

Research Article

Archival Preservation Practice in a Nationwide Context

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Abstract: The preservation of historical materials, in a variety of forms and formats, is both a cultural necessity and a central responsibility for professional archivists. Archivists need to define for themselves just what archival preservation entails and assess the capacity of the thousands of archives, large and small, scattered and isolated from each other, to develop and administer sophisticated preservation programs. The author presents the results of the first nationwide study of archival preservation practices in the United States. He describes a model of archival preservation that partially shaped the research project, summarizes the research process involved, reports the major findings, and discusses the implications of the research for archivists and the archival profession.

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THE PRESERVATION OF HISTORICAL materials, in a variety of forms and formats, is both a cultural necessity and a central management responsibility for professional archivists. The findings and implications of a two-year research, evaluation, and planning project, the results of which are described in this article, make it clear now more than ever that archivists confront special challenges in preserving the unique archival materials in their custody. In responding to these challenges, archivists need to develop processes, within the context of a nationwide archival preservation strategy, that improve their capacity to undertake comprehensive preservation programs at the institutional, regional, state, and national levels. Meeting this need is as much an educational problem as a financial one.

Until a decade ago, it appeared possible that archivists could fulfill their responsibilities to the historical record, and therefore to society, merely by collecting and housing materials in secure environments and permitting access to those who asked. Today more and more archivists recognize that preservation is a specific set of technical and administrative processes that affect every archival function.¹

The development and implementation of comprehensive, integrated preservation activities in archives can be an expensive proposition. Environmentally benign storage space, for example, comes at a premium price; many treatment activities are labor intensive and often require specialized equipment and supplies and highly skilled personnel. And yet, in the past few years archivists have seen a dramatic increase in popular support and funding from government and private sources for preservation projects.² The hypothetical ques-

tion that confronts every person committed to the preservation of what Paul Banks calls our "movable culture" is: "If a windfall befell you, could you spend the money wisely?"³

Some preservation experts have believed for years that wisdom is learned, not bought. Pamela Darling, for instance, concludes that accurate information is crucial to successful administration, and that the real problem is the shortage, not of money, but of knowledge. "Financial constraints are serious and will become more so; but until the preservation field reaches the point at which most people know what ought to be done and how it should be done, the lack of money to do it on a scale appropriate to the need is not terribly significant."⁴

Archivists need to define for themselves just what archival preservation entails and assess the capacity of the thousands of archives, large and small, scattered and isolated from each other, to develop and administer sophisticated preservation programs. From this base of information, archivists will then be able to build a nationwide strategy for archival preservation that supports preservation programs instead of recommending how to pour money into flashy but limited projects.

It is with these issues in mind that the Society of American Archivists, with the assistance of the National Endowment for the Humanities (NEH), carried out the first nationwide study of archival preservation practices.⁵ This article will describe a model

On the Preservation of the Human Record (Council on Library Resources, 1987), and the recent major increases in funding for the NEH Office of Preservation are but two examples of the renewed public commitment to preserving cultural resources.

³Paul Banks, unpublished keynote address to Latin American Archivists Conservation and Preservation Institute, Austin, Texas, 11 September 1989, 2.

⁴Pamela W. Darling, "Creativity v. Despair: The Challenge of Preservation Administration," *Library Trends* 30 (Fall 1981): 185.

⁵National Association of Government Archives and Records Administrators, *Preservation Needs in State*

¹Mary Lynn Ritzenthaler, *Archives and Manuscripts: Conservation* (Chicago: Society of American Archivists, 1983), 47.

²The popular acclaim accorded the film *Slow Fires*:

of archival preservation that partially shaped the research project, summarize the research process involved, report the major findings of a nationwide survey, and discuss the implications of the overall project for archivists and the archival profession.

What Is Archival Preservation?

One distinguishing characteristic of an evolving field of specialization, such as preservation, is disagreement on key definitions. Definition-setting sometimes seems like a trivial exercise. At certain times, however, program development and research both become dependent on clear statements of principles and priorities. In the past decade, archivists and librarians have been approaching such clarity.⁶ The following three-part working definition synthesizes an emerging consensus and serves as a structure for the research project.

First and foremost, the essence of archival preservation is resource allocation.

Archival preservation is the acquisition, organization, and distribution of resources (human, physical, monetary) to

Archives (Albany, NY: NAGARA, 1985). This is a national study, prepared by Howard Lowell, concerning the nation's fifty state archives.

⁶"Glossary of Selected Preservation Terms," *ALCTS Newsletter* 1 (1990): 14-15. The case for consensus is made in Pamela Darling and Shereyn Ogden, "From Problems Perceived to Programs in Practice: The Preservation of Library Resources in the U.S.A., 1956-1980," *Library Resources & Technical Services* 25 (January/March 1981): 10. The best preservation bibliographies are published annually in *Library Resources & Technical Services (LRTS)*. See Lisa Fox, "A Two Year Perspective on Library Preservation: An Annotated Bibliography," *LRTS* 30 (July/September 1986): 290-318; Carla J. Montori, "Library Preservation in 1986: An Annotated Bibliography," *LRTS* 31 (October/December 1987): 365-85; Carla J. Montori and Karl Eric Longstreth, "The Preservation of Library Materials, 1987: A Review of the Literature," *LRTS* 32 (July 1988): 235-47; and Karl E. Longstreth, "The Preservation of Library Materials in 1988: A Review of the Literature," *LRTS* 33 (July 1989): 217-26.

Archival Preservation: A Proposed Definition

Archival preservation is the acquisition, organization, and distribution of resources (human, physical, monetary) to ensure adequate protection of historical information of enduring value for access by present and future generations.

Archival preservation encompasses planning and implementing policies, procedures, and processes that together prevent further deterioration or renew the usability of selected groups of materials.

Archival preservation management, when most effective, requires that planning precede implementation, and that prevention activities have priority over renewal activities.

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Underlying this first part of the definition are a number of assumptions. First, as its ultimate goal, preservation is for use and not simply for its own sake. Second, preservation largely concerns information and knowledge, in a variety of forms and formats, that has been identified as having long-term values, including historical, legal, evidential, informational, and monetary. Archivists have the primary responsibility for identifying these values. Third, the word "adequate" in the definition implies that there is no ultimate or perfect solution to the preservation challenge and that there are many ways to approach solutions—probably as many ways as there are archivists. Finally, the definition assumes that responsibility for preservation ultimately rests with every person charged with caring for historical materials and pervades every function of a repository. Collection or re-

pository level strategies take precedence over activities directed toward individual items.⁷

Although these assumptions are echoed by nearly every author who has written on managing preservation programs, a second level of definition is needed that organizes the wide variety of specific preservation activities into a conceptual structure.

Archival preservation encompasses planning and implementing policies, procedures, and processes that together prevent further deterioration or renew the usability of selected groups of materials.

The statement suggests a possible way to identify and organize in two dimensions activities relating to the care and handling of archival materials. The first dimension distinguishes between the two basic aspects of the management function: planning and implementation.⁸ The second dimension reflects the distinction between activities that prevent or significantly retard deterioration and those that address damage that has already occurred. Less than a decade ago, archivists used the term *conservation* to describe all activities on archival materials, whether preventive or corrective. Today the term *preservation* is widely considered by conservators, preservation librarians, and archivists to be an umbrella under which conservation treatments on items or groups of materials are included.

Prevention involves identifying prob-

lems in the acquisition, storage, and handling of materials; establishing repository-wide policies and procedures that take a systems approach covering the entire life-cycle of materials; and taking specific actions to retard deterioration or damage to the entire collection.⁹ There are four major planning activities in prevention.

- Survey the building and microenvironments for variation from standards on temperature, relative humidity, light, dust, gases, and pests
- Prepare contingency plans for use in case of fire, flood, storms, and other natural or man-made disasters
- Establish policies on use of holdings by patrons and staff and on the public display of holdings
- Conduct surveys assessing the scope and nature of deterioration within collections

The model contains four corresponding implementation activities.

- Install equipment to monitor and stabilize environmental conditions
- Maintain the physical facilities routinely
- Enforce security procedures for staff, patrons and others
- Implement routine holdings maintenance actions, including rehousing, and removing or replacing damaged or deteriorated items¹⁰

Renewal involves policies, procedures, and processes that improve or otherwise enhance the usability of groups of archival materials. There are two principal planning activities in the renewal area.

⁷Some of the most persuasive arguments on these points are contained in Pamela W. Darling, "Planning for the Future," in *The Library Preservation Program: Models, Priorities, Possibilities*, ed. Jan Merrill-Oldham and Merrily Smith (Chicago: American Library Association, 1985), 103-110; Ritzenthaler, *Archives & Manuscripts: Conservation*; Robert H. Patterson, "Conservation: What We Should Do Until the Conservator and the Twenty-First Century Arrive," in *Conserving and Preserving Library Materials*, ed. Kathryn Luther Henderson and William T. Henderson (Urbana-Champaign: University of Illinois, 1983), 12.

⁸Paul H. McCarthy, "The Management of Archives: A Research Agenda," *American Archivist* 51 (Winter/Spring 1988): 52-69.

⁹The specific activities noted in figure 1 are adapted from "Standard Terminology for USMARC 583," recently developed by ALA's Preservation of Library Materials Section, with cooperation from the Library of Congress.

¹⁰Mary Lynn Ritzenthaler, *Preservation of Archival Records: Holdings Maintenance at the National Archives*, Technical Information Paper Number 6 (Washington, DC: NARA, 1990).

- Develop a set of strategies to evaluate and select materials for physical and chemical treatments, for reformatting, and for replacement, as appropriate
- Establish or review specific recovery procedures to be followed in the case of disaster

The model contains four corresponding implementation activities.

- Treat batches of materials physically or chemically, including washing, deacidifying, drying or humidifying, re-sizing, dry-cleaning, restoring, repairing, and rebinding
- Reformat materials on microfilm, fiche, paper, optical, or magnetic media
- Replace original items with duplicates, microform, or paper
- Respond to emergencies and disasters in a timely fashion

Figure 1 displays archival preservation activities graphically. Several observations

are important here. First, the structure is not media-specific but includes prevention and renewal activities appropriate for all types and formats of materials found in an archives (indeed, even in the same box), including loose and bound paper-based materials, film, and magnetic and optical media. Second, in reality archival preservation is neither as static nor as two-dimensional as presented above. There should always be an ongoing interaction between planning and implementation that involves monitoring progress and making adjustments as necessary. Third, activities such as staff and user education, outreach and community liaison, and fund raising certainly have major impacts on the preservation of archival materials; and they should be considered in developing a preservation program.

The management of archival preservation in any institutional setting is largely incremental and involves making choices

Figure 1

Archival Preservation		
	Planning	Implementation
Prevention	Environmental survey Disaster planning Use policies Holdings survey	Environmental Controls ¹ Building maintenance Security procedures ² Holdings maintenance ³ ----- Staff and user education Outreach/community liaison Fundraising
Renewal	Strategy for treatment Strategy for reformatting Strategy for replacement Disaster procedures	Physical and chemical treatments ⁴ Reformat ⁵ Replace ⁶ Disaster Response

¹ Temperature, relative humidity, light, dust, gas, pests
² Building, stacks, reference room
³ Rehouse, remove or replace damaging or deteriorating items
⁴ Wash, deacidify, dry or humidify, resize, dry-clean, restore, repair, rebind
⁵ Microfilm, fiche, paper, optical disk
⁶ Microform, paper, duplicate copy

among options over a long period of time. Priorities are needed to guide these choices, giving rise to a third part of the definition.

Archival preservation management, when most effective, requires that planning precede implementation, and that prevention activities have priority over renewal activities.

This third element of the definition is particularly important for purposes of research, program development, and education. Without a statement of priorities and values, it would be difficult to assess individual efforts, more difficult still to compare the progress of archival programs, and nearly impossible to chart over time how the archival profession meets its central preservation mandate.¹¹

How the Research Project Was Designed

The primary goal of the research project was to construct a meaningful portrait of current archival preservation activity as a point of departure for designing SAA's next decade of educational initiatives. The centerpiece of the research project was a nationwide survey of archival repositories, supported by literature reviews, an assessment of the documentation on SAA's decade-long experience with preservation and conservation education, interviews with preservation experts, and on-site inspections of conservation laboratories. The working definitions described above guided the development of the research project.

Two current limitations of the archival community, however, complicated the design of the nationwide survey itself. First, no full listing of archival and manuscript repositories exists. The recently published

Directory of Archival Repositories in the United States has serious coverage biases, especially in terms of the range of types of repositories covered.¹² In addition, a number of the 4,200 organizations included can most generously be described as "wanna be" archives, fundamentally lacking in holdings, staff, and services.

Possible alternatives to the *Directory* are the membership database of the Society of American Archivists and an assemblage of membership directories from over fifty regional and local archival associations. Neither the membership database nor the regional listings have been subjected to a systematic analysis to determine how representative they are of the archival profession as a whole. An unpublished study comparing joint membership in SAA with regional associations shows that overlap ranges from 11 percent to 54 percent, depending in part on the age of the regional association.¹³ For purposes of the current study, it was prohibitively expensive and time consuming to combine the SAA database with regional and local listings.

A second limitation that complicated the design of a nationwide study is the absence of accepted standards defining an archives. For example, unlike the fields of public or academic librarianship, the archival profession is largely defined in terms of the nature of the materials collected rather than in terms of the user populations served or the setting and functions of the repository. The ubiquitous nature of historical materials and the long history of small, isolated collecting programs makes it difficult, if

¹¹For a discussion of the implications of the definition for archival education, see Paul Conway, "Archival Preservation: Definitions for Improving Education and Training," *Restaurator* 10:2 (1989): 47-60.

¹²*Directory of Archives and Manuscript Repositories in the United States*, 2nd ed. (Phoenix: Oryx Press, 1988); reviewed by Paul Conway in *American Archivist* 52 (Winter 1989): 102-3.

¹³Timothy Ericson, then education officer of the Society of American Archivists, compiled these figures by matching membership lists from thirty regional archival associations with the SAA membership database.

not impossible, to define the archival universe. Even if an adequate list of archival repositories existed, selecting a sample would have required confronting serious definitional issues that were beyond the scope of the study.¹⁴

Considering these limitations, and the original charge by NEH to attempt to assess the impact of SAA's preservation education programs on participants, the research centered on a more limited study population: administrative units that enrolled one or more staff members in one of the twenty-two Basic Archival Conservation Workshops offered by SAA from 1981 to 1987. The total number of original participants in the program was 544. A count of discrete organizations in the full group of participants yielded 400 archival repositories. The study excluded four consultants without an institutional affiliation, three organizations from Canada, and the National Archives central office in Washington, D.C., which has vast resources and a unique mission.

Data for the study were gathered by means of a questionnaire sent by mail to the director or key contact person at each archival repository. The technique for administering the survey was based on the Dillman Total Design Method, which calls for a carefully constructed, pretested instrument and cover letter, and multiple follow-up contacts to encourage a high response rate.¹⁵

The questionnaire itself consisted of an eight-page booklet. Almost all questions were multiple choice, requiring only that respondents circle the appropriate response or fill in blank lines. Each questionnaire had a unique number, making it possible to administer the study effectively while giving respondents anonymity.

Four hundred questionnaires were sent on 28 March 1989 by first-class mail, accompanied by a personally addressed letter and a preprinted, stamped return envelope. Six weeks after a postcard reminder and a second copy of the questionnaire were mailed in succession, 320 of 400 questionnaires had been returned, for a base response rate of 80 percent. An additional twenty individuals returned the questionnaire either too late for processing or uncompleted with sometimes lengthy explanations about how little time they had for questionnaires. These unusable questionnaires bring the overall response rate to a respectable 85 percent.¹⁶

Administrative Setting

The survey questionnaire was designed to yield a basic portrait of archival settings. The study's unit of analysis is the "administrative unit," rather than the individual survey respondent or the parent institution. An administrative unit is a separately identifiable organizational structure with a primary responsibility for acquiring, preserving, and making available to users archival resources in a variety of media. Examples of administrative units are a special collections department in an academic or public library; a state archives division or independent historical society; the archives/library of a corporation or nonprofit organization; the archives of a diocesan headquarters; or a rare book and manuscript library administered separately.

When interpreting the findings, it is important to remember that the group of institutions studied is not necessarily representative of the archival community as a whole. The survey responses describe only

¹⁴Richard J. Cox, "Professionalism and Archivists in the United States," *American Archivist* 49 (Summer 1986): 229-48.

¹⁵Don A. Dillman, *Mail and Telephone Surveys: The Total Design Method* (New York: Wiley, 1978), 160-99.

¹⁶The approximate total cost for printing and mailing the original questionnaire, the postcard, and the follow-up letter was \$1,400, or about \$4.40 per usable response. More information on the design of the questionnaire and administration of the survey is available directly from the author.

TABLE 1

	Administrative Setting			
	1989 Survey Respondents		1985 Census Respondents	
Academic	40%	(129)	38%	(206)
Local	16%	(50)	5%	(29)
Religious	12%	(37)	19%	(103)
Museum	8%	(26)	3%	(19)
State	8%	(26)	10%	(60)
Corporate	7%	(22)	6%	(33)
Federal	6%	(20)	5%	(26)
Special	3%	(10)	13%	(73)
Total	100%	(320)	100%	(549)

Note: figures in parentheses represent the actual numbers of respondents in each category. Percentages in this and the following tables have been rounded to whole numbers and thus do not always total 100 percent.

one set of archival programs, a self-selected, yet very diverse group.¹⁷

Table 1 shows how the 320 responding archival units are distributed among eight types of parent organizations, compared with the distribution of respondents to the 1985 Census of Archival Institutions.¹⁸ The *federal* category consists of archival units that are part of the federal government, including National Archives field units and National Park Service historic sites, but not including the National Archives in Washington, D.C. The *state* category consists of state archives and state historical societies.

¹⁷Social scientists distinguish between research that is statistically generalizable to a large population from that which describes characteristics of a known population for purposes of developing a base of information for further research. The latter approach is taken in the current study. See Charles H. Backstrom and Gerald Hursh-Cesar, *Survey Research*, 2nd. ed. (New York: Wiley, 1981), 37.

¹⁸Paul Conway, "Perspectives on Archival Resources: The 1985 Census of Archival Institutions," *American Archivist* 50 (Spring 1987): 174-91. The 1985 census population consisted of institutions represented in SAA's current membership database. Forty-four percent of those contacted returned the census questionnaire.

The *local* category primarily consists of municipal archives, local historical societies, and public libraries. *Corporate* refers both to profit and nonprofit organizations. The *religious* category excludes denominational colleges and universities, which are included in the *academic* category, along with the three prep school archives. The *special subject* category contains archives whose primary purpose is to collect in a focused subject area, even though technically they may be affiliated with another type of organization. Finally, the *museum* category contains archival units that document the activities or collections of a museum. In most cases, respondents' self-categorizations were accepted at face value, unless an obvious error was detected during data analysis.

The distribution among types of parent organizations is quite similar from 1985 to 1989. Proportionately greater numbers of religious institutions may have responded to the 1985 census because of targeted publicity at the time in a Catholic weekly magazine. In addition, it appears that relatively fewer local historical societies were represented in the 1985 census because the

TABLE 2

Size of Archival Unit in Number of Full-Time Equivalent (FTEs)									
	FTEs				N	Mean	Min.	Max.	Median
	0-1	1.1-3.0	3.1-10	11+					
State N	0%	19%	31%	50%	26	20.3	2.0	87	11.0
Federal N	10%	25%	30%	35%	20	8.1	1.0	19	7.0
Local N	12%	44%	36%	8%	50	5.4	0.13	50	2.9
Corporate N	18%	50%	23%	9%	22	5.7	0.38	36	2.3
Academic N	23%	33%	30%	13%	129	5.4	0.05	34	2.2
Museum N	23%	39%	23%	15%	26	6.5	0.6	60	2.0
Special N	0%	70%	30%	0%	10	3.2	1.1	8	1.8
Religious N	43%	40%	19%	0%	37	2.2	0.3	9	1.0
ALL N	19%	37%	29%	15%	320	6.5	0.05	87	2.7

population studied consisted of institutions drawn from SAA's membership database. Only 54 percent of respondents to the 1989 survey were affiliated with SAA in any way.

Most archivists work in administrative units that are, in many cases, minor parts of their larger parent organizations. Only 17 percent of responding units can be characterized as independent organizations with ultimate responsibility for their unit's budget, organization, and activities. The remaining 83 percent are departments or divisions in organizations whose primary mission may have little to do with the care of historical materials.

The survey documents the intimate connection between archival units and libraries. A majority (56 percent) of all responding units are a part of a library. Special collections departments of academic libraries, local history collections in public libraries,

and corporate archive departments in corporate libraries are the most typical examples of archival units in libraries.

Size of Archival Units

Archival units vary tremendously in size, regardless of how size is determined. One possible measure of size is a unit's total annual budget. Such information is difficult to obtain in a mail survey. Only half of the respondents to the 1985 census, for instance, were willing or able to report their total annual budget, and fewer still were able to break out the figure into predefined categories. Small administrative units often do not have any control over budgets and function on a "funds as needed" basis. In addition, archival administrators sometimes consider budgetary information to be highly confidential.

TABLE 3

Size of Archival Unit in Volume of Holdings (cubic or linear feet)										
	10- 100 ft.	101- 750 ft.	751- 3,000 ft.	3,001- 7,500 ft.	7,501 + ft.	N	Mean	Min.	Max.	Median
State N	8% 2	4% 1	17% 4	13% 3	58% 14	24	23,111	100	86,000	8,500
Federal N	10% 2	20% 4	15% 3	25% 5	30% 6	20	6,719	10	30,000	3,276
Academic N	14% 18	24% 31	25% 32	18% 23	18% 23	127	4,942	15	50,000	1,499
Corporate N	0% 0	52% 11	33% 7	10% 2	5% 1	21	1,829	200	13,000	635
Special N	10% 1	40% 4	30% 3	10% 1	10% 1	10	1,927	30	10,000	500
Local N	22% 11	37% 18	20% 10	14% 7	6% 3	49	2,187	18	21,000	413
Religious N	11% 4	66% 23	17% 6	6% 2	0% 0	35	800	25	4,500	332
Museum N	27% 7	31% 8	27% 7	12% 3	4% 1	26	1,886	12	16,900	263
ALL N	14% 45	32% 100	23% 72	15% 46	16% 49	312	5,070	10	86,000	987

The 1985 census demonstrated that staff size, measured in full-time equivalents (FTEs), could serve as a somewhat reliable proxy measure of resources, since typically about 75 percent of a unit's resources are used to pay salaries and benefits. The preservation survey gathered information on the number of FTEs in each administrative unit involved with the administration and care of archival materials. Table 2 reports the figures by type of parent organization, ordered from largest to smallest median staff size. Included are full- and part-time employees, as well as student assistants and volunteers.

State level archival units are significantly larger than any other group of archives, averaging more than 20 FTEs per unit. Howard Lowell's study of preserva-

tion needs in state archives yielded an average of 14.5 FTEs for 42 state archives.¹⁹ The breakout by size grouping shows the high concentration of one-person shops in religious, academic, and museum organizations.

Staff size alone, however, is not a sufficient base for judging the preservation challenges of archival units. Individual archives may vary considerably in terms of the volume of materials for which they have responsibility. Survey respondents were asked to report the total cubic or linear footage of paper-based holdings, as well as the number of reels of microfilm and sheets of microfiche in the collection. As a way

¹⁹NAGARA, *Preservation Needs*, 16.

of roughly comparing types of units, table 3 reports the responses to the question of volume of paper-based holdings, ordered from greatest to least median volume of holdings in cubic or linear feet.

The variation between types of archival units is tremendous. An average state archives or state historical society has almost thirty times as much material as a typical religious archives. On slightly closer inspection, three clusters of archival programs emerge. Federal and state programs are much larger, at least in terms of holdings, than any other group. Local, corporate, religious, special subject, and museum archives typically are at the other end of the spectrum, with most of them falling well below 500 linear feet per organization. The typical academic archives falls somewhere in the middle in terms of volume. One implication of this variation is that there may not be a single approach that is appropriate for planning preservation activities and taking preservation action in all settings. Planning tools, educational programs, selection strategies, and perhaps even funding approaches may need to be tailored to archival units in specialized institutional settings.

Variation within any one type of archival unit is also large. In every type of organization except corporate, at least one archival unit reported having less than 100 linear feet of material, in some cases far less. At the other end of the spectrum, at least one archives in each category reported having custody of more than 10,000 feet of material. The largest state archives reported having 86,000 feet of paper-based records, which is consistent with Howard Lowell's findings. Lowell reported on the difficulty of getting archives to report accurate information uniformly, and the same caution applies with this study. Even if the figures are taken as approximate and used for general comparison only, it still is necessary to develop another way of comparing and contrasting archives with widely varying resources and staff.

Intensity of Care Index

Four hypothetical cases illustrate the extremes in the relationship of volume of holdings to size of staff. In the first case, a unit has custody of huge quantities of material but has limited staff to service the holdings. A records center operation with archival functions is a typical example. In this case, only the most rudimentary preservation actions may be possible beyond those necessary to protect the collection from fire and theft. In the second case, a unit also has custody of a large volume of material, but with a large staff, perhaps organized into functional departments. Many state archives and federal repositories fall into this category. In this case, if properly planned, preservation activities may begin to approach the preferred situation in which all departments and functions have a preservation component, overseen by one or more individuals with comprehensive responsibility.

In a third case, a unit has custody of a relatively small amount of material, but also has little or no staff to care for it. A significant portion of archival units, especially in college and university settings, are in this group. In this case, identifying a proper balance between holdings and resources, and identifying priorities for action are crucial to accomplishing systematic preservation activities. In the final case, a unit has custody of a small amount of material and has ample resources to care for it. A typical example of this case may be a museum whose archival holdings are an auxiliary responsibility compared to the care and conservation of works of art.

One possible approach to the problem of comparing archival programs is to build a measure of the preservation challenge that considers both the quantity of historical materials needing care and the staff resources available to do the job. Such a measure is needed, not only because of variation among and between types of archival

TABLE 4

	Intensity of Care (volume of Holdings per FTE)			N	Mean	Min.	Max.	Me- dian
	High (Less than 250 feet/ FTE)	Moder- ate (250- 1,000 feet/ FTE)	Low (More than 1,000 feet/ FTE)					
State N	16% 4	36% 9	48% 12	25	1,359.8	29.4	6,462	872
Academic N	28% 35	40% 50	32% 41	126	920.2	11.7	8,000	600
Corporate N	38% 8	52% 11	10% 2	21	505.3	12.3	2,500	337
Federal N	35% 7	35% 7	30% 6	20	829.8	10	3,846	337
Religious N	46% 17	41% 15	14% 5	37	526.5	25	3,920	300
Special N	50% 5	20% 2	30% 3	10	549.3	20.7	1,250	182
Local N	60% 29	23% 11	17% 8	48	465.7	1.2	3,068	160
Museum N	65% 17	19% 5	15% 4	26	618.5	3.6	8,325	105
ALL N	39% 122	35% 110	26% 81	313	768.6	1.2	8,325	405

units, but also because the extent to which an archival unit is capable of carrying out systematic preservation activities, regardless of their costs, may be largely dependent on achieving a balance between available resources and the preservation needs of collections.

For purposes of this study, an Intensity of Care Index has been calculated by dividing the volume of holdings in linear feet for each archival unit by the total FTEs in that unit. The index may be a more meaningful way of measuring size of repositories and may indicate which types of repositories face the greatest preservation challenges. Archival repositories with the

lowest intensity of care (high ratio of holdings to staff) face the greatest pressure in balancing the demands of the collection with available resources. Units with the highest intensity of care (low ratio) may be out of balance in the other extreme, with a middle group facing moderate, but perhaps manageable pressure.²⁰

Table 4 displays the results of calculating the index ratio for each survey respondent, ordered from highest to lowest median score. The Intensity of Care Index flattens

²⁰See Conway, "Perspectives," 185, for an earlier use of the Intensity of Care Index.

out the differences between types of administrative units. With the exception of state archives (which always seem to be the exception), both the averages and mid-points are much more similar than either holdings or staff taken separately. Instead of a factor of twenty-eight separating the high and low figures, the factor is only eight, with the median for all units in the middle.

When the Intensity of Care figures are collapsed into three categories, the preservation challenge faced by each type of archival unit becomes clearer. State archives and archival units in academic environments have relatively larger proportions in the low intensity category, over 1,000 feet per FTE. On the other extreme, museum archives, special subject collections, and many units in local settings care for holdings at a higher intensity, having less than 250 linear feet of holdings per FTE. The remaining types of organizations are clustered in the middle, around 300 linear feet per FTE.

The figures indicate that no single approach to preserving historical materials will be satisfactory for all archival units. Those in the low intensity category need far more assistance in setting priorities and getting the greatest benefit from limited resources. Those units in the high intensity category should be encouraged to resist the temptation to indulge in excessive treatment activities. Archives with moderate intensity of care may benefit most from tools and techniques that expand their capacity to plan comprehensive preservation programs. One implication of calculating an intensity of care measure is that continuing education workshops and institutes, publications and handbooks, and other tools designed to assist archivists in their preservation tasks should be targeted carefully to archival programs with different levels of need.

The boundaries between the three categories of the Intensity of Care Index are not hard and fast. Further research is needed to refine the index as a fully reliable mea-

sure. At this stage repositories with significant collections of nonpaper materials may not be assigned to the proper category. In addition, the index ignores variation in the value of any particular collection. It may be that a unit in the low intensity category contains an extraordinarily valuable but small collection requiring intensive item-level treatment.

Conservation Expertise

Archivists need ready access to conservation expertise since preservation has a technical side to it that may seem daunting to archivists who are not also chemists, microbiologists, and mechanical engineers. The survey contained two simple questions designed to find out how available such expertise is to archivists. Respondents were asked first to indicate whether any staff members of the administrative unit had received training in conservation by graduate course work or formal apprenticeships, and then if conservators are readily available within the parent institution for consultation.

Thirty-eight percent (122) of the respondents claimed to have staff trained in conservation beyond the basic level. Twenty-five percent (79) of the respondents claimed to have access, either readily or with some effort, to a conservator in the parent institution. When combined, the answers to these two questions provide a rough estimate of the availability of conservation expertise.

Overall, about 12 percent (37) of responding institutions claim to have both conservation expertise in the archival unit and access to a conservator. Fully 54 percent of the group (174) have access to neither staff trained in conservation nor an in-house conservation department. The remaining 34 percent of the respondents (109) have either conservation expertise on staff, or an in-house conservator. Seventy percent of this middle group claimed to have expertise on the staff but no ready access

to in-house conservators. The claims of respondents should be judged carefully, since the true level of technical expertise in archival units may be significantly lower than claimed. Nevertheless, this group of archival repositories that participated in SAA's workshop program expresses a fairly high level of confidence that conservation expertise can be located easily when needed.

Budget

The existence of a specific line item for conservation treatments and supplies in the annual budget of an archival unit is an important indicator that archivists are institutionalizing preservation activities. SAA's basic conservation workshop emphasized the importance of targeting conservation funds directly in the budget. Throughout the history of the program, workshop applicants were asked to indicate if a line item for conservation existed, and if so, how much money was allocated per year. A nearly identical question was included in the 1989 survey of participating institutions. Table 5 shows the percentage of workshop participants who reported a specific budget line for supplies and services

(excluding personnel), the percentage of respondents who had a budget line item in 1988, and the median annual conservation budgets in 1988 for eight types of institutions. Information on budgets derived from the original workshop application forms is not included in the table because of the poor quality of the data.

The table suggests that there has been a significant increase in the percentage of archival units that have a specific conservation budget. Publicly supported archives have the most generous budgets; federal government archives as a group seem to have made the greatest strides in incorporating conservation treatments into the annual budget. Museum archives have the best record overall. The two columns of figures are reported by the same population—participants in SAA's workshop program—suggesting that significant progress has been made in the past decade to make preservation a routine part of archival practice, even if the amount of money currently allocated to conservation supplies and services is small.

About one-third of the survey questionnaire was designed to discover the extent to which archival units are attempting to

TABLE 5

Institutions with Specific Budgets for Conservation Supplies and Services					
	Workshop Participants 1981-87		1989 Survey Respondents		Median 1988 Budget
Museum	50%	(27)	61%	(15)	\$1,950
Local	28%	(28)	60%	(40)	\$1,500
Special	36%	(16)	60%	(5)	\$1,300
Corporate	17%	(6)	55%	(12)	\$750
Federal	19%	(7)	55%	(11)	\$7,076
State	43%	(19)	54%	(14)	\$6,100
Religious	22%	(11)	41%	(11)	\$700
Academic	19%	(28)	28%	(32)	\$2,687
ALL	28%	(142)	44%	(140)	\$2,475

carry out preservation activities in the variety of areas described earlier in the model shown above in figure 1. For purposes of this article, the findings on environmental conditions, holdings maintenance, treatment activities, and microfilm production will be reported.

Environmental Care Index

The base of reliable information about preservation activities in archives is so limited that the current study could only develop a simple portrait of current conditions. A more sophisticated analysis would assess the capabilities of archivists to control environmental conditions in key storage areas, monitor the environment accurately and continuously, and protect their holdings from fire, pests, theft, and natural and man-made disasters.²¹ A less complete picture of the scope of preventive activities, however, may be drawn by combining responses to a set of simple questions about essential activities.

Archivists' answers to those questions, in lieu of direct observation or measurement, form the basis for the four components of an Environmental Care Index (ECI)—temperature stability, monitoring equipment, fire protection, and disaster planning. The first component, temperature control, was assessed by simply asking respondents to state whether their storage areas were equipped to provide a controlled temperature plus or minus three degrees Fahrenheit. Fifty-six percent (179) of the survey respondents claimed to have such steady temperatures, while only 44 percent (141) claimed to be able to control relative humidity in the storage areas. Both figures

should be greeted with a certain amount of skepticism.²²

The second component of the index is the use of a recording hygrothermograph, which Mary Lynn Ritzenthaler considers to be an essential piece of equipment for archivists.²³ Again, it was not possible in the limited space of the questionnaire to inquire about the capabilities of archivists to calibrate and maintain such equipment, or even to place it in the proper location. Twenty-seven percent (86) of the survey respondents reported having at least one recording hygrothermograph in the storage area.

Protection of archival materials from fire and the capability to suppress fire are a third important indicator of the capabilities of archival units to carry out preventive preservation. The survey asked a multi-part question to assess the level of fire protection in the storage area. Ten percent (32) of all respondents may indeed be violating fire codes in their community by having neither fire and smoke detection equipment in the stacks nor any capacity to put out fires that may start. It is important to note that respondents in this group either do not have basic fire detection equipment or do not know if they do, which is just as dangerous.

Fifty-two percent (166) of the group have fire and smoke detection equipment in place and fire extinguishers in the storage areas, but do not necessarily have the capacity to suppress fires after hours. The remaining 38 percent (162) of archival units have de-

²¹Due to an oversight during the design process, the survey questionnaire neglected to probe in any systematic way the problems archivists confront with mold and pests.

²²The questionnaire contained a follow-up question intended to obtain information on the actual temperature in the storage area on the day the survey was completed. Data from this question proved to be unreliable when it became apparent during data entry that respondents sometimes listed the outside ambient air temperature. The actual question read "What is today's temperature in the area where the majority of your materials are stored?"

²³Ritzenthaler, *Archives & Manuscripts: Conservation*, 32-34.

tection equipment in place and the capacity to suppress fires at any time, either by wet/dry sprinklers, halon gas, or carbon dioxide gas.

Finally, disaster planning is widely recognized as an essential part of a comprehensive preservation program. A well-crafted, up-to-date plan helps the staff of an archives prevent man-made disasters, react to catastrophic events in a timely way, and limit damage to materials during recovery. Fifty-six percent (179) of the survey respondents claimed to have a disaster plan in place or in the planning stages.

Table 6 reports the results of combining the four components into an Environmental Care Index for each type of reporting organization, ordered by mean score. The first column displays the percentage of archival units that reported having no stable tem-

perature controls, no monitoring devices, no fire protection, and no disaster plan. Overall, 18 percent (56) of the survey respondents fall into this category. In the fifth column, at the other end of the spectrum, are units that reported having all four components of the Environmental Care Index in place. Overall, 10 percent (32) of the units are in this category. In the middle columns are archives with either one, two, or three of the index components. The final column is the average score for each type of repository.

The Environmental Care Index is not designed for judging the efforts of any particular archives, but rather as a tool for comparing groups or types of archives. As a group, federal, state, and museum archives appear to have accomplished the most in providing minimal level environmental

TABLE 6

Environmental Care Index						
Number of Index Elements Reported						
	None	1	2	3	All	Mean
Federal	0%	20%	15%	5%	60%	3.05
N	0	4	3	1	12	20
State	12%	19%	15%	35%	19%	2.30
N	3	5	4	9	5	26
Museum	15%	12%	31%	27%	15%	2.15
N	4	3	8	7	4	26
Corporate	9%	46%	14%	23%	9%	1.77
N	2	10	3	5	2	22
Local	18%	26%	34%	18%	4%	1.64
N	9	13	17	9	2	50
Academic	16%	35%	25%	20%	5%	1.63
N	20	45	32	26	6	129
Special	20%	30%	20%	30%	0%	1.60
N	2	3	2	3	0	10
Religious	43%	27%	14%	14%	3%	1.05
N	16	10	5	5	1	37
ALL	18%	28%	24%	20%	10%	1.76
N	56	93	74	65	32	320

care for their collections. Religious archives, representing more than 10 percent of the respondents, are struggling to put in place the four basic components of the Environmental Care Index. Only one of the religious archives reported having all four components.

Care of Collections

Archivists have available a significant array of techniques to stabilize collections, prevent further deterioration, and address damage that has already occurred. Routine preventive, stabilizing activities together constitute holdings maintenance. The questionnaire asked respondents to indicate which of the following six actions are routinely carried out in the unit: rehousing in acid-free containers, segregating acidic paper, segregating photographic media, removing fasteners, copying deteriorated items, and "other" holdings maintenance actions.

The questionnaire also solicited information on a selected group of item treatment activities, including deacidification of sheets of paper, dry cleaning surfaces of documents, mylar encapsulation, basic mending and repair, simple testing of inks and pH, and "other" conservation treatments. The list of preventive and treatment activities chosen for the study was based on the set of recommendations made to participants in the basic conservation workshop.

One important preservation strategy for archivists is reformatting deteriorated collections on microfilm. The questionnaire requested information on the production of microfilm in 1988, both by in-house technicians and through external vendor contracts. Respondents also indicated the primary purpose for which the materials were reproduced, including limiting the handling of originals and preserving the information content of holdings.

Table 7 is a summary of the responses to sets of questions on holdings mainte-

nance, treatment actions, and the production of microfilm, broken out by type of repository. The first column is the average number of routine holdings maintenance activities carried out in the twelve months immediately prior to the survey; the second column is the average number of treatment activities carried out during the same period. The third column is the percentage of respondents who reported producing any microfilm for any reason in 1988.

At least two observations are evident from the information in the table. First, archivists from all types of organizations and from all sizes of repositories apparently are taking preventive action on their collections on a routine basis. The average number of holdings maintenance activities far exceeds the average number of treatment activities in all categories. Second, archivists are making solid use of microfilm technology for both preservation and enhanced access. While state archives and historical societies lead in this regard, all types of archival organizations show signs of a commitment to reformatting archival collections.

Implications of the Research

Describing the administrative context of archival preservation and the broad scope of preservation activities is only the first step in understanding the strengths and limitations of the archival profession's preservation practices. Data from the nationwide survey, when combined with secondary research and the informed opinions of leading preservation experts, lead to a series of conclusions about where the archival profession stands today, and where archivists ought to be heading in the near future. From these patterns, it may be possible to chart a path in the decade ahead to improve the care and handling of archival materials wherever they are housed.

Overall, the findings of two years of research and analysis suggest that although

TABLE 7

Care of Collections			
	Mean Holdings Maintenance	Mean Treatment Actions	Percentage Microfilm Production
Academic N = 129	3.9 128	2.4 129	51% 66
Corporate N = 22	4.3 21	2.1 22	45% 10
Federal N = 20	4.1 20	1.7 20	45% 9
Local N = 50	3.8 50	2.4 50	44% 22
Museum N = 26	3.3 25	2.2 26	23% 6
Religious N = 37	3.6 37	1.6 37	19% 7
Special N = 10	3.4 10	1.7 10	40% 4
State N = 26	4.2 26	2.8 26	80% 21
ALL N = 320	3.8 317	2.2 320	45% 145

archivists now understand the significance of their preservation efforts and have absorbed information on basic prevention and treatment techniques, they have only partially integrated into their professional practice the set of innovative approaches that together have come to be defined as archival preservation management. Archivists are not yet accustomed to viewing preservation as a management umbrella under which many archival functions can be placed.

At least three professional issues should concern every archival institution that takes its preservation mandate seriously. First, preservation is preventive medicine, not emergency surgery. The analogy to public health is apt, since an ongoing planning approach to preservation often renders specialized, expensive conservation treatments

unnecessary by identifying problems at the collection level, before they become more serious, and taking cost-effective remedial actions. The data from the study and supporting research demonstrate that archivists take a piecemeal approach to preservation, picking and choosing from among the possible activities, instead of working through a planning process that sets priorities for the unit and for the parent organization.

Second, appraisal of archival records does not stop at the receiving dock. Archival institutions need to develop and implement more systematic strategies both for selecting materials from among the holdings for preservation action and for using preservation methods appropriate to the value of selected materials. Archivists long ago recognized that their fundamental professional skill is their ability to assess the archival

values of large volumes of records and manuscripts and to select the small portion with enduring value. Archivists can enhance their capacity to develop comprehensive preservation programs by acting on the essential relationship between appraisal and preservation strategies.

Third, archival units are isolated from the organizations of which they are a part, playing a far more limited role in supporting the institution's mission and purpose than they should. Archivists need to integrate their programs more fully into the institutions that support them. It is doubtful that significant progress on preserving archival collections can occur in many types of administrative settings until archivists succeed in functionally integrating the activities of their departments into those of their institutions. If undertaken systematically and comprehensively, archival preservation has the potential to become the primary impetus for improving the overall quality, value, and effectiveness of individual archival programs.

In looking toward the future, as the volume of archival information increases and as archival records appear in a constantly expanding variety of forms and formats, archivists are faced with difficult decisions. It is inappropriate and, in fact, impossible to make responsible preservation decisions without coordinating preservation efforts with other archival repositories on state-wide, regional, and national levels.

Additionally, archivists should align themselves with other professionals already involved in developing and implementing nationwide strategies and in setting priorities. Librarians, in particular, have made unprecedented progress in this area over the past decade. It is critical that archivists strengthen and support ongoing nationwide preservation initiatives to ensure that archival concerns are integrated into the process.

To accomplish these tasks, the archival

profession needs a framework that provides archivists, institutions, service organizations, funding agencies, and professional associations with a clear statement of archival preservation goals and objectives. An outline for action should reflect commonly accepted operating principles and should clearly focus the efforts of both the archival profession and individual archivists. Most important, a nationwide strategy should enhance the capacity of this country's archival facilities to build institutional and public support for comprehensive preservation programs.²⁴

In the decade ahead, preservation management must join appraisal and use as an equal partner in the archival enterprise. The development of comprehensive preservation programs may be the most important factor in the long-term health of the archival profession, simply because preservation provides to administrators a rationale for funding archival programs in institutional settings that is not provided by all the innovative research that has been done recently, and that will continue to be done, in appraisal and use. It is the professional responsibility of archivists to make the case for preservation programs in practical terms.

Archival programs must make sense to the people who pick up the tab, whether these people are taxpayers, legislators, or university presidents. Archivists should take the time to make sense out of the sometimes complicated challenge of archival preservation, translate possible solutions to specific institutional settings, and step back from the daily routine to see how preservation planning can solve more problems than it creates.

²⁴A draft nationwide strategy document is printed as an insert in the January 1990 *SAA Newsletter*. Review, revision, and dissemination of the document is the responsibility of the SAA Task Force on Preservation, established for a three-year period in October 1989.