

AUDIO PRESERVATION PLAN
Elmer Holmes Bobst Library

Overview

In the recent *Survey of the State of Audio Collections in Academic Libraries*, produced by the Council on Library and Information Resources, when discussing the audio recordings housed in libraries and archives in the United States, the authors report that “these collections of recorded sound are an irreplaceable record of the history and creativity of the twentieth century. These collections are of enormous value for research and teaching.”¹ This holds true for those audio materials held in the various Archives and Special Collections at Elmer Holmes Bobst Library.

Based on various surveys of the different departments in Bobst, there is a total of 74,936 audio items in the Library. Of this, 24,679 items are held in one of the three Archives or Special Collection Libraries: Fales, Tamiment/Wagner and the University Archive. The remaining number is housed in the Avery Fischer Center and more than half of this number is made up of its music CD collection. While the music CD collection in the Fischer Center is the largest collection of audio material, it also has the benefit of being commercially released CDs. While this does not mean that such items do not represent problems for future preservation, rather it means that they do not share the same immediate and glaring preservation needs as those in the other departments.

Total Number of Audio Materials by Division

Avery Fischer	Fales Library	Tamiment/Wagner	University Archives	<i>Total</i>
50,257	2,825	17,620	4,234	<i>74,936</i>

Formats

There is a wide variety of audio materials housed at Bobst, including: wire recordings, LPs, ¼”, ½”, 45s, Cassettes, Microcassettes, DATs and Audio CDs. While not of the items production dates have been identified, the majority of the collection falls between the period of the 1950s to present day. In terms of greatest numbers, ¼” audio recordings represent 45% of the 24,679 items that are not in the Avery Fischer Center, with Cassettes representing an astonishing 52% of that number. Clearly then, these two formats are the largest need based materials in terms of the audio preservation lab. Moreover, while future donations or acquisitions are to be expected, it is unlikely that any would include such a large number of a different format as to compare with ¼” and Cassettes.

<i>Archive</i>	<i>Cassette</i>	<i>¼”</i>	<i>AudioCD</i>	<i>LPs</i>	<i>½”</i>	<i>Wire</i>	<i>DAT</i>	<i>Micro</i>	<i>45s</i>	<i>1”</i>
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¹ Abby Smith, David Randal Allen and Karen Allen, *Survey of the State of Audio Collections in Academic Libraries* (Washington, D.C.: Council on Library and Information Resources, 2004), 1.

Fales	1,508	496	334	199	89		84	69	50	2
Tamiment/ Wagner	10,630	6,895	2	No count		87		6		
University Archives	610	3,610	4	13			2			
Total	12,748	11,001	340	212	89	87	86	75	50	2
% of format in total audio holdings	52%	45%	2%	1%	Less than 1%	Less than 1%	Less than 1%	Less than 1%	Less than 1%	Less than 1%

Condition

Though a thorough and adequate assessment of the overall audio collections still needs to be done, there is more than enough written material about the condition of magnetic oxide-based media to paint demonstrate that even without an item level assessment, the materials in Bobst are at risk. Magnetic media, due to its chemical make-up has inherent vice. Essentially, then the chemical make-up of magnetic media is not designed to last. This deterioration is only aggravated by high temperature and humidity. While it is known that magnetic oxide-based media are at risk, the exact nature and extent of the risk has not fully been studied. However, the Image Permanence Institute of the Rochester Institute of Technology announced, in the spring of 2003, that it was undertaking a study on the deterioration of magnetic tape – both audio and video, as well as developing preservation techniques for magnetic tape.² Though this is an eagerly awaited study to better understand reasons for the deterioration of this medium, action must be taken now to ensure the preservation of the material held in Fales, University Archives and Tamiment/Wagner Archives which is at risk.

Staff Training and Curricular Support

The Audio Lab is needed to serve as not only a training space for Library staff and interns. Through demonstrations and hands-on work, proper care and handling for the various audio formats held by the Library can be learned. Moreover, by coordinating efforts with the Moving Image Archiving and Preservation Program, offered through the Cinema Studies Department in the Tisch School of the Arts, the Audio Lab can provide training for future conservation and preservation specialists. In addition, this cooperation offers the Library resources from which to draw from such eager, capable and knowledgeable graduate students.

Standards in Library and Archival Practice

Like video standards, the standards and procedures for the preservation of audio materials is still being developed. As can be seen in the recent *Survey of the State of Audio Collections in Academic Libraries*, standards are being contemplated and discussed in the realm of cultural institutions, such as libraries and archives. While there is a growing awareness of the need and standards, with the establishment of the audio lab at Bobst, NYU can become a leader in the creation of said standards. The Audio Lab, considered

² "RIT Studies Increasing Shelf Life for History Stored on Tape." Rochester Institute of Technology press release, June 25, 2003. Cited in Samuel Brylawski, "Proceedings from the Symposium: Review of Audio Collection Preservation Trends and Challenges," *Sound Savings: Preserving Audio Collections*. Online.

alongside the Digital Library firmly places NYU in the top realm of academic institutions equipped to deal with both the past and future of audio and video formats.

Scope of Audio Lab Activities

While the follow list can be considered to be a work-in progress, it nonetheless reflects an accurate reflection of activities that will be encountered in such an undertaking. As illustrated in the table above, there are ten known audio formats (Cassettes, microCassettes, 1", 1/2", 1/4", DAT, wire, LP and 45) held by the various archives and libraries in Bobst. While each one will require different solutions and workflows, the following assumes that the two largest formats – Cassettes and 1/4" open reel will be among the first source formats used in the audio lab.

Preventative care

- Visual inspection of audio materials to determine condition and to document physical condition. Includes visual inspection for physical damage or mold.
- Minor cleaning and other physical care. Examples are removing dust and debris on item or container, removal of tape or other attachments, and taping down of ends (on 1/4"), etc.
- In certain cases, selective rewinding (to prevent wind problems) or playback (to further assess condition) may be required.
- Re-housing with the goal of storage in archival containers, with proper labeling, corresponding to the database record for the item.

Preservation projects

- Selected Cassette and 1/4" open reel tapes will be re-mastered in the Audio Lab, to create preservation masters. In the short term, priorities will be re-mastering from Cassette, 1/4", Wire, 1/2" and MicroCassettes. In the future, the Lab will likely be expanded to include born-digital audio formats.
 - Destination formats for Cassettes and 1/4" source materials will be .wav files for the preservation master, registering at 24 bit, 94kHz.
 - Another preservation master possibility for 1/4" open reel is to make high quality duplicates on selected 1/4" reels. However this possibility needs to be further explored before being implemented.

Duplication for access

- Access copies for selected material will be created, to prevent playback of original materials, out of print materials or preservation masters. Access copies will typically be made on AudioCDs, at 16 bit and 94.1 kHz.

Education and support

- The Audio Lab will provide audio playback for identification purposes (of formats in good condition). Rare items may not be identified on tape or box label. Despite this, not all items in a collection will be valuable or fall within the department's collection policies. The Lab will support staff's need for accurate description and will assist in determining the value of audio materials.

- The Audio Lab will provide an excellent space for training in care and handling of audio materials.
- Continued collaboration with MIAP will support a new generation of audio preservationists. In addition, selective support and collaboration with the Clive Davis ??? can provide not only information regarding the latest innovations of audio recording, as well as a source of recommendations for audio equipment.

Research and Standards Development

- Procedures for evaluation, cleaning and re-mastering of audio materials will be developed through the Library's activities in the Audio Lab. The procedures will benefit not only the Library, but certainly the larger library and archival communities. Moreover, the combined use of the Lab by Preservation and Digital Libraries will allow for collaboration of ideas and approaches.

Basic preventative care may also take place in the Audio Lab. Workers will enter data about condition and actions through networked computer terminals.

While re-mastering can be done in the recently established Video Lab, additional space for physical inspection, cataloging, cleaning and re-housing are likely to encroach on areas designated for other tasks, and therefore needs to be planned out carefully.

Storage

Storage for digital formats is still in formulation and is likely to evolve in the near future. Ideally, storage will occur on a dedicated server. This will necessitate partnering with NYU's ITS Department, such as the one that the Digital Library already has in place, which includes 10 terabytes of storage. NYU's Digital Library actually has two separate servers, housed in different locations to lessen the likelihood of loss of data. While an optimal storage condition, it also adds to the cost. Automatic backup of the server as well as on tape would likely be occur, although specifics from ITS would need to be obtained.

Either in addition or in place of this collaboration, storage on RAID or on individual harddrives is also a likely possibility. Creating data CDs as backup and allowing quick access would also need to be considered.

Obviously much more research into both possibilities need to be explored. While digital file repositories is being used by larger institutions, such as the Library of Congress, such undertakings are still extraordinarily expensive, though costs have decreased in recent years. More information on NYU's ITS infrastructure and support is also required.

Metadata

An area that is of growing significance in the realm of digital materials, metadata, like storage, needs further research before it can be implemented in the Audio Lab. There are several developing standards and systems being explored by various institutions.

METS (Metadata Encoding and Transmission Standard) and OAIS (Open Archival Information System) are just a few of the acronymic possibilities. While both have advantages, there are disadvantages associated with each as well. As NYU will be in a place to establish standards, this is not a matter to be undertaken lightly.

In terms of description for original, preservation master and access copies, standards need to be imposed by library staff to record information, not only of analog material, but born digital as well. Born digital material, without the benefit of having written paper documentation (though not 100% reliable itself), it is particularly important to record metadata.

Information such as defects in playback as well as technical metadata for sampling rate, file type and any wrapper or codecs need to be considered equally important alongside descriptors as title and artist.

Equipment & Supplies

Contact was made with three separate individuals who have or are currently involved with audio material in one aspect or another. Molly Wheeler, formerly at UT Austin, David Seubert who is involved with the University of California Santa Barbara's Performing Arts Collection and Jeff Willens, a technician at Vidipax, a New York video and audio lab were contacted to inquire as to how they deal with audio materials. Moreover, inquiries were made to the ARSC (Association of Recorded Sound) as to the best equipment for an archival lab. What came back were three different sets of recommendations. What follows then is a list of equipment designated by Mona Jimenez, Preservation Specialist at Bobst and instructor in the MIAP program as being critical. However, the list was created in 2004 and thus the models may change.

For analog to analog re-mastering and playback of 1/4" open reel, audio cassette, DAT and CD:

- 2 1/4" open reel audio decks Otari MX5050BIII (source and possible mastering; only one needed if mastering to .wav files – which is highly likely)
- 2 audio cassette deck Tascam 122MKIII
- 1 Marantz PMD331 CD Player (source deck)
- 1 Sony PCMR500 DAT Recorder/Player (source deck)
- 2 Genlec 1031A speakers
- 1 Mackie 16 track mixer (for signal routing)
- 1 Rane PE 17 5-band parametric equalizer (for analog audio processing)

Additional equipment to make .wav files and for working digital-digital:

- 1 Mackie HDR 24/96 (for audio capture for .wav files)
- 1 Medea RAID (storage of .wav files)
- 1 Marantz 340 CD Recorder or equivalent (for making CDs)
- 1 Sample Rate Converter (converting between digital files)
- 1 Graham-Pattern ADC-20 A-to-D audio converter (for out to speakers)
- 1 Apple dual processor G5 desktop workstation (running software for digital audio processing)

1 Apple 20" Cinema Monitor

Another cost to be built into the overall budget is that of the cost of CDs for both access and in some cases, preservation masters. Gold CDs, particularly those made originally by Mitsui, now MAM-A have been recommended highly by several consultants.

Conclusion

Further research into three areas (storage, metadata and costing of equipment) needs to be finalized before completing the set-up of the Audio Lab. The latter can be done by either consulting further with academic institutions that have established audio labs, such as Stanford and UCSB. For metadata and storage, the preservation community is sadly in a "wait and see" attitude, largely because the material itself is changing so rapidly and bringing about new innovations and new problems in terms of preservation and archiving.

However, the above gives a good layout of what can be accomplished by the creation of an Audio Lab. Having recently created and established a Video Lab at Bobst, instituting an Audio Lab would not only serve to further cement NYU as a leader in the archival community, but continue its commitment to the materials entrusted to Fales, Tamiment/Wagner and University Archives.