AAA AUDIO PRESERVATION PLANNING PROJECT
A Preliminary Progress Report

By Elwood McKee

In early 1985--following discussion, correspondence, and a self-funded meeting--members of the Associated Audio Archives Committee (AAA) drafted a grant proposal to the National Endowment for the Humanities (NEH) to carry out an 18-month planning study on the status of the preservation of sound recordings.

The object of the study was to gather as much information as possible about all aspects of the conservation, preservation, and restoration of sound recordings. The researchers would then organize access to the mass of collected data through development of definitions of key elements, a bibliography, a glossary of terms, listings of pertinent standards and a variety of research reports. These materials would be incorporated into a final report which would summarize the nature and size of the audio preservation problem, indentify gaps and needs, and make prioritized recommendations for further research and cooperative activity to ensure the continued availability of as much as possible of the legacy of sound recordings accumulated over nearly a century.

The proposal called for the planning study to be made by the AAA representatives of The Library of Congresss (Gerald Gibson, Chairman, AAA), The New York Public Library (Donald McCormick), Stanford University (Barbara Sawka), Syracuse University (William Storm), University of Kansas (Ellen Johnson), and Yale University (Richard Warren, Jr.)

The proposal was approved by the ARSC Board of Directors, signed by the President, and submitted to NEH on May 31, 1985. NEH approved a grant of $48,298 to ARSC effective January 1, 1986 through September 30, 1987 for completion of Project PS-20021-86 "Audio Preservation: A Planning Study" by the AAA (whose members are contributing $38,070 in cost-sharing through salaries and release time for project participants[1].) Administrative support is being provided by ARSC and the writer was hired on a part-time basis with NEH funds to be the Project Director.

Methodology

The planning study objectives were set quite broadly. It was clear at the onset that an integrated, comprehensive methodology and an ongoing program for audio preservation

are lacking. The group wanted to be able to focus on gaps as well as that which is known and accepted in order to draw conclusions and make recommendations leading to development of a long-range, comprehensive preservation program for sound recording. Initially, we set as few limits as possible on the extent and depth of our consideration of audio preservation. We recognized that the need for prioritization could later on limit the extent of coverage accorded any given element.

In order to achieve the maximum results posible from the planning study our work is being carried out in three major ways:

1. In a series of planning meetings at which the results of research assignment have been discussed and assignments made;
2. Through a variety of research and analysis projects undertaken by the project participants and individual volunteers;
3. By successful requests to a number of institutions and individuals for cooperation and self-funded participation in collecting data on audio preservation.

Planning Meetings

As of the end of May 1987 there have been four formal planning meetings:[2] the first meeting was held in Washington, DC in January 1986; the second was in conjunction with the April 1986 Annual Conference of ARSC, at which a preliminary report was made to the Board of Directors and the ARSC membership; the third meeting was held in Burbank and Los Angeles in November 1986, at which time the group presented a three-hour workshop for the Audio Engineering Society (AES); the fourth meeting was held in Ocean City, Maryland in March 1987. The final meeting is scheduled for mid-September 1987 when the final report will be drafted.

In addition to the formal meetings which have lasted four to five days each, there have been several ad hoc sessions of available members of the project group:[3] four of us met in New York in July 1986 to plan the AES presentations and receive a briefing on a "write-once" compact disc recorder/playback system developed by the Sony Corporation; four members reviewed project assignments during a data gathering trip to an underground storage site in September 1986; in April 1987 three of us met in Washington, DC during a demonstration of the digital audio disk recording system developed by CompuSonics. Two sessions were held during the 1987 ARSC Annual Conference,

which seven members of the research group attended and made a report to the membership.

The National Archives (Allen Calmes, Preservation Officer), International Piano Archives (Morgan Cundiff, Curator), and the University of Missouri-Kansas City (Ted Sheldon, Director of Libraries and Charles Haddix, Record Collection Staff) have sent representatives to one or more of the project meetings.

The former ARSC Treasurer, J.F. Weber and members George Brock-Nannestad (Denmark) and Steven Smolian have actively participated in meetings at their own expense.

Research and Analysis Projects Underway

During the first planning meeting we identified a number of general and specific topics to be studied; some were assigned to individuals for study, and others are being worked on jointly by several researchers. Assignments were initially distributed among the AAA participants, but several volunteers have accepted assignments--notably George Brock-Nannestad (Denmark), Morgan Cundiff[4] (International Piano Archives at Maryland), and Ted Sheldon (University of Missouri-Kansas City).

All of the researchers have reported a common problem in data collection: The study of sound recordings from a archival point of view involves a wide range of scientific and humanistic disciplines and a very large number of potential reference sources. Relatively little work has been done to bring these materials together in a readily accessible manner for the sound recordings archivist. Balancing our goal of making as comprehensive a survey of audio preservation as time and resources permit against an equally strong desire to avoid superficiality has been a major concern for all participants.

The major topics of study assigned are the following:

1. Gerald Gibson has the principal responsibility for compilation of the bibliography to be appended to the final report. The other researchers are to contribute citations generated from their own assignments. An annotated, critical bibliography is needed but it appears that it will not be feasible to develop more than a preliminary bibliography during this project.
2. Gerald Gibson is also collecting data on the potential use of CD-ROM to facilitate bibliographic access to AAA sound recordings collections.
3. Morgan Cundiff is studying the potential of consortia. A prospective model consortium at the regional level exists in the New York State where an audio

preservation program funded by the State Department of Education is underway at Syracuse University, The New York Public Library, Cornell University, and the University of Rochester. The project was conceived by William Storm and Donald McCormick, who have provided background material to the group.

4. Various members of the group--working in combination and singly--are investigating the potential usefulness of digital audio applications to audio preservation.

5. Elwood McKee has developed working definitions and classifications for the various kinds of documentation relating to the preservation of research collections of sound recordings. These will be used in structuring the bibliography, glossary, and index of technical terms.

6. Barbara Sawka is studying dissemination and communications possibilities related to audio preservation.

7. Ellen Johnson is surveying education and training resources available for sound archivists.

8. Donald McCormick is developing the glossary which will be included with the final report. Not only are there several audio jargons in use at any given time, they change with developments in technology. It has also been found that relatively few audio terms for which definitions and explantions occur in existing glossaries have been specifically related to their role in audio preservation.

9. William Storm has started compilation of an index of technical terms with assistance from the staff of the Belfer Laboratory and Archive staff--George Brock-Nannestad will advise on potential incorporation of European terminology.

10. Gerald Gibson has been researching various legal implications:

a. in the use of existing bibliographies and glossaries --with particular emphasis on transfer of data from various computerized data bases into one which can be accessed for the purposes of this project;

b. in the use of long-range communications techniques to transfer the content of sound recordings from remote storage sites to multiple reception areas.

11. William Storm is preparing a draft 1-to-1 recording transfer Standard and recommendations on re-recording facilities.

12. Barbara Sawka is reviewing potentially applicable bibliographic citations, methods and procedures of preservation programs in other scholarly disciplines.

13. Morgan Cundiff is preparing a paper documenting the need for a professional association of sound archivists.

14. Ellen Johnson was instrumental in developing the questionnaire sent to 83 institutions, and, together

with Ted Sheldon, is collating the replies.

15. Barbara Sawka, with assistance form other members of the working group, is collecting citations to pertinent Standards.

16. Richard Warren, Jr., has developed a comprehensive, detailed outline of the factors affecting the storage and handling of sound recordings; as in each of the research projects, the outline indentifies gaps and topics requiring further research and testing.

17. Several members of the group, with Richard Warren Jr., as referent have been investigating underground, remote storage possibilities for archival collections of sound recordings.

In addition to the foregoing, George Brock-Nannestad has submitted the first section of an extended written commentary on various aspects of the of the project for use by the group and inclusion in the final report. Ted Sheldon is reviewing the grant proposal and project documentation in order to make recommendations on the format of the final report.

Cooperation Received

After formal commencement of the project on January 1, 1986, invitations to particpate in the planning study and resource questionnaires were sent to 83 institutions and individuals having significant sound recordings collections or expertise pertinent to audio preservation. The results so far have been highly useful and encouraging.

37 institutions have completed the eight-page preservation resources questionnaire. A number of them have contributed copies of policies and procedures related to the preservation and use of their collections. Several have described preservation projects or programs they have undertaken. Most have been frank and explicit in describing the problems they face with respect to preservation of their collections. This material is being collated and will be incorporated in the final report. It will constitute a major contribution.

The Ampex Corporation (Jim Wheeler) sent representatives to Yale to consult with Richard Warren, Jr., on cleaning tapes to eliminate squeal; these data were furnished to the project group.

Allen Calmes arranged for the group to receive copies of NBSIR 86-3474 Prediction of the Long Term Stability of Polyester-Based Recording Media which the National Bureau of Standards has prepared for the National Archives. He has invited project participants, William Storm and Elwood McKee

to participate in a July 29-30, 1987 meeting of the National Archives' Ad Hoc Subcommittee on the Preservation of Sound Recordings.

CompuSonics Corporation provided a video tape for use at the March 1987 meeting and in April 1987 demonstrated their Audio Computer and Digital Audio Disk Recorder system to a gathering at the Library of Congress.

Marie Griffin arranged for the group to visit Rutger's Institute for Jazz Studies (IJS) to be briefed on the NEH-supported preservation projects underway at IJS; she also attended part of the April 1986 project meeting.

Robert Kenselaar, Rodgers & Hammerstein Archives, NYPL, furnished the group with a paper on use of the Archives Manuscript Control MARC format for facilitating access to non-commercial sound recordings.

Brad McCoy, Library of Congress, submitted for group use an overview paper he prepared on optical discs and computer storage.

Larry Miller, Library of Congress, is furnishing the group the results of his research on record cleaning materials and techniques for inclusion in the final report.

Sandra Paul, Immediate Past Chairperson of the National Information Standards Organization (NISOOZ39) briefed the group on NISO-Z39 in April, 1986; ARSC subsequently became a voting member of NISO-Z39 and assigned AAA Chairman, Gerald Gibson as voting delegate.

Daniel Queen, Standards Manager for the Audio Engineering Society (AES) met the group in April 1986 and invited us to attend the meeting of the AES Standards Committee in November 1986; at that time he appointed AAA Principal Investigator from Syracuse, William Storm, chairman of an ad hoc AES-ARSC joint working group to study development of technical standards for audio preservation.

Lloyd Rigler provided conference facilities for the November 1986 meeting.

Steven Smolian has furnished data on the establishment of orchestral sound archives and the unique problems which symphony orchestras have with respect to their sound recordings archives.

Decisions and Definitions

The general decision was that the group would treat audio in its broadest scope at the beginning and look at more detailed considerations and prioritizations later. The group agreed not to exclude from consideration any media, content, or techniques related to recorded sound--with the clear understanding that the need for prioritization of the research effort may limit the extent of coverage accorded any given element.

A statement of scope was adopted as follows: The preservation of sound recordings is not limited by value judgments as to recorded content for the purposes of this project. The focus of further research and reporting shall be on developing a report directed to NEH for the audio archival community as it relates to audio preservation.

The preservation study group found, after initial review of dictionaries and glossaries, that available definitions of "sound recording" were unsatisfactory for project purposes. They expressed or implied limitations of media, and even content, which the group considered should not be imposed on our study, at least at the outset. The group adopted, therefore, a generalized working definition as follows:

> For the purpose of this project a "sound recording" is defined as an artifact which has been constructed and used for the specific purpose of storing a representation of energy for the further purpose of reproduction in the audio portion of the spectrum.[5]

It was also made clear that for the purposes of this project all references to "sound recordings" should be taken to refer to both the signal and the sound carrier unless otherwise stated.

The purpose in adopting such a non-specific definition was two-fold: First, we did not wish to exclude any existing or prior media and formats, but we did not wish to turn a definition into a catalog of possible attributes. Secondly, we wished to facilitate later consideration of the impact on sound recording of recent and emerging applications in related technology. Developments in science--both theoretical and applied--over the past century have greatly expanded our ability to use sound recordings and recording technology. Energy outside the audio spectrum is frequently recorded and reproduced in the audible range to facilitate analysis. Storage devices used in communications and data processing have potential--and actual--use in sound recording technology. It is clear that the actual and potential relationship between sound recording and other technologies is becoming more involved all the time and that audio preservation must take such interaction into account.

The group adopted the following definition of "Standard" for the purposes of this project:

> "The results of a particular standardization effort, approved by a recognized authority. It may take the form of:
> 1) a document containing a set of conditions to be fulfilled

2) a fundamental unit or physical constant, for example, ampere, metre, absolute zero (Kelvin)"[6]

From the beginning of the project the group was concerned with the means of documenting our findings in the most meaningful and orderly manner. We found it useful, therefore, to adopt the following definition of documentation:

> For the purposes of this study the term documentation, when applied to sound recordings, is understood to comprise all available information which purports to identify or make more fully comprehensible the audible event(s) captured on one or more sound recordings. For the purposes of preservation of sound recordings, such documentation should be
>
> -- factual insofar as the preservation and conservation of the artifact is concerned, and
> -- available without recourse to playing any undocumented sound recording even when the identifying or explanatory information was orginally communicated verbally by means of a recording.
>
> All documentation referred to in this study is intended to be that which facilitates preservation.[7]

During the discussion which preceded adoption of this definition it was understood and agreed that sound recordings themselves constitute audible documentation of the first significance, and concern was expressed that this primacy not be obscured. At the same time, it was recognized that the essential focus of this study is on preservation of sound recordings and that unless proper, accurate information is used, it is possible to damage or even destroy a recording during playback attempts.

It was convenient to consider types of documentation as a means of facilitating both research and prioritization of focus in this planning study. The divisions which the AAA Committee decided upon are, however, arbitrary to a considerable degree, and they overlap at many points so that any given type of documentation may actually fit into more than one type category. They are as follows:

Chief Source Documentation consists of indentifying and descriptive information pertinent to the individual sound recordings which comprise the collection.

Artifact Documentation consists of reference materials containing identifying and descriptive information pertinent to the media, formats, classifications, and makes of sound recordings represented in the collection.

Content Documentation consists of reference materials pertinent to the subject matter which the sound recordings embody and to the creators of the performance

which the sound recordings have captured.

Audio Technical Documentation consists of technical reference materials pertinent to the recordings, reproductions and transfer to other media, of the sound recordings in the collection.

Storage & Handling Documentation consists of the logistical reference materials pertinent to the effective physical maintenance and preservation of the total elements--sound recordings, documentation, equipment, packaging, housing--comprising the archival or collection entity.

Administrative Documentation consists of the administrative and procedural reference materials pertinent to the management of the sound archive or collection repository of an institution.

Transfer Documentation consists of the detailed registration of all materials, equipment, and step-by-step techniques (including software if applicable) followed in transferring from one medium/format to another.

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

There is not existing nationally organized infrastructure with a fully developed and active audio preservation program. The AAA recommends as an urgent priority work to create an audio preservation program. We also recommend the creation of an association of professional sound archivists.

In recognition of the absence of a Standards body focused on audio archival transfer technology, techniques, and procedures, the AAA recommends the establishment of such a body.

Since there is no proven archival medium for sound carriers, development of an archival medium for sound carriers is an urgent priority. The AAA will develop a plan to investigate a medium, format, and equipment combination with respect to its suitability for use in generating audio preservation transfer copies of sound recordings. The criteria for judgment of individual combinations will be based on the following AAA policy:[8]

> Any medium, format, and equipment combination to be used to generate archival preservation transfer copies of sound recordings must meet or exceed the following criteria in order to be recommended by the AAA Committee:
>
> 1. The recording/reproducing quality of the medium, format, and equipment combination must be satisfactory for professional audio purposes.
> 2. The medium, format and equipment shall have been nationally standardized and accepted by the

appropriate national Standards-setting organization.

3. Recording and reproduction in this medium and format, and with this equipment, shall be possible in an archival setting.

4. The medium, format, and equipment shall have been tested and found reliable in an archival setting.

By adopting this policy the AAA Committee accepted the responsibility to give an expeditious hearing to, and investigation of, any medium, format, and equipment system proposed for generation of archival preservation transfer copies of sound recordings.

The AAA Committee recommends the use of professional reel-to-reel analog recorders using magnetic tape in analog format for making archival preservation copies of sound recordings at this time. This combination best meets the policy criteria adopted by the AAA Committee, even though neither this nor any other known medium results in a permanent archival storage copy.

The AAA Committee finds that the combination of digital audio recorders, magnetic recording tape, and digital formats is not appropriate for the generation of archival preservation transfer copies of sound recordings at this time for the following reasons:

1. There are no nationally accepted Standards for the various digital recorders and formats.

2. The audio industry has yet to resolve its conflicting systems.

3. Neither equipment not formats have yet been tested or proven reliable in an archival setting for making archival preservation copies of sound recordings.

It should be stressed that the AAA Committee recommendations with respect to analog and digital recording systems for archival transfer purposes are based on conditions which pertain in mid-1987. Our recommendations are subject to change with the changes in sound recording technology now underway---when, and provided that, these changes result in a system or systems which more closely match the criteria for archival applications stated above. Various AAA member institutions are actively investigating digital applications and digital recording systems as this report indicates.

Solely from the physical standpoint, priority preservation efforts with respect to making archival transfer copies of sound recordings should be directed towards deteriorating sound carriers, for example (unprioritized): recordings in which the sound carrier is in

the process of delaminating from its base material (e.g., acetate and lacquer); recordings in which the sound carrier is undergoing chemical deterioration/physical malformation due to chemical processes such as mold or leaching; recordings in which the sound carrier is being physically malformed, cracked, or broken, as the result of physical stress during storage; recordings in which the embossed sound carrier is physically malformed as the result of a tendency of the sound carrier material to return to its original state.

The AAA Committee agreed not to hesitate to include recommended practices even in those instances in which we know that local administrative or budgetary considerations would prevent adoption of such practices as a standard or standards. For example, although it is most unlikely that photography of recordings should be accepted as a standard, the final report will include this form of documentation as a recommendation. Documented photography to a visible scale of the recordings in an archival collection is highly recommended whenever possible for several reasons: It offers access to visual information not available even from full archival cataloging without the necessity of risk of damage from removing the sound recordings from storage. It is highly useful for condition inventory, acquisitions and disposal evaluation, and as an analytical tool. To the extent that rising costs and related conditions bring about consortia of sound archives, photography will facilitate choices of recordings to retain, dispose of and exchange.

The final report will also recommend to adhere to preservation requirements for differing materials--that liner notes, texts, and illustrations furnished in, with, or on sound recording containers be stored separately from the sound recordings themselves whenever possible and in accordance with preservation requirements for the materials which comprise them. The AAA Committee proposes that liner notes be microfilmed for service use to facilitate preservation of the sound recording with which they are associated--through eliminating the necessity of removing the recording from storage in order to consult the liner note. Since recorded performances of literary and musical works frequently depart from the published text or source--or in the case of much ethnic music, humor, jazz, and popular material involve performances for which no published texts or full scores exist--and since an element of preservation is identification of that which is being preserved, the AAA Committee recommends that mention of annotated scores and texts with the rationale for their inclusion be included as an integral element of the bibliographic access provided for recordings in archival collections.

The research group has already identified numerous topics which will require further study and documentation as part of a comprehensive preservation program for sound recordings. This list is still far from complete and has not yet been prioritized. We consider, however, that the topics listed below as examples of the recommendations developed to date deserve coordinated attention and funding support.

Bibliographies need to be compiled for the following types of Artifact and Content Documentation:

> Histories of sound recording and the industry which produces them; manufacturers' records (session sheets, etc.--a union listing of privately and institutionally held materials is needed); manufacturers' catalogs and listings (we should expand and publish the existing ARSC/AAA union listing[9]); manufacturers' label name discogra-phies[10]; discographic periodicals, including perio-dicals containing union listings of available sound recordings[11]; published institutional catalogs of sound recordings collections; interactive, shared, computer-data-base catalogs which include sound recordings and Union indexes and listings of institutional collections of sound recordings; professional and trade journals and periodicals related to sound recording, reproduction, and preservation.

Further study is needed, for example, on the following unprioritized Storage & Handling and Audio Technical matters:

> Shelving; effects of preservation of containers and notes on storage and handling of the related recordings; longevity of sound carriers (signal and sound carrier); containers; effects on sound carriers of contamination by commonly emitted chemical vapors--paints, resin finishes, solvents, adhesives (such as those used in plywood and particleboard); physical handling of recordings--loose tape ends, carts, racks for temporary storage at playback or study facilities; labeling and marking of sound carriers and containers; damage repair; cleaning methods and materials; and instrumentation measurements related to storage and handling--humidity, electrostatic charges, magnetization.

It is clear that the planning study report will contain many more questions than answers. The project participants believe, however, that we shall have fulfilled our objectives to a reasonable degree if the report results in the development of a comprehensive, cooperative preservation

effort for sound recordings, continued research and development to achieve archival transfer and storage media for sound recordings, improved training and professional support for sound archivists, promotion of recommended practices--including transfer documentation--and Standards for the preservation of sound recordings, and continued generation of reference materials--including, particularly, compilation of a national discography--to facilitate the preservation process.

NOTES

1. The project was originally approved for the period January 1986 - June 30, 1987; a 90-day extension at no increase in budget was approved by NEH to facilitate preparation of the final report, which is now due by December 31, 1987.
2. Four formal meetings were originally projected, but NEH approved a fifth at AAA request.
3. NEH approved partial travel expenses for two persons for the July, 1986 meeting; participants paid their own per diem costs. The September, 1986 meeting costs were funded by National Underground Storage, Inc., and NEH. Individual participants, or their institutions, funded the other ad hoc sessions.
4. NEH approved inclusion of Morgan Cundiff's travel to the last two meetings subject to availability of project funds.
5. Minutes Meeting #1, January 20-24, 1986, p.6.
6. The Aims and Principles of Standardization, International Organization for Standardization, n.d.
7. Minutes Meeting #2, April 13-16, 1986, p. 6.
8. This policy and the related recommendations which follow were unanimously adopted during Meeting #4, March 1-6, 1987 and will be contained in the Minutes of that meeting.
9. "A Preliminary Union List of Manufacturer's Catalogs held by AAA" was compiled between 1976 and 1978; it has remained unpublished to date.
10. The publication of a planned Volume 5 of Bibliography of Discographies, (R.R. Bowker Company, New York, 1977+) scheduled to cover label listings will probably not occur in the forseeable future. See note 11 below.
11. The ARSC Journal, Vol X, No. 1, pp. 35-36, contained Gary-Gabriel Gisondi's "Sound Recording Periodicals: A Preliminary Union Catalog of Pre-LP Related Holdings in Member Libraries of the Associated Audio Archives." Tim Brooks' regular "Current Bibliography" department of the ARSC Journal goes far toward expanding and keeping these data current.