

# Archives and Museum Informatics

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## REINVENTING NARA

In response to a September 11 memorandum from the President to the heads of all Federal agencies entitled "Streamlining the Bureaucracy", Acting Archivist Trudy Peterson appointed a task force chaired by Ralph Bledsoe (Director of the Reagan Presidential Library), to examine the organization of the National Archives. The task force produced a draft report on November 22, which met strong resistance from NARA management. Asked to revise the report, the task force submitted its final report on December 13, but it was not released until mid-January. In the report, which included as appendixes all the comments made by agency staff on the earlier draft, the task force largely stuck to its guns. I believe the report is important enough to summarize and hope others will read it and comment on what they see as the strengths and weaknesses of its plan for NARA.

The report, Reinventing the National Archives and Records Administration, includes a Plan for Streamlining NARA built around the objectives of "putting NARA customers first, empowering NARA employees to get results, cutting red tape, and getting NARA back to basic records management and archival functions". The specific actions recommended in the plan are based on findings presented in the first part of the report, so in reviewing the report, I have first reproduced the findings and then discussed what I see as the potential of the proposed actions.

### *Findings: Putting NARA Customers First*

1) *NARA does not have a comprehensive strategy for providing services to all its customers and lacks an effective mechanism for continuous measurement of customer satisfaction.*

2) *NARA lacks strategies for ensuring that it is at the leading edge of service delivery in records management and archival services, and that it is at the forefront in application of state-of-the-art technology to these fields.*

3) *NARA lacks sufficient awareness of the records management marketplace, and particularly its role in creating and coping with market forces.*

In response, the task force proposes an agency commitment to high quality customer service, one stop service centers, expanded delivery options, systematic customer surveys, and evaluation of government records management practices. It recommends restructuring the organization to eliminate internal barriers to coordinated service delivery, joint ventures with customer agencies to develop

new records management practices, and collection and analysis of cost data to assess service effectiveness. And it urges NARA to conduct privatisation reviews of its services and to maintain a marketplace assessment.

While admirable, these recommendations fall into the same trap for which the report criticizes NARA by not taking a position on who the customers are and what services ought to be extended to them by NARA. Nor do they address the critique about utilizing state-of-the-art technology because they see it as a means to satisfying customers rather than as a fundamental function of the agency. If researchers using the archives, or even federal government records managers, are seen as the *raison d'etre* of the archives, improved service to them can be measured as success; unfortunately the real function of the archives, the preservation of corporate memory of a democratic society, does not necessarily improve as a consequence of admittedly valuable improvements in immediate end-user services. Would this new agency respond to the Department of Energy admission that Americans were subjected to radioactivity in the 1940's and 1950's with an aggressive search for the records to support claims of individuals against the Government or with new schedules for research records? (. . . more . . .)

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*Findings: Empowering NARA Employees to get Results*

- 4) *Decision-making power in NARA is too centralized for a modern, service-oriented professional organization.*
- 5) *The majority of NARA employees are not accountable for results.*
- 6) *NARA workers do not have all the tools they need to do their jobs.*
- 7) *NARA is not taking advantage of programs and processes available in today's workplace that stress the 'quality of working life'.*
- 8) *NARA management does not have a comprehensive partnership arrangement with its workforce.*
- 9) *NARA has not exerted sufficient leadership in adopting quality management approaches aimed at creating a strong workforce at all levels.*

In response, the task force proposes to decentralize decision making power through "top down goal setting and bottom up action planning", increase the span of control of individual supervisors and reduce current supervisor to staff ratio's by approximately 50%, remove layers of management, evaluate workload and establish clear expectations of results, establish performance awards, terminate employees failing to meet standards, develop a nationwide training plan including information technology planning, pursue affirmative action and equal opportunity, conduct periodic morale assessments, build better labor-management relations through a council, develop alternative methods of dispute resolution, and have the Archivist of the U.S. articulate a customer service oriented vision and plan and charge the management council with carrying it out in conjunction with the Deputy Archivist who will serve as a chief operating officer.

Again, these seem to be admirable objectives lacking only a clear vision of what the agency is about. It is true that NARA doesn't function because it is overburdened with levels of unaccountable management but the logjams of deadwood result from two decades without any vision of what it is trying to do. Simply streamlining the agency management will not help steer it in a useful direction.

One of the points missed by the task force is the deleterious effect of the dominance of people holding the job classification of archivist, especially in mid-level management. The qualifications for this job classification are seriously irrelevant to the tasks the agency must perform and deprive the organization of professionals with more relevant skills. In addition, other governmental agencies, which have a need for staff in the archivist classification, are unable to appoint archivists due to NARA's monopoly of this job classification.

*Findings: Cutting Red Tape*

- 10) *NARA's budget process is too centralized and inflexible, resulting in lack of innovation by NARA managers to achieve cost savings and productivity improvement.*
- 11) *NARA personnel policies and practices are too rigid, resulting in lengthy and costly recruiting and hiring procedures and little incentive for managers and employees to be innovative.*

12) *NARA's procurement function is over-regulated, resulting in slow responses and lost opportunities for cost savings.*

13) *NARA has in place a thicket of regulations, and has not been inclined to eliminate regulations or seek waivers from regulations imposed by other organizations.*

14) *NARA can make a stronger effort to cooperate with state and local governments to address common records management and archival administration issues and concerns.*

In response the task force recommends instituting a streamlined, multi-year, mission and performance based, budget with performance responsive measures and fewer line item restrictions, an agency wide account for training, technology improvements and personnel awards, and an automated budget tracking system. It proposes performance based personnel practices, a simplified position classification system to eliminate rigid job and grade structures and to create more fluid career paths, and more direct supervisory responsibility for hiring and firing. The procurement function should be service oriented and seek better values through choice. In addition the task force recommended that NARA reduce its regulations by 50% and reduce recordkeeping regulations imposed on states.

Anyone who has observed NARA will see that the basic budgeting and personnel recommendations proposed here are positive, but abstract guidelines such as reducing regulations by 50% are of little value without alternative directions. Missing since the earlier draft is a recommendation that the Inspector General should be encouraged to expand his focus to management auditing from his previously narrow emphasis on auditing to detect and prevent fraud, waste, abuse and mismanagement. This was the only recommendation dropped from the earlier draft, but I found it unfortunate because NARA does lack a tradition of serious program auditing and needs the benefits of independent critique badly.

*Findings: Back to Basics*

15) *NARA is not effectively organized to perform its mission*

16) *NARA has not generated new revenue to support its programs*

17) *NARA has not aggressively pursued its statutory responsibilities for providing guidance and assistance to Federal agencies, thereby threatening its primary mission of protecting the permanently valuable records of government.*

18) *Execution of basic archival processes of acquisition and reference are arbitrarily separated into rigid functions which interfere with good customer service and do not allow for the "judicious preservation and disposal of records."*

19) *NARA's preservation program is fragmented, often ineffective, and fails to make maximum use of limited resources.*

20) *NARA has failed to provide consistent leadership, policies and guidance on access issues.*

21) *NARA's records storage policies are characterized by failure to provide adequate space and proper environmental conditions on an agency-wide basis.*

22) *NARA's publication activities can be better coordinated and streamlined.*

23) *NARA does not appear to have a plan for frequent and consistent communication with the public.*

In the early draft, the task force called for privatisation of shops, conservation, reproduction, exhibition and publication services, and the Modern Archives Institute, and suggested consolidation of personnel offices in St. Louis and Washington, of information centers for records management and for archives, and transfer of the National Audiovisual Center to another agency. In the final draft they become much less specific, but in both they miss the most obvious inefficiency of NARA administration of records --- the Presidential libraries system which should see complete consolidation of holdings and transfer of the museum aspects of the shrines to private management.

They recommend reviewing Trust Fund operations, negotiating fees for services with government agencies, charging admission to exhibits, and establishing a private charitable foundation to receive gifts and other income producing activity. Unfortunately, they confine themselves to generalities about more cost effective methods of storage and a reduced publication program with a simultaneous improvement of communication to the public. The task force recommends a (vague) role for NARA in national information policy with OMB and GSA and in the National Information Infrastructure but it misses the critical role NARA could play in the Government Information Locator System, and doesn't seem to understand that NARA's Federal Register is an index to the records of government and hasn't been integrated with access or customer service.

Finally, the task force report recommends a restructuring of NARA that would consolidate all operations relating to life cycle management of government records under one office and introduce a new policy and planning unit to develop NARA policy. The functional consolidation would reduce a large number of layers of hierarchy and reduce the Grade 14, 15, and Senior Executive Service (SES) positions significantly through attrition and early retirement buy-outs.

While the task force report is by no means perfect, it could be a powerful force in the necessary administrative reform of NARA if Acting Archivist Peterson begins to act on its analysis. In doing so, she will have to overcome knee jerk reactions from entrenched bureaucrats whose responses, reprinted in the appendix, should be required reading for whomever is appointed Archivist of the U.S. She will also have to overcome a strong habit of NARA and this task force to pretend that it doesn't have the authority to take very many actions on its own. In a section of the report entitled Action Authorities the task force contends that the vast majority of the actions it proposes will "require cooperation/approval by other agencies". One wonders just how "restructur[ing] its organization to eliminate internal barriers to coordinated service delivery, clarify traditional functional roles, and to preclude non-productive internal 'turf wars'" will require other agencies.

Or why "adopt[ing] a policy that seeks to provide work-friendly, healthy and safe workplaces for all employees in all its facilities" would require approval! Attitudes like these prevent this behemoth from moving anywhere.

But the fundamental weakness of the report is that it is not informed by any coherent strategic vision of the agency as while it can streamline what exists, it has little to offer by way of a new vision. This is particularly evident in its virtually complete inattention to the relationship between NARA's mission and the operational missions of the Federal Register and the Presidential Libraries (and in the way it overlooks management problems in the administration of these two NARA operations). In my view no plan for NARA can be credible if it does not recognize that the Federal Register is the front-end information source for all agency documentation requirements and that the Presidential Libraries system is not a viable longterm strategy for maintenance of records. If permitted to continue, this system could lead to 30 or more such facilities by the end of the next century.

The absence of coherent vision is also clear in the failure of the report to define a workable relationship between NARA and other executive branch agencies. NARA is trying to streamline its operations and reduce its workforce but the report does not suggest closing the Federal Records Centers or putting them on fully cost reimbursable basis or charging agencies for the tremendous burden of declassification they are placing on NARA (or would if they ever get around to depositing with NARA the records they've been classifying for the past fifty years). As a consequence, two major sources of large scale savings are cut off and NARA is asked to achieve substantial reductions in force through starvation of other activities, especially starvation from high level professional expertise. The report continues to ignore the potential to NARA of allowing agencies which wanted to establish their own archival programs (under standards imposed by NARA) to do so. This expedient would have the dual advantage of providing placement for some NARA staff and increasing the overall appropriations to archival activity in the Federal government. Nor does the report take the opportunity to define any new proactive relationships between NARA and the agencies, for example by recognizing the critical role that NARA could play in a Government Information Locator System or the role NARA might play in promoting executive branch agencies practices for electronic record keeping which achieve NARA objectives.

The result is almost certainly unworkable as a whole although it contains numerous valuable reform ideas. The pragmatic maneuvering which shaped a plan that calls for centralization of some functions and decentralization of others and which advocates an end to micro-management while simultaneously offering recommendations in one branch of NARA for the re-allocation of a single mid-level manager, would itself give a senior manager inclined to accept it in whole reason to pause. But the failure to identify significant new sources of funding and staffing or ways to release significant amounts of currently unproduc-

tive funding and staffing, means all the reforms need to be undertaken with fewer staff and less money. Even with the excellent reform of a personnel structure that allows for professional, rather than only supervisory, roles in the higher grades, how is NARA to significantly beef up its ability to deal with information technology (now virtually non-existent) without hiring a slew of GS13-15 information professionals? How is NARA to conduct research on new ways of doing its business while reducing the numbers of highly graded staff with outside experience?

Managing the National Archives sensibly is going to require a great deal of courage and a strong sense of direction. Admirable as the call to valuing customers may be, it does not provide a strategic vision of a new National Archives but simply takes the existing organization and tries to suggest how it could be more responsive. The recommendations of this report will go far towards making the current NARA a more effective, accountable and streamlined organization, but they fail to provide an adequate blueprint for NARA's future. For that, we need to truly reinvent NARA, not just streamline it.

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## NARCISSE

by Xavier Perrot

NARCISSE ( Network of Art Research Computer Image Systems in Europe) is a consortium of four European cultural institutions. It held a seminar last November in Paris to unveil the technologies involved in the Narcisse project, one month before the deadline for its first development phase dictated by its sponsors: the IMPACT Research Program of the EC (Directorate General of Telecommunications, Information Market, Information Industry and Language Processing).

The seminar began with a lecture at the Musee d'Orsay followed by one and a half days of demonstrations in the new premises of the Laboratoire des Musees de France, at the Grand Louvre. There I met **Christian Lahanier**, the charismatic and exacting Project Director, who gave us further information about Narcisse.

**XP - Who are the partners of the Narcisse consortium?**

**CL** - The syndicate includes the Laboratoire de Recherche des Musees de France, the National Archives of Portugal, the Rathgen Forschungslaboratorium from Berlin and the Data Bank of Swiss Cultural Heritage.

**XP - What is the founding idea of your consortium?**

**CL** - In cultural institutions, several million iconographic documents (photographs or x-rays) are archived in traditional storage systems that make their access difficult, if not impossible. These unique and fragile documents, possess an impressive potential for utilization, if one could acquire customized tools and the necessary means of telecommunication. The design and develop-

ment of these tools is among the main objectives of Narcisse, which aims to intensify international exchanges and collaboration.

**XP - But there are no industrial members in the Narcisse consortium.**

**CL** - Industrial companies are not members of our syndicate, but contractual partners for specific research programs. Thomson Broadcast developed our very high performance scanner (VHPS). Bossard Systeme customized Influx, our documentary management software, to match museums needs. Avelem conceived a "pyramidal" pictures storage system called Scopyr. Euritis created our navigation interface, drew the screens and edited the first "Art & Sciences" CD-ROM, using its documentary software Airs.

**XP - What is the content of this CD-ROM, and who are the targeted users?**

**CL** - It has been designed for all professionals interested in art, including for researchers and students. In summary, this CD-ROM is an "electronic multilingual pictorial glossary", about conservation and restoration of paintings and illuminations. It is the result of one year of a collaboration involving twenty experts. The interface and the contents are translated into 8 languages (soon to be 15). There are 150 key words representing essential concepts in conservation. Five hundred graphic documents, from 120 paintings, illustrate the glossary.

**XP - How did you choose these key words?**

**CL** - It is a selection of terms made from a complete printed thesaurus that we developed together, and which has just been published by the "Arquivos Nacionais Torre do Tombo" from Lisbon. Thanks to the CD-ROM "Art & Sciences", it is now possible to visualize equivalence of terms in concrete examples. To the best of our knowledge, it is the first international multilingual collaboration in the field of conservation terminology and electronic editions.

**XP - I suppose multilinguality must have seemed an insurmountable issue sometimes!**

**CL** - Multilinguality rarely led us to compromises. Most often it was an opportunity for mutual enrichment. The concept of the system is based on an internal tree structure. The value labels in the different languages are attached to each branch of this tree. But for some concepts, the vocabulary of one language, or conventions in one country, are more developed, more refined. In this case, we adopted this input to the benefit of the whole structure. The Italian term "vedaccio", as well as the American "gilding", created some difficulties that we had to solve together. Things seemed to be easier with pictures. Especially when the quality of the pictures is so impressive. We have illustrations in true colors (16 million of nuances), with a definition that can reach 6,000x8,000 pixels, thanks to the Thomson scanner. With the Scopyr "pyramidal" storage technology, the display of an image

never takes more than a few seconds, whatever the size of the document might be.

**XP - Did the electronic publication of these images give you copyrights problems?**

*CL* - We managed the problem by signing many contracts with the multiple owners of copyrights. Furthermore, we included an advanced technology for the protection of the data cited. It allows different utilization levels, from browsing to extracting pictures, according to the license acquired by the user.

**XP - What are the requirements to run the CD-ROM, and how can it be obtained?**

*CL* - You need a Windows PC with a J-PEG component or card, a second visualization monitor with a 24 bits video card, and a specific protection card. The price of the CD-ROM alone is 8,400 F (\$1,400), or 31,000 F (\$7,200), with the three electronic cards. Jean-Francois Boisson, from Eurlis Company, ships the CD-ROM.

**XP - What are the consortium projects for the future?**

*CL* - At the end of this first development phase, sponsored by the European Program Impact, we have reached our objectives, partly because we had very clear contracts to define the relationships between partners. We learned that the future of Narcisse requires an institutionalization of the syndicate and the creation of a governance structure that involves the partners. Concerning future projects, we have many ideas. I will only mention the need to enlarge the thesaurus, and make it more accurate, or the project of developing a multispectral, very high definition, portable, scanner.

**XP - How can our American friends benefit from Narcisse?**

*CL* - The attempt at normalization of documentary systems for conservation and restoration of paintings and illuminations should be known and adopted by more American institutions, in order to permit the compatibility of our systems and their integration, since language is not an obstacle anymore. Producing a collection of "Art & Sciences" CD-ROMs, based on the glossary translated in 15 languages today, could be the starting point of new collaborations. Thus, the numerous files established in our institutions would, after normalization of their information content, become available for a broader audience, during events such as exhibitions, or in permanent presentations in museums, libraries, archives, training or documentation centers. To last, electronic pictures must feature a very high color quality and a very good resolution, which is permitted by the digitization techniques developed in Europe today. Art, seen by the bias of science, while escaping languages' particularisms, would become a universal cultural treasure, veritably without frontiers.

After hearing such a profession of faith in the benefit of science for humankind, we decided to behave as St. Thomas behaved, and to believe in what we could see. Unfortunately, the CD-ROM station was overwhelmed, and we just had a glimpse at what seems to be well-thought, well-done multilingual multimedia glossary. It is too bad that there is not a cheaper release of this application that could be run on personal computers such as a regular PC or Macintosh, even with lower image's definition. The technical requirements, and the price, will certainly confine "Art & Science CDs" in institutional uses, which is too bad for an attempt of normalization that should reach a broader audience of students, professionals or art "aficionados."

On the Thomson Broadcast stand, around the Very High Performance Scanner (VHPS), we met **Sebastien Darnault**, market researcher for automation and workstation group, and **Jean-Luc Velut**, a member of the development team. At first sight the VHPS looks definitively revolutionary. Even its shape has the look of a small guillotine, which is not meaningless in Paris!

**XP - What real breakthrough in performances does your scanner make?**

*SD* - It allows the capture of transparent documents form 4"x5" up to 14"x17", with a definition of 6,000x8,000 pixels, in 10 seconds for gray levels, and in less than a minute for millions of colors.

*JLV* - Not to mention that these times include the transfer of the whole picture to a dedicated workstation, and that exposure as well as color balances are automatically set up, without previous test.

**XP - How do you explain such performances and reliability without pre-scanning?**

*SD* - This scanner is the achievement of more than 40 years of experience in image processing.

*JLV* - For the VHPS, we also developed a specific ultra fast bus, interfacing it to Unix workstations a 9MB/s, a 32 bit high definition graphic card and an accelerator card with four Risc processors.

*SD* - Not to forget the "Celosie" software, developed under the Unix standard X11/Motif.

**XP - What is the format of the image you scan, and how can you process it?**

*SD* - The picture is instantaneously available on the screen. The VHPS software - Celosie - includes several modules: display, large image assembly, color correction and archiving. Large images can be formed from the successive juxtaposition of individual scans, allowing documents to be created with resolution in order of 20,000 x 20,000 or more. This can be very helpful for some expert or conservation tasks.

*JLV* - The color correction is theoretically useless. But it allows an image to be electronically restored by interactively changing the gain, gamma and black levels.

*SD* - In archiving mode, one could choose to save the document in its "raw" format, or using the ISO-JPEG compression, with or without loss of information. The document could also be saved in some formats used by PC or Macintosh, such as Tiff, and be transmitted through Ethernet or Rnis Network.

***XP* - What were the most tricky aspects of the development process?**

*JLV* - All the electronic hardware know-how involved in the VHPS have been mastered by Thomson Broadcast for a long time. It is the realization of a high precision mechanism for the mobile tray, which required more attention. Now the 20 kg tray, powered by a fast motor, guarantees a geometric precision and repeatability of 1 pixel.

***XP* - What are the main applications of the VHPS?**

*SD* - The VHPS belongs to a larger architecture: DIANA (Digital Image Archiving and Network Architecture). Diana was created with in the framework of the European project Narcisse. Therefore the first applications are oriented toward museums, such as the National Archives of Portugal "Torre do Tombo" project, or the work of the "Laboratoire de Recherche des Musees de France". But it is obvious that the performances of the VHPS lead it far ahead of any competitor in many domains as diverse as publishing, pre-press, documents management systems, medical applications of electronic analyze or teletransmission.

***XP* - How would you compare the VHPS with its competitors?**

*SD* - The VHPS is truly impressive for its quality and speed. One can think of digitizing huge images with a very high definition, but another possible utilization is to scan many documents at once, and to split them on the workstation into several files. We could also imagine endless applications by using such a scanner with a GTE ImageSpan service, for instance. Anyway, if ever you hear of a demonstration you can attend, don't miss it!

***XP* - Who is in charge of shipping this product in the United States?**

*SD* - Thomson Broadcast Inc. sells the VHPS in the United States. The contact is Olivier Mevel, Product Development Engineer (49 Smith Street, PO Box 5266, Englewood, New Jersey 07631, phone 201/569-1650, fax 201/569-1511). We are currently considering a demonstration tour in the US for 1994.

*X.P.*

## Vocabulary Control

by David Bearman

In November I gave a workshop on vocabulary control for the continuing education program at the University of Texas in Austin. The experience revealed some serious weaknesses in the object description vocabularies with which museums are expected to work that I think are worth examining.

In giving this workshop in the past, I have used copies of archival records and ephemera as the foundation for the workshop exercises. This year I found some marvelously detailed plastic refrigerator magnets in the form of common kitchen appliances at my local discount store and acquired one for each participant. In conjunction with each model, participants were given a whimsical provenance (Exhibits 1 & 2) which provided some additional vocabulary and numerous controllable personal, organizational and place name terms.

Initially each participant was asked to write a brief prose description of the item they had in hand. After a lecture on databases, access points, and markup techniques, each participant revisited their prose description to identify information in it that might be "fielded". Then participants made a structured description out of the initial prose. Following a lecture and discussion on the interests which visitors, researchers, and other users might have in these objects, the group defined a variety of user perspectives and potential queries. Participants then expanded their object description with fields that might be valuable to support different types of users and queries. Following a lecture on vocabulary lists and their structures, the whole group identified the terms each person had used for the same fields of data and organized them into flat lists, classified lists and thesauri.

Participants then spent some time looking for the terms they used in such controlled vocabularies as the Art and Architecture Thesaurus, the Library of Congress Subject Headings and Subject Headings for Graphic Materials, the The Revised Nomenclature for Museum Cataloging and the Social History and Industrial Classification (SHIC) scheme from England. This exercise was intended to show how different results are obtained when using different vocabularies to control the same facet of description and to identify the benefits and pitfalls of using a particular vocabulary. In this instance, the lesson learned was that these vocabularies are individually and collectively nearly useless, or even worse misleading, in describing these common household artifacts. Rather than discuss other aspects of the workshop (which has sessions on mechanics of implementation, costs and user assessment, as well) I think it useful to focus on what we found in the controlled vocabularies we searched.

The Art and Architecture Thesaurus does not even recognize "pop art" as a genre. It does have the term "plastic", and the term "models", but it has no terms for magnets, refrigerator magnets, or kitsch. "Collectibles" are recognized (but are these really collectibles?) and so is "decorative art" (but are these?).

The Library of Congress Thesaurus for Graphic Materials recognizes "appliances" as a term for "domestic appliances" and "art objects" as a term for "bric-a-brac". The term "miniatures" is allowable but "models" are either artists models or model airplanes, model railroads or model ships. Magnets or refrigerator magnets are still not to be found. We could pretend these are "sculpture", but the term plastic casts is not available.

We expected vocabularies designed for museums to do better, but were disappointed. The Revised Nomenclature for Museum Cataloging has only one high level category ("household accessory") that comes close and it isn't really appropriate; besides, the list of object names in this category does not include magnets. The term "magnets" does appear in the category Electrical and Mechanical Tools & Equipment, where it clearly doesn't refer to the things we had. Under "Advertising medium" we can find "Model, Product" but these really aren't and under "Art" we can find "bric-a-brac". The Social History and Industrial Classification (SHIC) vocabulary used by museums in the United Kingdom provides for "plastic products not elsewhere specified" and for "models" as a category of toys. As for plastic extrusion refrigerator magnets in the form of household appliances - we're still lost.

Interestingly, the Library of Congress Subject Headings, a list of pre-coordinated subject headings developed for books, comes closest to having the terms we would want and provides rules for extending headings using "floating" sub-headings. It includes "Miniature decorative design" and "Mounts" as narrower terms under Decoration and ornament and permits sub-categories such as "United States" and combinations such as "Kitchen - Decorations". The term "Household Appliances, Electric - Models" would apparently be legal. "Kitchen utensils" are a recognized term with narrower terms for all the forms of our magnets including blenders, coffee makers, eggbeaters, electric toasters, food processors, and mixers. "Kitsch" is a heading and so are "magnets". "Miniature objects" and "Models" are terms, although the closest we come to plastic models is "Plastics - Molding". The heading "Plastics in household appliances" is available and Pop Art presents no problem for LC. While the Library of Congress does not know about refrigerator magnets they do have "plastic sculpture" and "contemporary sculpture".

Discussions of the advantages of using controlled vocabularies usually assume that appropriate terms are available in the terminology list being employed. In a critique of controlled vocabularies for subject retrieval, which I wrote several years ago (*American Archivist*, vol. 52 #3, Summer 1989), I presumed that appropriate terminology existed in a controlled list somewhere. I argued that the important questions had to do with identifying which

fields contained information that it would be important to control given the requirements of those searching the system. I proposed ways to determine what would be a cost effective degree of control. For example, in this case controlling vocabulary for place names, personal names, and corporate names would prove a lot less problematic than controlling the subject terms, but because these proper name access points would also be a lot less meaningful to the queries we envisioned, the time spent on controlling them might not be very cost effective.

What I did not consider was what to do when no vocabularies accurately describe the concept we want to represent. It is obvious that if we have to adopt terms that distort the meaning of the objects we are describing, any benefits with respect to information retrieval, such as improved precision, that could accrue from control of terminology are a hardly an advantage. Even if by studying queries carefully we had selected the right fields to control, we would be forced to use misleading concepts in indexing. So what is a curator to do if they get a collection like this? And have we been asking the wrong questions about vocabulary control for topical subject terminology all along? Perhaps what we need to assess in selecting vocabularies is the ease with which they can be updated by users as the appropriateness of the intellectual perspective they embody. At least I'll never again assume that a vocabulary for a given domain of description actually has the terms required to describe that domain.

## Vocabulary Control Workshop

### Exhibit 1

87.46.3.a-mn. The Dumwhittle Collection, sequential accession 11

George Dumwhittle (1921-1987) owned Dumwhittle Hardware and Discount Inc., a general store in Harbinger, Illinois which he inherited from his father Manfred Dumwhittle (1896-1965) after the latter's death. Prior to taking over the family business, George Dumwhittle studied art history at the University of Illinois and managed the Adamson Gallery in Chicago, which was, during the period of his direction, one of the leading venues for the display of pop art. Dumwhittle's lifelong interest in pop art and in hardware is reflected in the collection which he gave to the Harbinger Historical Society in increments from 1978 until his death in 1987 when the last of the collection came to the Society under the terms of his will. The collection includes 1653 historical household appliances, 2980 paintings, sketches, posters, and 8764 other representations of household appliances by various artists.

Invoices in the company records, acquired after Dumwhittle's death, suggest they were acquired directly from the manufacturer, Preston Extrusions in Adderston California as part of the standard stock of Dumwhittle Hardware and Discount. The earliest invoice found, dated May 1983 cites stock #456-493 @ \$36.50 p.gross. (This

may not refer to the acquisition of these items, since many such orders were placed and the specific lot from which these were drawn between 1983 and 1987 is unknown).

### Exhibit 2

This personal letter was found in the private papers of George Dumwhittle. It might have bearing on the provenance of these items.

November 3, 1982  
Bob Preston  
453 Marybone St.  
Adderston, California 94565

Dear Bob,

I loved the new line! Of course I know you have talent but in this case you've outdone Andy Warhol. One quibble - shouldn't you put the actual brand names on them? Personally, I couldn't imagine having anything less than a Cuisinart on my fridge.

God, can't plastics be ugly! Did you ever wonder what madness of the gods brought us both to such an end after years of worshipping beauty and sitting at the feet of the masters of scholarship? If you ever make the bloody things, I'll sell thousands for you, hiding your genius in kitsch...

Sandra and I send our love as always,  
yours,  
Geo

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## CONFERENCES

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### Museum Computer Network

The Museum Computer Network meeting in Seattle, November 3-6, attracted about 250 museum and software industry professionals including many for whom this was a first MCN meeting. Indeed this meeting marked for me the passage of a generation at MCN with the full control now resting with people who have been members for five years or less. The change was signaled by the emergence of two new and dominant themes in the program and in the hallways at the meeting -- multimedia computing and the Internet -- and the continued emphasis on standards. The same change was also reflected in the presence, for the first time in twenty years, of significant numbers of museum computer specialists from universities. I was delighted with the result and hope that MCN continues both to stay at the forefront of these critical developments in computing and to appeal to academics.

The three day program was preceded by a day of workshops on multimedia (one general introduction and one on image bases), networks (using the Conservation Information Network) and standards (the AAT). Except for a session on bar coding, one on "home grown applications", and one mixed bag entitled "project reports", all the sessions dealt with the three dominant issues. The meeting was characterized by feast or famine scheduling; at times there were as many as four sessions and exhibits at

once, while at several other times there was only a solitary session which was not plenary except by default.

I began the first day by speaking at a session on museum information interchange about the recently published Standards Framework for Computer Interchange of Museum Information (*Spectra*, vol.20 #2-3). I was followed by Howard Besser who reviewed the latest state of multimedia data standards. Besser emphasized the importance of standards to the reuse of data from back room applications to outreach and the need to keep up with areas of rapid standards evolution such as multimedia and hypermedia interchange. Next, Jim Blackaby reported on the success of the Cultural History Information Task Group of CIMI in arriving at a definition of the data required for construction of collection level guides to museum holdings. The data content requirements and some background on the project are about to be published in *History News*. The session concluded with a report from Leslie Johnston as the MCN representative on the CIMI Management Committee about the formation of the Consortium for CIMI (see p.xxx). A lively discussion ensued on the potential work of such a consortium and how individual museums could get involved.

Following the opening session, Steve Lerman, of the Center for Educational Computing Initiatives at M.I.T. and Director of Project Athena, spoke on "Museums, Education and Technology: Will the Next Century Bring Significant Changes for Museums?". Lerman described the trends in processing power, storage costs, data communications, display technologies, systems architectures and cultural adoption of computing that have led to predictions of an ubiquitous, distributed, individuated, multimedia market by the opening of the 21st century. His major point was how critical it is for us to deal with the radical difference between the pace of change in the computing industry where generations last 2 years and that in museums where human generations of 30 years don't always bring change.

He then moved on to discussing the role of client-server architectures in museum and multimedia practices and repeatedly cited Howard Besser's emphasis on the importance of layered standards to long-term viability of systems. Lerman illustrated the concept with videotaped examples from Project Athena and Athena/MUSE productions and suggested that in the future individuals might want to gather their own "personal museum corpus" in personal assistants and similar computing devices as they visited museums in person or over the networks. He pointed out the importance, in such a future for museums to be information resources for scholarship, and the necessary role of directories to museum holdings and services. Noting that "the early Christians get the best lions" he proposed coalitions of organizations as the only viable strategies for museums to use to stay abreast of, or at the forefront of, utilizing changes in the technology.

Like many of his colleagues in higher education, Steve seemed to me too sanguine about the relationship be-

tween connectivity and access. His suggestion that image recognition might soon help us find images of cathedrals on the Internet and his lack of awareness of just how many unique museum objects we are talking about and how few are described, reminded me of White House advisor Paul Strassman's very similar assumptions at the Stein Conference which I attended the previous month.

The afternoon was devoted to a single marathon panel session on intellectual property rights, copyright and museum images at which representatives of numerous Rights and Reproductions Organizations (RRO's) and others active in copyright debates spoke about their experiences in establishing methods to protect intellectual property. Barry Knittel of ASCAP led off by describing how ASCAP licenses venues and broadcasters to play music. The \$390M a year operation employs over 150 field representatives whose job Knittel described as "educating" users of music in public places (night club owners and building managers playing Musack) and "offering" them licensing agreements although it might be thought of as enforcing ASCAP's monopoly. In all, 19% of ASCAP income is spent on overhead and the rest is returned to copyright owners based on statistical surveys of performances with weight on the size of the listening audience. Blanket licenses are what make it possible for ASCAP to collect the modest amounts due in royalties (for example, Knittel estimated a discotheque would have an average annual ASCAP fee of c.\$300-500), without the expense of collection exceeding income.

The second speaker, Betty Bengstron of the Coalition for Networked Information Rights in Electronic Access to Digital Information (READI) Project emphasized that her members, as both owners and users of electronic rights, were interested in developing mechanisms for managing such rights on networks and are in the process of developing guidelines for contracts and templates for licenses to rights.

Kelly Frey of the Copyright Clearance Center (CCC), a RRO focusing on copying from published texts formed in 1979, reported on how the CCC enters into agreements both with rights holders and foreign RRO's and redistributes income from licenses to both. Frey reiterated important elements of the experience CCC shares with ASCAP, especially that a benefit of the clearance center from the licensees point of view is that the cost of individual transactions is greatly reduced by paying to only one source and blanket agreements while auditing keeps down the record keeping costs associated with item level royalty payments. Bill Kirby, speaking for an even more recently formed RRO (1988) for artists in Canada, CanCOPY, repeated many points made by Knittel and Frey regarding ASCAP and the CCC.

Carl Quakenbush of the Software Publishers Association (SPA) and the Business Software Alliance (BSA) reported that the scope of unauthorized copying of software is estimated to be valued at \$12B annually worldwide and \$2B annually in the U.S. Not surprisingly the SPA and BSA therefore are heavily involved both in

public education and in enforcement of copyrights. Most cases of copyright infringement are resolved by a simple letter to the company at fault, notifying them of the problem and asking for their compliance. Occasionally, when they judge the violations to be willful and the damages to be extensive, the software companies go to court to obtain compliance, damages, and publicity.

Nathan Benn of Picture Network International (PNI) described how professional photographers and other image rights holders, faced with the new digital market, had decided to combine licensing and fulfillment in network accessible service. PNI views itself as the legitimate representative of the photographers because it shares their interest in maximizing royalties, but sees the similarity of its service to that of Kodak, Continuum Productions, Knight-Ridder and others who are constructing image and rights servers. Dick Weisgrad of the Association of News Photographers reported on the Media Photographers Copyright Agency formed in 1993 in reaction to the "outrageously broad" licensing rights being sought by buyers. Modeled after the National Music Publishers Association, it seeks to be the sole agent for rights and reproductions for news photographers and will share the risks of publishers in order to create new markets for its products.

After hearing from each of these spokesmen for the RRO's, Christine Steiner, a lawyer in the Office of the General Counsel of the Smithsonian Institution, reflected on what the museum community can learn from the experience of the RRO's. While acknowledging that museums are not necessarily motivated by the bottom line and not in the habit of looking at information as a resource, she pointed out that museums have experience in fulfilling orders for rights individually and asked whether they now needed an organization to represent them and if so why. Answering her own question, she stressed that it is time for museums to think about their content in new ways, cooperate in encouraging its broad uses, and to dedicate serious resources to studying the issues. She particularly urged museums to start to define common frameworks for licensing digital image rights and adopt methods for aggressive enforcement.

In the discussion which followed, I was particularly struck by Chairperson Susanne Quigley's plea. As a working registrar who is assigned responsibility for licensing, she finds it impossible to keep up on technology trends, fee structures, and enforcement, and felt her colleagues were likewise limited. She asked museums to agree on an outside agent to manage their licenses and royalties for all the reasons the universities which are represented in CNI's READI Project need it. Hopefully this session will be seen in the future as having been a major step forward in what has been a slow effort to educate the museum professional about digital image rights management requirements. As if to underline the need for the Intellectual Property Rights session, the evening reception which followed immediately afterwards at the Seattle Museum of Art, was sponsored by Continuum Productions which is responsible for pushing museums to define their stance

with respect to digital licensing because they have been trying to acquire such rights from museums for the past five years.

The second day, my program was devoted to multimedia. In the first session, *Multifaceted Multimedia*, Ben Davis of the Athena/MUSE Consortium at M.I.T. presented a recent project involving his group, the M.I.T. Archives and Museum, and the George Eastman House, which was devoted to the life and work of Harold Edgerton. Edgerton, an M.I.T. professor whose research on motors led him to develop strobe photography and whose invention of the strobe led him into a life of photographing things in motion, achieved the status of a cult figure at M.I.T. Most of Davis' project report focussed on the content, with only glimpses into the methods and interfaces of the about-to-be-released MUSE authoring tools.

The second speaker, Rich Roller, reported on an exhibit at the Guggenheim Museum which might have been the first museum exhibition of virtual art in the world. The artists who created "worlds" for the show, which was held from October 23 to November 1, 1993 at the Guggenheim's Soho Gallery, included Jenny Hultzer, Thomas Dolby, Lynn Holden in cooperation with Carl Loeffler, and Maxis Cove. Roller reported that the exhibit was exceptionally hard to maintain due to equipment shortages and breakages and the visitors' needs for continuous assistance. Because visitors were scheduled in ten minute intervals and were always attended by a guide, the very popular show could only be visited by about 350 people, but nevertheless had to be manned by over a dozen. Roller was not able to cite press reviews at the time of his talk since the show had opened so recently.

The third speaker, Howard Besser, presented the same project from the Canadian Center for Architecture that he had discussed at the MCN meeting last year.

In the next session, which was devoted to *Evaluation of Museum Multimedia Programs*, Ychaim Halevy whose extraordinary work can be viewed at the Holocaust Museum in Washington DC, presented a conceptual framework for evaluating what he called the second generation of museum multimedia. The second generation of multimedia is one, according to Halevy, that uses the same data and raw data objects from databases in a variety of ways, rather than simply making each object to fit into a specific, throwaway, presentation. To understand the need for projects to move to second generation systems, it is important to have a way of measuring "museum transactions" which Halevy defined as one exposure of an experience to one visitor. At the Holocaust Museum there are approximately 1,000 objects on exhibit and 13,000 potential interactive multimedia exposures (frames). On the other hand, one million visitors are exposed to traditional objects each year and only 500,000 can be exposed to interactive multimedia. If all visitors were exposed to all experiences of each type, Halevy reasoned, they could potentially have one billion traditional object experiences and 6.5 billion interactive multimedia experiences. Halevy then urged that we study not just the number of ex-

posures, but their duration, quality, learning consequences, and role in raising user expectations.

Helen Abbott then reported on how the Seattle Art Museum (SAM) gave Interactive Home Systems non-exclusive but perpetual rights to images of its collections in return for unspecified hardware and software which subsequently was two kiosks running ViewPoint. She described the ViewPoint system at the SAM and several evaluations of how users respond to it which showed little more than that they sort of liked it.

I reported on the evolution of the evaluation criteria used by the jury which evaluated interactive multimedia systems presented for the AAM Muse Awards in 1993. We found that some categories, such as the fit between the product and the original learning objectives or ergonomic considerations in the design of the installation, could not be evaluated because our instructions had not been sufficiently explicit about the background documentation that should be submitted with the awards. In addition, we wanted to be able to assess software functionality and systems architecture issues which we discovered could not be evaluated due to our having access only to video tapes. The criteria will, I hope, be revised for future years. Meanwhile, I called for the development of critical review literature, realizing that it requires that people who have seen more than one museum interactive do the reviewing and that often reviews are written by journalists who are seeing museum multimedia for the first time.

I spent the remainder of the afternoon in the exhibit halls, although it meant missing a session on Imaging for Object Collections. The exhibitors did not include anyone new in collections management. Cuadra, Eloquent, Gallery Systems, Questor, Vernon and Willoughby all demonstrated products with surprisingly little change over the past year. CHIN, the Getty AHIP Program, and RLG came to show the products of their cooperative programs. The only surprises were the absence of small east coast collection vendors such as Cactus (Minaret) and Oaktree Software (Accession). Two vendors of museum store packages (Computac and Wordstock), both new to MCN, tried their sales pitches. Two membership/ticketing systems (Blackbaud and Select Ticketing) both with long MCN histories were on the scene. New to MCN were Eastman Kodak (showing its Photo CD), Boston Photo (selling Photo CD mastering services), Pacer CATS Corporation (a ticketing and sales management company), and Peopleware (a company selling meeting management products). Frankly I didn't see anything that was very exciting, although it was obvious that Photo CD, hardly a new technology this year, was a big draw and has become a de facto standard for museum imaging projects.

Saturday morning, the Special Interest Group on Visual Images got off to a slow start talking about how it should operate before it decided to just start functioning but soon had an exciting exchange of information.

The formal sessions on Saturday were, however, a disappointment. Due to a cancellation, only one session was

held. It consisted of project reports and these were, like many project reports, somewhat dry. The most important report, by Janet Gomon on the study conducted by Mitre Corporation for the ten largest natural science museums in the U.S., was squeezed into too little time (see In-Box under Reports for a brief review of the product).

The conference ended in a whimper with the end of the last talk. Without even a session chairman to wish the delegates well, they drifted off reminding us that MCN doesn't always have conference organization quite together. Nonetheless, I was pleased with the overall quality of the meeting and encouraged that next year MCN will meet with the Committee on Documentation (CIDOC) of ICOM in Washington DC, bringing numbers up to about 500. The following year the MCN meeting will also be the ICHIM '95 conference in San Diego, again assuring a heavy attendance. These two back to back meetings with other groups could well be what MCN needs to regain the momentum it lost in its move and change of administration last year.

## COALITION FOR NETWORKED INFORMATION

The fall 1993 meeting of the Task Force of the Coalition for Networked Information (CNI) was attended by about 350 people from upper middle management and senior management of institutions designing, providing, using, and managing the Internet. Reports from projects alternated with plenary sessions and informal discussions to make a lively and useful conference at the Westfields Conference Center in Chantilly, Virginia.

For me the meeting began with a pre-conference session on the needs of humanities and arts computing in the National Information Infrastructure (NII) sponsored by CNI and the Getty Art History Information Program. About 25 invitees, including representatives from funding agencies, arts and humanities professional associations, and large scale data projects in the arts and humanities, met to discuss how to "define and establish a national coordinative forum for humanities and arts computing". The first part of the morning confirmed that attendees felt there was a need for the humanities and arts to speak with a more coherent voice in NII policy, while the second half was devoted to defining what to do. The urgency of such a "forum" was underlined by Ron Overmann of National Science Foundation, who reported on the internal NSF deadlines for policies on the "digital library" and on various decisions regarding NII management. Unfortunately, at the end of three hours of discussion, the only concrete product was a decision to authorize a "steering committee" of Getty, American Council of Learned Societies, and CNI to take the discussion forward. The inability of the attendees to articulate what made humanities important (cultural heritage, in my view) and how its information needs differed from those in the sciences, will be the first things that the new committee needs to address.

The CNI meeting itself began after lunch with the first of three plenary panels on optimizing public private interests in networking, which addressed the respective roles of the government, not-for-profit and for-profit sectors. Due to a cancellation, unfortunately, all three of the speakers were representatives of not-for-profit organizations. Doug van Houweling (University of Michigan) stressed how we need to look at the management needs of distributed servers and clients on the net before the private for-profit sector completely defines the NII as belonging to it. John Black (President of the Association of Research Libraries) spoke on the Canadian situation with respect to Internet policy. In spite of a longer tradition of mixed government and private enterprise (Air Canada, Canadian Broadcast Corporation, railroads) the network backbone in Canada still isn't even T1 speed, deregulation of telecommunications is only beginning, and high-speed computing has not yet become an issue on the national political agenda. Chuck Blunt (SUNY Albany) reported on the recent report "Telecommunications: A Vital Infrastructure for New York" and the follow-up study group that will report in December. Because no one expressed the positions of government or the for-profits, an opportunity to discover the differences in our visions of the network environment was lost.

In the "churn" sessions which followed, I could have heard a report on Project JANUS, a digital library project at Columbia University, or on public access to NASA earth and space science data over Internet or several other less archival topics, but I chose to attend a meeting of the Working Group on the Transformational Potential of Scholarly Communication.

Charles Henry (Vassar College) reported on the Getty/CNI morning meeting, but was forced to confess, when asked about what action besides publishing a statement was envisioned, that the session didn't really go beyond getting a steering committee organized. Ron Overmann reported on the "considerations" for converting materials to digital form approved in final form by the "Funder's Group" (representatives of National Endowment for the Humanities, NSF, National Endowment for the Arts and National Historical Publications and Records Commission). While each agency will probably incorporate these into their own "guidelines", the term was avoided in this draft because it requires Office of Management and Budget approval. Overmann also reported that on November 22, representatives of the Funder's Group agencies would meet with NSF policy makers on humanities and arts interests in the NII and that he and counterparts at NEH were organizing a way for the directors of their respective agencies to meet on a common humanities/science computing agenda.

The relative sums of money at stake in humanities computing and scientific computing were starkly illustrated by the presentation made by Kathleen Eisenbeis on the earth and space science data efforts, which reported that the U.S. Global Change Research Program and Global Change Data and Information Systems (GCDIS) have requested \$1.47B for FY1994 and NASA's High Perfor-

mance Computing and Communication Program will invest \$1.75M in the development of digital library technologies. [Contact keiseneis@usra.edu]

In the second "churn" session, Jim Michalko (Research Libraries Group), John Perkins (Computer Interchange of Museum Information) and I reported on the progress of the CIMI initiative. CIMI was, at that time, actively seeking the support from enough institutions to enable the formation of a consortium to pursue its objectives. The presentation of the Standards Framework for CIMI and the Consortium Prospectus was designed to attract such members. [Contact John Perkins, CIMI Project Manager, jperkins@fox.nstn.ns.ca]

Had I not been involved in this session, I likely would have gone to hear the HELIOS (Heinz Electronic Interactive Online System) presentation by the staff of the Senator H. John Heinz III Archives at Carnegie Mellon University. HELIOS is converting the approximately one million paper documents left by John Heinz to digital images and ASCII text and designing the three user interfaces required: a scanning interface, an archivist interface and a public interface in a distributed, GUI, environment. HELIOS plans to use natural language processing technologies to build relationships between documents and make access available over the Internet. [Contact Charles P. Lowry, University Librarian, cl3q@andrew.cmu.edu]

In the third afternoon session, Tom Duncan described the Berkeley Museum Informatics Project which is collaborating with the approximately 80 museums and special collections in 65 administrative units at the University of California, Berkeley to develop data models, systems architectures and demonstration systems for coordinated approaches to application of information technologies in museums. The scale of the museum related activities in a major university environment are impressive as this project and the similar program at Cornell University demonstrate. [Contact Tom Duncan, Faculty Assistant for MIP, tdunc@buttercup.berkeley.edu]

I could also have attended a session reporting on the Rice University "Electronic Studio Project" which utilizes the Virtual Notebook System product of the Forefront Group Inc. as a multimedia, collaborative workspace in classes on history of art, architecture, natural science, mathematics and political science. [Contact Arun Jain, Director, Electronic Studio Project, ajain@rice.edu]

The plenary session Saturday morning was devoted to "Optimizing Public/Private Interests in Intellectual Property". Joseph Ebersole, legal counsel to the Information Industry Association led off by stating that the future wealth of the nation was dependent on intellectual property and that while the copyright law was in general adequate as a means of assuring protection of intellectual property, some technical requirements of the overall system for publishing and distributing information are being worked out by IIA. The requirements he identified were that the system should support: 1) identification and copyright status on all works, 2) authentication mechanisms, 3)

encryption and control mechanisms, 4) terms for use of works, 5) write protection, 6) metered use, 7) electronic contractual obligations, 8) billing mechanisms, and 9) retention of copyright identification for scanned/copied items. Ebersole pointed out that the technical means to satisfy each requirement exists but that there were political and management issues in their deployment.

Laura Gasaway, representing the American Association of Universities Task Force on Intellectual Property reported on deliberations of that group about alternative models for ownership and control of faculty produced knowledge products. The problem as they saw it was that the current system of creation and distribution of knowledge involves universities paying faculty to write and faculty giving away the rights to their property to publishers who then sell the publications largely to universities. After developing numerous models, they were about to explore four of these in depth, including faculty ownership, joint faculty/university ownership, joint faculty and academic rights consortium ownership, and an extension (enlightened) of the present system. Each model was being subjected to examination of eleven dimensions and a report is expected in April 1994. [Contact laura\_gasaway@unc.edu]

Mary Beth Peters reported on pending legislative changes that would remove the mandatory deposit requirement of the existing copyright law and modify the law regarding performance rights in networked environments. Brian Kahin reported on a November 18 hearing of the Working Group on Intellectual Property of the Information Policy Committee of the NII Task Force chaired by the Commissioner on Trademarks and Patents which heard testimony relating to performance rights and other copyright issues. In Kahin's view, the significance of the hearing was that the Commerce Department was taking a lead in copyright policy more than that specific new issues were raised.

At the working group meetings that followed the plenary, I was forced to choose between architectures and standards which reported largely on the work of the Z39.50 implementers and the Internet Engineering Task Force and projects such as READI (Rights to Electronic Access & Delivery of Information), library gophers, or digital collections. The Z39.50 details I heard are also now reported in the October 1993 issue of Information Standards Quarterly (vol.5#4). The proposals of the Internet Engineering Task Force for Universal Resource Identifiers (URI's) to identify information by its name and location (URN's and URL's) have made substantial headway and are now likely to be adopted in the coming year making it possible to identify information resources independently of the specific computers and networks in which they are stored.

In the second set of working meetings I passed up learning about how the National Engineering Education Delivery System (NEEDS) is building facilities for networked access to courseware using Mosaic and Hi Time Markup Language (HTML) [Contact David Martin En-

gineering Network Coordinator, Iowa State University, [dmartin@iastate.edu](mailto:dmartin@iastate.edu)] in order to discuss public access to information with Joan Lippincott (CNI), Prudence Adler (Association of Research Libraries) and Scott Armstrong (Information Trust). Adler reported on the Conference on the Future of Federal Government Information held October 29-31 which defined a "Framework for New Federal Information Dissemination access Programs" which is available on the CNI listserv. The government librarians community seems mostly to be concerned about whether the electronic dissemination of published documents will subvert the intentions of the depository library program or be seen as a replacement for it. Scott Armstrong noted that OMB is actively interested in making commercializable information available but less interested in making all government information available, as is reflected in the designs for the Government Information Locator Service (GILS) which makes a passing nod to government information systems while concentrating on government information products, and especially "best sellers".

The closing plenary session was devoted to issues surrounding access to the network infrastructure. Charles Firestone, Director of the Communications and Society Program of Aspen Institute argued that the government had a role to play in assuring that principles such as universal access and community based services are realized in the NII. Marilyn Cade, Director of Technology and Infrastructure, Federal Government Affairs, AT&T, saw the NII as a key to economic competitiveness and focussed on price/value optimization. Laura Breeden, Executive Director of FARNET (Federation of American Research Networks) urged that the principles to be incorporated in the NII include that every client can be a server, interoperability and open technology, and decentralization of operations.

[A summary by CNI of its fall meeting is available from the office, at 21 Dupont Circle, Washington DC 20036, 202-296-5098 or by anonymous ftp from [ftp.cni.org/cd/CNI/tf.meetings/1993b.fall](ftp://ftp.cni.org/cd/CNI/tf.meetings/1993b.fall)]

## Managing Electronic Records

The "National Conference: Managing Electronic Records: Diffusing the Corporate Time Bomb", which was sponsored by Cohasset Associates in Chicago, December 7-9, 1993, attracted almost 100 registrants to the Radisson Suites Hotel at O'Hare Airport for what was, in fact, a continuing education seminar emphasizing document imaging systems issues over the problems of managing records created in electronic communications and control systems.

The meeting was opened by Bob Williams, President of Cohasset Associates. Like many more intimate workshops, the meeting began with a full round of introductions, but because of the size of the gathering this took more than an hour. Most participants were parts of teams

sent by for-profit organizations that were just beginning to think about the need for an electronic records management program. Only a handful of non-profits and governmental organizations sent staff and these individuals were easily outnumbered by the consultants in attendance.

The conference proper got under way with a session on "The New Frontier" in which Bob Williams skimmed over numerous reasons why Electronic Records Management (ERM) was becoming important to organizations including the significance of corporate memory and risk management especially in light of the new rules of civil procedure in Federal Courts as of December 1 (which require voluntary disclosure by parties in a suit) and the change in criminal codes for business executives of corporations charged with wrong-doing. Unfortunately he tended to use the terms documents and records interchangeably and developed a typology of types of documents (transaction, personal computer, reference, archival, large format and complex) which had no underlying rationale which thereby undermined the potential value of this analysis. He did however make some points about the nature of the "paradigm shifts" in which records management was involved and included an interesting notion that there had been a shift in our view of privacy.

In the next session, another Cohasset Associate, Dick Francis, reviewed a list of requirements for electronic information systems developed in what I consider to be a highly inadequate guideline from NARA and expounded on their value. At one point I thought he would identify the fundamental difference between information systems perspectives and those of records managers when he presented a table contrasting document and records managements systems (D&R) and databases (DBMS): D&R's maintain point-in-time representations while DBMS's maintain current-status-representations; D&R's are static while DBMS's are dynamic; D&R's consist of the input and results of business transactions while DBMS's reflect the status change with each transaction. Oddly, however, Fisher saw the major challenges to electronic records management not in the creation of records (which would appear formidable in light of these differences between recordkeeping systems and information systems), but rather in purging systems of records (although what he meant was identifying records in such a way that they could be conveniently and selectively purged given the media on which they were recorded). He seemed to think the solution lay in software that would do the trick, giving less emphasis to such implementation tactics as naming conventions or standards tactics as protocols with appropriate metadata. Indeed, while he suggested what was in effect a set of metadata elements for identification of records, he didn't identify them as such.

Fisher's presentation was useful in focussing attention on the misplaced concern with media preservation at the expense of preserving documents (or what I would call evidence) and on the need for clearer and broader assign-

ment of responsibility in distributed environments of records creation and management.

In the question period an interesting point of practice was raised by an individual responsible for nuclear utility records who pointed out that requirements in some state laws still invalidated any copies of documents while others required the state engineers' stamp on each document. Reasonably enough he asked how electronic records management requirements could accommodate these jurisdictions, and not surprisingly he got no answers.

After lunch a panel consisting Gary Fleming, the user manager of a large FileNet application at Mobil Corporation, David Springer of Home Savings of America, Mason Gringsby a consultant in COLDS systems with Output Strategies; and Raymond Moseley Chief of Staff of NARA discussed the issues raised in the two morning sessions. They noted that appropriate software wasn't being developed because records managers and corporate clients were not articulating requirements for it and that it is often not until long after implementing a system that anyone asks about the retention of its records. It was pointed out that it is possible to change organizational behavior and that changes in things like to Federal Sentencing Guidelines for Corporate Crime and the Rules of Evidence for Federal Courts has the potential of influencing management. There was a lovefest over the National Archives Guidelines which was rather sickening and contributed to the sense that this initial discussion was somewhat orchestrated with Bob Williams calling on people he had previously "planted". In the end, Williams suggested a new paradigm shift for records management, from touting space- compression to time-compression.

In the afternoon, Christine Burns, another Cohasset Associate, presented a series of definitions of records, files, databases, etc. which did not reflect an understanding of how records management views of these concepts needed to differ from information systems definitions in order to achieve records management objectives. The talk on identification, documentation, and scheduling of systems which demonstrated that the concept of business applications being the starting point for analysis and application transactions being the focus of documentation was not yet present in the records management community. In the discussion following her talk, after repeated invitations to the audience to suggest an approach other than one based either on systems or records, I suggested the benefits of taking the transaction and the business application focus and likened the issues to the three schema model in systems design in which the schema's are the logical (system view), physical (data processing) and user schema or business view. I suggested that calendaring and scheduling systems, GIS and decision support were excellent places to explore these differences.

The second day of the conference was also introduced by Bob Williams who presented a general lecture on business law in the United States, rules of evidence and the problems associated with admission of records as

evidence in legal and administrative proceedings. Noting that evidence is held to a general test of accuracy, reliability and trustworthiness like other witnesses, he explained legal concepts such as the term "hearsay" (which refers to any statement not made in court and subject to cross examination) and "data compilation" (an addition to the Federal Rules of Evidence early in the 1970's to incorporate all kinds of electronically recorded information. The survey reviewed Federal and State legal and administrative venues and the different, but fundamentally similar, rules of evidence and business practices which pertain in each. One nice nuance was the recognition that statute, case law and regulation (the "visible" law) is supplemented by "invisible law" in the form of administrative interpretations of regulations. I would add the importance of "best practices" established within an industry which serve as a benchmark for the courts. Unfortunately, too much of William's talk treated all issues related to electronic records as being essentially about electronic, bitmapped, images and particularly images recorded on optical media (the subject of his landmark book) and did not identify areas in the law that are extremely unclear with respect to obligations to create records from electronic information systems or how the content, structure, and context of records can be held together to assure that they convey evidence rather than just information.

Dick Fisher followed by addressing electronic signatures. His presentation was neither specific enough to be technically interesting, nor general enough to provide guidance to those who wonder what the hubbub is about. While he did say that signatures are significant as indicators of contemporaneity and authority for an act (actually my words), he stressed arriving at solutions to signatures independently of presenting important advances that have taken place in time stamping. One aspect of the presentation I found interesting was that Fisher based much of his discussion on consulting he has been doing with clients who collectively require solutions to the electronic laboratory notebook. He missed the opportunity to point out that this effort is typical of how an industry or profession develops a statement of "best practices" which then serves to insulate them from liability because by adhering to such practices they can argue that they are doing it the right way. The point is important to records managers because so much of what is acceptable practice will be industry and discipline specific and based on exactly such extra-legally developed consensus.

The next speaker, John Jesson, was brought from Seattle with instructions from Bob Williams "to scare the heck out of them" which he did by explaining how his firm, Electronic Discovery Inc. operates. The six year old firm essentially serves as the agent for plaintiffs in litigation who need to use discovery to identify electronic evidence. They have had great success in getting court orders under which they search electronic information systems on behalf of their clients. Jesson provided numerous examples of electronic mail, word processing and personnel records which his firm has uncovered, both "erased" and unerased on the hard drives of parties in law suits and reported the consequences in several cases: immediate out of court set-

tlements. One interesting point in his presentation was that discovery enables firms like his to follow the path to all interconnected systems, including home computers, computers in departments on the network and external systems with which the defending organization is in contact electronically. He suggested that in the future electronic discovery will be common and even more professionalized and concluded that "the data sitting on corporate America's computers is the biggest unfunded liability they have today", bigger by far than pensions or health care costs. In sum, he succeeded in scaring his audience.

From questions, it was clear that the audience heard that they needed to dispose of records rather than that corporate discipline was required in record creation. Fortunately, Jesson was followed by three lawyers whose commentary, taken collectively, stressed the potential of records to prove that the firm was not responsible for acts with which it might otherwise be charged. Robert Webb, General Counsel of the Marmon Group Inc in Chicago related problems his firm had in defending itself against liability for operations and companies it had long since divested and pointed out the huge expenses involved in such defenses when the records are not electronic. In a specific case, involving backup alarms installed on trucks, his firm was not able to find evidence proving that notification had been given to another party of a danger, and a jury found against them. In other liability cases they have successfully defended themselves specifically because records could be identified to prove a negative - that they did not contribute to negligence.

Dick Hetke, Corporate Counsel of Ameritech, one of the Baby-Bells, stressed that good electronic records systems would save companies time and money otherwise spent in discovery which is the most costly phase of civil litigation. He stressed the importance of being able to tag documents having attorney-client privilege or documents related to regulatory requirements in order to automatically exclude or include them in appropriate situations. He urged that proper management of information should be made a part of the performance reviews of all employees and that all employees should be well versed in the discoverability of electronic records. Although he didn't use the term "mental model", he discussed the importance of employees having a complete and correct understanding of the way in which their information systems actually work and why systems personnel need to segregate records physically, according to their disposition since logical segregation will not keep backup tapes with mixed data from being created, resulting in unrecognized liabilities. The subtext of the entire presentation was that it is critical in an electronic age for employees to understand company policy regarding information systems and for companies to establish and maintain strong policy guidance.

Mark Gordon, a partner in the specialized high-technology law practice of Gordon & Glickson, introduced some additional important considerations when he reminded participants that the only sure way to protect in-

formation, like protecting intellectual property, is to not let anyone see it, but that because information has to work for the company this is ridiculous. Instead the best protection becomes a corporate culture with norms of behavior and expectations for creating and using records which protect the firm. He urged that lawyers and records managers should help manage risk by fostering appropriate corporate cultures, rather than stand in the way of technological innovations companies need to survive.

In the discussion which followed, the subsequent and unrelated use of records by parties having access to them in other organizations was identified as an issue of concern as was the protection of electronic signatures gathered from customers.

Following lunch, Christine Burns of Cohasset tried to return the meeting to practical matters. She departed from her prepared overheads on electronic mail to report that Cohasset has found that its clients are not scheduling electronic mail and their employees have little or no understanding of the problems this might create. Only 15% of Cohasset client firms have formal policies regarding e-mail, including policies about non-business communications and fewer than 25% of their employees know what happens to their e-mail. She suggested that this in itself was a major problem, although noting that only improper records (electronic or not) would directly harm the firm.

Turning to what to do about it, however, Burns had little concrete to offer. She urged policy discussions between the information systems managers, program managers, records managers and legal counsel and lots of employee education, but proposed no technical or conceptual tools that would make electronic mail management successful. In her follow on talk on "Operational Considerations", Burns suggested that a major problem was identifying the "record copy" and suggested, following the NARA guidelines on electronic records management (published prior to the August 13 ruling in *Armstrong vs. the EOP*) that electronic records could be destroyed if a paper copy was kept. Although she seemed unable to articulate any concrete strategy for managing electronic records, she suggested employing the 80/20 rule. A sort of design based strategy was suggested by Burns in urging participants to look for the "best" in personal productivity application software packages (with criteria for the "best" being those which will satisfy more corporate record keeping requirements), but Burns did not develop a framework for deriving requirements or propose requirements that could be brought to such a selection. Another strategy, based on implementation, was hinted at when Burns suggested a need for "retention conscious backups" that would segregate materials by their disposition, but she did not offer any suggestions on how records with different disposition requirements would come to be marked so that they could be differentially backed up.

Wrapping up the day, Mark Langemo of the University of North Dakota preached to the converted in urging records managers to take up the challenge of electronic records. His inspirational/testimonial style of speaking

was a break from the rest of the afternoon, but the talk didn't provide any concrete help to someone fully convinced of the need to take a proactive stance.

On the final day of the meeting, Christine Burns advocated scheduling electronic records as if physical record series could be identified in the same way as paper records and without any automated relationship to the retention process. Her discussion of electronic vital records programs also stressed all the same issues we would have discussed with respect to paper such as employee awareness of the importance of the records and facilities for their storage. Media and file handling conventions that are normal for records center operations were also discussed but the methods for implementing control in distributed information systems in networked environments were not.

Next, Donna Thompson, of Price Waterhouse, addressed auditing electronic records systems in a prepared address that really only dealt with optical image storage systems. Nevertheless, the talk identified record keeping requirements of concern to auditors which, importantly, are all built around the concept of a business transaction. Thompson discussed authenticity (including the validation of the source and its authority to make the transaction), access control, completeness (as required by the transaction), comprehensiveness (especially for financial transactions), audit trails including audits over indexes so that these can't be deleted, and configuration management over software and hardware. She stressed the importance of procedures to avoid mis-filing which in electronic systems can result in loss of records and control over the steps in records capture (particularly in scanning systems) in which alteration to documents can occur and data can be edited or overlaid. She emphasized the criticality of indexes and file folders for retrieval and the importance of corporate backup responsibilities. As an auditor, she relied largely on traditional tools such as separation of duties, clear procedures, process monitoring, management review and physical control over machines and software, but noted that the new management styles associated with "empowering people" reduced separation of duties and the involvement of numerous individuals in a transaction which served as a check against fraud. In place of these she proposed requiring workers to take at least a full week of uninterrupted vacation so that the patterns of replacement workers during these periods could be compared to those of the regular employees. This, and many other recommendations, did not seem to be addressed particularly to records managers or to issues of electronic records management, but rather to fellow auditors.

In the final scheduled talk of the meeting, Thomas Johnson of Tenex Consulting illustrated how he would make the case for electronic records management with CEO's and CIO's. Using examples from his consulting practice, he urged records managers to get involved in the design cycle where he claimed they "know what is needed". At the Chicago Parking Authority, for example, redesigning tickets and scanning them into a system that

made the history of ticketing available at all hearings increased collection of fines from 11% of cases to 65%. The lesson is to redesign the records process to improve customer service and information delivery in areas critical to corporate success. Johnson generally favored "riding" change since the records function would not, typically, attract new investments in itself. In an example, in a paperless factory environment in which records managers were not attuned to this need, the custom produced electric motors initially emerged from the packing lines while 15 forms were printed to paper; Johnson showed the company how to dispense with these steps. Emphasizing the bottom line, Johnson pointed out that studies in the credit card business suggest that increasing customer retention by 5% increases future sales by 75% and in banking the same increase in retention is worth 85% in future business. With statistics like these he argued, records managers could get appropriate investments in front end capture of information so that it can be used throughout a process; unfortunately his argument was more about information systems design than about records management and like Langemo, his message was more inspirational than pragmatic.

Before the final panel, Bob Williams unfortunately decided to introduce an unscheduled presentation by Steve Subar of Mobius Management Systems which promoted the optical storage technology and software offered by his firm in a direct sales pitch. In the closing discussion, Tom Johnson, Donna Thompson and David Springer agreed that records management is really critical in a client-server environment and that records managers should get rid of all the other things they are now doing and focus their attention there.

When the meeting adjourned at noon without a conclusion, Bob Williams hinted that the same conference would be held in future years. He also promised that he would publish the transcripts of the discussions and open question periods from this meeting, but I hope that after review he bases that decision on the content rather than on this promise.

I left depressed. Records managers are still struggling with electronic image technologies, scaring themselves with legal nightmares, and taking advice from the U.S. National Archives. The most thoughtful educators in the records management profession are unable to articulate concrete strategies for managing electronic records and corporations have not yet developed practices that bear imitation.

On the other hand, a hundred people turned out to learn something, and even if they didn't get what they needed from this workshop, they will keep pursuing it. What we need to do now is to develop further the strategies that do work and make them known. The audience is listening.

*D.B.*

## Ancient Science/Modern Machines<sup>1</sup> (A workshop about electronic records)

Jayne Bellyk, Program Coordinator  
OABC Education Committee

The intention of ANCIENT SCIENCE/MODERN MACHINES was to provide an educational opportunity for archivists to learn more about computer-related methods and technologies. To this end, a data architect, two data analysts, an information engineering manager, a data centre operator, a scientist with a data archive, and some of archivists' own theorists were assembled for two days. We explored what was similar and what was different about our methods, our language, our concepts<sup>2</sup>, and how this affects what we do and how we will do archival work in the electronic world.

The first speaker, Larry Rohan, a senior Information Services Division Manager of a large corporation, described how the corporation where he works evolved from a technological viewpoint. He explained how the business grew around the technology of its day (1973) and how the genealogy of his department came to mirror changes and developments in computer technology. He provided us with an administrative history of his organization whose structure revealed that, as technology grew more complex so did the organizational configuration of the IS division.

Larry Myrick, a data management analyst, de-mystified computer science by presenting a brief history of computing since the 1950's that allowed us to see Computer Science for what it was, a young and developing discipline without much in the way of formal practices and precepts, not unlike our own profession fifty years ago.

Mr. Myrick made us realize that database design had traditionally revolved around the limitations of technology. As technology advanced so did the approach taken to system design. He made the point that the concept of information system architecture and the concept of a system development process or framework did not emerge until the 1980's. The concept of a development framework influenced the structure of many of the system development methodologies in use today, including Information Engineering.<sup>3</sup>

A formalized development process (framework) codifies the method by which models and requirements are transformed into fully automated information systems. A framework provides a way to think about system design and a way to classify various models and system documentation. Larry explained how methodologies help to standardize the system development process and the documentary representation used. He explained how methodologies typically divide the development process into planning, analysis, design, and construction phases that identify the tasks, resources, and manpower required for each. The use of methodologies assure that the right question is asked at the right time in the development

process. The speaker used this discussion to identify points in the development process where appraisal decisions could be built into the system and its documentation, namely the planning and analysis phases.

Mr. Myrick added that systems documentation can be a good resource in researching early corporate policies, since the requirements and analysis phases of system design require articulation of business rules as part of the information gathering process.

Kathy Hatton, another data management analyst, demonstrated the method by which a record becomes physically fragmented throughout a database. She explained how information requirements are analyzed and how the subsequent database is designed by explaining to us: how a data model is built; what a conceptual model is; where the model fits into the life cycle of the systems development process; how the designs become the actual physical database; and why a document fragments across multiple databases. The creation of a conceptual data model results from an analysis of business procedures and occurs independently of technical consideration. Therefore, a data model represents the analysis of the organization and the business function that is being automated.

Ms. Hatton used the example of a business form that represented the manual method for collecting information for a business activity prior to automation. The speaker showed us what the same information would look like in a data model, and how this same information would be stored in a database; and how in relational databases, entities (person, places or events) became tables, data become rows, and relationships became columns within other tables. The concept of non-redundancy (not storing repetitive information) was described in order to show how this principle might effect whether or not a record can be recreated after several years, and how physical considerations, such as storage space and response time, can also effect the final record layout of the physical database.

Ms. Hatton supports the view of the previous speaker that requirements and decisions made during analysis and design can effect whether a record can be recreated or not; thereby emphasizing the point that the planning and analysis phases are the most appropriate time during the system design process for archivists to effect appraisal concerns.

Chuck Watson, Director of the National Radiobiology Archives project, described and demonstrated the archival database that he designed and manages for the U.S. Department of Energy in Washington State. The National Radiobiology Archives consists of thousands of electronic records from various platforms that were migrated into an ORACLE application. The records consist of results of experiments performed on rodents over several decades.

Dr. Watson's presentation raised some interesting questions about archives in general, and illustrated technical problems associated with data integrity and data

migration in the creation of a data archives. He demonstrated how data migration has a tremendous capacity to lose evidence of the first record by reformatting it to a new application, and in other instances, by correcting it.<sup>4</sup>

Heather MacNeil, spoke as a former member of the Canadian Committee on Descriptive Standards about the application of RAD (Rules for Archival Description) to electronic records.<sup>5</sup>

Ms. MacNeil explained that the first generation of archivists looked to libraries for guidance in describing electronic media, and that the bibliographic descriptive model remained unchanged until the appearance of hierarchical and relational databases. This development allowed traditional archival practices to be translated more readily to computer records.

The first principle of arrangement (that records of different creators are never mixed and that original order is maintained) is amenable to relational databases, and that the nature of electronic records supports this idea. Systems should be described as a whole (as evidence of administrative action) before products of the system are described. She emphasized that we must describe the fonds in terms of context and provenance, that is to say, describe the mandate or purpose of the organization that created it, and its relationships with other record-creating bodies before describing its products.

The second principle of arrangement and description follows that description is presented from the general to the specific. Arrangement can be viewed as an analysis of context, and description as the representation of context in descriptive tools. Context, Ms. MacNeil stated, can be characterized as relationships of external and internal structure. External structure would describe the functional and administrative procedures important to understanding records, such as custodial history. Internal structure would describe the activities generating records and the relationship between the organization of the record and its documentary form.

Stevyn Dembo, a principal in the information practice of Ernst & Young, discussed the importance and role of a information system methodology. A methodology, he said, was something that enables visible, repeatable and understandable practices to be communicated. He used the Navigator methodology developed by Ernst and Young as an example of an Information Engineering (IE) methodology to stress the importance of its role in the planning, analysis, design and construction phases of an information system. The advent of Information Engineering made data dominant over function by making the relationship between business functions and the data the function uses fundamental to the method.<sup>6</sup>

He also noted that the boundary between what the tool is and what the technique is, is becoming increasingly blurred as technology advances. He illustrated this point by demonstrating the CASE product ADW and showed

how the tool is able to document the functional decomposition technique.

Luciana Duranti, an Associate Professor in the Master of Archival Studies Program at the University of British Columbia, began her presentation by comparing and contrasting the information engineering methodology presented by Mr. Dembo, with the diplomatic method, and made the following observations: a) where Information Engineering shows how to get from A to B in an information problem, diplomatics defines what A + B are; b) where Information Engineering tells us what route to take, diplomatics tells us how places relate to each other along the way; c) where Information Engineering gathers information from people, diplomatics analyzes records as products of actions and decisions belonging to people as a way to gather information; d) where Information Engineering focuses on data, diplomatics focuses on form and the actions that the data represents<sup>7</sup> and; e) where Information Engineering approaches the problem from the top-down, diplomatics analyzes information from the bottom-up.

In order to explore the relationship between electronic records held in databases and the main concepts of the diplomatic method, Professor Duranti used recent archival events as examples of problems whose solutions could have benefited from a diplomatic analysis. The problems that she chose to re-examine diplomatically were: the appraisal of databases at the US National Science Academy; the PROFS email case; and workflow rules databases.

These examples allowed the speaker to demonstrate that diplomatics is a powerful instrument which can be used in understanding and identifying electronic records. Perhaps the greatest potential contribution of the diplomatic method to Information Engineering methodology would be, she said, its focus on a record's completeness, integrity and accountability because diplomatics defines the elements necessary to satisfy the requirements of completeness and accountability.

Charles Dollar, Assistant Director of the Archival Research Staff of the US National Archives, in his first presentation, spoke about the impact of information technologies on the creation and use of records, and in a second session about electronic record preservation issues.

He presented a lengthy history of computing technology since the 1950's with the purpose of showing its effect on archival appraisal. He also described the future challenges that such developments as optical storage, object-oriented technology, and client server architecture pose to archivists, but made the point that continuity does exist between paper and electronic records with regard to traditional archival practices and processes because most applications represent the automation product of a manual process. The work that we need to do as a profession he feels is largely intellectual. We need to reconcile the concept of series, of function and record in the

electronic environment, and we need to collaborate with systems analysts to develop a common terminology to share concepts that describe these new kinds of documents.

In order to discuss the relationship of preservation to provenance and the notion of archivist as custodian, he said we need to redefine what preservation means, and the emphasis must shift from the preservation of the carrier of the information to the maintenance of access over time.<sup>8</sup> In the business world provenance means the reliability of information, and reliability relies on the maintenance of the context embedded in the metadata (origin and relationship). A record's authenticity depends, of course, on provenance, original order, and the unbroken custody of the record. Mr. Dollar sees client server architecture, time stamping and hash-digests as partial solutions to the problem of document tampering and other control issues. Requirements of authenticity will have to be built into rules of system access, he said.

Archivists should not accept a custodial role with regards to the preservation of electronic records. Instead they should focus on facilitating access through developing descriptive standards and guidelines for metadata, rather than worry about how to accession the physical record into the archives.

The final word went to Terry Eastwood, who had the Herculean task, after all was said and done, to tell us what an electronic record is. Defining an electronic record is not the problem, he said. Rather, the problem lies in deciding where the record is, how to get access to it, and how to deal with it as the technology that created it becomes obsolete. He brought us back to earth when he reminded us of the difference between electronic information and electronic records. Information that has no connection to action and decision is not a record (we knew that), and data which supports an activity does not a record make. The big problem facing us is this: HOW do we organize and conduct affairs with the aid of computer processing (both in gathering external information and using it in internal operations) and still be able to identify documentary products as records of activities needed as corporate evidence (accountability) and memory?

In summary, Terry reported that during these archival two days, we were stimulated, introduced to things we didn't understand before, and presented with new information that made us think. When we talk to ourselves, he continued, we often just recirculate the ideas that we already had.

So it was simple, all that was left to do was instill a firm understanding of ancient science into these machines and the rest would take care of itself.

Editors Note: The Author was responsible for planning this workshop.

## ENDNOTES

1. The workshop was sponsored by the *Archives Association of British Columbia* (AABC) and held at the *Insurance Corporation of British Columbia* an October 1-2, 1993 in Vancouver, BC, Canada.

2. Archivists and data analysts found similarities in the way we analyzed information. We saw common elements and patterns in the nature of information and analysis in general. Our approaches to analysis had several things in common: how we applied our methods and principles; why we applied them; and how we organized the results. Data administrators, records managers, and archivists, all try to identify facts, processes, and transactions. And we all record information about these things (metadata).

3. *Information Engineering* is defined as an interlocking set of formal techniques in which enterprise models, data models, and process models are built up in a comprehensive knowledge base and are used to create and maintain data processing systems.

4. Dr. Watson explained that the purpose of the National Radiobiology Archive was to make available data from previous experiments usable for new research. But in order to reuse data that was obviously erroneous, it required that the data be amended. Watson said that he was more interested in truth than evidence of past work.

5. The objective of Rules for Archival Description (RAD) is to establish a common foundation for the description of archival material within a fonds.

6. The IE characteristic of linking function to data seemed to me to be analogous to the objective of Peter Scott's series system. The series (or activity within a function) cuts across boundaries to perceive function and activity independently of the organizational configuration of departments or other units of organization just like IE does.

7. By focusing on form instead of action or data, Duranti said, diplomatics might be useful in object oriented analysis because diplomatics already sees objects where others see action.

8. The elements of access include: readability (recopying to ensure that information can be processed in the future on a computer other than the one that created it); retrievability (that you have the programs that enable you to reassemble the data); and intelligibility (that the information is comprehensible to humans and not just machines).

J.B.

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## CALENDAR

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**February 10-17**, Providence, RI; ARLIS/NA Annual Conference [ARLIS/NA 1994 Conference, 3900 E. Timrod St., Tucson, AZ 85711;(602)881-8479;FAX 602-322-6778]

**February 15-19**, New York City; Visual Resources Association Annual Conference [Leigh Gates, VRA Secretary, Art Institute of Chicago, Ryerson Library, 37 South Wabash St., Chicago, IL 60603]

**February 21-25**, Los Angeles, CA; Documentation '94 [Frank Gilbane, President, PTM;(617)643-8855;FAX 617-648-0678 or Marion Elledge, Vice President, Information Technologies, GCA; (703)519-8193;FAX 703-548-2867]

**February 23-25**, Kissimmee, FL; Orlando Multimedia '94 [Society for Applied Learning Technology, 50 Culpeper St., Warrenton, VA 22186; (800)457-6812;FAX 703-349-3169]

**February 28 - March 4**, Arlington VA, Computers in Libraries '94 [Mecklermedia Conference Management, 11 Ferry Lane West, Westport CT 06880; 800-632-5537; fax 203-454-5840]

**March 20-24**, Las Vegas, NAB Multimedia World [National Association of Broadcasters, 1771 N Street NW, Washington DC 20036-2891, 800-342-2460; fax 202-775-2146]

**March 23-26**, Chicago, "Computers, Freedom and Privacy '94", [CFP'94, John Marshall Law School, 315 S. Plymouth Ct., Chicago, IL 60604-3907; 312-987-1419; fax 312-427-8307; CFP94@jmls.edu]

**April 12-14**, Los Angeles, New Media Expo [NewMediaExpo'94, 300 First Ave., Needham MA 02194-2722]

**April 13-16**, Oxford, UK; Second Elvetham Hall Conference [Mrs. Christine Mullings, Office for Humanities Communication, Oxford University Computing Services, 13 Banbury Rd., Oxford, OX2 6NN]

**April 18-21**, New York City; Integrated Document Management: Work Smart, AIIM's 43rd Annual Conference [Association for Information and Image Management, 1100 Wayne Ave., Suite 1100, Silver Spring MD 20910-5699; 301-587-8202 fax 301-587-2711]

**April 24-28**, Seattle, WA; AAM Annual Meeting [American Association of Museums, Dept. 4002, Washington DC 20042-4002; (202)289-9113]

**May 10-12**, New York City; National Online Meeting & IOLS'94 [National Online Meeting Learned Information, Inc., 143 Old Marlton Pike, Medford, NJ 08055;(609)654-6266;FAX 609-654-4309]

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## INBOX

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### REPORTS

T.K.Bikson and E.J. Frinking, **Preserving the Present: Toward Viable Electronic Records** (The Hague, Sdu Publishers, 1993)

This report to the Dutch Minister of Welfare, Health and Cultural Affairs on the archival issues facing government management of electronic records was prepared by the European-American Center for Policy Analysis of the RAND Corporation. It is based on interviews with personnel through the Dutch government and in the national archives of the United States, Canada, Sweden and Germany as well as on a review that was designed to include all published literature on the topic from 1990-1993 but actually involves only a small subset of what is available. The authors present an intriguing argument that for some reason sees approaches based on OSI standards, on metadata management and on focussing only on those business transactions which have longterm evidential significance as mutually exclusive. In addition they believe that the latter suggestion, which is being pursued through business process analysis within Holland, is novel although it was the approach Rick Barry and I took at the World Bank in 1988/9. In my view not only are the three approaches mutually supportive (assuming we replace OSI with OSE and treat standards as a pragmatic rather than ideological commitment) but are necessarily combined in an complete strategy. Still, this is an important book. Do read it.

Brian Kahin, ed., **Information Infrastructure Sourcebook, version 2.0** (Cambridge, Harvard University Center for Science & International Affairs, December 15, 1993) 838pp. [\$60 from Yvonne Hickey at the Office for Information Technology, Harvard University Cambridge MA 02138; 617-496-4077 or yvonne@harvard.harvard.edu]

This is a huge compendium of official documents, vision statements and position papers, program and project descriptions, reports and legislative proposals collected and reprinted by the Information Infrastructure Project at the John F. Kennedy School of Government. Its comprehensiveness, the scope of the position papers collected from dozens of professional associations, trade associations and firms trying to influence the shape of future networks, and the timeliness of the contents make it a "must-have" collection of documents for anyone interested in information policy. It is one stop shopping for major speeches and will be the repository for rules as the regulatory recommendations begin to take shape. Anyone interested in the policy debate developing around the National Information Infrastructure will need to have this on their shelves, and to prepare the space for many more volumes as the NII debate continues. I imagine that soon we will find take-offs like the Zen of Networking which will be more fun to read!

## BOOKS and ARTICLES

D. Andrew Roberts, ed., **European Museum Documentation Strategies and Standards: Proceedings of an International Conference held in Canterbury England 2-6 September 1991** (Cambridge, Museum Documentation Association, 1993) 288pp.

This is an important archival record of a conference that brought museum professionals worldwide together to share the standards that form the basis of their documentation activity. While none of the articles go into enough depth to serve as more than an introduction to the standards being used in these projects, that function is important and well served by this book. The array of projects and standards sets the stage for the final chapters by Christen Larrison, Anne Claudel and Andrew Roberts on the state of international standards initiatives as of 1991. The state of content standards is essentially that which we have today: a U.K. data standard with CIDOC models still under discussion.

Robert Spindler and Richard Pearce-Moses, "Does AMC Mean 'Archives Made Confusing'? Patron Understanding of USMARC AMC Catalog Records", **American Archivist** vol.56 1993 p.330-341

It is not news that MARC AMC cataloging records are not very well accommodated within online public access catalogs that include other kinds of materials because those catalogs were designed to retrieve surrogates of published materials. Spindler and Pearce-Moses try to help those who want to do something about it by identifying five specific aspects of the record display that might be confusing but their study does not lead to very concrete design conclusions.

Charles Tupper and Richard Yevich, "Gone but not Forgotten", **Database Programming & Design**, vol.6#11 (Nov. 1993) p.33-40; and "Historical Data, Part II, Tips and Techniques", **Database Programming and Design**, vol.6#12 (December 1993) p.43-48

This two part article discusses the design issues involved in maintaining databases which are capable of reflecting not only the latest information but the state of their changing information at a given time in the past. The authors argue that there is a business need for such systems, that the capability to reconstruct historical data must be designed into systems up front, and that there are a three different levels of historical functionality - which they call simple history, bounded simple history, and complex history - which must be modeled and implemented. They explore a variety of physical and logical issues in the structuring and storage of such data that will be of interest to archivists and records managers.

"Light Comes to Life with Fibre Optics", **Exhibit Builder**, vol 11 #2 (November/December) 1993 p.18

Kohl Children's Museum in Wilmette Illinois is featured in this article which describes interactive participatory environments of fibre optic light for children to play in. The experience is akin to having a full body paint program and looked like fun to me.

## JOURNALS

**Morph's Outpost on the Digital Frontier**, subtitled "for builders on the information superhighway", is the latest monthly broadside for interactive multimedia developers [\$39.50 p.yr. from P.O.Box 578, Orinda CA 94563; 510-238-4545].

**The Eye: Visual Artists and Galleries Association Newsletter** [VAGA, 1133 Avenue of the America's, 45th Fl., New York, NY 10036; 212-840-1805; fax 212-840-1925] is probably not read by many museum informatics staff, but perhaps it should be. The Fall 1992 issue of the newsletter of this artists' rights organization and copyright collective contained an article entitled "Museums and Your Copyrights" and a sample contract for artists to grant limited non-exclusive rights to museums holding their works. The purpose of the contract was to substitute for licensing agreements typically offered by the museums which are much less favorable towards the artists.

## EPHEMERA

Kevin Hughes, **Entering the World Wide Web: A Guide to Cyberspace**, 4th edition, typescript (Honolulu, Honolulu Community College, September 1993) 32pp. [copies available from Ken Hensarling at 808-845-9291 are intended for copying and redistribution]

This guide answers, in an introductory way, the questions what is hypertext? the Internet? World-Wide Web(WWW)? Mosaic? the HyperText Markup Language (HTML) and HyperText Transmission Protocol (HTTP) on which Mosaic depends? It identifies sources of Mosaic software and lists platforms for clients and servers. And it includes lists of "places" on the Web, such as the Vatican exhibit, the Krannert Art Museum, HCC's Dinosaur exhibit, the City of Passua tour, and Guides to Australia and New Zealand which would be useful introductory taste treats for potential archives and museum users. The final appendix is a political brief to the State of Hawaii explaining why it needs to support WWW. The document is indexed, has a table of contents, and includes numerous citations both to literature and to Internet addresses.

**Association of Information and Image Management,  
Videoconference on Legal Requirements for Electronic  
Imaging Systems, videotape**

On October 13, the Association for Information and Image Management (AIIM) held a two and a half hour satellite broadcast on the legal requirements for electronic imaging systems. Speakers included Henry Perritt Jr., Villanova University School of Law, Donald Skupsky, Information Requirements Clearinghouse, and Robert Williams, Cohasset Associates. AIIM claims the videoconference was heard live by about 5,000 people at 300 sites. The videotape of the teleconference is available from the AIIM bookstore, \$99 for members and \$129 for non-members [Contact 1100 Wayne Ave., Suite 1100, Silver Spring MD 20910; 301-587-8202; fax 587-2711].

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**NEWS**

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**RLG SUSPENDS AMIS DEVELOPMENT**

Following the failure of an extraordinary "AMIS Fundraising Group" formed by the RLG board to find \$1.4M to complete the development of an Archives and Museum Information System, RLG announced that its AMIS project would be suspended on December 31, 1993 and the development team would be reassigned. In a letter from James P. Michalko, RLG President to members, RLG announced that it will hold a briefing in the first quarter of 1994 for museums, information systems vendors and other interested parties to report in depth on the AMIS work to date. Michalko added that RLG will continue to explore a few additional funding options until March 30 at which date it will make a final decision about AMIS. [For more information, contact Michalko at The Research Libraries Group, 1200 Villa St., Mountain View CA 94041-1100; 415-962-9951; fax 415-964-0943]

**CIDOC MULTIMEDIA WORKING GROUP**

At the 1992 CIDOC meeting, it was decided to form a new working group of the ICOM Documentation Committee (CIDOC) devoted to interactivity and multimedia. The group convened for the first time at the CIDOC meeting in Ljubjiana in September 1993 where it agreed to adopt the name Multimedia Working Group and a statement of scope, objectives and action plan for 1993-94. General objectives include facilitating communication, adopting guidelines and cooperating with other groups. The action plan includes expanding the mailing list, circulating an informal newsletter written by members, organizing a multimedia exhibition as part of the 1995 CIDOC conference in Stangar, production of a multimedia in museums factsheet and report, and establishment of links with CIMI, other ICOM groups, and IFLA's multimedia software survey. Chairman Costis Dallas invites potential new members and interested individuals to inquire for more information [Contact CIDOC Multimedia Working Group, Jan van der Starre, Secretary, RKD, P.O.Box 90418, 2509LK the Hague, Netherlands; +31-(70)3471514; fax +31(70)3475005]

**FID ARCHIVES & RECORDS MANAGEMENT**

The International Federation for Information and Documentation Archives and Records Management Special Interest Group (FID/ARM) held its first meeting November 25-26 in Granada, Spain. [for additional information and membership list, contact Kathleen Lannon, Chair, 2781 Grovemore Lane, Vienna VA 22180; 703-698-1816; klannon@cni.org]

**GILS DRAFT EXCLUDES RECORDS  
MANAGEMENT DATA**

Following the public hearing on December 14, the Office of Management and Budget circulated a modest rewriting of portions of its Government Information Locator Service draft which do not change in any meaningful ways the data that is being collected on government information systems and do not include information regarding the scheduling of the records or any other link to records management or archives. Nor does the new draft revise the bias in the initial document towards a listing of information products which the government wants to publish rather than to records which it is obliged to make publicly available upon request. Once again, the National Archives has missed an historic opportunity to be at the center of a major government undertaking central to the concerns of the governing administration.

**CALIFORNIA LAW ON-LINE**

California Governor Pete Wilson signed into law an act requiring the legislative calendar, full text of all bills, bill history, lists of hearings and status of each bill and amendment, bill analyses prepared by legislative committees, vote information, veto messages and the state's full code and constitution to be made available for free over the Internet as of January 1, 1994. The law specifically permits others to download the information, add value and resell it however they wish.

**LC PRINTS & PHOTOGRAPHS ROOM**

In a recent press release, the Library of Congress reported that "the past decade has witnessed significant growth in the demand to use visual primary source materials at the Library of Congress; in the last four years alone there has been a steady increase in use of collections (35%) and a dramatic increase in the number of items that are available to researchers (78%). At present, the Prints and Photographs Reading Room sometimes attracts as many as 30 patrons at one time." In the same press release the Library announced that it is limiting the Reading Room to eight walk in and three appointment patrons at a time in 1994 and then urges patrons to make appointments! Too bad LC doesn't have to respond to the President's memorandum on becoming more customer oriented.

## **NARA FAX-ON-DEMAND**

The non-Textual Archives Division of the National Archives has installed a fax-on-demand system for distributing pamphlets, announcements and finding lists. The system is free except for long-distance charges that are incurred by the users. Fax machines should dial 301-713-6905 and dial 1000 for the regularly updated list of available documents. Using that list as an index, users can then dial again and request specific documents which will be faxed to them. [For more information, or to register your comments, suggestions or criticism, contact Debra Wall at 202-501-5449 or [vuw@cu.nih.gov](mailto:vuw@cu.nih.gov)]

## **AMERICAN MEMORY ON-DEMAND**

The Library of Congress and Bell Atlantic have announced a public/private demonstration project to test the use of a telephone network delivery system to disseminate multimedia collections from the Library's American Memory program. The Library will provide the multimedia content for inclusion in Bell Atlantic's test of programming on demand for 2,000 customers in a test market in Northern Virginia. The demonstration project is considered a key element in the fifth and final year of the American Memory pilot. Both parties will cooperate in the evaluation, which the Library hopes will increase its understanding of audience needs and interests. [Contact Craig D'Ooge, Public Affairs Office, Library of Congress; 202-707-9189]

## **LIBRARY OF CONGRESS DIGITAL BERNSTEIN COLLECTION**

The estate of Leonard Bernstein made a gift to the Library of Congress on November 8 of 200 hours of films, 1,000 hours of recorded sound, and the textual content of Bernstein's professional and personal archives, which is to become the foundation for an internationally available electronic multimedia archives and model for similar archives worldwide. [For more information, contact the Jill Brett (202-707-2905 or Helen Dalrymple (202-707-1940) at the Library of Congress, Washington DC 20540.]

## **AAM LAUNCHES NATIONAL TEST**

The American Association of Museums, with funding from the Pew Charitable Trust and the Henry Luce Foundation, has launched a test of the implementation of it "excellence and equity" principles. The first five of ten principles, developed in an earlier project: 1) assert that museums place education - in the broadest sense of the word - at the center of their public service role... 2) reflect the 'diversity of our society by establishing and maintaining the broadest possible public dimension for the museum. 3) understand, develop, expand and use learning opportunities that museums offer their audiences. 4) enrich our knowledge, understanding and appreciation of

our collections... 5) assure that the interpretive process manifest a variety of cultural and intellectual perspectives... In general all the principles suggest a broadening of museum purposes, programs and approaches to information dissemination. [For more information about the test sites, contact the AAM at 1225 Eye St., NW Suite 200, Washington DC 20005.]

## **NAGARA BECOMES ASSOCIATION OF ORGANIZATIONS**

As of January 1, 1994 the National Association of Government Archives and Records Administrators (NAGARA) is becoming an organization of organizational members. Individuals will be able to subscribe to its publications in place of individual membership. The Secretariat remains at N.Y. State Archives, Room 10A46 Cultural Education Center, Albany NY 12230.

## **UNIVERSITY E-MAIL POLICY**

Michael Proctor, University Attorney [Office of the General Counsel, Tempe, AZ 85287-2003; 602-621-3175], circulated a draft of the University of Arizona policy regarding electronic communications in mid-November '93. While subject to further revisions, it is interesting in several respects including a statement under the rubric of "legal issues":

"Any message you send is permanent and may be read by persons other than the intended reader. Electronic messages may be subject to subpoena or public records requests. No expectation of privacy is warranted."

## **JUSTICE DEPT. BROADENS "White House Office" DEFINITION FOR FOIA**

In a revised instruction to agencies about administering the Freedom of Information Act, the Department of Justice (Associate Attorney General Webster Hubbell) on November 3, 1993 significantly broadened the definition of potential Presidential records for agencies charged with FOIA administration. The instruction, which supersedes a Bush administration Memorandum of January 28, 1992, asks agencies to refer records found in their files in response to FOIA requests but which originated in the White House Office or contain information from the White House Office to the Office of the Counsel for the President for review prior to release. The definition employed by the Department of what constitutes the White House Office now includes: "the Offices of the President, Cabinet Affairs, Chief of Staff, Communications, First Lady, Counsel to the President, Intergovernmental Affairs, Legislative Affairs, Management and Administration, Operations, Political Affairs, Presidential Personnel, Public liaison, Scheduling and Advance, Staff Secretary, Correspondence, Visitors, Policy Development, Domestic Policy Council, Environmental Policy, Council of Economic Advisors, National Economic Council, Assistant to the President for National

Security Affairs, Assistant to the President for Science and Technology, and the President's Foreign Intelligence Advisory Board. The White House Office also includes task forces and working groups created by the President or an official in the White House Office, and reporting to the President or an official in the White House Office, including, for instance, the National Performance Review".

One could view this as an extraordinary expansion of the Presidential Records Act provisions in light of the August 13 Federal Appeals court ruling that "the PRA does not bestow on the President the power to assert sweeping control over whatever material he chooses to designate as presidential without any possibility of judicial review." On the other hand, the inclusions may be consistent with court decisions in *Rushford v. Council of Economic Advisors* 762 F2d.1038 (D.C.Cir.1985) that the Council of Economic Advisors is not an agency under FOIA because its sole function is to advise the President and *Meyer v. Bush*, 981 F2d 1288 (D.C.Cir.1993) holding that the President's Task Force on Regulatory Relief falls within the *Soucie v. David* framework as entity whose sole function is to advise and assist the President. The real impact will be measured only in the extent to which agencies subsequently claim exemptions based on guidance from the White House.

## INTERNET ARCHIVAL FINDING AIDS

The U.S. National Archives Motion Picture, Sound and Video Branch and the Still Pictures Branch have begun making information about holdings available over the Internet. [For more information, contact Debra Wall at [vum@cu.nih.gov](mailto:vum@cu.nih.gov)]

## NHPRC MAKES FIVE ELECTRONIC RECORDS GRANTS

The National Historical Publications and Records Commission awarded grants to five electronic records projects at its November 4 meeting in Washington DC. The projects are very different in scope and function, ranging from planning grants to the states of Vermont, Indiana and Michigan to develop strategic plans for electronic records management to a study of two application systems by SUNY Albany and the development of 10 case studies for teaching purposes by the Society of American Archivists. [ For further information, contact Lisa Weber, NHPRC, National Archives Washington DC 20408; 202-501-5610]

Archives and Museum Informatics (ISSN 1042-1467) is a quarterly newsletter published by Archives & Museum Informatics, 5501 Walnut St., Suite 203, Pittsburgh PA 15232-2311; (412)683-9775, fax 412-683-7366.

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

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

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## SOFTWARE

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### NEW FROM THE AUSTRALIAN NATIONAL FILM AND SOUND ARCHIVE

The Australian National Film and Sound Archive (NFSA), together with Wizard Information Services Pty Ltd. are marketing AIMS, a system for management of descriptions of archival film and sound titles and the media on which they are recorded. The system, which is built in Oracle under Unix and runs on Sequent processors was recently demonstrated in Washington, New York and Chicago by David Watson, Computer Systems Manager of the NFSA. I spent several hours with Watson looking at the current pre-release version with the full data of the NFSA loaded.

The strengths of the system, as I saw them, were its separation of the intellectual units from the physical carriers, material sensitive variable displays for search results, the procedures it manages for accessioning and circulation control, and user definable help. Its weakness were an over dependence on coded data, hard-coding of fields and work flow, idiosyncratic authority file structures, and lack of an OPAC and of MARC export capability. Watson assured me that the lack of full-text searching in fields designed to hold lengthy prose descriptions and absence of MARC import facilities will be corrected before commercial release. The system was clearly designed for and appropriate for a recorded sound and motion image archive but was less suited to a general collection which included some such materials.

AIMS will license on a four tiered scale ranging from \$25K for 4 users to \$100 for 32+ users with a 20% annual maintenance fee plus Oracle license fees and consulting costs for porting to different hardware platforms. [Contact David Watson, Computer System Manager, National Film & Sound Archive, GPO Box 2002, Canberra ACT 2601, Australia, +61 (6) 267-1744; fax +61 (6) 242-2072].

### INFOWORKS 1.0

InfoWorks Technology Company [P.O.Box 128, New Wilmington PA 16142-0128; 412-946-8561; fax 412-946-8561; [jsong@hoyt.westminster.edu](mailto:jsong@hoyt.westminster.edu)] has released version 1.0 of InfoWorks MARC Management and OPAC System for DOS at an introductory price of \$149 until 4/31/94.

The system was developed in Microsoft BASIC 7.1 by Jesse Song, who developed a MARC record upload/download and local cataloging facility for the members of the Philadelphia Area Consortium of Special Collections Libraries when he was on their staff. The improved and documented version of the product enables archives and museums to create local MARC compatible records, or create records on OCLC or RLIN and download them for local use or reporting. The rudimentary single user system is just what many small archives and museums have been seeking; it provides adequate

local search and reporting features without having to pay RILIN or OCLC access charges and can even serve as a Public Access Catalog. Demonstration disks are available for \$19 which will be credited towards purchase. All purchases are on 30 day approval.

## CANADA'S VISUAL HISTORY ON CD-ROM

The Canadian Heritage Information Network, the National Film Board of Canada and the Museum of Civilization are cooperating in a project to bring an 80 volume reference work on Canada's visual history to CD-ROM at a price of around \$200. The early pre-release version received a rave review by Alison Henry in Electronic Dissemination Partnerships in December 1993; the real thing is anticipated to be released in January 1994. [Contact Barbara Rottenberg, CHIN, 365 Laurier Ave. 12th fl., Ottawa K1A 0C8 CANADA; 613-992-3333; fax 612-952-2318]

## LIBRARY SYSTEMS GO MULTIMEDIA

**Multimedia Access and Retrieval Corporation** [MARC Corp, Inc. 2000 Alameda de las Pulgas, San Mateo, CA 94403] has started shipping Voyager release 1.5. The Unix based GUI system still basically provides library functionality with its cataloging, circulation, acquisition, and serial control modules but is intended to be a multimedia OPAC as well.

## MULTIMEDIA PRODUCTS BUYERS GUIDE

**New Media**, November 1993, is devoted to product descriptions of presentation and authoring tools, graphics, audio, video, optical media, display systems and multimedia PC's. The issue is exceptionally useful in listing products and providing simple comparison tables. The articles accompanying each product category are not, however, full reviews.

## PRESENTATION SYSTEMS

**Mark IV Multimedia** [4 Weyside Park, Newman Lane, Alton Hampshire GU34 2PJ; (+44) 420-544-221; fax (+44) 420 543-374] showed their PresntR+ software at the ICHIM '93 conference. It employs script authoring with a Sony recordable Laserdisc to enable users to write presentations employing text, still images, sound and motion image.

## ART AS INVESTMENT DATABASE

**Artifact Inc.** [1130 Ten Rod Rd., #E104, N.Kingstown, RI 02852; 401-295-2656; fax 401-295-2629] has announced the availability of its auctions database through the Bloomberg Financial Market global network BLOOMBERG Terminals making the database which has been available on CD-ROM since 1988 available for day-to-day investment decisions for the first time.

## VISUAL ARCHIVER

The Visual Archiver is a "research and cross-referencing tool" developed by **Commonwealth Historic Resource Management Ltd.** [53 Herriott St., Perth K7H-1T5 CANADA; 613-267-7040] for MS Windows platforms to link images and data in a browsable, searchable, public access catalog. The C\$495 package is definitely a low end application, with ten pre-defined indexes and maximum field lengths of 400 characters, but it may be of value to managers of small photographic collections.

## SPECIALIZED INFORMATION BASED EXHIBIT HARDWARE

**Museum Technology Source**, 20 Bacon St., Winchestere MA 01890; 800-729-6873 has become a general source for a wide variety of specialized hardware devices used in museum exhibits. If you haven't seen their catalogs of video disc controllers, compact disc controllers, activators, lamp controllers, slide projector controllers, speakers, headsets and other accessories, you may want to ask them for it.

**RGB Spectrum** [950 Marina Village Parkway, Alameda CA 94501; 501-814-7000; fax 510-814-7026] is another source for exhibit devices, especially monitor controllers and synchronization devices as well as an original equipment manufacturer and systems integrator.

## MACTRAC FUND RAISING

**TRAC Inc.** [530 Oak Grove Ave. Suite 101, Menlo Park CA 94025; 415-853-1100; fax 415-853-1677] has released version 4.0 of MacTRAC, its fund raising software for the Macintosh computer with a report writing facility. Additional modules include Major Donor/Grant Tracking and Volunteer Tracking. The system is available both in single and multi-user versions and can interface with Peachtree Accounting for the Macintosh. The company will provide a demonstration of the basic system and both additional modules for potential users to explore the system functionality. The demonstration is limited to 50 records, but otherwise is fully functioning and accompanied by adequate documentation to allow users to make judgments of its suitability.

## RLG RELEASES FRONT-END

Eureka, a new patron-oriented search system from the Research Libraries Group, is available for end user searching of RILIN Bibliographic files and CitaDel article-citation databases and document delivery services. Annual subscriptions to Eureka can be licensed with metered searching or unlimited searching privileges and made available to single workstations or across entire campuses or wide-area networks. [For more information, contact bl.ric@rlg.stanford.edu]

## VERY LARGE STORAGE SYSTEMS

In October, I visited the Canadian National Film Board which had installed a robotically operated 7 terabyte optical disk storage system to deliver its film library to public workstations at its headquarters. Since then I've been keeping an eye on various approaches to large scale storage.

**Introl Corporation** [2817 Anthony Lane South, Minneapolis MN 55418-3254; 612-788-9391; fax 612-788-9387; [jkk@intcorp.mn.org](mailto:jkk@intcorp.mn.org)] is offering an intelligently architected hierarchical storage management system called Flexstor which integrates local hard disks, secondary magnetic and optical discs, tertiary tape storage with automatic changers and off-line storage to provide cost effective management of any volume of data. The system uses "push up stack" and other kinds of quasi intelligent staging methods to assure the quickest possible retrieval for the most information and can function in a completely vendor independent and transparent way.

## CROSS PLATFORM MULTIMEDIA PUBLISHING

**Folio Corporation** [2155 North Freedom Blvd, Suite 150, Provo UT 84604; 801-344-3700; fax 801-344-3791] is now shipping the Macintosh version of FolioVIEWS, delivering on the promise it made early in 1993 to provide DOS, Windows and Macintosh cross platform support for multimedia document creation and viewing. FolioVIEWS 3.0 for Windows was released in May 1993 and received very favorable reviews for large document hyper-navigation and user interface. The DOS version which was released in September maintained the attractive \$495 price with a "viewing" version available for \$195. The full license comes with the right to provide runtime reading versions for non-commercial applications. The Macintosh viewer was shown at COMDEX but the full authoring system wasn't released until the end of the year.

## STORYSPACE HYPERTEXT PUBLISHING

**Eastgate Systems Inc.** [134 Main St., Watertown MA 02172; 800-562-1638] is selling both Storyspace hypertext writing software (\$215) and fiction and non-fiction books written in Storyspace including George P. Landows award winning Dickens Web from his Brown University 19th Century British literature course and Jay David Bolter's Writing Space.

## MICROSOFT MULTIMEDIA VIEWER

Version 2.0 of the Microsoft Multimedia Viewer publishing toolkit for online publications provides tools for a general audience that have been the domain of more specialized software products for the past few years including the ability to output to CD-ROM (with a special run-time distribution license).

## SILICON GRAPHICS FULLY ELECTRONIC MULTIMEDIA & TEXTS

**Silicon Graphics Computer Systems Inc.** [2011 N. Shoreline Blvd., Mountain View CA 94043; 415-960-1980] is advertising its IRIS InSight software as a platform independent technical publishing tool, utilizing documents authored in SGML using FrameMaker, Interleaf, Arbor Text or SoftQuad, or texts from outside parsed with Avalanche or Exoterica, graphics captured by other products, and the entirety integrated and viewed under IRIS InSight.

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## STANDARDS

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### GILS TO USE Z39.50, URI's and HTML

Reflecting both the full impact of the revolution brought on by the Internet and the far sightedness of principal architect Eliot Christian, the Government Information Locator Service (GILS) will employ a wide range of emerging standards to support access over the Internet. As reported last month, a GILS profile is being drafted in a project with Syracuse University which is being funded by the Interagency Working Group on Data Management for Global Change. The profile "will facilitate interoperability of such components of GILS as discrete client and server software". The draft will make GILS data elements available in Generic Record Syntax, USMARC, and Unstructured Text and when using Generic Record Syntax it will support representation in Hypertext Markup Language (HTML). Provision is being made to support gopher and WAIS searching and to incorporate the new Universal Resource Identifier (URI) scheme of the Internet Engineering Task Force including URL's (Locators), URN's (Names) and URC's (Citations). The Abstract Record Syntax and Basic Encoding Rules used to define GILS Core Elements will support movement of GILS data to a variety of media (tape, CD, etc.) and across hardware systems. [For more information about the draft, contact William Moen at Syracuse University, SIS,4-206 Center for Science and Technology, Syracuse NY 13244; 315-443-4508; [wemoen@rodan.acs.syr.edu](mailto:wemoen@rodan.acs.syr.edu)]

### VISUAL RESOURCES DESCRIPTION

The Visual Resources Association has formed a new committee charged with advocating and promoting standard descriptive practices. The Committee will investigate methods, tools and resources used in analyzing, recording, storing and accessing data. Specifically they will focus on: data elements, descriptive practices, interpretive practices and formats. [For more information contact Linda McRae, College of Fine Arts Visual Resources Center, University of South Florida, Tampa FL 33620; 813-974-2360 or [lmcrea@cfrvm.cfr.usf.edu](mailto:lmcrea@cfrvm.cfr.usf.edu)]

## ICA COMMITTEE ON ELECTRONIC RECORDS

At its Ottawa meeting in October, the International Council on Archives Committee on Electronic Records adopted a graphic model of the issues which it felt needed to be considered in dealing with electronic records. With electronic records at the core of a concentric circle divided into wedges for creation, selection, acquisition, preservation and management, and providing records the model shows the intersection of three other factors, legal, technical and organizational, as overlapping ovals. It agreed to organize its own work to flesh out the model and to meet again in Canberra preceding the November Electronic Records conference being hosted by the Australian Archives. [For minutes, or more information, contact: John McDonald, National Archives of Canada, Government Records Branch, 395 Wellington St., Ottawa K1A 0N3, CANADA]

## UNION LIST OF ARTIST NAMES

The Getty Art History Information Program is circulating the Union List of Artists Names demonstration disk on the Art Reference Tool the memory resident package on which it released the Art and Architecture Thesaurus. The full Union List will be published in the first quarter of 1994. Other Getty AHIP databases are scheduled for release on the Art Reference Tool in the near future. The demonstration version is a bit annoying since it returns "invalid search expression" for all sorts of ways of asking about artists including values listed in the correct entry such as "da Vinci" or "Pollock, Jackson" to say nothing of inverted entries like "Jackson Pollock". If you get the right combination, however, the information displayed, including basic bibliographic citations and listings of other usages, is quite valuable. Presumably the completed release will allow people who don't already have the accepted form of entry to find it! [For information, contact: Nancy Bryan, Art History Information Program, 401 Wilshire Blvd., Suite 1100, Santa Monica CA 90401; 310-395-1025]

## FUNDING GUIDELINES FOR CONVERTING MATERIALS TO ELECTRONIC FORM

Representatives of several Federal government funding agencies (the "Federal Funders Group") have authored "Considerations for Converting Materials to Electronic Form" which reflect their joint agreement on guidelines for digitization projects. According to the guidelines, proposals for such projects should include:

- » evidence that digitization will enhance use
- » awareness of comparable efforts by others
- » a technical plan demonstrating competence
- » a budget and schedule reflecting sensible division of labor
- » awareness of risks in the life-cycle
- » a plan for intellectual control

- » quality standards related to functionality requirements
- » a maintenance plan
- » a plan for disseminating digitized materials
- » attention to copyright, integrity, privacy, security and confidentiality
- » a method for training end users
- » a plan for reporting results

It is anticipated that these considerations will be incorporated into relevant agency guidelines in the near future.

## CIMI CONSORTIUM ORGANIZED

The Museum Computer Network has announced the formation of a Consortium for Computer Interchange of Museum Information (CIMI) to "promote an open, standards-based approach to the creation and interchange of information relating to the professional and business activities of museums and cultural heritage organizations internationally." In particular, CIMI will focus on developing mechanisms for museum information interchange and availability over digital networks.

Three prestigious international organizations - the Canadian Heritage Information Network, the Getty Art History Information Program, and the Research Libraries Group have joined with MCN to provide the primary sponsorship for the Consortium, pledging a combined \$225,000 to its support over the next three years. In addition, the CIMI Consortium has signed up six participating members at US\$5,000 per year: the National Museum of American Art (Smithsonian Institution), the U.S. National Gallery of Art, the University of California at Berkeley, the University of California Office of the President, the Coalition for Networked Information and RAMA, a consortium of seven European museums and telecommunications organizations. CIMI also has commitments in principle to join at the \$5,000 level from the Museum Documentation Association of the UK and the Philadelphia Museum of Art.

CIMI has recently been endorsed by the Coalition for Networked Information, the Association for Systematics Collections and the Association of Science and Technology Centers. Previous endorsements have been received from the International Council on Museums Documentation Committee, the American Association of Museums and the Association for State and Local History (AASLH).

CIMI intends to start immediately and undertake a program of work commensurate with available funding. The work will be directed by John Perkins who has managed the CIMI project since its inception. Perkins attributes the interest in CIMI to the attention being paid to policy for the Information Infrastructure, in the U.S., Canada and Europe.

In addition to monitoring, reporting and promoting standards of interest to museums, the Consortium will be "undertaking a program of pilot projects as proofs-of-concept in the development of interchange format specifications for objects and their associated images and for collection-level descriptions, and an application profile for a ANSI Z39.50-based information retrieval" of these records. [Contact, John Perkins, by phone 902-826-2824; by fax 902-826-1337; by internet jperkins@fox.nstn.ns.ca]

## Multi-Level Description: A Discussion

by Wendy Duff and Kent Haworth

David Bearman's discussion of "inheritance of physical characteristics" and "associated inheritance" (in vol.7#4), is an important contribution to the discussion of the technique of multilevel description as it is applied by archivists and museum curators. While his analysis may be appropriate to museum collections, Bearman errs when he suggests that relationships documented by archivists are not part to whole relationships. Indeed, Bearman's description of "downward inheritance" where the attributes of the 'higher' level (for example, a fonds or series) are inherited by its components (a file or an item), captures precisely the organic nature of archives.

During the course of carrying out functions and activities, a creator creates and/or accumulates and uses records. These records document a person's or an organization's actions and as such are evidence of transactions. An organization's transactions derive from its mandated responsibilities and functions, and are revealed in the records they create. The functions and transactions manifest themselves repeatedly in the records. All records documenting the same type of transaction inherit their intellectual characteristics or their characteristics of evidence from the functions which caused them to be created and the context in which they are found.

The records within a series of marriage registers, for example, are created to document the same primary function: the registration of marriage. Thus, the records generated in this context will all share the same characteristics. These characteristics may not be physical, as some of the records may be paper while others are electronic, but they will all share the same value as evidence of the iteration of a transaction. Thus files forming part of a series do take on the attributes of the series of which they form a part. Moreover, the value of archives as evidence of actions is a direct consequence of this relationship between whole and part, that is, the part (the items or files) inherits the characteristics of the whole (the series or fonds).

From their context, meaning is derived from the files forming part of a series. Only by understanding the actions that caused the series to be created can one understand and evaluate the evidentiary nature of these files. In this way, the technique of multilevel description, which links the parts to the whole and ensures that context

resides at every level, takes on even greater significance and relevance in dynamic information systems.

This is why a knowledge of record-keeping systems may be more important than an examination of the records themselves as Bearman has said elsewhere. The records are understood because of the attributes they have inherited from the whole, whether it is a series, a fonds, or a comprehensive record-keeping system. An integral part of multilevel description is documenting at the highest level the provenance of the records, giving its mandate, structure, functions and responsibilities. This information may be carried in an authority file which can be linked to the highest level of description.

Applying the technique of multilevel description can also produce administrative economies. For example, the file inherits all of its characteristics as evidence from the functions documented at the series or fonds level to such an extent that archivists do not need to describe the files. In addition to realizing economies in description, users will be provided with the vital contextual information they require for an understanding of the records they consult.

A collection (an artificial accumulation of records of various provenances as opposed to a fonds d'archives) cannot be said to have inherited the characteristics of the whole. Accordingly, Bearman's account of associational inheritance is certainly appropriate in such a context, where items in a collection are gathered together because of an individual's propensity for owning things, or collecting objects related to a particular subject. As Bearman posits, just because the same individual owns the collection does not imply that the items in the collection take on the characteristics of the collective whole.

It is for the very reasons articulated in Bearman's essay, and elsewhere, that Canadian archivists have developed the technique of multilevel description in *Rules for Archival Description* for the description of a fonds and its parts. Furthermore, Canadians have chosen to concentrate their efforts on developing standards for representing a fonds d'archives rather than a collection because only in records organically and naturally accumulated by the creator do the series and files inherit the characteristics of the whole. Archivists have an obligation to protect and represent in their descriptions the context of the whole to ensure that the characteristics of evidence that the files inherit from the series will be revealed.

David Bearman replies:

Duff and Haworth provide an example of how the relationship between records and the series of which they form a part is a physical whole:part relationship. This is, of course, the rationale behind the choice of series by the Australians as the appropriate level for description.

Unfortunately, as I will argue in vol.8#1, their effort to extend the argument to fonds, cannot be sustained. I believe that fonds and other organization context data documents a critical provenancial relationship, but one for which there is only associated inheritance.