Introduction to Moving Image & Sound Collections

Howard Besser
NYU Moving Image Archiving & Preservation Program
http://besser.nyu.edu/howard
http://www.nyu.edu/tisch/preservation/

How long we keep things
• Companies keep information for days, or even years
• Individuals keep things for years, or a lifetime
• Archives, Libraries, and museums keep things for hundreds of years

Cultural Institutions have a much greater responsibility for preservation!

Preserving Difficult Materials:
Moving Images and Complex Digital Works-
• Communications History
• Carriers & Content
• Basic problems with technology-based material
• How are new works even more problematic?
• Problems caused by endlessly re-formatting
• Paradigm shifts needed

A/V Materials are part of
Communications history-
• A history that dates back thousands of years
• A history where technological developments have massively changed communications (production of paper/ink, printing press, photography, telephone, …)
• A history where technology has permitted us to build “carriers” to encapsule and save forms of communications

Today, peoples’ home collections are increasingly digital

Stockholm Telemuseum

Stockholm Telemuseum
Many organizations have audio collections

- Archives have speeches of politicians, recordings of legislative meetings or meetings of professional associations.
- Libraries and archives have oral histories and interviews with famous people.
- Museums, libraries, and archives record the audio of special events, guest lectures, etc.
- Cultural institutions collect recordings of indigenous music, interviews about disappearing cultures and languages, etc.
- Cultural institutions collect recordings of local cultural events, music, etc.

Everything I’ve shown so far was recorded on Digital devices

- More & more recordings are made on these devices
- We need to conserve and preserve these
- Where is the “original”?

Both A/V and Digital require a new way of looking at Preservation

- Little worry about the “original”
- Formats and hardware frequently become obsolete
- We need to constantly re-format
- Long-term planning and “preservation administration” is absolutely essential
- We can learn a lot from the Audiovisual field, which has dealt with these problems for a long time
Many organizations have film and video

- Historic collections often have old films of a city, of buildings, of people at another time period
- Archives have “home movie,” of famous people
- Science and culture museums have anthropological films of other cultures
- Museums have videos of dramatic performances, videos of exhibits, art films, art videos
- Government collections have films documenting government-funded projects (building Brasilia), films and videos commissioned by governmental agencies (AIDS prevention, “Brasil, um Pais de Todos”)

Images with Sound are critical to understanding our cultural heritage

- Both fiction & documentaries shape any time period’s views of the past (Milestones of TV communications: Diahann Carroll in “Roots,” 1970s urban US; Hirohito, Hirohito, A.W., World War II
- We are shaped by the cultural images of our childhood (Lassie, James Bond, police shows, Mickey Mouse, Road Runner)
- TV is also shaped by the advertisements, industrial and educational films (Maytag repairman, How to be a good homemaker)

To understand our time period, people in the future will need to have access to the cultural artifacts of our time (imagine trying to understand 1950s and 1960s gender dynamics if you had no pop culture images of the family)

Today, our A/V Communications Content spans quickly throughout the world

A/V materials are part of Communications history

- A history where technology has permitted us to build “carriers” to encapture and save forms of communications
  - Paper and Books to capture oral legends & tales
  - Photographic film & paper to capture images
  - Motion picture film to capture what our eyes see
  - Audio wax and wire recordings to capture what our ears hear
  - Audio and video tapes
  - CDs and DVDs

Communications-technologies: Carriers & Content (background)

- Throughout history, the content produced was intimately bound up with a particular carrier
  - Papyrus scrolls, clay tablets, codex
- Copying technologies (printing press, photography, film/video, photocopying) still bound content to carrier, but introduced the idea of “lack of uniqueness” and sometimes distinguished between a master “original” (negative) and copies

TV History

Duck and Cover

Sponsor: U.S. Federal Civil Defense Administration, 1951

Downloaded 2002 from Prelinger archive: http://www.archive.org/
Communications Technologies:
Carriers & Content
(Assess for today)

- Many types of institutions (libraries, some archives) only collect mass-produced copies (books, films, videos, DVDs), they do NOT collect the original materials (master copies, negatives, etc.).
- In the digital world, most originals are absolutely identical to all copies. Even when these are put onto different carriers (hard disk, digital tape, CD, DVD), all copies are identical to original (unless specifically made lower quality).
- For those mentioned above, there is no notion of "original", nor of "uniqueness".
- For those institutions that collect material that was used to construct an "original" (manuscripts, negatives, inter-negatives), the production elements used to construct the "original" still maintain some uniqueness.
- Not being able to identify "originals" or "uniqueness" bothers conservators.

Both A/V and Digital Preservation causes a shift in Conservation thinking.

Paper Conservators at Museu Imperial

Both A/V and Digital Preservation causes a shift in Conservation thinking.

Museu Imperial-access

Casa Rui Barbosa

Kungl Biblioteket-Conservation storage

Very different concerns than for Digital Storage

Communications Technologies:
Carriers & Content (continued)

- In the A/V world, we often distribute identical content through many different carriers:
  - Video carrier type: CD, DVD.
  - Sound files: MP3, WAV, AIFF, WMA.
  - Sometimes the content is identical with each carrier, and sometimes it is diminished or compromised for some carriers.
- Managers of really unique content (production elements) have different vocabularies and different needs than managers of mass-produced content.
Svenska Filmhuset (original production elements)

Bibliotek (finished distributed copies)

Cinemateca Brasileira (facilities)

Cinemateca Brasileira (film storage)

Cinemateca Brasileira (nitrate storage)

Cinemateca Brasileira (documentation)

Cinemateca Brasileira (other collections)
Cinematheca Brasileira

- Storage
- Restoration lab
- Inspection & repair
- Film cleaning
- Film copying
- Video/digital re-formatting

Hampton Collection

- (1)
- (2)
- (3)
We’re always reformatting, and dealing with wide variety of formats

- Nitrate
- Super8
- Cinemascope
- 3-D
- Cartridge
- ...

Lots of Formats; Hard to Store

Difficult Materials become obsolete relatively quickly

- The physical carriers decay or become obsolete
- The technology required to view the carriers changes frequently
- The encoding formats needed to decode the content shift

Pre-Cinema Machines

Obsolescent or deteriorated Physical Carriers
List of old Audio Formats

<table>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
<th>Years in Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wax Cylinder Records</td>
<td>2- or 4-minute formats, wax or wax compound</td>
<td>1888–1929</td>
</tr>
<tr>
<td>Recordable Disc Records</td>
<td>7&quot;, 12&quot;, or 16&quot;, recorded at 33 or 78 revolutions per minute (rpm). Generally vinyl on a paper, glass or metal base</td>
<td>1929–1960s</td>
</tr>
<tr>
<td>Recording Wire</td>
<td>Spooled wire, usually in 15- to 30-minute lengths, one direction only</td>
<td>c. 1945–1955</td>
</tr>
<tr>
<td>Open Reel Recording Tape</td>
<td>1/4&quot;–2&quot;, 3&quot;–10 1/2” reels, 1 7/8–30 inches per second (IPS)</td>
<td>c. 1945–Present</td>
</tr>
<tr>
<td>Compact Cassette</td>
<td>1/8” tape in hard case, 1 7/8 IPS format</td>
<td>1965–Present</td>
</tr>
<tr>
<td>Microcassette/Minicassette</td>
<td>Very small 2-4 cm cassette tapes</td>
<td>1977–Present</td>
</tr>
<tr>
<td>Digital disk, MP3, and other digital recorders</td>
<td>Audio recorded directly in digital files to optical disks or internal hard drives</td>
<td>2000–Present</td>
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</tbody>
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Lost Tapes, Found Sounds Exhibition

Harold Schellinx

Other Deterioration - film

Color Restore (VidiPax)

Re-formatting is not a new idea

- A form of copying
- Usually copied onto a medium having different physical characteristics than the original physical strata
- Examples
  - Document on acidic paper onto non-acidic paper
  - Newspaper microfilming
History of Conservation & Preservation Reformating

- In ancient times, in the library of Pamphilus at Caesaria, badly damaged papyrus manuscript pages were replaced with parchment (which was stronger)
- The Bible was hand-copied for millennia
- 1964 - US Newberry Library (Paul Banks) began 1st US institutional preservation program
- 1987 - US NEH begins funding massive microfilming of brittle paper (mainly newspapers)

Why do we Reformat?

- Because we cannot sustain the original object (its physical characteristics are deteriorating too fast)
- Because continued access and handling of the original object will rapidly decay its physical characteristics (so we create a surrogate for users and store the original in very good conditions, away from users)
- Because viewing the work requires some kind of technology, and we can’t keep that technology working very far into the future
Record Turntables

Slide Projector

Limitations of Reformatting

- Authenticity issues
- User behaviors (newspaper, book, video games, …)
- Users mistaking the reformatted work for the original

Critiques of Reformatting

Mainly User Behavior

- Can’t view outside the library
- Only sequential access
- Viewing and studying is awkward
- …

But if we don’t reformat, we totally lose some kinds of works (particularly audiovisual works like film)

- 50% of all the produced before 1950 have vanished ( approximate)
- More than 30% of features (full-length features) are folded, user behaviors, sequential, serial, indexical, independent, …, and these "orphans" are particularly in peril
- More than 30% of features from 1950-60 survive in complete form; survival rates of feature films (60% of all these are adaptations)

And sometimes we have to reformat because of technology changes

- We don’t have video players to play tapes made 25 years ago
- We don’t have 8-inch floppy disk drives, syquest drives, zip drives
- We don’t have Windows 3 operating systems
- But this is something that conservators have always dealt with …

We sometimes have no control over the technologies we use

- Environmental – Government mandates to discontinue use of halon gas as fire extinguisher
- Economic – Companies in economic trouble will cease manufacturing technologies that aren’t hugely profitable

Kodak stops making some films

Kodak stops making some papers
Basic Economics

- The conservation community is not large enough a purchaser to sustain many types of manufacturing and technological production.
- Many of the things we use are based upon larger production runs for larger (and richer) communities.
- Therefore, we need to be periodically monitoring the economic health of our suppliers, and be aware of long-term trends affecting their other customers.

Technical & Conceptual Approaches to Solutions

- Save the Hardware & Software
- Emulate
- Migrate
- FRBR
- Artist Intentions

Save the Hardware & Software

- A huge undertaking
- Computer Museum
- Broderbund

Old Video Formats

Old Digital Formats

Save the Hardware & Software

- A huge undertaking
- Computer Museum
- Broderbund

Possible endless need for reformatting implies

- Possible loss with each generation
- Requires managed environment
- Can lead to © violations

Preservation steps can raise serious Copyright Issues

- Refreshing onto new physical media can violate ©
- Migrating raises "moral rights" issues
- Emulation often requires reverse engineering of software
- Underlying rights

Some other things you should know about

- The production process
- Resources to help you
Managed Environment

• More than temperature & humidity control
• Periodic monitoring of the works
• Periodic monitoring of the technical environment for viewing the works (software, systems, hardware)
• Trusted repositories

Storage Media

• Removable media (like CDs) is not a long-term answer
• The long-term answer requires ongoing management, and involves regular migration or emulation. This solution is only viable with storage on spinning disks.

Consumers replace their CDs with a hard disk (& so should you)

Plain DVDs are no longer the latest format

So, with electronic works, the focus should be less on stable temperature
And less on the construction of Vaults (Helsinki underground vaults)

But more on ongoing management of a work without worrying so much about physical embodiment

Paradigms Shifts needed

<table>
<thead>
<tr>
<th>Physical preservation</th>
<th>Old</th>
<th>New</th>
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<tbody>
<tr>
<td></td>
<td>atmospheric</td>
<td>ongoing regime</td>
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<tr>
<td>What to save?</td>
<td>artifact</td>
<td>artifact + ancillary, record &amp; documentation</td>
</tr>
<tr>
<td>Cataloging</td>
<td>individual work in hand</td>
<td>full record</td>
</tr>
<tr>
<td>Later access</td>
<td>Artifact &amp; documentation</td>
<td>Restoring, ancillary material &amp; documentation</td>
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Preservação de Filmes, Videos, Som

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- http://www.nyu.edu/tisch/preservation
- http://www.ptvdigitalarchive.org/
- http://www.asa-web.org/nda/
- http://www.screenandsound/screenandsound.html