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-formatting
- Issues with New Works--what are we trying to represent/save?
- Efforts to watch (projects, standards)
- Paradigm shifts needed

Exactly two years ago
Zeit Magazine--Metropolis

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

Metropolis--Conservation without Access?

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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 bwn 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
Communications Technologies:
Carriers & Content (cautions)

• 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 shrunk or compressed for some carriers

• Managers of really unique content (production elements) have different vocabularies and different needs than managers of mass-produced content.
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)


How are multimedia and electronic works even more problematic? -

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 & Stewardship
  - The Inter-relation Problem
  - The Custodial Problem
  - The Translation Problem

Digital Preservation

- The 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 format, will it be the same when translated into another format?
- Behaviors

The Custodial Problem: How to save information?

- Methods for later access
  - Refreshing
  - Migration
  - Emulation
- Issues of authenticity and evidence
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

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

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

more later on...

- Digital Curation
- Digital Stewardship

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: 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 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 (3D ground)

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)
- Issues and Boundaries
- Recategorization (Postmodernism)–which rendition to save?
- Dynamic & Lack of Finiteness (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
- 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

### Managed Environment definitions

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### 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”

### 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

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

 Organisation to Engage & Collaborate

- Communities of practice: users
- Researchers
- Repository communities
- Management & administration
- Research & development
- Service & delivery

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 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

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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 (e.g., 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/lexia-based hypertext/interactive works
  - Storyspace hypertext/interactive works
  - Hypertext/interactive works in “plain” HTML
  - Hypertext/interactive works incorporating more complexity (DHTML, layers, Javascript, CSS, …)
  - Flash works
  - Director/Shockwave works
  - Interactive Fiction/Drama
  - Algorithmically generated works

- Attempt various preservation/restoration methods
- Test on projects to see which approaches work, consider long-term preservation strategies

- Examine Results
- Review how usable the works are under each method after 5 (10) years
- Assess the ease, 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

Another Simon Attie work

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

Jewish Museum

• 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 Toles. 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 matches 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.
Jewish Museum (internship)

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

Television Pictures
March 12, 1931
Unedited material used in a Fox Movietone newsmoz project by Kara van Malssen, Sean Savage, Paula Felts-Didier, Lindsay Horton.

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

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Limitations

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

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What we were able to verify.

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

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Paradigms Shifts needed

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- 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.iasa-web.org/tc04/
- http://variablemedia.net/