

AUTOMATED ACCESS PRACTICES AT ARCHIVAL REPOSITORIES OF ASSOCIATION OF RESEARCH LIBRARIES INSTITUTIONS

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ABSTRACT: This article reports and interprets the data collected from the author's 1995 survey of 142 archives and manuscripts repositories at Association of Research Libraries institutions and their automated access practices. The goals of the study are, first, analyzing the data gathered to understand the development of archives' automated access programs and, second, understanding the extent to which libraries' cataloging and automated systems units interact with their institutions' archival repositories in their common mission of creating and maintaining intellectual access to research materials. These interactions are analyzed in areas such as automated applications development and maintenance, use of specific automated access tools, overall responsibility for program planning, and the provision of training.

Introduction

Automated access to archives and the subsequent development of descriptive standards have become the center of daily descriptive practice for the archivist. The pre-MARC days of using SPINDEX are gone, and so are the days when automated access through the USMARC AMC format was the only viable choice. A wide array of automated applications for access is available to the archivist of the 1990s. While archival cataloging in the MARC format through the bibliographic utilities RILIN and OCLC is prevalent, there remains a plethora of automated access choices. For instance, there are MARC-supporting local library systems, PC workstation-based MARC-supporting software, PC workstation-based non-MARC archival management software, access to automated resources through local area networks (LANs) and wide area information servers (WAISes), general word processing and database files, and the Internet through World Wide Web (WWW) servers. And recently, making available digital image files of actual archival materials through networked access is on the rise, quickly becoming

yet another access tool available for widespread use by archivists. The opportunities for developing archival automated access programs abound.

All these access tools, when coupled with data format, content, and transmission standards,¹ bring on the possibility of integrated automated access programs linking archives and libraries. In many instances the same hardware, software, and networking applications are used by both parties. At academic institutions, approximately 81 percent of all archival organizations are placed within the library organization.² These factors make the potential for archives-library collaboration great. In fact, archives are frequently made part of the research library organization on the basis of similar needs in automated access. But is the modern research library really one integrated organization, or is it a dominance model, in which the smaller archives is isolated inside the complex research library? Are research libraries making the necessary changes to accommodate this potential integration, or are they more like segregated battlegrounds where isolated programs fight over limited resources and stake out territory? The prospects for cooperation in collection management inspired this research survey project to examine archival developments in automated access and their interactions with pertinent library units of the same institution.

The goals of this study in automated access practices are to: 1) create a base of data to understand the development of archives' automated access programs in North American research institutions; and 2) understand the extent to which libraries' cataloging and automated systems units interact with their institutions' archival repositories in their common mission of creating and maintaining intellectual access to research materials. The first section of the study uses the data to examine automated access planning and program development in 142 archives whose institutions are members of the Association of Research Libraries (ARL). The sample of archives in this survey project is as large as that employed in any other published study regarding automated access practices. The study is unique in the extensiveness of its investigation of the interrelationships between the archival repository's operational functions and the library's operational functions. Eighty percent of the archives surveyed are part of their institution's research library.

The second section of the study addresses the archives' interactions with their institution's library cataloging and automated systems units. The potential interactions are analyzed in areas such as automated applications development and maintenance, use of specific automated access tools, overall responsibility for program planning, and the provision of training. Factors to be reviewed throughout the article include: software types utilized; approaches to networking (bibliographic utilities, local library systems, and Web servers); the number of MARC catalog records produced; who performs the automated procedures, provides training, and develops and maintains systems; and what types of descriptive information are made available through each system.

Brief Review of Survey Method

The current study stems from survey data collected in 1995. The first part of the survey addressed archival preservation management; the second part dealt with archival automation.³ It utilized a scientific survey to gather data from 170 archival repositories. The target group of this study is units of institutions whose libraries are members of the Association of Research Libraries (ARL) and are responsible for collecting, preserving, and providing access to archival materials. The target group included archival repositories administratively placed both within and outside of the library. Archival units reporting to offices such as college or university president, provost, dean, or the director of a nonprofit cultural institution are included. Of the 120 ARL members, 113 institutions representing 170 archives and manuscript repositories were asked to participate.⁴

The survey instrument, methodology, and procedures were designed following the standard volume by Don Dillman, *Mail and Telephone Surveys: The Total Design Method* (1979). Dillman recommends a tiered approach to gathering survey data, using three to four follow-up mailings to achieve a minimum 80 percent response rate. When the deadline for survey responses passed (June 15, 1995), 142 archival repositories had responded to the automated access portion of the survey on 137 completed survey forms, resulting in an 84 percent response rate.⁵ Three repositories returned the survey, indicating it did not apply to their operation, while four communicated that they would not participate. Only 20 repositories did not respond in any way.

Review of Previously Published Major Archival Automated Access Surveys

The archives-library interrelationship in automated access has been a topic of concern. However, since the early 1980s, original data have been gathered only twice on archival automated access program development in academic settings, once prior to the implementation of the USMARC AMC format, and once where the focus was exclusively on that format. The earliest survey of automated access techniques in academic archives was performed by Leon J. Stout and Donald A. Baird, and reported in their 1984 *American Archivist* article entitled, "Automation in North American College and University Archives: A Survey."⁶ Their pioneering study covered 979 repositories in North America, with 90 percent of them administratively placed in institutions' libraries. By today's standards, its conclusions are dated. For example, one of their major observations is that "the microcomputer revolution and the birth of the MARC AMC format certainly opens new possibilities for automated activities."⁷ Much has changed in archival automated access since the first availability of the USMARC AMC format in 1984. Today, MARC cataloging of archives has become the standard as the later Martin study (published 1994) demonstrates. Stout and Baird did unearth a rich body of automated access activity, however.

The Stout-Baird study focused on automated administrative control and intellectual access to archival materials and the archives' involvement in library automated sys-

tems. By 1984, their survey indicated that 85 percent of the academic archives were entering information into OCLC, with an average number of 182.3 catalog records, representing 25 percent of their holdings.⁸ Stout and Baird add that "in more than half of the archives, this activity was initiated by library administrators or catalog department heads," and "the initiator of the planning was as likely to be the library director as the archivist; and, in most cases, planning was a joint effort between archival staff and library technical operations and systems staff."⁹ These findings have implications for a major portion of the current survey. Stout and Baird also offer comments significant to the future of continuing archival education and archival automation. They found "a rather low level of computer training on the part of these archivists," and "few claimed formal coursework."¹⁰ Their conclusion is that "there can be no doubt that training and continuing education in automation must continue to be a major activity for the profession."¹¹ The words of Leon Stout and Donald Baird could not have been more accurate.

Ten years later, in 1994, another major automated access survey involving academic archives was reported in the pages of *American Archivist*. The results of this study, conducted by Lyn M. Martin in 1992, are found in her article, "Viewing the Field: A Literature Review and Survey of the Use of USMARC AMC in U.S. Academic Archives."¹² Martin's study covers 140 academic archives, and articulates well the important trends present in contemporary archival cataloging. It documents the growth and acceptance of USMARC AMC cataloging in archives. Unlike the current study, however, it focuses only on USMARC AMC cataloging and does not address any of the other avenues for creating automated access to archives. She does not analyze in depth the interrelations between archivists and librarians when the academic archives is located within the library.

Martin found that 57 percent of the archives surveyed catalog using the USMARC AMC format, and she appropriately indicates disappointment that the percentage is not higher. Bibliographic utilities are in high use, with 45 percent of the AMC cataloging archives using OCLC and 25 percent using RLIN, while 62.5 percent use a combination of a local OPAC system with one of these bibliographic utilities. In Martin's survey, 57 percent of the archives used MARC cataloging, while in the Stout-Baird survey of a decade earlier, 85 percent were cataloging in OCLC. This comparison may indicate less use of MARC and bibliographic utilities by archives today and a growing diversity of automated access techniques such as Web servers and local, off-the-shelf, database and word processing software applications.

Perhaps most significant to the current study are Martin's findings about relations between the archivist and the library cataloger. In 60 percent of the archives, collections are cataloged with archivists and library catalogers working together; only 35 percent of the time do archivists catalog by themselves; and in only 5 percent of the cases are archives cataloged by the library cataloger alone. Also, 46.4 percent commented on the survey that "archivists and catalogers should work together." In terms of archival cataloging training, a high 72.5 percent of those archives cataloging stated that 72.5 percent of the staff doing the cataloging have received special MARC AMC cataloging training.¹³ In her concluding remarks, Martin emphatically states that MARC-based archival cataloging "is here to stay," and that "archivists and (library) catalogers are obligated to continue to forge even stronger alliances."¹⁴ The current study will

delve further into archival automated access planning and descriptive program development activities. It will include a look at PC workstation-based word processors and databases, Web servers, and digital imaging of original source material, as well as local library OPAC systems and bibliographic utilities.

Automated Access Planning and Description Program Development

The aforementioned list of automated access tools available to today's archivists is extensive. Some are specifically developed for facilitating access to archives while others are general applications used by virtually everyone with computing needs. The first part of this automated access study attempts to discover which tools are used in creating access to archives and whether they are used routinely or only occasionally. The tools surveyed throughout this project are a mix of workstation-based software and computer network systems presumably used in archives.

For the first part of this study, participating repositories were asked about which automated access tools they use. As indicated in Table 1, archives heavily use general word processing and database software. These applications can be converted into formats such as ASCII, SGML, HTML, and SQL for mounting as searchable files on the World Wide Web. However, the survey did not ask what was done with files from word processors or general databases after their composition.

Table 1: Automated access tools used to provide access to archival materials (n=139)

Archives using listed tools	Number	Percent
PC-based word processing	108	77%
PC-based general database software applications	76	54%
Local/regional library system cataloging	60	43%
Internet: Gopher servers	54	39%
RLIN	53	38%
OCLC	48	34%
Internet: World Wide Web servers	45	32%
PC-based MARC cataloging	42	30%
LANs	35	25%
Other	8	5%
None	3	2%

The responses found in Table 1 illustrate the widespread investment in MARC-based networked cataloging systems (RLIN, OCLC, and local/regional library systems) to provide access to archival description. After PC-based general software, MARC-based network systems rank 3, 5, and 6 in terms of the number of times they were indicated to be used by the archival repositories. The results also show the rise of World Wide Web access as a popular choice to provide access to archives. Since Web technologies became widely available only in the early to mid-1990s, the fact that nearly 40 percent of the responding archives indicate some use of them demonstrates that access to archives via the Web is growing significantly.

Are Web sites' ability to deliver non-MARC formatted description challenging the popularity of MARC-based networked cataloging systems like bibliographic utilities and local library systems? The results in Table 2 indicate that responding institutions perform MARC cataloging much more routinely than they create Web access to descriptive information. While cataloging is routinely performed by a majority, the preponderance of archives using Web servers apply them only occasionally to provide access.¹⁵ Given that MARC cataloging systems are used more, let us look closer at their frequency of use.

Table 2: Frequency of use of selected automated access activities

	Archives using listed activities	
	Number	Percent
Cataloging (n=129)		
Routinely	81	63%
Occasionally	28	22%
None	20	16%
Web/Gopher Server Access (n=129)		
Routinely	24	19%
Occasionally	55	43%
None	50	39%

The survey results supply the raw data to determine the ratio of archival collections to collection-level MARC catalog records. Responding archives supplied their number of archival collections as well as the number of collections cataloged in the MARC format. Of the 142 responding archival repositories, 87 provided this combination of data. The 87 repositories reported holding 134,655 archival collections with 68,364 of them being described in MARC catalog records. Only 50.7 percent of the reported collections have been cataloged in the MARC format (see Table 3).

Table 3: Comparison of archival collections to MARC catalog records (n=87)

Archival collections reported	134,655
MARC catalog records reported	68,364
Percentage of MARC cataloged archival collections	50.7%

Additionally, 16 of the 87 repositories reported that none of their archival collections are described in MARC catalog records (see Table 3A). In other words, 18.4 percent—one out of every 5.43 archival repositories—do not perform on-line MARC cataloging of their collections. Eight repositories (9 percent) reported that all their archival collections are described in MARC catalog records. Table 3A further illustrates that there is a far greater frequency of archives with few catalog records than archives with many. Twenty-six percent (20) of the archives reported they have cataloged 80–100 percent of their holdings. Yet 48 percent (42) of the archives reported they have cataloged less than 20 percent of their holdings.

Table 3A: Percentage of archival collections MARC cataloged in each archives (n=87)

Percentage of cataloged holdings	Archival repositories	
	Number	Percent
100%	8	9%
90%–99%	6	7%
80%–89%	8	9%
70%–79%	5	6%
60%–69%	2	2%
50%–59%	6	7%
40%–49%	3	3%
30%–39%	7	8%
20%–29%	0	0%
10%–19%	11	13%
1%–9%	15	17%
No cataloging	16	18%

The results of this data comparison are incredibly telling in regard to the significant accomplishments archives have made in MARC cataloging in the past 11 years. In short, about 140 academic archives have cataloged half of their combined holdings. But the results also demonstrate that archivists must maintain their resolve to reach their goal of representing all the nation's archival collections through MARC-based bibliographic networks. Further study is necessary to understand why so many archives have cataloged only small portions of their holdings. Certainly staffing levels play a part in the answer. Close attention must be given to the age-old questions of how to retool the staff's skills (to include archival cataloging), as well as how to gain institutional support for professional standards and trends in access methods. Grant-making institutions such as the National Endowment for the Humanities (NEH) and the National Historical Publications and Records Commission (NHPRC) should take note of these numbers as well. Their interests in facilitating automated access to the nation's archival resources for the American public is far from over; much cataloging work remains.

The next phase of this study addresses the types of descriptive information being made available through MARC cataloging network systems, Web servers, and other automated means. Table 4 provides a view of which tools are used to produce and provide access to traditional products of archival description. General word processors are found to be used approximately three to one over general database applications to compose and compile all the descriptive elements listed. The exception to this are subject headings and index terms. Databases are utilized almost as much as word processors when compiling these terms.

MARC cataloging systems (see Table 4) include biographical or organizational history notes and collection-level scope and content notes 52 percent and 62 percent of the time, respectively, while handling series descriptions 38 percent of the time and container/folder listings only 17 percent of the time. Web servers do not share this same frequency relationship with the descriptive elements made available through them. All the elements are reported to be available via Web servers at approximately the same levels, with collection-level descriptions at the high end at 29 percent and container/folder listings at the low end at 23 percent. Where descriptive elements do not have MARC fields designated for them, such as container lists, they appear more frequently in Web servers than in MARC cataloging systems (23 percent vs. 14 percent). However, PC-based word processing files remain the chief way archivists handle this descriptive element, with 62 percent of the archives reporting doing so.

Web servers are used to communicate much more than just basic elements of archival description, however. Their single largest use is to communicate general information about the archives department's activities, programs, and functions (see Table 5). They are also used to distribute subject guides, once existing in a paper-based, published mode only, and to create on-line access to archival exhibits and other forms of archival outreach and public programming. While Web servers are being used in these ways, they are also used to communicate descriptive elements found in traditional archival collection descriptions. Fifty-nine repositories (42 percent) state they use Web servers for this last purpose. Another growing item of interest is the use of Web servers to distribute digital image files of archival documents. Fifteen percent (21) of the

Table 4: Descriptive elements accessible through particular access tools (n=139)

Archives using listed access tools		
	Number	Percent
Biographical/Organizational History Notes		
MARC cataloging systems	73	52%
PC-based word processing files	71	51%
Web/Gopher servers	39	28%
PC-based general database software applications	21	15%
Collection-level Scope and Content Notes/Abstracts		
MARC cataloging systems	86	62%
PC-based word processing files	73	52%
Web/Gopher servers	40	29%
PC-based general database software applications	29	21%
Series Descriptions		
PC-based word processing files	77	55%
MARC cataloging systems	53	38%
Web/Gopher servers	38	27%
PC-based general database software applications	22	16%
Container/Folder Listings		
PC-based word processing files	87	62%
Web/Gopher servers	32	23%
PC-based general database software applications	29	21%
MARC cataloging systems	20	14%
Subject Headings/Index Terms		
MARC cataloging systems	79	57%
PC-based word processing files	33	24%
PC-based general database software applications	27	19%
Web/Gopher servers	24	17%

Table 5: Archival descriptive products accessible through Web servers (n=139)

	Archives with access to listed products	
	Number	Percent
General information about the archives	69	50%
Individual collection descriptions	59	42%
No information	44	32%
Outreach/public programs (histories, exhibits, etc)	33	24%
Subject guides to archival collections	32	23%
Optical images of documents in archival collections	21	15%
Other	11	8%
Electronic text of documents in archival collections	6	4%

respondents state they are providing Internet access to these files, while 48 repositories (36 percent) have made initial attempts at optical imaging activity with their archival materials. Of the same 48 repositories that are performing some optical imaging work, 38 (79 percent) indicated it is an experimental project, for demonstration purposes only. Ten of the 48 repositories (21 percent) state their imaging activities are part of a planned program of routine activity in their archives (see Table 5A). While there are many archives using Web servers, there are still many not using them. Nearly one-third of the repositories (44, or 32 percent) surveyed indicate they do not make any type of information available through the Web. By and large, Web servers are being used to communicate archival information about an archives' services and holdings and, in some cases, the digital images of documentary materials.

Table 5A: Optical imaging activity in archives (n=132)

	Archives engaged in optical imaging	
	Number	Percent
	48	36%
Activity is Experimental/Demonstration Project	38	79%
Activity is Planned Program of Routine Activity	10	21%

The next phase of this study surveyed archives to learn if any of them were devising plans to determine which types of archival information to make accessible through specific access tools. Concurrent with the rise of the Internet, we also see little planning to decide which types of non-MARC formatted descriptive information are made available through it via Web servers (see Table 6). Fifty-seven repositories (41 percent) declared they have no policies or procedures to determine which types of archival description are made available through any of the systems listed. This is an intriguing figure given the high use of cataloging systems, which have very well-structured data content standards, such as AACR2 and APPM.¹⁶ In fact, the highest number of archives responding positively to possessing any policies or procedures in this area replied that they possessed them for bibliographic utilities. The next highest groups are general word processing and database files. This is a good indication that archives are developing some local policies and procedures about what information is made available through certain systems. General database and word processing applications do not have nationally accepted data content standards. Such standards should be developed with an eye toward acceptable standards of professional practice. A great amount of effort is now being applied to building standards for Web-based information as well with the advent of Encoded Archival Description (EAD).

Table 6: Policies/procedures for inputting descriptive elements into certain access tools (n=139)

	Archives with policies/procedures	
	Number	Percent
No policies/procedures	57	41%
Bibliographic utilities (RLIN/OCLC)	39	28%
PC-based word processing files	38	27%
PC-based general database software applications	32	23%
Local/regional library system cataloging	26	19%
PC-based MARC cataloging	24	17%
Internet: Gopher servers	15	11%
Internet: World Wide Web servers	9	6%

Archivists have several ways they can create on-line access to their archival holdings. Yet archives staff need training to utilize the latest technologies and integrate them into their archives' program of descriptive activities. In MARC-based cataloging, archivists are experiencing results of the rising trend of formal graduate archival education.¹⁷ The highest number of archival repositories, 33 (31 percent), responded that their staff received training through a graduate degree with applicable cataloging

courses (see Table 7). This may be a result of the rise in the number of practicing archivists holding M.L.S. degrees, who logically might have gained some exposure to cataloging through the M.L.S.'s library cataloging courses. However, this is only the highest number for any *one* training method. Most significant is that all the other categories of training result in 69 percent of the methods by which archives staff learn to catalog.

Table 7: Sources of archives staff training in automated access

	Archives with staff training	
	Number	Percent
Cataloging (n=105)		
Graduate degree with applicable courses	33	31%
Continuing education programs	31	29.5%
Other	31	29.5%
Library cataloging dept.	8	8%
Library automated systems dept.	2	2%
Web/Gopher Server Content (n=74)		
Library automated systems dept.	31	29%
Other	27	26%
Continuing education programs	8	7%
Graduate degree with applicable courses	6	6%
Library cataloging dept.	2	2%

Continuing education offerings, no doubt principally offered through SAA's very well attended workshops on archival cataloging, represent a very common way by which archives staff learn to catalog (see Table 7). Also, learning archival cataloging in ways not specified in the survey produced a collectively high response for the "other" category, shown in Table 7. Many archivists indicate that self-study is a leading way to acquire archival cataloging skills. Frequent responses are that they are "self-taught," learned "hands-on" or through "experience," and by "reading AMC cataloging books." Several responses also pointed to vendor-provided instruction; "RLG's RLIN training" is an often-supplied survey answer. The "other" category is also filled with responses illustrating that archivists do not learn from just one source. Many "other" responses state they have learned from a combination involving many of the sources listed in Table 7.

Where the new technologies of the Internet are concerned, the dynamics of skills building are different. The library automated systems department is playing a critical role in providing archivists with training to create and mount their files on Web servers (see Table 7). The library cataloging unit is not involved with the archivists' Web training. Perhaps cataloging departments have yet to become knowledgeable about automating intellectual access to collections beyond MARC-formatted, AACR2 cataloging. In the "other" answer category, other library units are arising in the automated access arena. Several survey respondents indicate that the library's reference and/or public services departments are providing archivists with Web training. Other training providers are libraries' Internet coordination committees, library automation liaison officers (not from cataloging or automated systems units), and the parent institutions' computing services unit. As with cataloging skills, acquiring Web content development skills are also occurring through self-study. Many "other" responses such as "read manuals," "self-taught," and "trial and error," are supplied. Most intriguing is the inverse relationship between archival education (graduate and continuing) and library-based training with respect to archival cataloging and archival uses of the Web. The results in Table 7 show that, unlike the case in archival cataloging, graduate and continuing archival education in 1995 had not yet responded to the use of the Web, adapting their curricula to include this emerging access tool. These sources, for the most part, are now beginning to provide introductory Internet education and training for their archival students.

Integrating Automated Access Planning and Program Development between Archives and Libraries

In addition to the aspects of automated access program development just examined, there are factors external to archives that can make a positive impact on their development. Library automated access programs can impact archival automated access programs. This is largely because of established and emerging standards in data format, content, and transmission, which are coupled with the fact that, within ARL institutions, the vast majority of archival repositories are administratively a portion of the library. This study attempts to understand library-archives relations with regard to automated access programs by examining the data gathered on who develops and maintains the automated applications used by the archives, who performs the archives' automated access creation procedures, who has responsibility for program planning, and who provides training to the archives staff when they perform their own automated access creation procedures. The potential is great for library-archives program integration, but an archival perspective on automated access must be present for this to occur.

Let's examine the data on who is responsible for developing and maintaining the archives' automated applications. The applications and systems identified earlier in this study remain the focus of this part: PC workstation-based MARC cataloging; PC workstation-based word processing; PC workstation-based general database software applications; local/regional library cataloging systems; bibliographic utility

cataloging systems; and Web servers. This examination will focus on MARC cataloging systems and Web servers.

In the case of MARC cataloging systems, library cataloging departments play the leading role in maintaining them. This is the traditional role of academic library cataloging departments: they deal with on-line MARC-based cataloging. Those archives performing MARC cataloging and not using a PC-based MARC cataloging system are most likely using the library's local system or a national bibliographic utility, or both. The frequency of an archives being responsible for the development and maintenance of its applications in local and regional library systems is significant, given that library departments have traditionally done this (see Table 8). Seventeen archives (29 percent) are responsible for the development and maintenance of archival cataloging applications in their local or regional library cataloging system. However, when the frequencies for the library cataloging and automated systems are combined, libraries are responsible for application development and maintenance 62 percent of the time. The library units dominate developing and maintaining local and regional library cataloging systems.

Archives are the largest single unit responsible for archival applications in the bibliographic utilities, with 39 (45 percent) indicating so. Again, the cataloging department figures prominently, but this time at a lower rate of frequency than the archives (31 percent). The combined library cataloging/automated systems units' frequency for developing and maintaining archival applications in bibliographic utilities is 42 percent, still less than the archives units by themselves (see Table 8). This may well be the case because more archives use RLIN than OCLC, the former offering its own archives subsystem (see Table 1). Libraries may be leaving development and maintenance to the archives departments so they may consult with RLG directly. However, archives are responsible for using bibliographic utilities in only slightly less than half these cases.

The dynamics of library-archives collaboration in the development and maintenance of archival applications on Web servers are different from their MARC cataloging systems counterparts. In the case of Web servers, the archives assumes this responsibility most of the time (54 percent). The combined library units' frequency of responsibility is only 27 percent (see Table 8). However, one notable change from the cataloging systems experience is the role of the libraries' automated systems departments in conjunction with the lack of participation from the libraries' cataloging departments. The automated systems unit is responsible for archival applications in Web servers 25 percent of the time. Library cataloging departments are negligible in this area. They are responsible for Web servers 2 percent of the time. The role of the archives' parent organizations' central computing facility is significant as well. They are responsible for the archival applications on the Internet 40 percent of the time (see Table 8). Library automated systems units are establishing important collaborative roles in the archival applications of Web servers. The automated systems units also provide a majority of training to archivists on using Web servers (see Table 7) and, other than the archives itself, they are the second most frequent managers of the archives' Web applications. Here is one area where archives-library collaboration is frequent and appears to be fruitful.

Table 8: Library-archives integration: unit responsible for development and maintenance of archives-specific applications

	Archives using listed units	
	Number	Percent
PC-Based MARC Cataloging (n=56)		
Archives dept.	36	64%
Library cataloging dept.	10	18%
External consultant	5	9%
Institution's computer assistance unit	3	5%
Library automated systems dept.	2	4%
PC-Based Word Processing (n=110)		
Archives dept.	102	93%
Institution's computer assistance unit	3	3%
Library cataloging dept.	2	2%
Library automated systems dept.	2	2%
External consultant	1	1%
PC-Based General Database Software Applications (n=81)		
Archives dept.	71	88%
Institution's computer assistance unit	4	5%
Library automated systems dept.	3	4%
External consultant	2	2%
Library cataloging dept.	1	1%
Local/Regional Library System Cataloging (n=58)		
Library cataloging dept.	20	34%
Archives dept.	17	29%
Library automated systems dept.	16	28%
Institution's computer assistance unit	3	5%
External consultant	2	3%
Bibliographic Utility Cataloging (RLIN/OCLC) (n=87)		
Archives dept.	39	45%
Library cataloging dept.	27	31%
Library automated systems dept.	10	11%
External consultant	6	7%
Institution's computer assistance unit	5	6%
Internet: Gopher servers (n=64)		
Archives dept.	25	39%
Library automated systems dept.	20	31%
Institution's computer assistance unit	16	25%
Library cataloging dept.	2	3%
External consultant	1	2%
Internet: World Wide Web servers (n=52)		
Archives dept.	28	54%
Library automated systems dept.	13	25%
Institution's computer assistance unit	8	15%
External consultant	2	4%
Library cataloging dept.	1	2%

The moderately high levels of library responsibility for archival applications in their automated access systems do not necessarily extend to libraries performing the tasks to create on-line access to the archives holdings. Table 9 summarizes the data collected on which units are responsible for carrying out archival cataloging and the creation of Web content. Despite Lyn Martin’s findings that, in 60 percent of the archives she polled, archivists and library catalogers work together, the current study finds that archivists are responsible for cataloging in at least three out of four cases. An overwhelming majority of the reporting archives, 104 (76 percent), indicates that their staffs, not the library catalogers, are responsible for cataloging. Only 30 archives (22 percent) reported that the library cataloging department is responsible for archival cataloging, but this number is still much higher than in Martin’s study, in which only five percent of the archives reported that archival cataloging is performed by a library cataloger alone.

Table 9: Library-archives integration: unit responsible for carrying out automated access activities

	Archives using listed units	
	Number	Percent
Cataloging (n=136)		
Archives dept.	104	76%
Library cataloging dept.	30	22%
Library automated systems dept.	2	1%
Web/Gopher Server Content (n=94)		
Archives dept.	60	64%
Library automated systems dept.	33	35%
Library cataloging dept.	1	1%

This is one interpretation of the data, in light of Martin’s findings. Another interpretation is to recognize that 60 percent of the archives staff work with library catalogers, and when they do work together, the archives retains principal oversight and responsibility for this work. The findings of the two studies are not necessarily exclusive of one another. In the current study, the archives were asked which units were “principally responsible” for carrying out the archives automated access activities. In Martin’s study, she asked, “Who catalogs the collections?,” and provides “archivists and catalogers working together” as one of the selections. The current study did not ask about cooperation between archivists and library catalogers. While Martin was looking for evidence of collaboration in performing the specific act of cataloging, the current study is looking for overall responsibility for that act.

Unit responsibility for creating access to archival information via Web servers (e.g., creating and mounting HTML files, SGML files) displays characteristics similar to those found with archival cataloging, but there are important differences. The archives retains responsibility for its Web content in two out of three cases (60 archives; 64 percent) (see Table 9). As previously affirmed in Table 7's sources of automated access training and Table 8's data on applications development and maintenance, the library cataloging department has marginal, if any, involvement in archival applications on the Web. There is only one case where the library cataloging department performs Web access activities such as creating and maintaining HTML files for the archives. Once again, the data illustrate that the library automated systems department is becoming involved with archival automated access activities. Thirty-three archives (35 percent) report that their library automated systems unit carries out its Web content creation activities. Given that by 1995, archivists were in the early stages of their use of the Web, the fact that one-third of the library automated systems units performed related Web activities for their archives was a sign of positive library-archives collaborations.

Conclusions

Overall, collaboration among archival repositories, library cataloging units, and library automated systems units is mixed. Traditional boundaries seem to be very much in operation: library cataloging staff deals with on-line library cataloging predominately and seldom with archival cataloging. At least in the case of the archives' applications, the cataloging units do not engage in Web activities, and the automated systems units are involved primarily in systems administration. However, the largest area of collaboration is between the archives and library automated systems units, particularly with regard to the use of the Web. Also, the automated systems department is the single largest trainer of the archives staff in this area (see Table 7). In the realm of automation planning, the archival repository does not collaborate much with the perti-

Table 10: Library-archives integration: position responsible for automated access planning (n=129)

	Archives using listing positions	
	Number	Percent
Archives dept. head	75	8%
Other archives staff	22	17%
Other	14	11%
Designated automation officer from archives staff	11	8%
Library cataloging dept. representative	4	3%
Library automated systems dept. representative	3	2%

ment library units. In 83 percent of the cases, it is the archives department head and/or staff that conducts the planning. The library is involved in only five percent of cases, three percent with the cataloging department and two percent with the automated systems department (see Table 10). Automation planning is one realm where archives could benefit from collaborating with the library, and the library has an obligation to do so for its archival repository units because they are part of the library organization.

The data show that distinct automated access programs in research libraries are integrating in certain functions and in isolated cases. They are moving toward becoming the "modern information/knowledge management center," capable of organizing, preserving, and transmitting knowledge from any of society's information sources. This article takes a step toward developing an archival management perspective to managing automated access in research libraries. The findings suggest that the evolution of research libraries has a long way to go until an archival perspective is interwoven into library-wide management and planning. Units managing archival resources have yet to be considered a part of the library's main stream of work flow. Archives may be using the libraries' automated systems and many of the same access systems and data standards (e.g., LCSH, USMARC, AACR2, APPM), but they are not brought into the planning and evaluation process that produces strategic and long-range plans for these libraries' automated access programs.

Moreover, archives are entering into library automated access programs in a piecemeal fashion: there is no conscious management strategy to "bring archives into the fold" as a portion of the overall library access program. Hence, it is the author's opinion that archives are still an adjunct, an afterthought to the grand planning schemes and documents characteristic of planning initiatives today. The modern research library will not reach its sought-after status as a global information/knowledge management center until its administrators take into consideration the means necessary to preserve and create access to the incredible diversity of formats, physical compositions, contexts of creation, and the broader social constructs inherent in the making of the research materials they manage today.

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NOTES

1. For discussions of some of the pertinent standards, see Victoria Irons Walch, *Standards for Archival Description: A Handbook* (Chicago: The Society of American Archivists, 1994); Steven L. Hensen, "The Use of Standards in the Application of the MARC AMC Format," *American Archivist* 49:3 (1986): 31-40; Charles Dollar, *Archival Theory and Information Technologies: The Impact of Information Technologies on Archival Principles and Methods* (Ancona, Italy: University of Macerata, 1992); and the *American Archivist* special issue on Encoded Archival Description: Part I - Context and Theory, *American Archivist* 60:2 (1997): 264-354, ed. Jackie M. Dooley.
2. *The Academic Archivist: Newsletter of the Society of American Archivists College and University Section*: 6 (January 1988): 3.
3. For the data and interpretations on preservation management, see Tyler O. Walters, in association with Ivan E. Hanthorn, "Special Collections Repositories at Association of Research Libraries Institutions: A Study of Current Practices in Preservation Management," *American Archivist* 61:2 (1998): 174-204.
4. The 113 ARL institutions included in the study represent those institutions operating archives and manuscripts units, either inside the library organization or from outside. No archival repositories were found in seven of the ARL institutions. The 170 archival repositories are representative of those at ARL institutions; they are not to be construed as the comprehensive total.
5. Five archival repositories completed surveys, which provided combined responses for more than one archival repository within an institution. This typically occurred in the case of a library's special collections division, where a number of archival units were solicited for participation, but the division head responded on one survey form reflecting all the solicited repositories.
6. Leon J. Stout and Donald A. Baird, "Automation in North American College and University Archives: A Survey," *American Archivist* 47:4 (1984): 394-404.
7. Stout and Baird, 403.
8. Stout and Baird, 401.
9. Stout and Baird, 402.
10. Stout and Baird, 403.
11. Stout and Baird, 403.
12. Lyn M. Martin, "Viewing the Field: A Literature Review and Survey of the Use of USMARC AMC in U.S. Academic Archives," *American Archivist* 57:3 (1994): 482-497.
13. Martin, 492-493.
14. Martin, 496.
15. The survey designed for this study did not account for the area of overlap between MARC-based networked cataloging systems and Web servers. Instead, it treats them as technologies that are used separately, even though utilities and local library systems can be accessed via Web/Gopher servers. This was an oversight on the part of the author.
16. Michael Gorman and Paul W. Winkler, ed., *Anglo-American Cataloging Rules, 2nd edition*, revised (Chicago: American Library Association, 1988), and Steven L. Hensen, *Archives, Personal Papers, and Manuscripts: A Cataloging Manual for Archival Repositories, Historical Societies, and Manuscript Libraries*, Second Edition (Chicago: Society of American Archivists, 1989).
17. See Tyler O. Walters, "Creating a Front Door to Archival Knowledge: Guidelines for a Master of Archival Studies Degree," *Archival Issues* 18:2 (1993): 83; Timothy L. Ericson, "Abolish the Recent: The Progress of Archival Education," *Journal of Education for Library and Information Science* 34:1 (1993): 28, 31; and Donald DeWitt, "The Impact of the MARC AMC Format on Archives Education and Employment During the 1980s," *Midwestern Archivist* 16:2 (1991): 73-85.

