

Orson Welles Audio Collection New York University Study Center Archive Digitization Proposal

1. Introduction

Over the course of the fall 2013 semester, Kelly Haydon, Rebecca Hernandez-Gerber, and Benjamin Turkus, M.A. candidates in New York University's Moving Image Archiving and Preservation (MIAP) Program, worked together to begin digitizing a collection of audio recordings held by Ann Harris, manager/archivist of the George Amberg Memorial Film Center (hereafter referred to as "the Study Center Archive"). This ongoing preservation project benefitted from the support and guidance of a number of individuals at NYU: Mona Jimenez, Associate Director of the MIAP Program; Peter Oleksik, Adjunct Professor of Video Preservation; and William Simon, Associate Professor of Cinema Studies. The goal of this project is to assist the Study Center Archive in the pursuit its central mission—to provide excellent care for items associated with NYU's Department of Cinema Studies, maintaining their availability for members of the university community. Because analog audiovisual materials held within the Study Center Archive require specialized care and attention, and because certain formats are in danger of obsolescence and deterioration, it is recommended that Department of Cinema Studies use the information provided in the following report to begin formalizing a long-term digital preservation plan, thus safeguarding these valuable, endangered objects for future generations.¹ While the media under consideration (61 quarter-inch open reel audiotapes; 21 U-Matic videotapes; 1 VHS videotape, all recordings of the collaborative 1988 NYU conference and exhibition "Orson Welles: Theater, Radio, Film. A Major Retrospective and Critical Examination") are not in immediate danger, the contemporary magnetic media crisis—that combination of equipment obsolescence and material decay that signals the end of audiovisual recordings on magnetic tape—demands that thoughtful and considered transfer work begin as soon as possible. This report, based upon the latest internationally-accepted audiovisual preservation/access strategies and practices, is perhaps best considered as offering a "snapshot in time;" for contemporary audiovisual preservation to truly succeed, it must be thought of as an active, ongoing process, one that relies upon open communication and a willingness respond agilely to constantly shifting standards.

2. Project Background

The films of Orson Welles are perhaps more readily accessible than ever before. Setting aside the enshrined classics (*Citizen Kane*, 1941; *Touch of Evil*, 1958), even the more obscure, once-overlooked corners of the Welles oeuvre are now available at the click of a button: Welles's first directorial effort, *Hearts of Age* (1934), an "eight minute parody of an avant-garde allegory," can be easily found on YouTube, while his last, *F for Fake* (1973), an unusual, formally daring pseudo-documentary, currently streams on Hulu as part of the Criterion Collection.

Yet, while this streaming abundance would seem to suggest a deeper appreciation for the multi-faceted nature of Welles's work and career, it is equally possible that the lessons of the 1988 NYU conference and exhibition—a collaborative effort of the Tisch School of the Arts, the

¹ This digitization proposal does not consider intellectual property issues aside from the collection of rights-related metadata. As part of a robust digital preservation program, it is recommended that the Study Center Archive begin considering any contracts that would govern how the resulting files would be made available to researchers.

Humanities Council of NYU, and the Orson Welles Research Project—have only been partially digested, and are in need of reaffirmation and review. In a 2013 interview, Professor Simon, organizer of the retrospective, confirmed this sentiment, reiterating a statement made twenty-five years ago during the original conference: “I don’t think there’s anything like a full appreciation of [Welles’s] accomplishments in the public eye.”² Despite his immense reputation—his status as “one of the best and most critically acclaimed of American film directors,” Welles remains a somewhat curiously marginalized figure in both critical and popular discourse.³ Today, at the twenty-fifth anniversary of the NYU retrospective, and the seventy-fifth anniversary of Welles’s *War of the Worlds* broadcast (October 30, 1938), it is essential that any and all recordings offering a deeper, more nuanced portrait of Welles be preserved for future researchers and scholars.

The vast majority of the audio materials being addressed as part of this effort are recordings of interviews with artists, performers, or associates who either collaborated or competed with Welles during his theater and radio days. Of the 61 quarter-inch open reel audiotapes, 55 are recordings of interviews (to name a select few: John Houseman, an actor/producer and Welles’s second-in-command until the 1941 production of *Citizen Kane*; Tommy Anderson, a prominent African American actor who performed in Welles’s 1936 stage production of *Macbeth*, often referred to as the “Voodoo Macbeth;” and Virgil Thomson, a composer who worked on same production); the remaining 5 audiotapes are recordings of an Audio Documentary composed of material from these varying interviews.

3. Project Scope and Description

This digitization project has been focused exclusively on the audio recordings of the 1988 Welles retrospective, all of which are currently housed in NYU’s Study Center Archive (651 Broadway). Four audiotapes have been digitized as part of this effort, with preservation masters created in the Broadcast Wave Format (alternatively abbreviated as “BWA” or “BWF;” we will use “BWF”), a widely accepted, de facto standard in the archival and professional audio engineering communities. As Mike Casey and Bruce Gordon explain in *Sound Directions: Best Practices in Audio Preservation*, the Broadcast Wave format is “ideal for preservation”: it is “non-proprietary, restricted in definition, contains assigned locations for specific metadata, and has a sample-accurate time stamp.”⁴ Encoded using linear pulse code modulation (PCM), with a 16 bit-depth, 48 kHz sample rate, it is estimated that the resulting BWF master files will require approximately five gigabytes of storage space. As the Welles recordings are spoken word, it was determined that “CD quality” 16/48 digital files would be sufficient for this collection; ultimately, the complexity of the sound waves themselves was not high enough to justify using the 96 kHz sample rate that has become standard practice throughout the archival community.

All of the Welles retrospective audiotapes are the Scotch 3M brand; organized by length, 53 of these tapes are twelve hundred foot reels; 8 are six hundred foot reels. Though the recording speed for all of the tapes has not yet been confirmed, the tapes that have been sampled were recorded at a speed of 7.5 ips. At this speed, it is estimated that the collection will amount to 28.5 hours of recorded content.

Priorities for digitization were formed by consulting with Professor Simon, who provided a list of individuals deemed most important to the critical analysis of Welles. While Professor

² Leslie Bennets, “New Look at Orson Welles,” *The New York Times*.

³ William G. Simon, “Orson Welles: An Introduction,” *Persistence of Vision*, 5.

⁴ Mike Casey and Bruce Gordon, *Sound Directions: Best Practices for Audio Preservation*, 34.

Simon has not worked recently with these materials, the information he provided was invaluable. The recordings that have been digitized offer two distinct, but complementary, approaches to the study of Welles. The Tommy Anderson interview, described by Professor Simon as “fabulous,” presents the perspective of a performer who worked with Welles as a theater director. The interview with Erik Barnouw, a broadcast and documentary historian, offers a contrasting scholarly perspective that is rare in the collection. Several recordings have also been prioritized for future digitization efforts, including: (1) The interview with John Houseman, a business associate and close friend of Welles, which offers a more personal examination of the man; and (2) Perhaps the most significant recordings in the collection: items related directly to the Audio Documentary on Welles. These recordings, likely compilations of audio material from various interviews, represent the curatorial work of the organizers of the Welles exhibition and conference.

As another group of MIAP students is working with video materials from the Welles collection, communication between the two groups was an important step in this project. Approaching others for additional data on the collection, such as speaking with the collection’s manager and those who have dealt with the materials in the past, was a task that both groups participated in. File naming conventions and directory substructures were also shared between the two groups. Metadata, though mostly shared, has been differentiated due to the unique characteristics of audio and video.

Selection Specifications:

- Four ¼” open reel analog audiotapes from the Study Center Archive Welles Retrospective Collection.
 - 4008 Anderson, T. Interview #1.
 - 4009 Anderson, T. Interview #2.
 - 4013 Barnouw Interview #1.
 - 4014 Barnouw Interview #2.
- Estimated Total Hours: 2.
- Equipment List
 - Studer A807 quarter inch Reel-to-Reel audio deck.
 - Coleman Audio MS2
 - Benchmark ADC1
 - Benchmark DAC1
 - WaveLab 8 software

4. Timeline

During the fall 2013 semester, the video preservation class met on Monday evenings. By December 13th, all components of this digitization project were finalized.

Due Date	Summary of Actions
November 11th	Deliver a draft of the proposal for audio inspection and digitization to Mona Jimenez for feedback.
November 18th	Begin inspection of physical materials and adjust signal path for test digitization.

December 2nd	Complete test digitization and make final adjustments to the signal path. Begin digitizing selected works, creating preservation masters in a lossless codec.
December 9th	Complete digitization of preservation copies and create access-only derivatives. Perform checksums and quality control on digital files.
December 13th	Deliver final proposal and the metadata of digital files logged in an Excel spreadsheet. Store 8 digital files (4 preservation masters and 4 derivatives) in a local NAS folder for retrieval by the Study Center.

5. Workflow

The following step-by-step workflow was created for use with the equipment available MIAP digitization lab, and, as such, takes the specifications of the lab into account. It is broken into three areas of activity that are roughly sequential, though all are connected by shared metadata concerns. When the workflow and inspection is complete, any defective digital material will undergo further quality control.

All digital files will be stored on the Film Center's Network Attached Storage (NAS) system, with additional copies provided on an external hard drive. In addition to reformatting the works into preservation-quality digital files, the audio team will complete local catalog records of the ten elements prioritized for digitization, and prepare documentation that will guide the process should it be continued beyond the series completed for this project.

5.1 Pre-Digitization

- Perform an inspection of the physical condition of the materials.
 - Without removing the audiotape from its reel, quickly check for whether particles fall from the tape when the item is moved, noting any discoloration immediately visible.
 - Check tapes for odors. Note any musty or irregular odors, as they might indicate mold or deterioration in the tapes. Add the results of this inspection to the condition metadata fields.
 - Do not digitize any materials with large amounts of shedding, discoloration, or strong, offensive odors.
- Prepare the audiotape for digital transfer.
 - Leader will be added to the head and tail of each audio element.
 - Equipment used for playback will be cleaned and calibrated.
- Perform a quick check to confirm content, sound reproduction (whether it is stereo or mono), tape speed (ips), and steady audio levels whose peaks do not fall outside the highest and lowest points.
 - During this spot check, listen to two minutes of the beginning of the tape, two minutes midway through the tape, and two minutes near the end of the tape.
- After reaching the end of the tape, clean the surface of tape with a soft cloth while it is rewound.
- Update and revise metadata, adding new technical and descriptive information.

5.2 Digitization

- Set up the signal path in the MIAP digitization lab. (Please see Appendix A for a visual diagram of this signal path)
 - Connect Studer A807 cords to Patchbay MS2P-1 In.
 - Connect Coleman Audio MS2 Fixed output to ADC In.
 - Connect DAC Out to Monitors In.
- Calibrate all equipment.
 - Use a 1 kHz tone to calibrate both analog meters (those on playback equipment itself as well as the external analog meters) as well as the digital meters. For the analog meters, the reading should be at zero vu. Digital meters should instead be between minus six and four dbfs.
- Digitize audiotapes.
 - Decide if any adjustments will be made in the signal or if it will pass unchanged. If sound from the signal is unbalanced and it is impossible to change, change the signal digitally to ensure more balanced audio and document those changes.
 - Repeat this process if errors are found during later quality checks of the digitized material.
- Ensure that metadata regarding the digitization process is recorded in the separate metadata spreadsheet created as part of this project. For the specific fields, please see the more extensive review of metadata in Part VII..
- Check the quality of the digitized material.
 - Due to the short length of the audiotapes, listen to the entirety of the digitized audio content. If this is not possible due to time constraints, listen to two minutes at the beginning of the material, approximately midway into the material, and at the end of the material to ensure the audio is correct and that there are no errors.

5.3 Post-Digitization

- Use the following file naming convention for the preservation masters and derivative digital files (though adhere to a twenty total character restriction):
RXXXX_Welles_Title_XofX_P/A.
 - ***RXXXX*** will stand for the unique identifier assigned by the Study Center Archive.
 - ***Welles*** will relate to the name of the larger collection that includes both audio and video recordings of the 1988 retrospective.
 - ***XofX*** will relate to the item and its place in a series (ex. ***Reel 1 of 3*** would be written as ***1of3***).
 - ***P*** will stand for preservation master, ***A*** for an access file.
- Transfer files to the Study Center Archive NAS and temporary HDD storage.
 - Storage at the Study Center Archive is currently inadequate for long-term preservation. Decisions on long-term storage should be considered in greater depth. For now, place all items within temporary folders.
- Create derivative mp3 files for the four preservation masters in Compressor.
 - Select the file format as mp3, the Stereo Bit Rate as 192 kbps, the Sample Rate as 48 kHz, and the Channels as Stereo.
- Store both the preservation master and derivative digital files under the “Welles_Digitization_Project” tree.
 - Divide this file directory into two subdirectories: ***Welles_Audio*** and ***Welles_Video***. For this project, the former will be used.

- Within the subdirectory, files will be housed in two folders named *Welles_Audio_Preservation_Files* and *Welles_Audio_Access_Files*. In the first folder, include the digital preservation masters created during this process. In the second folder, include the derivative files.
- Create and apply MD5 checksums, then record the generated hash for future checksums.

6. Deliverables and Specifications

Below is a list of physical and digital deliverables described in further detail in earlier sections of this proposal:

- **Supporting Documentation:**
 - Digitization project plan that includes a workflow for digitization and the application of checksums, metadata and file-naming standards and a spreadsheet of recommended fields to be added to the Study Center Archive's database.
- **Physical Deliverables:**
 - The four selected audiotapes inspected, cleaned, and with new leader added to the head and tail of each.
- **Digital Deliverables*:**
 - 4 digital preservation master files, left on Terminal Four.
 - 4 derivative files used for streaming or access, left on Terminal Four.
 - Final report summarizing the process.
 - Final spreadsheet of metadata for the eight digital files.

	Preservation Master	Access Derivative
Format/Wrapper	WAV (Broadcast)	MP3
Bit-Depth	16	16
Sample Rate	48 kHz	48 kHz
Compression	Lossless	Lossy
Data Rate (approx.)	4.38 MB/min	0.58 MB/min
Total Size For the Four Files	1.53 GB	140 MB
File Name Convention	RXXXX_Welles_Title_XofX_P	RXXXX_Welles_Title_XofX_A
Checksum	MD5 Checksum	MD5 Checksum

*Note on digital characteristics: A number of factors led to the decision to create uncompressed BWF files using a linear PCM codec, with a bit-depth of 16 and a sample rate of 48kHz. Simplest of these was the decision to create uncompressed files that use a reasonable amount of storage space in regards to the quality and range of their original recording. A sample rate higher

than 48kHz will create a much larger file to store and yet the difference in quality would be imperceptible (multi-track works such as music would require a higher sample rate). While a bit-depth of 24 is preferred for maximum audio resolution, configurations set on the audio conversion deck limits us to use a serviceable 16, comparable to the quality of audio compact discs.

7. Metadata Requirements

As part of this digitization project, additional metadata on the items will be added to the NYU Study Center Archive database. It will be primarily of a descriptive and technical nature, though preservation-related metadata will be also added as the digitization process continues. The following fields are based on the VP13_file_template.xls spreadsheet, where they are listed as Tape/Item Level Fields as well as Subfields/elements. Any additional metadata will follow specifications found in the ViPIRS Data Dictionary.

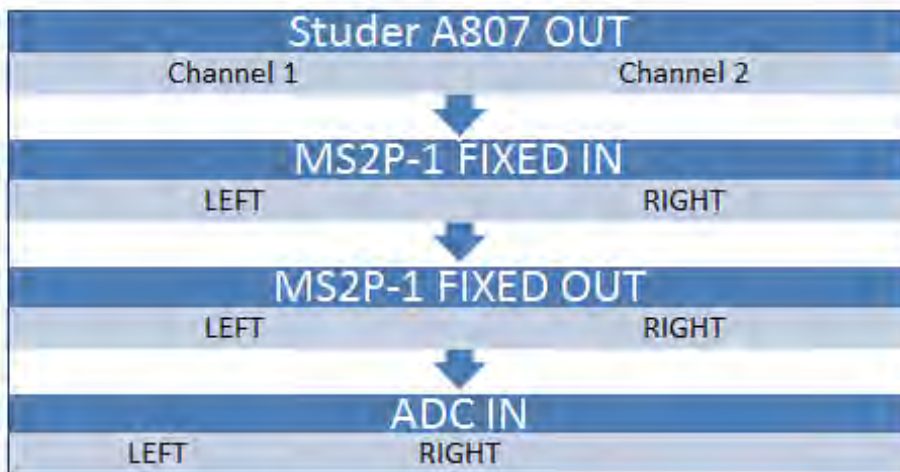
Tape/Item Level Field Names, as well as brief descriptions, are as follows:

- Directory/Folder: Location of the digitized files.
- Unique ID: Unique ID of the original audiotape.
- Format: Format of the material.
- Sound: Whether its silent, monoaural, or stereo.
- Date Created: Date the object was created.
- Audio Signal Adjustments: Any changes made to the audio signal.
- Checksum:
 - Value: Checksum value.
 - Algorithm: What kind of checksum it is.
 - Date Generated: Date the checksum was generated.
- Audio Encoding Codec: Codec used to create the digital file.
 - Codec Creator Application: Name of application used to encode.
 - Codec Quality: Whether it is lossy or lossless.
 - Bit Depth: Bits per sample.
 - Sample Rate: Samples per second.
 - Data Rate: Used to give the bit-rate that the described audio objects audio data has been processed to achieve.
- Program Duration: Running time or length of the audiotape.

8. Appendix A – Signal Path Diagram

Digital Audio Workstation (DAW)
Signal Path for Studer A807

Studer A807 to Computer:



Computer to Monitor Speakers:



8. Appendix B – Bibliography

Bennets, Leslie. “New Look at Orson Welles.” *The New York Times*. April 22, 1988.

Casey, Mike and Bruce Gordon. *Sound Directions: Best Practices for Audio Preservation*. Indiana and Harvard Universities, 2007.

Kehr, Dave. “Early Film by Orson Welles is Rediscovered.” *The New York Times*. August 7, 2013.

Simon, William G. “Orson Welles: An Introduction.” *Persistence of Vision*. Number 7, 1989.