Background: Conservation of Media Art & Other Complex Works

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

Conservation of Media Art & Other Complex Works-

- Basic problems with technology-based material
- How are new works even more problematic?
- Problems caused by endlessly re-formating
- Issues with New Works—what are we trying to represent/save?
- Efforts to watch (projects, standards)
- Paradigm shifts needed

Metropolis—Conservation without Access?

- From Paula Felix-Didier: paula.felixdidier@gmail.com
  - Sent Friday, June 27, 2008 3:53 pm
  - Subject: miapers don’t fall far from the tree

  Hola Howard,
  I just came back from a very nice dinner and wine dinner with Herr M. Koerber, in his Berlin apartment. A German magazine brought me here as part of the story they are publishing next week on our Metropolis finding. I arrived here two days ago and I went directly from the airport to the Kunstkammer to show my DVD to Koerber, Reiner Rotha, and the people from the Murnau Foundation. Yesterday, I went to Munich and showed it to Patalas. A few jaws dropped and everybody is very excited, but this is not why I’m writing to you.

  The thing is that throughout the whole business people kept complimenting me on my generosity and how great and rare it is that I decided to share this so openly, bah, blah, blah. And I couldn’t see why this was such a big deal. For me, it came naturally, and it was the obvious thing to do. And I couldn’t help thinking that (although I do have some merit in this, I’m not being falsely modest), the fact that I had no doubts about what to do comes directly from my MIAP upbringing. You and Mona ingrained in our archivists’ DNA that there’s no preservation without access, and that sharing is the only way to go. So I just wanted to let you know that you are sending good seeds out to the archiving world, and that we are making a difference and people are noticing it. I just felt I owed you this and give credit where credit is due.

  Other than that, everything is going well, except that I’m starting to deal with the Murnau Foundation. They didn’t believe me at first (probably thought I didn’t know what I was talking about), because they have proof, they are getting paid, and are claiming copyright on the new images. I have this very annoying and disgusting. But I’ll have to learn how to negotiate something for my little museum. We’ll see how it goes. Please change your things on going fine, wherever in the globe you are. Take care.

  un beso

  Paula

  Paula Felix-Didier
  Directora, Museo del Cine de Buenos Aires

A/V Materials are part of Communications history

- A history where technology has permitted us to build “carriers” to encapsulate 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
  - Only reproduction was hand-copying (monks w/religious texts)
  - 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” (negatives) and copies
Communications Technologies:
Carriers & Content  (lessons 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 “uniqueness”, nor of “original”:
  - 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

Kungl Biblioteket-Conservation storage

Very different concerns than for Digital Storage
In this context, “carrier” means a container permanently bound to the contents (a book, videocassette, film, tape).

• In the A/V world, we often distribute identical content through many different carriers
  – Vinyl, cassette tape, CD, iPod
  – Nitrate film to safety film
  – 35mm film, 16mm film, video formats, DVD
  – 2” video, 1” video, U-Matic, Beta, VHS
• Sometimes the content is identical with each carrier, and sometimes it is shrunken or compressed for some carriers
• Managers of really unique content (production elements) have different vocabularies and different needs than managers of mass-produced content

Many types of difficult materials

• Moving Images
• Sound
• Websites
• CAD
• GIS
• Electronic Art
• …
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

Obsolete Carriers

Kodak stops making some films

Old Video Formats (www.vidipax.com)
Even conventional Moving Image Carriers are highly unstable, and an enormous # have already disappeared

- 50% of all titles produced before 1950 have vanished (approximate number as of late 1970s)
- This reflects full-length features; survival rates are much lower for other types (studio newsreels, shorts, docs, independent, ...), and these "orphans" are particularly in peril
- Fewer than 20% of features from 1920s survive in complete form; survival rates of 1910s is <10% (& none of these are negatives)


Conventional Works

- Manuscripts, books, paintings, sculpture
- We have a good sense of what the original object is
- Objective is to make object itself endure (temperature/humidity control, chemicals/pigments/fibers/adhesives, ...)
- Goal is to keep object as close as possible to original state (though occasionally controversy arises over whether to let aging show)
Electronic Media

- Video, audio, digital, new media, websites, blogs, … Often difficult to determine what the original object is
- Difficult to make the original object endure (magnetic particle deterioration, warping, etc.)
- Even if we could make the original object endure, we wouldn’t have the infrastructure to view it in the future
- Need to develop a paradigm shift from preserving the original object to preserving info content
- Need to pay more attention to maintaining authenticity and replicating user experience

Electronic Art in general is not like canvas paintings

- May include
  - Moving image materials
  - Multimedia
  - Interactive programs (including hypertext novels & games)
  - Computer generated art
- Most electronic art works share some common characteristics with other “strange” works like
  - Performance Art
  - Conceptual Art
  - Site-specific installations
  - Experiential Art

The Short Life of Digital Info: Digital Longevity Problems-

- Digital Preservation
  - The Viewing Problem
  - The Scrambling Problem
- Digital Curation
  - The Inter-relation Problem
  - The Custodial Problem
  - The Translation Problem

Digital Preservation

- Requires new file formats and new physical strata at regular intervals
- Needs a serious Managed Environment
- Main InterPARES finding—the need for complete lifecycle management
  - Archivist needs to be involved when record is created and throughout active life

The Viewing Problem

- Digital Info requires a whole infrastructure to view it
- Each piece of that infrastructure is changing at an incredibly rapid rate
- How can we ever hope to deal with all the permutations and combinations

Viewing Problem

- Requires new file formats and new physical strata at regular intervals
- Needs a serious Managed Environment
- Main InterPARES finding—the need for complete lifecycle management
  - Archivist needs to be involved when record is created and throughout active life
The Scrambling Problem

Dangers from:
 Compression to ease storage & delivery
 Encryption to enhance digital commerce

The Inter-relation Problem

 Info is increasingly inter-related to other info
 How do we make our own Info persist when it points to and integrates with Info owned by others?
 What is the boundary of a set of information (or even of a digital object)?

The Custodial Problem

 In the past, much of survival was due to redundancy
 How do we decide what to save?
 Who should save it?
 Mellon-funded E-Journal Archives
 How should they save it?

The Translation Problem

 Content translated into new delivery devices changes meaning
  – A photo vs. a painting
  – If Info is produced originally in digital form in one encoded format, will it be the same when translated into another format?
 Behaviors
The Translation Problem

Thinking of the Future

• Screens will be different resolutions and different aspect ratios
• CRTs won’t exist
• A decade or 2 from now, today’s user interfaces will look like arrow-key navigation looks like today

Thinking of the Future

• Today’s streaming media are small windows, slow speeds
• As bandwidth increases, viewers will expect higher quality streams
• Creators may need to consider how they’ll be able to deliver higher-bandwidth streams
  – Delivery Derivatives vs. Masters encoded w/standards
  – May also want to re-edit the piece to take advantage of changes in technology, viewer expectations, society-

Screen Formats

Responding to serious Longevity Problems

 Previous formats required little ongoing intervention (remote storage facilities, Iron Mtn); digital formats require intense ongoing management
 Need for:
   Preservation Repositories
   Preservation Metadata

Issues with new works-

• What is the work?
• Is there an “original” to preserve?
• Complexity of rich media
• Difficulty of making the work last

LeWitt: Wall Drawing 340
LeWitt: What do we save?

- The installation?
- Documentation of the Installation?
- The directions for the Installation?
- What is the goal of our documentation and preservation?

Born-digital works

- Where is the “original”? 

Born-digital works are both easier and harder to preserve than analog works

+ With a born-digital work, we don’t have to worry so much about the “original artifact” (there really isn’t one)
- We know that digital works face a whole range of obsolescence problems, so they must be reformatted at least once per decade
Gates Project 1992 (plan)

Gates Project 1992 (time-slices)

New Opportunities--Digital Cameras

GPS Metadata in Camera

Giving images a Place (google)
Complexity of Rich Media

- Works often have artistic nature (including video games)
- Enormous number of elements can, at times, be very important to preserve (pacing, original artifact, elements used to construct the artifact)
- Too complex to save every one of these aspects for every type of material
- Importance of saving documentation

Special Characteristics of Electronic Works

- What Really is the Work?
- Disappearing software
- Enormous number of elements can, at times, be very important to preserve (randomness, interactivity, pacing, color, format, original artifact, elements used to construct the artifact)
- Pieces and Boundaries
- Recontextualization (Postmodernism)–which rendition to save?
- Dynamic & Lack of Fixity (evolving works)
- Interactivity
- Historical context
- Difficulty of authentication over time
Management & Preservation: What are we trying to do?
• Show the work the way people saw and interacted with it when it was first created (may be impossible; in the past, the artifact and how one interacted with it didn’t change much, so preservation and documentation were relatively straightforward)
• Show documentation of the work and people interacting with it when it was first created
• Reinstall/Recreate/Reinact the work

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

Digital Stewardship definitions
• “acquire, manage, organize, preserve, and provide access to massive amounts of data for use and re-use by a variety of interdisciplinary and heterogeneous communities over time”
• “Preservation + Use”

Digital Stewardship: Harvard Library OIS definition
• the management of digital objects over the long term through careful digital asset management practices. Collection managers and DRS staff must work together to manage stored digital objects throughout all phases of the objects’ life cycle. This section describes the major areas of digital stewardship in the life cycle of a digital object:
  • Assessment and selection phase: Collection manager performs a curatorial assessment of materials intended for DRS storage.
  • Acquisition and creation phase: Collection manager (in consultation with HUL analysts) selects digital formats and defines technical specifications and workflow processes for creation of objects and related metadata.
  • Deposit phase: DRS ensures a successful deposit by validating each package of digital objects and related metadata that is submitted to DRS.
  • Archive and preservation phase: DRS staff perform periodic checks to ensure the usability of digital objects over time. This includes periodic reports to collection managers about their objects.

Digital Curation
Digital Curation

- Planning & risk management
- Open flexible file formats
- Format registries
- OAIS repositories
- Extensive Metadata
- Individuals & organizations-

Digital Preservation Players

- Collection staff (need to reach agreement on SIP/DIP and acceptable AIP transformations)
  - preservation/conservation staff
  - metadata staff
  - access staff
- Repository staff
- Agreement negotiators

Preservation Repositories:

too difficult for small institutions

- Too complex for small institutions to manage
- Will be done through partnering (small museum or dance company with University) or through consortia (museum association, state-wide organization, …) or through service bureaus (OCLC)
- Archive or museum will direct what is needed, but digital repository will carry out the actual work (as defined in SIP/DIP/AIP agreement)

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-
Storing on CDs becomes a big problem over time

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

Plain DVDs are no longer the latest format

Standards for encoding creators’ intentions
(group efforts w/i Cult Heritage community)

- Variable Media Initiative
- New Arts Foundation collaborations-Media Matters (MOMA, SFMOMA, Tate)
- DOCAM
- INCCA
- Past
  - Seeing Double Exhibition, & Symposium
  - TechArcheology: A Symposium on Installation Preservation (SFMOMA)

Artist Interviews

- Required as part of purchase for certain types of works (SF MoMA, Tate, Guggenheim, MoMA, …)
- AIC Denver workshop
- WAAC (Western Assn for Art Conservation) “Artist Interview Committee”
- Miwa Yokoyama’s thesis -- “Capturing the Artist Interview: Interview Methodologies and Resources for Documenting and Preserving Time-Based Media Art”

Multiple Approaches

- Capture the documentation
- Freeze a final version (eg. PDF of CAD)
- Capture the full functionality

Trade-offs
- risk vs. safety
- cheap vs. expensive
- full functionality vs. reduced functionality
ELO Projects -

• For older works
• For works not yet created

ELO: Uncle Buddy’s Funhouse

ELO: Impermanence Agent

ELO: Boyfriend Home from War

ELO Research Approaches - Retrospective

• Focus on 8 older works representing:
  - Text-based hypertext/interactive works
  - Essays/mini-research projects
  - Interactive fiction/drama
  - Algorithmically-generated works
• Attempt various preservation/restoration methods:
  - Technical experts to test the longevity/handability of the older works in today's machines
  - Save supporting metadata (titles, names of important versions, dates to test the authoring technologies with tools, etc.)
• Examine Results:
  - Review how usable the works are under each method after 3 (5, 10) years
  - Assess the cost, time, skills involved in each method

ELO Research Approaches - Prospective

• Develop standards for encoding interactive behaviors, timing, etc.
• Gain community consensus for these standards
• Express these standards in terms of METS extensions and XML encoding
• Either convince vendors of authoring software to export to these standards, or design our own open-source authoring software
• Partner with a stable institution running a digital preservation repository, and use the encoded standards we develop as directions of how to handle works over time
• Develop model IP rights contracts that allow ELO to distribute a work if it’s no longer in distribution elsewhere
• Convince the community of authors to place copies of their works in ELO’s “dark archives”
Student Projects
NYU’s Moving Image Archiving & Preservation

- Examples of some steps taken towards capture & preservation of complex works-

Preserving Eyebeam’s ReBlog
(Pamela Smith project)

- Description of the component parts
- The archive
- Risk assessment
- Possible preservation strategies

Re/Collecting: A Centennial Installation
By Simon Attie with Norman Ballard

- Projections of art objects hovering in free space, and evocative texts that materialize as if written by an unseen hand, greet visitors to a dramatic, enclosed environment created in The Jewish Museum by artist Shimon Attie in collaboration with Norman Ballard, as a new artwork commissioned for the Museum's centennial. The sound design by Bill Tole. Presented in two “chapters,” the artwork evocatively juxtaposes images from the Museum's collection and fragments of texts. Re/collecting: A Centennial Installation by Shimon Attie with Norman Ballard, in which three-dimensional projections and laser writing magically call up objects and snatches of language from The Jewish Museum's past, is in the contemporary gallery of the permanent exhibition. The words and images have been selected to suggest the conversations about art, culture, identity and history that have been at the heart of The Jewish Museum over the last century. The second chapter, featuring works from the Museum's collection related to Hanukkah, remains on view through January 16, 2005.

Another Simon Attie work

Jewish Museum (Internship)

Pamela Smith Thesis Project:
Videofreex--early 1970s experimental community broadcast television

Videofreex (Pamela Smith)

Television Pictures
March 12, 1931

Unedited material used in a Fox Movietone newreel project by Kara van Molson, Sean Savage, Paula Felix-Didier, Lindsay Benton

Clip #2
Ernst Fredrik Werner Alexanderson in the General Electric “House of Magic”

- “We have succeeded to photograph the television image on a moving picture film. Important events that in the future may be intercepted by the television camera and broadcast to all corners of the world may thus be recorded on the film and kept in readiness in moving picture houses for projection of a lifetime some minutes or hours after the event.”

- Cuts to close-shot: “We hope that this will be one more step to widen our horizon and to make all people our neighbors.”

- The scanning disk “is perforated with 48 small holes, three sixty-fourths of an inch in diameter which are arranged in a spiral on the outer edge of the disk…”

- Clip continues later on tape after a repeat of Clip #1
Early experiments with television

Limitations

- 48 lines of resolution (not a life-like image)
- Audio: synchronization & pitch
- Required the subject be in close proximity to the apparatus

What we were able to verify.

Date.
- First successfully recorded image shown to the public.
  - Alexanderson.
  - The apparatus.
  - Was edited and shown in theaters.

Paradigms Shifts needed

<table>
<thead>
<tr>
<th></th>
<th>Old</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>atmospheric ctrl</td>
<td>ongoing mgmt</td>
</tr>
<tr>
<td>preservation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What to save?</td>
<td>artifact</td>
<td>idea + ancillary material &amp; documentation</td>
</tr>
<tr>
<td>Cataloging</td>
<td>Individual work in hand</td>
<td>FRBR</td>
</tr>
<tr>
<td>Later access</td>
<td>Artifact &amp; documentation</td>
<td>Restaging, ancillary material &amp; documentation</td>
</tr>
</tbody>
</table>

Conservation of Media Art & Other Complex Works

Howard Besser, NYU Moving Image Archiving & Preservation Program

- http://besser.tsoa.nyu.edu/howard/Talks/
- http://www.nyu.edu/tisch/preservation
- http://www.ptvdigitalarchive.org/
- http://www.dcc.ac.uk/
- http://www.digitalpreservation.gov/
- http://www.interpares.org
- http://www.iasi-web.org/hc04/
- http://variablemedia.net/

Today, peoples’ home collections are increasingly digital