VHS CONSERVATION AT AMERICAN UNIVERSITY

Collection review and digitization workflow
Collection Analysis

- American University: private research university (R2) in Washington, DC with ~13,000 FTE students.
- AU Library Media Services unit started in 1984 providing educational content on U-Matic (3/4”) videotape and 16mm film.
- By mid-80s, educational distributors were migrating to VHS.
Early Section 108 Activity

- Around 1997, when high-use and deteriorating U-matic titles from Films Inc. and PBS went out of distribution

- By mid-2000s, distributors had migrated to the DVD format. AU’s VHS collection stood at 8500 titles.
  - Due to classroom needs, necessary to maintain access to the VHS collection despite the risks of losing out-of-release items to damage and loss.

- First VHS to DVD transfers (2010) were to protect deteriorating tapes and used low-budget consumer equipment (iGrabber).
Early Section 108 Activity

- Added Section 108 information to the NOTE field of the replacement copy’s catalog record, including the date of the recording.

Preservation copy of out of release and deteriorating videotape made under protection of Section 108 C of the U.S. Copyright Law on July 5, 2012. This item is restricted from use by the public outside of the library.

- Originals sent to off-site storage.
Collection Analysis

- November 2010: Video At Risk discussions at NYU-MIAP.
- Mike Casey at Indiana U coins “degralescence” – degradation of tapes and players + obsolete format. Preservation experts estimate 2025-2028 to be the point at which VHS digitization efforts will no longer be economically viable.
- Summer 2014: Media Librarian reviewed status of entire VHS collection. 40% out of distribution.
  - Moratorium placed on VHS circulation.
- Triage priority:
  - **Highest**: unique campus recordings.
  - **High**: regionally-produced or high-use recordings.
  - **Medium**: low use and limited holding libraries.
  - **Lower**: low use and high number of holding libraries, or in a streaming database.
Collection Analysis

- Coding titles in spreadsheet:
  - **S** = Send to storage (has been replaced with DVD)
  - **A/S** – Acquire and Send (available on DVD and can be replaced)
  - **D** = Digitize (out of distribution)

<table>
<thead>
<tr>
<th>Title</th>
<th>Catalog</th>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raising our voices South Asian Americans address hate /</td>
<td>VHS 6930 31194008199428</td>
<td>8/14/2018</td>
<td>Low use; Send</td>
</tr>
<tr>
<td>At the end of a gun women and war /</td>
<td>VHS 7172 31194008415220</td>
<td>3/1/2016</td>
<td></td>
</tr>
<tr>
<td>Doctor's story</td>
<td>VHS 7203 31194008425138</td>
<td>3/1/2016</td>
<td></td>
</tr>
</tbody>
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- Distribution status recorded in “log sheets” by work-study students.
  [https://tinyurl.com/VHSlog](https://tinyurl.com/VHSlog)

- 2014, in collaboration with deg farrelly (Arizona State) and Jane Hutchinson (William Paterson), began developing an online database to share information about out-of-distribution VHS recordings: section108video.org
Dilemmas

Can we legally digitize...

- If the VHS is subtitled and only an unsubtitled DVD is available?
- If the only available version is in streaming format?
- If the only available format is PAL?
- If the VHS recording is copy-protected with Magnavision?
- If the VHS is a different edition of a work still in distribution?
Digitization Workflow

- We were not trained as archivists! Joined AMIA, listened to digipres professionals
- If not us, then who? The alternative was to do nothing
- Good > Perfect
- Optimized for ease-of-use, speed, and budget
- Built into existing job responsibilities
- Improved workflow over time
OUR SETUP:

- iMac
- JVC S-VHS player
- Blackmagic Intensity Shuttle and capture software
- AV Toolbox AVT-8710 Time Base Corrector
- Consumer DVD software
- Promise Technology 32TB RAID store arrays
- XenData SX-10 LTO-6 appliance
- Adobe Premiere CC and Media Encoder CC (via library subscription)

Total cost (2 stations + LTO): $14,000
Output Formats

- Embrace lossy video! Save storage space.
  - Circulating VHS tapes are lower quality.
  - For 30-minute tape:
    - Uncompressed: 37GB
    - H.264: 6GB

- Capture as Apple ProRes 422 (compressed format).
  - 8-bit uncompressed .mov for unique campus content.

- Encoding as “mezzanine”-level H.264 .mov.
Storage, Preservation, and Access

- Videos stored on 8-disk RAIDs (96TB total storage)
  - Checking file integrity (checksums)
  - Currently backing up videos to LTO-6.
    - Don’t be scared by LTO! Not as daunting as it sounds!
- DVD copy to circulate at library’s Media Services desk.
  - Sent to cataloging department to create new record.
- Campus-produced videos uploaded to institutional repository (with approval)
- VHS tapes retained. Sent to off-site storage.
Section 108 Project: Endgame

What does the end of this project look like?
Section 108 Project: Endgame

- Currently digitizing ~40 VHS tapes per week.
- 250 VHS tapes remaining on-site, plus 2500 to digitize from storage and archives/special collections.

Final goal:

- Circulating DVD for every out-of-distribution tape.
- Back-ups of videos on LTO in multiple locations.
Advantages

- Independent, self-contained.
- Can make our own choices about workflow.
- Nimble, able to revise/adapt. Move at our own pace.
- Keeps equipment costs relatively low.
- Responsive to patron needs and keeps collections accessible.
Challenges

■ Independence + budget-minded = we’re responsible for solving our problems.
  – Troubleshooting can be difficult.
■ Challenging to justify budget. VHS isn’t exciting.
■ Student employee turnover and quality control.
■ Processing DVD copies is time-consuming.
■ Benefits vs. outsourcing.
You can do it too!

- We started in earnest in 2014.
- We expect to finish digitizing a total of 4500 tapes by 2023 using existing staff.
- Your library can take this on too!

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Digitization Workflow

Jonathan Iannone
Snell Library Recording Studio Supervisor
and
Kimberly Kennedy
Digital Production Coordinator
Source Media Appraisal and Evaluation

• Is the source media in good condition?
• Do you have the playback equipment to play the source media?
• How much is known about the value of the recorded material?
• Is the source media copy protected by Macrovision or a similar anti-piracy method?
Playback and Capture Equipment

• Older media formats have older hardware playback devices
• In a world of planned obsolescence, playback device use life, is a serious consideration.
• Use and disuse of playback equipment can lead to equipment failure.
• Computer manufacturer's elimination of "obsolete" ports is an issue that must be considered when building a capture workstation.
• Adaptors, cables, and converters are important elements of the media capture system.
• OS versions, Device drivers and Production software are also important items to consider when building a capture system.
Capturing the playback for preservation

• The quality of the copy is only as good as the quality of the source material.

• Dirty media and dirty equipment can degrade the quality of the material to be preserved.

• "Cleaning" media and equipment is a calculated risk that may destroy the object to be preserved.
Real time capture

• Most analogue media formats can only be captured in "real time" playback. There typically is no "fast forward" way of preserving analogue media.

• This is where mean time to equipment failure becomes something that must be factored into workflow and deliverables time tables.

• Some data buses are slower than others. For example USB 2 has a burst data rate of 400MB/Sec but a sustained rated of 200MB/Sec. This can increase the time it takes to capture/transfer data.
Transformatting considerations

• Long term file formatting for Video recordings
• Physical formats: VHS to DVD
• Digital formats for electronic preservation of physical recordings: H.264, .Mov, .MP4
Deliverables

• Once the objects have been converted into their final deliverable format, they must be labeled, cataloged and delivered to their final access point destination.

• It is important to determine how the deliverables will be transported to the requestor. Most people assume that they can get a digitized file as an electronic file of some sort, which can be sent to them as an attachment or a download.
Meghan Banach Bergin, Coordinator of Metadata Unit

Gabe Stetson, Coordinator of Digital Curriculum, Reserve, and Media

The Section 108 Dilemma: Red Tape, Video Tape, and Digital Conversion

Boston Library Consortium Media Community of Interest, April 2019
WHO IS INVOLVED IN WORKING WITH VIDEO AT UMASS?

SIX SEPARATE DEPARTMENTS:

- University Archives and Special Collections
- Digital Curriculum, Reserve, and Media
- Development and Communications
- Digital Media Lab
- Office of Scholarly Communication
- Digital Scholarship Center
SPECIAL COLLECTIONS AND UNIVERSITY ARCHIVES

HARDWARE

- Apple Mac Pro desktop computer
- Analogue to digital converter (AJA ioXT)
- VHS player (NTSC)
- Multi-format VHS player (PAL & SECAM)
- U-matic player
- Betacam player
- DVCAM player
- Time base corrector
- VHS audio converter
- Audio mixer

Hardware setup by Pinehurst Pictures & Sound and Jeremy Smith, Open Education Librarian, UMass Amherst
SOFTWARE

• AJA Control Room (comes with (AJA ioXT conversion machine)
  • For capture, conversion, playback, and output of media types
• Adobe Premier
  • For video editing
• Adobe Media Encoder
  • For digital format conversion from PAL or SECAM to NTSC
WORKFLOW
• FORMATS
• ORIGINALS
• ACCESS
• STORAGE
• STAFF TIME
• WORKFLOW DOCUMENTATION:
  https://www.library.umass.edu/wikis/credo/doku.php?id=video_digitization

OTHER CONSIDERATIONS
• SELECTION
• COPYRIGHT
• OUTSOURCING
• VIDEO AND AUDIO QUALITY
• ACCESSIBILITY
Example with transcript and closed captioning:
http://credo.library.umass.edu/view/full/mums312-b246-i001
Ceremony for filing the last card and closing the catalog: University Library, University of Massachusetts at Amherst, February 25, 1994

http://credo.library.umass.edu/view/full/murg186_100-i00131
VHS Digitization for Reserves

Two Approaches Used by UMass Amherst Reserves Staff

**DVD Recorders and Macrovision/TBCs**

In order to ensure that the program you are watching is an original and of the highest quality, this videocassette is protected by the Macrovision anticopy process.

**Video Capture Software**

Digitize Video for Mac, PC or iPad
Macrovision and Time Base Correctors

Copyright protection

How macrovision and TBCs work:

- Macrovision is old-school copyright protection
- NTSC has 525 line vertical resolution
- Automatic Gain Control
- Solution 1: Time Base Correctors
Time Base Correctors

Macrovision solution

2 types: external box or pass-through

- External TBCs
  - More options
  - Better results
- Pass-through
  - Cheaper
  - Faster
Video Capture Software

Macrovision? Who cares!

How video capture software works

- Interprets video signal like a TV, no AGC chip
- Allows video quality scaling
- Real time conversion
- No adjustments to tracking, etc.
So what did we choose?

Video capture software

- Works for VHS, DVDs, anything with composite out
- Low upfront cost
- Greater control over file size
- Less adjustment to video quality/tracking
THANK YOU!

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Credit also to Aaron Rubenstein, Digital Archivist & Jeremy Smith, Open Education Librarian for assistance with this presentation