s using the MDA cataloging system. Most of the applications focus on collections management, but there are also a few educational experiments. Since 1989, the Ministry of Culture has established an automation advisory department, RKD, The Hague. A DFL 400 K "PC Museum Project" has been launched, aimed at small museums and national history museums, which supplies a package to start automating collections.

The big issue of the 1990s is the privatization of national museums, now being followed by some city museums. The collections remain state owned, but the body caring for the museum are privatized to cut down costs. This leaves no room for any central policy, as national museums take their "independence!" There is still a DFL 40 M "Deltaplan," aimed at supporting conservation (80%) and registration (20%) until 1996.

Jeanne Hogenboom summarizes the situation in a few points: "No central policy. Good initiatives from museum incidentally supported. Strong professional contacts through the users groups and the Museum Association. Voluntary cooperation. No national database."

**PORTUGAL.** "The state of multimedia reflects the situation of Portuguese museums in terms of being not dynamic enough, not having specialized and prepared professionals, not enough money and so on . . .," observes Mario Brito, from the Museu Regional de Arqueologia D. Diogo de Sousa. Portuguese museums are mainly divided in 3 groups:

1. Museums under the control of Central Government IPM (Institut Portugais de Musée). This group of 28 establishments represents important ones, some of them involved in European projects.
2. Museums controlled by local governments. Most of them are very small, with no multimedia projects or experience, which is not surprising when you learn that the third main city, Braga, has fewer than 80,000 inhabitants.
3. Private museums, and among them, the Museum of Music that opened this summer with multimedia applications for its audience.

**LUXEMBOURG.** This small European country is far from the least active in the field of cultural multimedia. Luxembourg will be the Cultural Capital of Europe in 1995 and plans to include multimedia among technical and artistic resources displayed during the year. CAP'95 is a project that will

provide interactive kiosks throughout the city, to present users a guide to cultural and tourist attractions as well as sporting events, transport and leisure activities. It is developed on IBM 8696 platforms, coordinated by Roland Pinnel, director of the City of Culture offices of Luxembourg and Lisbon (Cultural Capital in 1994).

**SPAIN.** Is there any national policy towards IT for museums? "For this question I've got a quick answer: nothing," says Juan José Vazquez from the Madrid-based company INo3. "Investment is so scarce that it hardly, if at all, reaches the institutions and museums. Neither private nor public investment is heading in that direction with the exception of the Biblioteca Nacional (National Library), which is constructing a permanent exhibition about the evolution of books, and has several POIs as main sources of information for the objects in the exhibition. Institutions like Museo Reina Sofia have stalled the projects, and Museo Thyssen is not considering any development [in this regard], while Museo del Prado is submerged in a sea of doubts." According to Agustin Jimenez, from the EC representation in Spain, "multimedia projects in Spanish museums are very scattered. It is due to regionalism, and because innovative projects are developed either by private museums or commercial firms."

Even though there is no clear policy at a national scale, a database-oriented approach has been followed for many years in Catalonia. Through its Department of Culture, the autonomous government regulates the protection and diffusion of the heritage, including the collections of the 250 public and private museum using DAC (Assisted Collections Documentation), a documentation and management collection software that runs on DOS and Windows PC with Unix file servers. Its distribution began in 1993, and 80 museums are currently using it. Its implementation sounds successful, as many institutions from other autonomous communities in Spain expressed an interest in using it. "In this connection, we have been forced to translate it into Spanish (the original is in Catalan) and, as from 1995, it will be commercialised all over Spain," comments Joan Guitart, Conseller of Culture. "The ultimate objective is to create a database of all the cultural assets in Catalonia." Access to this database is planned either online or via optical discs.

"Diffusion, at the national as well as international level, is a particularly important and very interesting subject as far as the Department of Culture is concerned," stresses Joan Guitart. "We are very interested in the RAMA (Remote Access to Museum Archives) project, and have already started to work with its promoters." RAMA is one of the European Union programs we will present in our next issue. The Catalonia Directorate General of Cultural Heritage also took part in the publication of the NARCISSE (CD-ROM, another European project. [See NARCISSE, *Archives and Museum Informatics* (Winter 1993/94) vol.7 #4, p.4-6]

Despite this apparent lack of policy and government support at a national level, multimedia in museums in Europe is receiving substantial public funding and is the focus of considerable research. Oddly, this is a consequence of local government and European Union financing. In part two of this article, to be published in the next issue, we will profile this support and discuss its outcomes.



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## CONFERENCES

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### CIDOC/MCN

The Committee on Documentation (CIDOC) of the International Council of Museums held its 1994 annual meeting in conjunction with the annual conference of the Museum Computer Network in Washington in late August. The coordinated conferences were a tremendous success for both organizations, attracting record numbers to both meetings and providing opportunities for valuable collaborations to be explored.

Because these meetings both had numerous parallel sessions and even these were interrupted for me by many private meetings, my report cannot begin to cover all that went on. Nonetheless, the number of important talks I heard and useful contacts I made certainly qualified this as one of the year's great successes.

CIDOC is a committee, with numerous working groups, so its meeting was structured to allow working groups to do their work and report to the meeting as a whole, as well as for more standard content sessions. The meeting proper opened Monday, August 29 (many working meetings having already taken place during the previous two days). Approximately 200 of CIDOC's 650 members were in attendance to hear Yanl Harimen, a Mexican anthropologist, establish the nexus between cultural heritage and identity and explain why she believes there will continue to be a growing worldwide investment in cultural heritage as its economic value and societal significance becomes even more appreciated by governments. She challenged the audience to develop methods to realize the promise of "Connecting Cultures," the theme of the meeting.

Following the plenary address, Andrew Roberts, Chairman of CIDOC, opened the business portion of the meeting to reports by the chairs of working groups. The Ethnographic Working Group (which was established in 1993) reported that it was compiling ethnographic data standards and would be conducting a survey this year to identify standards in use throughout the world. Costis Dallas reported that the Multimedia Working Group was authoring a basic guide to multimedia projects which will be edited by Jan Van der Starre and will have contributions from almost thirty authors and reviewers. Leonard Will described the Libraries Working Group as a discussion forum, not oriented towards creating a product but towards achieving greater understanding among its members. Toni Petersen reported that the newly merged Data and Terminology Working Groups had published a

directory of thesauri of object names and was proposing a standard for Minimum Information Categories for Museum Objects (MICMO). The Database Working Group is trying to build a knowledge base of all collections management automation efforts and will be working on ways to make it available on the Internet. Kathy Spiess reported that the Data Model Working Group continues to build on its model (available from Pat Reed at the Smithsonian Institution, OIRM) and is now modeling relationships. Jan Hoogenboom reported for the CIDOC Services Working Group that it was publishing fact sheets on basic issues and had two available already: registration and labeling. Andrew Roberts concluded by reminding members that all CIDOC working groups operate under sunset provisions and will expire in 1995. Working groups with new three-year mandates will be renewed or created and ideas (such as a working group on Directory services and the Internet which has already been proposed) were invited.

I attended several days of meetings of the Multimedia Working Group. There were about 30 other participants, although few were present throughout. Three primary issues (and a lot of minor ones) were on the agenda:

- the production of project guidelines or a basic handbook on multimedia in museums,
- mounting a display of multimedia for the triennial conference of CIDOC to be held in Stavanger, Norway, in July 1995, and
- implicitly, but never quite explicitly, the relationship between the working group and AVICOM, the Audio-Visual Committee of ICOM.

A detailed outline of the handbook and assignments to authors and reviewers was developed. Jennifer Trant of the Getty Art History Information Program's Imaging Initiative agreed to publish the product for ICOM and make it available for the ICHIM conference in October 1995. Jan van der Starre will be the editor in chief.

It was agreed that the opportunity to display at ICOM should not be used as a show for CIDOC members as much as for other delegates, so that placement would be sought in the main hall and the demonstrations should be integrated in advance through linked "home pages" available via the World Wide Web. Again the Imaging Initiative of the Getty AHIP program was able to offer some assistance to ensure telecommunications and a physical set-up if the organizers of ICOM can provide a site. Howard Besser of the Universities of Michigan and California at Berkeley offered to have his students build a linked cultural heritage services home page.

The underlying question of why CIDOC has a Multimedia Working Group and how it is related to AVICOM was begged, I thought. There was less attention to the issue of multimedia as documentation, to documentation

of multimedia, or to multimedia standards as a way of ensuring interoperability than I would have preferred and more attention to matters of content and interface which I would have been happier to see assigned to AVICOM.

A lively discussion took place around copyright in multimedia, with a sense of despair beginning to pervade much of the discussion as the realities of trying to obtain rights to reasonably valuable content are being confronted (see my editorial in this issue).

I spoke at a session on the proposed Minimum Information Content for Museum Objects (MICMO). Toni Petersen, chair of the working group responsible for the draft, introduced the history and objectives of MICMO, explaining that in 1978 Chenhall and Homulos had recommended 16 data categories (subsequently reduced to nine) but no formal action was taken. This committee conducted a survey of data recording practices (receiving responses based on 13 standards) and identified 15 categories, although no single practice incorporated data from all fifteen. Each category had numerous sub-categories (more like fields). Alice Grant, who as standards officer for the Museum Documentation Association (UK) did much of the work, then presented the draft. Commentaries by Costis Dallas and me pointed to most of the same weaknesses. Foremost among these was the concept of a "minimum." Minimum to what application purpose?, we both asked. The data, we pointed out, was not linked to a process so it was not possible to determine if the advice for how it should be structured would help in the ultimate use of the field. How, we asked, could the document incorporate a set of principles for deriving minimum data categories so that the rationale behind these minima, rather than some other set, could be debated? Following the session the working group took these and comments from the floor to a working meeting at which further revisions were apparently made. I look forward to seeing a future draft.

CIDOC also held a "Marketplace/Bazaar" to see non-commercial software developments from around the world. Included were three Brazilian, two British, a Croatian, three Chilean, a Finnish, a French, a Greek, a Mexican, a Romanian, two Russian, a Slovenia, and four US programs, most simply illustrating how local institutions have used interactive multimedia, but several with broader interest to the community. These included a demonstration by the RAMA (Remote Access to Museum Archives) consortium of the European Union which has been developing interfaces and communications methods to search across museum databases. [*Contact Dominique Delouis, Telesystemes, +331-4614-5186; fax +331-4614-5681.*]

Following the lead of the AAM, CIDOC published a "Sourcebook" that contained quite a number of useful short articles, methods guidelines, and resource sheets. Hopefully this innovation will be continued in future years.

The Museum Computer Network meeting which followed CIDOC was not only larger than ever before but had a pleasantly international cast. Sessions I attended were of exceptionally high quality, and the exhibition hall featured twenty or so commercial vendors including a few new products.

Charles Patch of the Historic New Orleans Collection, and collaborators from the Universities of Michigan, Ottawa, and Pennsylvania, reported on "A System for Thematically Querying a Multimedia Archives" which presented research on natural language query strategies for accessing images from a large photographic archives. The archives belonged to Clarence John Laughlin (1905-1975), a somewhat eccentric, slightly marginal, but artistically important photographer who wrote a great deal about the purpose and meaning of his often evocative and abstract images. Steven Kimbrough and his students from the Wharton School at the University of Pennsylvania presented a very impressive search method based on ranked retrieval, sensitive to semantic latency and context, which they developed for decision support systems and applied here. [For more, contact [kimbrough@wharton.upenn.edu](mailto:kimbrough@wharton.upenn.edu).]

At a session organized by Steve Dietz of the National Museum of American Art on "Virtual Reality, Ubiquitous Computing, and Art in the Age of Digital Reproductions", I saw Eric Zarakov, Program Manager of the Quicktime VR Advanced Technology Group at Apple Computer, Inc. [[Zarakov@applelink.apple.com](mailto:Zarakov@applelink.apple.com)] demonstrate the about-to-be-released Virtual Reality extensions to Quicktime. These run on the same low-end platforms as Quicktime itself (MacLCIII or Intel 386 machines) and use software only. They can be based on the real world (from photographs) or rendered scenes. The software allows the user to "walk about" in a seamless 360 degree environment using the mouse to control movements, to "zoom" in on items in that environment, and through hyperlinks activated to the objects, to "pick them up and look them over." After beginning with very expensive stop-motion and 360 degree lens photographic processes, the developers made software tools to "knit" regular photographs together in order to produce the effect of 360 degree photography. Ultimately these tools were powerful enough to allow shots taken with throw away box cameras to be used to make up the virtual spaces. Licenses for distributable software using Quicktime VR are on offer now; the software will be available for consumer use by the end of 1994.

An extremely well attended session on the Internet and Imaging chaired by David Bridge reflected the excitement that museums are experiencing as a consequence of the widespread adoption of Mosaic. Eric Jordan (previously of the University of Victoria but now with his own company, Unisoft), detailed the problems of managing a large slide library (150,000 slides) with lots of usage that led to the development of a software system (client-server, scalable, based on public communications protocols and layering) that has been used at the Archives of British Columbia since April 1993. One of the

most interesting aspects of this system, Project Mask, is that it includes an Interactive Voice Response interface so the "client" can be a telephone providing input to menu selection by pressing buttons. The server reads the same texts it would have put to the screen and when it encounters images that satisfy the users criteria it can fax them to the user! It also includes a concept of forms which are stylesheets for multimedia objects. The project is developing tools that link these forms into relational databases, allowing collections management through modeling the processes as forms. At the same session, reports from the Archives of British Columbia on the use of the system and from the Museum of Paleontology, U.C. Berkeley on Mosaic applications, illustrated the breadth of new approaches to multimedia on the Internet.

One session I attended described several national databases of art: at the Norwegian National Gallery, the Finnish National Art Registry, and the Danish National Museum. Another provided a useful update from Michael Roark of the AAM on legislation in the US and the role of museum lobbyists in securing a place for museums on the NII. Another served as an update on the efforts of the CIMI Consortium which also reported in a special newsletter available from its Project Manager John Perkins [[JPerkins@fox.nstn.ns.ca](mailto:JPerkins@fox.nstn.ns.ca)].

Among the new commercial systems seen at MCN for the first time was EmbARK from DCI which is reviewed in this issue by Kathy Garmil. ACCS Museum Software, which has been serving Monticello since 1988, came to the meeting to show their museum catalog with impressive field data capture and archaeological object geo-referenced visualization interfaces. The catalog itself doesn't do much or look particularly powerful, but the interfaces are optimized for museums which feature data on a historic site or sites. Data captured from site-based equipment can be directly recorded into the system and search results from the artifact catalog can be output to a mapping program and shown in interesting and useful ways.

Catalyst Systems, based in Minnesota, came to demonstrate an under development version of its "Automated Collection Management" software. The brothers who own this firm were anxious to show object-oriented data management and leading edge ideas such as using images as a query statement while not getting into too great detail about the functionality associated with the as yet incomplete modules for cataloging, registration, exhibitions, conservation, authority control, and administration. The company envisions offering two versions of this system -- one for individual collectors at ca.\$3500 and one for institutions at \$6000 plus \$1200 per user. Unless they obtain a great deal broader understanding of museums than they had at the time of the meeting, however, I expect their December 1994 launch to be a dud.

[1]

## Society of American Archivists

In the ultimate test of the dedication of its members, the SAA met in Indianapolis over Labor Day. Without being unnecessarily graphic about Indianapolis, I can only say the choice of venue kept participants from being tempted to stray from the meeting!

For me the conference began with an afternoon session organized by Paul Conway and Lisa Weber as a "Leadership Forum." The purpose was to have those individuals whose positions in SAA influence the Society's program understand the strategic goals of the Society and think about how to implement them. Though this was a worthy objective, the result of a few hours of breakout meetings was less than impressive, I think because consolidated reports from the groups sterilized the ideas that had been generated rather than selecting exemplary ones and developing them. Perhaps the written report will do more justice to the better ideas, but on one level it didn't work: I didn't see any impact of the forum in the committee meetings I attended later in the meeting.

Those meetings were, I thought, quite confused. The Electronic Record Section discussion never got off the ground. It only seemed to engage the attendees when the question of why the section existed, and whether it couldn't do its work better by having its members attend other sections, was raised. The Archival Educators Roundtable couldn't bring itself to criticize the SAA Education Office, which clearly has no strategic direction, and couldn't decide if it was willing to have the results of the certification examination released which would reveal success rates by school. The fundamental issue of whether the certification program and archival graduate education are complementary or contradictory was simply avoided, as always, because the people responsible for each were in the room and SAA members are allergic to debate.

In the first round of sessions, I chaired a discussion of my paper "Archival Strategies." In the paper I extend the ideas developed in *Archival Methods* (1988) and draw from them their implications for strategies that must be pursued by the archival profession. Anne Pederson (University of New South Wales, Sydney, Australia) led off the commentary with a paper which focussed on examining the impact that *Archival Methods* and "Strategies," as radical ideas, seemed to have had in archives, especially in Australia. Her talk, illustrated by cartoon overheads, was a fitting prelude to a scholarly analysis and critique of the paper by Ian Wilson (Archivist of Ontario). Ian's talk was too complex to summarize here, but will be remembered by many for the poignant story of Doris Godfrey on which it ends. Ms. Godfrey was one of a number of transcribers who worked for the Canadian Archives at the Public Records Office in London from 1890 to 1945, copying out by hand documents of the colonial history of Canada. Her health broken by the war years, she retired. The then Dominion Archivist of Canada W. Kaye Lamb,

suspended the program and installed microfilm cameras that within three years copied everything the team of transcribers had done for more than fifty years, and much else besides. Wilson's point was that we have the same knowledge of new and emerging methods today that Lamb and his colleagues did in the 1920s and 1930s when they kept a small army of transcribers at work in London rather than accept the new practices of microfilming. The final commentator, Eric Ketelaar (Director General of the National Archives of the Netherlands), documented the declining fortunes of recordkeepers, from the middle ages when they were so respected that every guild portrait showed the records of the guild, to today when they are considered a sort of clerk. He astounded the audience by diving into their midst with a roving microphone and asking difficult questions about strategic alternatives to illustrate how little thought we have given as a profession to why we adopt the methods and approaches that we have. As the organizer of the session, I thought it was good fun and look forward to the set of papers being published.

The next session I attended was more distressing to me. The intention was to discuss two standards for description of architectural records, AVIADOR and the FDA. Deborah Wilde of the Getty Art History Information Program introduced the FDA (Foundation for Documents of Architecture) standard to be published this fall by G.K. Hall by recounting the project pedigree and history. It grew out of work of the Architectural Drawing Advisory Committee from 1983-1986, which was tested by institutions such as the National Archives of the U.S. and the Centre for Canadian Architecture. It steps back from implementation issues and purports to offer a general set of data categories for the description of drawings, documents, buildings, and projects. Janet Parks then described the AVIADOR manual which is intended only for drawings and defines an implementation of MARC-VM (visual materials), Elisabeth Betz Parker's cataloging rules, and the Art and Architecture Thesaurus (AAT). The Avery Art Index, which uses AVIADOR, believes it is the appropriate way to describe architectural drawings. What made the session distressing is that the two speakers could not say whether or not AVIADOR was a conformant implementation of the FDA standard and, if not, what differences there were. Nicholas Oldsberg of the Canadian Centre for Architecture, who was chair of the FDA standards development, urged us to remember that the product was the result of a failed standards development effort and that it doesn't succeed in describing architectural projects. The result was that most attendees left without any idea of what standards to follow or if there even are standards. Rather than clarifying the situation of describing architectural drawings, the session muddied the waters.

An interesting idea in the SAA program this year was to have a series of mini-sessions on technology issues coordinated by the Electronic Records Section. Unfortunately many of the planned sessions didn't occur and the ones I attended were of mixed quality. I thought Susan Hockey's presentation

on SGML was the most rewarding -- it was cast at the right level for the audience and was presented in a pedagogically attentive manner. The session by David Wallace on Documenting Electronic Records was full of useful information but just tried to teach too much for the time available and will be more valuable for most people if they read it. I felt the other sessions just didn't work.

The most surprising session to me was the celebration of the tenth anniversary of the MARC AMC format. The three speakers and chairman Larry Dowler, were all individuals who played major roles in the development and promulgation of the format, so it was not unexpected that they each provided a different view of its history, but their consensus about its future was quite unexpected. Tom Hickerson concluded his account of the technical success of AMC by urging that it shouldn't impede further development. Lisa Weber concluded her talk on the professional impact of AMC as a standard and ways in which it provided (but failed to force) opportunities for self-reflection on our description practices, with a prediction of the end of such cataloging and a future of SGML and distributed collections linked by Z39.50 facilities. Steve Hensen described his own cataloging rules, APPM, as a victory of libraries over archival practices. He recommended the Working Group on Standards for Archival Description view of description as a process rather than a product. He saw a future in which cataloging surrogates would be replaced by full-text in HTML delivered over the Internet and recommended to archivists that they look to a near future in which this will be the predominant way users access records. The over 200 archivists in the room, most of whom had grown up with or been promoters of MARC AMC, were definitely challenged.

Archivists were also challenged at a session chaired by Richard Cox which presented preliminary findings of the University of Pittsburgh research project on Functional Requirements for Recordkeeping. Cox presented an overview of the research methods and hypotheses. He was followed by Wendy Duff who explained how the functional requirements are being tested in experimental organizations and the process by which the project is identifying literary warrant for these requirements in the authoritative literature of various professions such as law, audits, health care, laboratory methods, and quality assurance. Ken Sochats then discussed the formal expression of the functional requirements as "production rules" which can be tested in automated systems. *[A copy of the full report of the project, which was distributed at the session, is available from Richard Cox, 412-624-3245 or rjc@lis.pitt.edu.]*

A session that was much less well-attended contained papers on two important initiatives that are potentially of great significance to archivists: GILS and the metadata standards of the Federal Geographic Data Committee. Peggy Adams of NARA presented the paper on GILS in which she argued that the National Archives had pursued a constructive role in ensur-

ing that this distributed system for documenting governmental information products and systems would serve archival interests. While her account directly contradicted the evidence that has been publicly available, it was good to hear that the archives now believes that GILS provides an important opportunity and will be working to ensure that it is populated with descriptions of information systems useful to the citizens and to NARA. *(For my comments on the OMB Bulletin which requires NARA to play this role, see this issue, p.247).*

Bruce Ambacher then gave an extremely interesting paper on the evolution of the Federal Geographic Data Committee standards for documentation of GIS data sets and the way in which the metadata definitions required by those standards serve as archival description. I hope that his detailed and important paper will be published soon.

A very brief session on multiple thesauri ended the penultimate day of meetings. Multiple thesauri are a growing problem in a world in which many rich databases are available, but they all use different access vocabularies because they have different primary audiences. Gary Strawn of Northwestern University described a piece of user interface software that could be laid over their standard library search system to bridge between databases using Library of Congress subject headings and another vocabulary, such as MeSH. In a simple, inexpensive (and not totally satisfactory) way the searchers could use databases with multiple thesauri. Sarah Rouse of the Library of Congress presented a paper written by Mark Ziomek which described a totally different approach to multiple thesauri: reconciliation of differences. Such an approach has been underway for a number of years with the AAT, AMIA, MeSH, GMGDC, RBMS, and LCSH vocabularies. The paper discussed the methods that participants are using (basically face-to-face meetings and negotiations) to try to reconcile differences. Many terms have been normalized between these vocabularies, but sometimes resolution of differences ends with terms being non-preferred terms in one list that are preferred in another. I was much more attracted to the front-end approach since the reconciliation could go on forever with larger and larger universes of vocabularies and tremendous manpower requirements.

The final session of the meeting was on the electronic records research agenda of the NHPRC. John McDonald (National Archives of Canada) led off the session with a history of the drafting of the agenda and its impacts, describing it as a "milestone" and a "beacon." Margaret Hedstrom (New York State Archives), in an extremely thoughtful paper, examined the relationship between the ideas articulated in the research agenda and the prior decade of electronic data archives. She then examined the objectives set out for the conference which created the agenda and considered how it has succeeded and where it fell short. Of particular interest was her observation of how little the conference held in 1992 was influenced by the Internet. Asking why it is that many of the innovations in thinking introduced in the agenda have not

yet influenced archivists, Hedstrom resorted to Everett Roger's classic diffusion of innovation studies and noted how profound the transformational requirement imposed by these new ideas is for the profession. In the final paper, Liisa Fagerlund (United Nations) noted that as a non-participant in the meeting that crafted the agenda, she had a very different view. She found that her institution had much more applied interests and concerns than those expressed in the somewhat pure research objectives of the agenda and wished that it had addressed more concrete technology and implementation issues. She also noted that few archivists were in a position to engage in multidisciplinary research with teams from outside their own institutions -- time and positioning made this difficult. In the end, she urged another activity on top of research: a "technology watch" that would advise archivists of the best directions to take today and dispense practical advice about how to get there.



## ELECTRONIC EVIDENCE

### Strategies for Managing Records in Contemporary Organizations

by David Bearman

**Archives & Museum Informatics** has made available a collection of papers written by David Bearman on electronic records management, plus a new essay exploring the evolution of the concepts they develop.

The papers reprinted here were previously published between 1989 and 1993 in journals in the US, Canada, Portugal, Australia, and in a United Nations report. A detailed index compiled by Victoria Irons Walch is included.

*US \$40.00 prepaid; a \$5.00 handling fee is assessed billed orders. Include \$10.00 per copy for shipping outside the U.S. and Canada.*

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## CALENDAR

**December 5-8** Long Beach, CA, CALS Expo '94 [CALS Expo International '94, Galaxy Registration, Inc., P.O. Box 3379, Frederick, MD 21705; 202-775-1309; fax 202-466-9080]

**December 6-9** Washington, DC, Fall Internet World 94 [Mecklermedia Conference Management, 20 Ketchum St., Westport, CT 06880; 800-632-5537; fax 203-226-6976]

**January 13-16** Cannes, France, MILIA '95 [Laurine Garaude, Reed Midem Organisation, 179 Avenue Victor Hugo, 75116 Paris; +33-1-4434-4444; fax +33-1-4434-4400]

**January 25-28** San Antonio, TX, Visual Resources Association [Leigh Gates, VRA Secretary, Art Institute of Chicago, Ryerson Library, 37 S. Wabash St., Chicago, IL 60603]

**February 22-24** Kissimmee, FL, Orlando Multimedia '95 [Society for Applied Learning Technology, 50 Culpeper St., Warrenton, VA 22186; 703-347-0055; fax 703-349-3169]

**March 7-9** Long Beach, CA, Documentation '95 [Graphic Communications Association, 100 Daingerfield Rd., Alexandria, VA 22314-2888; Fax 703-548-2867]

**March 22-25** San Antonio, TX, SITE 95 [AACE, P.O. Box 2966, Charlottesville, VA 22902; 804-973-3987; fax 804-978-7449; e-mail AACE@virginia.edu]

## INBOX

### REFERENCE

- National Security Archive, **The National Security Archive Index on CD-ROM** (Alexandria, VA, Charles Chadwick-Healey Inc., 1994) CD-ROM, software and user's manual.

This CD contains the full indexes (in print 21,462 pages) to twelve collections of documents (35,857 documents totaling 184,458 pages) on the making of U.S. foreign policy. The document sets have previously been published with individual printed indexes to microfiche of the original documents. The twelve sets are: Afghanistan 1973-1990; The Berlin Crisis 1958-1962; the Cuban Missile Crisis 1962; El Salvador 1977-1984; Iran 1977-1980; the Iran-Contra Affair 1983-1988; Nicaragua 1978-1990; the Philippines 1965-1986; South Africa 1962-1989; the U.S. Intelligence Community 1947-1989; U.S. Military Uses of Space 1945-1991; and U.S. Nuclear Non-Proliferation 1945-1991. The ability to search across sets and use sophisticated searching facilities of the CD are invaluable for any serious researcher.

- Getty Art History Information Program, **Union List of Artists Names** (N.Y., G.K. Hall, 1994). 2900 pp. in 4 vols. \$495; also in electronic form - single user \$195; multi-user \$495.

The long-awaited Union List of Artists Names provides over 200,000 names for more than 100,000 in-

dividuals together with bibliographic citations in paper and as an Art Reference Tool (ART) memory-resident DOS program. A review can be found in *Spectra*, vol. 22 #1 (1994), pp.17-19.

## REPORTS

- Commonwealth of Australia, Bureau of Transportation & Communication, Communications Futures Project, **New Forms and New Media: Commercial and Cultural Policy Implications** (Communications Futures Project, Work in Progress Paper #3, August 1994), 148pp. ISBN 0-642-21303-8 [*Available free from the Manager, Commonwealth Information Services, Bureau of Transportation and Communication, GPO Box 501, Canberra ACT 2601, Australia and by ftp from happy.doc.gov.au under 'cfp-documents' in a variety of formats*]

This report on the state of the "content" industries and their implications for cultural policy in Australia could, with different statistics, represent the situation in any country in the world. The authors attempt to sort out international trends in technology and communications, relate them to potential economic and cultural benefits, and frame policies to support the development of a vital "content" sector.

- **Humanities and Arts on the Information Highways: A Profile** (Final Report of a National Initiative sponsored by the Getty Art History Information Program, American Council of Learned

Societies, and Coalition for Networked Information, September 1994) 55pp.

This report consists of summaries of reports by two working groups established in the spring of 1994 to define the technical requirements of humanities networking and the nature of tools and resources available or under development, along with an extended introduction and policy discussion. The document examines the public benefits of humanities and arts with examples of numerous projects. It then details the necessary component of a Humanities and Arts Information Infrastructure: physical facilities, information content, software applications, standards, and people. The report is essentially what was discussed in Washington, DC, at the July 14 meeting of cultural agencies (see Vol.8 #2, pp.131-134). It was released publicly at the same time as the NITF report in order to influence the public discussion of that document, although it had already evidently influenced some of the contents of the Administration's Application Paper (see below).

- Information Infrastructure Task Force, **The Information Infrastructure: Reaching Society's Goals**, Report of the Information Infrastructure Task Force Committee on Applications and Technology (Gaithersburg, NIST, 1994), SP868. [*Available in hard copy from NTIS, electronic copy by gopher at iitf.doc.gov and www at http://iitf.doc.gov.*]

This second set of applications papers by the Information In-

frastructure Task Force contains the paper on Arts, Humanities, and Culture which is of special interest to readers of this journal, in addition to papers on Electric Power, Transportation, Telecommuting, Emergency Management, Environment, Public Safety, and services to people with disabilities. The report has an open comment period, although obviously one cannot wait too long and expect to have an effect.

The chapter on "Arts, Humanities, and Culture on the NII" (pp.117-142) makes a strong case for the economic value of cultural information and for its importance in education in a multi-cultural society. It includes numerous nice examples of actual and possible uses of networked cultural information and cites NEA and NEH funding of efforts such as the TEI, CIMI, and AITF, as well as private sector partnerships such as Project Open Book, the Cornell/Xerox Project, and the Dead Sea Scrolls Project. It notes the efforts of MCN, the Getty AHIP program, CIMI, and the AAMD, and outlines some challenges in the near and longer term. These include creating content, getting institutions online, dealing with copyright, and creating a "census" or overview of digital resources. In general, I applaud the NII Task Force report. However, it neglected to emphasize three matters of crucial significance which were explained in the Getty, ACLS, CNI report (see above).

(1) While standards are critical to making information available, we must not make the mistake of thinking these standards are primarily

technical ones; instead they are standards of information content and values which alone will make the huge repository of networked bytes meaningful.

(2) The research that is required for arts and humanities information to be exploited on the Internet and NII is not only of importance to the cultural arena, it is critical to the future of the networks. The problems that face the humanities today -- natural language processing, virtual reality, visualization -- are the most challenging computing problems we have ever faced, and their resolution will determine whether networked information systems transform our society.

(3) The cultural heritage sector needs an ongoing voice in the development of national policy for the NII. It is not enough that by strenuous effort we are able to persuade Department of Commerce staff to author one white paper -- there must be ongoing involvement.

- Information Infrastructure Task Force, **National Information Infrastructure: Progress Report** September 1993-94

This document reviews the efforts of the Task Force itself and of every Federal agency over the past year. Some of these reports are very impressive and exciting: the Library of Congress lists nineteen activities ranging from providing the public with free software to search LC's catalogs to launching a National Digital Library initiative. Unfortunately the National Archives could think of only a single activity -- host-

ing a conference on electronic dissemination of legal information.

- Library of Congress, **Strategic Directions Toward a Digital Library**, September 13, 1994, 15pp. [Available free from Library of Congress, Office of the Librarian, Washington, DC 20540; 202-707-5220; fax 202-707-1714.]

This white paper by the Digital Library Coordinating Committee spells out the proposed roles of the Library of Congress, other libraries, and the government and private sectors in the creation of a National Digital Library which will result in at least 5 million digitized items within LC by the year 2000. The issues range from funding and partnerships, through technology, to copyright, and involve new approaches to intellectual control, preservation, and public service. The paper outlines the role of a series of meetings and consultations to take place over the next six months. Mastering these issues as presented is critical to anyone who might become involved in this large scale digitization effort.

- National Archives and Records Administration, **Digital Imaging and Optical Data Disk Storage Systems: Long-term Access Strategies for Federal Agencies**. Technical Information Paper #12, July 1994, 295pp.

Even though it still accepts only 9600 bpi tape and CD-ROM as a transfer medium for permanent records, NARA issued this guidance for agencies involved in use of WORM and recordable optical technologies for long-term records.

The position they take is that agencies need to adopt open-systems architectures, take care in the initial conversion (they assume for an unknown reason that all records will be scanned from paper), use open or well documented image file headers and compression techniques, employ SQL compliant indexing, store the index magnetically, and test all conversions and migrations for backward compatibility. Other recommendations advise good information management practices such as understanding user needs, designing cost-effective solutions, and ensuring adherence to legal admissibility standards.

- National Research Council (US), **Preserving Scientific Information on our Physical Universe: A New Strategy for Archiving our Nation's Scientific Information Resources** (Report of the Steering Committee for the Study of the Long-term Retention of Selected Scientific and Technical Records of the Federal Government) (Washington, DC, National Research Council, 1994).

This report grew out of a study proposed by the National Archives and Records Administration at a meeting in January 1992. The conclusions are simple and revolutionary: only the nation's scientific community can preserve its records and they will do so through a self-managed distributed consortium of scientific institutions. The National Archives lacks the facilities and funding to maintain the records and the scientific knowledge to determine what to keep. The proposed distributed network of institutions

maintaining archives of scientific information is a model of what archival activities will look like in the future, even if the subject of these holdings is not what we would typically call records, but rather simply data. The public policy implications will need to be worked out in the future -- the NARA position is, as yet, unknown, although it could possibly be inferred from the NARA internal report on affiliated archives (See "NARA Task Force Limits Affiliated Archives," p.253).

- State Archives of the Netherlands, **PIVOT: A New Turn to Appraisal Policy** (The Hague, Rijkarchiefdienst, 1991).

The Dutch National Archives has recently translated into English its 1991 guidance to the Dutch civil service on implementing a reduction in the transfer period for government records. We can now better understand the strategies they adopted to cope with a change in the Public Records Act that requires government documents to be transferred to the archives after twenty, rather than fifty, years.

The basic strategy is to conduct a top-down, functional analysis of the bureaucracy to determine up front what transactions require long-term documentation. By moving in concert with agencies to act on those business functions, the archives and the agencies save effort. The PIVOT brochure articulates this rationale and tries to enlist agency employees in the new, macro selection criteria. The brochure is most interesting for its explicit embrace of this new strategy in which it is more forthright

than the Canadian or Australian policies along the same lines. For example, it states that "it is better to put the management of information in any form in the hands of the departments themselves rather than imposing it on the central records and documentation department [because it] ... makes the departments themselves accountable for their management. Data management can then be better adapted to the requirements of the department itself."

This from the homeland of modern archival theory. What difference 100 years can make in methods!

## NEWSLETTERS

- **Critical Issues: A Legal & Business Journal for Cultural Organizations** [ISSN 1075-3974] six times p.a. \$95. Available from Fred B. Rothman & Co., 10368 WE. Centennial Rd., Littleton CO 80127; 303-979-5657; fax 303-978-1457.

Based on the preliminary issue (April 1994) this 12-page newsletter will carry the views of Leonard DuBoff, an attorney at Northwestern Law School, and George Hicks, Director of the Airmen Memorial Museum in Suitland, Maryland. Their initial, didactic, articles address some matters of copyright, institutional investing, dealing with thefts, and joint authorship agreements. While brief, they are fairly interesting.

- **Computers and Texts** [ISSN 0963-1763] Free to UK academics; fees elsewhere. *CTI Centre for Textual Studies & Office for Humanities Communication, 13 Banbury Rd., Oxford OX2 6NN; ctitext@vax.ox.ac.uk.*

Issue #7 (July 1994) announces the funding of the Computers in Teaching Initiative for the next five years, the completion of the third edition of a "Resources Guide," and a web server, and the launch of a new format featuring more in-depth articles.

- **Interactive Age: Content, Technology, and Communications for the Information Highway** [No ISSN yet] Monthly in 1994; bi-monthly in future. Industry tabloid/ free to "qualified subscribers." [*Circulation Dept., P.O.Box 1194 Skokie IL 60076-8194*]

Pretty standard tabloid style articles. Many with nice inside stories and lots of names, products, and ads. Could prove quite useful.

- **Multimedia Business Report** [ISSN 1065-8300] has gone weekly.

At \$476 for 46 issues however, this 8-page newsletter, which replicates business pages of the daily press, could prove a bit steep.

- **RAMA (Remote Access to Museum Archives) News #1** [Summer 1994]. *Editor, Mrs. M. Lagendijk, P.O.Box 72, 2501 CD Den Haag, the Netherlands (+31-70-338-1401; fax +31-70-350-6319)*

The 4-page first issue contains reports from several project participants.

- **The Record: News from the National Archives** Vol.1#1 September 1994 (five times per year; No ISSN). [*Available from NARA, Public Affairs, Washington, DC 20408*]

This new, free, newsletter contains information previously released in other forms about accessions and declassifications, along with articles of interest to the broader community. This first issue includes an article by me on the "Virtual Archives of the Near Future."

## JOURNALS

- **Journal of the American Society for Information Science**, Vol. 45 #8, September 1994.

This issue contains a special section, "Perspectives on Indexing," which includes at least three articles readers of this journal will want to study. Elaine Svenonius addresses "Access to Nonbook Materials," Helen Tibbo discusses "Indexing for the Humanities," and James Anderson presents his views on "Standards for Indexing." Each should be read.

## ARTICLES

- Joseph A. Busch, "How to Choose Among Alternative Technologies for Physical Access to Art Images," **Computers in the History of Art**, Vol. 4 #2 (1994), pp.3-16.

Managing slide collections and photo archives is a huge problem which is not made easier by numerous competing technologies.

Busch suggests a model of measures that can be used to assess the fit between patterns use and technologies of storage.

- George F. MacDonald, "Dynamics of Culture and Identity and the Potential of Interactive Technologies," **SPECTRA** Vol. 22 #1 (Summer 1994) pp.6-9.

The CEO of the Canadian Museum of Civilization speculates on the virtual Family of Man and the museum as a source of genealogy and identity in the age of the Global Information Infrastructure.

- Bruce R. Schatz and Joseph Hardin, "NCSA Mosaic and the World Wide Web: Global Hypermedia Protocols for the Internet," **Science** (August 12, 1994), Vol. 265, pp.895-901.

A good introduction and framework with which to understand the revolution in Internet communication that is underway as a consequence of the introduction of the first graphical interface with hyperlinking capabilities.

## BOOKS

- David Bearman, **Electronic Evidence: Strategies for Managing Records in Contemporary Organizations** (Pittsburgh, Archives & Museum Informatics, 1994) [ISBN 1-885626-08-8] 314pp. \$40.

This collection of essays published between 1990 and 1993 in a variety of journals worldwide defines a new approach to thinking about electronic records and provides a framework for interven-

tion to ensure the creation and maintenance of evidence in electronic formats. It also presents the background and conceptual underpinning of the recent University of Pittsburgh research project on electronic recordkeeping and of Bearman's Edith-Cowan University distance education course on this subject.

- Sue McKemmish and Michael Piggot, editors, **The Record Continuum: Ian Maclean and Australian Archives first Fifty Years** (Melbourne, Ancora Press & Monash University, 1994).

This collection of essays celebrates the 50th anniversary of The Australian Archives and Ian Maclean's early leadership of that institution. Australian archivists have realized in recent years that their distinctive method of managing records and maintaining intellectual control has been poorly understood, not well appreciated or simply rejected by the rest of the world. A few of the essays in this volume are of the celebratory history genre, but by and large the volume focuses on, and makes its greatest contribution in, the elucidation of the Australian (or series) system of archival control. From Frank Upward's revisionist "In Search of the Continuum," and Mark Wagland and Russell Kelly's workmanlike essay "The Series System," to Chris Hurley's important and clarifying "The Australian (series) System: An exposition," and Sue McKemmish's radical "Are Records Ever Actual," the volume is the strongest and best articulated explanation of that system and its perceived benefits and

relevance today. I would like to focus on these pieces together because they state the rationale for the system of administrative and intellectual control introduced in Australia in the 1960s and developed there in the 1970s and 1980s.

Upward revisits the past from the perspective of the present and discovers that Maclean, in accepting Peter Scott's suggestions on how to deal with the changes in administrative control of records that were widespread in Australian Commonwealth practice, encountered struggles with the British, Continental and American traditions of archival theory. By placing the adoption of a new system in this context, Upward, more than Scott in his writings or others previously, makes us understand what issues unaddressed by practice elsewhere were thought to be resolved by the new system.

Wagland and Kelly describe a system not previously accessible except through internal directives and manuals of practice at Australian Archives. In the process they inadvertently reveal the extent to which physical items, not records, comprise the lowest level of description; that consignments and accessions which are administrative actions are seen as a level in a hierarchy rather than an associated action with potential many-to-many linkages; and the uncertain status of people within the construct. Indeed, their exposition makes us yearn for a rigorous data model.

Chris Hurley tries to provide one. It is a data model and it clarifies intended entities and relations, but it

reflects the system as it actually has been employed and is therefore very much a physical data model of the system rather than a logical data model of normalized relations. As such it begins to expose some of the underlying weaknesses as well as the essential strength of the system.

Sue McKemmish takes the effort to its logical conclusion, realizing that records are always and only, a logical entity. While they may have physical manifestations and these may be in documents, data, and files, the logical entity and its relations to the recordkeeping system and business processes that created it are the crux of the task for archival elucidation. Control devolves from knowing the processes and the records they must create, planning for the capture of the record and the data necessary for its administrative and intellectual control, and taking care to manage that representation over time. McKemmish liberates us from archives in order to do the task of archiving, a concept and a term inexplicable alien to most archivists.

- Ira Penn, Gail Pennex and Jim Coulson, **Records Management Handbook**, 2nd ed. (Brookfield, VT, Gower Publishing, 1994) [ISBN 0-56607-510-5] \$64.95.

This update of a standard reference tool comes at a time when one cannot help but look to see what it is saying about the evolving electronic environment. Incredibly, it says virtually nothing with the exception of a few slightly dated pages on automated systems for control of records and a few pages on document image management systems.

Otherwise, electronic records might not exist. We deserve better.

## EPHEMERA

### ● **ICOM/MCN Sourcebook: 1994 Joint Annual Meeting**

This 192-page compilation of contributed items was printed and distributed for participants in the Joint ICOM/MCN Annual conference in Washington in September. It contains some useful information, but is made difficult to use by the fact that its 37 chapters are (inexplicably) organized in alphabetical order by author. About half the papers are reports on experiences in automating specific museums, particularly in Latin America and Europe. The others include descriptions or background papers on community resources such as the AAT, CIMI, Getty AHIP, Internet resources, ITEM, MUSEUM-L, and RAMA, or papers given at the conference.

- National Archives of Canada Systems Division, **Circulation and Tracking Project: Project Post**

**Mortem Report**, September 6, 1994.

Not all automation efforts that fail are utterly useless. In this report, Gilles Lalonde tries to salvage some benefit from the one part of the Archival Holdings automation effort that went forward.

- University of Pittsburgh, **Recordkeeping Functional Requirements Project: Reports and Working Papers**, Research Reports Series LIS055/LS94001, September 1994 [Available from Richard Cox, University of Pittsburgh SLIS, Pittsburgh PA 15260; 412-624-3245 or [rjc@lis.pitt.edu](mailto:rjc@lis.pitt.edu)].

This loosebound report contains a project overview, nine unpublished papers, and abstracts of seven published papers on the NHPRC-funded University of Pittsburgh recordkeeping research project, providing the most complete account available of the project as of September 1994.



## New York State Archives Establishes Gopher Server

The New York State Archives and Records Administration (SARA) is now using the Internet and gopher server software to make information about State Archives holdings, exhibits, and grant programs for records in New York State instantly and easily accessible. SARA established its own gopher server on July 29. The SARA Gopher is "registered," which means that it can be searched by users of the Internet with the Veronica search software. SARA hopes to serve researchers, teachers, public policy analysts and any citizen by enabling them to learn quickly about what records are in the State Archives and how they can be used, as well as about other services provided by SARA.

SARA is using gopher server software to make available the full-text of guides for Revolutionary War and other military history records, women's history sources, genealogical records, records of the Erie Canal, and other materials held by the archives. In addition, the gopher provides brief summaries of archives holdings in specific topical areas such as probate records, vital records, military service records, and electronic records. The SARA gopher also provides a telnet connection to the online public access catalog of holdings of the State Archives which contains bibliographic descriptions of records in the archives. In addition, SARA uses its

gopher to publicize items of current interest such as exhibit announcements, lists of new accessions, and information on upcoming events at SARA. SARA plans to expand the gopher to provide additional resources.

The benefits of providing information on archives holdings and services via the Internet are clearly shown by the use statistics from the SARA gopher's first month of operation. During the month of August, the directories and documents on the gopher were accessed over 10,000 times. Most users of the gopher access the Internet from academic institutions (43% of all accesses), although government and private organizations are well represented. In addition, over 500 accesses came from outside of the United States. The most popular items on the gopher during the first month were the description of its purpose and the directory of its contents. The gopher was also heavily used to access the online public access catalog. Users also made extremely heavy use of information on how to obtain genealogical and birth and death information. SARA also mounted versions of the recently published *Guide to Records in the New York State Archives* which were downloaded almost 100 times during the month. Anecdotal information from discussions on one listserv indicate that the academic research community finds the service of great value.

The SARA gopher can be accessed by "gophering" to UNIX6.NYSED.GOV. [For further information about the SARA Gopher

contact: Tom Ruller, New York State Archives and Records Administration, Cultural Education Center, Room 9C71, Albany, NY 12230; e-mail: gosys@unix6.nysed.gov.]

## OMB Issues Draft Bulletin on GILS

The Office of Management and Budget issued its long-awaited draft bulletin on the Government Information Locator Service (GILS) on September 22 with a very short public comment period until October 14.

Those of us who urged that the GILS include both information systems and information dissemination products are delighted that the definitions of government records have been used throughout. The Bulletin asserts that: "GILS will become an integral part of the Federal government's overall information management and dissemination infrastructure and will ultimately facilitate both identification and direct retrieval of government information." In my comments on the Bulletin, I noted, and urged, three areas in which OMB could go even further than it did:

6. Responsibilities, a. (3) appropriately requires agencies to determine if records systems are covered by disposition schedules. In a. (4) agencies are instructed to cite applicable disposition authority in "supplemental information" for entries that cover records that have been scheduled. These two sections would be strengthened if under c. the National Archives was required to provide a standard method for

making such citations and methods to access the data thus recorded. Without such standards, citizens will have difficulty determining the retention period which is critical to knowing if records being sought are about to be destroyed.

6. Responsibilities, c. (1) appropriately instructs the National Archives to provide, on a cost reimbursable basis, guidance and training to Federal agencies in describing information dissemination products and automated information systems using GILS Core Elements. It should further require the Archives to develop and promulgate such GILS Record Creation Guidelines and data value standards as will be necessary to ensure consistency in such critical data as names of agencies and programs, keywords for functions, citation of schedules, etc. As the Final Report of the Syracuse University and U.S.G.S. study, "GILS: Expanding Research and Development on the ANSI/NISO Z39.50 Information Retrieval Standard," makes clear -- without appropriate bibliographic control, the GILS will not be a resource that citizens can use. NARA should be encouraged to use its role as publisher of the Federal Register to integrate agency names and citations to legislative and regulatory authorities so that the Register and GILS are intellectually consistent.

6. Responsibilities, c. (3) appropriately instructs the National Archives to reduce reporting burdens and facilitate scheduling of records by accepting GILS data entries when they provide information required on Standard Form 115,

Request for Disposition Authority. The integration of governmental functions would be greater if agencies were instructed to submit such information by making GILS records and the National Archives was assigned responsibility for ensuring that all records described by such GILS entries were scheduled in a timely fashion."

We can expect to see a final Bulletin issued around November 15. Together with the final Federal Information Processing Standard, which will be issued by NIST at about the same time, the Bulletin should provide a sound foundation for the full implementation of the Government Information Locator Service. Now the center of action moves to finalizing the implementers agreement which is where the details of the data content and the rules for data values will be worked out. This falls to the Open Systems Environment Implementers Workshop (OIW), Special Interest Group on Library Applications, which is responsible for maintaining the Implementers Agreement on the GILS Profile. [For more information contact Eliot Christian, 703-648-7245; fax 703-648-7069; [echristi@usgs.gov](mailto:echristi@usgs.gov) or monitor the list [gils@cni.org](mailto:gils@cni.org)]

### **Dutch Records Management Course on Business Process**

The Dutch Ministry of the Interior, spurred by the Dutch Court of Audit findings of weaknesses in its records management, has initiated a 22-week course for records managers focusing on the link between business processes and records management decisions. The stu-

dents, who receive 48 contact hours of teaching and are expected to do 60 hours of reading and 48 hours of assignments, are trained in this advanced course to take part and play a useful role in business process re-engineering as well as to tie their records management regulations into business needs and requirements. The Ministry intends to issue an English language version of the course. [For an English precise, contact Peter Waters, Administrative Coordination and Information Systems Division, Ministry of the Interior, Schedeldoekshaven 200, The Hague, The Netherlands; fax +31-30-302-7600.]

### **Cultural Projects Receive NTIA Grants**

Two of 92 grants made as part of the new \$24 million Telecommunications and Information Infrastructure Assistance Program (TIAP) were awarded to cultural institutions. Both projects are ones we've frequently discussed in this journal. The program received almost 1400 proposals this year.

The Consortium for Computer Interchange of Museum Information (CIMI) received \$158,150 towards the \$316,300 cost of CHIO (Cultural Heritage Information Online), a project to create standards and formats for representing text, images, and publications of the types required by the cultural heritage sector in a multimedia resource about folk art collections. CHIO will test the application of SGML (Standard Generalized Markup Language) and the retrieval facilities of ANSI Z39.50. It aims to

create models that will be applicable to any cultural heritage interchanges on the NII.

Members of the CIMI Consortium currently include public and private organizations in North America and Europe such as the Museum Computer Network (US), the Museum Documentation Association (UK), the Canadian Heritage Information Network, the Research Libraries Group, the Getty Art History Information Program, the RAMA Consortium (Europe), the Eastman Kodak Corporation, Continuum Productions, the Smithsonian Institution National Museum of American Art, the National Gallery of Art (Washington), the Canadian Museum of Civilization, the Victoria and Albert Museum, the University of California Museum Informatics Project, and others. Membership in CIMI, and the benefits of participating in its research, is open to any interested organization, whether for profit or not-for-profit. [For further information, or to join the CIMI Consortium, contact John Perkins, CIMI Project Director, 902-826-2824; fax 902-826-1337; email [jperkins@fox.ntsns.ca](mailto:jperkins@fox.ntsns.ca)]

The second grant-- \$200,000 to be matched by an equal amount of non-Federal funding -- went to a consortium of the nation's leading natural history museums and botanical gardens including the New York Botanic Garden, the Academy of Natural Science (Philadelphia), the American Museum of Natural History (NYC), the Bishop Museum (Honolulu), the Carnegie Museum of Natural History (Pittsburgh), the Field Museum (Chicago), the Mis-

souri Botanical Gardens (St.Louis), and the Natural History Museum of Los Angeles County. The project will implement the first phase of the plan previously developed by the Mitre Corporation under a grant to the consortium by the National Science Foundation. The project will interconnect geographically distant resources and encourage new users.

The TIAP is administered by the National Telecommunications and Information Administration (NTIA) in the U.S. Department of Commerce. Congress increased the funding to \$64 million for next year. [For information about TIAP grants next year, contact NTIA at 202-482-2048.]

### **UK Slide Licensing Scheme Launched**

The Design and Artists Copyright Society (DACS) has launched a program to indemnify past slide copying practices and grant annual licenses for new copying. A special license with one-time fees ranging from £500 for fewer than 1,000 slides to £2500 for more than 100,000 slides will be offered to institutions with slide collections. An annual license will allow institutions to make copies. The scheme, because it is so novel, will be carefully monitored by a committee of users and by many abroad who are trying to establish similar copyright collectives. Unfortunately, it deals only with analog copying; they have left digital rights "for another day." [For information contact Roy McKeown, National Art Slide Library, De Montfort University; +44-533-577036; fax +44-533-577170; or email to [rmk@dmu.ac.uk](mailto:rmk@dmu.ac.uk)]

## US Museum Educational Site Licensing Project Launched

In September, the Getty Art History Information Program (AHIP) provided funding for planning a pilot project to engage a number of museums and a like number of universities in the crafting of frameworks for site licensing museum images and information for educational purposes. The project, designed by the Multimedia Study Group brought together by MUSE Film and Television, was organized as a separate project, with a board consisting of David Bearman, Howard Besser, Clifford Lynch, and Maxwell Anderson, and a shared executive of Jennifer Trant (AHIP) and Geoff Samuels (MUSE). The project issued a call-for-participants (one for museums, one for universities) over the Internet and through the American Association of Museums and the Coalition for Networked Information; it received over one hundred expressions of interest from museums, universities, and consortia of museums and universities. Its advisory board met to develop grant proposals for additional funding for the two-year pilot which will get underway formally July 1, 1995. The board will meet again to select participants at the end of November. An organizing meeting of the participating institutions will be held in February.

Under the terms of the pilot project, each museum will provide a minimum of 500 images and associated documentation in a standard format for use by the educational participants each year. The educa-

tional institutions will develop and test methods of providing this data for campus use which satisfy the security and integrity concerns of the museums and provide data on uses that will reflect the value of the site licenses to the universities. The experiment is designed, after two years, to resolve the issues which prevent museums in general from providing information and images for educational uses and to test mechanisms for an open social mechanism through which museums and universities can support a growing "critical mass" of authoritative, multimedia material in the future. [For more information, contact Geoff Samuels at [GeoffSam@aol.com](mailto:GeoffSam@aol.com); Jennifer Trant at [JTrant@getty.edu](mailto:JTrant@getty.edu); or via GOPHER [gopher.cni.org](http://gopher.cni.org) 70 or FTP [ftp.cni.org](http://ftp.cni.org), login:anonymous, password = e-mail address, cd /pub/MUSE]

## Fifth State Proposes Free Legislative Data

New Jersey State Senate Government Committee unanimously endorsed a bill that would make New Jersey the fifth state (along with California, Hawaii, Minnesota, and Utah) to make all legislation, scheduled actions on bills, text of pending bills and veto messages, and the like available free over the Internet. The New Jersey legislation also allows the Office of Legislative Services to offer for-fee value-added services such as automatic updating, notification of pending action, and access to the archives of prior legislation. [For additional information, contact Michael Swayze; [swayze@pilot.njin.net](mailto:swayze@pilot.njin.net).]

## NSF Awards Six Large Grants for Digital Library Research

At the end of September, the National Science Foundation made awards of approximately \$4 million each to six four-year university projects involving many of the largest companies in America as partners. The projects are centered at Carnegie Mellon University, the University of California at Berkeley, the University of Illinois, the University of Michigan, the University of California at Santa Barbara, and Stanford University. They involve developing technologies and methods for storing, searching, and delivering vast quantities of digital data over networks. In brief:

- CMU, in cooperation with Microsoft, DEC, and Bell Atlantic, will provide WQED Television the ability to deliver over 1,000 hours of Open University video and electronic field trips to a private and a public school while addressing issues of human-computer interface, value and charging, and security.
- U.C. Berkeley, in conjunction with Xerox, Hewlett Packard, and California agencies of state and local government, will explore automatic indexing, intelligent retrieval, document analysis, and compression and communication requirements of large-scale libraries with a testbed of environmental information.
- The University of Michigan, in conjunction with Apple, Bellcore, IBM, UMI, McGraw Hill, El-

sevier, Encyclopedia Britannica Films, and Kodak, will evaluate the uses of a growing multimedia library by a wide variety of users.

- U.C. Santa Barbara, in conjunction with SUNY Buffalo, the University of Maine, the Library of Congress, the U.S. Geological Survey, and others, will explore issues of providing spatially indexed information.
- Stanford, in conjunction with Dialog, Hewlett Packard, NASA, the ACM, Bellcore, WAIS Inc., Xerox, and others, will explore technologies for creating a single virtual digital library from huge existing collections and new works as they are published.
- The University of Illinois, in conjunction with scientific associations and a wide array of commercial partners, will use a customized version of Mosaic to conduct sociological analysis of digital library users and develop techniques of semantic retrieval.

All of the projects are designed to create partnerships between university, industry, and user communities and generate new tools and technologies. From the cultural informatics perspective, they are all highly relevant to problems encountered in delivering cultural heritage information over networks, although none could be said to be directly exploring cultural information issues. [For further information, contact [dl-info@nsf.gov](mailto:dl-info@nsf.gov) or phone 703-306-1930 to speak with Stephen Griffen]

## Museum Computer Network Gopher

MCN information is now available from "gopher.world.std.com." Select Membership and Professional Organizations from the menu. MCN information is also available by anonymous ftp at "simsc.si.edu."

## NARA Copies Tapes In-house

Using a newly acquired \$500,000 media management system, NARA has moved most of its copying of data from tape to 3480 cartridges in-house. The system was acquired to free NARA of dependence on NIH for copying. *Government Computer News* reported (September 13) that "although APS was designed to copy the up to 3000 electronic files submitted for preservation from all federal agencies each year, NARA has used the system primarily to preserve e-mail messages from the Bush and Reagan White Houses" as required by the U.S. Court of Appeals.

## HELIOS Project Receives \$1million for NLP Retrieval

Carnegie Mellon University has announced that the Heinz Electronic Library Online System (HELIOS), which will access the 4 million document archive of the late Senator John H. Heinz III, has received grants totaling \$1million, including funds from a university spin-off firm that will develop the software for commercial use.

The retrieval system is based on Natural Language Processing (NLP) approaches being developed

at the University's Laboratory for Computational Linguistics. By the end of the year, 1 million of the 4 million documents will have been scanned and converted to machine-readable text. [For more information contact: Edward Galloway, Heinz Archivist, CMU Libraries, 412-268-7402; fax 412-268-6960.]

## Archaeological Data Archive Project

The Center for the Study of Archaeology has announced plans to compile a database on archaeological data resources that will describe digital files throughout the world being compiled by archaeologists. The purpose is to provide sufficient information about the content and technical characteristics of such files to enable researchers to download them usefully. A preliminary listing of data categories is published in *CSA Newsletter* Vol.7 #2 (August 1994). [For further information contact Harrison Eiteljorg at CSA, P.O. Box 60, Bryn Mawr, PA 19010; 610-526-7925; fax 610-526-7926; heiteljo@cc.brynmawr.edu]

## NARA e-mail Guidelines Being Revised

NARA received over 100 comments on its proposed e-mail guidelines and is now in the process of revising them. NARA spokesperson, James Hastings, could not say whether the revision would be substantial. [For more information, contact Jim Hastings, NARA, Washington D.C. 20408]

## President Revives Committee on Arts and Humanities

In mid-September, President Clinton announced his intention to revive the President's Committee on Arts and Humanities; and appointed Dr. John Brademas, President Emeritus of New York University and a former U.S. Congressman, as chair and 32 private citizens as members. The Committee also includes as ex-officio members the chairs of NEH, NEA, and IMS, the Secretaries of Treasury, Interior, and the Smithsonian, the Librarian of Congress, the Director of the National Gallery of Art, the Chairman of the JFK Center for Performing Arts, and others. The Committee held its first meeting September 21.

## RAD at National Archives of Canada

Cynthia Durance recently posted a four-page report on the implementation of the *Rules for Archival Description* on ARCAN-L, the Canadian archives listserv [also available from [cdurance@archives.ca](mailto:cdurance@archives.ca) or by fax 613-995-2267]. The report documents the growing commitment of the NAC to RAD which has been estimated to have used 15 NAC FTEs in its development. Now a much higher level of commitment is planned. A seven-member team is involved in implementing the new control system, a six-member team with the Archives and Government Records Branch is devoting 50 percent of its time to procedures, and contracts have been let for other activity.

## NARA Task Force Limits Affiliated Archives

The Task Force established by NARA in April 1993, in response to its strategic plan to re-evaluate its "position on authorizing affiliated archives for the storage of records that are legally part of the National Archives of the United States," reported in April 1994 that NARA should tighten, rather than open up, the process by which such affiliates are allowed. Only under pressure from NARA's management committee did it even accept a recommendation to mention the possibility of affiliate archives in the Code of Federal Regulations. The report "Affiliated Archives: A Re-Evaluation" is a study in backwards looking rationalization. It doesn't even consider the reality of late twentieth century documentary volumes that led to the suggestion of a strategic re-assessment of NARA's position. The strange thing is why NARA's own leadership can't simply reject the findings. It should appoint a new Task Force to work on how, rather than whether, to open up the affiliation option.

## Foundation for the Hellenic World

Under a special authorization from the Greek Parliament, a "Foundation for the Hellenic World" was established by Mr. Lazaros Efraimoglou in the spring of 1994. Dr. Constantinos J. Dallas, previously director of the Benaki Museum and chairman of the Multimedia Working Group of CIDOC, assumed the position of General-

Director in July. The Foundation plans a cultural center and museum that will use information technology in creative ways to enable tourists and citizens to understand Greek culture. A technical advisory committee is being formed to define an overall architecture for this international cultural heritage information project. [For additional information, contact Costis Dallas, 15 Akademias St., Athens 106 71, Greece; +301-362-6531; fax +301-362-8796.]

### Digital Cash/Architecture of the NII

A Cross-Industry Working Team (XIWT), representing forty leading communications and computing firms, presented the NII Advisory Committee with two reports at its September 13 meeting in New York. The first, "An Architectural Framework for the NII," defined the NII in terms of a functional services framework. According to the model, the NII has three basic components: applications, enabling services, and physical infrastructure. The XIWT recommends that each of these components be addressed in terms of functionality (what it does), trust (the conditions under which it operates), and control (how it is managed). The XIWT also provided a reference model in terms of appliances and interfaces.

The second report, "Electronic Cash, Tokens, and Payments in the National Information Infrastructure," describes the functional requirements and technical options for conducting commerce in the NII "with the ease and certainty of today's cash economy -- and with

more security and control" according to XIWT Applications Services Team chair Dan Schutzer of Citibank. [For copies or further information, contact Charles N. Brownstein 703-620-8990, or get it from the XIWT home page at <http://www.cnri.reston.va.us:3000/XIWT/public.html>]

### Best Practices in Management of Electronic Records

Dr. Anne Thurston, School of Library, Archive, and Information Studies, University College, London has been awarded a British Library R&D grant of £42,980 to bring experts from other countries to the UK to make educational videos describing best practices elsewhere and make them available to UK information and records professionals.



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## SOFTWARE REVIEW

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### EmbARK

Kathy Jones-Garmil

#### INTRODUCTION

EmbARK was recently introduced to the museum automation marketplace by Digital Collections, Inc. (DCI) of Berkeley, CA. It takes a somewhat new approach by offering a high-end imaging management system which is seamlessly integrated with a collections management package. In addition, DCI offers two other exciting companion system features, the public interface component which may be run in a kiosk-like installation in a gallery or orientation area and the exhibition management component of the system. Exhibition management will be covered in a separate review.

DCI is a spin-off company of AXS, a well-established provider of software to catalog image collections. DCI combined the imaging experience of the original company with the collections management knowledge of its development partners to create EmbARK.

The museum experience of the development partners is apparent as soon as the first screen is encountered but more will be said about that later. The development partners include: the Harvard University Art Museums, San Francisco Museum of Modern Art, the Frick Collection, the Stanford University Museum of Art, the Neuberger Museum, the Delta Distance Learning Project (California State Universities at Long Beach, San Jose, and Chico), Shin'enKan Foundation, and the Robert Rauschenberg Foundation.

The system developers incorporated museum-community standards into the underlying framework of the product. EmbARK uses the Artist/Object/Actions/Agents Model described by David Bearman (*Archives & Museum Data Models & Dictionaries*, Archives and Museum Informatics Technical Report No. 10 (Pittsburgh, PA: Archives & Museum Informatics, 1990). It will also incorporate two standards products developed by the Getty Art History Information Project: the Art and Architecture Thesaurus (AAT) and the Union List of Artist Names (ULAN).

Standards are an important consideration throughout the system. The product, developed in 4th DIMENSION by ACI, Inc., operates on a Macintosh platform. All interfaces use standard Macintosh features including the

top menu bar, pull-down menus, keyboard command equivalents, windowing, and so on. Anyone familiar with the Mac from other applications will navigate with ease through the EmbARK screens and commands. Features unique to EmbARK such as the Button bar which facilitates system use in the Public screens also follow Macintosh conventions.

## SYSTEM RECOMMENDATIONS

EmbARK operates as either single user system or in a client-server environment with multiple users. Minimum system requirements for servers include an Apple Macintosh computer with a 68040 processor (e.g., Quadra 950), a hard disk with at least 120 MB of free space, 32 MB of RAM, System 7.0 or later with QuickTime™ installed, 3.5 inch, high density floppy drive, 13-inch color monitor, and Ethernet capability installed and running. Recommended configuration for clients including Apple Macintosh computer with a 68040 processor (e.g., Quadra 650), 250 MB hard disk, 24 MB of RAM, System 7.0 or later with QuickTime™ installed, 3.5 inch, high density floppy drive, 13-inch color monitor, color graphics capability (24-bit strongly recommended), removable cartridge drive, CD-ROM drive, Ethernet capability installed and running.

Pricing is dependent on number of system users. Maintenance agreements are available. Initial training is included; additional training is available. Support is available but the extent of the support is based on the licensing agreement.

## SYSTEM COMPONENTS

### Public Access

My introduction to EmbARK was through the Public Access feature. This system component can be used independent from the collections management component in public areas of the museum. A customized Welcome Screen greets the visitors and allows them to begin a multimedia tour through the collection. The visitor may view a QuickTime™ movie about the collection or the museum at the point of introduction. Intro Pages or screens follow the Welcome Screen. These screens allow further introduction to the museum and the collection. Audio messages may be added to give a more personal touch. The visitor may choose from a number of virtual tours created by the museum staff using the Index Tree or search for a particular object or maker with the Quick Search command. Portfolios also allow for the creation and display of groups of objects according to any criteria. The Thumbnails layout allows visitors to create sets of images, view them at full size, and zoom in on details. Public screens are designated with a dark gray background and are read-only.

## Collections Management

While the Public Access component is a very exciting way to explore a collection, I was intrigued by the functionality and image management features of the Collections Management component. I admit that I am biased toward this particular area, so perhaps my partiality is understandable.

The system is customized for users through the System Administrators setup window. Here the systems administrator may define user types (setting up security parameters and user profiles) and customize layouts. The setup may be changed or updated as the needs of the users change or as new workstations are added.

The standard Macintosh interface is readily appreciated in the Collections Management component as it is throughout the system. This greatly speeds up the learning process for those on staff already familiar with the Mac.

EmbARK features 1200 user-customizable data fields. The data structure reflects a thoughtful development process that included the ideas of the museum development partners. These 1200 fields are grouped as follows:

- *Descriptive:* Categorization, Physical, Creation, and Content;
- *Historical:* Context, Exhibition History, Loan History, Conservation History, Examination History, Location History, Valuation History, and Related Works;
- *Management:* Collections Management, General, Acquisition, Exhibition Management, Loan Management, Insurance, Shipping, Valuation; and
- *Documentation:* Document Source, Photographic Source, Related Source, and Computerized Files.

This rich data structure coupled with the organization structure which separates information about works of art into four main categories (Objects, Agents, Actions, and Authorities) provides a firm foundation for processing and retrieving information about a collection.

EmbARK has a robust and dynamic user interface and navigation system. It allows the user to view object information singly or in groups, as text in a List View or with images through the Thumbnails layout. The Thumbnails layout is a comprehensive way to view objects in the collections, create sets of images, view images at full size and zoom in on a particular area, and navigate to other screens. These screens may be used as part of the in-house collections management component or by external users via the public access module. The public screens are read-only and are referenced by dark gray backgrounds. Screens which allow for modification of object data are designated with light gray backgrounds.

The depth and power of the relational structure of EmbARK is apparent throughout the system. The graphical user interface has been programmed with buttons and other active icons that allow the user to move from screen to screen. A windows manager dialog box keeps track of which windows are open and lets the user move back to open windows by double clicking on the window name.

Data entry can be accomplished using standard screen formats or with user-customizable screens which may contain a reduced set of fields per screen. The screens can be set up to follow the functionality of the acquisition and accessioning process or more fully developed for cataloging. As with other systems, it is possible to convert data from an existing system into EmbARK or to import files that have gone through retrospective conversion off-site. Another exciting feature of EmbARK is the ability to import an image or group of images using the Acquire or Acquire Folder commands. Once the images are in the system they may be matched with the appropriate text record or a new text record may be created for each image.

As I mentioned above, the importance of standards is seen throughout EmbARK. Two of the Getty standards that will be included in a future release are the Art and Architecture Thesaurus (AAT) and the Union List of Artists Names (ULAN). In addition, the data structure reflects the work done by the Getty Art History Information Task Group. DCI plans to add support for the MARC format and CIMI-recommended formats.

### **Image Management**

It is hard to separate comments about image management from comments about the system in general because images are so well integrated into the system. Images may be utilized throughout the system except with the List View. The images provide a visual reference to the object and may accompany a full-text record, or be presented as thumbnail images resulting from a search of the database, or as a prepared grouping of the objects around a theme, artist, or historical period. The user may view a full-screen image, zoom in on Details of the object, or select images for a SlideShow presentation. The SlideShow may be developed in conjunction with the Portfolio grouping.

EmbARK supports high quality images in 24-bit color and in a number of formats (PICT, TIFF, EPSF with PICT preview, Photoshop, JPEG, PhotoCD). The presentation of the images reflects the aesthetic realm that they represent. The EmbARK screens have been developed to complement the works of art that are described. Consideration was given to fonts, formats, placement of text and images, and colors (foreground, background, etc.). Button bars, pull-down menus, and active windows have been programmed into the screens to facilitate user interaction.

### **Additional features**

Another common need that EmbARK addresses is the management of object accessories such as crates, frames, Plexiglas, and the like. Accessories are handled as a standard feature in the Descriptive -- Physical section of the data group framework (or data structure). Fabrication specifications as well as lighting and other exhibition specifications may be included here.

Related objects can be linked permanently or temporarily by EmbARK. Parent child relationships can be designated. A host image of the parent may accompany the information as it is linked to the child/children. Through this feature, relationships of all kinds can be established -- marking the tea set in the collection as related to the Mary Cassatt painting in the collection in which it appears, for example. Temporary relationships can be established for viewing or for the organizing stage of an exhibition.

The user may incorporate a wealth of information about an object with the Notes and Histories feature. This feature is the virtual equivalent of the Registrar's or Curator's Object File. It contains information on the object that accumulates from the time the object enters the institution. Notes refer to the text fields which may be used when lengthy commentary is required. These fields are searchable though not indexed. Histories employ the relational capability of EmbARK and consist of indexed, searchable fields. The combination of Notes and Histories covers a wide range of topics including but not limited to: Accessories, Acquisition Actions, Agent Actions, Artists (other than the primary artist), Bibliographies, Commentary, Conservation Notes, Curatorial Notes, Historical Notes, Installation Instructions, Locations (including location of accessories, components, etc.), Moves, Object Description, Provenance, Reproduction Catalogues, Restrictions, Shipping Details, Title Elaboration, and more.

It is important to note that Moves and Locations data fields function as a log of object movements within and outside of the museum as well as the current and permanent locations. Movements outside of the museum are tracked using the Shipments file. Visiting scholars notes may be included as Notes created on-site during a visit or imported from MS Word. The system allows 32K for such notes, per entry, so the notes could be recorded with each scholar's name and date of visit.

User definable notes fields are available and can be renamed to further meet the needs of the user.

### **SUMMARY COMMENTS**

EmbARK is one of the first collections management systems that I have seen that I would use without hesitation. It incorporates database structure and functionality that I have identified as a requirement for several museums over the last few years. I have found other products lacking in one area or another or too complex for a museum to use on a daily basis without hiring

a dedicated systems administrator. Although I would recommend hiring a systems administrator for EmbARK as well because I think it is necessary for the management of complex information systems such as those in museums, I don't believe this system mandates such a position. The imaging alone is worth the price of the system.

The product is well thought out and integrates several collections management functions into the basic system -- inventory, catalog, loans, exhibition. EmbARK takes collections management way beyond inventory into the realm of full, online cataloging. It allows for the development of permanent or transient portfolios or object groupings that can be used for research, traditional catalog development, exhibition companions, or public guides to the collection. It is most fully developed for art museums at this point but with its robust data structure and customizable fields it could be used for other museum disciplines as well.



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## SOFTWARE NOTES

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### Artifact Tagging by Transponders

Radio frequency scanning enables a new kind of monitoring of museum artifacts for security, collections management, and gallery interpretation. The technology labels artifacts by physically attaching tags, called transponders, to them. These chemically inert tags can be as small as a grain of rice, but typically are on cards or capsules. The advantage over regular tags is that they are machine-readable; the advantage over bar codes is that they don't require a line of sight to be read. Obscured by dirt and grime? Lost in the back of a container? No problem for the scanners which can detect transponders ten or more feet distant and report to an operator who can identify them, hands free. The transponder stores a voice recording which can identify the object, describe it for a blind visitor, or provide a warning message. Because scanners can be hand-held, book size devices or be hidden in door frames, and because transponders can be carried in wallets, put inside crates, or attached to inventory, the possibilities are endless. [For further information contact: id Systems, Marble Arch, King Street, Knutsford Cheshire WA16 6HD; +44-565-651314; +44-565-651003]

### PNI Launches Seymour

**Picture Network International**  
[2000 North 15th St., Arlington, VA 22201; 703-558-7889; 703-558-7898]

went online in August with its Seymour image retrieval and licensing system. Seymour allows users to search a database of 200,000 images from stock photography houses (25,000 additional are planned to go up each month) and receive an immediate quotation to license their use based on types of uses anticipated. Orders can be placed directly, while online, and images will be delivered in a variety of media including PhotoCD or cartridge. Each stock house sets its own prices. Access is provided through an "artificial intelligence" front end. End-user software comes with membership at \$175 per computer and access is billed by PNI at an additional \$1.50 per minute. PNI estimates this will cost about \$20 per image over the average \$250 licensing fee. I used the system and found the automated license/order procedure extremely helpful but was not very impressed by the intelligence of the search engine. Nevertheless, if you need images this is a better way to get them.

### CD-ROM Displays Works of 150 Russian Artists

**ARTINFO Multimedia Publishing House** [Central House of Artists, 10 Krymsky val, Moscow, Russia 117049; (+95)292-3725; fax (+95) 290-3377, attn. Dr. Segey Senkin] is planning to publish an international series of CD-ROMs entitled "Contemporary Fine Arts." The first of these provides a showcase for the works of 150 Russian artists. A second disk with additional Russian artists and plans for access by telecommunications are underway.

The product, which includes over 1000 images of graphics, sculptures, and works of fine art, comes with biographies of the artists and information about galleries and dealers. It sells for US\$99.50.

## Romanian Systems for Museum Collections

**CIMEC (Centrul de Informatica si Momorie Culturala)** in Bucharest has developed and is marketing a number of museum applications using standard commercial software platforms. [For more information, contact Dan Matei, Director, Information Centre for Culture and Heritage, Piata Presci Libere 1, 71341 Bucharest Romania, tel & fax +40-1-617-5170]

STAR is an application in Foxpro designed for management of cultural events such as performances, festivals, or gallery openings. It is used by CIMEC for a database on theater in Romania since 1944 which already documents 13,000 events, 186,000 role players, 10,000 personalities, and 60 theaters and companies. STAR can also be used for promotion and planning of events because it has a reporting function designed to support these uses and a public access query facility. STAR data structures incorporate attributes of institutions and of references as well as those of institutions, events, and personalities.

SIS-PCN is a collections documentation system for applied arts, archaeology, archives, ethnology, fine arts, history, natural science, numismatics, and rare books built in Borland Paradox 4.0.

It serves as a local cataloging system and a bridge to the national database in Romania which currently maintains records on 700,000 objects. SIS-PCN conforms to international standards and terminology. The system provides thesaurus assisted data entry and retrieval but does not have built in collections management.

## Art Collection Manager

**Catalyst Corporation** [4208 Grimes Avenue South, Edina, MN 55416-5021; 612-920-8018; fax 612-920-7928] is selling ACM, the Art Collection Manager, a GUI database for Windows 3.1 designed to support collections documentation, including images and a modest amount of collections management such as exhibition and loan tracking. One of ACM's advertised features is its ability to support multiple languages, including Hebrew with text that is read from right to left.

## CHIN Issues New CDs

**The Canadian Heritage Information Network** (which provides online access to more than 20 cultural and scientific databases) has published two new CDs. "Charting a New World: Maps of Discovery," which won a bronze medal in the interactive multimedia competition at the New York Festival) is a CD-I product. "Canada's Visual History" is in CD-ROM format. These are the first of a series undertaken after CHIN completed the CD-ROM "Dutch and Flemish Masters" as a prototype for ICOM. The next CD, "Canadian Dwellings through Time," is expected to be available by year end.

## Object-Oriented Collections Management

It's called Koine and comes from Slovenia. I saw it demonstrated on a Silicon Graphics workstation by the staff of **Arxel** [Samova 5, 61000 Ljubljana, Slovenia; +386-61-317-775; fax +386-61-328-175; email dima@arxel.si] at the CIDOC meeting in Washington, DC. It was hard to overcome the incongruity involved in seeing high technology engaged on behalf of culture by a small capitalist firm from a very troubled part of the ex-communist world. But when you did, you found a rich collections documentation and management system on top of an API that has the ability to handle lots of multimedia data objects in interesting ways. The displays are well thought out, which is not too surprising when you learn that the product was initially developed to deal with historic restoration sites requiring information about stages of conservation and restoration activity throughout the life of the project. The system was designed for UNIX Motif but apparently also runs on Windows NT and can be ported to other platforms and to virtually any workstation hardware.

## TARGET 1/ECHO Merge

**TARGET/1 Management Systems**, a fund raising firm, has joined **ECHO Management Group** a software developer for nonprofit organizations. [ECHO Management Group, 1055 Taylor Ave., Suite 300, Baltimore MD 21286; 410-321-7610; fax 410-321-7658.]

## Exchange Attempts to Incorporate Archival Metadata

As proof that professional standards can effect software design, **Canon Australia** [Information Management Division, 12 Thomas Holt Dr., North Ryde NSW 2113; +612-805-2700] is marketing a system which incorporates a template "for all records containing attributes of content, context, and structure." **fridayEXCHANGE** is an electronic document management system for workgroups which supports capturing organizational (and functional) context data associated with the history of documents created as text or multi-media, received as e-mail, scanned from source material, or otherwise incorporated into a work environment. The system also attempts to incorporate the concept of draft (local or personal), workgroup and organizational (archive) level records. I haven't seen it yet, but it does sound intriguing. Thanks to Chris Hurley for calling it to my attention.

## Information Retrieval Across Platforms

**TRW** [495 Java Drive, P.O.Box 3510, Sunnyvale, CA 94088-3510; 408-738-2888] is about to release **TRW Smart Search**, now in beta release, which enables users to search multiple information sources, including Z39.50 servers, WAIS and World Wide Web, and Silver Platter CD-ROMs "without loss of database specific indexing and other features." **TRW Smart Search** runs on Windows, Windows NT, Macintosh, and UNIX platforms and will

be offered under site licenses based on a sliding scale with educational discounts. TRW is interested in learning about additional protocol requirements and encourages potential users to contact them by phone at 800-767-8457 or by e-mail to smart-info@esl.com

### Classical Mythology on CD

G.K.Hall Co. has published "Athena: Classical Mythology" on CD-ROM which includes summaries of 1,200 myths, full-text translations of 20 classical works, pop-up definitions of names of mythical figures with genealogical tables, and over 500 images of mythical scenes and personages. Functions include full-text searching and hyperlinks. Currently only Windows. In January

for Macintosh. Single user \$295; network version \$395.

### Online Encyclopedia of Aircraft

The National Aviation Museum in Ottawa, in a partnership with Bell Ontario and Digital Renaissance, has implemented a wide-area network delivery trial of the Silver Dart Project, an online encyclopedia of Canadian Aircraft. In an exciting experiment in inter-museum cooperation, those using the system include visitors to the Ontario Science Centre. [For further information, contact National Aviation Museum, P.O. Box 9724, Ottawa Terminal K1G 5A3, CANADA; 613-990-5881]



## PARTNERS IN RESEARCH Improving Access to the Nation's Archive

by Paul Conway

Archives & Museum Informatics has reprinted the user studies conducted at the National Archives in 1991/1992, along with the author's covering report.

The volume includes an essay on the studies methodological basis and the application of these methodologies to other archival user studies.

*US \$40.00 prepaid; a \$5.00 handling fee is assessed billed orders. Include \$10.00 per copy for shipping outside the U.S. and Canada.*

**Archives & Museum Informatics**  
5501 Walnut Street, Suite 203, Pittsburgh, PA 15232-2311 USA  
Tel. (412) 683-9775 or fax 412-683-7366

## STANDARDS

### RAD Rules for Electronic Records

The Planning Committee on Descriptive Standards (PCDS) of the Bureau of Canadian Archives has released a long awaited draft of Chapter 9 of the Rules for Archival Description developed by the Electronic Records Working Group (ERWG). The ERWG was formed in May 1992, and held five meetings before submitting a draft final report in November 1993. From January through April 1994, the ERWG discussed the PCDS response to its initial draft and prepared this final draft report dated September 1994. In addition to rules, the ERWG made recommendations to the Bureau to plan national training programs, introduce electronic records into graduate studies curricula, and develop an interpretation manual.

Unfortunately the ERWG produced rules for the description of computer data files and not rules for documentation of archival records even though it changed the title of the chapter late in the day from computer files to electronic records. By missing completely what units of description document business transactions, the ERWG has produced a set of rules that can describe physical files and databases but cannot link the business records (documentation of transactions) to the computer records. While these may be adequate for the kind of bibliographic control practiced by so-called "data archivists," they are irrelevant to the needs of the electronic records community and would prove to be a colossal waste of effort if applied there. Indeed, all of the examples provided in the text of the Chapter relate exclusively to machine-readable data files of the sort acquired by data archives, underlining their irrelevance to records management or archives.

There are many levels on which these rules fail, but most abstractly, after having identified the wrong thing as the focus of description, they adopt a method for documenting it that serves no useful purpose during the life of the electronic system and therefore would always need to be created *de novo* by archivists. While in principle the kinds of information recorded could be of some value in data libraries and other computer systems configuration management functions, I doubt those business activities will be persuaded to adopt the framework suggested here. As a consequence, even data archivists will need to re-describe existing documentation. In the age of electronic information systems, when descriptions should be a view of attributes of the system, description should be the upfront specification of metadata. The approach of defining surrogates that can only be written by archivists after the fact will fail to link the essential structural and contextual information

about transactions to the records when they are created, and fail to provide a view of what archivists have always considered to be records: that information which participated in a business transaction.

The problems that the ERWG had are reflected throughout their report. In the preliminary material describing the scope of Chapter 9, they assert that "since all electronic records have in common their existence in a (more or less) permanent 'addressable location' i.e., in one or more computer files which occupy a location for which an address can be defined, this was the principle the ERWG used to determine the scope of this chapter." In a reflection of their confusion over what a record is, they further asserted that "temporary manifestations, such as ad hoc reports, views, fax transmissions, voice mail . . . should be considered beyond the scope of this chapter unless they result in or come to reside in permanent computer files." [!!!] So we are to consider records to be records only if they are stored in an imaginary thing called a permanent!!! computer file?

Fundamentally, the ERWG could not see that physical record structures and physical files have no more to do with the concept of a record than page breaks do with paper records. They failed to understand that electronic links serve the role of staples in multiple page records, of file folders in case files with attachments, or of removal slips in multi-media records because they describe the physical things (indeed whole series of them) rather than the records.

In struggling with the framework provided by other chapters of RAD, the ERWG suggested a scheme for revision of the General Material Designator (GMD) and with it the entire organization of the Rules for Archival Description. Noting that any kind of content could be electronic, they proposed a division of the GMD into two categories which they called substantive and physical as follows:

substantive	physical
architectural material	paper records
cartographic material	electronic records
graphic	microform
moving images	multiple media
sound recordings	tactile
textual records	large print

In this they were partially correct. Electronic is a method of storing physical signals -- other methods include tactile, photographic, optical, eye visible markers (pen/pencil/type, etc.). The physical signals we store may be

symbolic representations of various conventions: architectural, cartographic, dance notation, hieroglyphics, musical notation, or words. They may be reproduced as still images, motion images, sound, or text. They may be recorded on paper, clay, film, magnetic tape, optical disk, etc. These may in turn be in many formats: film on film strip, microfilm, or as photoprints; paper in books, manuscripts, newspapers, or broadsides. A variety of qualifiers may be applied to describe the technical characteristics of the formats more precisely: large print books, beta videotape, 9600 bpi magnetic tape, etc.

The proper way to record these and other characteristics is not to give the record a two-level as opposed to a one-level "GMD" code but to record the relevant data about physical carriers and content representation conventions in fields with appropriate granularity to describe all these differences. The ERWG seems to realize that the physical carriers of records will change, and in its introductory discussion goes so far as to say in section 2.5 of its report that physical carriers should not be described here but instead that documentation of physical carriers be separate from that of the electronic records themselves. From a practical point of view it is hard to imagine how this piece of implementation advice has anything to do with the rules or what kind of unalterable environment someone's descriptive system would have to live in to make this a useful suggestion.

Needless to say, the ERWG was forced to identify a new sub-area (9.7D) to describe "Systems" but the general nature of the rules it established, the fact that the sub-area is not a "level" in the description but applicable to records at the "fonds," "sous-fonds," "series," "item," or any other level, and the fact that they envision it as an "authority record" means they have missed the point that the provenance of the electronic record is the recordkeeping system and the context of the record-creating activity. The rules as defined will not enable the recording of information at the record level that is essential to locate the record in the software configuration environment (permissions, views, value tables pointed to by the record content, etc.) and that gives the record the structure to make it meaningful. One field (9.7D7), for example, is provided for "Software/application capabilities" with the instructions: "Give details of major functionalities, including data input, management, and output capabilities. Include word processing, database management, spreadsheet, statistical, electronic mail, data quality management, and other relevant capabilities. Give details of capability of producing and managing metadata."

All this is prose, we presume. What use is it supposed to be in the reconstruction of records? Completely missing the point of description, which is to ensure the capture of evidence and its reconstructability, the ERWG notes that it: "envisages in future archival description schemes, based on hypertext software, links from appropriate individual elements of description within a RAD-like record . . . to metadatabases but such a development

is a matter of the software with which descriptive records are maintained, not of the rules *per se*." Wrong.

With respect to at least two issues, the ERWG rejected poor implementation suggestions made by the Planning Committee. It rejected the PCDS suggestion (based on the false notion that publication is the same thing as the existence of multiple copies) that it drop the distinction between published and unpublished electronic records. In this the ERWG is correct: publication is an act, engaged in by publishers/disseminators, which makes information available for use under certain terms. The agents of the act, the time of publication, the method of access and the terms of use under which access is provided are all important to document whether the entity is in electronic form or not. Networks have no more to do with publication than do video rental stores and television channels, they simply provide a new means of dissemination.

The ERWG also rejected the PCDS suggestion that the URLs (Uniform Resource Locators) of the records, if they are available by remote access, be included in the System Description area, correctly recognizing that URLs are descriptions of the way to access records and belong in the area where one would expect such information in RAD.

The Draft Rules are available from the Planning Committee, c/o Mirielle Miniggio, Project Coordinator, Rm. 3016, 344 Wellington St., Ottawa K1A 0N3 CANADA.

David Bearman

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## STANDARDS NOTES

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### Datastream for Electronic Folder Interchange

ISO Technical Committee 171 is devoted to Micrographics and Optical Memories for Document and Image Recording, Storage and Use. Last December 15, it published a proposed "New Work Item" for its Working Group 6 entitled "NWI: Electronic Folder Interchange Datastream," which brought forward the Association for Information and Image Management item 93-504 "Standard Recommended Practice -- Electronic Folder Interchange Datastream." By appearances, this standard is only relevant to Electronic Image Management systems, but in fact it details a technical approach which I have been calling metadata encapsulated object management. This is a most promising concept in the management of records of electronic business transactions.

The reason that this proposed standards effort is of interest to archivists is that the concept of a folder (a logical set or grouping of documents) and its attributes (information such as folder description, creation date, source, etc.) is the same as our concept of a record (the data and documents that engaged in a particular business transaction) and because the standard is designed to accommodate the interchange of attributes without requiring interchange of images. The architecture is by definition hierarchical and allows any object (uni-

quely identified) to be incorporated within other objects (themselves separately identified) as is the case in records. It enables recording of unique descriptive attributes as well as an "events log" documenting uses of objects. The resulting record consists of tagged data fields with lengths up to 2GB (larger fields may be partitioned).

Because the proposed standard is suggested for image management systems, it includes functionality irrelevant to records management such as the ability to insert new items in an existing folder (read record) or replace objects altogether. The event set, or audit trail, can apply to any object and can contain the action itself as well as information about users, time and date, and notes.

While highly abstract, this kind of object associated with its own history and preceded by descriptive metadata is precisely what we need to engineer in all record creating environments. The model provided here, while for another purpose, is an adequate base on which to design the evidential record-object of the future.

### Intellectual Property Task Force Draws Comment

As reported in the last issue, the Working Group on Intellectual Property Rights of the National Information Infrastructure Task Force issued a preliminary report in July that argues that if the NII is to achieve its potential, authors and publishers will need reasonable assurance that their intellectual property rights will be respected. It

concludes that such assurances are currently lacking and that, as a result, sources of valuable intellectual property are not making it available over networks. It therefore recommends three "minor clarifications and changes" to the copyright act to make the necessary adjustments to a digital networked environment. These are:

- (1) making digital transmission of a copy of copyrighted works without permission of the copyright holder an infringement;
- (2) abolishing the "first sale" rule for digital transmissions so that those receiving a copy have no right to distribute their copy; and
- (3) making it an infringement of copyright to make or sell devices intended to circumvent copy protection.

Although advertised as modest, most observers would consider the effect of these changes far from trivial, whether or not they agree with them. I was interested to read Pamela Samuelson's analysis in the December 1994 issue of *Communications of the ACM*. Samuelson and I agree with the definition of the problem. She advances arguments against all three changes being proposed by the NIITF. I believe the first two changes are warranted but that the third, because it outlaws devices rather than behavior, is overreaching itself and threatens civil liberties. Her analysis is very much grounded in a legal analysis; mine is driven by public policy interests.

I believe that we want the NII to be a resource for valuable information and that if we don't protect copying on the NII, producers and distributors of such information will use patents, trade secrets and licenses to protect them. The result will be a general impoverishment of publicly available information and a rise in the amount of encrypted data being disseminated. This, I fear, would ultimately do greater damage to the concept of copyright than the new restrictions.

Samuelson and I agree however that the proposed restrictions are not as "minor" as they are being portrayed. She argues, in effect, that explicit restriction of digital transmission is unnecessary because courts have already basically established this doctrine, that rather than abolish the first sale doctrine the report could have proposed clarifying it to make it clear that copying a copyrighted work and retaining a copy for oneself while giving copies to others, was illegal but that if we deleted our own copy, then it would be the equivalent to lending a book to a friend. And she notes the sweeping intent of a law that makes it illegal to make or sell devices that could be used illegally whether they are used this way or not (an objection I certainly also hold).

From a legal point-of-view I suspect Samuelson is right. Socially however, we need to give a strong message to users of digital information about what is, and what is not, legal. I think the first two recommendations of the NIITF report do this. I hope that the debate over them, whether or not these changes are

enacted, has the effect of making people appropriately aware. Otherwise we can expect to see much less current and valuable digital information available to us over networks than we have been dreaming about.

### **SPECTRUM: The UK Museum Documentation Standard**

The latest standard for museum documentation from the Museum Documentation Association in the UK, which has long been the leading developer of museum standards, begins where information management standards should begin -- with an analysis of the business process.

SPECTRUM defines "best practices" for twenty procedures commonly found in museum collections management: object entry, loans in, acquisition, inventory control, location and movement control, cataloging, condition checking, conservation, reproduction, risk management, insurance management, indemnity management, valuation control, audit, exhibitions and displays, shipping, loans out, loss, deaccession and disposal, and retrospective documentation.

SPECTRUM identifies the steps in each procedure and its relation to other procedures, and then links these to the information requirements of the procedure. The data dictionary that results from this occupies half of the bulky standards document. Appropriately it is the last half. Other materials associated with the standard include a discussion of legal and technical information management issues, a

discussion of documentation issues, a glossary, bibliography, and address list of resource organizations.

The format of each procedural guideline begins with a definition, establishes a minimum standard of practice, and lists the steps in the process. Next the standard provides "Notes" on policy, legal, and technical issues, followed by sources of advice and help (both publications and institutions). Lastly the format provides for listing of data categories or "units of information" associated with the overall procedure. The standard would have been improved by graphical flow charts of the procedures and top-down views of the overall business of the museum, as well as by links between data items and the process steps that create or use them, but these would all require formal diagramming conventions and systems analysis tools which run contrary to the easy readability of this document.

The data dictionary, entitled "Descriptions of Units of Information," contains a definition of each unit, followed by recording guidelines, terminology standards, and examples. It provides for definition of the relationships between elements and how they are used. Finally it correlates the data with the primary procedures that require it. The data dictionary, unfortunately, is organized only according to element name, so that except for a one page view of categories provided as part of the Quick Reference guide that accompanies the standard, there is no overview or data model. And the synoptic overview in the Quick Reference guide isn't related

in any way to the CIDOC data model (although its evolution since earlier drafts of the MDA data standards does suggest that it has been influenced by the CIDOC modeling).

Despite these few shortcomings, the new SPECTRUM standard should be warmly welcomed in the museum community. It contextualizes museum information requirements in the context of best practice guidelines and consolidates twenty years of MDA work in the area of museum documentation. The publication is a real must for any collections manager. [For information, or copies, contact MDA, Lincoln House, 347 Cherry Hinton Rd., Cambridge CB1 4DH; +44-223-242-848; fax +44-223-213-575]

### Directory of Thesauri for Object Names

The CIDOC Terminology Control Working Group (1987-1992) and its successor the Data and Terminology Working Group (1992-1994) have produced a directory of projects developing thesauri for object names worldwide. Forty-three term lists from twelve countries are represented in this bi-lingual (French/English) publication compiled by Toni Petersen of the Art and Architecture Thesaurus. [Available from Toni Petersen, Art & Architecture Thesaurus, 62 Stratton Rd., Williamstown MA 01267]

### Transaction Action Terms for Collections Management

The Smithsonian Institution Data Content Committee published this term list (designated as Version 1.0)

in 1994. It defines terms used with respect to five object status' found throughout Smithsonian member museums: acquire, dispose, lend, borrow, and temporary custody. The list of terms under acquire should give a flavor for the kinds of language documented: acquire, bargain sale, bequest, birth, collected, deposit, exchange, found in collection, gift, made in museum, purchase, and transfer. For each term the current terms in use in Smithsonian museums and the historic terms are listed. For example, the concept of "bargain sale" which is to acquire at less than fair market value, has been called "donative purchase" and "gift and purchase" in some Smithsonian museums. The term bequest covers concepts that previously were called "gift of estate," "partial bequest," and "restricted bequest."

The Data Content Committee is working on two other term lists, one for "Roles" and one for "Object Types" (object names). In addition, a future version of this list will ultimately include a list of "related terms." [Available from Patricia Fiske, Chairman CIS Management Committee, Smithsonian Institution, Washington DC 20560]

### GILS Standard Final Report

The final report of the study of how to implement a Government Information Locator Service using the ANSI/NISO Z39.50 Information Retrieval Standard was issued in early September. This cooperative research project of Syracuse University and the U.S. Geological Survey was funded by the Working Group on Data Management for Global

Change and has resulted in definition of a Federal Information Processing Standard (FIPS) for GILS, and a definition of the data content of a standard GILS record. The final report outlines a number of issues encountered in the study and summarises the consulting reports (including mine on the needs of archives and records management) which were contracted during the study. [Available for \$45 from NISO press, P.O.Box 338, Oxon Hill MD 20750; or by gopher from gopher://gopher.cni.org.70 or by ftp from ftp.cni.org with anonymous login using e-mail address as password]

### Getty Launches Imaging Initiative

In late August, the Getty Trust announced the launch of an international initiative to foster development of standards for capture and access to digital images. The Imaging Initiative grows directly out of the recommendations of the March conference (vol. 8, pp.29-35) and will address the three challenges identified at that meeting: standards, intellectual property rights, and the articulation of a common vision and coordinated activity. In the first few months of its existence, the initiative, under the direction of Jennifer Trant, has:

- become a sponsor of the Museum Educational Site Licensing (previously MUSE) project;
- co-sponsored the Image Collections Implementers Workshop, with Kodak, M.I.T., and the University of California at

Berkeley in Rochester to examine imaging standards;

- defined work plans with the Consortium for Computer Interchange of Museum Information;
- defined common ground with the Library of Congress National Digital Library team; and
- begun to plan for an international distributed information resource on imaging projects.

[For further information contact Jennifer Trant, JTrant@getty.edu or Getty AHIP, 401 Wilshire Blvd., Suite 1100, Santa Monica CA 90401]

### NISO Establishes New Internet Forum

In collaboration with CNI, NISO has replaced its old listserv with a new forum called niso-l. To subscribe send an e-mail message to listproc@cni.org with the message subscribe niso-l your name. The forum will provide status reports on NISO standards efforts, balloting calendars, and a table of contents for *Information Standards Quarterly*. NISO announces that Z39.50-199x is out for ballot with a balloting period closing November 30, 1994.

### Archives Microfilming Manual

The Research Libraries Group has published an *Archives Microfilming Manual*. It is based on its earlier *Preservation Microfilming Handbook* (1992) but incorporates issues specific to archives uncovered in the Archives Preservation Microfilming Project which has involved 13 in-

stitutions over the past four years. The manual deals especially with the problems of project management, vendor selection, preparation of materials, bibliographic control, and inspection, and includes an overview of film digitization. It incorporates sample contracts, discussions of pesky issues like scrapbooks, and comparative cost data. [*Available from RLG, Distribution Services Center, 1200 Villa St., Mountain View, CA 94041-1100, \$45, 218pp.*]

### **NARA Issues CD-ROM and Optical Disk Policies**

This summer the National Archives and Records Administration issued a bulletin (94-4) allowing the use of CD-ROM as a medium to transfer records to the archives. It's not clear from the bulletin how NARA will provide access to software-dependent data on such discs over time because the bulletin only restricts the data layout (ISO 9660) and the data encoding (ASCII) standards and says nothing about functionality. The second bulletin (94-5) allows transfer of videodiscs containing photographs as long as the original photographs are also transferred and accepts CD-A format discs for audio data. It permits use of optical discs for permanent records in agency custody with case-by-case approval, but does not permit transfer of data to NARA on such discs. Agencies are permitted to transfer any non-permanent records to optical disc without NARA approval.

### **CIDOC Fact Sheets: Registration**

The Documentation Committee of the International Council on Museums (CIDOC) has begun issuing "fact sheets" to promote standard practices in museum documentation worldwide. These simply written, one-page directives describe a museum process and the documentation requirements of that process step by step. The first of these, on Registration, was distributed earlier this year and is available in quite a few languages. [*For information and copies contact: ICOM, Maison de Unesco, 12 Rue Miollis, 75732 Paris, cedex 15, France, +331-4734-0500; fax +331-4306-7862*]



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## **END NOTE**

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### **Fair Use**

Christine Steiner, Smithsonian Institution

On September 19, 1994, the Clinton Administration brought together the users and producers of copyrighted materials to begin hammering out an agreement on how such products can be used in the electronic age. The two sides were brought together by the Administration's Working Group on Intellectual Property Rights, a subgroup of the federal committee that is charged with developing policies for the proposed National Information Infrastructure. The following was my statement to that meeting:

"The Smithsonian Institution, an educational entity dedicated to the 'increase and diffusion of knowledge,' is a consumer, creator, provider, and publisher of copyrighted works. The interests of the Smithsonian Institution appear to be ably represented by other Fair Use Conference participants in the areas of library use, text creation and use, and scholarly exchange in general. I confine my limited statement to the vexing issues surrounding exchange in the networked environment of museum images (and accompanying explanatory text, databases, or music and film recordings). Cultural communities provide and use information for a variety of education, exhibition, and research purposes; the core principle of open and equitable access to museum information for educational purposes must be balanced with the competing core principle that ownership of museum images must be protected with the vigilance exercised over the custody and care of museum objects. To this end, three principles for educational and library fair use of museum images can be articulated as concerns about integrity, control, and context, as follows:

1. The museum community shares the common mission to preserve, exhibit, and interpret cultural information and the growing anxiety that third parties will abuse or alter this information. Because the opportunity for "transformative uses" is so great in an environment where images can be easily manipulated and altered, there must be assurances that unauthorized reproduction or alteration (color changes, composition or context manipulation, adding to or taking from, cropping, or other alteration) is impermissible. This is especially crucial where the altered image is passed off as the authorized reproduction with the museum name/credit

line still attached. Legal assurances that the integrity of museum-owned images is protected, here and abroad, will affect the rate at which museums make their collections available.

2. It is a corresponding principle that museums maintain the exclusive right to distribute museum images (and license/authorize third parties) as a part of their educational mission and responsibility to preserve, authenticate, and accurately present collections, related research, and accompanying text. Uses of museum-developed, museum-distributed images are and will continue to be encouraged for teaching and research purposes. At the same time, licensing arrangements for commercial uses, for wide distribution, and for frequent access must also be encouraged but controlled by the museum. For example, practices such as building educational institution collections by unauthorized copying, or repeated classroom use of museum images without permission, are not fair uses. The museum community is unlikely to agree that licensing arrangements constrain fair use in the absence of technological systems that protect the ownership of museum images and economic incentives that will drive initiatives for continuing collections accessibility in the networked environment.
3. Recognizing that cultural information knows no borders, any attempts to fashion guidelines for fair use must consider the international scope of shared information. A set of international principles to enable the sharing of information for educational purposes must be identified. A framework for managing diverse and conflicting laws must be developed in the international legal context. Museums and cultural entities have been hampered by intellectual property uncertainties; a vigorous effort to harmonize copyright laws for international networked educational uses is a priority."

The various and potentially competing interests represented at the opening session will assure a vigorous debate on the issues. The Fair Use Subcommittee members were organized by Commissioner Bruce A. Lehman into three working groups: Library Subcommittee, Elementary-Secondary Subcommittee, and University Subcommittee. The Smithsonian Institution was placed, properly, in the University Subcommittee (but I suggested to Committee staff that they consider, at a later point, further refining these groups to create a separate subcommittee for cultural entities). The first meetings were convened at the end of October; monthly meetings are anticipated until the task is accomplished.

[For more information, write to Christine Steiner at Office of the General Counsel, Smithsonian Institution, 1000 Jefferson Drive, S.W., Washington, D.C. 20003]

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## CONTRIBUTORS

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**David Bearman** has been President and Senior Consultant at Archives & Museum Informatics in Pittsburgh, Pennsylvania, since 1986. Previously he served as Deputy Director of the Smithsonian Institution Office of Information Resource Management and Director of the National Information Systems Task Force of the Society of American Archivists. He will co-chair ICHIM'95 to be held in Conjunction with the Museum Computer Network in San Diego in October 1995.

**Daniel M. Jansen** is an archivist in the Cartographic and Architectural Branch of the National Archives and Records Administration. He has an MA in American History from the University of Tennessee-Knoxville and a BA in History from the University of Wisconsin-Platteville.

**Katherine Jones-Garmil** was the Data Processing Coordinator for Florida's Bureau of Historic Sites and Properties, and then joined the computer consulting company, DATABASICS, Inc., in Providence, RI, as Senior Consultant. She has consulted in the museum and government communities since 1985. Ms. Jones-Garmil is a former President of the Board of Directors and is currently the Program Director of the Museum Computer Network. She is the Documentation Manager at the Peabody Museum of Archaeology and Ethnology, Harvard University.

**Xavier Perrot** is an information scientist specializing in interactive multimedia and hypermedia for museums. Perrot lectures at the Hypermedia Department at the University of Paris, where he is pursuing his PhD., and is a research fellow of the Studio for Creative Inquiry at Carnegie Mellon University. He also serves as an independent consultant on interactive multimedia content production and systems design and as a regular columnist for *Archives and Museum Informatics*.

**Christine Steiner** is Assistant General Counsel, Smithsonian Institution, Washington, D.C. Her practice areas include copyright, contracts, personnel, cultural property, and general day-to-day advice for the Smithsonian's museums and its educational offices. She is an active participant in the field of electronic rights issues affecting museums and educational entities, and has lectured and written in this area.

**David A. Wallace** served as the Records/Data-base/Systems Manager at the National Security Archive in Washington, DC from 1988-1992. While at the NSA he also acted as Series Technical Editor to their "The Making of U.S. Policy" series. He is currently pursuing doctoral studies at the School of Library and Information Science at the University of Pittsburgh and serving as staff to Dean Toni Carbo Bearman in support of her role as a member of the National Information Infrastructure Advisory Council.



