

Education in Library Conservation

PAUL N. BANKS

Some Historical Perspectives

THE PRESERVATION OF RECORDS has probably been of concern as long as there have been records; in fifth century China, paper was treated with insecticidal infusions, and medieval librarians were concerned that libraries be placed in rooms with good ventilation to reduce the threat of dampness and insects. Similarly, bookbinding, one of the primary means of protecting the codex book, is roughly concurrent with the Christian era. In any case, earlier record materials tended to be permanent and durable, and their main enemies were fire and flood, mildew and insects.

But with the Industrial Revolution came the beginnings of social, economic and technological changes that have altered the circumstances of records preservation just as profoundly as they have virtually every other facet of civilization. The proliferation of books and other records, the decline in the lasting qualities of materials, and the effects of increasing air pollution need no further comment here, but the effects of other factors such as inadequately controlled heating and air conditioning have been less noticed.

Among the socioeconomic changes that have had a bearing on the preservation of book and other record materials has been the decline of the artisan. When all manufactured goods were made by hand in small shops, the artisan had a central role in society. But as manufacturing

Paul N. Banks is Associate Professor and Director of Conservation Programs, School of Library Service, Columbia University.

became industrialized, the role of the artisan became increasingly untenable economically. One result of this is evident every day: the increasing cost, and often decreasing quality, of such services as the repairing of shoes and garments. The increasing marginalness of the artisan—or, stated another way, increasing economic pressure—has meant, over at least the past century, interrelated declines in the education, the outlook, and often the skills of the artisan.

One product of the dramatic rise in the cost (at least relatively) of handmade goods is that those few that are produced either are shoddy, are goods of high luxury, or are created and bought as virtual works of art (which are also, of course, luxury goods). In the latter category are the products of designer binders. Creative bookbinding is a field closely allied with book conservation both because of the manual skills required and because artistic bookbinders often must do conservation work in order to supplement their income. The underlying assumptions of these two branches of bookbinding, however, are quite different; indeed, they are almost opposed, as with advertising typography, whose function is to call attention to itself, versus book typography, which is successful to the degree that it is unobtrusive to the reader. Few have the talent and energy to pursue both branches entirely successfully.

The traditional training of the book artisan was by an apprenticeship which usually started at an early age that sharply limited the apprentice's formal education. While there are always exceptional people in any endeavor who achieve beyond the norm of their milieu, the declining status of the artisan combined with limited education generally led to a decline in standards for bookbinders as well as other craftsmen.

Actually, this is rather an oversimplification. In many cases (although by no means all) actual manual skills—as reflected, for example, in clean and brilliant gold tooling—improved. But on the one hand, the long historical roots of the craft were lost; neither master nor apprentice often had an opportunity to study the conspicuously sound structures of early bindings, for example. On the other hand, the technical challenges of binding, restoring and preserving newer materials—products of the rapidly changing technology of the Industrial Revolution—soon went beyond the purely empirical ability of traditionally trained craftsmen to solve.

One additional thread might be picked up here. There has gradually developed, especially in the last hundred years or so, the notion that there is an obligation to posterity to preserve, with as little alteration as possible, objects of what is now called cultural property: works of art

Education in Library Conservation

and artifacts that are assumed to have scholarly or cultural value for people of the present or of the future. In other words, the question of ethics has entered the field of the conservation of library and archival materials.

The science and technology that made the proliferation of records possible—and also all too often made them quite perishable—are also fundamental to any preservation efforts that provide any hope of gaining on the growing backlog of deteriorating library and archival materials. Not only are empirical solutions no longer adequate—acidic paper will deteriorate reinforcing tissue unless the paper is first neutralized—but the scale of preservation problems has escalated far beyond the ability of older, craft-oriented techniques alone to solve. (Craft remains an essential element of conservation, however, as will be discussed below.)

A somewhat similar situation evolved in the conservation of works of art. The often great value attached to individual works of art and their public visibility (in both literal and metaphorical senses) led to professionalization of art conservation earlier than has happened in the conservation of library and archival materials.

Although there had earlier been at least one small generation of remarkable pioneers, much of the groundwork for the modern discipline of art conservation, based on science and ethics as well as craft, depended on two turning points: the founding of professional societies, and the establishment of the first graduate degree-granting training program in the field. The International Institute for Conservation of Historic and Artistic Works (1950) and the American Institute for Conservation of Historic and Artistic Works (1960) have increased communication among people concerned with or practicing conservation, have promulgated a code of ethics, and have generally advanced professionalism in the field.

In 1960 the Rockefeller Foundation, responding to the report of a group of museum officials, art historians and conservators, supplied funds to establish the Conservation Center at the Institute of Fine Arts of New York University, the first graduate degree-granting education program for museum conservators in the world. The center's program, which leads to a master's degree in art history and a certificate in conservation, includes art history and connoisseurship, the history and science of art materials and techniques, ethics and philosophy of conservation, general collections protection and care, and laboratory practice in the examination and treatment of objects. One to two years of the four-year program are devoted to an internship in recognized conservation laboratories.

Similar programs have since been established by the State University of New York at Oneonta and the New York State Historical Association at Cooperstown, New York (1970), and by the University of Delaware and the Henry Francis DuPont Winterthur Museum (1974). These extensive and rigorous academic programs in art conservation seem to represent recognition of both the complexity of the conservation of cultural property and the responsibility entailed.

Some Needs in Library Preservation

The ultimate aim of book preservation is to make the information that the books contain available for as long as it is needed; Edwin Williams has suggested, perhaps only slightly metaphorically, that the term *dissemination* might usefully be substituted for the term *preservation*.¹ Among the ramifications of this useful concept, however, is that books may contain more than one kind of information, and that there are difficulties in determining, or more accurately in deciding, how far into the future that information may be needed.

On the first point, it is easy enough to assert that there are books which without question have artifactual value, and albeit with somewhat less confidence, to assert that there are ones that are of value only for their intellectual content. (A book that has no artifactual value in general might have some in a particular highly specific context.) The most difficulties are caused by the large area in between: those books that have some, or potential, or unrecognized artifactual value. But that large gray area is really the topic of other papers.

It may be asserted that the point of preserving artifactual values is preserving—for dissemination to users of the future—those aspects of the book's information that can be derived from the physical object as distinct from (but by no means necessarily instead of) its textual content. In this case, the point is to preserve the physical container of the textual content with as little alteration as possible so that physical features can be "read" as accurately as possible.

For books that are deemed (however accurate that determination may ultimately prove to be) to have no artifactual value, the specific "container" of the information is assumed to be inconsequential, so that there is no theoretical objection to changing the container, for example, by converting to film format and discarding the original. These two aspects of library conservation appear to entail, needless to say, rather dramatically different approaches: conventionally, the restoration of rare books on the one hand, and preservation microfilming programs on the other.

Education in Library Conservation

Truly preserving artifactual values implies avoiding any alteration to the artifact insofar as possible, whether that alteration is in the form of deterioration or of the treatment of prior deterioration. And even when intervention in the form of rebinding or other treatment is appropriate—that is, unavoidable—it is enormously expensive if it is truly to serve the ends of conservation. Although the proportion of artifactual to general materials in most collections is assumed to be small, even here the dimensions of the problem are enormous. Peter Waters has estimated that 11,500 work-years are required just to deal with the present problems of the *rare* book collections of the Library of Congress.²

Similarly, while microfilming to preserve the text of badly deteriorated nonartifactual materials is cheap compared with physical restoration, there are millions upon millions of deteriorating volumes in research collections. (Some newer technologies such as videodisc are sometimes seen as offering significant cost advantages in conversion for preservation; although they probably will speed—and reduce the cost of—retrieving and distributing information so recorded, it is difficult to see how the high cost of initial capture of the information, including preparation, handling for imaging, and checking, can be significantly reduced.)

The conclusion that seems inescapable, then, is that progress in preserving research collections that is at all proportional to the dimensions of the problem can only be achieved through the application of preventive methods, such as optimum environmental control and storage and housing that benefit entire collections, in addition to more conventional approaches. In addition to the inherent benefits of slowing down deterioration, the urgency of preventive conservation is in buying time until greater resources—fiscal, human and technological—are available for the application of “conventional” solutions or until better methods are available.

These preventive methods—along with methods of actual treatment, about which more will be said later—require an engineering approach. This term has in my mind two major connotations. First, engineering in the most conventional sense is obviously fundamental to such matters as designing and operating environmental control systems and in other aspects of the design of new or renovated library buildings. The difficulties connected with this aspect of engineering seem to stem from divisions and gulfs in both knowledge and responsibility. The heating, ventilating and air conditioning (HVAC) engineers who design the systems do not operate them once they are installed, and may

not have sufficient concern about operational problems; building engineers who operate the systems may not know how to fine-tune them or to operate them with whatever flexibility the design engineers have built into them; neither design nor operating engineers may have adequate understanding of the special needs of research library and archival collections; and librarians and archivists are often not sufficiently informed to be able to assure themselves that what the HVAC engineers propose will meet those needs or that building engineers are operating the systems for maximum protection of the collections. These gulfs in knowledge and experience might effectively be bridged by specialists in library and archives conservation whose training is directed in part toward accurately monitoring environmental conditions; toward being able to specify environmental parameters so as to give architects and engineers adequate guidance for new or renovated systems, and toward dealing effectively with physical plant departments in maintaining suitable conditions for preservation of collections.

The other "engineering" approach that I have in mind is the need for a systems method for a multiplicity of library conservation problems. By "systems method" I mean: (1) a thorough analysis of the problem in question in the widest possible context; (2) design of a system to meet as nearly as possible the specific criteria identified in (1); (3) a search for necessary existing methods, materials, and equipment, from other fields, if necessary; (4) an attempt, if necessary, to have materials or equipment manufactured for the system designed; and (5) the making of any necessary alterations or compromises in an ideal system as dictated by (3) and (4).

It may be useful here to cite some examples of what I mean by a systems or engineering approach to the solving of library conservation problems. Observation and common sense indicate that enclosure of items—as, for example, boxes for books—is among the most effective means of prolonging the life of materials that are valuable or vulnerable to damage or rapid deterioration. This is certainly true for single pieces of paper (e.g., manuscripts or posters) that do not have the protection afforded the leaves of a compactly bound book. The need for a better method of protecting unbound materials led the Restoration Office of the Library of Congress to the search for what became polyester encapsulation in its present form.

Analysis of the problem led to criteria that might be summarized as a system for providing at reasonable cost good physical protection for unbound materials with little or no alteration to the materials themselves. Polyester film was identified as the most nearly inert film readily

Education in Library Conservation

available, and it turned out to have outstanding physical characteristics as well. The initial search for a method of sealing the edges led to a stable pressure-sensitive tape, although in the meantime two machines for sealing edges, based on different principles, have been developed elsewhere. It was realized that the corners of encapsulations are sharp and potentially damaging to unencapsulated items, so simple devices to round off the corners were found. Polyester encapsulation, in common with any system, has limitations and drawbacks, but the success of this product of a systems approach to a preservation problem is attested to by the rapidity of what one is tempted to call its universal adoption.

The treatment by Roger Powell of the *Book of Kells* in the early 1950s is a consummate example of a systems approach to a book conservation problem. Major and irreparable damage had been done to the manuscript from previous rebindings in which the then-current binding methods were imposed without regard to the physical and historic characteristics of the manuscript. By contrast, Powell studied extensively not only the manuscript itself, but the specific circumstances of its use—in this case, frequent handling and exhibition—and environment, and made a full-scale dummy before undertaking actual treatment of the manuscript. Traditional craft techniques were then carefully adapted for the treatment of the leaves and the development of suitable binding structures and protective containers. This systems approach may indeed be said to distinguish the book conservator or conservation binder from the trade binder or book restorer, who is likely to try to impose a narrow, received set of methods regardless of their suitability to the problem in hand.

Another example of a systems analysis method applied to a conservation problem is the Library of Congress "phase box," a relatively inexpensive means of providing sturdy protective boxes for bound books, which again involved identifying materials and existing machinery and encouraging the development of a simple new machine for the system. The leaf-casting research and development laboratory at the Canadian Conservation Institute in Ottawa employs a more complex form of engineering of a sort usually associated with professional engineers.

Engineering and systems methods of tackling library and archives problems are urgently needed in such areas as mass deacidification (in which research and engineering is in fact in progress), and in improved methods of in-house mending and of library binding that genuinely contribute to the preservation of library materials at manageable cost. In addition, many kinds of non-paper-based records—audio, digital and

reprographic media—that are finding their way into libraries in increasing volume require more conventional engineering techniques in their preservation, as do the reprographic laboratories that are often an essential part of preservation programs. While highly qualified specialists in these nonbook media do exist, libraries and archives may have difficulty obtaining their services because of higher salaries in industry.

It was mentioned earlier that the two broad categories of library conservation—preservation of artifactual and replacement of nonartifactual materials—appear to require diametrically different approaches. However, it may not be evident that in at least two fundamental ways, methods that are genuinely useful for both aspects of conservation are not so different after all. First, in both cases, the problems are of so large a scale that preventive conservation is essential to slow the rate of deterioration if whole segments of our books and records are not to be lost before there are adequate means to treat or replace them. Second, whether dealing with an individual national treasure or masses of brittle books, the application of systems methods to their preservation is necessary to achieve efficiency that is adequate to the size and urgency of the problems and that results in treatments suitable for the particular condition, rather than hiding or, in the long run, worsening deterioration.

The common thread in both preventive conservation and conservation treatment might be called an *engineering approach*. In some respects this engineering approach is perfectly conventional in that it deals quantitatively with stresses, loads, capacities—and economics—in terms that are measurable and calculable. A more subtle issue is the form of engineering entailed in successful paper mending, book repair and rebinding, protective container construction, and the like. In this case, many of the same parameters are involved—loads, stress/strain relationships, strengths of materials—but quantitative measures are not (yet, at least) available, so that judgments must be made on an empirical basis; on the basis, that is, of visual and often tactile observations; in other words, craft.

In museums as in libraries, conservators have tended to be primarily craftspeople, as craft is the longest of the roots from which conservation has grown. The best, however, have incorporated science into their armamentaria, and have also become concerned with preventive conservation—environmental control, storage and shipping conditions, and the like. However, aptitude for treatment of objects, the predominantly craft aspect of conservation, is not always accompanied by ability for the quantitative types of engineering. Indeed, there have

Education in Library Conservation

begun to be calls for an "exhibition conservator" (perhaps not an ideal term), as distinct from the "treatment conservator," who deals with conditions of exhibition, shipping, and housing. No such person has emerged yet even in the older and larger museum conservation field (although conservation scientists have to some extent filled this role), and library and archives conservation is certainly too immature thus far to support such narrow specialists, however needed their services might be.

Current Efforts

The conservation of the collections of libraries and archives—books, manuscripts, photographs, magnetic tapes, maps, and related records media—is, then, a vast, complex and highly technical task whose dimensions and urgency are just beginning to be appreciated. Educational efforts have thus far been inadequate to meet the preservation needs of current library and archival collections in a number of respects. Apprenticeship, upon which all full professional training has thus far been based, tends without extraordinary balancing effort to concentrate on the manual aspects of book conservation at the expense of the equally essential broader technical aspects. It was only ten years ago that the first full introductory course in preservation for librarians was offered by a U.S. library school, and there was no formal training of any sort for library and archival conservators before that which was developed by the Library of Congress for its own personnel needs at about the same time.

The situation has improved dramatically in the intervening decade. A number of library schools now have introductory courses, and seminars, workshops, programs and conferences have proliferated to the point that it is difficult to keep track of them all. Yale University has an ambitious and varied program funded by the National Endowment for the Humanities. A new apprenticeship program for conservators, again primarily to develop its own staff, is getting underway at the Humanities Research Center of the University of Texas at Austin.

Another effort aimed at the professionalization of library and archives conservation is now starting at Columbia and New York universities in New York City. In summer 1978, the School of Library Service of Columbia University offered a four-week institute, with funding from the U.S. Office of Education, for graduate librarians who had, or were about to have, some form of direct responsibility for preservation. During the course of the institute, a number of specialists in various aspects of library preservation were invited to Columbia to

talk with the participants. During an informal discussion among Richard L. Darling, dean of the School of Library Service (SLS); the faculty of the institute; Norbert S. Baer, cochairman of the Conservation Center of the Institute of Fine Arts, New York University; and Frazer G. Poole, a private consultant who had been the preservation officer of the Library of Congress, the idea of exploring a full-fledged educational program in library conservation to be based at the School of Library Service was launched. Darling prepared a successful grant application to the National Endowment for the Humanities (NEH) which enabled this author to spend the second half of 1979 at SLS preparing a 100-page report outlining graduate programs for the preparation of conservators and conservation administrators.

The report was the basis for a series of grant proposals prepared by Darling that resulted in a grant of \$375,000 from NEH to establish the Columbia programs. In addition, grants of \$350,000 from the Andrew W. Mellon Foundation, \$50,000 from the Carnegie Corporation, \$25,000 from the Morgan Guaranty Bank of New York, and \$10,000 from the H.W. Wilson Foundation have been received for matching the NEH grant and for capital costs that the federal grant does not cover. These funds are primarily for renovation and equipping the laboratories and for faculty and staff salaries, student stipends, supplies, and guest lecturers for the first three years of the programs. With virtually all of the funding in hand, the Conservation and Preservation Education Programs of the School of Library Service, Columbia University (as they are called formally) will start with the autumn 1981 school term.

For the conservator students, the curriculum includes four semesters of coursework, two summer semesters of field projects, and a two-semester internship in a recognized library or archives conservation laboratory, for a total of three years. Six of the nineteen courses are laboratory courses in book paper conservation treatment. Of the remaining courses, eight deal with the history, technology, structure, and science of library and archival materials, and the remaining five include introduction to library and information science, archives administration, the administration of preservation programs, history and philosophy of conservation, and the protection and care of library and archival collections. Sixty points are earned in the coursework and twelve additional points in the summer projects and internship.

The summer projects are intended to expose the students to the working environment of libraries or archives, usually ones that do not have highly developed conservation programs, partly as a balance to the inherently somewhat idealistic tenor of academic instruction. At least one of the summer projects will be in a library mending and shelf-

Education in Library Conservation

preparation unit, where the pressures and realities of everyday library operations will be particularly evident. The internship will be in a conservation laboratory of recognized merit, so that the students can continue learning treatment practice under expert supervision in a real-world situation that also provides a different viewpoint from the labs in which they have received their initial instruction.

Conservator education is a joint program with the Conservation Center of the Institute of Fine Arts, New York University (NYU) (which, like the School of Library Service, is the original graduate school in its specialty). The Conservation Center has been instrumental in serving as a role model and in advising and assisting the progress of the library conservation programs from the outset, and the all-important conservation science courses, and one or possibly two of the laboratory courses, will be taught there. The conservator program leads to a master of science degree granted by Columbia University, and a Certificate in Library and Archives Conservation awarded jointly by SLS and the Conservation Center at NYU.

The sixty-point, two-year curriculum for preservation administrators includes courses in management and administration, as well as about half the number of specialized conservation courses required of the conservators. Of these, one is a laboratory course to introduce the students to problems of the physical treatment of books and related materials. The emphasis in the specialized courses is on understanding the technology and structure of the materials about which preservation decisions will have to be made in libraries and archives, and about broad aspects of their care. Other parts of the curriculum concern aspects of bibliographical control and networking that are vital to national preservation programs. There is one field work course to introduce the aspiring administrators to real-world problems. Because of the realities of the job market, more flexibility is built into the administrator than the conservator program so that students can take courses in related areas which, it is hoped, will enable them to take jobs that have other components in addition to preservation. For librarians who already have a master's degree from an accredited library school, an advanced certificate in library conservation can be obtained in one year, with the curriculum concentrated entirely in required, specialized courses. The regular teaching of both the conservator and administrator programs, in some cases separately and others collectively, will be supplemented with guest lectures and short seminars on specialized topics that will bring new viewpoints to the students and will permit them to meet people working in the field.

Applicants for the Columbia conservation programs are screened by the school's Committee on Admissions, on which the director of conservation programs sits for this purpose. In addition, applicants for the conservator program must be interviewed, submit a portfolio of some form of craft or other creative work, and pass a special aptitude test developed at the Preservation Office of the Library of Congress. A maximum of six students a year are admitted to the conservator program, while twelve can be accommodated in the administrator program.

In addition to the present faculty of the SLS, two new full-time people are participating. This author is director of conservation programs and will teach four of the specialized courses. Gary Frost, formerly of the Newberry Library Conservation Department, will teach the laboratory courses at SLS and manage its conservation laboratory. To be appointed are two adjunct faculty members to teach preservation administration and manuscript conservation treatment and, at NYU, the science courses for conservators. Antoinette King, Adjunct Professor at the Conservation Center of NYU and Conservator of Drawings at the Museum of Modern Art, will teach the course in flat paper treatment.

The SLS conservation laboratories consist of space vacated when the biology department moved into new quarters. Although their location across campus from the library school's quarters in Butler Library is unfortunate from both practical and philosophical viewpoints, the facilities, under renovation at the time of this writing, will be far better than could have been provided in Butler, which in any case does not have capacity for the necessary plumbing and wiring. In addition to the main book and paper laboratories, there are smaller rooms for a stock-room, a workshop for dirty work, a documentation room, and a dark-room. Approximately \$125,000 is being spent on renovating the space and equipping the labs with standard bindery equipment, a processing sink, water treatment system, microscopes, cameras, and fume hoods. The labs have good natural light and a pleasant view of New York's Amsterdam Avenue. Gas, compressed air and distilled water are bonuses acquired with the space.

The science and flat paper treatment course, and possibly the manuscript treatment course, will be taught in the Conservation Center's new building on East 78th Street in Manhattan. This building, designed specifically for the needs of the center, will be one of the finest conservation teaching facilities in the world when it is completed in autumn 1981.

Education in Library Conservation

Substantial financial aid is available for students in the conservation programs. Conservator students, because of the duration and consequent cost of the program in relation to salary expectations, may be eligible for stipends somewhat more generous than SLS's usual scholarship funds provide.

Conclusion

The challenges of preserving mankind's records are great and are growing with the increasing volume, variety and often impermanence of records media. These challenges have elicited little in the way of educational programs to prepare people to meet them until very recently. Now, however, many introductory courses, seminars and the like are helping to educate librarians and archivists about the broad aspects of conservation.

In addition, programs are being launched to prepare conservation specialists. Apprenticeship programs at the Library of Congress and the University of Texas, designed primarily to meet those institutions' own staffing needs, emphasize (but are not limited to) training in treatment practice. New graduate-level, degree-granting programs based at the School of Library Service, Columbia University, will educate specialists in both the administration of preservation programs and the technical aspects of records conservation. The latter, the conservator program, will attempt to give roughly equal emphasis to conservation treatment practice and to broader aspects such as environmental control and other kinds of preventive conservation.

References

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