Archives and Museum Informatics

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Towards a U.S. Museum Information Network

Suddenly there is activity on numerous fronts that makes it very likely we will see a real computer based museum network in the United States in three to five years. The Museum Computer Network Board of Directors, at its meeting in Winnipeg on May 5, charged a committee consisting of John Perkins, Paul Perrot and me, with developing a framework for a business plan for such a network. The Research Libraries Group Inc., which commissioned a study of the requirements of museums in 1989, and received a specification for its AMIS (Archives and Museum Information System) in April, is advertising for a Museum Information Specialist ($45K - please apply), and preparing a business plan for network services for review by its Board of Governors in November. The Canadian Heritage Information Network, the hosts of the international Conservation Information Network as well as of a network of Canadian museums, is working on plans to extend its services by providing other value added databases internationally.

In the context of this activity, the need for a communication standard for museum information becomes pressing. It is therefore particularly encouraging that the National Endowment for the Humanities has provided the funding requested of it for the first two years of operation of the Museum Computer Network Committee on Computer Interchange of Museum Information (CIMI), which I chair. The CIMI committee, which has representatives from all the major museum associations and from the network contenders and vendors, should hold its first formal meeting in the fall. CIMI is charged with defining a structure for the content designation of a record (in the format of the ISO-2709 communication protocol) that will be capable of holding any information that museums of any type might have in their information systems.

If CIMI can define such a structure, it will also help give shape to the applications that are beginning to coalesce out of the primordial sea of museum data. Slowly, the systems being sold by the vendor community are beginning to define similar modules - collections information retrieval, collections management, membership & development, ticketing and participation management, facilities and events management, etc. These application domains are starting to be sketched into the plans vendors have for fully integrated museum applications systems, and to fill out the cooperative agreements forged by a number of vendors on the same platform. As these developments occur, the museum community will be able to better compare functionality against a relatively common framework of data. We will find ourselves able to send data to replacement systems, and will therefore be in a position to argue more forcefully for our present vendors to enhance their products. And we will be able to take advantage of services provided by information networks for museums.

What kinds of services might these be? Probably the most important will be the construction and sharing of museum authority files, including databases of creators (artists and manufacturers), contexts of discovery (archaeological sites and ecological niches), contexts of use (publication history, exhibit history, auctions) and controlled vocabularies (AAT, Nomenclature, SHIC etc.). The next most important services will probably be support for shared activities - lending, shipping, insuring, conserving, and appraising - which rely on common databases of agents, common standards of practice and the interchange of data between participants. A third set of services will involve developing information bases to sell museum services and increase clients, such as a national catalog of slide sources, a photography ordering service, or a national calendar of exhibitions. Fourth, a network might serve to organize, and funnel support for, the massive information conversion efforts necessary to meet the challenge of providing information in the 21st century, including retrospective cataloging of collections and the digital capture of images. Finally, because it will provide the means for museums to work together, it will also require that they do; a network will serve as a focus for the development of professional standards for museum data representation, museum data management and museum data access.

Personally, I find the new world that is barely visible here extremely exciting, and encourage anyone with an interest in it, and ideas about how to might come about and what it might look like, to find a way to participate. By the way, CIMI is looking for a project officer to help the committee conduct its work and promote the idea of computer interchange of museum information.

DAVID BEARMAN, Editor

In This Issue

Articles:

Regular Features:

Archives and Museum Informatics carries news, opinion and reports on information technologies, techniques and theories relevant to archives and museums. Submissions of notes, letters to the editor and articles are welcomed, and should be addressed to Lynn Cox, Managing Editor.

Copy is preferred typed, double-spaced. Longer articles may be requested in machine-readable form if accepted for publication. Authors assume full responsibility for accuracy and for any opinions or judgments expressed.

Deadlines for submissions are the 15th of March, June, September and December.

Artistic Computing in Art Museums: Findings From a National Survey

JAMES B. PICK

Introduction

Art museum computing in the United States and Canada emphasizes the business objectives of institutions but deemphasizes the arts objectives. This major finding of the 1989 National Art Museum Computer Survey is the principal focus of this paper. Other major survey findings include documenting the largely micro orientation of museum computing, the dominant role of full-time non-computer staff in performing computing tasks, the lack of planning and management control over information systems, and the generally high level of satisfaction with computing expressed by museum computer management.

The National Art Museum Computer Survey was conducted in April of 1989, and offers a broad description of the current status of art museum computing nationally (Pick, 1989b). The survey consisted of a mail-back questionnaire, which was sent to the entire AAM list of 1,083 art museums in the United States and Canada. The questionnaire was designed based on a prior survey of symphony computing, and pre-tested on five art museums, mostly located in southern California. It was mailed to the museum's executive director (or similar title), to be forwarded to the person at the museum responsible for computing. Statistical tests were performed on the representativeness of the sample and the non-respondents, and these tests generally confirmed a representative sample (Pick, 1989b). The overall response rate was 23.3 percent, which adds confidence that the sample reflects the full population of art museums in North America. The results discussed here refer only to the 75 percent of respondents that were computer users and mailed back acceptable questionnaires (i.e. reasonably complete).

Respondents' annual budgets averaged $2.2 million, and ranged from $22,249 to $52 million. For purposes of analysis, the museums were divided into small, medium, and large budget groups according to budget ranges of $0-210,000, $211-817,000, and $818,000+. The museums had medians of 3,663 art objects (excluding photographs) and 175 photographs. The largest numbers of art objects and photos were 350,000 and 250,000 respectively. On the average, the responding museums were 42 years old.

Survey Results on Artistic Applications

Arts applications had relatively low prevalence of use, while word processing, development/fund raising, and budgeting/accounting were very prevalent (see Table 1). The leading applications, each in use by over 60 percent of museums, were word processing, mailing lists and maintenance, membership processing, non-payroll accounting, and budgeting. At the interface between the business and arts sides, computers were used for registrarial purposes

Table 1

Prevalence of Software by Application Area

Application Area	N	Percent Having Application
ACCOUNTING/FINANCE	160	
Budgeting		63
Financial Planning		36
Payroll and tax		31
Accounting, besides Payroll and tax		66
DEVELOPMENT	159	
Membership processing		69
Contribution processing		48
Mailing lists		77
Solicitations		42
BUSINESS INVENTORY	157	18
WORD PROCESSING/ GRAPHICS	160	
Word Processing		92
Presentation graphics		24
Desktop publishing		35
REGISTRAR	159	
Collection		50
Full registration/ cataloguing		41
CURATORIAL/ EDUCATIONAL	158	
Curatorial research		20
Exhibition design		9
In-gallery educ. use		10
Library		15
MEAN		40

by about half of museums, with full registration/cataloguing in use by 41 percent. The area of lowest use was curatorial/educational (specific applications varied from 9 to 20 percent). A similar low level of computer use in artistic computer application areas was ascertained for symphonies (Pick, 1987). The reasons for low curatorial and educational use of computers include lack of training, unavailability of software, and low museum priorities.

The most intensive sub-area of curatorial/educational use was curatorial research. This reflects both the fundamental importance of the curatorial mission, as well as the productivity benefits to professionals using modern data management and networking tools. Fewer museums have so far applied computers to exhibitions. One reason may be lack of high quality exhibition software products. Exhibition design commonly entails exhibition layout by interactive computer aided design (CAD) or other graphics, and is just beginning to be established in art museums. Current advances in visual display technology and price/performance will favor greater computerization of exhibitions.

The arts-related application area involving the highest proportion of in-house development was registrarial, for which about one third is programmed in-house, one third

modified from commercial software, and one third entirely commercial software. Registrarial procedures are very museum-oriented, at the same time varying significantly from museum to museum. Responses suggest that so far, the commercial software marketplace has not produced registrarial packages that are flexible and cheap enough to obviate in-house development. This is especially true for very large museums, 46 percent of which reported registrarial computer applications developed in-house.

Art museum personnel spend on the average 163 person hours per week performing IS tasks. As seen in Table 2, over half of IS task time is spent on word processing, followed by development/fund raising and accounting/finance (about a sixth each). The large proportion of time spent on word processing stems from the expanding number of museums and users, and the increasing sophistication of, and demand for word processed documents. This in turn reflects general trends in business and society towards increasing end-user applications, typified by word processing.

Limited personnel time, only 18 hours per week, was devoted to registrarial applications. Only eight hours per week was dedicated to artistic applications, a mere five percent of personnel time for IS. This is rather surprising since the mission purpose of an art museum is to collect and exhibit art. As seen in Table 2, similar results occurred for symphonies in 1987.

The average personnel time spent on specific sub-areas of curatorial and education applications are shown in Table 3 below. For museums reporting any curatorial/educational uses, the total time spent on these applications averaged 20 hours per week, i.e. equivalent to half a person-week. The leading areas of time spent were curatorial research, library, and other, with reduced time dedicated to exhibition design and education. Since education is rarely viewed as a critical IS success factor, it is usually given lower priority in the planning and allocation of computing resources.

Arts-Specific Computer Packages

The survey also examined the use and prevalence of arts-specific packages, i.e. those programmed specifically for arts or nonprofit organizations. These packages may be intended for a variety of art museum-specific uses, including curatorial, educational, art collection, development/fundraising, and registrarial uses. Some of these software products are integrated, encompassing two or more arts-specific applications. These packages are pertinent to arts applications in museums, since many of them contain features tailored for arts functions and activities. The survey did not inquire into the specific details of applications, but only whether packages were present and what the name of the package was.

Arts-specific packages were present for only a fifth of institutions. However, their number increased substantially by budget size of museum, becoming a standard feature in very large museums. For example zero percent of small museums had arts-specific packages, whereas 10 percent of medium museums and 47 percent of large museums had them. Larger museums have greater capability to fund and support the use of these sometimes complex packages. For instance, at the Milwaukee Art Museum, installation of a complex development/fundraising package involved considerable training, support, and some trial and error (Petrie, 1987).

There was wide variation in the nature and function of the arts-specific packages adopted. Of thirty institutions using these packages, twenty eight different package products were represented. The most prevalent package, ARTIS, an integrated one, was stated as being utilized by

Table 3

Time Spent on Curatorial and Educational Applications

Application	N	Mean No. of Hours Spent per Week	Max No. of Hours Spent
Curatorial research	20	15.1	60.0
Exhibition design	13	6.8	20.0
Educational use	13	5.5	10.0
Library	15	18.1	40.0
Other	8	35.5	99.0
TOTAL	**46**	**22.1**	**139.0**

Note: calculated only for museums answering the question panel on time spent on curatorial/educational applications.

Table 2

Average Personnel Hours Per Week Spent on Computer Application Areas: Museums (1989) and Symphonies (1987)

Application Area	Symphonies, 1987 Time Spent Hours/week*	Museums, 1989 Time Spent Hours/week*	Adjusted Ratio*** of Time Spent Museums 1989/ Symphonies 1987
ACCOUNTING/FINANCE			
Budgeting	1.67	4.52	
Financial Planning	0.99	2.77	
Payroll and Tax	0.91	2.81	
Accounting, besides Payroll and Tax	3.37	11.17	
Overall, ACCT/FINANCE	11.81	21.73	1.2
DEVELOPMENT			
Contribution Processing	4 .07	5.97	
Mailing Lists	4.64	5.46	
Solicitations	2.68	3.66	
Overall, DEVELOPMENT	14.15	24.51	1.1
BUSINESS INVENTORY	0.40	0.59	
WORD PROCESSING	17.82	88.27 +	3.3
GRAPHICS	N/A	5.06	
REGISTRARIAL**	--	15.48	
OTHER	3.94	--	
HOURS USING NON-ARTISTIC APPLICATIONS	48.12	155.64	2.1
HOURS USING ARTISTIC + + APPLICATIONS	3.18	7.71	1.6
TOTAL HOURS USING ALL APPLICATIONS	51.30	163.35**	2.1
	(N = 110)	(N = 132)	

* Each mean value was calculated based on the full sample of institutions responding to the question panel, i.e. 110 symphonies and 132 museums.
** Does not apply to symphonies.
\+ Excludes one outlier value of 3,600 hours/week.
\+ + For museums, curatorial and educational applications.

***This ratio equals:

$$\frac{\text{mean time spent for museums 1989}}{\text{mean time spent for symphonies 1987}} \times \frac{\text{mean symphony budget 1987}}{\text{mean museum budget 1989}}$$

only four museums out of 166 in the sample, while ARGUS, for collections management, and FundMaster, for development and fundraising, were stated as used by three museums apiece.

The low prevalence of these packages may be due to several factors. First, there is likely some non-response to the question by adopters. Second, due to the limited marketplace for arts-specific packages, the price of the packages tends to be high relative to generic personal computing software. Some of the leading such packages cost over $10,000 per user station, a cost considerably exceeding prices for generic software packages that are usually under $500. Since average software expenditures annually for small, medium, and large museums were $205, $760, and $10,231 respectively, larger museums are much more likely to find arts-specific packages affordable, and even then, they are very costly relative to budget.

Discussion

Art museums are not realizing the potential to apply IS in the "mission" areas of artistic computer applications. Museums appear to be following the stated or unstated policy that "business IS applications come first." Often not enough time or resources are left over to support useful IS applications, including training and support, on the art side. For example, an application with great IS potential is exhibitions, including exhibition design preparation, and visitor enhancements. In this area, modern visual display software and hardware might be effectively applied. Yet the present research indicates that this area is slightly computerized.

The low prevalence of arts usage is not unique to this survey, but has appeared in other similar surveys in the 1980s. A survey of computer use in museums (about half art museums) in 1983 revealed that collections and exhibitions applications were computerized in twelve percent of museums, less than for accounting and development applications, but slightly more than for publications and sales (Arthur Young, 1983). In addition, a question on future intentions to computerize indicated that collections/exhibitions considerably trailed the other three applications.

Likewise, a survey of computerization of symphony orchestras in 1987 revealed that artistic applications (music library, performance repertory, recording archives, etc.) trailed all other applications, except for inventory control (Pick, 1987). The range of prevalence for artistic applications was 2-22 percent, versus business applications prevalences of 50-99 percent. The tentative conclusion is that the paucity of arts computing applications is a general characteristic of arts organizations.

Arts applications are trailing business uses because of museum financial stringencies, educational and training problems, and difficulties in the development and marketing of arts-related programs and software. In today's world, most arts organizations are under continual and sometime severe financial pressures. The response of museum management is to apply computers to revenue-generating and cost-controlling functions, rather than art mission functions. In some respects, this is appropriate as a short-term action. However, a longer-term management view would regard computing as essential to enhance the quality and productivity of arts programs; an eventual offshoot would be greater revenue production.

On the art side of museums, the users are mostly art professionals. In general, their professional training does not provide the extent of formal computer education and training that business education offers. Some art professionals may offset this by home use of personal computers or other means. Although over half of museums have instituted in-house or outside computer training for employees, this is constrained by the high cost of outside training and lack of computer professionals to provide in-house training. In-house training is helped by the presence in three quarters of museums of "computer lead users," who may be employees or volunteer outside consultants. These lead users often function as the center of an informal user support network. One unanswered question is whether lead users conform to usual management prerogatives and emphasize training and support of business rather than arts staff. The importance of "lead users" and an informal support network was also noted in a study of medium-sized corporations (Lee, 1986).

Another reason for weakness in arts applications is that arts applications are generally more specialized in nature than business ones. For instance, an exhibition design package employed by operations and curatorial staff tends to be more specialized than the spreadsheets and database packages used by finance staff. The usual solutions are to acquire often expensive arts-specific software on the outside marketplace, or to program applications in-house, which may be time-consuming and risky. On this point, survey responses varied by area. For instance a third of curatorial research applications were programmed in-house whereas 100 percent of exhibition design applications were purchased commercially.

What are the steps that art museum management can take to increase the efficient computerization on the art side? Among possible steps are the following:

Improved computer education and training of arts professionals. Museum management can look for computer knowledge as an important secondary skill in hiring of arts professionals, as well as foster increased knowledge through establishment of training programs geared to the arts staff. In addition, the informal support networks centered on "lead users" should be encouraged.

More thorough and informed budgetary decision-making for arts applications. Budgetary decision-makers in art museums should fully evaluate arts computing applications, applying cost-benefit analysis with longer time horizons that takes into account both tangible and intangible costs and benefits. Long-term professional enhancements to the museum's arts program, and associated revenue generation, should be weighed. The high cost of arts software needs to be recognized as an economic

market factor, and such software carefully decided upon, even if it is more costly or difficult to develop than on the business side.

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Full Report Available

"The 1989 National Museum Computer Survey: A Summary of Results" is available from James B. Pick, Graduate School of Management, University of California at Riverside, Riverside, CA 92521.

This article and a subsequent article, "Staffing, Planning and Control in Art Museums," scheduled to appear in the next issue of **Archives and Museum Informatics**, expand on aspects of survey results not discussed in the published report.

Electronic Records Issues

DAVID BEARMAN

In preparation for a proposed conference on the electronic records managment research agenda, Lisa Weber of the NHPRC asked colleagues to suggest unanswered questions that they believe must be resolved before there can be a widespread implementation of successful electronic records programs. My list of twenty questions and suggestions of possible research towards answering them is printed below. Lisa will be delighted to receive additional suggestions which will become ingredients in the discussion at a conference tentatively planned for December 1990.

Questions and Proposed Research

1. How does an e-mail system change the character of communications within an office?

Study the records of a significant, policy making office several years after implementation of an e-mail and electronic office system, and compare the written documentation created by this same office before it became electronic. Identify characteristics of similar and different documentation and determine whether they are being filed differently and if communications are coming from different places.

2. What constitutes records and what are drafts in the electronic office? Can we discover things about the lifecycle of documents that will help make appraisal determinations?

Study an existing setting in depth. Examine every electronic draft and every paper version. See what is being done with each by their creators.

3. Do creators, given basic records management instructions, make different judgments about retention than records managers and archivists?

Set up a test environment. Give users instructions to assign retention periods to their documents. Have review at end of six months or so by records managers and archivists. Compare.

4. Would a header, automatically constructed and user supplied, assist in filing and records management?

Create a front end template that creates such a header. Test user ability/willingness to complete it and its usefulness to records managers.

5. Can administratively established common filing structures work in distributed networks?

In several offices in a large organization, establish common file headings and directories for all PC systems, pro-

vide staff with explanation of how they should file, and let the systems run for a year. Reminders could be provided, but basically no more than other offices are likely to receive. At end of year, analyze adherence, reasons for adherence and for failures. Perhaps try with one case in which managers are told their performance ratings depend on adherence!

6. Will the concept of retention periods based on applications work if introduced in conjunction with automation?

Try bringing up two office systems at roughly the same time, one with archival involvement and one without. The one with should introduce a structure to applications as the use evolves, constantly monitoring use and developing appropriate front end views of the underlying software so that users see themselves participating in different applications based on retention periods. Compare results.

7. What would constitute adequate security and back-up for the automated records of offices - say equivalent to that provided by existing vital records policies and minimum privacy type policies?

An organization that has strong vital records and security programs for paper could study how these would need to be modified in order to arrive at acceptable electronic records policies, and develop a model with costs.

8. What could a variety of approaches of management of electronic records cost, using different scenarios of costs and different futures?

Develop a model for institutions to apply to their situation to develop estimates.

9. What procedures can be employed to appraise and retain electronic records from existing systems?

An organization with an existing backlog of electronic office tapes and disk packs could undertake their appraisal.

10. Do proposed methodologies for developing electronic records management policies work and how can they be applied?

An organization tries to develop policies for itself based on the UN guidelines.

11. What should archivists be doing about voice mail and other digital voice applications?

In a setting in which voice messages, voice store and forward systems and voice conferencing are in use, an archivist should examine the contents of voice and other records to determine the importance of the voice records and their duplication by other documentation. Methods of storing and filing should be examined.

12. When are various media and formats most appropriate for archival retention of electronic records? What are the cost and effectiveness criteria to apply in order to determine whether paper, microform or optical storage should replace magnetic media?

A study of the cost and efficiency factors in a variety of media, with projections over 5, 10, 25, 50 and 100 years of life using appropriate staffing and media migration.

13. Is microform ever a reasonable medium for retention of electronic records?

Conduct a study of COM, CAR, scanning from microfilm, OCR and database reconstruction technologies with a view towards establishing the sizes of databases, the degree of use, and the character of existing institutional investments necessary to recommend microform retention.

14. What should archivists and records managers be doing about fax?

Conduct an examination of facsimile traffic in an organization and of the efficacy of the simplest methods of retaining fax messages - as thermal paper copies (the norm), as archival life paper copies, and as compressed digital raster images.

15. Are there viable strategies for retention of software dependent documents - spreadsheets, hypermedia, compound digital documents, and online queries to real time updated linked databases?

Study the state of standards and administrative measures and formulate recommendations.

16. What is the extent of optically stored electronic public records today?

Survey jurisdictions for existing and planned applications with an eye towards identifying the commonalities of applications and the range of optical systems being employed. The objective is to determine the extent of the problem that will be posed by these early innovators.

17. Is there a public that wants access to records in electronic formats, and if so, can their needs be satisfied by other deliverables?

Examine FOIA requests and the experience of archives and records managers. Identify constituencies currently using electronic records and determine what kinds of requirements they have.

18. Can the Information Resource Directory System be both an active records control environment and an archival Online Public Access Catalog (OPAC)?

Assess existing IRDS standards and Data Dictionary/Directory products against the requirements of both data administration, as a means of records management, and the end user online catalog, as a means of access to records. Propose the necessary modifications.

19. If intelligent systems are going to assist workers to make decisions, what are the requirements for documenting the rules and logic by which such systems make judgments? What are the tools?

In a setting in which AI is used (college admissions, welfare distributions, tax audits, etc.), evaluate the role that AI plays in helping people make decisions, determine its "documentary requirement", and establish guidelines for appraising AI systems, along with their data.

20. Electronic records are easily subject to falsification, so it is likely that they will be held to the test of having been made under normal procedures and subject to reasonable security before being admitted as evidence. What are normal procedures and reasonable security, and how could they be demonstrated?

A study that identified the wide variety of ways in which electronic records can be altered without showing signs of that alteration should also be able to identify the kinds of normal operating procedures that will minimize the likelihood of falsification and which would most likely withstand court scrutiny. The experience of establishing the legal admissibility of microform should be informative.

Towards a Research Agenda

A conference to establish an electronic records research agenda could take all the candidate unresolved questions proposed by the archival community and identify their priority on the basis of 1) the benefit of answering them and 2) the likelihood that they could be answered. For each proposal, working groups could refine the questions, identify what would constitute an answer, and define the methodologies that would produce a valid result.

For example, we could take question 12 from the list I initially submitted: "When are various media and formats most appropriate for archival retention of electronic records, and what are the cost and effectiveness criteria to apply in order to determine whether paper, microform or optical storage should replace magnetic media?" This question, similar to that posed by Ann Balough in her recent articles for *Records & Retrieval Report* (see p. 9) would be answered if we could create an evaluation instrument that 1) identified all the dimensions along which any current or future medium should be assessed and 2) provided criteria that would be valid at any time to determine the weight that should be given to each dimension and its effect on the overall assessment. The instrument, when employed by records managers and archivists with access to basic technology advice, should recommend decisions consistent with those made by expert advisors. When applied to historical situations, the criteria for weighting each technology should produce results that would effect the advice as it should have been given in the past. When applied to future hypothetical situations, the criteria should influence weighting to shift the recommended technologies in a direction, and at a time, that experts agree would be advisable.

Such a research project would involve:

1) a literature search and interviews to identify evaluative dimensions

2) the administration and analysis of advice given by five independent records technology experts in a decision protocol simulating a variety of records situations and presumed conditions, in order to identify weighting criteria employed

3) the definition of a cost model and calculation of costs and risks of following the advice of each expert to establish the interaction factors underlying the application of separate weighting criteria

4) administration of a trial instrument based on dimensions and weighting criteria in several real media decision contexts with the archivists and records managers actually responsible

5) cross checking the decisions recommended by the instrument in the real situations with the advice given by the experts without use of the instrument

6) cross checking the decision recommended by the instrument in the real situations with the experts in a group based on both a Delphi process and a step by step analysis of the instrument

7) cross checking the decision recommended by the instrument by applying it against historical media conundrums previously judged by the experts

8) cross checking the instrument application protocol by having a number of archivists and records managers apply it against the same hypothetical case

9) instrument refinement and retesting of 4-8 if substantially revised

10) publication of the research project findings, the instrument and an application protocol.

To find out more about the planned conference to establish an electronic records research agenda, or to contribute questions and issues to be addressed, contact Lisa Weber, NHPRC, Washington, DC 20408, 202-523-5386.

□

CONFERENCES

Preservation of Microcomputer Software: A Symposium

A diverse group of archivists, museum curators, software producers, librarians, an attorney, and researchers gathered for a Symposium on the Preservation of Microcomputer Software at Arden Homestead north of New York City, March 23-25. The symposium was sponsored by the School of Library Service, Columbia University, funded by a grant from the H.W. Wilson Foundation and organized by Hans Rutimann of Columbia. Originally billed as a conference on "microcomputer" software, the symposium quickly expanded its focus to preserving software generally and collecting archival records on the history of software.

Participants expressed considerable interest in documenting the history of software by identifying significant individuals, events and processes in software development and coordinating collection of supporting archival records. The participants also recommended that some executable software should be collected to maintain an "intellectual audit trail" for future generations, to have means to retrieve and process historical machine-readable data, and to preserve the information imbedded in software about automated procedures and processes. Those present debated whether it was necessary to preserve software itself in order to provide a sense of "touch and feel" or whether the history of software development could be documented with more traditional records. Conference participants also considered whether preserving software is even feasible given the need for appropriate technology platforms and increasing legal restrictions, including use of software patents.

The conference produced a statement urging establishment of a national center to promote and coordinate research on the history of software with the following objectives: establish a consortium of centers that collect and preserve microcomputer software and archival records on the history of software; cooperate with data repositories on development of standards and techniques for preservation of machine-readable information and its migration from obsolete to current media; ensure that an adequate record of the important developments in the history of software is created and maintained by acquiring and preserving relevant archives, manuscript collections and software, and where necessary, creating records such as oral history interviews and video tapes on the operation of software; and ensure that there are technology platforms for the purpose of executing software for historical purposes.

Participants included William Asprey (Center for the History of Electrical Engineering), Gwen Bell (Computer Museum), Bruce Bruemmer (Charles Babbage Institute), Margaret Hedstrom (New York State Archives and Records Administration), William Holmes (National Archives), John Kimball (Library of Congress), Henry Lowood (Stanford University), Victor Rosenberg (Personal Bibliographic Services, Inc.), Steve Siebert (Dragonfly Software), Peggy Seiden (EDUCOM National Software Catalog), and Jessica Gordon, Ellis Mount and Robert Wedgeworth (Columbia University), and the authors of the position papers described below.

MARGARET HEDSTROM
New York State Archives and Records Administration

The "Report of the Symposium on the Preservation of Microcomputer Software" contains background papers prepared by Paul Banks (Columbia University), Mary Bowling (New York Public Library), Bernard Galler (University of Michigan), C. Lee Jones (Mid-Atlantic Preservation Service), Brian Kahin (Harvard University), and Paul Evan Peters (New York Public Library). The conclusions of the meeting are briefly summarized by Carolyn Harris. Commendable accomplishments of the symposium were the revision of the initial goal of establishing a collecting center to a documentation strategy based on decentralized collecting, and the shift of focus from microcomputer software to software in general.

The background papers contain much interesting information, but are largely disappointing. Paul Banks, in a paper on "Preservation and Format Issues" covers much the same ground as John C. Mallinson in the International Symposium of Conservation in Archives (1989) and by Sidney Geller in his 1983 NBS report, and doesn't call attention to the increasingly problematic and disappearing non-boundary between hardware and software or software and data. Banks also fails to recognize the vast array of potential data storage media and formats and the lack of standards for how data should be laid out on all but a handful of such formats. Peters, in a paper on "Machine Aspects", adopts a position that I find absurd, arguing that we could and therefore should maintain hardware environments. He further argues that we should enhance the documentation of systems being archived. Both approaches seem to me to guarantee virtually limitless calls on resources in return for a trivial extension in the time we could expect to be able to support access. Galler's paper on "Software Issues" proposes a collections policy for a prototypical center or one of the many centers that might exist in the distributed model. The policy is plausible, but because it is only one alternative and will only remain plausible for a short time it would have been useful for Galler to suggest the criteria for its revision. Bowling's paper on "Access and Outreach issues" focuses on MARC description because it equates access with cataloging and software with applications software. Lee Jones provides a superb discussion of the organizational challenges and presents a scenario under which such a center could be commercially viable. Brian Kahin makes a major contribution to our understanding of the conflicts between software patents and software copyrights.

DAVID BEARMAN
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Documentation of Historical Collections

On January 18, the AASLH Common Agenda kicked off its Philadelphia Area project with a conference on historical collections documentation issues and strategies. The one day meeting was intended to introduce Philadelphia area institutions to the aims of the Pew Charitable Trust funded project. That limited purpose was served by the introductory talk by Mary Alexander, Common Agenda Program administrator, and by materials distributed to the participants, leaving the rest of the day for presentations by others on fundamental issues in documentation.

Lonn Taylor, Assistant Director of the National Museum of American History, sounded like a down-home story teller as he drew his audience towards his conclusion that documentation is the making and transmitting of the contexts of creation and use of cultural materials. His accounts of a variety of personal experiences in museums reminded the audience that context, or assocational data, is the crux of historical museum knowledge and that only with such information can material culture "rewrite American history". Taylor told of a bench found in New Mexico during a search for artifacts of early 19th century New Mexico craftsmen, that was made in Baltimore more than a hundred years before, and could well have made a major contribution to understanding the 18th century furniture industry on the East Coast if its documentation had been created, or made known, to others.

Taylor's theme was picked up and amplified by Lynne Poirier-Wilson of the Strong Museum, who confessed that her institution, despite a ten-year long cataloging project before it opened its doors in 1982, was "woefully lacking in historical documentation" of its collections. As a consequence, it was now having to return to the task. As the professional inheritor of a collection assembled quite idiosyncratically by an individual without such guidance, Poirier-Wilson stressed the importance of a clear museum mission statement of the documentation task, since such a statement would stress the origin or use of objects as a rationale for accessioning them, and the acquisition process would therefore be more likely to document origin and use. In a poignant illustration of the difference between descriptive and managent information and true documentation, she described her own study storage collection in which items on shelves have catalog numbers pointing to a card drawer. When users interested in further information look up the item in the card drawer they discover descriptions of what they have just seen for themselves - "toy fire engine, 4 inches, metal" - rather than information about where and when the item was made or distributed, how much it costs, how many were produced, etc. Noting that a collection like her own will forever be deprived of owner specific information about when objects were obtained and how they were used, Poirier-Wilson asked rhetorically how the documentation might be enriched nonethless by access to authority databases of associational information about manufacturers, distributors and archival documents.

After beginning with two powerful challenges to the very concepts of documentation that have guided museum work, the conference turned after lunch to a discussion of several projects that might hold promise for museums in the future. Kathy Speiss (National Museum of American History) reported on the work of the Common Agenda Database Task Force which defined "core" data fields required for history museums for purposes of both accountability and accessibility. She noted that museums tend to record what has been recorded in the past, that this is not necessarily the information people need, and that creation of, and access to, historical documentation increases the resources of museums collectively. She urged participants in the Common Agenda Philadelphia database project to test whether the fields proposed by the task force were indeed the "live or die" fields, and to experiment with how they can both share vocabularies and perspectives and create context sensitive, historically accurate descriptions.

Ellen Dunlap (Rosenbach Museum and Library) described for participants the Research Libraries Group AMIS (Archives and Museum Information System) project, which has recently completed an assessment of functional requirements for museum information systems. The functional requirement is the first step in development of a national networking service for museums and in the expansion of the capabilities RLG already has to support archival information exchange in its RLIN system.

Barbara Rottenberg of the Canadian Heritage Information Network rounded off this part of the program by describing the CHIN network and its 1.5 million record humanities database, constructed by 50 member museums since 1972, and its growing panoply of reference databases, such as "Artists in Canada, "Travelling Exhibits", "Historical Sites Supplies", "Repository of Stolen Art", "Directory of Canadian Museums", Nova Scotia Shipwreck Inventory", etc. She noted that CHIN was now discussing the creation of a national collection level database and other services desired by users, and that the cooperative construction of databases was leading to a new emphasis at CHIN on developing and employing standards.

The conference ended with presentations by Brent Glass of the Pennsylvania Historical and Museums Commission and Marsha Semmel of the National Endowment for the Humanities on the documentation related grant programs of their respective institutions, and with a reminder from conference organizers about two upcoming Common Agenda workshops and the opportunity for Philadelphia museums to participate in the Pew Charitable Trust funded pilot project.

DAVID BEARMAN

Electronic Office Records

A Meeting Held at the Brookings Institution, January 11, 1990

The archival profession has developed frameworks for management of machine-readable data files, but does not have similar guidelines on records of electronic office systems, although some recent works on electronic office information have addressed long-term strategic approaches to electronic office records management. Unfortunately, these strategic approaches, which focus on solutions that depend on development of international standards and on testing specifications for systems that enforce local records management policies, will not affect existing systems. Even if these strategies prove fully successful in the long run, they cannot solve most of the problems we will confront in the management of electronic office records management over the next three to five years.

Not surprisingly, the profession is looking for concrete answers to what to do now and in the medium term future. Specifically, archivists and records managers are seeking guidance on what to do:

1. When they receive physical storage devices containing electronic office records or are asked by administrators of existing data how to identify appropriate retention schedules or appraise existing office records, and

2. When they are called upon to define and implement procedures that will improve the ability of their organization to meet its operational and legal requirements for documentation of activities recorded electronically.

In other words, our colleagues are seeking solutions applicable right now, on existing systems, and within their present organizational and technological constraints.

A meeting to discuss these issues, funded by the Benton Foundation, was held at the Brookings Institution in Washington, DC, on January 11, 1990. Participants included Richard E. Barry (World Bank), David Bearman (Archives & Museum Informatics), Charles Dollar (National Archives), Margaret Hedstrom (New York State Archives), Ed Levine (Florida State Legislature), John MacDonald (National Archives of Canada), Judi Moline (National Institute of Standards & Technology), Franklin Reeder (Office of Management & Budget), Nancy Sahli (NHPRC) and Lisa Weber (NHPRC). Participants identified a variety of issues that needed to be addressed, defined solutions on which they could agree, and proposed topics for further research.

Participants agreed that an adequate policy framework, even if it established who within an organization has what authority and responsibility for electronic records management, is not sufficient. Solutions to the short and intermediate term issues facing archivists and records managers with electronic office records require an implementation framework which pays equal attention to administrative remedies and technology-supported solutions. Meeting participants agreed that records management guidelines had to be based on the missions of agencies and on their day-to-day operational requirements for records, and therefore policies and their implementation would be application specific as well as organization specific. They further agreed that solutions would need to be defined in terms of outcomes, would be format independent, and would have to be sensitive to the life-cycle of records.

Existing Electronic Office Records

Archivists and records managers have the fewest options and the least desirable task if they find themselves confronted by electronic office records already created in a system that was not administered with guidelines sensitive to records management requirements. Before such records can be appraised it is necessary to:

a) Determine the business purpose of the records and establish their potential informational value to prospective users. Records managers will use this information to determine the appropriate retentions for classes of current records and apply these retentions on a class-wide basis. Archivists will use it to decide whether it is necessary to proceed with an appraisal.

b) Physically identify what data is on the medium, how it is laid out, and what software was employed in its creation. Using the software that records creators used to make the records (hopefully documentation will exist and the software will be available), archivists and records managers need to examine a sample of the records to determine whether it is possible to reconstruct both the documents and their surrounding system headers, pointers and indexes. If the headers and stamps cannot be reconstructed, the document texts will have lost most of their value as records, since it will be impossible to reconstruct the context of creation of the information in the system, and hence to distinguish real documents from spurious data.

c) Establish the structure of the files and the uniformity of their contents. A preliminary sample may be required to do this. Typically a chronological stamp will be provided by the system on which such a sample could be based if no more sensitive categorization is possible. Such a stamp may subsequently enable the archivist to remove duplicates from the system and create a content and life-history profile of the remaining unique materials.

Participants agreed that the costs of item level review of records created without attention to records management requirements is almost certain to be prohibitive, and that, at the least, such item by item reviews are not acceptable as a routine procedure. They agreed that, except in extraordinary circumstances, the major benefit of reviewing electronic office records from existing systems is the pedagogical opportunity provided by the review to discuss these steps with the custodian of the records, rather than the results of the item level appraisal. A dialogue with the records custodian could reinforce the fact that electronic office systems do contain records, and demonstrate how

costly and inefficient it is to appraise electronic media containing office records created in systems that did not implement appropriate technical and administrative controls. The discussion can emphasize to the custodian the need to take administrative actions to improve management of electronic office systems to assure that future records will be segregated by records retention requirements, and thus be usable if they are retained.

Immeditate Term Advice

Participants agreed that becouse there was no reasonable way short of item review to appraise records from exisitng systems for which no appropriate admnistrative or technical records management guidelines have been implemented, it is critical that the archivist or records manager be in a position to provide guidelines that program managers can implement in their present hardware and software environments.

The approach employed must ultimately proceed from policy objectives, to implementation issues, to administrative guidance. It needs to speak to program managers, end users and data processing staffs. And it needs to achieve the same objectives for retention and access to information that have been the basis of values for retention and access to traditional records.

Such administrative guidance should be consistent with a common sense understanding of the requirements for records management, the most basic of which is that in order to manage any given records, it must be possible to identify those records requiring different actions and to segregate them. Therefore, records must be flagged in some way, either to directly indicate how long they are to be retained, or to provide information that will be used indirectly to make such determinations. Further, the system must enable a records manager or archivist to take action on records without having to conduct an item-by-item review.

Participants agreed that the determination of what constitutes a record could depend on a declaration by the user at the time of the creation of the record. Some preferred that the definition of what constitutes a record depend on some objective characteristics of the record or the process of its creation or dissemination so that segregation can be conducted by an automated process not subject to individual whims. In either case, systems should provide little or no latitude for individuals to alter or delete records after they have been communicated to others, and should probably forbid any undocumented deletion of communicated records (e.g. leave an audit trail if deletion is permitted). Records managers will need to accept that this practice may result in the initial retention of a greater volume of records than paper practices do because individuals may currently throw away paper records even after they have been communicated. On the other hand, it may result in fewer records being retained because in paper based offices many additional copies of records are created and filed in separate systems. Participants were not fully in agreement about how limiting systems should be about record deletion and modification but the mood was subsequently captured by Margaret Hedstrom who stated that "in the absence of usable standards and conventions that can be carried over from manual systems, managers should err on the conservative side."

Participants agreed that administrative guidelines to end-users can work when the organization recognizes needs for documentation of an application area and the program manager in that area feels accountable for the data. In this context the program manager can assert the organizational will to enforce use of a system with respect to the application, as has been documented by Richard Barry at the World Bank.

Participants asserted that because all systems have some means of capturing data beyond the workstation, systems guidelines need to state how data wil be captured and how often such capture will take place. Because retention decisions will need to be based on clues in the headers and system stamps pointing to the text of the electronic documents, systems guidelines need to establish what data will be recorded on electronic envelopes and in audit trails. Because any system has some means of organizing data for retrieval, systems guidelines need to state whether the retrieval functionality is based on data which is explicitly recorded in the document, and could therefore be available to a separate system, or whether it is based on system specific information, not stored in the document and therefore available only within the software that generated the record.

In formulating guidelines, managers will need to pay special attention to the problems created by the dissemination of documents through exchange of magnetic media ("sneaker nets"), since these will leave no system trails and may need to be prohibited or documented in other ways. Managers also must consider the problems that will be associated with migration of data to and from previous electronic systems, systems involving mixtures of paper and electronic information formats, and systems that do not keep use histories that would automatically help with management of draft documents.

Guidelines need to address who can create documents in each application, who may delete them, and when. They must address who can label a document (adding to its header), and when. They need to determine where the document will physically reside, and to recognize that physical residence should be determined exclusively by systems administration requirements. And they need to designate the file structure in the storage location that will make segreagation of records by application and retention period possible.

In developing such guidelines, archivists and records managers may need to work with technical staff to determine whether headers, content analysis tools and security features can be made adequate to achieve documentation accountability objectives within the existing software. Archivists and records managers will need to explain the way

the system works to end users whose views of the system do not necessarily correspond to how it actually operates. Successful introduction of records retention practices in electronic records environments will depend on program managers being committed to guidelines which they know are tied to organizational policies, and understanding the way in which the office information system causes the guidelines to be effected. In the absence of commitment from management to support the increased costs, oversight and enforcement required to ensure accountability will erode rapidly. Participants reported their own observations that administrative guidelines for accountable management of electronic records are currently in place in those business functions, such as financial management, that must sustain levels of access to their own documentation for ongoing business reasons. There was considerable support for basing records retention decisions in the electronic office information systems environment on risk management analysis rather than cost-benefit analysis.

In brief, the steps to implementing acceptable records management control within existing systems are:

1. Reinforce to users that electronic data may be records.

2. Identify the organizational requirement for access to records of electronic office systems.

3. Establish that documentation is a basic management responsibility and introduce formal accountability for it, complete with penalties and rewards based on regular audits.

4. Require program managers to establish administrative guidelines for use of systems that are dictated by organizational policy interests; do not permit guidelines to be driven by the data center or systems adminstrators based solely on system administration efficiencies, such as reducing storage loads.

5. Begin with systems that may not otherwise produce paper trails, like electronic mail, and with systems whose records are meaningful only in electronic form, such as spreadsheets with projection formulae embedded in them.

6. Construct shared files. If this cannot be accommodated, adopt common local file structures and naming conventions that employ separate sub-directory structures for each application and define document name extensions by document type to support retention decisions.

7. Implement backup procedures based on the requirements of the application area so as to assure capture of 100% of records. This may involve investigating methods other than snapshots, including journaling, modifed (document level) journals, and audit trails built around data communication to support definitions of records that focus on the transmission of information beyond the individual, organizational unit, or organizational boundary. Backup procedures may also require development of mechanisms to identify and remove duplicates.

8. Define the data to be captured, recognizing that systems are software dependent; that software and data are interdependent in common situations like spreadsheets and newer compound documents; and that the retained "copy" cannot consist only of the text, but must also include system supplied stamps, headers, trails and structures. The pre-processing of records for retirement to more software independent formats will normally need to take place within the software environment in which the records were created, and will involve explicitly writing to storage media some document characteristics implicitly assigned by the software system but not typically revealed to the user, such as update stamps and security permissions. If records that are printed out lose their system transaction stamps and headers, much information about their provenance, which is critical to unerstanding their role in the business process, is lost.

9. Avoid the guidance to "print records out to paper," unless all the data in the system can be routinely printed out and will be filed. Randomly stored paper records or selectively printed paper records are worthless as documentation.

10. Adopt only those administrative solutions that pass tests of operational utility and legal acceptability. Archival concerns are tertiary.

Mid-term Solutions

A number of solutions that cannot be implemented in existing systems are available to offices that are implementing new systems.

Foremost among these is to base procurements around standards that support a high degree of interchange of data independent of software formats, and that support a large number of functional requirements of records management, including shared filing systems and records retention data in headers.

Participants felt the implementation of a new system was also an opportunity to reassess information objectives of records keeping, emphasizing the needs for intellectual control over those of physical control and documenting the tasks that give rise to the record, e.g. the business process, not just to the record content. Functional requirements could include use of electronic stamps to identify the application process out of which the records arose.

New systems provide an opportunity to determine whether records need to be used electronically, and if so, what software features would need to be retained with the data. It was noted that archivists and records managers, in consultation with users, need to make a judgment as to whether future users will require raw data, formatted data, editable data, etc. and that this judgment will influence retention strategies and the costs of continued retention.

Implementation of new systems provides an opportunity to decide if data crossing communication boundaries can be used as a definition of "recordness" and, if

so, if record stamping at such boundary crossing communication transactions can be made a basis for filing, retention, and appraisal decisions.

It was agreed that these mid-term solutions would be highly dependent on organizational integration of the records management and EDP functions in order to upgrade jobs in records management and to introduce concerns of records management into EDP. Data administrators and library/information science trained staff who share the content orientation of program managers and records managers have been found valuable to bridge differences between EDP technicians and the content concerns of program management.

Further Research

Participants called for some additional research into the need to encourage documentation of data structures and data architecture, but pointed to the preliminary success of projects at the World Bank and the National Archives of Canada in using meta-data in records control.

Further work in testing statements of application functional requirements for records management was deemed necessary. Experiments in using business systems analysis to map the way in which records retention requirements follow function were viewed as being of great interest. The need to develop tactics for integrated access to mixed paper and electronic environments was alluded to frequently.

Further work was called for in defining what level of document content standardization to suggest to for mid-term solutions (ASCII, DCA, PDL, SGML, ODA), and when and why to introduce concerns about document editability and standards for headers such as x.400. Interest was expressed in further definition of the problems of documents with embedded software functions, including hyper-documents.

DAVID BEARMAN

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CALENDAR

June 16-21 Providence, RI
Association for Living Historical Farms and Agricultural Museums [Bob Benz, Billings Farm Museum, PO Box 489, Woodstock, VT 05091, 802-457-2355]

June 25-30 Seattle, WA
American Association of Botanical Gardens and Arboreta [AABGA, 786 Church Road, Wayne, PA 19087, 215-688-1120]

July 1-3, 5-7 Cooperstown, NY
43rd New York State Historical Association Seminar on American Culture. Courses by Deirdre Stam, Janet Parks and Andrew Eskind on linking art & art information. [NYSHA, P.O.Box 800, Cooperstown NY 13326-0800; 607-547-2534]

July 25-28 Boston, MA
NAGARA Annual Meeting, "Public Records in the Age of Technology" [Council of State Governments, Iron Works Pike, PO Box 11910, Lexington, KY 40578]

August 5-8 Richmond, VA
Association of Systematics Collections Annual Meeting [Louise Salmon, American Institute of Biological Sciences, 730 11th St. NW, Washington, DC 20001]

August 26-29 Dallas, TX
Nuclear Information and Records Management Association [NIRMA, Jane Hannum, 10 Almas Rd., Windham, NH 03087; 603-432-6476]

August 27-29 Gaithersburg, MD
2nd NIST Hypermedia Workshop. Call for papers. [Leonard Gallagher, NIST, Bldg 225 Room A-266, Gaithersburg, MD 20899; 301-975-3251]

August 30 - Sept 3 Seattle, WA
Society of American Archivists Annual Meeting [Georgeann Palmer, SAA, 606 S. Federal St., Suite 504, Chicago, IL 60605, 312-922-0140]

Sept 5-8 Washington, DC
American Association for State and Local History, "Diversifying Cultural Perspectives" [AASLH, 172 Second Ave. North, Nashville, TN 37201, 615-255-2971]

Sept. 2-8 Cambridge, ENGLAND
Museum Documentation Association Study Tour & Conference, "Staff Development &Training: Meeting the Needs of Museum Documentation" [MDA, Building O, 347 Cherry Hinton Rd., Cambridge CB1-4DH]

Sept 23-27 Indianapolis, IN
American Association of Zoological Parks and Aquaria [AAZPA, Oglebay Park, Wheeling, WV 26003, 304-242-2160]

PUBLICATIONS

In-Box

☐ Reports

American Society for Industrial Security, Standing Committee on Museum, Library & Archive Security. **Suggested Guidelines in Museum Security.** Arlington, VA: ASIS, 1990, 21pp. ASIS, 1655 North Fort Myer Drive, Suite 1200, Arlington, VA 22209, 703-522-5800.

These guidelines should be considered as the best available professional recommendations covering all aspects of museum security. Two appendices address museum security officer qualifications and museum employee pre-employment screening.

☐

Patricia J. Barnett. **"Developing a MARC Format for Cataloging Art Objects and their Visual Surrogates: Report and Accompanying Documents on the Workshop sponsored by the Getty Art History Information Program, June 12-13, 1989,"** 31pp. + Directory of Related Projects.

This is the report of a meeting, organized and chaired by Eleanor Fink of the Getty AHIP program, which led to the establishment of the Art Information Task Force. The paper documents discussions of the impact of format standards efforts in other communities, such as the archival community, on the art history world, but the points made are likely to be of historical interest only. If the AITF is funded this spring (the Getty is considering a 1st year support application), the conference will have borne fruit. Otherwise it is only one more reflection of the growing interest in extending MARC for museum objects.

☐

Chief Officers of State Library Agencies (COSLA). **Gateways to Comprehensive State Information Policy.** James A. Nelson, ed. Lexington, KY: Council of State Governments, 1990, $25.00.

This report is the proceedings and background papers of a conference held in October 1988. The meeting brought state librarians together with the records managers, archivists, computer systems managers and telecommunications managers in their states to hear papers by experts in the field and to meet in working groups to reconsider their respective roles in the management of state information resources. The papers presented at the meeting, and the policy documents from California, Florida, Kansas, Kentucky, New Jersey, New York, North Carolina, Virginia and Washington gathered in the appendices, will be of considerable interest to anyone trying to develop public, and especially electronic, records management policies.

☐

National Historical Publications and Records Commission. **Electronic Records Issues: A Report to the Commission by Lisa B. Weber; Commission Reports and Papers #4, March 1990.** Washington, DC: NARA, 1990, 11pp., free.

This staff report, endorsed by the NHPRC at its February 1990 meeting, identifies electronic records management as "the most significant and difficult challenge confronting the archival community". It summarizes the current approaches to the management of electronic records, calls for a national conference to define a research agenda for electronic records, and recommends the funding of five categories of electronic records related projects during the coming year. Since it represents the views of the major source of archival funding, it is obviously must reading for archivists.

☐

Transport Canada Integrated Offices Services. **Model of Generic Office Functions Summary Report.** DMR Group Inc., 20 December 1989, 26pp.

The Office Systems Working Group of the Canadian Treasury Board, which is the group responsible for the FOREMOST specification, identified the need to develop models of office functions as a first step in the strategy to develop standards-based systems for offices in the Canadian Federal Government. This report, which is a summary of the results achieved in that effort through the end of 1989, and a bibliography of the literature informing the preliminary conclusions, identifies four generic missions: process control, regulation, resource management and program control. The common functions underlying these missions are identified along the life-cycle of information. The report distinguishes "offices" from other work settings, such as laboratories, manufacturies, theaters, or libraries and identifies the functions performed in them in terms of procedures, processes and roles. Procedures and the processes that comprise them may be decomposed into work activities (or tasks). At a high level of abstraction, offices are places where information is transformed and can thus be understood by representation of actions taking place at different stages in the life-cycle of information. This work has a long way to go but the initial effort suggests it will be worth following.

☐

U.S. Congress, Office of Technology Assessment. **Critical Connections: Communication for the Future.** Washington, DC: USGPO, 1990, 408pp. $17 (order #052-003-01143-3).

This is an exceptionally important, comprehensive and lucid report on one of the most important information policy issues facing the nation, and legislative response to it will shape our communications infrastructures in the 21st century. It should be must reading for any information professional for the conceptual framework it presents and the policy questions it raises.

☐

U.S. Department of Commerce, National Institute of Standards & Technology (NIST). **Proceedings of the Hypertext Standardization Workshop, January 16-18 1990.** Judi Moline, Dan Benigni and Jean Baronas, eds. NIST Special Publication 500-178. Washington, DC: USGPO, 1990, 269pp.

This collection of conference papers and deliberations on the prospects for standardization of hypertext/hypermedia, complete with a comprehensive hypermedia bibliography by Paul Kahn of Brown University, provides an exceptional view of the earliest stages of the process of developing technical standards. The papers propose a plethora of different strategies, technical models and theoretical concerns. I found the questions they posed immensely stimulating and look forward to the follow up meeting this summer as the practitioners of these new forms of communication grapple with the question of how to represent the products of hypermedia environments so that they are transportable and interoperable. ☐

United Nations, Advisory Committee for Co-Ordination of Information Systems (ACCIS). **Management of Electronic Records: Issues and Guidelines.** New York: United Nations, 1990, 189pp., $15 (order # GV.E.89.0.15).

This report consists of three parts: a short chapter (16p) reviewing the results of a survey of electronic records practices at UN agencies that demonstrates a need for policy guidance; an important paper by Charles Dollar of the US National Archives on the role of standards in integrated systems management; and an extensive chapter (with appendices including recommendations and a glossary) serving as guidelines for management of electronic records written under contract by David Bearman. These products were prepared for a task force under the direction of Richard Barry (World Bank), which discussed them and enabled them to be formally adopted by the United Nations in September 1989. While it is partially self-serving to say so, I think this is the most important single document now available on the issues and opportunities presented to archivists and records managers by electronic office systems. ☐

Working Group on Standards for Archival Description. **Archival Description Standards: Establishing a Process for their Development and Implementation.** Report and working papers to be published in *American Archivist* 52, no. 4 and 53, no. 1.

WGSAD, which represented no organization, was funded by an NHPRC grant and met only twice in a period of less than a year (September 1988 to June 1989), will be remembered as one of the most productive and important professional archival catalysts. Its report and associated background papers will occupy virtually the entirety of the next two issues of the American Archivist, and its recommendations and their follow up are likely to influence archival practice for the next decade. ☐

☐ Newsletters & Journals

American Archivist 52, no. 3 (Summer 1989). It may be late, but it contains several valuable articles on matters relating to authority control: David Bearman, "Authority Control Issues and Prospects;" Helena Zinkham, Patricia Cloud and Hope Mayo, "Providing Access by Form of Material, Genre and Physical Characteristics: Benefits and Techniques;" William McNitt, "Development of the PRESNET Subject Descriptor Thesaurus."

Library Hi Tech News no. 69 (March 1990) contains an article by David Clark on transferring records in and out of InMagic to Microsoft Word for editing (p.1-8).

Library of Congress Information Bulletin 49, no.5 (Feb. 26, 1990) contains a fairly extensive report on the American Memory Project (p.83-87), an initiative of the Librarian of Congress to distribute full multi-media digital representations of important Library of Congress collections. Between 1990 and 1995 the Library envisions producing 15-20 pilot hypermedia publications. The article describes these and illustrates sample interfaces.

Library Systems Newsletter 10 no. 3 (March 1990) is the annual survey of automated library system vendors, this year combining the previously separate reports on turnkey and software vendors, since most sell both ways. More than a decade after the introduction of ILS, it is now possible to report that nearly all product lines support all four major modules of a standard library system - acquisitions, serials control, circulation and online patron access.

Research Libraries Group News no. 21 contains an article by Ellen Dunlap on AMIS, the proposed Archives and Museum Information System (p.17-19).

SPECTRA 17 no.1 (Spring 1990). With this issue, it is clear that SPECTRA has become must reading for museum professionals involved in any way with automation. Editor Deirdre Stam has transformed the once dull newsletter into a journal with respectable articles and useful, timely news. This issue contains articles by Joan Bacharach (National Park Service), Susan Patterson (St. Louis Art Museum), David Bearman (Archives & Museum Informatics) and Paula Sumpter (Milwaukee Public Museum Dept of Geology), reports from MCN special interest groups and reviews of the literature.

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☐ Books & Articles

Ann Balough. **"The Media Decision: Parts 1-3."** *The Records & Retrieval Report* 5 no.10, 6 no. 1, and 6 no. 2

This three part report (42p.) purports to compare paper, microform and optical disk as media for records storage and retrieval. It concludes with an algorithmic evaluative worksheet that assigns scores to each of 105 dimensions of each medium and provides for these to be multiplied by a weight factor reflecting the local importance of each attribute. The author is described as president of a records management consulting firm in El Paso, Texas. Her introduction reports without identifying sources or methodology that 4.5% of business records are "relational" and stored on magnetic media, that over 90% are documents (which are defined as "printed or written") and that the remainder are "draft", also stored on magnetic media. The report then discusses only "document-based" records, and ignores magnetic media altogether, presumably because they have been defined somehow as not holding any documents! In addition, the report's recommendations really apply only to decisions about when to convert media (since it presumes that documents begin on paper). Even if one could agree with the judgments made in the report and embodied in the worksheet, Balough's approach, which assigns fixed scores to each medium along a given dimension, would be valid only for the moment. Unfortunately, I found her judgments suspect so often that I was finally forced to dismiss the worksheet altogether.

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Mary Kay Duggan, ed. **CD-ROM in the Library: Today and Tomorrow.** Boston: G.K.Hall, 1990, 126pp, $22.50.

This slim volume, the proceedings of a conference held at the University of California at Berkeley in 1989, contains solid papers and useful discussions of CD-ROM technology from the perspective of librarians. While it does not intend to be a technical briefing or market report, it is probably of use for anyone considering acquiring CD-ROM's. The papers are admirably up to date, contain much useful practical advice, and address most of the issues without either condescending or becoming unhelpfully technical.

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Management of Recorded Information: Converging Disciplines. Cynthia Durance, comp. New York: K.G.Saur, 1990, 218pp. $36.

These proceedings of the 1989 International Council on Archives Symposium on Current Records, include both the papers and summary of the discussions that followed each. Most of the papers were well worth hearing and remain fresh, having been published in less than a year. The sometimes confused summaries of discussion confirm my impression at the meeting itself (reported extensively in *Archives and Museum Informatics* 3, no. 2:7-8) that the meeting never quite jelled.

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Nancy Melin Nelson. **Computers In Libraries '90. 5th Annual Conference Proceedings.** Westport, CT: Meckler, 1990, $40.00 237pp.

This volume, which consists of long abstracts (or short precis) of papers given at a conference held in Washington DC, March 5-7 1990, provides a way to browse for research that might be of interest. The authors' postal addresses are all kindly provided.

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☐ Ephemera

Accountants for the Public Interest. **National Directory of Volunteer Accounting Programs.** Washington, DC: API, 1989, 90pp. $3. API, 1625 I St. NW, Suite 717, Washington DC 20006.

This Directory, organized by state, lists over 200 accounting programs providing pro bono services to non-profit organizations, small businesses and even some categories of individuals. Each entry describes the scope of services and criteria for qualifying.

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National Endowment for the Humanities. **"Awards for Documentation of Museum Collections, 1985-1989."** June 1989, Typescript, 14pp.

This list of over 50 grants given by the NEH since 1985 (including grants made under the program for planning for computerized documentation which has now been suspended) almost screams for an evaluation of their success. Hopefully that is on the NEH agenda.

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National Association of Government Archives and Records Administrators (NAGARA). **A Guide for the Selection and Development of Local Government Records Storage Facilities.** A. K. Johnson Jr., comp. NAGARA, 1989, 12pp., $5 each, $2 in quantities of 25.

This basic advisory pamphlet, advertised as the first in NAGARA's "Local Government Records Technical Publication Series", is issued in cooperation with the National Association of Counties and the International Institute of Municipal Clerks. If local governments acquire it and follow its guidance, they will certainly improve their existing records centers.

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Society of American Archivists. **"Nationwide Strategy for Archival Preservation."** Chicago: SAA, 1990, 8pp.

This paper by Paul Conway is primarily a report on a conference of archivists and preservation administrators held at the University of Pittsburgh in September 1989. It includes their strategy document "Preserving History's Future: Nationwide Initiatives for the Preservation and use of the Archival Record".

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SOFTWARE

Reviews

Accession. Release 1.0, Oaktree Software Specialists, 515 East Altamonte Drive, Suite 250-9A, Altamonte Springs, FL 37201; 407-339-5855. Runs on Macintosh Plus, SE or II with at least 1MB of memory and a hard disk. $795 for one computer/one "version" plus $395 for each additional "version" and 30% additional for each additional computer on site. Shipping, handling and sales tax are extra. A fully capable demo disk with tutorial, limited only in that it will store no more than 50 records, is available for $20.

DAVID BEARMAN

Overview

Accession is a breakthrough in museum computing on a number of fronts. It is the first commercial system to employ the Macintosh, the first system priced at under $1000 that a small museum would not be making a mistake to acquire, and the first commercially available museum collections information system at any price to use an exclusively graphical interface.

Accession comes in several "versions", each of which has slightly different data in the main object record. Versions currently offered include: history (e.g., cultural artifacts including art), natural history, paleontology, archaeology, and geology. All versions have Catalog number, Accession number, Accession Date, Collection and Source data fields but differ on the names of six or so other fields. Archaeology includes vocabulary controlled fields for artifact name, artifact type, material, culture/period and site name/number, while History has classification code, category, object name, culture/period and name of manufacturer or artist, and Paleontology has phylum, genus, species, subspecies, period/epoch and formation. All versions share the structure of three other files for recording data on Donors, Accessions and "Other" (e.g collections management actions).

All versions of **Accession** share the impressive functional capabilities of the software which include excellent data entry facilities, easy to use search features, flexible reporting, good documentation and a basically well conceived architecture. The few failings of the system as a collections information tool can easily be corrected by feedback from the first users, leaving OakTree with the challenge to develop add-on products or extensions to make **Accession** a collections management system and position it in a multi-user environment.

Building a Database

Users will be impressed by **Accession** from the start. The documentation is a handsome, well organized, indexed, nicely printed 120 page spiral bound manual that reads like English and contains images of the screens in nearly every state. Following its instructions, user will have no difficulty installing **Accession** or initializing it with their password (which they may want to remove during active periods of data entry because the system insists on it whenever data in authority files is being altered and for changing most collections management data, rather than assuming you are still logged on). For anyone who resists using printed documentation, an online tutorial is available to take the user through all parts of the system.

From the first screen on, users are presented with a screen on which the top option bar has the familiar Macintosh menu: Finder, File, Edit, Options, Windows and Help. Using the mouse, the user can pull down the menus from the bar to reveal options, clicking on these to activate appropriate screens. Data can be conveniently cut and pasted throughout the application and moved to a clipboard for other applications to use by employing standard Macintosh Edit features (Cut, Copy, Paste, Undo, Clear, Select All). Throughout the product, standard Macintosh methods govern the interface mechanics - double clicking on fields that might contain text opens them to full page size, pointing and "shooting" copies data from value tables and vocabulary lists into fields.

Users will probably begin by trying to enter data into a new "collection". They will be prompted to name the collection, because the system allows them to set up separate collection databases to reflect their departmental structure or the organization of their holdings, or to build a unified database. Each database will have all four basic files - item, accession, donor and "other" - each consisting of fixed length fields displayed on a single screen and variable length text fields entered through the same screen but expandable to their full length. The initial item screen will be governed by type of collection once this is defined, and the cursor will locate itself in the first field. Users may enter data in each field and "tab" to the next field, or use the mouse to locate themselves anywhere on the screen. Before leaving a screen, however, they will need to tab through all the fields, presumably as a protection against missing data (but in practice slightly annoying). **Accession** also defines some required fields, such as ACQUIRED BY on the donor screen, and CATALOG NUMBER on the Accession screen which must be filled or the record will not file. Usually the fields demanded are logically necessary, but there are instances, like STATE on the Accession screen, where they are not and users will probably want to request a change.

Most fields are validated either by data type (number, date, currency with decimal added), value tables (called "fixed lists", although they are user modifiable) or vocabulary lists (called keyed-name lists). Data will be checked interactively as the user tabs from the field. If the data matches the definitions in these value tables, or matches uniquely the first several letters of a value in a vocabulary list, it will be accepted and/or translated to its full value, but if not, the user will either encounter a message (not always terribly helpful) or be shown a vocabulary list at the alphabetical location of the term entered. The

user may add the keyed term to the vocabulary list, or select a value from the list, and has the option of going on to another field with the caveat that the unvalidated record will not save. Because values look up on the first unique characters, a method is provided to add a term, such as "kit" to a list already containing the term "kitchen" which will otherwise automatically translate into the field when "kit" is entered.

For fields that may have free text, the user can key in data in a wrap around mode on a full screen within a limit for each text field of 32,000 characters (which should be more than adequate). Fields such as "Remarks" can be sub-divided using a unique feature called "define prompts" that provides user defined textual sub-fields for different types of "remarks", each of which can be searched independently and copied from different source records.

Accession has a copying function that will be the envy of many systems 50 times its price. Data may be copied from the previous record, from a record viewed previously (the user searches while in entry mode, views a similar record, and invokes copying it), from a named record (making it possible to build "template" records to copy), and from the accession record to which a collection is linked. Copying will not override data previously entered into the record by keystroke, so the user can first fill out the differences, and then copy. Users may selectively copy the remarks fields and "prompt" sub-fields. And users can import word processing lists of terms into vocabulary lists when initializing the system rather than having to enter each value separately.

On the whole, **Accession** permits recording of data that will be adequate for most museums. At present the number of data elements recorded about holdings will fall short of that desired by some institutions (although it will probably exceed what they will be able to capture for quite a few years) and the structure of the data recorded about collections mangement activities is text rather than transactions. As a collections information system, it does not record data about donors adequate for membership and development purposes, although it is adequate for documentation of collections. The two most serious defects in the data now are the absence of means of explicitly representing hierarchical links between records (groups/wholes/parts/pieces) and the lack of a thesaurus structure for terms. But these features are also less than adequately realized in products many times the price of **Accession.**

Searching the Database

Searching **Accession** employs several inter-related functions: Browse, Search, Set Data Sort, Set Record Information and Set Display.

The simplest search method is to browse a collection, by naming the collection and using the First, Previous, GoTo, Next and Last buttons to navigate through the main object records of the collection. "GoTo" will select a specific record based on catalog number. Users may branch to linked files for each object by selecting donor, accession or "other" files.

More sophisticated searching involves filling in the values to be searched on a screen which prompts for all fields. Full Boolean logic (AND, OR, NOT) may be employed between values in fields, wildcards may be used for character strings in any position (initial, middle, end) in words or phrases, and range searching is supported. Full text searching is available for text fields and it can employ Boolean operators, although this will involve character string matching in unindexed data and therefore will be fairly slow in a large database. By making a search criterion into a "list", searches of several different files may be combined.

Once search criteria are specified, users can identify up to seven levels of sorting for reports, and define the specific fields that should be seen on the output, by popping field names from a complete list onto a target list on the Set Data Sort and Set Record Information screens. Options provided on these lists permit a rapid count of the records satisfying the search, a display of unique values for each sort field together with a count of occurrences, and a very nice "Preview" format function which displays the fields selected for the information display as they will be viewed or printed. All reports can be written to printer, to screen, or to disk (in both reusable and word processing formats). Search strategies may be named and retained for easy reuse.

Overall the search features of **Accession** far exceed what would be expected in a product at this price. Simple searches of a database of nearly 4,000 records required less than a minute, although a six level sort took a substantial time. The major retrieval weakness I found has to do with the way dates are represented in **Accession.** In an effort to provide for the kind of vagueness in dates (circa, before, after) that is common in museum cataloging, **Accession** provides a date field consisting of a qualifier, a year or year range, and a millennium indicator (AD, BC). In searching, the system looks at the year or year range without applying any algorithms for the qualifiers, meaning that items cataloged as circa 1923 will not be retrieved in searches for items from 1924-1945. Providing local definitions of the meaning of qualifying terms would get around some of these problems. (On the plus side about dates, **Accession** provides natural history curators with the ability to record seasons). A more fundamental problem is that Boolean operators cannot be applied between fields in **Accession** searches except by using multiple lists.

Reporting and Utilities

Accession comes with a very powerful report writer and easy exporting of reports to word processors. Because we are dealing with a Macintosh, reports can be specified by font and font size in addition to having a title, calculating totals, displaying in page or column format, and other standard reporting features. Extensive texts may be entered at the point of defining reports or drawn into the report from other sources to explain fields or entries. With

practice I believe this feature could be employed to build catalogs and guides to holdings, complete with editorial materials, as reports from the database, although my first efforts were pretty trivial.

Accession operates with pointers in records in place of much data. The result is great efficiency in storage, ease of updating (a change in an authority file automatically updates every record with that data as well as making future records conform), the ability to report quickly on missing sequence numbers in catalog number sequences, and powerful features for "copying" parts of records and texts. The disadvantages are that **Accession** does not permit users to remove terms from keyword lists or value tables because to do so would threaten the data integrity. Perhaps in future releases **Accession** could provide a utility program that would make such changes and update the pointers.

Summary

Accession is the best value for money yet produced by the museum collections information system vendors. It is powerful enough for a small museum to use as is, and could meet the needs of curatorial departments in a larger museum. While it lacks support for the procedures of collections management, it holds skeletal information about provenance, storage, conservation, appraisal, exhibition and deaccessioning actions and can easily accommodate extensive textual information regarding loan, conservation, exhibition and publication history. Because of the Macintosh Finder, it is smoothly, if loosely, coupled to all other Macintosh applications including desk top publishing, and has the potential to be integrated with hypercard stacks that guide staff or the public through activities involving the collections. Hopefully this product will find a receptive market and be with us for some time. Personally I look forward to seeing it grow to a multi-user system with additional functionality for larger museums. □

Collection Management System (CMS). Release 2.1b, is a shareware product for archival accessioning and cataloging using MARC AMC. It runs on IBM PC compatible systems under MS-DOS version 3.0 or greater and requires 640K RAM and a hard disk. The system is written in Clipper (a product of Nantucket Software compatible with DBase III Plus and IV) and uses R&R Report Writer by Concentric Data Systems to generate its reports. A donation of $30 is requested from users, and additional copies of the system in a variety of media distribution formats with a 39 page spiral bound manual are available for $10 from: Scott L. Moore, P.O.Box 51001, Shannon Station, Durham NC 27717.

DAVID BEARMAN

Scott Moore, the distributor of this shareware product, originally developed the system in a modified form for "a major national repository". He states that his "purpose in developing this system is to allow repositories an inexpensive way to acquire a collection manager". By making copies available at the cost of distribution, and encouraging others to copy the product, he has succeeded in his first objective leaving us only to ask whether, and when, it should be used.

First, two caveats. One, applicable to all shareware, is that what you see is what you get. The second, applicable to any Clipper system, is that you can't easily change it, and there may be no way to escape some limitations such as the stringent length limits and non-repeatability of fields.

Second, this system is intended to permit you to enter archives accession data, link it to archives collection records, conduct searches on keywords, and print some standard reports including accessioning statistics. If you want to do more than this, note the second caveat and reconsider.

When you first install **CMS**, following the fault free instructions in the user's manual, it will spend about a minute indexing all its files before asking for your initials and the name and address of your institution (which it assumes is a "library"). **CMS** then uses this initialization information to "personalize" your main screen. The installation process also initializes your printer and installs a run-time version of the report writer.

The Main Menu provides three options: Update and Inquiry, Reports, and Maintenance. The system requires that you begin by adding an accession, as is logically true but does not always conform to real world cataloging. In **CMS**, an accession record will create a dummy collection record automatically.

The accession record consists of one screen in which the user enters a small number of MARC fields: main entry (1xx), title (245), extent (300), summary & scope note (520), source of acquisition (541) biographical/historical note (545), added entries (6xx,7xx), hierarchical geographic access term (752) and location (851). In addition, the user can enter a few Y/N fields to record aspects of status (Addition? AACRII? Accession Printed? Cards Printed? Restricted? Approved? Cataloged?) as well as acquisition price, appraised value and priority code. While this menu of fields might be adequate for some institutions, it should be noted that only the 541 field has separately identified subfields; other fields would presumably have to be defined as equal to subfield a. Also, the lengths of fields as defined in **CMS** are severely constrained; a biographical note can contain up to 156 characters, of which only 40 are displayed, and the comments field is limited to 110 characters. The scope note appears to be of nearly unlimited length and employs a word wrap - I created one over 160 lines. The number of repeats permitted to fields for which repeating is typically required is also quite constrained; users are permitted only eight added entries (6xx/7xx) and eight accretions to a collection.

Collection records consist of the descriptions of the accretions linked to them. They display an aggregated item count and measurement of linear footage on the screen. Every accession must be linked to one and only one collection; a collection can be linked to up to eight accessions. In a display of brittleness often associated with shareware, there is no facility for transferring accessions from one collection to another; if an error has been made, deleting a collection will delete the attached accessions and reconnecting them will require remaking the entries and packing and reindexing the database.

Searching CMS online means searching the subject added entries or the main entries. Main entries must be known precisely. For subject searches, an alphabetical list is invoked through which the user moves by arrow keys or the first letter of the desired term. The term is selected (one term per search, no operators for combining them), and a predefined brief record is displayed.

The **Collection Management System** writes Accession Lists, Catalog Cards, Cataloging Statistics, a Fund Report, a Priority Report, a Status Report, a Collection Summary, a Fiscal Year Accession Summary, and a Fund Summary. These reports are predefined, although the user may select a "filter" to define the set of records to be reported on by date or subject. These reports are not elegant, but are serviceable for their system defined purposes. Report formats can be modified by using the full version of R&R Report Writer (dBase III Plus version).

All in all, the **Collection Management System** is a quite good piece of shareware. I did not encounter any bugs, but I didn't exercise the system very much. I didn't try to build a large database either, but the limited quantity of data allowed for a record should make it possible to build relatively large databases, even though these consume the full fixed length defined for the data for each record. The greater problem clearly will be searching since the search features are very limited.

Which brings us back to the initial question. When and why should we acquire this system? The approach to accessioning supported by CMS is not atypical, and the need it meets for a repository is real, but I find myself unable to envision a situation in which I would recommend the acquisition of this package when commercial software designed for archival applications with full MARC data, with the ability to write screens to guide local procedures, with substantially more flexible searching and reporting capabilities, and with the support of the vendor, is sold for less than $1000. I hope Mr. Moore will take the product he now has, enhance it by adding greater flexibility and richer data, and sell it commercially so that he can provide support for users. As it now stands, the very users who most need help with systems will be tempted to acquire this virtually free package, and no one stands to benefit.

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Demonstration Disks

Masterpiece Master Software Corporation [8604 Allisonville Rd., Suite 309, Indianapolis IN 46250; 317-842-7020] has released **Masterpiece**, a collections management system. Master Software has been well known to museums for its fund raising package Fund Master. Masterpiece reflects the strengths and weaknesses of the earlier product. Like Fund Master, it is a well documented, easy to use package with strong report writing features. Like Fund Master, **Masterpiece** also supports quick searching on predefined indexed fields (eight in this case) and uses coding in many areas to conserve space and ensure consistency. These features tend to be strengths in fund raising software but appear more as weaknesses in the collections arena. The provision of five screens for textual comments, and one predefined screen for history also reflects a carryover from the fund raising area, where it is more than adequate, to collections, where it is probably only barely adequate if that. The IBM PC package is offered at $2900 for a single user and $4900 for the networked version (Novell). You should get the demo disk (which is a show only, without any functionality), to decide this for yourself. I wouldn't judge this product to be a masterpiece, at least not yet.

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IDS SYSTEM ONE. Institutional Data Systems Inc. [2 Hamilton Ave., New Rochelle NY 10801; 800-322-IDS1 or 914-632-2332] is distributing a demonstration disk for its non-profit fund accounting and fund raising system for the IBM-PC. The demonstration, which is in slide show format, provides a quite detailed view of a very full-functioned system, even though it does not give the user an opportunity to explore the functionality. From the demo disk and literature I would recommend considering **IDS System One** for fund accounting in an organization with fewer than 99 funds and 999 programs. The price is reasonable - $995 for General Ledger, less that $5000 for a two user system for museum accounting/fund raising with all relevant modules. The accounting functions are very strong. The fund raising features are less developed, although by using the interface provided to Lotus and Word Perfect they would be adequate for most museums.

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Vendor & Product News

David L. Clark has released **History Database**, software for cataloging photograph collections consistent with MARC, running under Pick. The system costs $185 and comes with a 16 page manual covering various aspects of using the system and general cataloging advice. [David L. Clark, 24851 Piuma Rd., Malibu CA 90265-3036]

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AMARC Data International, an Australasian data conversion firm, which has done data conversion for the Australian War Memorial (Canberra), the National Film and Sound Archive (Canberra), the Australian Museum (Sydney), Artbank (Sydney) and the Powerhouse Museum (Sydney) as well as numerous libraries, is interested in taking on North American museum projects. [Sharon Barnett, Marketing Executive, AMARC Data International Ltd., 10 Pitt St., Parramatta NSW 2150]

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Vernon Systems has published several "Technical Bulletins" elaborating on new developments to **Collection.** "Date Recording and Retrieval" discusses how **Collection** handles dates, date ranges, vague dates, seasons and named cultural time periods, and how to search these. "Activities Management" discusses the application of procedural control; "Authority Module Enhancements" discusses the new authority features provided as a consequence of converting to Advanced Revelation. An eight user version of **Collection** has been installed at the San Bernardino County Museum. Contact Jennifer Reynolds, Special Projects Assistant (714-798-8570). [Vernon Systems Ltd., P.O.Box 6909, Auckland New Zealand]

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Access International is now at 432 Columbia St., Cambridge, MA 02141, with new phone (607) 494-0066 and fax (607) 494-8404.

☐

Philips Electronic Ltd. has announced a "strategic alliance" with Provenance Systems Inc., which gives Philips exclusive rights to distribute Provenance's software which manages electronic records in accordance with the FOREMOST (Formal Records Management for Office Systems Technology) requirements articulated by the Canadian Treasury Board.

☐

Intel, Inc. has announced the first DVI authoring system, **Authology: Multi-Media,** for $4500 with user runtime versions priced at $300. According to the pre-release announcement, the software utilizes mouse, dialog boxes, and pull-down menus and fully supports DVI Audio Video Subsystem (AVSS) video, audio, stills and DVI bitmapped images. [Kevin Gazzara, Intel Princeton Operation, CN 5325, Princeton NJ 08543-5091; 609-936-7617]

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As a result of restructuring of **Apple Computer Inc.,** the Community Affairs Department has canceled the second year of "Explorations," its grants program for museums. An unrelated program to offer discounts of 30-35% through local Apple dealers is in effect for museums submitting an approved Apple agreement, a photocopy of one page of IRS form 1023 and a copy of their 501(c)(3) certificate. [Call 800-538-9696]

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Chadwyck-Healey Inc., has completed its microfilming of the entire collection of **Sanborn Fire Insurance Maps** from the Library of Congress for the period 1867-1970. The maps are large scale plans showing the outline of each building in a city, including its size, shape and construction and the location of its windows and doors. Street names, property boundaries, building use and other details are noted. Shading indicates different building materials. Chadwyck-Healey has also adapted **MundoCart,** a digital map of the world on CD-ROM, for NeXT. **MundoCart** consists of over 350 megabytes of data from the 280 maps of the U.S. Navy's 1:1,000,000 scale Operational Navigation Charts. According to the announcement, "the product provides high resolution spatial and thematic detail on waterways and bodies of water worldwide as well as displays of 25 commonly used map projections with infinite zoom capability and the ability to extract data for use in any other NeXT application." [Chadwyck-Healey Inc., 1101 King St., Alexandria, VA 22314; 703-683-4890]

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CD-ROM End User 1, no.11 (March 1990) includes a special section dedicated to cartographic information on CD-ROM. In addition, pp.86-87 list 15 newsletters and journals devoted to geographic information systems.

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Pacific Information [979 Eaton Drive, Felton CA 95018; 408-335-5599] published the 1989/90 edition of its **Directory of Information Management Software for Libraries, Information Centers, Record Centers** ($59). Compiled and edited by Pamela R. Cibbarelli and Edward John Kazlauskas, the new edition contains over 200 entries, each usually one page in length and covering the same ground as the 1987/88 Directory. The applications covered include acquisitions, cataloging, circulation, interlibrary loan, media and audio-visual booking, records center management, and serials control. The Directory has alphabetical, applications and hardware indexes. In addition to containing up to date information covering an additional 25 products (gross increase as a result of many drops and adds), and being printed with a laser printer, the new edition improves on the old by explicitly identifying the comments following each entry as "Supplier's comments". A new line lists reviews and publications provided by the vendors, which is a handy feature, but it would be made more useful if the editors made these comprehensive, so that unflattering reviews would be noted as well. Libraries and information centers should definitely acquire this directory; records centers will find six companies providing products listed here.

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New Media Graphics Corporation has released **Video-Windows,** a board providing the capability of showing NTSC video in windows with VGA or EGA overlays. We should see some products using this technology soon. [New Media Graphics Corporation, 780 Boston Rd., Billerica MA 01821; 508-663-0666]

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STANDARDS

Rules for Archival Description

Kent Haworth, Chair of the Bureau of Canadian Archivists Planning Committee on Descriptive Standards reports in the *ACA Bulletin* 14, no. 3 (January 1990) on final approval given to three of the projected fifteen chapters in the Rules for Archival Description. Chapter 1, General Rules for Description; Chapter 2, Rules for Multiple Media Fonds and Collections; and Chapter 13, Analysis: Rules for Multi-level Description, are currently being translated and will shortly be made available. Unfortunately funds have not been made available for the position of education officer, but other PCDS work is continuing. PCDS has been invited to send representatives to serve on the Canadian Committee on Cataloging (CCC) and the SAA Committee on Archival Information Exchange, and acceptance of both offers is anticipated.

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MARC Accessioning Pilot Project

The National Archives of Canada, Office of Descriptive Standards issued a final report on its MARC accessioning pilot project in January. The project was designed to learn how and whether MARC and AACRII standards should be employed at the accessioning stage in the records life-cycle at the NAC. It concluded that there were very substantial benefits to the institution to be gained by using these standards at the initial acquisition phase. It found that the standards revealed substantial inconsistencies in existing practices, led to unexpectedly high re-use of authority data after even one year of trial, and had the potential of saving considerable redundant effort in the cataloging and description stage. [Available from Hugo Stibbe, Senior Archival Descriptive Standards Officer, National Archives of Canada (OADS), 395 Wellington St., Ottawa K1A 0N3, CANADA]

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Survey of Loan Policies

The AAM Registrars Committee, Professional Practices Subcommittee issued in a report in May on its 1989 Loan Survey. The survey found that while only a very small percentage of institutions do not loan, a very large percentage of art museums (40%) and smaller percentages of history (21%) and natural history museums (9%) do not have written loan policies or procedures. The survey analyzes the written policies that do exist in a way useful for museums developing or reviewing loan practices. It inclues a statistical analysis and a draft "Statement of Practice for Borrowing and Lending". Museums should comment on the report now, before it becomes a standard.

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The National Research and Education Network (NREN)

If you haven't already started to see the acronym NREN bandied about, brace yourself. NREN, the National Research and Education Network, is the designated successor to ARPANET and INTERNET. NREN is to be a universally accessible telecommunications channel connected to a vast array of educational resources, but at the moment it is only an idea, being explored in some funded research and advanced in legislation introduced by Albert Gore (S1067) and Doug Walgren (HR 3131). When ideas have a big enough price tag and a large promise however, everyone gets in on the act of trying to shape them. Several recently received reports related to NREN were particularly interesting to me:

"Information Technology and the Conduct of Research: The User's View" is the title of a report issued by the Panel on Information Technology and the Conduct of Research of the National Academies of Science and Engineeering and the Institute of Medicine. These influentual bodies organized a distinguished group of scientists to address a serious question and produced a useful report and the recommendation to form NREN. The value of the report resides primarily in the many easy to understand accounts it gives of the way in which information science is changing the research process. [National Academy Press, 2101 Constitution Ave., NW, Washington, DC 40418, $10 prepaid check or credit card]

Edwin Brownrigg was contracted by the Library Information Technology Association (LITA) to prepare a white paper on NREN for delegates to the state conferences scheduled to precede the July 1991 White House Conference. "Developing the Information Superhighway: Issues for Libraries" succeeds in defining the issues in terms that should be accessible to anyone. When it is published, get it.

Joshua Lederberg and Keith Uncapher's "Towards a National Collaboratory: Report of an Invitational Workshop held at the Rockefeller University March 17-18, 1989" presents a research agenda for the establishment of a facility through which scientists around the world can collaborate in research. The agenda addresses issues of the system architecture, development of tools and technologies and establishment of test-beds to validate both the technology and organization.

"Electronic Networks, the Research Process, and Scholarly Communication: An Empirical Study with Policy Recommendations for the National Research and Education Network" (46pp. + appendices) by Charles R. McClure, Ann Bishop and Philip Doty is a study of the extent of current use of electronic networks by researchers, and a set of proposals for policies to increase the effectiveness of a national network. The study contains a useful bibliography of recent literature on academic networks (which also seems to include a slightly idiosyncratic bibliography on the sociology of scientific communication).

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