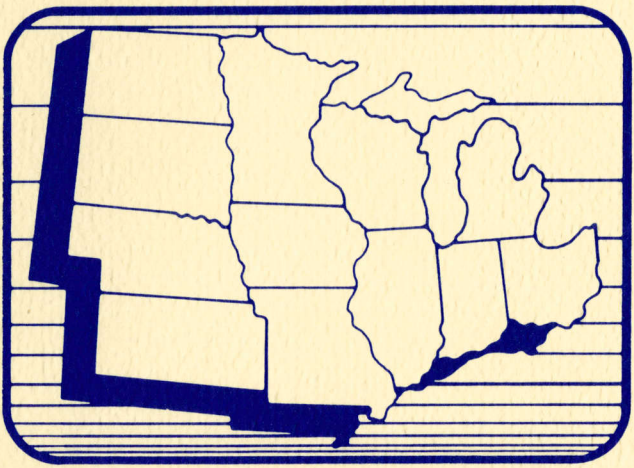
The Midwestern Archivist



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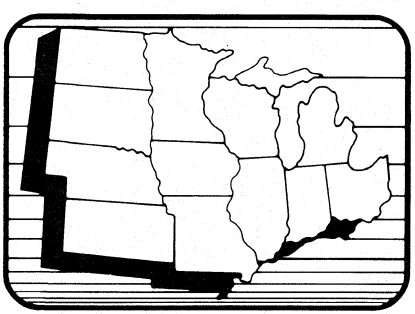


AUDIO PRESERVATION IN THE UNITED STATES: A REPORT ON THE ARSC/AAA PLANNING STUDY

BARBARA SAWKA

ABSTRACT: This article summarizes the current state of audio preservation in the United States as detailed in the final report of a two-year study conducted by a consortium of major sound archives. The study's conclusions illustrate the fledgling state of preservation knowledge, effort, and funding in the sound archives community. The study has inspired new cooperative and standards-setting efforts among the sound archives community, but the larger archival community must still be alerted to the precarious condition and uncertain future of our aural heritage.

The following case studies by Chris Paton and Brenda Nelson-Strauss document particular problems inherent in dealing with specific sound formats. To provide an introductory frame of reference, this article considers the current state of audio preservation efforts. It does so using results from a recently completed national audio preservation study, the first of its kind.

In 1986 the six member institutions of the Associated Audio Archives (AAA), a special committee of the Association for Recorded Sound Collections (ARSC), embarked on an NEH-funded audio preservation planning study.[1] ARSC is an organization representing 1,000 institutional and privately-held sound collections in the United States and abroad. It is dedicated to the preservation of all types of historical recordings and to the exchange and dissemination of sound recording research and information. In keeping with this mission, AAA's primary goals in conducting the study were to better define and standardize audio preservation methods and practices. The ultimate outcome of that effort is *Audio Preservation: A Planning Study - Final Performance Report,*[2] which documents in detail both the research methods and results of the ARSC/AAA project.

To appreciate how and why the preservation planning study was conceived and undertaken, it is important to know something of the history of AAA's origins. The five original members of AAA first united in 1974 to try to solve common problems in gaining access to their vast and, for the most part, uncataloged sound recording holdings.[3] During the ensuing decade, the consortium

procured both federal and private funding to carry out a planning study, pilot project, and finally a full-fledged project resulting in the Rigler-Deutsch Record Index, a union index to some 615,000 pre-LP commercial recordings held by the five participating archives. A number of secondary results useful to the sound archives community at large stemmed from those projects, including the publication of detailed rules for the cataloging of archival sound recordings.[4] Having focused initial efforts on creating access to substantial portions of its collections, the consortium turned its attention in 1985 to the equally important issues of better preserving the wide variety of recording formats they housed (including cylinders, discs of all types, and magnetic wire and tape recordings). Examples of formats known or suspected to be particularly at risk were acetate (often glass-based) transcription discs and paper- and acetate-based magnetic tapes.

In the late 1970s and early 1980s, the growing interest in paper preservation in traditional library and archives circles helped pave the way for a more receptive response to the preservation needs of sound recordings and other nonprint media, but sound archivists still have a long way to go to persuade both traditional archivists and funding agencies that many audio materials present dire emergencies. It can be argued, though, that the precarious condition of these materials coupled with an increasing number of preservation transfer proposals submitted to funding agencies like NEH set the stage for AAA's successful 1985 proposal to examine the state of audio preservation in general. Before the publication of this project's final report, the archival community had no reliable reference source or compendium of accepted practices and recommendations for audio preservation. Funding agencies trying to evaluate audio preservation proposals had no guidelines by which to judge them.

As originally conceived, the planning study had three primary objectives: (1) to examine the current state of audio preservation, (2) to draft and publish appropriate glossaries and bibliographies, and (3) to recommend standards and priorities to guide sound archivists in the selection of transfer media, technical methods and practices, and staff training. Each of the six principal investigators accepted several assignments, and the project work was accomplished over a two-year period through a combination of individual research and group meetings to share information, compare notes, and plan future work. The project's initial scope was intentionally broad and inclusive to avoid overlooking anything or letting preconceptions lead the investigators astray. For example, almost an entire day of the first working meeting was spent defining the term *sound recording*, not as simple a task as one might think. Specific project goals and priorities were refined as work progressed.

In the course of exhaustive research and work on the planning study, AAA members were not surprised by the dearth of solid information on audio preservation. The planning study participants would have been delighted to discover solutions to problems buried deep in obscure technical reports or esoteric scientific journals, but they did not find them. Nor did they expect or receive much help from the recording industry itself or from audio products manufacturers, who consider their research and development and product testing and specifications proprietary. This is not to say that the manufacturers were uncooperative. In fact, they eventually proved to be important allies in some of the standards-setting committees that have recently been established. While their basic

motives are primarily financial rather than historical, their substantial contributions to the archival standards-setting process are nonetheless valuable.

The findings of the ARSC/AAA study confirmed and documented a number of general impressions shared but never verified by those working in sound archives: (1) there "is a clear and urgent need to preserve our surviving heritage of sound recordings" that will require both national and international cooperative efforts to succeed; (2) development of an archival medium for sound carriers is an urgent priority (no such proven medium currently exists); (3) a formal curriculum or certification program for training the professional sound archivist does not exist and is urgently needed; (4) the literature, scientific or otherwise, specifically devoted to the care and preservation of sound recordings is negligible; and (5) tested and agreed-upon audio preservation standards do not exist.[5] These results, in fact, neatly generalize just the types of specific problems cited in the following case studies.

Besides reaffirming the need for further research, the study also enabled AAA members to determine whether their commonsense and experience-based practices held up against what little new information was uncovered. To approach this exercise in the most objective and comprehensive way, AAA designed and distributed a detailed questionnaire to eighty-three sound archives or collections containing substantial quantities of audio materials. Results from the thirty-eight responses are included in the final report.[6] Respondents were asked for extensive information ranging from the size and education of staff to the size and disposition of preservation budgets (very small to nonexistent in both cases)—and everything in between. It is immediately apparent from the survey results that most sound archives face an array of common problems.

Archivists might be disheartened to think that the basic conclusions of a two-year study were largely negative. It would be a mistake, however, to assume that the sound archive community is, therefore, no better off than it was at the beginning of the study. Although sound archivists are far from solving their stated problems, they now know the scope of the task ahead. Having researched and shared considerable information in the process of conducting the planning study, sound archivists can now more confidently undertake some of the important follow-on projects recommended in the final report, knowing that they are working in concert on a national, and sometimes international, scale. They can also more knowledgeably and confidently advise other archival colleagues who seek assistance. They cannot always provide definitive answers, but they know better than ever before the extent of the limited canon of accepted audio preservation practices.

Beyond its general conclusions, the report also contains specific information on selected issues. Among the most challenging problems confronting sound archivists are the preservation problems resulting from (1) the diversity of materials used to make sound recordings over the decades, (2) the even greater variety of technological formats made from combinations of those materials, and (3) the ever-changing and usually obsolete equipment used to record and play them. The Paton and Nelson-Strauss articles describe the problems of two of the most prevalent and vulnerable formats, acetate discs and magnetic tape, but they represent just the tip of a depressingly big iceberg. Rapidly evolving sound recording technologies constitute a never-ending dilemma. Directly related to the issue of changing technology is that expensive technical expertise

is necessary both to operate and maintain audio equipment and to conduct archivally correct audio transfer and restoration work. Of course, the problems arising from obsolete and rapidly changing technologies now confront traditional archives, too, as automation pervades the way we conduct and document daily life. The approach taken by sound and other media archivists to solve their problems will surely benefit and instruct the archival community at large.

The issue of technical expertise raises the related issue of proper training and education for sound archivists. Most of the heads of sound archives in this country are subject specialists who usually have acquired their technical knowledge on the job. An archivist whose primary responsibility is audio materials must have at least a basic understanding of the technical complexities of the field, especially if the archives lacks dedicated technical personnel. Short of going back to school for a comprehensive degree in audio engineering—training that is likely to include little, if any, emphasis on preservation or restoration—today's sound archivist or archives administrator has little to choose from in the way of educational programs specifically geared to the requirements of his or her position.

Preservation problems, lack of technical research, and absence of formal educational programs are just a few of the many challenges sound archivists face. How are the results of the preservation planning study helping to address these problems? The final report itself is a comprehensive compendium of nearly all the pertinent information available when it was written. In addition to narrative summaries of the individual and group research topics, it contains a short list of recommended practices for the storage and handling of sound recordings; many suggestions for future work, research, and testing; a comprehensive bibliography; and an excellent draft glossary, which was used with permission in a recently published book on the administration of sound archives.[7]

AAA is also disseminating other information. It is arranging to reissue the classic, long out-of-print, Library of Congress-commissioned Pickett and Lemcoe study on the preservation and storage of sound recordings.[8] Though this precedent-setting study is based on testing and research done in the late 1950s (and thus limited to recorded disc and tape formats prevalent at the time), most of the results and ensuing recommendations are still valid. The highly detailed outline on the storage and handling of sound recordings in the ARSC/AAA planning study final report is also being expanded for eventual publication.

One of the most significant short-term results of the preservation planning study is the reorganization and expansion of the AAA itself. All the institutions that received project surveys were also invited to join the committee. The committee structure and requirements for membership were substantially revised and redefined in order to encourage and permit broader institutional participation. The committee has now grown from the six sound archives that conducted the preservation study to fourteen institutions.

Critically important long-range activities have also been set in motion as a direct result of the preservation planning study. Two committees are now actively pursuing the establishment of audio preservation standards. The Audio Engineering Society's (AES) Subcommittee on the Preservation and Restoration of Audio Recording focuses specifically on technical standards for the preservation and transfer of sound recordings, while the American National Standards

Institute/AES Joint Technical Commission on Permanence of Optical and Magnetic Systems is developing similar standards for all magnetic and optical media. Both committees include some AAA members and representatives of most of the major companies producing audiovisual media and systems. Initial contacts with these companies during the course of the preservation planning study coupled with their growing awareness of archival problems and concerns convinced many in the industry of the benefits of working with the archival community.

Nationally, AAA is also initiating efforts to share its findings and work cooperatively with allied professional organizations such as the Music Library Association and the Society of American Archivists. Internationally, there is now a UNESCO-sponsored joint technical commission devoted to the preservation of sound, video, and film, as well as renewed effort to improve communication and cooperation between ARSC and the International Association of Sound Archives. While these international efforts are not, strictly speaking, direct results of the preservation planning study, they benefit from and sustain its initial momentum.

This, then, is an overview of major conclusions and activities arising from the ARSC/AAA preservation planning study. In case there are those still skeptical of how serious a peril our sound collections face, consider this: What price would archivists assign today to a recording of Lincoln delivering his Gettysburg address or Mozart improvising at the keyboard? Mark Twain is known to have had access to a cylinder machine and to have made recordings, but none is known to have survived. As Stanford University moves into its centennial year, hope persists that a recording of Leland Stanford or members of the Stanford family might one day surface. This is not impossible since a neighboring family with whom the Stanfords socialized owned a cylinder machine and made home recordings. There are recordings just as important, some surely unidentified as yet, perhaps on the verge of disintegration in institutional and private collections around the world.

It is crucial that sound archivists enlist the support of all parties in the preservation of sound recordings. Sound archivists must not continue to preach to the converted but must engage all their library and archival colleagues and the audio industry in the task of recognizing and rescuing an irreplaceable heritage. As inundated as we are by nonprint media, the relative neglect of audio in preservation circles is appalling. It may be that the very familiarity of sound recordings breeds contempt, or that their largely popular, mass-market origins and associations relegate them to second-class citizenship as scholarly resources. Whatever the reasons, archivists can no longer sit by and risk losing these endangered sound recordings. We must strive to educate and convince those responsible for funding and promoting local, national, and international preservation efforts that the task at hand is important and urgent. Sound archivists have taken some promising initial steps by defining the problems, identifying the formats in greatest peril, and establishing standards-setting committees. Now they need to enlist the larger archival community's aid to keep the issue alive. Consciousness-raising requires perseverance and vigilance. Sound archivists do, indeed, want to sound like broken records, because that is the price all archivists will pay if they fail to do something now.

ABOUT THE AUTHOR: Barbara Sawka is currently president of the Association for Recorded Sound Collections and represents Stanford University in the Associated Audio Archives consortium. After serving as assistant to the curator of the Yale Collection of Historical Sound Recordings, she assumed responsibility in 1977 for the Stanford Archive of Recorded Sound, where she holds the recently established William R. Moran Curatorship in Recorded Sound. She is also a member of the Society of American Archivists and the Society of California Archivists.

NOTES

1. AAA members at the time of the preservation planning study were the Library of Congress Motion Picture, Broadcasting and Recorded Sound Division, New York Public Library's Rodgers and Hammerstein Archives, the University of Kansas Archives of Recorded Sound, the Stanford Archive of Recorded Sound, the Syracuse Belfer Audio Laboratory and Archives, and the Yale Collection of Historical Sound Recordings.
2. Association for Recorded Sound Collections, Associated Audio Archives Committee, *Audio Preservation: A Planning Study - Final Performance Report,* NEH Grant PS-20021-86 (Silver Spring, Md.: ARSC, 1988).
3. The five original AAA members are those listed in note 1, above, with the exception of the University of Kansas Archives of Recorded Sound.
4. Association for Recorded Sound Collections, Associated Audio Archives Committee, *Rules for Archival Cataloging of Sound Recordings* (Silver Spring, Md.: ARSC, 1978). These rules are currently under revision.
5. ARSC/AAA, *Audio Preservation,* 4-5.
6. ARSC/AAA, *Audio Preservation,* 451-534.
7. Alan Ward, *A Manual of Sound Archive Administration* (Brookfield, Vt.: Gower Publishing Co., 1990).
8. A.G. Pickett and M.M. Lemcoe, *Preservation and Storage of Sound Recordings: A Study Supported by a Grant from the Rockefeller Foundation* (Washington, D.C.: Library of Congress, 1959).

PRESERVATION OF ACETATE DISC SOUND RECORDINGS AT GEORGIA STATE UNIVERSITY

CHRISTOPHER ANN PATON

ABSTRACT: When the special Collections Department at Georgia State University (GSU) discovered instantaneous disc sound recordings in acquisitions relating to the GSU Popular Music Collection, the archivists on the staff were unprepared to properly identify and preserve such materials. After searching for relevant literature and technical assistance for several years, the archivists at GSU eventually learned how to properly care for the recordings, developed procedures for producing archival preservation copies, and located a laboratory to handle the re-recording process. The author comments on the need for archivists to become more knowledgeable about sound recording technology and offers recommendations to improve the care of sound recordings in archives.

Nearly ten years ago, the Special Collections Department at Georgia State University (GSU) embarked on an adventure. It did not intend to have an adventure, and at times the staff would have chosen other terms to describe the experience. *Nightmare,* for example, comes to mind, and staff members occasionally felt like the victims of an archival curse. Nevertheless, when the Special Collections Department accepted the task of building a research collection of American popular music materials, including sound recordings in obsolete formats, it also accepted an adventure. Although the experience has been immensely frustrating at times, it has also produced exhilaration and triumph, as the staff conquered one obstacle after another to bring rare and valuable archival recordings back to life.

The adventure began in 1981, when the Special Collections Department accepted the papers of Johnny Mercer, one of America's most prominent popular songwriters and lyricists. Mercer, a native of Savannah, Georgia, was one of the leading lyricists in Hollywood from the 1930s virtually until his death in 1976. He worked with most of the major popular composers of his day, including Jerome Kern, Richard Rodgers, Harold Arlen, Hoagy Carmichael, and, more recently, Henry Mancini, André Previn, and Marvin Hamlisch. Mercer wrote lyrics for such tunes as "Hooray for Hollywood," "Moon River," "Days of Wine and Roses," "You Must Have Been a Beautiful Baby," "Tangerine," "Blues in the Night," "That Old Black Magic," and "Jeepers Creepers," and for productions such as *Li'l Abner* and the film musical *Seven Brides for Seven*

Brothers. Over the course of his prolific career, eighteen of his songs received Academy Award nominations, and four won Oscars.

In addition to writing songs, Mercer was a popular and active performer and recording artist, working, over the years, with the Benny Goodman and Paul Whiteman bands, appearing on radio broadcasts, and recording songs written by himself and others. He was also one of the three co-founders of Capitol Records, which became one of the top U.S. record companies soon after its founding in 1942.

In short, Mercer was an active, influential figure in the development of American popular music and the music industry. GSU recognized that the Mercer Papers represented an important research resource, and in 1982 the Special Collections Department hired a music archivist to oversee work on the collection.

Although one might expect the personal papers of a prolific songwriter to be bursting with sound recordings, the original shipment of "Mercer Papers" to the university actually contained very few. At first glance, most of the recordings that did accompany the papers looked like ordinary 78 rpm and 33-1/3 rpm discs. But a closer look showed that several of them were very different. Their edges were blue and their surfaces had a strange, translucent look. They also had hand-typed labels and when staff members looked into the spindle holes they saw that the records appeared to be made of a metal inner layer coated on the outside with blue-black plastic. At the time, no one on the staff had ever seen a recording like this. Eventually it was discovered that the recordings were called *instantaneous discs,* also known as *acetates* or *lacquers*. They were commonly used in the broadcasting, music, and film industries, especially from the 1930s through the 1950s (although they remained in use, for some purposes, through the 1970s). The discs were made of a base material, aluminum in this particular case, coated with soft plastic, often nitro-cellulose or cellulose acetate. Recordings were made by placing blank discs on a special turntable (or cutting lathe), where a cutting stylus carved grooves directly into the surface. Such discs were not mass-produced, and each was likely to be a unique recording, possibly the only one of its kind in the world. They were often used for pre-recorded radio broadcasts, for off-the-air recordings, and for making "demo" discs exchanged by songwriters and recording artists. The recordings were not intended for repeated playback. According to the little information the archivists at GSU were able to find, the discs should not be played, at least not repeatedly, for fear of wearing down the soft grooves and degrading the sound quality. To be used (either by staff or by researchers) they needed to be transferred to magnetic tape.

When the nature of the recordings was discovered, the archivists' initial reaction was relief that they had not received more of them. The staff was not sure what was recorded on the discs, they were not supposed to play them, and worst of all their only preservation option was magnetic tape, a medium not noted for its archival properties. Because it was unclear at that time whether these particular recordings were relevant to the Mercer collection, the discs were temporarily set aside while the staff sought more information. Intriguing as the recordings were, the archivists sometimes hoped that they would turn out to be marginal materials that could be discarded and forgotten. Naturally, the solution was not nearly that simple.

About four months later, in the spring of 1983, the Special Collections Department received a large shipment of recordings from a dealer on the West Coast, who described the materials as mostly commercially-pressed 78s and LPs of Johnny Mercer music. But as the boxes were unpacked, the staff began finding surprises. At first they found a few recordings similar to the acetates identified earlier. Like the other recordings, these were made of plastic-coated aluminum; unlike the others, they came in a variety of sizes, chiefly 8", 10", and 12" diameters, much like 45s, 78s, and LPs. But mixed in with these now-familiar items were also discs made of bare aluminum, without any coating (figure 1), a few discs marked "glass" (figure 2), and one that appeared to be made of cardboard. As it turned out, aluminum, glass, and cardboard are all common base materials for acetate discs. Although not all of the recordings were labeled, most of them were clearly relevant to the Mercer Papers, often featuring songs performed by either Mercer himself or his prominent collaborators. The staff knew that these would be very valuable for researchers, and that they must be preserved and made usable.

To make things more interesting, some of the recordings from the second shipment showed signs of deterioration including cracked glass, cracked laminate, and, in some cases, a white powder on the surface of the disc (figure 3). The white powder resembled mold, but often appeared in patterns that were not characteristic of any mold the staff had seen before. The staff "quarantined" the powdery discs and went looking for more information.

Figure 1
An example of an aluminum disc recording. The oblong and oval blotches in the upper left quadrant of the disc were caused by very old fingerprints.

A friendly source at the Library of Congress informed the archivists that the powder was most likely plasticizer leaching from the acetate coating as the coating deteriorated.[1] Eventually the coating would dry up and flake off the disc, and when that happened, the sound recorded on the disc would be lost (figures 4 and 5). Regardless of careful storage and handling, these recordings were guaranteed to have short lives, due entirely to their physical composition. Poor care would certainly hasten the process; good care might retard it somewhat. In order to preserve the sound captured on the recordings, GSU should have them transferred to magnetic tape as soon as possible.

Alarmed, the GSU archivists asked how to produce preservation copies of sound recordings, and sought recommendations regarding a laboratory to do the work. Unfortunately, a simple and reliable solution was not immediately forthcoming. On one hand, the Library of Congress would consider making preservation transfers of those recordings that it felt were appropriate for its own collection, but probably not of all the discs GSU needed copied. On the other hand, commercial recording studios lacked playback equipment for such old recordings, and also lacked the training to handle archival materials and produce reliable preservation copies. GSU decided to postpone preservation action and seek better solutions. The archivists hoped that the discs were sturdy enough to hold up for a little bit longer, and that they would find an appropriate solution soon.

About a year and a half later, in late 1984, GSU acquired yet another large group of acetate discs, this time from a local radio station. These transcription

Figure 2

Many glass base discs are identified as such on their labels or sleeves (if they are still in their original sleeves). This disc also shows clearly the three "drive holes" surrounding the spindle hole which are characteristic of acetate disc recordings. Recordings may have one or two drive holes, rather than three; the holes are sometimes obscured by labels pasted on the discs.

discs were similar in many ways to those found earlier, consisting of aluminum, glass, or cardboard bases covered with acetate. Unlike the other discs, however, these measured 16" in diameter, much larger than modern LPs and certainly too large for any equipment the archives owned. Fortunately, the radio station donated two old RCA turntables which, when repaired, provided the archives with playback capability. These recordings included speeches by important Georgia politicians, musical and dramatic programs, and voices of national and international leaders such as Harry Truman, Franklin Roosevelt, and Winston Churchill. The archivists were sure that researchers would be thrilled to have this new resource, and they themselves were ecstatic at having discovered it. But they were also somewhat horrified at their growing preservation problem, since they still had no means of obtaining the necessary tape copies, and the collection of acetates had now grown to nearly 300.

At this point, the staff began exploring every option available in an effort to find someone to copy the recordings. They contacted GSU's Educational Media Department, whose technicians handle most university audio reproduction needs. Unfortunately the technicians were all too young ever to have seen these recordings in use, and none of them had any training in historic or archival recordings. They were able to repair one of the 16" turntables, but then were surprised to learn that the transcription discs played from the inside out, rather than the outside in. Clearly, this approach to audio preservation would not work.

The archivists contacted radio stations in the hope that some of their older engineers could be hired to make the tape copies. The archivists reasoned that

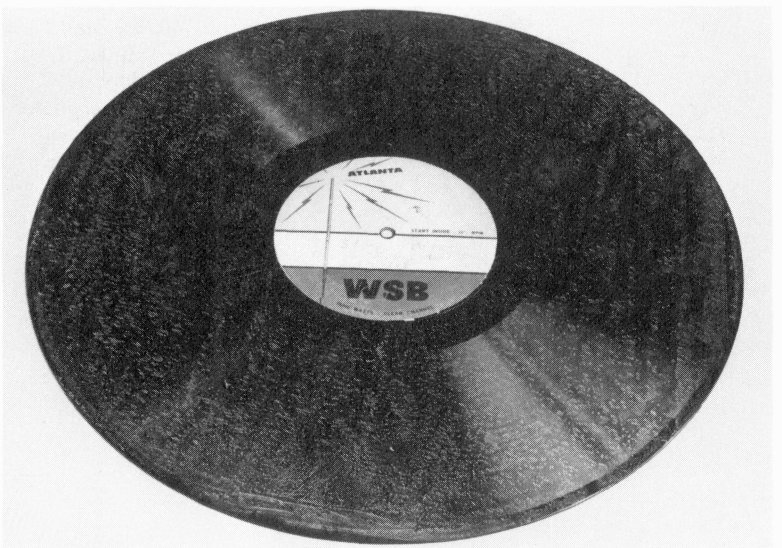
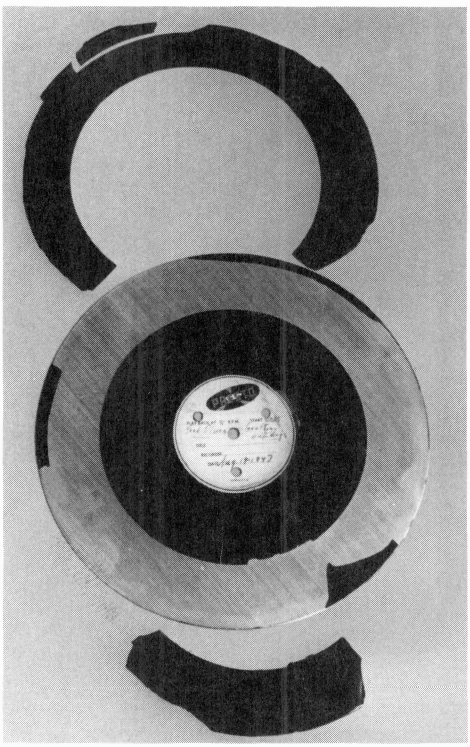


Figure 3
This disc shows a characteristic pattern of powdery deterioration. The laminate is still intact, and the sound captured on the disc may still be excellent.



Figures 4 and 5

This disc never showed signs of powdery deterioration, but the laminate began to blister and shrink and eventually separated completely from the aluminum base. Interestingly, the laminate on the other side of the disc, although beginning to blister, is still intact.

people who were in the broadcasting business when these recordings were commonly used might be able to help with re-recording. Unfortunately, engineers proved to be very busy people, and none could be found who had time for the project.

The chairman of GSU's Commercial Music and Recording Department suggested a particular local studio that had been in business for many years. The studio replied that it did have the equipment to do the work, and was willing to make the transfers. But now that a studio had tentatively been identified, two other things still stood in the way. First, the archivists needed to learn how to clean and prepare the recordings for copying. For example, they had been told that liquid freon was often used for removing the white powdery deposit, but had no idea where to get it, or how to apply it, or even whether it was safe to use. The second, and larger, problem was how to tell the engineer what type of recording to make. The archivists realized that these tape recordings would ultimately replace the acetate discs as the "original" recordings. What should the new copies sound like? What kind of tape should be used? What standards or guidelines should be followed? No one in the archives knew how to define or describe an archival copy of a sound recording. Until the archivists could do this, they did not feel comfortable engaging a studio and beginning work on the project.

Neither archival nor library literature provided useful advice on this topic, so the archivists cast their net more broadly using an online database search. Unfortunately they found very little literature relating specifically to preservation of archival sound recordings. Although the search turned up a few articles relating to care of consumer audio products, and a number of citations relating to audio engineering, there were almost none available from mainstream archival publications. Few of the resources the archivists did locate were written from an archival perspective, and most of them were very technical. Most disappointing of all, they found almost no literature regarding archival re-recording.

While all this information-seeking was going on, the archives relied on passive preservation measures, careful storage, and luck to keep the recordings intact. The discs were stored in acid-free sleeves whenever possible. All cracked discs were segregated and stored separately to prevent further damage. The remainder were shelved vertically, separated according to size to avoid warping. Archives staff became especially picky about air quality and climate controls in an effort to keep the coatings on the discs from swelling or shrinking. This last point naturally inspired a host of physical plant disasters ranging from climate control system failures to the migration of small birds into the conservation lab, all of which increased the sense of urgency about the project.

In the meantime the archivists kept looking for help, and finally, in 1987 and 1988, they began to find some answers. In 1987, four-and-one-half years after acetates were first discovered in the GSU collections, the archivist in charge of the Mercer project attended a meeting of the Association for Recorded Sound Collections (known as ARSC). The meeting was held in Washington, D.C., and a Library of Congress staff member suggested that the Mercer archivist bring a few problem discs along to see what the Library's engineers could do with them. For the first time, she was able to watch someone clean a disc (with soap and water, followed by small amounts of liquid freon), then try different stylus-

es to achieve the best sound. The discs played that day proved to be in remarkably good condition, justifying the time and effort that the archivists had invested in preserving them. In addition, while attending the meeting, the Mercer archivist finally found other archivists who dealt with recorded sound on a daily basis. Now that she had a better idea of where to turn for information, finding the funding and studio to do the recording work again became a top priority. This was spurred by her discovery, while selecting discs to bring to Washington, that signs of deterioration in the collection were increasing. More discs were covered with white powder, in thicker accumulations than before. Clearly, time was running out.

At the next ARSC meeting, in 1988, the Mercer archivist met William Storm, the director of the Belfer Audio Laboratory at Syracuse University. The Belfer Lab specializes in preservation of archival sound recordings and was willing to work on GSU's Johnny Mercer and radio broadcast recordings, a project estimated to cost about $12,000. Work began on the recordings in September of 1989 and the GSU archivists developed the following procedures for preparing the discs for taping. GSU staff members number each disc and its sleeve and make a list of the recordings that are sent to the lab. The discs are packed very carefully and shipped to Syracuse by overnight delivery. The lab cleans the discs when necessary, and produces analog copies using 1.5 mil polyester tape on 10.5" reels. The archivists have rejected digital recording technology for the time being, preferring to use technology that is known to be appropriate and reliable. Although there are still no universally-accepted standards for producing audio preservation tapes, the engineer follows such recommendations and guidelines as are currently available, and carefully documents the re-recording process. Information about the physical characteristics of each original recording, the equipment used to make the transfer, and the new preservation master tape is transcribed on the box label accompanying each reel that the lab returns to GSU. After the preservation copies are returned to Atlanta, the GSU archivists are able to identify and index the recordings and produce copies for researchers to use.

Now that GSU is experiencing some success with preserving these historic recordings, the adventure of the past eight years has a promising future. The archivists have learned how to handle these materials with a measure of grace, and they expect the recordings to be very popular with researchers. Projects that have been suggested since preservation work began include exhibits on Johnny Mercer (featuring a soundtrack of historic sound recordings, of course); television documentaries on Mercer or, using the radio recordings, on Georgia politicians; and, copyright status allowing, a commercial re-issue of "lost" or previously unreleased songs discovered during re-recording.

However, in looking back over the years spent working on this project, one cannot help feeling uneasy about some aspects of the experience. Perhaps the most disturbing characteristic of this foray into the field of audio preservation has been the ignorance exhibited by the archivists: ignorance of the history and composition of the recordings GSU is trying to preserve; ignorance of the language, theories, and techniques of audio preservation; and ignorance of where to turn for help. Since GSU has had a total of five professional archivists on its staff since 1982, all of whom have exhibited the same level of ignorance, one has to wonder if this is not symptomatic of the profession at large, rather

than an individual failing. In light of this possibility, this author suggests that archivists consider the following actions for the archival profession in order to ensure proper care for historically valuable sound recordings.

First, the archival community must increase communication between "paper" archivists and "sound" archivists. There are professional sound archivists across the nation who are developing methods for preserving recorded sound, but their work is rarely discussed in the mainstream archival literature. This isolation of one group of professionals from another is not good, and the resulting information and communication gap needs to be bridged if archival audio materials are to be properly cared for. On the other side of the coin, "paper" archivists also possess information of which "sound" archivists tend to be unaware. Increased information exchange would be mutually beneficial.

Second, archival educators should include discussion of sound recordings and sound recording preservation in archival education courses. The best remedy for ignorance is education, and, surprisingly, there is more material available for discussion, study, and classroom use than one might expect.

Third, archivists should advocate the development of national or regional audio preservation laboratories. At the present time, archivists needing to transfer aging recordings to tape have virtually nowhere to turn for technical support. This leaves archival sound recordings in the United States at risk, and preservation work that is done is likely to be piecemeal, unstandardized, and poorly documented.

Finally, funding agencies should promote basic research into how recordings age and what passive preservation measures are most suitable for the various formats. Too much of the "information" currently available is undocumented and passed by word-of-mouth, rather than through reliable written reports and recommendations. Are paper sleeves too abrasive for disc recordings? What happens to acetate discs stored in sealed sleeves—do they deteriorate faster, or are they preserved longer? Just how likely is accidental erasure or damage to magnetic tapes? Is there a recording medium that archivists can use to produce archival quality preservation recordings that need not be re-recorded every ten or fifteen years? Are digital and optical disk technologies appropriate for archival preservation? Or, at an even more basic level, how should archives care for the digital and optical recordings that are already being produced and finding their way into archives? Inquiring minds do want to know the answers to these questions, and only thorough, careful research will provide the necessary evidence.

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NOTES

1. Some powdery deterioration, including most of that found in the GSU recordings, is, in fact, plasticizer. Under some circumstances, however, deposits on acetate discs can be fungal growth, or a combination of fungus and plasticizer. Microscopic inspection by experts can identify which form of deterioration is present.

PRESERVING CHICAGO SYMPHONY ORCHESTRA BROADCAST TAPES

BRENDA NELSON-STRAUSS

ABSTRACT: In the last decade archivists, especially those with music and oral history collections, have become increasingly concerned about the lifespan of audio tape, yet few archives have instituted comprehensive preservation policies for sound recordings. The Chicago Symphony Orchestra Archives, determined to preserve the sound of the orchestra, embarked on a major audio tape restoration project in 1988. The author describes the difficulties experienced in collecting, appraising, and restoring the audio tape collection and summarizes the most current literature on audio tape preservation. In conclusion, she urges all repositories with recorded sound collections to view recordings as important musical and historical documents and treat them accordingly.

Introduction

In 1988 the Orchestral Association of the Chicago Symphony Orchestra (CSO) initiated steps to establish a permanent archives in anticipation of their 1990/91 centennial season. Two consultants were hired, a paper archivist and a sound archivist, to examine the respective parts of the collection and evaluate the condition of the records. The results of their reports alarmed the CSO management. Most portions of the collection had been stored improperly for many years; some for decades. As a result important historical documents, photographs, and audiovisual materials were beginning to deteriorate. The consultants warned that if remedial steps were not taken immediately portions of the collection, including the reel to reel audio tapes in the orchestra's radio broadcast archive, probably would not survive into the next century. Funding was quickly sought for a full-time archivist and for a major audio tape restoration project. The following is an account of the project beginning with the appraisal of the audio tape collection, continuing through the restoration process, and concluding with basic recommendations for the storage and handling of audio tape.

The CSO's decision to place a higher priority on audio rather than paper preservation might surprise some archivists; others may even think the decision ill-advised. Undoubtedly such attitudes are due to a general disregard for the importance of recorded sound by the scholarly community as a whole. During the last decade, however, attitudes toward sound recordings have been slowly

changing as scholars begin to realize their value. For example, Henry Fogel, executive director of the CSO, recently stated:

> The history of an orchestra is contained in its sound. Programs, newspaper clippings, reviews, memorabilia—all of these things are important and have their role in a significant archive. But the point of an orchestra is the music it makes, and what the truly interested historian should most want to know is "what did the orchestra sound like?"[1]

Consequently, performing arts archivists must selectively preserve sound recordings, films, and videos that serve as evidence of an organization's artistic output and as primary sources for the study of performance practice. Furthermore, other archivists collecting in areas where informational and evidential value is best conveyed through aural and visual means must also incorporate audiovisual materials into preservation programs.

Appraising the Recorded Sound Collection

Even though the inherent value of sound recordings was obvious to the CSO management, the decision to place priority on the preservation of audio tapes over paper records was not made immediately. Careful appraisal was initiated to determine the general characteristics of the audio holdings. The primary task was to research and compile a complete listing and history of CSO broadcast activity—a necessity for accurate appraisal of the collection as a whole, for determining the significance of individual broadcasts, and for making informed preservation decisions. As research progressed, a model for appraisal gradually evolved based on the distinctions between broadcast recordings and commercial recordings.

On 1 May 1916 the CSO became the first major American symphony orchestra to record commercially under the baton of its own conductor and subsequently released a 78 rpm shellac disc of Mendelssohn's *Wedding March* on the Columbia label. Nine years later a CSO concert was aired live over radio station WMAQ in Chicago, marking the beginning of an almost annual broadcast schedule now spanning sixty-five years and totaling over 1,500 individual programs. The commercial recordings, however, differ from broadcast recordings in a number of ways that have a direct impact on appraisal and preservation decisions.

Commercial recordings by definition are mass-produced and distributed by record companies. Consequently, each disc was pressed in such large quantities that most of the commercially recorded output of the CSO is still obtainable from new or used record dealers. Furthermore, the commercial recordings in the CSO archives, ranging from 78s through CDs, are relatively stable and present no immediate preservation risk. On the other hand, recordings made for radio broadcast are instantaneous; that is, the concerts were recorded directly onto discs or tapes which then serve as one-of-a-kind performance masters. The CSO Archives holds all broadcast masters made after 1960, but locating any broadcast recording made before 1960 is a difficult task.

In a 1987 *Symphony Magazine* article, Charles Passy referred to the recent efforts by various American symphony orchestras to collect their early radio broadcast recordings as "the great orchestral treasure hunt ... the musical equiv-

alent of discovering the Titanic." The problem, as described by Passy, is finding tapes of live broadcasts that aired before the advent of tape-delay in the late 1950s or, in many instances, finding copies of tape-delayed broadcasts after the originals have been lost, destroyed, or discarded.[2] For example, when the CSO began broadcasting in 1925 all concerts were aired live over local stations. Occasionally acetate discs were made by radio stations for distribution to other networks, but only if the show was syndicated—an arrangement not enjoyed by most orchestras, the CSO included. In the case of the CSO, discs are known to have been made by one local station in the late 1930s and early 1940s but the contract with the orchestra apparently specified that all discs be destroyed within a few weeks of broadcast.

In two years the CSO archives has recovered only a few acetate discs of early broadcasts. Some had been rescued from the dumpster by musicians; others, in the hands of local collectors, were originally recorded off-the-air by engineers with access to professional disc-cutting equipment; and a few were located in radio stations or sound archives. We now reluctantly assume, however, that most CSO broadcasts made between 1925 and 1940 were never copied to disc. The majority of extant CSO broadcast recordings date from the early 1940s onward, after magnetic tape became the principal recording medium and home taping devices became readily available. To date, several caches of tapes have been discovered, some made by CSO fans who either placed tape recorders in front of their radios or brought their machines to concerts (an activity later prohibited). As our collecting activities continue we hope to find more private audio tape collections that will yield a few choice CSO concert recordings.

Aside from their rarity, research revealed that broadcast recordings are the most valuable and historically significant items in the CSO sound archive for several additional reasons. For example, broadcast recordings made before 1960 are especially valued because the majority capture the live performance of the orchestra. Unlike most commercial recordings or broadcasts of the past three decades, which are usually edited, prepackaged, and aired several weeks after the original performance, early live broadcasts were unedited and consequently reproduce the actual concert sound. Through live broadcast recordings researchers are better able to study the techniques of conductors and musicians and evaluate changes in performance practice over the years.[3]

All radio broadcasts, regardless of their age or degree of editing, are important historical documents for several additional reasons. First, because the 78 rpm commercial recordings were of limited duration holding no more than four-and-a-half minutes of sound per disc side, the disc capacity and not the conductor's preference often dictated the tempo of a work or movement. Therefore, researchers studying particular conductors prominent before the advent of long-playing discs in the early 1950s often discover that broadcast recordings offer the only accurate example of the conductor's interpretation of a work. Second, broadcast recordings provide an opportunity for researchers to hear collaborations that do not exist on commercial recordings. Not only do conductors and orchestras commercially record just a fraction of their actual concert repertoire, but many artists and conductors are under exclusive contract to different labels, making joint recording sessions impossible. Third, broadcast recordings frequently capture performances, perhaps even world premieres, of works never commercially released. Finally, though several performances may

be edited together for modern broadcasts, such editing is not as extensive as that done by record company engineers. All broadcast recordings provide researchers with a product more closely resembling concerts and therefore of greater evidential value than the product of commercial recording sessions.

The results of the appraisal verified the original estimation of the value of radio broadcast recordings and justified the priority of the audio preservation project. To date, several other orchestras, including the New York Philharmonic, the Los Angeles Symphony, and the Cleveland Orchestra, have initiated similar projects. Like the CSO, most have found the majority of extant radio broadcasts were recorded after 1940 and consequently most preservation efforts to date have been concentrated on audio tape. But the "great orchestral treasure hunt" may now be a race against time due to the limited shelf life of all magnetic tape. Depending upon storage conditions and the type of tape stock, the life expectancy of audio tape is generally only twelve to twenty-five years. Tapes recorded prior to 1970 are nearing the end of their lifespan, and certainly any tape dating from 1960 or earlier may be in immediate danger of failure.[4]

A Brief History of Audio Tape

Since 1988 the CSO has employed Steven Smolian, a sound restoration expert based in Washington, D.C., to both collect and restore its broadcast tapes. Often Smolian has achieved amazing results, but, as he has aptly stated, "even with today's most sophisticated technology, there is only so much that can be done to correct the various ills that beset something geriatric."[5] "Geriatric" tapes in the CSO collection included two hundred programs recorded by Chicago radio station WFMT from 1965 to 1968 as well as the newly recovered 1940-1965 era tapes, and all are part of the tape restoration project.

Because the CSO tapes span a period of over twenty-five years, a variety of tape types have been encountered, each posing a different preservation problem and requiring different handling. In fact, the first step in any tape preservation project must be the identification of tape configurations—no small problem. In the past thirty-three years alone, over fifty noncompatible open-reel and cassette tape formats have been developed that use at least seven different speeds, five different tape widths, various thicknesses, and a seemingly endless number of track configurations. There are, however, some common denominators.

The actual recording tape is composed of a strip of iron oxide or other magnetizable particles affixed to a base film by a binder, with plasticizer usually added to keep the materials supple. There are three basic types of tape bases and all were encountered during the CSO tape restoration project.

Paper, the first base, dates from the mid-1940s and is similar in appearance to the material used in brown paper bags. In general use for only a few years, paper tape is not common and therefore few studies have been conducted on its physical properties and characteristics. If encountered in archival collections an archivist should assume the paper base is unstable and transfer the audio signal immediately to new tape stock using a machine with a gentle tape transport mechanism.

Acetate replaced paper as a backing in approximately 1949 and may be distinguished from more modern backings by the greater transparency of the acetate-base film. Because plasticizers added to acetate bases have a tendency

to evaporate over time, much of the acetate tape in audio collections is now quite brittle and must be handled with extreme care. Acetate tape is also eight times more sensitive to humidity than modern tape and during playback a 2,400 foot long reel can actually lengthen by an average of 14 feet and increase playing speed by 23 seconds if exposed to a 60 percent increase in relative humidity. Excessive humidity will also cause acetate tape to cup and deform resulting in uneven head contact during playback. Any acetate tape in a collection should also be prioritized for transfer to new tape stock.[6]

Polyester, one common type of which is called Mylar, was introduced in the late 1950s and has been the industry standard since 1970.[7] Polyester has proved to be the most appropriate base for archival purposes because it is more stable during long-term storage than acetate or paper and is not subject to chemical attack either by inorganic acids or organic solvents. Furthermore, because of its strength, polyester exposed to stress will stretch long before breaking.[8] Still, audio collections consisting entirely of post-1960 tape stock are certainly not immune to problems.

Magnetic tape, even the newer varieties using Mylar, is not a permanent storage medium. Archivists should expect a random portion of their magnetic tapes to develop a variety of problems over the years no matter how well they have been stored, and this percentage increases with the passage of time.[9] Unfortunately, audio tapes cannot be examined for preservation problems as quickly and conveniently as can paper and, unless tapes are played regularly, problems will probably go unnoticed until tape deterioration is well underway and the signal already impaired. Though individual auditioning of tapes is a time-consuming and labor-intensive process, the alternative—automatically retaping every twenty years—is extremely costly. Furthermore, each subsequent generation of analog recorded tape will be of lower quality than the original due to added tape hiss.[10] The object of tape preservation, therefore, should be to extend tape life and reduce or eliminate loss of quality. A thorough knowledge of factors affecting tape life is an essential starting point.

Problems and Solutions

Various chemical changes can occur which influence the long-term behavior of magnetic tapes. The most common problem created by chemical reactions is probably binder breakdown. Because the magnetic coating on audio tapes consists of a binder system that fixes the pigment to the polyester base film, certain conditions will aggravate binder system failure causing the coatings to flake off the base film. A recent issue of *Mix* magazine described the scenario as follows:

> You're about to get started on preparing a reissue when you notice that your source tape was recorded in the late '70s. With mounting apprehension, you load the tape onto your machine, rewind a bit and press play. Just as you feared, within 30 seconds you start to hear the familiar squeal of gummy oxide grabbing the tape as it moves past the heads.... After winding off the tape, you spend the next couple of minutes ridding your tape path of the sticky black shed that used to be part of the master.[11]

The "shedding oxide" or "binder breakdown" syndrome has occurred on many major tape brands due to a process called hydrolysis: polyurethane

binders absorb water under humid conditions causing urethane molecules to migrate to the surface forming a gummy substance. Once this process begins, tapes will be rendered unplayable within two to fifteen years unless the chemical reaction is reversed.[12]

Solutions to the problem vary and are quite complex. Agfa, a major audio tape manufacturer, has invented a special process (Agfa-XT) to restore tapes, but, with the cost averaging $300 per reel, most do not find the Agfa process an affordable option. Many engineers, therefore, have resorted to home remedies that usually involve heating the tape either with blow-dryers or convection ovens. Though risky, these methods have been used quite successfully at many studios, but archivists should seek the help of an expert. Because the "cure" is not permanent and may last for only a few weeks, the flaking tapes should be transferred to new tape stock immediately.[13]

Oxide problems seem to vary from tape brand to brand, from year to year, and possibly even from batch to batch. Though research into the problem is progressing, as yet there is no simple chart available to identify tape brands and specific batches that are likely to shed oxide. Tapes manufactured as recently as 1975-1987 may be at risk, especially if exposed to humidity at or above 70 percent for even two to three days.[14] Since audio tapes in archival collections are usually several years old by the time of deposit, the precise conditions of prior tape storage (including storage before purchase) are seldom known. Archivists should probably assume that every audio tape in their collections has received adverse exposure to heat and humidity at some point during its lifespan and should regularly inspect for evidence of related problems.

Storage and Handling Guidelines

Although inherent chemical and physical properties that affect audio tape longevity are beyond the archivist's control, most studies conclude that tape life depends even more on proper storage and handling. Properly stored magnetic tapes have been known to survive for three to five decades without significant loss in quality; conversely, tapes may exhibit a number of problems after a relatively short duration if mishandled. The close monitoring of climatic conditions has already been discussed as a prerequisite for prolonging tape life. General recommendations suggest temperature settings between 65 to 70 degrees Fahrenheit and relative humidity between 30 and 40 percent for both storage areas and all other areas of tape use. It is imperative that temperature and humidity levels remain constant to prevent expansion and contraction of the wound tape.

Besides degradation caused by climatic effects, the majority of problems leading to premature tape failure result from poor engineering practices that can and should be monitored in the archive, and, to the extent possible, in recording studios, university departments, and other regular sources of audio tapes deposited in archives. For example, dirt (including fingerprints, dust, hair, smoke, and cigarette ashes) is one of the most serious enemies of perfect quality reproduction because deposits on the tape surface not only weaken the signal during playback but may have a chemical effect on the tape coating.[15] Problems can be eliminated completely by enforcing no-smoking policies, practicing good housekeeping, eliminating food and beverages in tape areas, and wearing cotton gloves when handling tape.

Tape deformation, perhaps even more detrimental than dirt, prevents the tape from lying flat and thus alters the tape's integrity by impairing its ability to make full contact with the playback heads. Deformation most frequently results from bad winding leading to excessive or uneven tape tension. Controlling the quality of tape winding is of central importance to tape life and there are several basic guidelines to follow.

First, tape recorders must be professionally cleaned and maintained, must have winding tensions in accordance with recommended standards, and must have precisely adjusted tape guides. Tape tension that is too high will lead to overtight winding and tension that is too low will result in cinching, or reel slippage; both cause deformation over time. To test for the latter, hold the spool or hub tight and pull the end of the tape. If the tape moves, the reel is wound too loosely and should be rewound immediately.[16]

Second, never use the fast forward or fast rewind mode as the last step before storage. Uneven tape wind will almost always result, causing edges of random portions of the tape to protrude above the rest of the tape pack where they may fold or stretch along the exposed edge. Instead, run the tape at playing speed or use "library wind" (a feature on professional-model tape decks) after each use and store it in the played position (commonly referred to as "tails-out"). All tapes in archival collections should be examined for evenness of winding and, if the tape pack does not appear absolutely smooth and even, should be rewound immediately.[17]

Finally, the reel and hub contribute to winding quality. Bent flanges on the reel can cause uneven feed tension during each turn of the reel, resulting in tape stretching and, consequently, pitch drops. Avoid hubs with threading slots because the slot leaves a small hole over which the tape will dimple during winding, causing spoke pressure lines and tape deformation. Plastic reels deform, break, often have slotted hubs, and therefore are not considered archivally sound. The preferred solution is to use unslotted metal reel hubs which are the most durable over time.[18]

Splices in tapes create additional problems. As stated earlier, post-1960 CSO broadcast masters are usually composites of several concerts with splices at the editing points; that is, the two pieces of magnetic tape are pieced together with adhesive tape. Archivists know that all adhesive tape is "inherently evil" and the same holds true for splicing tape. The adhesive can either dry up causing the tape to come off the reel in pieces, or it can become gummy and bleed onto adjacent layers. In both cases, careful cleaning is required to remove the old adhesive. Then the tape must be respliced and copied onto a new splice-free preservation master tape.[19]

Cassette tapes present a variety of preservation problems because of extremely thin tape, internal construction, and low tape speed. Widely used since 1970, they are ideal for reference copies but are not suitable for long-term storage, and, if long-term preservation of the signal is desired all cassettes should be transferred to reels as soon as possible.

Of course the quality of the recording and the tape stock are paramount to tape longevity. Unfortunately archival tape collections are often recorded by individuals more concerned with the high cost of audio tape than the overall quality. They frequently select poor quality tape stock and maximize duration by recording at slow speeds. For example, the following tape configurations are poor candidates for long term preservation: tapes 0.5 mil in thickness; speeds

below 7-1/2 ips (inches per second) for music and 3-3/4 ips for spoken word; and quarter-track configurations. Recommended guidelines for preservation masters call for 1.5 mil tapes recorded at 15 ips for music and 7-1/2 ips for spoken word using full- or half-track configurations. In many cases it is better to transfer inferior tapes as soon as possible and concentrate preservation efforts on the new masters.

If tapes must be transferred, it is crucial that general archival guidelines be followed; that is, the transfer copy should be a faithful reproduction of the original. In this era of high-tech equipment and digital technology many engineers succumb to the irresistible temptation to "improve" the original recording. Therefore, archivists must closely supervise the process to ensure that the original is reproduced as accurately as possible and the recording methodology fully documented. If the original sound quality is poor and can be sonically improved through noise reduction, equalization, or other techniques, archivists may decide to make two copies—a preservation copy duplicating the original and a listening copy with sonic adjustments.[20]

During the CSO tape restoration project, all older masters are being professionally transferred at a speed of 15 ips onto new 1/4 inch tape stock, 1.5 mil in thickness, of a proprietary brand recommended for long-term archival storage.[21] The new masters will be free of leader tape and splices and will be wound onto archivally preferred 10.5 inch precision reels with metal hubs. Because most of the post-1960 tapes were recorded using Dolby A noise reduction, the process will also be used on the preservation copies.[22] Two such preservation copies are being made for each program—one to be stored in the archive and used for playback, the other to be sent to an off-site storage facility as a cautionary measure. Test tones, a series of pitches at the head of the tape, are added to each reel to facilitate proper alignment of the playback heads and to indicate playback levels and high and low frequency equalization.

Eventually reference copies will also be made on cassette tapes for use within the archives. Professional equipment has been purchased and a part-time audio technician is employed as necessary to make reference copies and gradually transfer post-1970 tapes as the need arises. Items requiring special attention will continue to be sent out for professional restoration.

Both the preservation copies and the original masters will be stored upright in acid-free boxes equipped with an insert allowing the weight of the reel to be supported by the hub. Program pages originally stored inside tape boxes will be removed to prevent acidic vapors and shed particles from compromising the tape storage. Each new broadcast tape received from the radio station will be examined for proper winding and transferred to an acid-free box before accessioning.

Conclusion

The cost of tape preservation is high—approximately sixteen to twenty dollars per reel for materials in addition to the hourly rate of the engineer. But with luck, not to mention funding, the CSO Archives will succeed at preserving the sound of the Chicago Symphony Orchestra on analog tape until a more durable preservation medium, possibly a recordable compact disc, has been adequately tested and proven reliable.

The issues associated with audio preservation are vast and complex; an in-depth discussion is beyond the scope of this paper.[23] I hope this overview of the CSO tape preservation project offers some encouragement to those with audio tape collections. True, the preservation of recorded formats is costly, requires high-quality storage facilities, equipment, state-of-the-art restoration techniques, and professional engineers. However, all archival recordings were presumably accessioned because of their perceived value. All audio collections should be appraised and checked for the various problems outlined above. Preservation priorities should then be identified, selective portions of the collection added to the institutional preservation policy, and funding sought for audio preservation and restoration. If this is done, an archive will succeed at preserving the musical activities, oral traditions, or histories of the communities and institutions it documents. This goal will be accomplished only if sound recordings are viewed as the equivalent of manuscripts and granted equal attention and treatment.

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NOTES

1. Charles Passy, "Recapturing the Historic Broadcast: An Orchestral Treasure Hunt," *Symphony Magazine* 38 (August 1987): 27. Passy's article is based in part on information gathered during an interview with Steven Smolian, noted sound restoration engineer and record collector, who assisted with both the Chicago Symphony Orchestra and New York Philharmonic sound archives projects.
2. Passy, 25.
3. Passy, 27.
4. Passy, 25.
5. Ibid.
6. Steven Smolian, "Preservation, Deterioration and Restoration of Recording Tape," *ARSC Journal* 19, no. 2-3 (1987 [issued February 1989]): 39. See also Alan Ward, *A Manual of Sound Archive Administration* (Brookfield, Vt.: Gower, 1990), 171-174.
7. Barry Fox, "Tape Life: An Era of Concern," *Studio Sound and Broadcast Engineering* 32 (December 1990): 50-54. According to Fox, polyester was introduced as a base film in the late 1950s by 3M, but some manufacturers were still using acetate for professional tapes until the mid-1960s and even into the 1970s for "economy" tapes. Furthermore, companies such as BASF used PVC (polyvinylchloride) as a base from the late 1940s until the switch to polyester around 1970. Cassette tapes as well as video tapes have always used polyester as a base.
8. Andreas Merkel, "When Tapes Start to Feel Their Age," *Agfa Forum News* (April 1990): 4.
9. Smolian, 37.
10. The tape hiss problem could be solved by using digital audio tape for transfers instead of analog tape but at present digital audio tape is not recommended as an archival format. Though I have chosen not to discuss the pros and cons of digital formats in this article, a summary of the issues

as well as the opinions of several noted recorded sound archivists may be found in David McGee's "Archivists Stick with Analog, Question Efficacy of CD, DAT" *Pro Sound News* 12 (August 1990): 18, 30. See also Smolian, 49-50, for a discussion of digital audio tape and discs.

11. Philip De Lancie, "Sticky Shed Syndrome: Tips on Saving your Damaged Master Tapes," *Mix* 14, no. 5 (May 1990): 148.
12. Ibid.
13. See De Lancie, 148-152, for diagrams of home made heating chambers and a complete description of the procedure. Price quotes for the Agfa-XT process are based on 2,500 foot reels recorded at 15 ips. According to Fox, 53, the baking process does not reverse degradation but instead dries solvents and excess lubricants making playback possible. See also Smolian, 42-43, for precise temperature and humidity guidelines to be observed during the baking process.
14. See Fox, 52-53, for a complete explanation. Each tape manufacturer has experimented with a variety of chemical formulations for tape binders, lubricants, and stabilizers. Though some companies have conducted research into the binder breakdown problem and have attempted to chart chemical formulations most likely to become unstable, little information has been released to the public. Ampex, possibly the leading manufacturer and distributor of tape worldwide, admits to a risk period of ten years beginning in the mid-1970s when polyurethane was first used as a binder until the mid-1980s when stabilizers had improved. Agfa 468, a tape brand and type commonly recommended for archival use, shed oxide in the form of a white powder on batches of tape produced between 1986 and 1987. According to Agfa representatives, the problem occurred when chemical formulations were altered to meet new German pollution standards and the problem has since been corrected. The Agfa-XT restoration process was made available after this incident raising the issue of tape companies profiting from tape degradation as well as the issue of manufacturer liability. The 3M company admits to only a few cases of oxide shedding and other tape manufacturers have been quiet on the issue. It should be noted, however, the BASF representatives claim their tapes are free of sticky binder problems because polyurethane binders were never used.
15. See Merkel, 7, for specific ratios of magnitudes for different types of dirt and for graphs demonstrating the harmful effects of deposits on the tape surface.
16. Ibid. See also Smolian, 43-45.
17. Smolian, 44.
18. Ibid. The hub is the cylindrical object at the center of a tape reel; flanges are the sides or spokes of the reel.
19. See Smolian, 43, for recommendations on products used in studios for splice cleaning.
20. The pros and cons of sonic alteration are discussed in Association for Recorded Sound Collections, Associated Audio Archives Committee, *Audio Preservation: A Planning Study - Final Performance Report,* NEH Grant PS-20021-86 (Silver Spring, Md.: ARSC, 1987), 240-241. See also Ward, 116-117.
21. Currently most sound archives in the United States are using Agfa 468, Scotch 808, or 3M 996 brand tapes for preservation masters.
22. Though some claim noise reduction processes leave an aural fingerprint, they have the advantage of reducing print-through (the magnetic leakage from one layer to the other) as well as tape hiss. See Ward, 224-226, for brief explanations of commonly used noise reduction systems.
23. If further information on magnetic tape is desired, I strongly urge archivists to obtain copies of the articles and studies cited above. As a group they provide the most current and complete information on the history of magnetic tapes, their chemical and physical properties, and their storage and handling.

ANNOTATED SELECTED BIBLIOGRAPHY OF WORKS RELATING TO SOUND RECORDINGS AND MAGNETIC AND OPTICAL MEDIA

CHRISTOPHER ANN PATON

The following publications were selected for this bibliography because they offer insights into the special nature and needs of sound recordings. They were written over a period of more than thirty years and offer a broad range of information from a variety of perspectives, not all of which are oriented toward archival purposes. Inclusion in this bibliography does not imply that the advice offered by the authors is authoritative. Archivists using these works should be careful in applying any suggested or implied treatments or remedies to sound recordings in their collections.

1. Association for Recorded Sound Collections. Associated Audio Archives Committee. *Audio Preservation: A Planning Study - Final Performance Report.* Silver Spring, Md.: Association for Recorded Sound Collections, 1988.

During 1986 and 1987 the Associated Audio Archives Committee (AAA) of the Association for Recorded Sound Collections (ARSC) carried out a survey of the state of audio preservation in sound archives in the United States and a few foreign countries. The survey found that there are currently no broadly recognized standards relating to audio preservation, and that the needs in this area are urgent and growing. The report contains the findings of the survey, the methodology employed, the raw data gathered, and the results of various related research projects carried out by the investigators. The report is a complex document that includes numerous appendixes and reports from individual investigators; nevertheless, archivists seeking current, reliable information relating to sound archives and audio preservation will find the publication very valuable. Includes a glossary and extensive bibliography. Copies are available from: Elwood McKee, 118 Monroe Street #610, Rockville, MD 20850.

2. ———. *Rules for Archival Cataloging of Sound Recordings.* Silver Spring, Md.: Association for Recorded Sound Collections, 1980.

These rules, which are based on the second edition of the *Anglo-American Cataloging Rules (AACR 2),* were developed by the Associated Audio Archives

Committee (AAA) of the Association for Recorded Sound Collections (ARSC) and represent the first known effort to adapt library cataloging rules and techniques to archival sound recordings. The publication includes complete rules for cataloging discs and cylinders and an outline of rules appropriate for other recording media (including magnetic tape). The rules are most readily suited to commercial disc and cylinder recordings as opposed to noncommercial, "instantaneous" recordings. In addition, the rules are more oriented toward item-level, library cataloging than toward the archival concepts of provenance, collection, record group, and finding aid. Nevertheless, archivists seeking guidance toward standards in a standard-less world will find the rules helpful. The AAA committee plans in the near future to revise the rules to reflect recent changes in *AACR 2*. Copies available from: ARSC, Executive Director —Publications Orders, P.O. Box 10162, Silver Spring, MD 20914.

3. Berger, Myron. "Record Cleaners and the Real World." *High Fidelity* 30 (July 1980): 43.

Berger critiques several commercial disc-cleaning products. Although the author does not write from an archival perspective, he describes each cleaning method clearly and compares and contrasts their strong and weak points. The editors of *High Fidelity* include an "afterword" on long-term effects of wet-cleaning. Archivists will want to exercise their own judgment in choosing which cleaning methods to use on their collections.

4. Bolnick, Doreen, and Bruce Johnson. "Audiocassette Repair." *Library Journal* 114:19 (15 November 1989): 43-46.

The authors clearly and succinctly describe the "anatomy" of cassette audio tapes and offer advice on repairing certain types of damage. They write from the perspective of librarians who care for a circulating collection of audio tapes that receive moderate to heavy use. The advice offered here may be useful in those cases where an archives receives mangled cassettes of possibly valuable material or where use copies become damaged. Archivists should keep in mind that cassette tapes are not archival.

5. Brock-Nannestad, George. "A Comment and Further Recommendations on 'International Rerecording Standards'." *ARSC Journal* 20:2 (Fall 1989): 156-161.

The author writes in response to recommendations on international re-recording standards proposed by William Storm in "A Proposal for the Establishment of International Rerecording Standards," *ARSC Journal* 15:2-3 (1983): 26-37. He discusses issues that engineers and archivists should consider in determining the desired goal of the re-recording process, and offers suggestions and recommendations on achieving accurate reproductions.

6. Carneal, Robert B. "Controlling Magnetic Tape for Archival Storage." *Phonographic Bulletin* 18 (July 1977): 11-14.

The author discusses the archival problems presented by the wide variety of audio recording formats that have developed over time, particularly those involving magnetic tape. He identifies particular problems in long-term storage of magnetic tape (including reel design, structure of storage boxes, aging of splicing tape, reel identification, print-through, and compatibility of recording and playback equipment). He identifies factors that archivists can control and recommends that archives begin to develop standards relating to archival stor-

age of magnetic tape. In the thirteen years since this article was written, some guidelines have been proposed and some of the problems identified by Carneal (such as archival use of slotted reels) have been addressed. Standards are currently being developed by the Preservation Committee of the Audio Engineering Society (AES), the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and the American National Standards Institute (ANSI).

7. Colby, Edward E. "Sound Scholarship: Scope, Purpose, Function and Potential of Phonorecord Archives." *Library Trends* 21:1 (July 1972): 7-28.

The author posits that "the time has arrived" for examining the status and use of sound archives to scholarship and society, for developing systematic descriptive methods, and for promoting the uses of sound recordings for educational purposes. He discusses the ways in which sound archives originate and build their collections, he briefly describes several well-known U.S. sound archives, he discusses specific educational purposes best served by sound recordings, and he concludes with a list of long-range objectives for future development and maturity of sound archives.

8. Cuddihy, Edward F. "Aging of Magnetic Tape." *IEEE Transactions on Magnetics* v. MAG-16, n. 4 (July 1980): 558-568.

The author reports on an experiment that examined the effects of hydrolysis on magnetic tape. The experiment exposed samples of one type of back-coated polyester instrumentation recording tape to varying combinations of relative humidity and temperature in open air and nitrogen; other tape samples were hermetically aged. The author concludes that relative humidity, rather than oxygen, is the primary factor in oxide degradation, and infers that at a certain temperature and relative humidity tape does not chemically age. He notes in particular that it is the chemical age of tape rather than the calendar age that is most important in predicting tape life, since environmental conditions have such a profound impact on tape degradation. The experiment did not address lubricant breakdown or other forms of physical aging nor did it deal specifically with audio tape. The article, while technical in nature, is readable and provides archivists with a clear understanding of the experiment and its results.

9. Czerwinska, E., and R. Kowalik. "Microbiodeterioration of Audiovisual Collections." *Restaurator* 3 (1979): 63-80.

In the first part of this article, the authors report on the nature of fungi found in archival audiovisual materials and on their search for a suitable fungicide to inhibit mold growth in air-conditioned storage areas. They isolated and identified the particular fungi involved and tested tape and film reels and sealing tape for microbioresistance. They experimented with disinfecting audiovisual materials by fungicide delivered in vapor form and concluded that a fungicidal solution delivered via soaked filter paper discs placed in the top and bottom of sealed metal cans used for storing motion picture films and magnetic tape completely inhibited fungal growth. Tape and film reels were disinfected by wiping with the same solution. The authors do not speculate on the long-term effects of storing audiovisual materials in vapor-filled cans. In the second part of the article, the authors consider similar questions regarding microbial growth on black-and-white photographic prints.

10. De Lancie, Philip. "Sticky Shed Syndrome." *Mix* (May 1990): 148-155.

The author describes the condition he calls "sticky shed syndrome," which occurs when modern polyester tape sheds oxide and binder. The condition causes squealing during tape playback and buildup of sticky oxide on playback heads, and signals the beginning of the end of the useful life of the afflicted tape. De Lancie reports the recommended temporary solution for the syndrome: heating (or baking) the tape at a low temperature for several hours until the oxide re-adheres and then copying the recording to a fresh reel. He also describes a homemade "baking oven" made from a cardboard box and heated with a blow-dryer. Although the oven may work, archivists inexperienced with magnetic tape should seek professional advice when dealing with afflicted tapes. The article also includes an announcement from Agfa (a major tape manufacturer) describing a commercial restoration service offered by the company.

11. Dick, Ernest J. "Through the Rearview Mirror: Moving Image and Sound Archives in the 1990s." *Archivaria* 28 (Summer 1989): 68-73.

Dick explores the advent and proliferation of audiovisual documentation in the twentieth century. He notes the increasingly complex conservation problems that the newer formats present, especially since magnetic audio and video tape came into common usage. He also discusses implications of new documentation formats on archives collecting policies, and the need for archivists to understand the context (technological as well as historical) within which a moving image or sound document was created, and not just its technical quality, when making appraisal and accessioning decisions.

12. Eckersley, Timothy. "The Selection of Recordings for Permanent Retention in the BBC Sound Archives." *Phonographic Bulletin* 9 (1974): 9-12.

The author discusses appraisal criteria (or "selection" criteria, in the parlance of sound archivists) used by the sound archive of the British Broadcasting Corporation. He notes the main purposes of the archive (to document radio broadcasting and to build an audio collection for use by producers in the future), discusses sources of materials and how the archive operation is financed, and then describes the primary selection criteria used by the archive selector.

13. Eilers, Delos A. "Polyester and Acetate as Magnetic Tape Backings." *Journal of the Audio Engineering Society* 17:3 (June 1969): 303-308.

In this article, written when polyester film was first coming into use as a base material for magnetic tape, the author compares the physical properties of the two types of film. He examines tape smoothness, reactions to environmental change, tape strength and tear resistance, and aging characteristics. The article offers archivists specific information not readily available elsewhere in such a concise format.

14. "Emergency Restoration for Rosengarten Tapes." *Sounds of the South* 2 (July 1990): 1-2.

Archivists at the Southern Folklife Collection received forty-eight valuable oral history tapes damaged with mud, sand, and salt water by Hurricane Hugo and devised a way to clean the tapes sufficiently to allow re-recording. The article describes the condition of the tapes, the cleaning apparatus designed and built by the archivists, and the washing procedure they used, and includes a photograph of the cleaning machine.

15. Foreman, Lewis. "Living History: The Preservation and Dissemination of Unpublished Sound Recordings." *State Librarian* 24:1 (March 1976): 4-5.

Foreman briefly traces the development of recording and playback technology, and then focuses on the difficulties that a researcher faces in trying to find and gain access to noncommercial and out-of-print commercial recordings. He discusses the existence of "networks" of home recording enthusiasts and collectors who make and preserve unauthorized, often illegal, recordings of important events and performances. Such recordings, the author notes, are rarely available through libraries or archives. Foreman recommends moving to legalize these recordings, so that they might eventually be cataloged and rendered accessible to researchers.

16. Fox, Barry. "Master Tapes Come to a Sticky End." *New Scientist* 22 (September 1990): 31.

The writer describes the now well-recognized phenomenon of oxide shedding and binder breakdown as it affects modern audio tape.

17. ———. "Tests Prove CDs Can Self-Destruct." *New Scientist* 7 (July 1988): 37.

The author cites evidence that some compact discs may be short-lived, and quotes various manufacturers regarding the likelihood of deterioration and possible causes of CD flaws.

18. Gagnon, Ronald. "Keep Record Collections in Tune." *Library Journal* 110:19 (15 November 1985): 56-58.

This author writes about basic record care from the perspective of a librarian working with a circulating collection of phonograph records (primarily commercial vinyl LPs). He notes the importance of regular, thorough, and safe cleaning in enhancing and prolonging the life of commercial sound recordings, and discusses particular cleaning methods and products. Although most of his comments and recommendations reflect accepted safe cleaning practices, he is not writing about archival sound recording collections, and archivists should be cautious in applying some of these procedures to their archival holdings. In particular, the recommendations regarding use of a homemade alcohol cleaning solution or a detergent and water bath should be studied carefully before implementation.

19. Gelatt, Roland. *The Fabulous Phonograph, 1877-1977*. 2nd rev. ed. New York: MacMillan Publishing Company, Inc., 1977.

A readable, enjoyable history of the invention and development of the phonograph and related recording and playback devices. The second revised edition covers this subject through the development of 8-track cartridge, audio cassette, and quadraphonic sound.

20. Geller, Sidney B. "Erasing Myths About Magnetic Media." *Datamation* 22:3 (March 1967): 65-70.

Geller describes tests undertaken by the National Bureau of Standards (NBS) to determine the effects of magnetic and electromagnetic fields on magnetic recording media. NBS tested computer tapes, digital cassettes, and credit cards bearing magnetic stripes with exposure to possible sources of erasure. The tests determined that magnetic recordings are not easily damaged by exposure

to most magnetic fields except large permanent magnets, and that fears of accidental erasure have been over-emphasized. Archivists should note, however, that these tests involved, for the most part, digital computer media, and the testing criteria allowed up to 50 percent loss of signal before considering a tape damaged. Smaller signal losses, which could damage audio tapes, were not considered significant, although they are reported in the article.

21. Goldman, Abe A. "Copyright and Archival Collections of Sound Recordings." *Library Trends* 21:1 (July 1972): 147-155.

The author describes the aspects of copyright law that pertain to sound recordings and to the underlying works on the recordings and discusses how archivists might apply the laws that pertained to copyright of sound recordings in 1972. At the time the article was written, copyright protection had just recently been extended to include recorded sound materials but the Copyright Act of 1976 had not yet been adopted. Despite changes in the applicable laws since 1972, archivists seeking basic information on copyright issues will find this article helpful.

22. Griffin, Marie P. "*The IJS Jazz Register and Indexes:* Jazz Discography in the Computer Era." *Annual Review of Jazz Studies* 1 (1982): 110-127.

Griffin discusses development of a model cataloging system for jazz recordings. The cataloging procedure is designed to be acceptable to national utilities and to produce registers for use by Institute of Jazz Studies (IJS) researchers. The IJS catalog contains very full documentation of each recording; some archivists may lack the time and staff to create such detailed discographical entries. Details of the process are available from the Institute of Jazz Studies.

23. ———. "Preservation of Rare and Unique Materials at the Institute for Jazz Studies." *ARSC Journal* 17:1-3 (1985): 11-17.

Griffin describes a project carried out at the Institute of Jazz Studies to clean and re-record aging and fragile archival jazz recordings and preserve the information in the institute's clipping files. She discusses in detail the cleaning and re-recording process and the equipment used by the institute. This is one of only a handful of articles that describes the use of a record-cleaning machine for archival disc recordings.

24. Greenfield, Amy. "The Case of the Vanishing Videotape." *American Film* 6 (July-August 1981): 17-18.

Greenfield describes the impermanence of videotape as a storage medium, and discusses problems of changing technology and new formats that exhibit short lifespans. She points out particular problems with the medium (such as physical degradation over time and questions regarding the impact of repeated playback on longevity) and notes preservation research efforts that were underway at the time she wrote.

25. Hagen, Carlos B. "The Struggle of Sound Archives in the United States." *Library Trends* 21:1 (July 1972): 29-52.

The author discusses the problems that U.S. recorded sound collections face in their struggle for recognition of sound recordings as legitimate research materials and library resources. He also notes and describes the holdings of several major recorded sound collections at institutions across the U.S.

26. Hall, David. "Phonorecord Preservation: Notes of a Pragmatist." *Special Libraries* 62 (September 1971): 357-362.

The author's remarks are addressed primarily to librarians in charge of circulating collections of phonograph records. He discusses safe storage, handling and use practices, and the legality of copying recordings on tape for use by library patrons. Despite the library orientation, archivists will find the basic advice sound, although, since the article is twenty years old, some of the information is out of date. For example, few archives today make a special effort to shelve magnetic tapes on nonmetal shelving, and the copyright advice offered by the author is based on the 1909 law rather than the 1972 amendment relating to sound recordings or the current law that took effect in 1978. Archivists will want to read this article for basic background information, and then turn to more recent works to bring their readings up to date.

27. Hammar, Peter. "Jack Mullin: The Man and His Machines." *Journal of the Audio Engineering Society* 37:6 (June 1989): 490-512.

The author briefly recounts the history of recorded sound technology, using as a framework the John T. (Jack) Mullin collection of recording and reproducing equipment. Mullin is generally credited with introducing high-quality magnetic recording capability to the United States after World War II. In the course of his career he assembled the extensive collection of recording artifacts that inspired this article.

28. Harrison, Helen P. *The Archival Appraisal of Sound Recordings and Related Materials: A RAMP Study with Guidelines.* Paris: UNESCO, 1987.

A thorough, useful study of issues relating to appraisal and selection of sound recordings in archives. The author sets forth basic aspects of appraisal (including legal issues, collecting scope and policies, conservation and records management) and applies them to the varying needs of archives that deal with sound recordings of all types. Although experienced archivists will be familiar with the information contained in portions of the report, they will also find information on the history and typology of sound recordings and sound recording archives that is usually neglected in archival literature.

29. ———. "Preservation of Moving Pictures and Sound Carriers." *Art Libraries Journal* 5:1 (Spring 1980): 13-20.

The author briefly discusses preservation of film, video, and sound recordings (including audio tapes, cassettes, and discs), and offers concise, accurate information on proper storage and use of such materials.

30. ———. *Selection in Sound Archives.* IASA Special Publication No. 5, 1984.

This volume contains papers presented at meetings of the International Association of Sound Archives (IASA), many of which were also published in the IASA publication *Phonographic Bulletin.* An excellent source for information on issues relating to selection criteria and collecting policies for sound archives.

31. Herbst, Krist. "Networks That Make Sweet Music." *Network World* (25 June 1990): 37-39, 52.

According to the author, new technology enables recording studios to transmit and exchange high quality audio signals via satellite and fiberoptic cable, and audio versions of local area networks (LANs) are becoming available and feasible. He describes studios currently linked by networks, a transcontinental recording session, and the development of audio LANs.

32. Kalil, Ford, ed. *Magnetic Tape Recording for the Eighties.* NASA Reference Publication 1075. National Aeronautics and Space Administration, April 1982.

This publication contains reports on the creation, use, care, and preservation of magnetic tape recordings. It focuses primarily on instrumentation and computer recordings rather than recorded sound, and is at times quite technical. Nevertheless, archivists dealing with sound recordings will find parts of the reports helpful, including the bibliographies compiled by the authors.

33. Kent, Scott. "Binder Breakdown in Back-coated Tapes." *Recording Engineer/Producer* (July 1988): 80-81.

The author describes the phenomenon of oxide shedding that frequently afflicts magnetic tapes produced from the late 1960s and 1970s through the early 1980s. Kent attributes oxide shedding (dubbed "sticky shed syndrome" by another author) to binder deterioration, and describes the sticky oxide residue that adheres to tape playback heads and the accompanying high-pitched squeal. He also discusses the "temporary fix" achieved by heating the tape under controlled conditions.

34. Kittle, Paul W. "Effects on Media Materials of Storage in Proximity to a Magnetic Resonance Imaging Scanner." *Bulletin of the Medical Library Association* 77:1 (January 1989): 67-69.

The author discusses a project carried out at the Loma Linda University Medical Center to determine whether video cassettes and audio cassettes stored in a medical library, in close proximity to an MRI scanner that generates a magnetic field, were likely to become damaged. In this particular case, the investigators found no apparent detrimental effects. The author describes the methodology of the project, the equipment used to carry out the work, and the results. A bibliography is included.

35. Knight, G. A. "Factors Relating to the Long Term Storage of Magnetic Tape." *Phonographic Bulletin* 18 (July 1977): 15-45.

This article is a reprint of a report prepared by the Central Research Laboratories of EMI Ltd. While preparing the report, the author reviewed past recommendations regarding storage and transit conditions for magnetic audio tape by surveying the available literature, examining and assessing the condition of selected EMI tapes, and exchanging information with other interested organizations. The report covers environmental conditions, deterioration of tapes due to physical composition ("inherent vice"), and other sources of possible damage. It includes a concise summary of recommendations for storage environment, packaging, and handling procedures for both older and modern magnetic tape. The recommendation that tapes be stored in sealed plastic bags is not universally accepted, and should be implemented cautiously. The report contains a brief bibliography.

36. Lampton, Christopher. *CD ROMs*. New York: F. Watts, 1987.

This book is part of a "First Book" series designed for young readers, apparently of middle school and high school age. Archivists who are not technologically adept, but who desire a clearer understanding of how compact discs, optical disks, and digital technology work, will find the text clear and easy to understand. The book includes a brief glossary of CD-ROM terminology.

37. "Laser Rot." *The Perfect Vision* 1:1 (Winter 1986-1987): 35-45.

This article describes, informally, the playback problems with laser video discs, particularly the form of deterioration known as "laser rot." Although the article does not deal directly with this problem as it affects CDs (audio, rather than video optical disk formats), and is not written by an archivist or from an archival point of view, archivists may find useful the descriptions of the physical structure of video discs and of laser rot.

38. Leavitt, Donald L. "Recorded Sound in the Library of Congress." *Library Trends* 21:1 (July 1972): 53-59.

The author describes the origins of the recorded sound collections in the Library of Congress, including the types of materials collected over the years and the types of patrons and uses of the materials.

39. Levitt, Martin L. "A Case Study in Audio Tape Transfer." *College & Research Libraries News* 49:10 (November 1988): 654-657.

The author describes an archival preservation project in which the Library of the American Philosophical Society transferred valuable, aging, and fragile audio tapes to Rotary Digital Audio Tape (RDAT) for preservation purposes. The project is noteworthy in part because the library chose digital RDAT technology, which in 1987 was brand new. The author discusses the methodology used to assess the condition of the library's audio collection, development of the preservation plan, and rationale for choosing a radical and controversial format for preservation of the tapes. The February 1989 issue of *C & RL News* (see entry no. 58) contains a letter pointing out the potential problems with the library's choice of recording format, and enumerating the reasons why RDAT was not a good preservation choice. Mr. Levitt provides a response to these arguments immediately following the letter.

40. Loescher, F. A., and F. H. Hirsch. "Long-term Durability of Pickup Diamonds and Records." *Journal of the Audio Engineering Society* 22 (December 1974): 800-806.

The authors studied durability of contemporary styluses and record grooves by undertaking long-term tests, under controlled conditions, of both dry and wet playback systems. The article describes the testing procedure in detail, and includes photographs of the styluses showing the type and amount of deterioration they exhibited at various points during the tests.

41. Masters, Ian G. "The Basics (A Series of Articles on the Basics of Audio)." *Stereo Review,* beginning in the September 1989 issue and continuing.

Masters begins with an overview of the history and development of sound reproduction technology. Each article addresses an individual topic in recording and reproduction, including disc and tape recordings, acoustics, how sound is reproduced from various media, and how to choose system components. The

articles are well-focused and provide good background information for archivists who lack a clear understanding of audio recording and playback technology.

42. McCormick, Don, and Seth Winner. "The Toscanini Legacy." *ARSC Journal* 20:2 (Fall 1989): 182-190.

The authors describe the contents of "The Toscanini Legacy," a very large and valuable collection of materials held by the New York Public Library relating to the life and career of Arturo Toscanini. The authors note the types of sound recordings found in the collection (including various types of commercial and instantaneous discs, tapes, and an exotic format known as Selenophone film), many of which were both rare and in poor condition. They thoroughly discuss the preservation and re-recording processes used with the recordings. The article includes information on setting priorities for preservation work within the collection, cleaning the recordings, re-recording (including the equipment used), cataloging, and use of the recordings by patrons.

43. McKee, Elwood. "AAA Audio Preservation Planning Project: A Preliminary Progress Report." *ARSC Journal* 18:1-3 (1986): 20-32.

The author reports on the progress of a study of the status of sound recording preservation in major sound archives. The study was funded by NEH, and sought to "gather as much information as possible about all aspects of the conservation, preservation, and restoration of sound recordings." The author describes the methodology of the project and includes a report of the preliminary findings of the investigators. The final report on this project is cited as entry no. 1 in this bibliography.

44. McWilliams, Jerry. *The Preservation and Restoration of Sound Recordings.* Nashville: American Association for State and Local History, 1979.

This was the first book to directly and exclusively address the role of sound recordings in archives and issues relating to preservation and restoration of sound recordings. The author writes of the history of early and recent recording technology, and then offers advice on storage, handling, playback, and restoration of sound recordings. Some of the information is now out of date; some sound archivists disagree with some of the author's recommendations. Archivists will want to use this work in conjunction with more recent publications and recommendations regarding archival storage and handling practices. Contains a bibliography.

45. Orbanz, Eva, Helen P. Harrison, and Henning Schou. *Archiving the Audiovisual Heritage: A Joint Technical Symposium, Federation Internationale des Archives du Film, Federation Internationale des Archives de Television, International Association of Sound Archives.* Berlin: Stiftung Deutsche Kinemathek, 1988.

This book is an anthology of papers presented at a Joint Technical Symposium, which was held in Berlin in 1987 and organized by the International Federation of Film Archives (FIAF), the International Federation of Television Archives (FIAT), and the International Association of Sound Archives (IASA). The papers, prepared by experts in the various fields, address issues relating to preservation and restoration of modern audiovisual media (including film, video, and sound recordings). The articles, which are printed in

English, are, for the most part, excellent. They will be of interest to most archivists who work with audiovisual materials.

46. Owen, Tom. "Fifty Questions on Audio Restoration and Transfer Technology." *ARSC Journal* 15:2-3 (1983): 38-45a. Note also the response to this article in the *ARSC Journal* 16:3 (1984): 5-11.

The author, who was chief engineer at the Rodgers and Hammerstein Archives of Recorded Sound at Lincoln Center, poses and answers both simple and complex questions relating to audio restoration. He recommends cleaning methods, equipment, and engineering techniques that he feels are appropriate for use with archival recordings. The next issue of the *ARSC Journal* (volume 16:2 (1984)) includes a disclaimer from the ARSC president regarding the article and indicates that enough controversy resulted from this article to warrant retention of attorneys. Volume 16:3 (1984) of the *ARSC Journal* contains both a policy statement relating to Mr. Owen's article (on p. 3) and correspondence relating to the piece with responses by Mr. Owen (pp. 5-11). The article clearly deals with sensitive and controversial issues in sound restoration, and archivists will want to examine all sides of the various issues before choosing which recommendations to implement.

47. Pesak, Josef. "Ultrasonic Cleaning of Gramophone Records." *TESLA Electronics* 16:1 (March 1983): 16-19.

The author describes the principle of ultrasonic cleaning and the results of cleaning procedures and tests carried out in TESLA Litovel (a Czechoslovakian producer of record players). The article includes photographs of record grooves before and after cleaning, charts and graphs documenting the size and number of dirt particles found on recordings, and graphs of the comparative noise levels of dirty and clean records.

48. Pickett, A. G., and M. M. Lemcoe. *Preservation and Storage of Sound Recordings*. Washington, D.C.: Library of Congress, 1959.

This classic work was carried out at the request of the Library of Congress. The investigators studied all aspects of deterioration and preservation of the sound recording formats commonly used or recently developed at the time of their work (including acetate, shellac and vinyl disc recordings, and acetate and mylar-based magnetic tape). The report is still cited as an authoritative source of information, and most of the investigators' conclusions and recommendations remain valid. The report includes technical information regarding the testing procedures and the physical characteristics of recording media, plus illustrations, recommendations, and a bibliography.

49. Porter, James D. "Sound in the Archives." *American Archivist* 27:2 (April 1964): 327-336.

The author writes from the perspective of an archivist whose institution has studied the problems that can arise when governmental offices create audio records in an unregulated manner, and has developed standards to control the creation of such documents. Most of the author's recommendations regarding creation of magnetic tape sound recordings are still valid, despite the passage of over twenty-five years, although contemporary archivists will find that "home," or consumer, reel-to-reel tape recorders are no longer readily available. This article is virtually the only short work of any substance dealing with creation,

accessioning, preservation, and use of archival sound recordings from the point of view of a "traditional," paper-and-document-oriented archives.

50. Poulos, Arthur. "Audio and Video Cassettes, Friend or Foe of the Librarian?" *Special Libraries* 63:5-6 (May/June 1972): 222-226.

The author briefly recounts the history and development of audio and video cassette technology. He documents the improving quality and increasing popularity of the new formats and playback systems, and speculates on the future place of these materials in libraries. The present popularity of both audio and video materials in cassette format substantiates most of his predictions.

51. Public Archives of Canada. Sound Archives Section. National Film Archives. *Sound Archives: Guide to Procedures.* Ottawa: Public Archives of Canada, 1979.

This publication describes "the objectives, activities and procedures of the Sound Archives" section of the National Film Archives of Canada. It includes information on acquisitions, accessions, descriptive policies and procedures, indexing, conservation, restrictions, and reference service. These procedures relate specifically to the needs of this particular institution; nevertheless, archivists will find much reliable background information as well.

52. Radocy, Frank. "Tape Storage Problems." *Journal of the Audio Engineering Society* 5:1 (January 1957): 32-35.

The author tested and compared types of damage and deterioration exhibited by magnetic tapes with acetate and Mylar bases. The conclusions listed at the end of the article are essentially identical to recommendations commonly discussed today, except that more recent researchers suggest slightly lower storage temperatures and recommend plastic or acid-free cardboard storage boxes rather than sealed metal cans.

53. Ranada, David. "How to Clean a Stylus." *Stereo Review* 48 (January 1983): 58.

A good description of the techniques used to clean a stylus and the basic products needed to accomplish this task. Includes photographs of styluses (both dirty and clean) and the cleaning process.

54. Read, Oliver, and Walter Welch. *From Tinfoil to Stereo.* 2nd ed. Indianapolis: H. W. Sams, 1976.

The authors provide an exhaustive history of the development of recording technology, omitting virtually no details, and with particular emphasis on the development of early cylinder and disc technology. Most archivists seeking concise, readable background information will find Roland Gelatt's *The Fabulous Phonograph, 1877-1977* more accessible.

55. Reed, Mary Hutchings. *The Copyright Primer for Librarians and Educators.* Chicago: American Library Association; Washington, D. C.: National Education Association, 1987.

Although this publication discusses all aspects of copyright law as the law affects librarians and educators, rather than focusing specifically on recorded sound materials, it does include information relating to copying sound recordings that archivists may find helpful.

56. Robbins, Donald C. "Current Resources for the Bibliographic Control of Sound Recordings." *Library Trends* 21:1 (July 1972): 136-146.

This article examines sources for "bibliographic control of in-print, commercially produced material." Noncommercial materials are not discussed at all. The author describes sources of information for domestic and foreign sound recordings, including trade lists such as the *Schwann Record & Tape Guide* and *Phonolog* (with their foreign counterparts), as well as bibliographies and discographies with a more official, or scholarly, origin. He also pinpoints specific problem areas.

57. Roberts, David. "Archives and Sound Archives—What's the Difference?" *Archives and Manuscripts* 12:2 (November 1984): 117-126.

The author offers a careful, thoughtful discussion of the different types of archives that count sound recordings among their holdings. He notes the differences between sound recordings that traditional archives collect and the collections of commercial recordings or recordings relating to particular subjects that other sound archives often build. He proceeds to discuss the implications of these different understandings of sound archives for the functions carried out by the two types of institutions.

58. Roosa, Mark S. "Audio Tape Transfer." *College & Research Libraries News* 50:2 (February 1989): 132-134.

The author writes in response to an article that appeared in a previous issue of *C & RL News* (see entry no. 39). Roosa takes issue with the use of new digital technology (specifically the rotary digital audio tape, or RDAT, format) for audio preservation in the project that Levitt describes. Roosa outlines the goals of archival audio preservation and describes why, at the present time, the analog format is preferable to digital. Roosa's letter is followed by Levitt's response.

59. Roper, Michael. "Advanced Technical Media: The Conservation and Storage of Audio-visual and Machine-readable Records." *Journal of the Society of Archivists* 7:2 (October 1982): 106-112.

The author discusses the complexity and fragility of many audiovisual formats, and discusses storage and handling criteria for photographs, film, microfilm, sound recordings, and machine-readable records. He also touches on technology that was emerging at the time the article was written, including video discs, binary COM/CIM, holography, and transparent electrophotography.

60. Rosenberg, Kenyon C. "Direct & Digital Sound Recordings: Basics for Librarians." *Library Journal* 108:9 (1 May 1983): 879-880.

The author explains the evolution of "direct to disc" and digital recording technology, and mentions the expected availability of the then-new compact disc. His explanation of the two types of new recordings, and the disadvantages of older recording methods, is clear and understandable.

61. Scharlau, Ulf. "Selection in Radio Sound Archives: A Problem of Methods of Documentation." *Phonographic Bulletin* 31 (1981): 33-36.

The author discusses the selection policies and cataloging and documentation procedures of the archive of the Süddeutscher Rundfunk, stressing the role these play in a radio archive.

62. Schüller, Dietrich. "Archival Tape Test." *Phonographic Bulletin* 27 (1980): 21-25.

The author reports on the result of tests of different types of magnetic audio tape used for long-term storage. The tests were conducted by the IASA Technical Committee on various brands of tape, and the article includes technical descriptions of how the samples performed. Archivists not well-versed in recording or audio engineering technology may wish to solicit assistance in understanding the results of the tests.

63. ———. "Towards a Standard for Exchange Tapes Between Research Sound Archives." *Phonographic Bulletin* 16 (December 1976): 36-37.

This article is a draft proposal by the IASA Technical Committee regarding international standards for archival audio tapes and tapes exchanged between sound archives. The author proposes standards for type of tape, types of acceptable reels and containers, speed, equalization, track-configuration, and other points. The article includes a chart of standards and policies used by major U.S. and foreign sound archives. Archivists seeking guidance in developing their own internal policies will find this article very helpful.

64. ———. "Sound Tapes and the 'Vinegar Syndrome'." *Phonographic Bulletin* 54 (July 1989): 29-31.

The author describes the "vinegar syndrome" that afflicts motion picture films of a triacetate cellulose base, reports on investigations regarding whether the syndrome may also affect acetate-based audio tapes, and discusses the discovery of "vinegar syndrome" audio tapes at at least one European sound archive. Schüller recommends procedures for examining audio tapes, handling damaged tapes, and preventing damage to healthy tapes. His recommendations cast some doubt on the advisability of storing tapes in plastic bags.

65. Schuursma, Rolf. L. "Principles of Selection." *Phonographic Bulletin* 9 (1974): 7-8.

The author discusses reasons why sound archivists may wish to develop selection policies, rather than accepting every recording offered to them. He offers a list of points to consider in determining which sound recordings have enduring value and are therefore appropriate for retention.

66. ———. "Principles of Selection in Sound Archives." *Phonographic Bulletin* 11 (1975): 12-19.

The author expands on the brief discussion of selection in the article listed in entry no. 65, exploring the implications of selection criteria, and the lack thereof, for archivists and historians.

67. Smiraglia, Richard P. *Music Cataloging*. Englewood, Colo.: Libraries Unlimited, Inc., 1989.

In this guide to cataloging music materials, the author focuses primarily on published music (whether in printed or recorded format) rather than on sound recordings or noncommercial archival materials. The book is well-written and thorough, and archivists seeking information on cataloging or description of music recordings may find it helpful.

68. Spence, John. "Mould: A Growing Problem Too Big to Ignore." *Phonographic Bulletin* 55 (November 1989): 21-25.

The author describes a mold outbreak in the Radio Archives of the Australian Broadcasting Corporation, including the conditions that created the problem, the tapes that were affected by mold, and the remedies chosen by the archives to solve the problem and clean the damaged tapes. The article includes a description of the cleaning methods tried by the archivists and the tape-cleaning machine that they eventually selected and used.

69. Storm, William. "The Establishment of International Re-Recording Standards." *Phonographic Bulletin* (July 1980): 5-12.

The author recommends that sound archives develop standards for archival re-recording, since preservation of the sound within a recording is of primary importance (as opposed to preservation of the recordings as artifacts or art objects). He discusses the conditions that will allow the development of such standards, and then proposes possible standards for two different types of re-recording. This article discusses issues that have not yet been settled and that will become increasingly important in the future. The article includes a bibliography.

70. ———. "Standards for Speakers." *Library Trends* 30:2 (Fall 1981): 307-317.

The author discusses criteria that archivists can employ in selecting speakers for use with archival sound recordings. He examines five variables to consider in selecting speakers, describes the meaning and archival implications of each, and concludes with summary guidelines. The article includes supporting graphs and charts.

71. Storm, William D. "Construction and Rationale of Building the Belfer Audio Laboratory and Archive at Syracuse University." *Phonographic Bulletin* 39 (July 1984): 9-18.

The author describes the planning and development process for designing and building a sound archive and archival audio laboratory. The article includes discussion of the desired specifications of the recording complex (including a partial list of equipment), a sketch of the floor plans, and a bibliography of resources on acoustics.

72. ———. "A Proposal for the Establishment of International Re-recording Standards." *ARSC Journal* 15:2-3 (1983): 26-37.

This article is a revised version of the article cited in entry no. 69 in this bibliography, including an expanded bibliography of sources relating to the topic.

73. Storm, William D., and Kenneth Whistler. "Laser Reproduction of Cylinder Sound Recordings." *Dossier de l'Audiovisuel* 9 (October 1986): 40-41.

The authors report on their experiments with laser reproduction (playback) of cylinder recordings. This brief article was published in French and lacks an English abstract, so interested non-French-speaking archivists will need translation assistance.

74. Thomas, David H. "Cataloging Sound Recordings Using Archival Methods." *Cataloging and Classification Quarterly* 11:3-4 (1990): 193-212.

The author focuses on descriptive practices for archival audio materials. He offers a definition of archival sound recordings, discusses organization and arrangement of archival sound collections, and describes methods for cataloging archival, noncommercial sound recordings using the MARC AMC format. His observations stem from his work at the Rodgers and Hammerstein Archives of Recorded Sound at the New York Public Library. Archivists seeking to develop in-house descriptive practices for their audio materials will find the article clear, thoughtful, and helpful.

75. *Videodisc and Optical Digital Disk Technologies and Their Applications in Libraries: A Report to the Council on Library Resources.* Washington, D.C.: The Council on Library Resources. 1985.

While not focused specifically on optical disk technology as it pertains to sound recordings, this publication does address the developing potential of optical digital media, and speculates on the probable usefulness and longevity of such materials. The authors cautiously posit a life span of approximately ten years, based on manufacturers' information available at the time the report was compiled.

76. Ward, Alan. *A Manual of Sound Archive Administration.* Brookfield, Vt.: Gower Publishing Company, 1990.

The compiler of this bibliography has not yet read this publication. Reports from other archivists who have read it indicate that Ward offers accurate, reliable information and advice and that archivists will find the book clearly written and approachable. The author is British, and U.S. archivists will find that some portions of the book, such as the chapter on copyright, are more pertinent to Great Britain than to the United States.

77. Welch, Walter L. "Preservation and Restoration of Authenticity in Sound Recordings." *Library Trends* 21:1 (July 1972): 83-100.

The author describes the work of the Syracuse University Audio Archives and the Thomas Alva Edison Foundation Re-Recording Laboratory along with historical background on recordings produced by Thomas Edison. He offers some advice on storing, handling, and cleaning cylinder and disc recordings, much of which is still acceptable today, although contemporary archivists may want to be cautious about spraying commercial cleaning products on archival recordings.

78. ———. "Preservation and Restoration of Authenticity in Sound Recordings—To Standards." *Library Trends* 30:2 (Fall 1981): 297-305.

Despite the title of this article, the author does not discuss archival preservation or restoration issues in any detail. For the most part the article recounts the history of recordings produced by Thomas Edison in the first third of the twentieth century.

79. ———. "Recorded Music and Re-recording Processes." *American Archivist* 31:4 (October 1968): 379-383.

This work records the author's remarks from an informal presentation in which he focuses primarily on the work of Thomas Edison rather than on sound recordings in archives or the re-recording process.

80. Wheeler, Jim. "Increasing the Life of Your Audio Tape." *Journal of the Audio Engineering Society* 36:4 (April 1988): 232-234.

The author, a representative of the Ampex Corporation, discusses appropriate storage and handling procedures for increasing the life of magnetic tape. He includes recommendations on storage procedures and storage and work climate.

81. Woodcock, Roderick, and Marc Wielage. "Laser Rot." *Video* (April 1987): 49-52.

The authors describe "laser rot" as it affects video discs and examine possible failures in the production process that may cause such deterioration. Although the article is limited to video discs and does not discuss possible problems with compact discs, archivists may find the descriptions of the problem and the manufacturing process helpful.

SUBJECT INDEX

Many of the resources in this bibliography deal with more than one subject. This brief subject index is intended to help readers identify the primary or most important subject covered by each work, not as an exhaustive list of all the subjects discussed

A REPOSITORY ARCHIVIST ON CAPITOL HILL

CONNELL B. GALLAGHER

ABSTRACT: The receipt of large twentieth-century political collections can be a crippling experience for a moderately sized archival repository. A proactive approach can, however, soften the blow by permitting the archivist to (1) understand a working congressional office and (2) appraise the papers *en scene* before they are packed. As a result the repository will receive a smaller, more organized collection with a preliminary finding aid, and the archivist will be in a better position to provide service on the papers sooner.

The University of Vermont began its manuscript collecting program in 1962 with the creation of a Special Collections Department.[1] Little collecting was being done in twentieth-century manuscripts in Vermont, so this became the obvious focus for the program. By 1970, the university had acquired over 3,000 feet of manuscripts with approximately 25 percent in political papers. The single largest collection was the Senator Warren R. Austin papers (1877-1962), approximately 100 feet of material covering Austin's fifteen years in the U.S. Senate from 1931 to 1946, and six years as ambassador to the United Nations, 1947-53.

This proportion changed to 50 percent with the receipt of 450 feet of papers in 1972 following the death of Senator Winston L. Prouty, and 800 feet of papers in 1974 following the retirement of Senator George D. Aiken. Together the Prouty and Aiken papers represented 53 years of combined service in Congress. It was reasonable to assume that with files inflation we could expect to receive 1,000 feet or more just from Senator Robert T. Stafford who was scheduled to retire in 1988 after 28 years in Congress.[2]

The manuscript collection was, from the beginning, a Vermont collection; congressional papers were acquired for their Vermont content and for their role in documenting Vermont legislators at the national level rather than for tracking national issues or the functioning of Congress. These subjects are, however, byproducts, and the collections have been used in many ways. Though congressional papers are primarily local in content, they provide much of the source material for national history. Senator Aiken's attempt to improve rural electrification in Vermont resulted in the construction of the St. Lawrence Seaway in 1959, and Senator John J. Williams's clean-up of corruption in Delaware tax collection resulted in the first publication of the Internal Revenue Code in 1954.[3]

Planning the Project

The idea of going to Washington to work in the office of a United States senator occurred to me during the Congressional Papers Project Conference sponsored by the Dirksen Congressional Center and the NHPRC, held in Harper's Ferry, West Virginia, in the summer of 1985.[4] This was my first opportunity to meet with many colleagues who also were responsible for the care of congressional collections. (It was at this time, too, that an SAA Congressional Papers Group was established, and I was asked to be the first chair and to usher the group through the process of becoming an SAA roundtable.)[5] Robert Blesse of the University of Nevada, one of the conference participants, had just returned from a stint in the office of Senator Paul Laxalt where he packed and shipped the senator's papers to the University of Nevada for deposit.[6] Patricia Aronsson recommended this approach in 1984:

> Only by thoroughly understanding the context in which the records are created can the archivist be certain of the validity of his appraisal decisions. The ideal time for an archivist to gain these insights is while the senator or representative is still in office. Then the archivist can observe the operation of the congressional office, learn from congressional staff members what issues are of special importance to the member of Congress, and inquire about the value of particular categories of information.[7]

Blesse had spent five weeks dealing with seven years of Laxalt's papers, but I was looking at a longer stay to handle the accumulation of 28 years for Senator Robert T. Stafford. Time and cost would make such an approach prohibitive for most repository archivists under normal conditions, but the project seemed perfect for a sabbatical. Because Vermont is a small state with only three members of Congress, I had the opportunity to cover the whole delegation —if the members could somehow contribute to my travel and living expenses in Washington.

On my return from Harper's Ferry, I wrote to Senators Stafford and Patrick J. Leahy and Congressman James V. Jeffords to apprise them of my sabbatical plans. I hoped to come to Capitol Hill to learn about the workings of Congress firsthand in order to better understand congressional collections, and to advise staff on the organization and disposition of files. All were interested in the proposition, and I was invited to visit and meet with appropriate staff to flesh-out my ideas. I did this in the summer of 1986. Neal Houston, Senator Stafford's administrative assistant, was most interested in my coming to help because the senator had just announced that he would retire at the end of the 100th Congress and that his papers would go to the university. Houston pretty much hired me on the spot.

Congressman Jeffords' administrative assistant was also interested because her boss was planning to run for Stafford's Senate seat, and Jeffords planned to add the remainder of his House papers to an already considerable collection at the University of Vermont. Senator Leahy's personal assistant was interested in the idea, but the senator did not want to make any commitments regarding his papers that early in his career.

Initially I had planned to spend July through September of 1988 in the Stafford office, spend October through December with Jeffords, and then use

the spring semester to complete the appraisal and description of the papers received by the university. This would have been an ideal scenario, for I would have had Senate experience with Stafford, House and campaign experience with Jeffords, and time to bring this experience to fruition in a purely archival setting. Instead, the Jeffords plan fell through because of a problem with funding, and Leahy asked me to work with his staff for the entire spring semester to review his records management/archival program. This second internship gave me a very valuable point of comparison because Stafford's and Leahy's offices were set up quite differently.

Stafford brought me on as a full staff member for six months, and I agreed to spend nine weeks in Washington doing the same kinds of things done by Blesse: "to inventory, pack, and ship to the library all inactive records in storage; [and] to familiarize myself with the day-to-day operation of the senator's office, particularly regarding the creation and storage of correspondence and other office records."[8] The last year in a member's term is ideal from a budgetary point of view, because other staff leave and funds may be available to hire an archivist. My status as a full staff member with a Senate identification card was helpful. It gave me access to committee rooms, committee staff, Congressional Research Service, and many other offices on Capitol Hill. Negotiations were completed in one visit with a brief exchange of letters, and I began work on 1 July 1988. The amount of time was sufficient to do most of the things I felt were important.

Washington Office Functions and Their Records

Robert T. Stafford was a career politician. Before entering Congress in 1960, he served as Vermont's attorney general, lieutenant governor, and governor. By Vermont standards he was a moderate Republican, strong on defense and a fiscal conservative. He served on the House Committee on Armed Services, supported the concept of the all volunteer army as co-author of *How to End the Draft* (1967), and endorsed the Morse withdrawal plan for Viet Nam in 1968 after a second trip to that war torn country.[9] He also served on the House Ethics Committee, was vice chair of the House Republican Conference, and was on the short list of vice-presidential candidates when Gerald Ford became president. Stafford moved to the Senate following the death of Winston L. Prouty in 1971 and served on the Environment and Public Works Committee, the Labor and Human Resources Committee, and the Committee on Veterans Affairs. He became chair of the Environment Committee and the Subcommittee on Education during the Republican takeover of the Senate in 1980. As a senator, Stafford supported legislation to clean up the air and water, reduce acid rain, prevent global warming, and establish a superfund for toxic wastes. He was also a strong advocate of equal opportunity in education for handicapped and disadvantaged students. Although Stafford was a "good" Republican for most of his career, he fell out with the Reagan administration because of his strong support for environmental regulations and federal aid for education. The papers generated in these years, 1980-86, while he was a committee chair, are the most voluminous and seem to be the most interesting.

I thought I knew what to expect when I arrived for duty in July of 1988, for I had processed a number of congressional collections already. The Stafford papers, like the Aiken and Prouty papers, were really the records of an organiza-

tion rather than an individual, but for the first time I realized that these papers documented the activities of the staff more than those of the senator himself. The staff does the "work"; the senator presents the case in committee, on the floor, and to the public. His role is to persuade other senators and to vote.

I read Karen Paul's *Records Management Handbook for United States Senators and Their Repositories*,[10] visited with her at the Senate Historical Office, and met with the two other archivists who were working on Capitol Hill that summer, all to help me to adjust to the complex world of the U.S. Senate.[11] I reported to Stafford's administrative assistant (AA), the most important person in the office next to the senator. He was Stafford's chief political officer, his "eyes and ears," so to speak, and the "office Republican"—according to Stafford's chief legislative assistant (LA), who styled himself as the "office Democrat." It was important to report directly to the AA because he had the most authority on the staff and could facilitate access to files and people. In Senator Leahy's office I reported to the senator's personal assistant. Although she lacked the power of the AA, she was a strong individual, very close to the senator, and had the senator's full backing in the archival project. She helped me to schedule staff interviews, and she made all of the appointments for me.

In Stafford's office, the AA and the office manager were the only people who backed the archives project from the beginning. I represented the first sign of the end for staff who had an average tenure of fifteen years in the office. The AA explained that, once hired, I worked for the senator and that the expectation was "loyalty" and "integrity." Staff were concerned that a stranger with wide access to the files would not respect the privacy they guarded so carefully, and that the senator's image might be compromised inadvertently. They needed to get to know me, and this would take a little time.

I kept a low profile in the beginning by concentrating on the 350 feet of records in the attic. This work needed to be done, but at the same time I wanted to take advantage of opportunities to learn how the Senate worked, and more particularly, how the senator worked in it to achieve his goals. I followed Stafford as much as time would permit. I attended hearings, committee meetings, press conferences, and floor sessions; interviewed key staff members on the senator's most important committees; and noted that wherever he went, there was an LA at his side to brief or advise him as needed. The LAs helped to write legislation, and they prepared speeches, briefings, and position papers. Each had extensive files, kept up with issues, and studied the positions of friends and foes. Good work on their part strengthened the senator's hand in committee; he always knew how the vote would go before he entered any committee room. The files of the LAs would be an important adjunct to the senator's.

The workings of the typical congressional office and the associated documentation are clearly discussed in Aronsson and Paul.[12] The functions are divided between administrative and legislative.[13] In the Stafford office the administrative staff consisted of the AA, who really functioned on both sides of the aisle, office manager, press officer, secretaries/case workers (nearly all of the secretaries carried some case load), and receptionists. The legislative (or professional) staff included three assistants with responsibilities for Stafford's three committees: Environment and Public Works (EPW), Labor and Human Resources (LHR), and the Subcommittee on the Handicapped.[14] Stafford, as

a Republican, was in the minority for most of his career, but with seniority he achieved the status of ranking member on EPW and the Education Subcommittee of LHR. The minority staff of EPW (14 persons) and Education (3) reported to him. The minority staff director of the Education Subcommittee functioned as Stafford's LA for education, and therefore all of the records relating to education were interfiled with the official records of the subcommittee. This blending of responsibilities is very common in Congress, and senators typically move staff from the personal office to the committee payroll at will. This creates much confusion in the records, and archivists must be aware of this if they wish to find full documentation of their member's activities. The best way to discover this is to interview key personal and committee staff and actually look at the records. Stafford's AA considered all of the records in the minority office of the Education Subcommittee to be part of the senator's personal papers, and so they are.[15] The records of EPW, although not as clearly personal, were available on microfilm, and a copy was ordered to supplement the Stafford papers.

Stafford's office, with a high ratio of administrative to legislative staff, maintained a centralized file system. It was obvious that he inherited most of this from his predecessor, Senator Winston L. Prouty, because many of his file series are exactly the same as Prouty's, but quite different from Aiken's or Leahy's. Nine of Stafford's twelve Washington staff served the administrative functions of the office, handling most of the constituent mail, press relations, and casework.

Leahy, on the other hand, has twelve administrative staff and six legislative assistants to cover the three committees he chairs and the four others on which he also serves. Some key committee staff report directly to him, as they did to Stafford. The main difference in the workload of the two senators relates to the fact that Leahy is in the majority and is a committee chairman. There is also a difference in personality. Stafford preferred to concentrate on the few issues for which he became known while Leahy is active in most of the legislation that comes before the Senate.

According to Aronsson, the files of the AA are potentially the most important files produced in a congressional office because of the political nature of the position and, often, close personal relationships.[16] Members and their AAs usually communicate orally, eyeball to eyeball, and do not tend to write much because of the sensitivity of their positions. Stafford's AA had been with the senator since he was lieutenant governor, and the two had adjoining offices. The AA claimed to have no files except for two cartons of political polls on the floor in the corner of his office, and this proved to be an accurate statement. The AA is usually the chief personnel officer, and I did find some files relating to personnel decisions. It was interesting that the AA was responsible for all of the military academy appointment files as well. Next to the senator himself, this person is probably the best candidate for oral history.

The next single most important person in the Stafford office was the senator's personal secretary because she was the conduit to the senator and because she maintained all of his personal files, including financial disclosure statements, tax returns, appointments, invitations, annotated copies of speeches, photographs, travel records, and memberships. Stafford's secretary maintained the most extensive files in the office, and although most of these became part of

the papers, she was the least forthcoming and the most protective member of the staff. Some of these files were transferred directly to the senator's home in Vermont for use in his retirement. We hope that most of them will eventually be added to his papers at the university.

The files of the office manager included filing guides, procedure manuals, and documentation on office expenditures and routine personnel actions. These files were reviewed and selectively weeded. The press officer was responsible for clippings, tapes, position papers, some speeches, and press releases. Duplicates were weeded, but otherwise these files were kept in their entirety. Other administrative staff did not keep separate files, but helped to maintain the large central office file. This file included series entitled "Blue Slips" (copies of all letters sent, 35 ft.); "Federal Government" (files of contacts with the Executive branch, 56 ft.); "Committees" (83 ft.); "Cases" (51 ft.); "General Subjects" (33 ft.); "Acknowledgments" (7 ft.);"Requests" (20 ft.); "Robos" (form letters, 19 ft.); and "Vermont Issues" (29 ft.). These centralized files were arranged alphabetically by topic for each session of Congress, and they received a preliminary weeding in Washington during the packing process. The "Blue Slips" series had little intrinsic value because it was a duplicate file and because the contents were repetitive. Still, it had some "slice of life" value as a record of every outgoing letter.[17] This file was microfilmed and the originals were destroyed.

Senators have free access to a microfilm service, but it is inadequate to meet demands; there was a forty-day backlog in the summer of 1988. The Microfilm Office uses a rotary camera and 35 mm roll microfilm. The member's office must do all of the preparation, including removing staples and clips, arranging the papers, and providing targets.[18] Stafford provided a full-time intern to help with the project, but the preparation of 35 feet of onionskin copies still took nearly two months. This was not a profitable use of time, so we abandoned earlier plans to film 17 feet of clippings and the large casework file. Members really need to use microfilm as a records management tool over the long term; it is impossible to do much in a few months.

The large "Federal Government" file included mostly constituent correspondence, particularly requests to support municipal and institutional federal grant projects, agency reports, and other documentation of federal programs. The "Committees" file was similar, although it included correspondence from committee chairs, lobbyists, and others seeking the senator's support, as well as constituent correspondence relating to the work of all of the congressional committees. Most of the publications in these large series were removed and shipped separately to the university for addition to the general library collections. Both series may be further weeded, but we do wish to retain documentation of the ways federal funds are expended in Vermont.

Cases remain sealed, but the intention is to sample them heavily and to retain only the flavor of the senator's casework together with a few "fat files" on more important issues that may have consumed a lot of staff time and effort.[19] "General Subjects" and "Vermont Issues" still need to be reviewed. The former will probably be thinned of subjects that were tangential to the Stafford legislative program, but files on environment, education, handicapped, and other issues important to the senator will be preserved. The Vermont file will be retained in its entirety. Form letters, "Robos," will be retained because they

reflect the senator's positions over time. "Requests" and "Acknowledgments" have been discarded because of their low informational value. There was very strong Vermont content in every series in the centralized files, and I found this was also characteristic of similar files in Senator Leahy's office, although to a slightly lesser degree.

The press officer's files included speeches, news clippings (mostly from Vermont newspapers), press releases, newsletters, radio and television scripts, audiotapes, and videotapes. Duplicates, particularly the overlap with state office files, will be discarded, but for the most part these files will be retained in total. Researchers, particularly students, find press files to be very useful.

The three legislative assistants considered themselves professional staff. They maintained the working files on legislation that came before the senator's committees. These files included virtual legislative histories of bills. All three LAs maintained large reference files of printed matter including books, documents, and reports. I considered keeping this material with the collection, but have decided that it would be more useful if added to the general library collections. A list of publications removed will be placed with the files of the LAs.

The LAs shipped some files to the senator's attic in the Russell building, but retained most files as their own property. They were surprised that I was interested in their files as part of the senator's papers, and it took some convincing before they agreed to relinquish them. It took time to build my credibility. I tagged along with the LAs when they accompanied the senator to committee meetings or hearings and showed an interest in their work. Legislative assistants are often subject specialists, and as they move from job to job they want to take their files with them. In some cases they feel that the files are too confidential because they document confidential maneuvering. Stafford's AA was surprised that I wanted the files of the LAs, and warned that their opinions were not necessarily the same as the senator's. I assured him that these files would be maintained as a separate satellite series and clearly identified as advisory. (Many congressional collections arrive at repositories *sans* the files of the legislative assistants.)

I kept a daily journal to mark progress, prepared regular oral and written reports for the AA, and made recommendations for the disposition of retrospective files based on the guidelines outlined in Karen Paul's *Handbook*.[20] I actually copied the section of the handbook that pertained to each staff member and used this as a primer for interviews regarding the person's role in the office and the files produced. This printed authority gave my requests more credence.

The Vermont Offices

Both senators maintained offices in Vermont as well as in Washington, and there I followed the same procedures for file review and staff interviews. Files in Stafford's state offices differed somewhat from Leahy's. Leahy's Vermont staff do all of the Vermont casework, most of the grants and projects, particularly municipal ones, and serve as the frontline in the famous Leahy outreach program. Stafford's state staff did some of these things on a much smaller scale; casework, however, was done by Washington staff. The state staff was very small; it served as an outpost and a campaign base.[21] Staff monitored Vermont issues in detail, collected information on active state politicians, particularly

potential opponents from either party, and served the local community as specialists on the federal government. I identified over 25 feet of historical records from Stafford's Rutland office alone including important papers that document the senator's campaigns for attorney general, lieutenant governor, and governor, all previously thought lost. State office staff act somewhat independently from the main Washington staff, and often there is little accountability in terms of records. Few state office files were deposited with the Prouty and Aiken papers, so we have little idea how these important offices worked for them.

The collection was beginning to take shape. The core would be composed of Stafford's personal files, the central office files, and the press files. These would be flanked by files of the legislative assistants, including some committee records, and the records from the state offices. The operational integrity of each part of the office would be reflected in the integrity of its files. I would not have been as aware of this model if I had not been a member of the senator's staff.

The Stafford and Leahy offices functioned differently because one was more centralized than the other. All important information was funneled to Stafford through his AA, usually orally. The youngest and newest LA prepared written reports for the senator, but the other staff were more informal. Leahy's office was decentralized and the AA was not a crony, so there was more need for written reports and summary documents. The AA, for instance, holds full staff meetings every week, works with each LA to set written goals and objectives, and prepares a strategic plan for each session—and all of these summary documents are maintained in the files of the AA.

Conclusion

The congressional office tends to focus on tomorrow's headline and the next election. From time to time someone with a historical perspective must remind the staff that history is being made—and recorded in the documents produced in the office. The systematic transfer of records to a federal records center or a repository can promote orderliness. Stafford's records were in better shape than Leahy's because of the centralized office and the larger clerical staff. It was more important for me to spend time with each record producer in Leahy's office to encourage them to list files at the end of each session, box them, and transfer them to storage. Most understood the wisdom of such a practice when it was outlined for them.

There were lost chances to preserve history in both offices. Senator Leahy kept an irregular journal that will be very important, but his secretary dismantled his daily briefing book at the end of each briefing session. I hope I persuaded her to copy the contents before the action documents were distributed to staff. These documents were probably preserved in the files of the senator's assistants, but only in the briefing book were they gathered together. Historians would find it invaluable to know how a senator was briefed each day. An archivist *en scene* can advise staff on these important practices.

I think it is important for each records person in a member's office to actually *see* an archivist, so I made it a point to interview as many of them as I possibly could. These interviews gave me an understanding of the office, the kinds of documentation produced, and the recordkeeping problems. I suggested that the member make it official policy that all records produced by staff on the sena-

tor's payroll become part of the senator's papers, and that no records be taken from the office when a staff member leaves unless copies are made. I recommended that committee staff copy the office, within reason, on files that showed the senator's personal involvement, and noted that those committee staff who also serve the LA function were responsible for documenting their activities on both sides of the aisle. I was in the position to stress early and regular microfilming for selected files such as clippings.

The repository gained as well. The more time the archivist spends in the office of the member, the better the archivist will understand the collection. Most of Stafford's papers were in series when they arrived at the university, and this facilitated both processing and use. Less than a year after his retirement the history department was able to take advantage of the availability of the papers, and of the senator himself, for a course on Stafford. This early use of the material helped to familiarize me with the kinds of documentation needed by graduate and undergraduate students. Clippings, briefing documents, and speech files were heavily used, together with published sources such as the *Congressional Record,* Senate and House documents, and the *Congressional Quarterly.*

Both Aronsson and Paul recommend early contact between the member and the repository for all of the reasons described above. Such contact should result in significant reduction in the volume of records received, particularly if the repository has a well-thought-out collecting policy for congressional papers. Aronsson also suggests cooperative collecting based on a subject approach among institutions, and this may work in special circumstances.[22] Karen Paul has recently embarked on a documentation strategy approach to collecting congressional papers, and she is doing a much-needed national survey on the use of these collections. That survey (results to be published in 1992), case studies like this one, and perhaps other research yet unpublished can all contribute to resolution of the twentieth-century dilemma of the "crescendo of volume" in modern congressional records.

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NOTES

1. J. Kevin Graffagnino, *Vermont Historical Resources: The Manuscript Holdings of the Wilbur Collection, University of Vermont* (Burlington: Special Collections, Bailey/Howe Library, University of Vermont, 1986).
2. Lydia Lucas describes the phenomenal growth ("crescendo of volume") in congressional collections since World War II in "Managing Congressional Papers: A Repository View," *American Archivist* 41 (July 1978): 275-76.
3. L. Rebecca Johnson, *Guide to the Papers of Senator John J. Williams of Delaware* (Newark, Del.: University of Delaware Library, 1990), 27.

4. *Congressional Papers Project Report Sponsored by the Dirksen Congressional Center and the National Historical Publications and Records Commission, July 15-November 15, 1985* (Washington D.C.: NHPRC and Dirksen Congressional Leadership Research Center, 1986). Project director, Frank H. Mackaman.
5. The Society of American Archivists Congressional Papers Roundtable was established in 1986.
6. See Robert E. Blesse, "University of Nevada, Reno Acquires Laxalt Papers," *Senate History* 10 (May 1985): 2.
7. Patricia Aronsson, "Appraisal of Twentieth Century Congressional Collections," in *Archival Choices,* ed. Nancy E. Peace (Lexington, Mass.: D.C. Heath, 1984), 83-84.
8. Blesse, "Laxalt Papers," 2.
9. Robert T. Stafford, et al. *How to End the Draft* (Washington, D.C.: National Press, 1967).
10. Karen Dawley Paul, *Records Management Handbook for United States Senators and Their Repositories* (Washington, D.C.: Secretary of the Senate, 1985). This is the most useful single guide for the appraisal of senatorial papers.
11. Carla Kemp of the University of Florida was helping to close the office of Senator Lawton Chiles (D-Fla.), and Jane Odom was working on the files of Senator Lloyd M. Bentsen (D-Tex.).
12. Aronsson describes the functioning of a typical congressional office and its standard record series, "Appraisal," 84-86. Paul arranges record series by function and presents a guide for appraisal, *Records Management Handbook,* 4-21.
13 Richard Baker describes the division between legislative and constituent service staff in "Managing Congressional Papers: A View of the Senate," *American Archivist* 41 (July 1978): 292.
14. Stafford used the same LA for LHR and Veterans Affairs.
15. Official committee files will be weeded from Stafford's personal education files, and these will be sent to the National Archives.
16. Aronsson, "Appraisal," 87.
17. Leahy maintained an automated file (CMS) for constituent mail that included incoming and outgoing correspondence arranged chronologically and indexed by name, subject and county of origin. Staff could print out summary lists by any of these categories for specified periods of time.
18. The Microfilm Office has one planetary camera, but members must provide staff.
19. "Fat files" are files with extensive correspondence on a particular issue. The assumption is that larger files are more interesting and important because they have consumed more time and effort on the part of the staff. Frank H. Mackaman makes a good case for the preservation of congressional case files in "Managing Case Files in Congressional Collections: the Hazard of Prophecy" *Midwestern Archivist* 4 (1979): 95-104.
20. Paul, *Records Management Handbook,* 4-22.
21. All of Leahy's campaign files were stored in Washington.
22. Aronsson, "Appraisal," 98-99.

BOOK REVIEWS

Arranging and Describing Archives and Manuscripts. By Fredric M. Miller. Chicago: Society of American Archivists, 1990. 131 pp. Preface, illustrations, bibliographic note, index. Paper. $19 for SAA members, $25 for nonmembers.

Arranging and Describing Archives and Manuscripts is one of seven titles in SAA's new Archival Fundamentals Series, replacing the Basic Manual Series. (Two other titles in the series, *Understanding Archives and Manuscripts* and *Managing Archival and Manuscript Repositories* have already been published. Remaining titles will appear throughout 1991.)

Like its predecessor, this series provides a foundation for modern archival theory and practice. Intended for a general archival audience, it focuses on newcomers to the profession, providing both a broad overview and in-depth treatment of components of archival work. This manual is well organized, clear, and readable, with a mixture of archival theory and procedure—all of which place the subject matter in a useful context. Its practical emphasis will make it a useful reference not only for newcomers, but also for experienced archivists and archival educators.

The ten chapters of this manual treat comprehensively the basics of arrangement and description theory and practice. The first two chapters define archival terminology and review the nature of archival work and archival repositories. Especially interesting are the comparisons of archives, manuscripts, and library collections, which provide perspective throughout the book.

As an added help to newcomers, the author offers realistic arrangement alternatives directly applicable to most daily archival decision making. As stated in chapter 1, "The discussions of both arrangement and description stress the idea of options in the selection of a type of processing appropriate to the nature and potential uses of any given set of records." Chapter 2 introduces four different archival and manuscript collection models that are used throughout the book to illustrate and clarify principles and procedures.

Chapter 3 presents basic archival principles and their application within the framework of the development of European and American archival ideology and practices. The standardization of bibliographic practice is contrasted with the diversity and uniqueness of archives, and the convergence of archival and library traditions in the early 1980s is noted.

Chapter 4 concerns the physical and intellectual components of accessioning, including a useful analysis of the steps involved. Sample forms and a review of accessioning decisions for the four model collections illustrate practical aspects of description and the concepts of levels of control.

Arrangement and description are discussed in chapters 5-7, moving from general administrative considerations to levels of control (repository-level, provenance, filing structure, and physical file units) to practices and procedures.

Chapter 5 concerns establishing processing priorities, considering resources and facilities, developing processing plans, and applying automation.

Chapter 6 (Levels of Control) distinguishes between record groups, subgroups, series, subseries, sub-subseries, file units, and items/documents. Illustrations further explain these sometimes confusing concepts. Equally useful are the periodic "reality checks" that put the pieces of the conceptual puzzle into a realistic archival framework.

Chapter 7 concerns arrangement practices and procedures. The emphasis on careful preparatory work is an excellent reminder to all processors. The section on how to do series-level arrangement is clear; unlike some discussions that are vague on practical aspects of arrangement, it quickly gets to the heart of the matter. There is helpful basic information on developing a conceptual framework; how and when to identify, create, reconstitute, and rearrange series; and how to order series within record groups.

Archival description is broadly defined in chapters 8-10 as a process or system of communicating information about sets of records to their potential users. Information about records and their creators, descriptive tools (e.g., inventories and finding aids), and standards and rules used to create the tools are components of this system.

Chapter 8 reviews the specific descriptive elements necessary to archival information systems. Chapter 9 (Descriptive Tools) compares archival and manuscript descriptive practices, and describes the components of inventories, guides, and specialized finding aids. For automated applications in public and institutional archives and large manuscript collections, Miller advocates maintaining series descriptions separate from—but linked to—descriptions of record creating entities. Descriptive standards, including USMARC and *APPM,* NUCMC, RLIN, OCLC, and the increasing standardization of archival practice are addressed in chapter 10. The illustrations of sample descriptive tools and standards add considerably to the text.

This outstanding manual amply fulfills the stated goals of the Archival Fundamentals Series. It is readable and understandable, emphasizing both theory and practicality. Newcomers and those in one-person shops will find much guidance in this volume, while experienced archivists will find it an excellent reference work. If the remaining six volumes of this series are similarly well written and informative, they will be useful to all archivists and important additions to archival reference collections.

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CUNA Mutual Insurance Group

Our Past Before Us: A Five-Year Regional Plan for METRO's Archives and Historical Records Program July 1, 1989-June 30, 1994. METRO Miscellaneous Publication No. 40. New York: METRO, 1989. 40 pp. Paper (stapled). Free to New York state residents, $20 to all others. Available from New York Metropolitan Reference and Research Library Agency, 57 E. 11th St., New York, NY 10003.

Most archival institutions acknowledge the importance of establishing and meeting goals. Unfortunately, many that do so do not articulate these goals in a

systematic matter to their staff or to the public they serve. METRO (New York Metropolitan Reference and Research Library Agency) has both established and publicized the goals for its Archives and Records Program. METRO's published plan is the subject of this review.

Following an introduction by Bob Sink, then chair of METRO's Historical Records Advisory Council (HRAC), the volume is divided into three parts. The first provides information about METRO's Archives and Historical Records Program, which is funded by the New York State Documentary Heritage Program, itself established by the State Archives and Records Administration to improve the condition of historical records programs. The program's three goals are to strengthen historical records programs in the region, to increase research use of these records, and to work towards identifying the region's valuable historical resources. The second part of the volume is a report on a survey of regional archival matters, and the third part is a five-year plan for preserving the region's documentary heritage.

Before something can be fixed or improved, one must diagnose its problems or shortcomings. During early 1989, Phyllis A. Klein, METRO's regional archives consultant, worked with the HRAC to design two surveys—one dealing with institutions and archivists, the other dealing with users—to assess the region's archival situation. A two-page appendix contains background information on how the surveys were designed and conducted. The results of the survey comprise almost half the publication. A regional profile of programs and activities is followed by sections on repository conditions and needs, including information on types and ages of repositories, their overall administration, and financial resources; staff; archival and manuscript holdings; facilities and equipment, including storage and preservation; acquisition and processing activities; reference and use of holdings; and professional consultants and continuing education. The surveys confirm what most archivists know. There is a lot to do and too little with which to do it.

The second part concludes with a section entitled "Archivists' and Users' Assessment of Regional Conditions and Needs." Here we are informed that there were three main areas of agreement. First, "cooperation as a realistic approach to the management of scarce resources was received with considerable enthusiasm"; second, "identifying and preserving underdocumented areas of our regional history was felt to be a significant objective"; and finally, "stimulating institutional and public awareness was ... critical to increasing use of historical records." Each area is discussed briefly.

Based on the survey and assessments METRO developed a five-year regional plan for its Archives and Historical Records Program. The plan is modeled on the management by objectives (MBO) approach to establishing and achieving goals. Although many people consider the MBO approach outdated, I believe that such an approach is an excellent way to establish and achieve goals.

Three interrelated goals were established for the Archives and Historical Records Program: (1) to strengthen the management of regional historical records and to explain to administrators the characteristics of sound archival and historical records programs; (2) to increase public awareness of the importance of historical records to stimulate both use of the records and support for records programs; and (3) to work towards identification of the region's valuable historical resources. To achieve these broad goals, METRO identified four program priorities. They are Administration of Historical Records (fund-raising, long-

range planning, and facilities/space); Collection Development (accessioning new collections and devising documentation strategies to improve the overall adequacy of archival documentation in the METRO region); and Public Awareness and Outreach (publicity about the value of historical records and lobbying for support for their preservation and use).

To implement these program priorities, the Archives and Historical Records Program will use three major strategies: information, through a newsletter, occasional brochures, talks, and telephone technical assistance; education, through workshops, lectures, and technical consultations; and cooperation, through efforts developed and coordinated by METRO's Historical Records Advisory Council, METRO's regional archivist, and local archival groups.

Following the list of goals, objectives, and strategies, there is a schedule of specific activities to be undertaken during the first two years of the plan to meet its goals and objectives.

It is often said that "failure to plan is planning to fail." METRO's plan will help the region's repositories avoid failure. *Our Past Before Us* should be read by all archival administrators concerned about their institutions' long-term survival and viability in our age of limited resources and increasing demand for information. With some modification, the publication could serve as a model for other archival institutions and organizations.

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National Archives and Records Administration

The Role of Archives and Records Management in National Information Systems: A RAMP Study. By James B. Rhoads. Revised edition. PGI-89/WS/6. Paris: UNESCO, 1989. 72 pp. Paper (stapled). Available from West Virginia Library Commission, Cultural Center, Charleston, WV 25305.

This is a most welcome and thorough revision of Rhoads's important 1983 Records and Archives Management Programme paper, the purpose of which is "to provide information to decision makers about the character and value of archives." In seventy-two pages, Rhoads does just that. The study is a demonstration of the cultural and historical benefits of a carefully designed records management and archival program on a national level. It also points out the fiscal benefits of such a program—something that will delight every bureaucrat.

The study begins with clear working definitions of the elements of a standard records management and archival program and builds from these definitions. Rhoads then switches to a rather pedagogical question and answer method easily read by the busy senior official or administrator who needs information regarding all aspects of records retention and maintenance. Within this framework there is a precise discussion of the life-cycle of records, simply and clearly described.

One very enlightening section, "Research Values of Archives," hammers home the point that archives are an economic benefit to a nation rather than an economic drain. The arguments in this section are especially well constructed and would be useful to any archivist or records manager required to justify the value of his or her program to an institution or governmental entity.

A particularly important change from the 1983 edition is the increased emphasis on electronic records and the need for careful planning and preparation to manage them. It seems that many governments jump into the electronic age without considering the long-term effect such action will have on the management of records. Rhoads warns of the need for clearly defined goals.

The bibliography is up-to-date and designed for the benefit of governmental officials. It is not packed with technical studies; instead, it lists those monographs and essays that would be useful to decision-makers seeking additional information on records management and archives.

While this study was prepared for national systems and national officials in countries where there is no records management or archival program established, it could easily be used for other purposes. It could be a guidebook for senior administrators in local and regional governments, in academia, or in the business sector who need to be convinced of the importance and value of a sound records management and archival program. This is one of the great strengths of the RAMP studies; while they are often written for national or international purposes, they serve many constituencies. RAMP studies deserve to be better known to the profession as a whole.

Unfortunately, RAMP studies are often poorly reproduced, making them difficult to read. This deficiency, however, should not deter one from reading such an important contribution to the literature.

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Manual of Archival Description, 2nd ed. By Michael Cook and Margaret Procter. Aldershot, England, and Brookfield, Vt.: Gower Publishing Company, 1989. 291 pp. Hardcover. $59.95.

A MAD User Guide. By Michael Cook and Margaret Procter. Aldershot, England, and Brookfield, Vt.: Gower Publishing Company, 1989. 55 pp. paper. $19.95.

Archival description is currently a trendy topic, due in part to automation and the proliferation of bibliographic databases requiring descriptive standardization. As a result, the amount of literature on the subject has multiplied, leaving archivists to search for the works that will be valuable and efficient for their purposes.

These changes in description have involved theory as well as practice. The publication of the report and background papers of the Working Group on Standards for Archival Description in two recent issues of the *American Archivist* testifies to that fact. Other relevant recent publications for archivists include Steven L. Hensen's *Archives, Personal Papers, and Manuscripts,* second edition, and Fredric M. Miller's *Arranging and Describing Archives and Manuscripts.* Given all this it is important to evaluate *A Manual of Archival Description* (*MAD2*) and *A MAD User Guide* in the context of other works as well as on their own merits. In fact, one section of *MAD2* (9.11) deals with that specific issue.

A Manual of Archival Description and *A MAD User Guide* attempt to cover both the technical aspects and the theoretical underpinnings of description in a comprehensive fashion. There are actually two volumes, sold and priced separately. The first volume, *A Manual of Archival Description,* "aims to provide standards which will control the production of finding aids and finding aid systems in archival repositories and archives services...[and] is primarily intended as a guide to normal descriptive or cataloging practices as carried out by archivists working in general repositories." The second volume, *A MAD User Guide,* functions more as "a simplified explanation of the rules and principles laid down in the *Manual of Archival Description.*" *MAD2* is organized into five sections: The Nature of Archival Description, The Data Structure of an Archival Description, Recommended Descriptive Formats, Typology of Archival Descriptions, and Special Formats. Each section contains chapters on various facets of description that go into great detail about the background and application of each principle. The paragraphs are numbered and labeled similar to *AACR2* and *APPM,* a feature that in this case many might find difficult to follow. *MAD2* contains an index, brief bibliography, and glossary.

Unfortunately, *A MAD User Guide* is based on the *first* edition of *MAD* (1986), so the reader cannot easily bounce back and forth between *MAD2* and the *User Guide.* The organization of the *User Guide* is simpler, both in structure and in language. The *User Guide* is divided into three parts: Preliminary Planning Decisions, Listing Models, and Special Formats. Chapter titles in each part use familiar terminology such as "Levels of description," "Depth of description," and "Data elements." The *User Guide* does not follow *MAD2*'s elaborate numbering scheme. In fact, these two volumes could easily be viewed as two totally separate publications.

In terms of content and perspective, American archivists using these publications will face some confusion. Cook and Procter are British archivists who write in that context. They refer to finding aids as "representation files," and their item level arrangement is equivalent to the American folder level. Our "item" is their "piece." In addition, the authors advise archivists to assign a decimal numbering system to the levels of arrangement and "reference codes" to individual documents for ease of subsequent identification. The former practice is uncommon in the United States and the latter totally unwieldy for large contemporary collections.

The general concepts presented in these two publications follow practice that is common both in the U.K. and the U.S., with some exceptions. At one point, Cook and Procter state that they found no place in *MAD2* for the *AACR2* concept of "chief source of information," claiming that the term always refers to the archive itself. Many U.S. archivists would disagree, pointing out the need for progressive levels of description, whereby a catalog entry, for example, is based on the inventory rather than on the collection as a whole. This reflects the authors' more linear approach to description, in contrast to their emphasis on hierarchy for arrangement. They overlook the concept that description is really an integral part of all phases of archival activity. The section on special formats ignores current innovative work relating to description of photographs and other visual material.

MAD2 and the *MAD User Guide* cannot substitute for a thorough arrangement and description manual, such as Fred Miller's. Nor can it replace *APPM* as

an effective tool for applying accepted cataloging systems. Instead, these volumes constitute an elaborate and through treatise on descriptive elements and concepts. Given the existence of other useful current publications on description and the price tags of these two publications, the audience for *MAD2* and the *MAD User Guide* is likely to be extremely small.

Susan E. Davis
University of Wisconsin

Wisconsin Task Force on Court and Local Government Records: Final Report. Madison: State Historical Society of Wisconsin, 1990. 40 pp. Paper. Available from the Archives Division, State Historical Society of Wisconsin, 816 State St., Madison, WI 53706.

This slender volume represents the culmination of many hours of deliberation by the task force in proposing direction for Wisconsin's local government records programs. The task force, representing state agencies, the court system, the legislative branch, and a wide assortment of local officials and local officials' organizations, concluded that "Wisconsin has reached a crisis in the management of its public records." Examples, details, and illustrations of that crisis are described forthrightly and clearly, without attempts to downplay negative evidence. The report continues by describing the successful records program of the Wisconsin Court System, which combines centralized policy with decentralized implementation. Finally, the report recommends cooperative efforts by local government agencies, the court system, and the statewide records authorities to work toward the model program.

The task force recommended that local governments develop comprehensive records programs designed to dispose of obsolete records. It also recommended that the state should expand its services in the areas of records management (especially general records retention schedules and manuals for local jurisdictions), micrographics assistance, and more efficient procedures for destruction of records. The state's Area Research Center (ARC) network will play an expanded role in this state-local records partnership. Another major recommendation calls for the state to initiate a regrant system to address local governments' records concerns. Finally the report calls for the addition of two positions each for the staff of the State Historical Society and the Public Records and Forms Board to implement the recommendations.

The task force has done a commendable job in delineating the needs of, and recommending priorities for, the records program. Its report should be an effective tool in promoting awareness of the significance of the preservation of the state's local records to the legislature and to local officials. However, the task force has clearly understated the implementation costs. While the four positions recommended may be sufficient to fulfill the state's personnel obligations, the report does not begin to suggest the real costs of implementing the system. Staffing and, more important, storage and public service costs at the Area Research Centers have not been considered. A procedures manual, general retention schedules, and heightened awareness of services to be provided by the state are clearly necessary first steps, but if successful they will result in trans-

fers of tremendous quantities of records to archival repositories. Are all the ARCs capable of dealing with such influxes? Will the state archives staff—even if expanded—be able to integrate the new accessions into its system? Is the State Historical Society willing to redirect its internal energies to cope with this expanded mandate? If the answer to any of these questions is in the negative the task force will have done little more than raise expectations that cannot be met—just another frustration for the local officials in whose custody the records remain.

None of these questions should reduce the basic value of this report. Its clarity of purpose and direction is a model for other state programs. The state-local cooperation evident in the compilation of this report is very positive; state mandates alone will not ensure the preservation of archival local government records. Without state involvement in their long-term physical custody, however, many archival local records will not survive this decade. The groundwork has been laid. Successful implementation will depend on how forcefully the authors of the report make their case to resource allocators in the legislature and within their own organizations.

Duane P. Swanson
Minnesota Historical Society

Filming Florida: Images of the Sunshine State. Tallahassee: Florida Department of State, Division of Library and Information Services, Bureau of Archives and Records Management, 1990. 105 pp. Paper (spiral bound). Available free from the Bureau of Archives and Records Management, R. A. Gray Building, Tallahassee, FL 23399-0250.

Filming Florida is a reference index to 420 films administered by the Florida State Archives Photographic Collection. Most were commissioned by the Florida Development Commission (FDC) to promote the many attractions of the state and encourage its growth. These films, many in color, span the 1950s to the 1970s. The remainder, dating from about 1947 through the 1970s, cover political events and persons, notably governors and congressmen. The Florida State Archives obtained a grant to view, describe, conserve, and copy these materials; to publish information about them; and to produce broadcast-quality videotapes (available for a fee).

Florida is a state of great variety—tropical flora and fauna, oranges and tourism, resorts and sports, aerospace and Seminoles, industry, political events, celebrities, beauty contests, fishing, and Mickey Mouse. A film collection that documents aspects of all of these is inherently fascinating, and the medium itself adds interest. Visual media like photography, film, and television inundate the senses with information, not just about the stated subject but about the context, about economic and social conditions, and about the producer's intent and point of view. Every visual medium has such qualities, but these particular films were intended not only to be informative but also to *sell* Florida to various audiences over a relatively long period of time. Because of this, *Filming Florida* will be a rich resource for students of public relations, sports, fashion,

leisure, economic growth, industry, communication arts, film production, visual information theory, cultural anthropology, and sociology.

Although *Footage 89/North American Film and Video Sources* lists twenty sources of film on Florida's history and culture, the film resources included in *Filming Florida* probably document the history of the promotion of the state more thoroughly.

The Florida State Archives is to be commended for recognizing the value of the collection and acting so swiftly to preserve, organize, and make it available to researchers and producers. Many an archive's good intentions have faltered on one or the other of these steps.

The guide is effective for several reasons. The Florida collection is manageable in size and topical scope. Because the FDC or the state itself commissioned these films, the archives holds full rights to them. (Institutions with large collections of silent television newsfilm clips may well feel envious.)

A few criticisms might be made. Considering the archives' awareness of the potentially broad appeal of their films, and considering archivists' present sensitivity to issues of description and access, the level of description in this guide and its use of local subject categories is disappointing. For example, a file on the 1972 Republican and Democratic conventions is not indexed under "Republicans," "Democrats," "Politics," or "Conventions." In the descriptions themselves, largely devoid of subjective evaluations, some qualitative assessments would have been helpful. It is hard to tell whether a title in the guide represents the original title or something devised for descriptive purposes. Further editing might have eliminated such phrases as "[the] can said," or "it tells about."

On the other hand, reading the entire publication does not require much effort and some of the titles are gems. I was propelled along in anticipation of *Elsie the Cow at Cypress Garden, The Big Squeeze* (about oranges), *Bombing Demonstration, Bouncing Baby* (featuring Oliver Hardy as the baby), *A Dip in Dixie, Kissimmee: Gateway to the Worlds, Major League Baseball Players Fishing, Phosphorus: Florida's Vital Key to a Better Future for Man,* and *Pinky and Perky* (pig puppets, of course).

Filming Florida is one of only a few indexes to film collections currently available. (The 1985 *Newsfilm Index: A Guide to the Newsfilm Collection, 1954-1971* by the Mississippi Department of Archives and History also comes to mind.) While it is not perfect, it is a very good starting point. Other archival repositories should emulate Florida's example and produce guides to their own film holdings.

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