Some Thoughts and Designs about Archives and Automation, 1984

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Abstract: Archivists traditionally use provenance-based means for intellectual control of collections, while many researchers have requested subject-based means of access. The former approach involves records management, and the latter involves information management. Automation makes it possible for a repository to employ both approaches in one integrated system. Reasons why this has not yet occurred involve theoretical, practical, and financial considerations. The author reviews an automation "wish list" and suggests how the computer, which can arrange, remember, count, and communicate data, may be used in relation to archival functions, which involve appraisal, accession, preservation and conservation, records processing and management, description, and information retrieval and reference. The essay concludes with important questions to be answered when considering automation and some suggestions as to ways archivists might employ innovations in the making of a modern archives.

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In 1965 T. R. Schellenberg, in *The Management of Archives*, stated the obvious: that an archivist "cannot arrange records by both their source and their subject." Schellenberg indicated that archivists, when they adhere to the principle of provenance, "seem to run counter" to what users want them to do, "i.e., to arrange and describe records in relation to subject." Historians, he wrote, "almost always" want subject description, but this classification scheme "obscures the rationale of the records, i.e., the reasons why they came into being."[1] Today, thanks to the computer, the archivist can print guides in which records retained in their original order are described *and* can create indexes in which the information content of records is described by subjects, dates, places, and other qualifying terms chosen by the archivist. The former approach follows the principles of records management; the latter follows principles of information management, often called information retrieval. Automation makes both approaches to records control possible and compatible. Indeed, automation makes debates over which approach is correct unnecessary and misleading.

Systems that combine records management and information management functions will soon be the sine qua non of modern archives. The prospects have never been better for management of records in a way that preserves original order and yet allows for precise intellectual control. Information control throughout the entire repository process is the key to modern records treatment. Technological developments in the last twenty years have made it possible to satisfy both the archivist's need to preserve original order and the researcher's desire for subject access.

By combining records management and information management principles into one system, the archivist can have a powerful advantage over other information professionals. Yet at this time, the power is essentially latent because few archivists think of themselves as information professionals. Development of a system that serves both traditional (records management) and newer (information management) needs will benefit the archivist, who traditionally provides a wide array of information procurement possibilities but sacrifices time (speed) for range (comprehension). The very selective and specialized "narrow-ray" approach taken by the usual information professionals and specialists of the scientific and corporate world offers them relative retrieval speed, but it may not meet the increasingly comprehensive demands of users in the "Information Age." As archivists improve their ability to transfer information from the source (records) to the user, they and their work will take on added significance. The amounts of seemingly unconnected data grow larger, however, and the archivist must find ways to improve retrieval speed without sacrificing breadth of coverage.

The first step is to achieve a broad overview of archivists' relationship to the mountain of data before them. This step includes consideration of the archivist's role. Richard Kesner has reminded us that the last decade has seen a "blurring of distinction between the keepers of knowledge: librarians, archivists, and data processors"[2] and, I might add, in-

[1]T.R. Schellenberg, *The Management of Archives* (New York: Columbia University Press, 1965), p. 96. For a recent discussion of provenance and original order see Frank Boles, "Disrespecting Original Order," *American Archivist* 45 (Winter 1982): 26–32.

[2]Richard M. Kesner, "Historians in the Information Age: Putting the New Technology to Work," a paper given at the Organization of American Historians session on "Dialogue Among Historians, Archivists, and Information Scientists," Philadelphia, Pa., 2 April 1982, pp. 3, 24.

formation resource specialists. Kesner called on archivists, along with librarians, to become "vendors of information." The call also comes from a United Nations report in which it is stated that archives should be "recognized more and more as a part of the information industry" and should engage in use of "automated data processing, information retrieval and application, abstracting, indexing and dissemination techniques."[3] I can hear archivists from California to Carolina responding, "Yes, but how?"

The solution is not simple. Many archivists and records managers are experiencing a decline in allocations but a rise in the expectations of records users. Historians, whose own quantitative abilities have improved greatly since the 1960s, are today aware of dramatic improvement in the bibliographic data base environment. The number of historians famliliar with the computer has increased dramatically, while patience with traditional finding aids has decreased by an inverse scale. Mary Jo Pugh states that "new fields of historical inquiry and current interest in cross-disciplinary research has created a revolution in reader's expectations and needs."[4] Yet archivists, even those willing to experiment with new methods, have encountered many difficulties. Some archivists probably concur with historian Lawrence Douglas' recent statement that "We seem to be at the front end of applying computers."[5] My guess is that many of us are at the same point of development with the computer. When confronted with something new, professionals often experience exhilaration, followed by disillusionment when problems arise, followed by a sense of accomplishment and refinement when those problems are solved. Some large, successful (and expensive) automated library systems have been developed in the United States. Their functions include automatic circulation, cataloging, and accounting. At least one system, GEAC, installed at New York University and the Smithsonian, among other places, includes automated subject searching, which uses the subject descriptors in the traditional card catalog. David Bearman has suggested that automated library systems may be adapted to archives. Experiments have been made with ILS (Integrated Library Systems) at the New York State Archives to see if that software can be adapted to archival needs. The results so far are inconclusive. An automated system designed specifically for archives, with assistance from archivists, would have the most likely chance for success.

The archivist who would become a vendor of information realizes that systems of information control are different from library systems because the sources are different both in quantity and in quality. The difference in quantity is a matter of scale. For instance, if, in place of the books contained in the Library of Congress, we preserved all the documents used by authors in writing their books,

[3]United Nations Educational, Scientific and Cultural Organization, "Regional Training Centre for Archivists—Accra," United Nations Development Programme, Paris, 1981, UNDP/RAF/72/71 Terminal Report.

[4]Mary Jo Pugh, "The Illusion of Omniscience: Subject Access and the Reference Archivist," *American Archivist* 45 (Winter 1982): 40. James W. Vaupel, Associate Professor at Duke University's Institute of Policy Sciences and Public Affairs, recently researched a subject that involved demography, actuarial mathematics, epidemiology, reliability engineering, and economics. With the use of a few "key words—mortality, failure rate, reliability," he stated, he could run a bibliographic search in automated data bases that would have taken weeks if he had used card catalogs and indexes. Cf. J. A. Turner, "Bibliographic Data Bases Help Researchers Gather Information More Efficiently," *Chronicle of Higher Education*, 14 December 1983, 27.

[5]"Software and the Historian: A Revolution Yet to Come," *OAH Newsletter* November 1983, p. 23.

the District of Columbia would be filled with nothing but repositories. The National Archives and Records Service would take over the Capitol, the White House, and all other federally owned buildings for its holdings. The difference in quality is a matter of content. Generally, the information contained in libraries is already assembled in books, serials, etc. Indexing can automatically follow because the authors have associated parts to wholes, linked individuals to subjects, and organized by type the characters or groups about whom they have written. Archival records cannot and do not come preassembled for the user because no one can foretell what use, what intellectual arrangement, the future researcher will have in mind. The material controlled by archives, especially for large organizations, was not created with some intellectual order in mind. Therefore, archivists, who must look for their own kinds of links, cannot use an author's, an historian's, or even a librarian's approach. As a result, until recently researchers generally had to understand the record group they wanted to search—almost to the point of becoming archivists themselves. "This position is not tenable in terms of contemporary research," states archivist Fred Miller, "and our basic finding aids seem as antiquated as the old calendars of state papers."[6] Modern archival systems, which take an information approach to records, need not be handicapped by inadequate or antiquarian constraints. Archival systems are required that allow for searches according to a record group's provenance or according to the intellectual order established by the researcher.

Modern archives have not one but two primary objectives: to preserve the records entrusted to them and to lead the researcher to the needed information. The second is impossible without the first, and the first is meaningless without the second. Out of respect for the origin of the records and any useful order in which the records of an organization were created and maintained, the archivist does not rearrange and disrupt that order. At the same time, because the researcher will rarely be an expert on the records of an organization (or may not even know if the records of a given organization contain information to his or her interest), the researcher, until recently, has depended on the archival staff's familiarity with its collection record content and has relied on the limited finding aids of the repositories. It is possible to create an automated system that will give archivists and records managers better control through easier creation of traditional finding aids; software that will create newer finding aids which provide on-line searches of either full text or bibliographic and record citation data bases; and reports sorted by fields, subjects, geocodes, etc. Before examining these possibilities we must clear away some archival cobwebs.

Several years ago Richard Lytle conducted an archival experiment in which he attempted to measure accuracy of document recall by comparing provenance-based and subject-based control systems. He demonstrated an excellent example of theory construction using the inductive method. He described subject retrieval by two methods: the Provenance Method (P) and the Content Indexing Method (CI). In the P method, the intellectual control is established by using terms created by knowledge "about the file—the activities of the creating person or organization," and the information is retrieved by "linking subject queries with

[6]Fredric M. Miller, "Social History and Archival Practice," *American Archivist* 44 (Spring 1981): 121. Lester J. Cappon discussed the difference between the historian's and the archivist's crafts in "What, Then, Is There to Theorize About?," *American Archivist* 45 (Winter 1982): 19–25.

provenance information." In the CI method, intellectual control is established by using terms created by establishing "an index or catalogue" and information is retrieved by matching subject queries with these terms. The latter approach is derived from librarianship. Lytle based his entire experiment on this distinction yet stated twice in the opening paragraphs of his report that while the methods are "theoretically distinct," in practice they "occur as complementary approaches."[7] Indeed, in theory they overlap also.

Archivists should not disagree on this issue. For some time we have worried about the evidential and informational approach to records, while noting frequent overlap in practice. Archivists could resolve many of the problems related to this two-sided approach to records by assimilating them under a dynamic concept of description which encontent. Abandoning the discussion will do more than free archivists from the dangers of a false polarization and the necessity to borrow from librarians; it dangers of a false polarization and the necessity to borrow from librarians; ti will also help clear the air about the difference of the two respective activities.

Lytle's experiment and analysis are excellent, but he does not carry his own evidence far enough. He implies that the P approach is derived from archives while the CI approach is derived from library science. Both, we are learning, provide access to information, and the significant distinction between approaches may not be so much in the origin of the information as in manipulation of the information data base (used here in a generic sense and not referring only to automation), which is created to be manipulated so that it can be searched in a number of ways by the researcher. Integration of both approaches (Lytle's P = records management and Lytle's CI = information management or information retrieval), however, does require use of the computer. Furthermore, once we understand how the computer works, the solution, in theory, is very simple: the archivist provides the data about the records and the computer arranges the data, remembers the data, counts numerical information about the data, and helps the archivist communicate information about the data. The computer can even store the information on the records (in words, numbers, and pictures) and display or print it on command.

The use of computers by archivists, is, however, in its infancy. Not one repository in the United States is satisfied that it has the hardware, software, training, and personnel configuration sufficient to do the entire job. At this time no software package exists that will provide on-line services for the array of archival needs. There is not even a report planning document that relates the body of archival needs to computer resources. In summary, there is no software that provides for on-line data entry and retrieval, Boolean searching, and hard copy (batch) reports in the various areas and formats of records management and information control required by archivists.

Some software has been written expressly for archives. Notable is SPINDEX, which, among other accomplishments, was used to print a guide for the National Archives and Records Service. Max Evans, however, in a project based on SPINDEX and designed to

[7]Richard Lytle, "Intellectual Access to Archives: I. Provenance and Content Indexing Methods of Subject Retrieval," *American Archivist* 43 (Winter 1980): 64–75; and "Intellectual Access to Archives: II. Report of an Experiment Comparing Provenance and Content Indexing Methods of Subject Retrieval," *American Archivist* 43 (Spring 1980): 191–206. The results of the experiment were first reported in Lytle's 1979 doctoral dissertation "Subject Retrieval in Archives: A Comparison of the Provenance and Content Indexing Methods," at the University of Maryland.

"contribute to a national guide project data base,"[8] found that for many reasons —logistical, financial, systemic, and rational—such a national guide was not feasible in the early 1980s. The New York State Archivist, Larry Hackman, issued a report in 1983 in which he noted the archival needs of New York and claimed that the use of automation was essential for future growth, effectiveness, and efficiency.[9] His report, however, must be followed by a specific planning document, if New York's needs are to be adequately articulated and refined to the point where the most efficient use of software can be applied.

An Automation Wish List

Suppose the planning had been done, suppose the archival egg had been laid. What would a software package sufficient to the task look like? It would have manuals; support systems, such as training, installation, and maintenance; and a fair degree of machine independence. It would make use of all the standardization available, including the MARC format; the National Information Systems Task Force (NISTF) Data Element Dictionary; and, for state archives, the State Archives and Records Management Terminology, Measurement, and Reporting Standards prepared by the National Association of State Archives and Records Managers (NASARA). What would such software do?

Some computer applications related to archival needs are given in Figure 1, the Archival Automation Matrix. The computer performs four kinds of functions that can help archivists do their jobs. These are identified by the headings of the four "computer functions" columns in Figure 1. The headings, in archival terms, are arrange (computer people often use the term manipulate), remember (memory or store), count (compute or calculate) and communicate (access or network). The functions of archivists are grouped into six modules labeled appraisal, accession, preservation and conservation, records processing and management, description, and information retrieval and reference. These exclude the records survey function and personnel and most accounting functions. Although the matrix is not exhaustive, it does contain suggested ways in which the computer makes it possible for archivists to use one system in which records management and information management capabilities are combined. By combining the six modules with the four fields of computer activity, the matrix forms twenty-four units. The overlapping among the units is inevitable because the commands which the computer will execute draw information from the data base (files) in complimentary ways. Each unit lists specific tasks.

Many archival/computer functions simply involve the use of automation to perform tasks that can be done manually. Unit five, for example, includes the task "generate guides," a manual function of long standing. On the other hand computer output microfilm in unit nine clearly requires the use of a computer. Sometimes reports (as in unit sixteen) can be generated manually, but a computer, with its ability to store and manipulate large amounts of data, greatly facilitates the operation.

A few words about computer functions in each module seem to be in order. First, however, a word about automation and the modules. Meyer Fishbein stated that Europeans experienced serious difficulties when trying to build large com-

[8]Max Evans, "The Midwest State Archives Guide Project: An Evaluation," a report submitted to the NHPRC, 1982.

[9]"Report on State Archives Information Systems," New York State Education Department, Bureau of Administrative Analysis, April 1983.

plicated systems in which most archival functions were integrated. A cautious approach would be to build a modular system. This has several advantages: (1) The modules can be installed separately. Some archives may not need all of them. (2) The modules may, nevertheless, be designed to interact as one integrated system. (3) During the modular design process, some of those finished early may be tested. (4) Refinements and enhancements (an inevitability in automation) may be added to specific modules. (5) Custom adaptations for specific installations (repositories) can be made without affecting the overall design. In other words, a high degree of standardization may be achieved which, at the same time, allows for repository-specific adaptations.

The six modules presented are for analytical purposes. They could become six independent but interactive parts of one system; however, such considerations would require the creation of a target document by archivists and system analysts working together. In the target document, file structure, screen and report formats, and data base construction and maintenance would be described to show system feasibility.

As every archivist knows, appraisal is a primary and crucial archival activity. Because it is necessary, especially in public archives, to keep forms and create reports concerning policies, legislation, decisions, and schedules about records not held by the archives, these important "records about records" can get out of order or out of date, or both. Imagine two scenes, one old and one new. In each, an archivist is seated at a desk. In the first, a long row of metal, four-drawer file cabinets stretches as far as the eye can see. In the second, the files are gone, but atop the desk is a microcomputer and a printer. The computer terminal makes it possible for the archivist to look at all the appraisal activities scheduled for a specific week or month as well as the appraisal schedule for a given office for an entire year or decade (Figure 1, unit 1 task b). All this could be done within minutes. At the same time, the file could be updated if the archivist had new information to add. The archivist may want to know if certain restrictions to access apply to the office whose schedule is on the screen. Again the information is readily available with just a few strokes on the keyboard. Figure 2 shows a sample screen of information.[10] Policy, legislation, and restriction information can be provided in the spaces indicated. The archivist can see that certain access restrictions will apply and that the incoming collection is sizeable and contains several forms of media. By stroking just a few more keys in the menu-driven system the archivist may learn about medium, volume, arrangement, and condition (Figures 3 and 4). These sample screens accommodate information about various media, including paper, audio tape, and photographs. Again, by manipulating the keyboard, the archivist can call to the screen statistics about staff workload connected with the last accretion. Finally, the archivist may want to send a message to the agency involved. This would most likely require exiting from the data base being used and accessing another data base designated for interoffice electronic mail. The process takes about one minute. Then the archivist types a message, which appears on the screen

[10]The information categories on this and subsequent screens are taken from the SAA *Forms Manual*; the NISTF Data Element Dictionary; NASARA, State Archives and Records Management Terminology Measurement and Reporting Standards; and other sources. The last lines on the screens indicate commands the user may give to the computer to access more menus or screens for data entry, editing, or information retrieval.

Computer functions:	ARRANGE	REMEMBER
Archival Function: APPRAISAL	1. a-create authority files b-create appraisal schedules arranged by dates, offices, record groups, sub-groups, and series c-create disposition recommendations, e.g., accession, destroy, film, etc. d-note final dispositon	7. a-establish offices of origin lists b-note significance of records c-retain legislative access restrictions and policy information regarding record groups
ACCESSION	2. a-prepare accretion information forms b-prepare accession register c-create a report to verify contents/identification d-generate schedules for records destruction by group, year, method	8. a-generate restriction information, e.g., access, copyright, etc. b-store provenance information c-store biographical information d-store deed of gift information e-note nature and type of records
PRESERVATION CONSERVATION	3. a-monitor work progress by projects, e.g., fumigate, rebox, clean, repair, relabel b-monitor film inspection steps	9. a-generate computer output microfilm b-generate videodisk index and interface
RECORDS PROCESSING AND MANAGEMENT	4. a-produce institutional activity reports b-generate and update location register c-generate schedules for processing and describing d-generate information at selected levels about records in other modules and units	10. a-generate shelf lists b-establish logs for records arrangement, types, conditions c-generate institutional contact lists
DESCRIPTION	5. a-generate guides b-create inventories arranged by titles, series, dates, etc. c-generate file folder heading lists d-generate subject descriptions, using also geododes, qualifiers and dates e-generate name indexes	11. a-generate abstracts b-enter full texts c-reproduce fully-developed guides
INFORMATION RETRIEVAL AND REFERENCE	6. a-search by natural language b-search by control vocabulary and qualifiers c-search by proper names d-use Boolean logic e-generate reports by various sorts f-create mailing lists	12. a-list record, cartridge, etc., check-out/in b-search texts by keywords or full text searching

Figure 1

COUNT	COMMUNICATE
13. a-create statistics for activities re: staff, time, budget b-report appraisal results by volume and medium, e.g., paper, film, etc.	19. a-send messages to respective agencies via electronic mail
14. a-generate reports on volume by record group, sub-group, series, etc.	20. a-communicate accessions information to internal workstations and other repositories
15. a-compute staff and material time/costs by record groups, projects, and methods b-report necessary preservation and conservation by kind and volume c-report preservation and conservation *treatment by kind, volume, and* assigned personnel, e.g., microfilming by units and staff time.	21. a-communicate with vendors b-print conservation/preservation schedules and logs
16. a-generate reports on record groups (at desired level) in regard to volume, cost, reference use, space use b-measure cost/benefit ratios c-track projects to funding bodies	22. a-communicate joint project steps and results to participants b-communicate intra- and inter-institutional needs and plans
17. a-report staff time for various descriptive activities at various record levels	23. a-build data bases for independent and/or shared access
18. a-produce content analysis b-produce user statistics c-produce user charges by ID and record group used, reprographic services used	24. a-disseminate guide information to other repositories through networks and/or MARC format b-create networks for information exchange

Figure 1

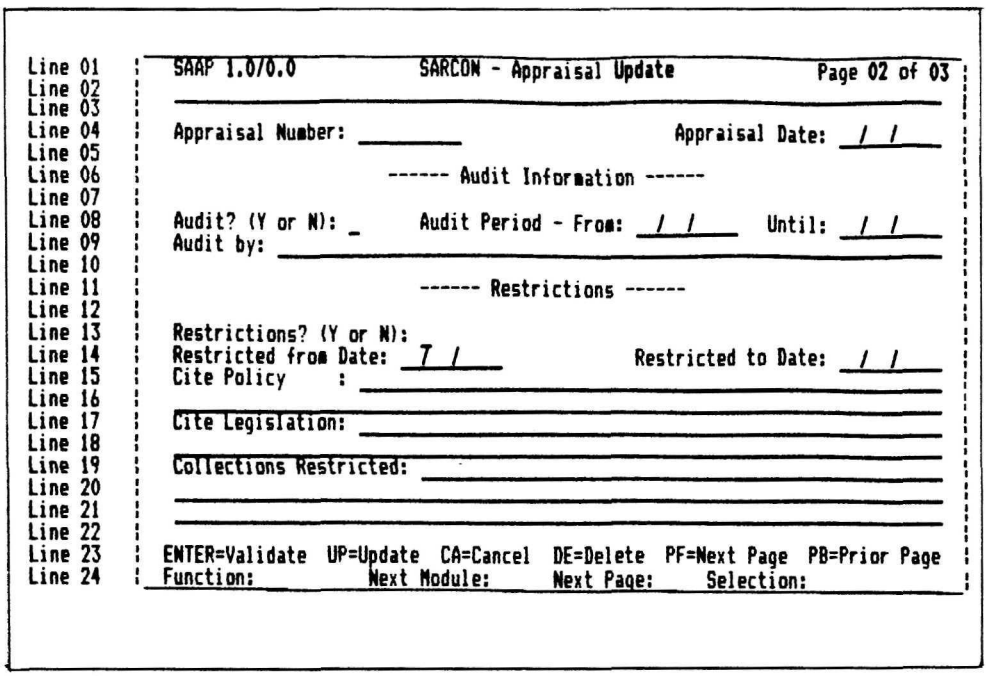

Figure 2

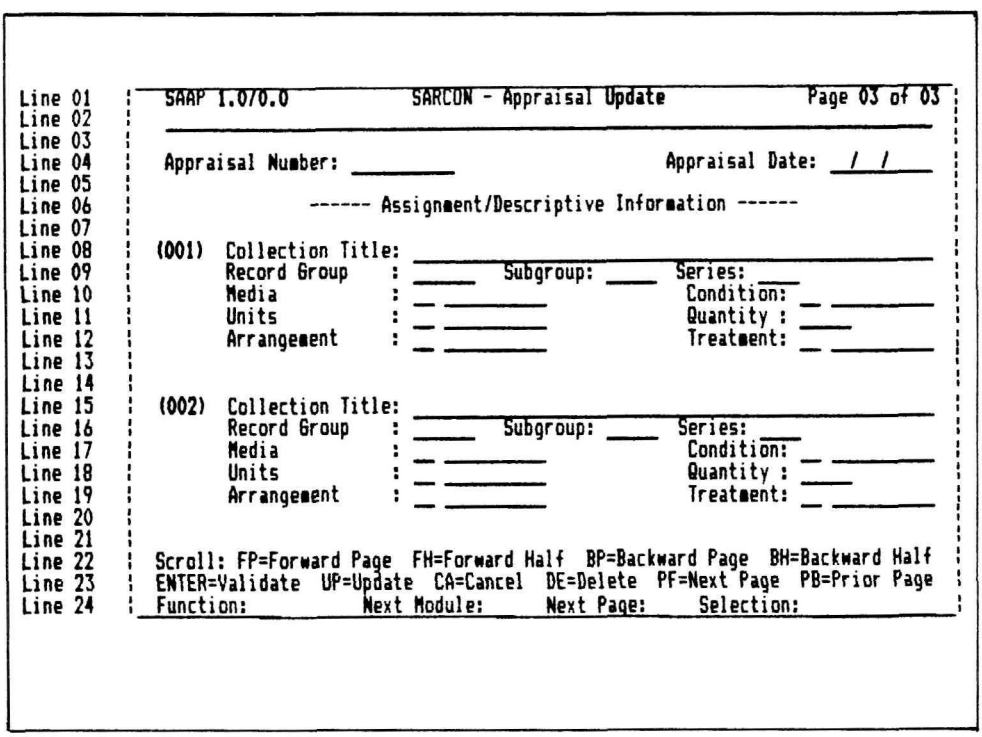

Figure 3

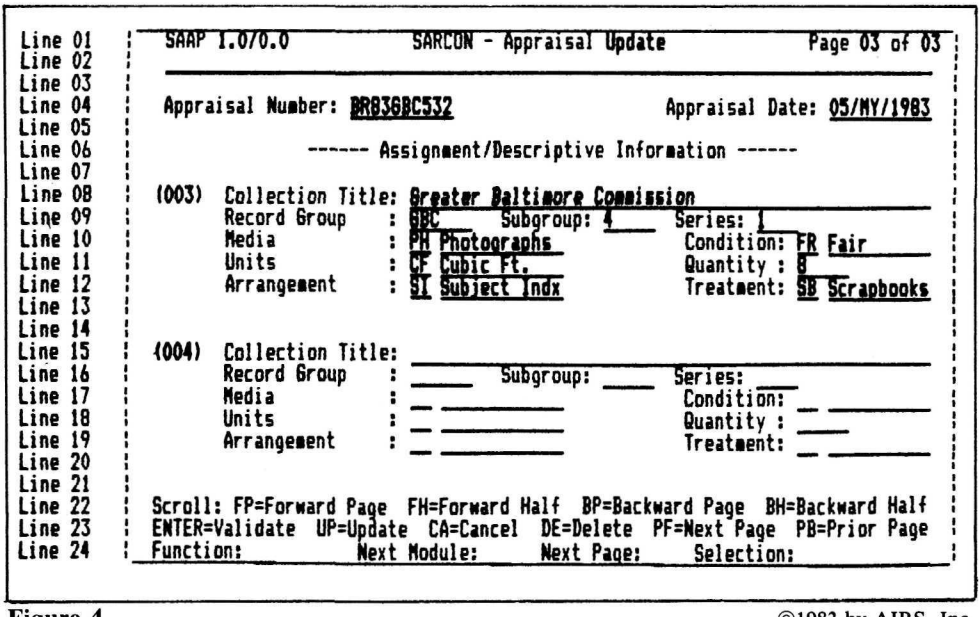

Figure 4 ©1983 by AIRS, Inc.

(Figure 1, unit 19, task a). If the archivist, having been reared in the age of paper, decides that a paper record would be of use, he or she gives the appropriate command, and the printer dutifully prints out the message. Whether or not it is needed, the piece of paper gives the archivist a feeling of security.

Space limitations prevent a similar examination of all the functions a computer could perform in each of the other modules. A brief review of the other five modules follows the arrangement noted in the box below.

Accession, or accretion, as the process is sometimes called, requires the creation of registers and reports in which information such as volume, deed of gift information, and retention and disposition schedules is presented. Since software can be designed to sort data in any number of fields, the archivist may obtain computer-produced reports that list, for instance, all the records scheduled for destruction by various means in a given year or all the various years in which different groups, sub-groups, or series are

Module	Tasks
Accession	report generation (Figure 1, unit 14)
Preservation/Conservation	reprographic technology (Figure 1, unit 9)
Records Processing and Management	record tracking (Figure 1, unit 4)
Description	generate abstracts, guides, texts (Figure 1, unit 5)
Information Retrieval and Reference	searching (Figure 1, unit 6)

scheduled for destruction. In other words, the data can be arranged by year; by record group, sub-group, or series; or by whatever field is desired. When reports are needed, a sort program is used. These reports are not generated from a small printer attached to a terminal or microcomputer, but are printed by a high-speed printer (Figure 1, unit 2, task d). On the other hand, a screen for a specific accession may appear as in Figure 5. Legal information related to transfer and disposition is recorded on this type of form. The archivist may want to charge agencies or organizations for specific costs. Such information related to rates could be stored and retrieved as suggested in Figure 6.

Preservation and conservation techniques frequently involve the creation of Computer Output Microfilm (or microfiche), commonly known as COM (Figure 1, unit 9, tasks a and b). The storage convenience is obvious. Often the medium of record information storage is changed from paper to film. Specific information for the management related to this process is provided in Figure 7 in which dates, hours of work, charges, and responsibility are noted.

Not enough is known about the life of film as a storage medium. Film life is affected by the environmental conditions under which it is stored. Videodisc, a more recently developed medium, offers greater promise in the long run, but its high cost—approximately $20,000 for the original production of each disc—is generally prohibitive.

A much less expensive version of the videodisc may soon appear on the market. This new version will work on a floppy or Winchester (hard) disk and will be available for microcomputer users. The computer can also be used to program instruction that is interactive between the user, the CRT, and a videodisk player/monitor. This will enable a user to search a data base and find and play a program segment on a videodisk that has recorded, for instance, an interview or a musical performance. These develop-

```
Line 01   SAAC 1.0/0.0          SARCON - Accession Update          Page 02 of 06
Line 02
Line 03
Line 04   Accession Number: _____                    Accession Date: __/__/__
Line 05   Current Location: __ _____                 Loc. Status   : _____
Line 06
Line 07                     ------ Transfer Information ------
Line 08
Line 09   Transfer Signatorie: _____________________________________________
Line 10   Transfer to: __                          Title Transfer Date: __/__/__
Line 11   Location: _____ Location is Temporary or Permanent? (T or P): _
Line 12
Line 13
Line 14                     ------ Disposition ------
Line 15
Line 16   Retention from Date: __/__/__              Retention to Date: __/__/__
Line 17
Line 18   Scheduled Accession by Archives    : __/__/__
Line 19   Actual Date of Transfer to Archives: __/__/__
Line 20   Scheduled Destruction Date: __/__/__
Line 21   Destroyed? (Y or N): _                  Actual Destruction Date : __/__/__
Line 22   By Whom: __ _____                       Method: __ _____
Line 22
Line 23   ENTER=Validate  UP=Update  CA=Cancel  DE=Delete  PF=Next Page  PB=Prior Page
Line 24   Function:          Next Module:      Next Page:     Selection:
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Figure 5

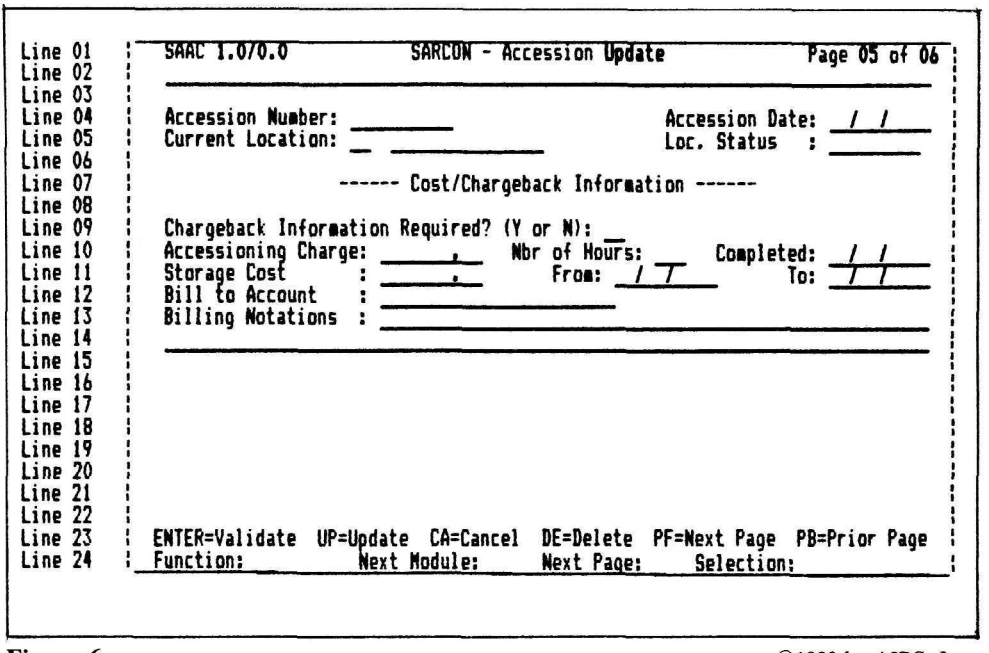

Figure 6 ©1983 by AIRS, Inc.

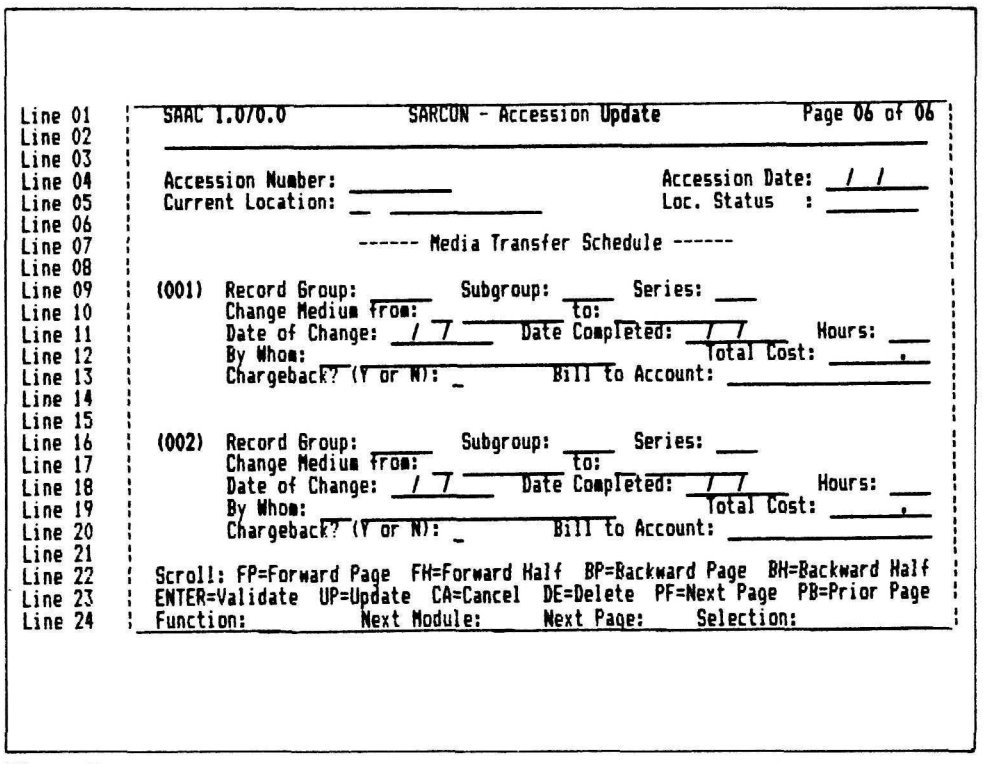

Figure 7 ©1983 by AIRS, Inc.

ments have exciting implications for the archives' efforts to recapture the past.

Records processing and management includes a goal suggested in the previously mentioned reports of the Midwest State Archives Guide Project and New York State Archives. This involves a feature that would integrate information from the various modules. As long as the information flow can be integrated while the modules remain independent, the mischief perpetrated by the gremlins of computer systems may be kept at a minimum. The goal is to develop a tracking system wherein, at a given level—for example, the sub-group level—an assigned identifier code (numeric or alphanumeric) would enable an archivist to track, through the other modules, all the information available about the records in that specific sub-group (Figure 1, unit 4, task d). This tracking system could use menus that would indicate the various kinds of information, relevant to a particular record unit, available in the other modules. Frequent updates would be important to this function and, at least in part, would occur automatically as a result of normal data entry in the modules. At the records processing stage (Figure 8) attention must be given to tasks such as fumigation, removal of clips and staples, deacidification, or humidification. The processing checklist in Figure 8 contains details about location, various steps, and staff input. The transition screen from processing to describing is suggested in Figure 9 where information is provided about record order, record indexing, or creation of finding aids.

The description module has potential for on-line information report generation. Abstracts, full texts, and guides are all included here, because the computer can arrange, remember, and count. Its ability at this level has been partially demonstrated by the SPINDEX projects at the National Archives and other institutions. Full-text entry and searching

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Line 01   SAPC 1.0/0.0      SARCON - Processing Checklist Update      Page 02 of 04
Line 02
Line 03
Line 04   Record Group: ____          Appraisal Number: _______ Date:  /  /
Line 05   Subgroup    : ___           Accession Number: _______ Date:  /  /
Line 06   Series      : ___           Current Location: __ _____       _____
Line 07   Title       : _____________
Line 08
Line 09   ----- PREPARATION for STORAGE -----   -- Date --  By   Hours  -- Cost --
Line 10   Rubber/Tape Removed                    /  /       __   ____     ____.__
Line 11   Clips & Staples Replaced               /  /       __   ____     ____.__
Line 12   Repairs                               /  /       __   ____     ____.__
Line 13   Copies Made of Clippings               /  /       __   ____     ____.__
Line 14   Duplicates Removed (see below)        /  /       __   ____     ____.__
Line 15   Folders Replaced                       /  /       __   ____     ____.__
Line 16   Reboxed                               /  /       __   ____     ____.__
Line 17   Fumigated                            /  /       __   ____     ____.__
Line 18   Deacidify                            /  /       __   ____     ____.__
Line 19   Humidify                            /  /       __   ____     ____.__
Line 20   Flatten                             /  /       __   ____     ____.__
Line 21
Line 22   ** Duplicates removed were Returned or Destroyed? (R or D):
Line 23   ENTER=Validate  UP=Update  CA=Cancel  DE=Delete  PF=Next Page  PB=Prior Page
Line 24   Function:          Next Module:      Next Page:     Selection:
```

Figure 8

```
Line 01 | SAPC 1.0/0.0        SARCON - Processing Checklist Update          Page 03 of 04 |
Line 02 |                                                                                |
Line 03 | ______________________________________________________________________         |
Line 04 | Record Group: ____          Appraisal Number: ________ Date: _/_/___           |
Line 05 | Subgroup    : ___           Accession Number: ________ Date: _/_/___           |
Line 06 | Series      : __            Current Location: _ _______     _______            |
Line 07 | Title       : ___________                                                      |
Line 08 |                                                                                |
Line 09 | ----- ARRANGEMENT of RECORDS ----    -- Date --   By    Hours   -- Cost --      |
Line 10 | Original Order Maintained            _/_/___      __    ____    _____._         |
Line 11 | New Order Established (see below)    _/_/___      __    ____    _____._         |
Line 12 | Folder Heading List Completed        _/_/___      __    ____    _____._         |
Line 13 | Index Made                           _/_/___      __    ____    _____._         |
Line 14 | Inventory/Register Completed         _/_/___      __    ____    _____._         |
Line 15 | Finding Aids Completed               _/_/___      __    ____    _____._         |
Line 16 | Series Description Completed         _/_/___      __    ____    _____._         |
Line 17 | Type(s) of Description: ____________________________________________            |
Line 18 | ______________________________________________________________________         |
Line 19 | ______________________________________________________________________         |
Line 20 |                                                                                |
Line 21 | ** If a new order was established, enter New Order: _ _______                  |
Line 22 |                                                                                |
Line 23 | ENTER=Validate  UP=Update  CA=Cancel  DE=Delete  PF=Next Page  PB=Prior Page    |
Line 24 | Function:       Next Module:       Next Page:      Selection:                    |
```

Figure 9 ©1983 by AIRS, Inc.

```
     CITATION DISPLAY WITH ABSTRACT: MEDIUM = PAPER                              S5

   Qnnn = xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

   RECORD GROUP: xxxxxx       SERIES: xxxx        FOLDER: xxx        POSTING
   SUBGROUP    : xxxxxx       BOX   : xxxx        ITEM  : xx         zzz,zz9

 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
                                  KEYWORDS
 ------------------------------------------------------------------------------
 ------------------------------------------------------------------------------
 _ Press: 1 - Page foward      4 - Last Page                 P - Print this screen
          2 - Page backward    5 - Return to 'Results' screen
          3 - First page       6 - Enter another query       Z - Master Menu
 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

Figure 10 ©1983 by AIRS, Inc.

systems such as LEXIS or WESTLAW provide time-saving but costly and somewhat risky recall. That is, entire texts are entered, using up a large amount of disk space, and success of this rather vicarious approach depends on whether or not the researcher enters the same words or text elements that occur in the text. Full-text entry of the thousands of documents in archives makes this approach unrealistic. When abstracts are prepared, however, the size of the data base becomes more manageable. Abstracts may be searched either by a key word system or by using natural language to find passages that use the identical words. A more precise system for records control involves describing a collection with a control vocabulary along with the use of geographic, proper name, and chronological descriptors. If qualifiers such as terms depicting treatment, format, activity, and focus are added, the searcher can construct a very precise search profile with high probability of avoiding many "false drops." These capacities are suggested in Figure 1, units 5 and 6.

The screen in Figure 10 suggests an abstract of collection material described to whatever level the top lines indicate (record group through item). There is sufficient space on the screen for six to eight sentences in the abstract, and scrolling would increase this to one or more pages in length. The information retrieval and reference module can provide circulation information. Through using this module and inquiring about a specific subject area, an archivist may locate a film in the archives. In the process of searching, the archivist may have used a "help routine" or "tutorial" to discover how to inquire about the film. Having located the film, the archivist can return to the "remember" function of the computer system (Figure 1, unit 12, task a) and might discover that the film (cartridge) is checked out. The archivist can then inquire who has the film and when it is due to be returned.

An archivist searching for a particular manuscript, such as a transcript of an interview, using a quite specific search profile, might get a result in the form of the screen in Figure 11. If, for example, an archivist were interested in anti-Semitism as experienced by Russian Jews in America, the type would be SUB (for subject), the code might be alphanumeric, such as (TB 0604),[11] and the term would be anti-Semitism. One qualifier could be transcript. The term Russian could be added to the query. The actual entry on the terminal would be SUB = anti-Semitism and QUA = transcript and ETH = Russian. A range of dates, perhaps 1945–1955, might be added, and a place, such as New York. The system would require the archivist to designate whether New York was the city or the state. This would be done by placing STA or CIT as the type indicator before the term. If the data base contained such a reference, the information about the location of the document would appear in the record group, subgroup, series, box folder, and item headings. Of course, the information could be given only to the actual level of description in any collection. The original inquiry would appear at the top of the screen following Qnn. The query elements when entered might appear as in Figure 12. An advanced system would not require both codes and terms entry.

An Automation Check List

There are many things to check when considering use of a computer for archives. Computers now come in micro, mini, and mainframe versions. Because

[11]W.T. Dürr and Paul Rosenberg, *The Urban Information Thesaurus: A Vocabulary for Social Documentation* (Westport, Conn.: Greenwood Press, 1977).

```
CITATION DISPLAY WITH DESCRIPTOR INFORMATIONO: MEDIUM = PAPER                      05

 Qnnn = xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

  RECORD GROUP: xxxxxx      SERIES: xxxx        FOLDER: xxx        POSTING
  SUBGROUP    : xxxxxx      BOX   : xxxx        ITEM  : xx         zzz,zz9

TYPE    CODE       TERM                              QUALIFIER
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx
xxx     xxxxxx     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx    xxxxxxxxxxxxxxxxxxxxxxxx

_ Press:  1 - Page forward        5 - Return to the Query Results screen
          2 - Page backward       6 - Enter another query
          3 - First page          P - Print this screen
          4 - Last page           Z - Return to the Master Menu
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

Figure 11

Type	Code	Term	Qualifier
SUB	TB0604	Anti-Semitism	
OUA	100		Transcript
ETH	MK3280	Russian	
TIM	194555		
STA	5600	New York	

Figure 12

of advancements in computer core memory and disk storage space, most archives will probably find a microcomputer adequate. Unfortunately, at present there is no software system that will perform all the tasks identified in the automation wish list.

Among the many questions one needs to ask are: What are the automated file characteristics? Is the data alphanumeric, numeric, graphic, or a combination of these? In what language is the software, and what operating system does it employ? There two kinds of software: operations software and applications software. The latter searches the data base but must be accompanied by operations software in order to communicate with the machine. On what computer will the software work? Is there a control vocabulary, or thesaurus; and, if so, how is it maintained? How are batch operations—report generation—supported? How are on-line operations supported?

Does the software have good documentation; and does the package include a good user guide as well as a systems manual, operations manual, reference manual, and training manual? Does the software vendor support the software and/or participate in a user network? Will the system accommodate multiple files and simultaneous file searching by various users, or is it restricted to single file search and single users? Will the system provide for networks and communication? Is data entry on-line, and is there an edit function to help insure validation? How easily can entries (code or text) be changed or deleted? Will the system allow on-line, full-screen editing? Can the systems store the queries during a work session? Will the query language allow searching by post coordinated terms and use of Boolean operators? Will the query search by fields as well as by subjects? Will the software allow some custom changes with relatively little expense? What statistical information will the system generate? Will the circulation functions create a borrower master file, permit item changing, record returns, control overdue items, and produce circulation statistics? Does it use bar codes and light pens? Does the system support data security? Must users know programming on their own, or is the system very friendly? Is it menu-driven?[12]

Although the world of archival automation is in its infancy, some important experiments have been made, and some standards have emerged. Establishment of the MARC format for data exchange is an important step. A manual for its use will be published in 1984. Also, the Data Element Dictionary produced by the National Information Systems Task Force and approved by the Society of American Archivists has achieved some standardization of terms.

The new world of archival automation in 1984 will require people with courage, vision, and, above all, tenacity. Archives originally carried out information management functions; but, especially since World War II, their emphasis has shifted toward records management. Many records managers left the Society of American Archivists to form an association around their own specialty. Unfortunately, from an archival point of view, records management is not the concern of records managers alone. It cannot be segregated from the archival responsibility. Now that many records are kept only in machine-readable form, documentation, retention, and format are important to the archivist. Machine-readable records, stored on magnetic tape, are virtually meaningless without the applications and operations software and the manuals that back them up. Also, the target documents, logic and flow charts, and machine listings, which culminated with the creation of the system, constitute the *respect des fonds* of automated programs. This situation merely underscores a point archivists already know: that cooperation and/or assumption of records management is crucial to the collection program of modern archives.

Until archivists either take over, or become full partners in, the records management function, they will fail to fulfill their responsibility to preserve information that may be significant to planners and policy makers as well as

[12]Several very helpful articles in which these concepts are reviewed and which are written in "*English*" by authors informed about automation can be found in *The DEC Professional*. They are: Robert Walsh, "System Development Methodology—Part 3: The Feasibility Phase," 2 (July 1983); John Gram, "Elements of Software Support: Planning and Preparing for It," 2 (July 1983); and John Gram, "Elements of Software Support: Managing the Support Effort," 2 (September 1983). For a good introductory article on micro applications software, see David Gabel, "How to Buy Data-Base Software," *Personal Computing*, February 1984.

future scholars. Furthermore, since the late 1960s, roles for people designated as "information resource specialists" or "information resource managers" have emerged outside of the archival field. Archivists did not lose work so much as identity. The volume of records still available to the archivist has assured work. The institutional archivist is responsible for information which, in many instances, has become mountainous. Executives, managers, policy makers, and researchers, however, are interested in more precise forms of recall and summary than archivists currently can provide. Automation will make it possible for archivists to fulfill requests for information without having to surrender long-standing theories and policies.

Raising the funds to do the job may not be easy. Yet, in the long run, the savings of personnel and staff time will be very significant. Furthermore, if the skills of archivists, records managers, and information resource specialists are united into one information-centered function, as conceptually they already are, the administrator—by whatever name—in charge of the information generation, storage, retrieval, and dissemination—by whatever name—will not be able to keep the money away.

The Fellows' Posner Prize

For the past several years, the Society has had but one award for writing, the Waldo Gifford Leland Prize, given for the outstanding separate publication of the preceding year. Article-length contributions to archival scholarship, however outstanding, received no special recognition or incentive. Consequently, the Fellows of the Society have offered, and the Council has accepted, the establishment of a new award: The Fellows' Posner Prize. Honoring one of the most outstanding archival scholars and teachers of the 20th century – Ernst Posner – it will reward the best article published in the preceding year's volume of the *American Archivist.* The winning article will be selected by a subcommittee of SAA's Awards Committee. The cash prize will be awarded at the annual meeting.