

PRESERVING RESEARCH  
COLLECTIONS: A  
COLLABORATION BETWEEN  
LIBRARIANS AND SCHOLARS

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# Preserving Research Collections: A Collaboration between Librarians and Scholars

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*The "Statement on the Significance of Primary Records" issued in 1995 by the Modern Language Association (MLA) resulted in the formation of a task force by the MLA, the American Historical Association, and the Association of Research Libraries to examine the issues related to the preservation of primary records or "the artifact". The task force concluded that a report documenting the development of library preservation activities would be helpful to inform scholars that libraries have developed effective mechanisms to preserve printed materials, however, funding will never be sufficient to save every physical object. Moreover, new formats (film, video, digital information) have introduced new technological and additional financial challenges. The report should also encourage scholars to become involved in discussions of preservation priorities, both at the national level within their societies and on their local campuses. Preserving Research Collections is the result of the task force's recommendation.*

*The following organizations were represented on the Task Force on the Preservation of the Artifact:*

*American Academy of Religion*  
*American Historical Association*  
*American Society for Eighteenth-Century Studies*  
*American Society for Theatre Research*  
*Association of Research Libraries*  
*Council on Library and Information Resources*  
*Library of Congress*  
*Modern Language Association*  
*Society of American Archivists*

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## Introduction

Imagine a historian opening a late nineteenth-century text and helplessly watching as the title page breaks in her hand. Imagine another scholar, ten years from now, inserting a disk containing an important document into the computer and reading only a "fatal error" message on his screen. These two examples illustrate the Janus-like preservation challenge faced by research libraries today: fragility of the print past and volatility of the electronic future. To preserve the past, libraries must treat millions of books and other materials that are in danger of becoming unreadable because of the deterioration of the media on which they are produced. To preserve the future, they must contend with a new electronic culture in which the life span of both hardware and software used to create, store, and access digital information is potentially very short. While this challenge confronts all libraries, archives, and other depositories, the problems are most critical in the nation's larger research libraries. This report focuses on these libraries' strategies for maintaining access to scholarly resources in their original physical form or in new information formats. Like the ancient Roman god Janus, research libraries in their preservation efforts face in opposite directions at once: they must preserve the legacy of the past in the form of millions of deteriorating printed volumes, and they must respond to the needs of the future by ensuring the long-term accessibility of digital information in a rapidly changing technical environment.

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## What Is at Stake?

Scholarship and progress in the humanities depend on the continuing availability of the documentary record of published texts, manuscripts, and visual sources. Access to knowledge is inextricably linked to preservation. There is hardly an aspect of scholars' use of research resources that is not affected by the preservation crisis in libraries. "For centuries the library has been the repository of the written record and a powerful symbol of human intellectual achievement,"<sup>1</sup> observes the Mellon Foundation study on university libraries. The purpose of the research library, notes Sheila Dowd, "is, and has been throughout its long history...to collect the record of human knowledge, to organize and make it available for use, and to conserve it for future use."<sup>2</sup> The nation's research libraries house the vast historical and intellectual records of human experience, both the original sources of scholarship and the products of past scholarly work. These libraries contain major special collections of unique research resources as well as scholarly texts, in print and the many other media on which the collective memory of human activity is preserved. While research libraries play an indispensable role in all scholarly fields, for the humanities the content of these libraries is, in effect, the very foundation of scholarship and teaching.

Research library collections constitute a major part of society's collective memory. Without preservation of these documentary resources, the accumulated knowledge of society cannot be transmitted to future generations. As the historian Arthur Schlesinger, Jr., warns, "A nation that forgets its history is disabled in dealing with the present and the future."<sup>3</sup> Society depends on the continued availability of historical and cultural records that chronicle political events, document achievements in the arts, track scientific discoveries, and capture human experience in its myriad manifestations. These records are of immense value to society in helping it understand the past, shape its view of the present, and plan for the future.

Scholars, librarians, archivists, and library users share the conviction that a nation must preserve its cultural and intellectual heritage. Recorded knowledge has a long life, but the human record, in every form, is fragile. History has recorded the loss of the papyrus scrolls in the great library of Alexandria. In this century, the survival of the print record has been threatened by acts of war, fire, and flood, and by many other forms of destruction. Chance often plays a significant role in determining which records survive. We know from the detailed census in the *Records of Early English Drama*, for example, that only a small number of these plays have come down to us as texts. Carelessness, accidents, the ravages of use, and the vicissitudes of time have jeopardized the documentary heritage. But many

of these hazards pale in comparison with the "brittle books" problem, the shorthand term for the "slow fires" of acidic paper that are endangering most publications of the past 150 years, many of which are already so brittle that they may fall apart during use. It is estimated that nearly 80 million books in North American research libraries are threatened with chemical and eventual mechanical disintegration. If this estimate proves correct and research libraries lose even a fraction of their printed publications over the next decades, the comprehensiveness and richness of the nation's cultural heritage will be irreparably diminished.

The print resources of the past 150 years constitute a significant portion of the nation's cultural legacy and are crucial to all areas of the humanities especially. The landmark 1986 study by the Council on Library Resources reports, "The paper most often used for books manufactured since the mid-nineteenth century tends to be acidic and, for that reason, less stable and durable than earlier, alkaline paper."<sup>4</sup> Virtually all post-1850 publications are at risk, because they are printed on paper manufactured from unbleached wood pulp--which is highly acidic--and/or paper treated with acidic sizing. Unbleached woodpulp paper deteriorates rapidly with the passage of time; the process can be slowed down but not reversed. Unless libraries take action, books printed on acidic paper may become unusable in the twenty-first century.

The instability over time of major portions of research collections will seriously affect humanities scholars now and in future decades. The brittle books problem is particularly daunting in that the underlying cause of the deterioration of texts cannot be changed without costly chemical treatments. It would be a serious error to underestimate the peril to print collections and the cost of ensuring their continued existence.

While the uncertainty of paper-based research collections is a stark reality, the growing reliance on information in electronic form poses the challenge of maintaining access to an even more volatile format. Magnetic media are especially subject to physical deterioration; hardware and software obsolescence presents a different but equally serious problem. Overshadowing these concerns is the complex intellectual question about which electronic information to save. The projected growth in digital information in the twenty-first century threatens to overwhelm libraries' capacity to select, manage, and preserve these new formats.

Preservation in the digital era presents challenges that are not only more complex, but also reach beyond the traditional boundaries of preservation programs. Preserving information in electronic form entails significant technical investments and structural institutional change. Files must be refreshed--that is, copied--and existing applications must be migrated repeatedly to new hardware and software

platforms. As scholarship becomes increasingly reliant on digital collections, research libraries face the challenge of maintaining for long-term access resources created with the new technologies. As George Soete puts it, "When we confront the problem of preserving digital information, we confront the very essence of what it will mean to be a library in the 21st century."<sup>5</sup>

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## Scope of Preservation Needs

Virtually every medium used to record information is threatened by the natural forces of deterioration. The magnitude of preservation needs in a library is determined by the interplay of many factors; chief among them are the age, scope, and composition of the collections. Research library collections include a multiplicity of formats (e.g., monographs, journals, newspapers, maps, manuscripts, photographs, digital images) and media (e.g., paper, vellum, photographs, films, magnetic tapes, various types of disks). Among these diverse resources there is tremendous variation in life expectancy. Paper made from cotton fiber has lasted for more than a thousand years, preservation microfilm can have a life expectancy of hundreds of years, woodpulp newspaper pages deteriorate within decades, and some types of computer disks show loss of information after a few years.

While the durability and longevity of library collections are determined in part by inherent characteristics of the media, libraries and users also play a role. Many media deteriorate much more quickly when housed under hot, humid, or otherwise poor storage conditions; when adequate collection maintenance is lacking; or when the media are improperly handled by users.

Among the variety of media, paper-based materials compose the largest portion of research collections and are at the center of the preservation crisis. A series of assessments of the condition of research collections describe in alarming detail the magnitude of the preservation needs in research libraries. The most comprehensive survey was undertaken at Yale University Library in 1982 with funding from the National Endowment for the Humanities. This large-scale study assessed the physical condition and extent of deterioration of books in a random sample of 36,500 volumes; the results brought the size of the problem into sharp focus. In the Yale University collections, which numbered more than 7.7 million volumes at that time, 82.6% of the books were printed on acidic paper, 37.1% were already brittle, and 12.8% needed immediate repair.<sup>6</sup> More recently, a survey of 40,000 volumes

in the Western European Local History Collection in the Harvard University Library revealed that 44% were damaged.<sup>7</sup> Overall these studies indicate that about one-fourth to one-third of larger research collections show significant signs of disintegration, that embrittlement is an ongoing process and threatens millions of books in the nation's research libraries. One estimate based on a Library of Congress study shows that 77,000 volumes in that library's collection become "brittle" each year.<sup>8</sup>

While the brittle books problem has dominated the preservation discourse, research libraries also hold vast collections of manuscripts, archives, and rare books printed on alkaline paper that require conservation treatments to restore them to usable condition. In addition, there are aging problems with motion picture films, sound recordings, and videotapes, all of which have limited life spans and require substantial preservation investment.

Electronic information and communications technologies are reshaping research libraries. At present, digital resources are a small percentage of total collections, but this situation will change dramatically. The amount of information that is created on computers is increasing exponentially, and the number of electronic collections is already huge. Not only will this upward trend continue, it is certain to accelerate. Information created in electronic form is presenting libraries with yet a new set of preservation challenges. The traditional preservation strategies used in the past to ensure the longevity of intellectual resources are no longer appropriate in the digital environment. Not only are digital media short-lived, there are no warning signals when they are becoming unreadable. Long-term retention of digital resources requires systematic maintenance and monitoring of data integrity, with continued upgrading of system components. Migration to newer technologies will eventually occur, and new information technology standards will be implemented as they are developed.<sup>9</sup> Ensuring long-term survival of digital information is a complex technical and economic problem that will consume an increasing portion of preservation investments in the twenty-first century.

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## **Responses to the Preservation Challenge**

Preservation at the turn of the century is a rapidly changing enterprise that builds on several decades of success in creating the infrastructure at both the national and institutional levels to support systematic, efficient, and sustained preservation investment. Among the most significant recent developments are:

- building a coalition of key national stakeholders to advance preservation;
- launching a nationwide program to address the brittle books crisis;
- implementing state, regional, national, and international cooperative projects;
- improving the capacity of research libraries to preserve the nation's cultural heritage;
- increasing financial support at the institutional and national levels;
- establishing professionally managed preservation programs that are now a basic feature of research libraries;
- expanding the range of preservation strategies, improving efficiency, and streamlining preservation treatments;
- exploring digitization as a preservation technology;
- developing standards for permanent paper and for preservation microfilming; and
- fostering research and development efforts to address scientific or technical preservation problems.

There are three essential arenas for advancing preservation: national, collaborative, and institutional.

### ***1. Success of National Efforts***

A complex web of individual research libraries, national organizations and associations, and federal agencies has shaped the American preservation program. Together these diverse organizations have made a substantial investment in cooperative programs to preserve research materials. Key organizations include the Association of Research Libraries (ARL); the Council on Library and Information Resources (formerly the Commission on Preservation and Access and the Council on Library Resources); the American Library Association; the Library of Congress; the National Endowment for the Humanities (NEH), especially its Division of Preservation and Access; the National Humanities Alliance; and the Research Libraries Group (RLG).

A centerpiece of the national strategy is the effort to address the problem of brittle books. Of the nearly 80 million volumes printed on acidic paper in research library collections, about 12 million are unique titles. Approved by Congress in 1989, the Brittle Books Program is envisioned as a 20-year effort to save three million of these endangered unique volumes. Its overarching goal is to "create, in effect, a new national library of preserved materials" through large-scale cooperative preservation microfilming.<sup>10</sup> The intent is to capture the intellectual content of

brittle books and journals that have deteriorated to a stage where reformatting is necessary. This nationwide program for brittle books has been conducted under the aegis of and with support from the NEH. In an extraordinary partnership, the NEH has funded a series of collaborative projects in libraries and archives. The track record of the Endowment's preservation efforts is impressive--approximately 850,000 embrittled volumes have been reformatted to date. The preeminent role of the NEH in funding preservation microfilming projects has placed special emphasis on humanities research collections.

The NEH also funds the national initiative to catalog and preserve on microfilm the country's newspapers on a state-by-state basis. All 50 states, two U.S. territories, and the District of Columbia are now involved in the NEH United States Newspaper Program. At the conclusion of currently funded NEH newspaper projects, catalog records for more than 245,000 newspaper titles will be available in a national database, and approximately 55 million deteriorating newspaper pages will have been transferred to microfilm.

Retrospective solutions have been accompanied by a search for prospective solutions to the brittle books problem. Working with scientists and the paper industry, a national coalition of library organizations, government agencies, and professional librarians and archivists has worked to find an alternative to acidic paper, so that newly published texts will not deteriorate over short periods of time. Using the results of scientific paper research, standards for permanent and durable alkaline paper were developed.<sup>11</sup> The North American and European publishing communities responded to the call for use of permanent paper, and most scholarly monographs and journals have been printed on permanent paper for the past 15 years. In 1990, the federal government took the important step of requiring permanent paper in all government publications of enduring value. Finally, for primarily economic reasons, the paper industry has changed to production of alkaline paper. Taken together, these developments have halted the use of acidic paper for most scholarly texts in North America and Europe, but many of the publications from other countries continue to be printed on acidic paper. While success in containing the problem of acidic books in some regions of the world is encouraging, more remains to be done.

Public awareness of the preservation problem has been increased by such films as *Slow Fires* and *Turning to Dust*, and by expanded media coverage of preservation topics. The *New York Times*, *Washington Post*, *Scientific American*, and many scholarly journals have published articles on the preservation of research materials.

## ***2. Collaborative Programs***

Collaborative action in preservation has tackled many problems, and it has been

the dominant model in addressing the brittle books problem especially. Through an intricate mosaic of national, regional, and local projects, libraries have built what is, in effect, a national collection of preserved texts. A few examples will illustrate the rich diversity of these efforts. For more than three decades, the members of the American Theological Library Association have filmed deteriorating theology serials and monographs and specialized religious materials. The American Philological Association pioneered a landmark project in 1984: with the assistance of scholars in classical studies, priorities for preserving the most important works published between 1850 and 1918 were established. These works were then filmed at the Columbia University Libraries.<sup>12</sup> The project preserved the most important and most endangered publications in this field. The Research Libraries Group (RLG) has managed a series of cooperative preservation microfilming projects that allowed libraries to target collections at risk, such as U.S. publications from 1870 to 1920, and to divide up the task of filming materials on the basis of collection strengths. These projects not only enabled libraries to share the task of preserving collections; they also resulted in the creation of tools, guidelines, and approaches that have become the model for large-scale preservation microfilming. For example, the RLG model has been followed closely by the members of the Committee on Institutional Cooperation (CIC) in their preservation projects.

Availability of external funding always has been a critical factor in cooperative programs. The Brittle Books Program has been a powerful catalyst for promoting coordinated preservation at the local, regional, and national levels. That a significant number of funded projects involved multiple institutions underscores the scope and vitality of the cooperative approach. Cooperation and collaboration have successfully shaped a national response to the preservation challenge. On a fundamental level, broad-based participation has been an important factor in transforming preservation programs in research libraries.

### ***3. Transformation of Preservation Programs in Research Libraries***

In response to the preservation challenge, research libraries have expanded preservation investments and have effectively transformed small-scale, fractured efforts into comprehensive, systematic programs. The evolution of these programs spans more than three decades. In the 1970s, some of the nation's largest research libraries, at such major universities as Columbia, Berkeley, and Yale, established preservation programs. The Library of Congress and the New York Public Library expanded in-house preservation functions. Over the past two decades, more than 80 of the 122 member institutions of the Association of Research Libraries have implemented professionally managed preservation programs by adding preservationists, reorganizing existing binding and repair activities, and developing new capabilities. By the early 1990s preservation had become a top priority for

research libraries. *ARL Preservation Statistics* provide compelling evidence of growth, expansion in activities, and institutional support. For example, in 1997, ARL libraries spent more than \$80 million on preservation activities and treated almost one million volumes.<sup>13</sup> The accomplishments in dealing with the preservation crisis are impressive, and the transition to professionally managed programs has been rapid.

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## Preservation Strategies

Indispensable for the success of preservation efforts at the institutional level is the ability to tailor treatments to an array of problems. Research libraries with comprehensive preservation programs use a variety of approaches to carry out their responsibilities to maintain research resources for use.<sup>14</sup> These approaches range from traditional methods of commercial binding to intricate treatments of rare materials to digitization. Some options treat collections on a macro level and require no item-specific intervention. Other options protect or restore texts one by one. Still others reformat endangered items, capturing only the information content. All preservation programs require complex decision making to choose the most effective approach to ensure continued availability of valuable scholarly information. Preservation options will vary widely in labor requirements and technical facilities, and hence cost. Maximizing benefits from investments entails difficult trade-offs.

From a cost-benefit standpoint, the single most effective preservation action is to store collections at properly controlled temperature and humidity. Temperature, relative humidity, light, air quality, and wide fluctuations in temperature and humidity have a direct and continuing impact on the longevity of research materials. Research has shown that storing print collections at 60 instead of 80 degrees Fahrenheit will extend their life by more than 300%; paper degrades about twice as fast at 50% relative humidity as at 25%.<sup>15</sup> Improving environmental conditions will buy time, increase the life span of all materials in the collections, and extend the time available for preserving them.<sup>16</sup>

Although improving storage conditions will significantly lengthen the useful life of research materials in the aggregate, only labor-intensive treatment of texts one at a time can repair damage and ensure availability of the original work for use. Collections care efforts have traditionally focused on books and other paper-based materials. Many treatments are available to prolong the life of these materials--for

example, putting low-use items into protective enclosures; repairing or rebinding high-use items; and conserving materials that are rare or otherwise have artifactual value. Timely minor repairs can ensure the continued safe use of most library materials. Such limited repairs retain the original bindings and minimize changes to the original formats of texts with artifactual value. Most importantly, not only are a significant number of damaged materials restored to usable condition in this way, the overall condition of the collections is gradually improved as well.<sup>17</sup>

Another strategy is to deacidify acidic books and other paper-based materials. Mass deacidification is an effective way to deal with acidic books that are in otherwise sound condition. The process neutralizes the acids in book papers and leaves an alkaline reserve against future acid attack. Deacidification can extend the useful life of paper by over 300%.<sup>18</sup> This strategy allows retention of acidic but not yet deteriorated volumes in their original format. Although the goal of large-scale mass deacidification at low unit costs has proved elusive, selective deacidification is a standard component of preservation programs. It is a technology especially well suited for acidic books and documents that have scholarly value as artifacts and therefore must be preserved in original form.

In contrast to environmental control, conservation, and deacidification, reformatting does not treat the artifact but instead focuses on reproducing and saving the intellectual content of endangered items. Reformatting creates a permanent replacement of deteriorating monographs, journal volumes, and other paper-based documents. Libraries have used preservation microfilming to reformat at-risk materials since the 1930s. It is a mature technology that is governed by a detailed set of standards, but it is also an imperfect technology. Microfilming cannot affordably capture detailed, continuous-tone, or multicolored illustrations, and it complicates access, being machine-dependent. Reformatting has been the primary preservation strategy used to rescue brittle nineteenth- and early-twentieth-century texts. The most common option is to film the deteriorating volumes, but in some instances photocopying onto permanent, alkaline paper is used as an alternate approach.

Digitization is the newest technology that may hold promise for preservation reformatting of books, manuscripts, and other printed texts. "The conversion of textual, visual, and numeric information to electronic form--from preparation and conversion to presentation and archiving--encompasses a range of procedures and technologies with widely varying implications and costs," observe Dan Hazen, Jeffrey Horrell, and Jan Merrill-Oldham.<sup>19</sup> There are many different ways of digitizing. In *The Digitization of Primary Textual Sources*, Peter Robinson lays out some of the complex choices that must be made--for example, whether to scan

texts at one resolution or another, and whether to bitmap or key texts.<sup>20</sup> Such decisions affect a scholar's use of and ability to manipulate texts and images. The benefits of networked access are a powerful driving force for digitization, but significant concerns remain: digital resources are dependent on complex technical systems that must be continually upgraded, and no standards exist for the archival permanence of such resources. These problems must be solved in order to preserve original digital works as well as to rely upon digitization as a preservation reformatting strategy. Libraries engaged in digitizing for preservation are operating, for the most part, pilot projects to gain experience and, as Suzanne Kellerman and Rebecca Wilson say, to "explore long-term possibilities for the future."<sup>21</sup>

Beyond these primary approaches, librarians have developed a range of other activities to keep endangered research collections accessible for teaching and scholarship. Some preservation strategies, such as improving storage conditions, may be invisible to scholars. Some, such as rebinding, will have more apparent results. And some, such as reformatting, will transform how a scholar uses texts; transference to electronic media, for example, may support new ways of teaching and new kinds of scholarship. It is important that scholars understand not only the causes and consequences of the deterioration of different information media, but also the choices involved in protecting and preserving research collections at risk. Scholars should participate in the debate about priorities for action.

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## Decision Making in Preservation

The preservation issue raises profound questions about which research resources are and will be most important to scholars today and in the future. Research libraries lack the funds required to preserve all the deteriorating and endangered materials in their collections. Therefore, choices about what to preserve and how to preserve it must be made. But it is far easier to achieve consensus on the general need for preservation than on the specific strategies to ensure continued access.

Although preservation needs reach far beyond the brittle books problem and the emphasis on saving content through reformatting, it is in this arena that diverse views have been most evident. Scholars and librarians agree on the goal of "rescuing our cultural heritage before it [is] lost," as Nancy Gwinn writes.<sup>22</sup> But assessments differ on the methods. Ultimately the defining issue is selection: Which resources should be preserved and in what format?

The library community has pursued several distinct though overlapping methods to select texts for preservation microfilming. These differ in their approaches, values, and prioritizations of the tasks to be accomplished. One method deals with the preservation problem in a framework of individual institutions and the integrity of local collections. Its philosophy is that libraries do not have sufficient resources to save everything of potential value and that priorities should be assigned, according to demand, for the reformatting of deteriorated materials. In this campus-based, use-driven approach, individual items are selected because of their poor physical condition and local needs. The primary aim is to save materials most at risk within a given institution.

A second approach shares the concern that libraries do not have the resources to save all the endangered texts in their collections but holds that selection must transcend the needs of local users, taking place within a context larger than one institution. It proposes "that priority for preservation be given to unusually strong (great) collections because those collections are likely to provide the best presentation of the literature in a given field."<sup>23</sup> The aim in this subject- or collection-based approach is to select according to a collection's comprehensiveness and strengths. A central characteristic of this approach is close collaboration among several institutions to ensure that related materials are included and that various projects do not duplicate efforts. This model has been the dominant one in the national Brittle Books Program.

A third approach does not deny the crucial role of librarians in preservation selection, but emphasizes the need to follow an intellectual blueprint based on a discipline's total literature and shaped by input from scholars in the field. This position holds that each discipline encompasses a unique universe of research resources and relies on different research patterns. The aim of this discipline-based approach is to incorporate the collective needs of the scholarly communities in the decision-making process. A number of projects in fields ranging from agriculture to classics to theology have pursued this strategy.

While these three approaches differ in their selection principles, they all reproduce the at-risk text, creating a surrogate on film. Just as views differ on selection criteria of embrittled texts, there are different perspectives on the choice of format. The decision to preserve content through microfilming has major implications for scholars. Not surprisingly, concerns have been raised about the long-term impact of preservation microfilming on scholarship. While many scholars acknowledge the need to reformat brittle print resources, they also stress the enduring value of these resources as artifacts. Selection decisions, they emphasize, need to be made in a context that recognizes the importance of retaining the original object. This

position is cogently presented in the Modern Language Association (MLA) "Statement on the Significance of Primary Records,"<sup>24</sup> and the accompanying essays by several humanities scholars in the MLA's *Profession 95* articulate the important issues concerning preservation of texts whose original formats have scholarly value. The "Statement" arose from the concern that reformatting was endangering the continued availability of the physical artifacts. Central to the policy recommendations of the MLA are the vital importance of the physical features of printed texts and the consequent need to retain primary records for humanistic scholarship.

A related concern stems from the loss of local shelf access. Individual research library collections have been shaped over time by careful selection of those items of value to present and future scholars. Just as libraries are products of "a culture of print,"<sup>25</sup> the printed scholarly literature has been indispensable to scholarship in the humanities. Reformatting can have an adverse impact on the physical integrity of collections and can also hinder browsing. Browsable is of particular importance to scholars in the humanities. Dan Hazen notes, "Research characterized by a rather fluid meander through a broad range of materials plays a major role in some humanities fields."<sup>26</sup> In *Widener Library: Voices from the Stacks*, several Harvard University humanities scholars describe their research in the Widener stacks; their vivid examples highlight the crucial role of browsing, which permits a patient search from source to source in an ever-widening circle that leads to new discoveries and connections.<sup>27</sup> Taken together, these and other descriptions of the research process of humanists have put into sharp focus the need to keep in mind, when choosing preservation strategies, the ways scholars use library materials.<sup>28</sup>

Future technological advances in digitization and network technologies will reshape the debate about decision making in preservation reformatting. We are witnessing a fundamental shift to issues in the selection of manuscripts, early printed books, monographs, and visual resources for digitization. The use of digitization technology presents many opportunities for scholarship in the humanities. For example, medievalists already have benefited significantly from the transference of widely dispersed medieval texts to electronic form. One persuasive value of digital surrogates is that they provide access to materials that are frequently impossible for most users to see because the materials are dispersed among distant libraries and archives or because they are fragile. As a recent article in the *New York Times* announced, "Digitized Artifacts Are Making Knowledge Available to All, On Line."<sup>29</sup> The project highlighted in this article is the scholar-led papyrus project, which aims to build a virtual archive of 50,000 papyri from the collections of seven major research libraries. This virtual collection will allow worldwide access and enhance scholarly use of these unique materials. An

even larger scale effort is the digitization of the 8,600,000 pages of documents relating to the Spanish Conquest from the collections of the Archivo General de Indias in Seville.

Remarkable as these and other projects are, digitization is very expensive; choices of content and format remain critical. As the authors of *Selecting Research Collections for Digitization* underscore, "We will be able to convert to electronic form only a small percentage of existing scholarly materials, and to do even that will require substantial investments."<sup>30</sup> Not only are there complex choices of what types of material should be digitized, but there are also highly technical choices of what digitization techniques should be used. Clifford Lynch captures the complexity of digitizing special collections: "The challenge is how to convert such collections to digital format in a way that facilitates reuse and enhancement by the broad scholarly community over time--that weaves primary content into a web of commentary, criticism, scholarship, and instruction, and links it to other related content without regard to institutional or geographic boundaries, while preserving the integrity of the digitized representations."<sup>31</sup> Only through collaboration will this vision be realized.

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## Collaboration and Partnerships

The complexity and dimension of the preservation challenge require high-level, sustained attention and call for new collaborative ventures. Mobilizing scholarly communities is essential to the successful preservation of both deteriorating print collections and new digital resources. The resolution of difficult preservation issues requires ongoing involvement by scholarly associations as well as individual scholars.

### *1. Role of Scholars in Preservation*

Over the past decade many scholars have participated in discussions about preservation on their local campuses, through NEH scholarly panels, and in many advocacy efforts. The preservation problem is long-term, and the perils to research resources are a reality that all scholars in the humanities have experienced firsthand. Scholars and librarians recognize the difficulty, even the impossibility, of solving the problem of preservation in its entirety. But now is certainly the time to strengthen the involvement of scholars and to forge new partnerships. Rapid changes in technology are creating new opportunities and adding pressures. Participation by scholars is indispensable in the selection of resources for

digitizing. Digitization projects must be designed to meet the fundamental needs of scholars. The value added by digitization, the use of electronic materials in both teaching and research, the retention of crucial features of the source materials, the importance of the original artifact, and the convenience of navigational tools must all be kept in mind. Already under way are several initiatives that involve close collaboration between scholars and libraries and that demonstrate the advantages of broad-based support from all stakeholders.

## ***2. National Scholarly Associations***

National scholarly organizations play a vital role in making preservation, and all that the loss of the nation's cultural heritage means, explicit on the national agenda. The Modern Language Association, working with the American Historical Association, has taken the lead in publicizing the importance of preserving textual artifacts. All scholarly societies can contribute much by pursuing an active advocacy and education agenda. Such efforts can take the form of keeping scholars informed about initiatives, promoting campus awareness of preservation, and encouraging participation in national preservation programs. With all institutions of higher education facing tight budgets, national scholarly organizations can function as advocates to increase financial support for preserving scholarly resources. For example, the National Humanities Alliance has joined with ARL and the Council on Library and Information Resources in support of increased federal funding for preservation. This strategic alliance has been a powerful factor in supporting the NEH-funded Brittle Books Program.

The preservation of digital resources will require new efforts and extensive collaboration. One task is to promote the development of a national system for the preservation of digital resources. The increase in digital-only publishing poses difficult questions: "What do we preserve? How do we preserve it? At what cost?"<sup>32</sup> The answers will be found only through research and extensive debate about the implications for future scholars and through shared decision making among all stakeholders.

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## **Financial Requirements**

For scholars, librarians, and their institutions the daunting challenge is to sustain preservation programs to protect research library resources for future scholarship. These collections are not only a major intellectual investment but a capital investment as well. Yet the problem of funding preservation programs is frequently

analogous to the problem of funding building maintenance: among the many competing demands for resource allocations, preservation does not always sustain administrators' attention. The pressure to contain costs in higher education has intensified competition for resources. There is a danger that the preservation of print collections will be underfunded and pushed to the margins of institutional concerns. But it is clear that substantial investment in preserving print-based resources will continue to be necessary. And, as the digital library becomes a reality, a major commitment of funds is required to build the requisite technical infrastructure with all the attendant systems for maintaining digital resources and storage media.

Without question, the need for additional funds for preservation is urgent. The cost of preserving the nation's intellectual resources is high. Preservation is capital- and labor-intensive. Yet a look at the present funding support for preservation in research libraries reveals a discouraging picture. Preservation expenditures in ARL libraries have been level since 1993, external funding has been declining steadily, and staffing has declined.<sup>33</sup> The negative impact of the reduction in federal funding is especially evident. Direct federal funding has been of critical importance because it encourages other funding, at both the institutional and state levels. The recent cuts in the NEH budget have hurt preservation efforts by research libraries. NEH grant funds played a major role particularly in preservation microfilming. *ARL Preservation Statistics 1996-97* documents a drastic decline in microfilming since 1992, when the NEH budget cuts went into effect.<sup>34</sup>

Meanwhile, the new electronic resources are intensifying pressures on tight budgets. The need is great for continued institutional investment in expanding libraries' capacity to create digital surrogates and preserve original digital resources. The projected cost of maintaining digital collections raises the inevitable question: How will libraries afford to support refreshing and migrating data, or other strategies aimed at ensuring the longevity of digital resources? Not only are there substantial add-on costs for maintaining digital information, but frequently the costs are duplicative. A look at several digitization projects shows that they depend on paper or microfilm for archival retention, with the attendant increase in expense. It is also noteworthy that many digitization projects include manuscripts and other original documents; therefore the digitized reproduction will never take the place of the original, which will still need to be preserved. If financial resources for preservation are not increased, research libraries may be unable to continue to build their preservation programs to the needed levels.

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## What Does the Future Hold?

The combination of the brittle books legacy and growing numbers of media, electronic resources, and users--compounded by limited financial resources--points to a turbulent future for research collections. The momentous task of dealing with the deterioration of print collections is far from completed. In the humanities, the printed monograph continues to be the primary vehicle for scholarly communication. As many scholars have observed, printed publications are a reflective and compelling medium in which to engage and explore ideas; paper will continue to be a pervasive medium for the transmittal of knowledge. Accordingly, the brittle books problem will be an ongoing concern and should receive continuing attention. There is little doubt that libraries are at a critical crossroads and that the movement toward greater reliance on digital technology is inexorable. Expectations are great among scholars and administrators that technology will enhance higher education. But this will require significant investments in digitization and the development of preservation-quality digital media, as well as methods for preserving digital information. In the words of John Bruer, there is a danger "that our overall preservation programs may lose their appropriate balance, resulting in both the abandonment of proven (non-digital) techniques as well as the likelihood that large categories of (non-digitizable) materials may be put at risk."<sup>35</sup>

Future preservation efforts in research libraries will require a strategic vision that integrates the need for maintaining print resources with the opportunities offered by digital technologies. Adding to the challenge of balancing conflicting needs is the problem of limited financial resources. If libraries are to preserve scholarly resources either in their original formats, or as reformatted surrogates, substantial economic and technical investments are necessary.

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