Digital Media at the University

Howard Besser, Director
Moving Image Archiving & Preservation Program
NYU's Tisch School of the Arts
http://www.tisch.nyu.edu/preservation
http://besser.tsoa.nyu.edu/Talks

Digital Media at the University

- Recent Trends
- Why do digital media pose long-term problems?
- What do we need to do to answer those problems?
- Reformatting--why have we done it, and what can we learn from the audiovisual field? (and some lessons about audiovisual conservation)
- Pushing metadata gathering upstream
- Difference btwn libraries, museums, archives
- © impediments

Recent trends in University Media Management

- Centralized digital repository for most of the Campus' organized collections and faculty pre-prints
  - Usually managed by Computer Center, but sometimes by Library or other units
  - Often only a storage repository (w/o preservation)
  - Sometimes has no centralized access (access is through each individual collection)
  - Many handle only well-understood static formats (PDF, TIFF)
- Administrative merging of units that previously were independent
  - University Presses going to Libraries
  - Museums and Libraries into same reporting structure
  - Film Archives under libraries

Strategies for Re-Use

- content: quotations, citations, photos, clips, …
- For Re-Use with
  - Papers
  - Articles
  - Course slides
  - Social media
  - YouTube
  - Re-contextualizations

The Short Life of Digital Info: Digital Longevity Problems-

- ✿Disappearing Information
- ✿The Viewing Problem
- ✿The Scrambling Problem
- ✿The Inter-relation Problem
- ✿The Custodial Problem
- ✿The Translation Problem

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

The Scrambling Problem

Dangers from:

- Compression to ease storage & delivery
- Container Architecture 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?-

Migration

- Wordstar to Word 1 to Word 3, …
- -Tables and complex features often get corrupted
- -Need to repeat every 4-5 years (maybe forever)
- +We know how to do this ourselves
- +If there's a problem, we can catch it soon

Emulation

- Keep the Wordstar file format, but write emulators to make it work in newer environments
- +A better chance of carrying over complexity
- +Many more features can survive
- -Problems may not be caught until it's too late
- -Specialists and a whole infrastructure of emulators required
- -Serious © problems (reverse engineering?)

The Custodial Problem:
How to save information?

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

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

Thinking of the Future (1/2)

- 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 (2/2)

- 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
- Key requirement is **Ongoing Management**:
  - Preservation Repositories
  - Preservation Metadata

Even newspapers in Alabama know about ongoing management

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

Standards, Metadata, & Best Practices to follow-

- Risk Management
- Best Practices for Reformatting
- Preservation Repositories & Metadata
- Other Metadata & Standards

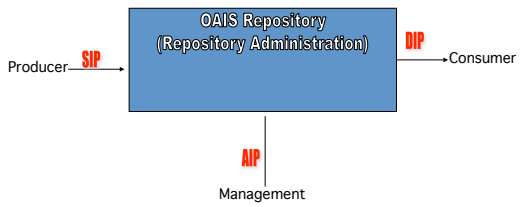
Risk Management

- We can't say definitively that we can make every digital work persist
- What we CAN say is that the more a digital work conforms to standards and best practices, the greater the likelihood that we can assure persistance
- Our preservation repositories can even accept deposits of non-conforming works, but the less they conform, the less likely that they'll be salvageable
- Persistance is most likely for works that share standards, metadata, and best practices

Reformatting Best Practices (still images)

- Think about users (and potential users), uses, and type of material/collection
- Scan at the highest quality that does not exceed the likely potential users/uses /material
- Do not let today's delivery limitations influence your scanning file sizes; understand the difference between digital masters and derivative files used for delivery
- Many documents which appear to be bitonal actually are better represented with greyscale scans
- Include color bar and ruler in the scan
- Use objective measurements to determine scanner settings (do NOT attempt to make the image good on your particular monitor or use image processing to color correct)
- Don't use lossy compression
- Store in a common (standardized) file format
- Capture as much metadata as is reasonably possible (including metadata about the scanning process itself)

Preservation Repositories: Open Archival Info System Model



Preservation Repositories: Open Archival Info System Model

- ✿ High-level reference model describing submission, organization and management, and continuing access
- ✿ Conceptual framework for different organizations to share discussions with a common language
- ✿ Producers, consumers, management, actual repository
- ✿ SIP, DIP, AIP
- ✿ AIP consists of data objects plus representation info (Content, Preservation Description, Packaging, Descriptive)
- ✿ Originally developed for Space Science community

OCLC/RLG Digital Repository Attributes

- Administrative responsibility
- Organizational viability
- Financial sustainability
- Technological suitability
- System security
- Procedural accountability
- Certification-

Trustworthy Repositories Audit & Certification (TRAC): Criteria and Checklist

- Organizational Infrastructure
- Digital Object Management
- Technologies, Technical Infrastructure, & Security

- Who can benefit?
- The document benefits those who work in or are responsible for digital repositories and who want to be certified against its requirements, as well as for those who execute the audit and certification process. However, the guidelines are also designed for a much broader audience—for organizations planning repositories and for producers of digital materials.

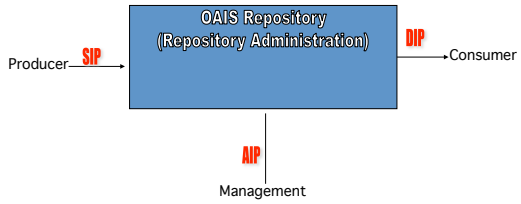
- When does it come in handy?
- —For staff working within repositories: The checklist is useful in helping them to determine the criteria they need to plan for and to meet for safely storing and migrating digital materials.
- —For producers of digital materials: It also serves producers of digital materials by helping them know what to expect from the repositories they work with and how to streamline interactions with the repositories.
- —For those considering outsourcing their digital materials storage: The checklist will help organizations considering an external agency to serve their digital preservation needs to ensure that contracted organizations are executing the task adequately.

Trustworthy Repositories Audit & Certification: Criteria and Checklist (TRAC)

- The repository commits to continuing maintenance of digital objects for identified community/communities.
- Demonstrates organizational fitness (including financial, staffing structure, and processes) to fulfill its commitment.
- Acquires and maintains requisite contractual and legal rights and fulfills responsibilities.
- Has an effective and efficient policy framework.
- Acquires and ingests digital objects based upon stated criteria that correspond to its commitments and capabilities.
- Maintains/ensures the integrity, authenticity and usability of digital objects it holds over time.
- Creates and maintains requisite metadata about actions taken on digital objects during preservation as well as about the relevant production, access support, and usage process contexts before preservation.
- Fulfills requisite dissemination requirements.
- Has a strategic program for preservation planning and action.
- Has technical infrastructure adequate to continuing maintenance and security of its digital objects.

Management:

Preservation Repositories: OAIS & agreements



OAIS-steps in the process

- Agreement
- Ingest
- Store and manage/maintain
  - Refresh
  - Emulate/Migrate/others
- Disseminate

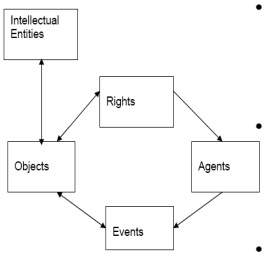
Metadata

- Containers/Packaging for SIP (METS)
- AIP
- Preservation (PREMIS)

AIP Metadata

- Preservation Description Info
  - reference info
  - context info
  - provenance info
  - fixity info
- Packaging Info
- Descriptive Info
- Content Info

PREMIS Data Model



- **Item Pres. Metadata**
  - **About the creation of the Item**
  - **Technical details about the item**
- **Relationship Pres. Metadata**
  - **Persistent Identifier**
  - **Objects relation to parts of the intellectual entity**
- **Migration Metadata**
  - **Items relation to its previous manifestation.**

OCLC/RLG Efforts

PREMIS Data Dictionary Example

Semantic unit	fixity		
Semantic components	messageDigestAlgorithm, messageDigest, messageDigestOriginator		
Definition	Information used to verify whether an object has been altered in an undocumented or unauthorized way.		
Data constraint	Container		
Object category	Representation	File	Bitstream
Applicability	Not applicable (see usage note)	Applicable	Applicable (see usage note)
Repeatability		Repeatable	Repeatable
Obligation		Optional	Optional
Creation/ Maintenance notes	Automatically calculated and recorded by repository.		
Usage notes	To perform a fixity check, a message digest calculated at some earlier time is compared with a message digest calculated at a later time. If the digests are the same, the object was not altered in the interim. Recommended practice is to use two or more message digests calculated by different algorithms. The act of performing a fixity check and the date it occurred would be recorded as an Event. The result of the check would be recorded as the eventOutcome. Therefore, only the messageDigestAlgorithm and messageDigest need to be recorded as objectCharacteristics for future comparison.		

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

Structural & Administrative Metadata (METS)

- For complex, multi-part works (collections of images, groups of maps, albums of photographs, etc.)
- Structural--preserving relationships (books/chapters/sections /pages, photo albums on a page, master images with thumbnails and different sizes, etc.)
- Administrative--keeping information about managing the works over time (keeping track of all of the pieces in a group, what software is needed to decompress/view an image, etc.)
- Metadata Encoding & Transmission Standards (METS)--wrap the image(s) in XML encoding

Website Management

More issues with referencing IDs

- References for mirror sites
- References for back-up sites when main site is down or bottle-necked
- References for off-site copies and archival copies

Migration is a form of Re-formatting.
Re-formatting is not a new idea.

What is Reformatting?

- 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

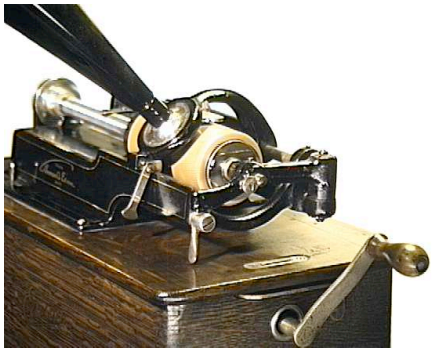
Why do we Reformat?-

Brittle Newspapers (Australia Battye Library)

Film Decay (LC Dayton)

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
- A/V community has been forced into reformatting for a long time because of obsolescence issues-



Edison

Metal sound recording Disks

Casa Rui Barbosa

Paper print (LC Dayton)

Record Turntables

Slide Projector

Old Video Formats (www.vidipax.com)

1956 2" Quad
1962 2" Helical Ampex VR-1500
1962 2" Sony Helical SV-201
1962 Macthronics MVC-10
1963 1" Pi-3V
1964 1" EV-200
1965 1" EL3400
1965 1" SMPTE Type A
1965 1/2" - CV
1965 VTR150
1967 1" IVC-700/800/900
1967 VTR600
1969 1/2" EIAJ Type I
1969 1/4" Akai
1970 1/2" VCR
1971 3/4" U-Matic
1971 EIAJ Cartridge
1972 Cartivision
1972 V-Cord, V-Cord II
1973 2" Helical IVC-9000
1975 1" SMPTE Type B
1975 Betamax/Super/HB
1976 1" Helical BVH-1000
1976 VHS
1976 VX
1978 1" SMPTE Type C
1979 1/2" V2000
1981 1/2" Hawkeye/Recam/M
1982 Betacam
1984 8mm
1984 CVC
1984 HDV1000
1985 M-II
1986 3/4" U-Matic SP
1986 Betacam SP
1986 D1
1987 S-VHS
1988 D2
1988 ED-Beta
1988 HDD1000
1989 Hi8
1990 D3
1990 UniHi
1992 DCT
1993 Digital Betacam
1994 D5
1994 D6
1995 DV
1995 DVCAM
1995 DVCPRO/D7
1995 W-VHS
1996 BETACAM SX
1996 HD D5
1997 HDCAM
1998 DVCPRO 50
1998 DVCPRO 50/P
1999 Digital-8
2000 D9 HD
2000 DVC PRO HD
2000 MPEG IMX

vidipax

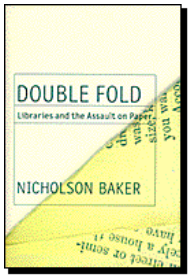
List of old Audio Formats

Format	Description	Years in Use
Wax Cylinder Records	2- or 4-minute formats, wax or wax compound	1888– 1929
Recordable Disc Records (Direct or Acetate Discs)	7", 12", or 16", recorded at 33 or 78 revolutions per minute (rpm). Generally vinyl on a paper, glass or metal base	1929– 1960s
Recording Wire	Spooled wire, usually in 15- to 30- minute lengths, one direction only	c. 1945– 1955
Open reel recording tape	1/4"– 2", 3"– 10 1/2" reels, 1 7/8– 30 inches per second (IPS) speeds	c. 1945– Present
Compact Cassette	1/8" tape in hard case, 1 7/8 IPS format	1965– Present
Microcassette/Minicassette	Very small 2-4 cm cassette tapes	1977– Present
Digital disk, MP3, and other digital recorders	Audio recorded directly in digital files to optical disks or internal hard drives	2000– Present

Limitations of Reformatting

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

Critiques of Reformatting



<u>Mainly User Behaviors</u>

- 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 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)

-Film Preservation 1993: A Study of the Current State of American Film Preservation, Vol 1: Report, June 1993, Report of the Librarian of Congress (http://www.loc.gov/film/study.html)

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…

Reformatting needs to be part of a 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-

Storing on CDs becomes a big problem over time

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

Preventative Conservation-

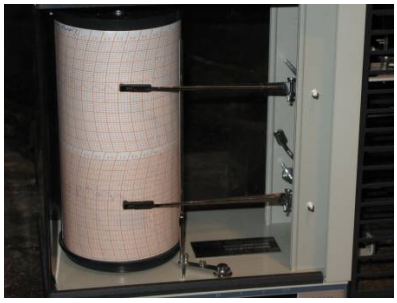
- Facilities and infrastructure
- Monitoring micro and macro environments
- Collection Assessment tools
- Treatments (chemistry, physics, reformatting)
- Disaster recovery

Hampton Collection (atmosphere cntrl)

Academy-Atmosphere

Besser-LIU Preservation, 11.17, 2010

Thermohygrograph



IPI Storage Guide

IPI Media Storage Reference Guide

IPI Preservation Index

temperature/humidity, Years until noticeable deterioration

% RH			Tempera ture C°				
	2°	7°	13°	18°	24°	29°	35°
20	1250	600	250	125	60	30	16
30	900	400	200	90	45	25	12
40	700	300	150 150	70	35	18	10
50	500	250	100	50	25	14	7
60	350	175	80	40	20	11	6
70	250	125	60	30	16	9	5
80	200	100	50	25	13	7	4

66

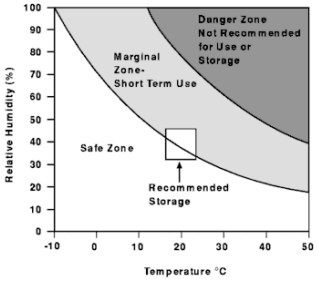
Temperature & Humidity for Tape Storage

- Variance of less than 2ºC and 5% RH per 24 hours
- Ideally 8ºC and 25% RH
- Other options
  - 20°C (68°F) and 20-30% RH
  - 15°C (59°F) and 20-40% RH
  - 10°C (50°F) and 20-50% RH
- Never store below 8ºC

amianet.org 2003, & ISO 18923

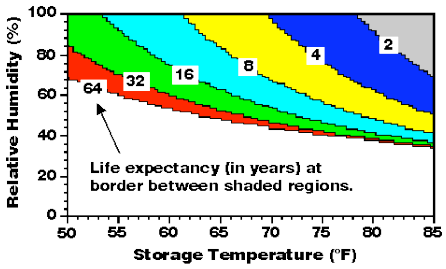
Ideal Temperature/Humidity

Van Bogart http://www.clir.org/pubs/reports/pub54



Life Expentency at various Temperature/Humidity

Van Bogart http://www.clir.org/pubs/reports/pub54



Improving storage outside the Can

Jean-Louis Bigourdan, AMIA 1998

- lowering temperature and/or relative humidity can help reduce the rate of acidification in degrading film
- trying to remove acid within the can does not outweigh the benefits of low temperature and humidity
- the greatest improvements in chemical stability can be achieved with cold temperatures

Monitoring Micro & Macro Environments

Improving storage inside the Can

Jean-Louis Bigourdan, AMIA 1998

- zeolites, silica gel, and low relative humidity preconditioning help mostly by reducing moisture content
- acid adsorbents retard further decay
- acid adsorbents do not reduce the acid content of degraded film
- the use of cardboard disks is not recommended

IPI A-D Strips

Acid Detection Strips at NYU Library (Internship)

NYU University Archives Internship **Collection Assessment**

Acid Detection results/autocatalytic point readings

University Archives Collections	Total # of items	0 – 1.0	% of 0 – 1.0	1.5 – 3.0	% of 1.5 – 3.0
University Archives (in total)	400	325	81%	75	19%
Audio Visual	107	82	77%	25	23%
Brademas Papers	75	75	100%	0	0%
Classics Dept. Tapes	101	100	99%	1	1%
Dept. of Athletics	14	4	29%	10	71%
External Affairs	2	2	100%	0	0%
Abby Weed Grey	37	37	100%	0	0%
Alice V. Keliher	10	10	100%	0	0%
Miscellaneous Films	45	6	13%	39	87%
Annette Weiner	9	9	100%	0	0%

Collection Assessment Tools

- New York University Visual and Playback Inspection Ratings System (ViPIRS): Tool for Evaluating Audiovisual Magnetic Media

  http://library.nyu.edu/preservation/movingimage/vipirshome.html
- Columbia University Libraries: Audio/Moving Image Survey Database

  https://www1.columbia.edu/sec/cu/libraries/bts/preservation/projects.html

Collection Assessment class projects

- Laurie Anderson
- Sonic Youth Video
- The Kitchen
- John F Kennedy (Gartenberg Media)
- Hemispheric Institute
- Cabinet Magazine Digital Content Archive
- AMNH Video Collection
- Robert Haller Collection (Anthology)
- New Museum of Contemporary Art
- Filmmakers Coop
- 16mm Films at Brooklyn Public Library
- John Watts Papers (Fales Library)
- Flaherty Film Seminar
- Richard Foreman Papers (Fales Library)
- Hadassah Collection
- Eyebeam
- Frank Kuenstler Films (Anthology)
- Art21 Archive
- World Music Institute Audio/Video Archive
- Teo Masero Collection (NYPL-Rodgers/Hammerstein)
- Third World Newsreel

Setting Collection Priorities

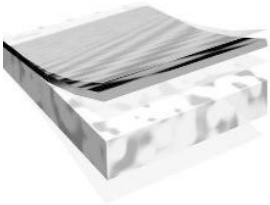
- You collection will always need more time than you can give
- Triage--setting priorities

Physical Properties of the medium-

- chemistry, physics, electromagnetism, …

Film Layers

ScreenSound Film Preservation Handbook



- Topcoat
- Emulsion (content)
- Subbing Layer (adhere)
- Base (cellulose triacetate, cellulose diacetate, cellulose nitrate, or polyester)
- Backing Layer

Surface Physical Damage

- Perforation
- Scratches
- Water droplet damage to emulsion

- ScreenSound Film Preservation Handbook

Mold Damage

ScreenSound Film Preservation Handbook

- Usually in gelatin part of emulsion layer
- Interesting patterns

Shrinkage

ScreenSound Film Preservation Handbook

Vinegar Syndrome Deterioration

Image Permanance Institute

Signs of Vinegar Syndrome

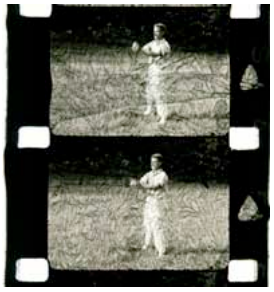
- sour smell
- Shrinkage
- buckling of the emulsion
- the appearance of crystals that obscure the image

Film--Acetate Decomposition

cupping--Home Film Preservation Guide--filmforever.org

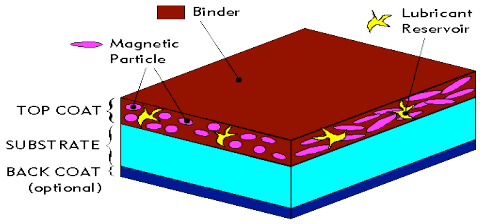
Film--Acetate Decomposition

emulsion cracks--Home Film Preservation Guide--filmforever.org



Structure of Tape

Van Bogart http://www.clir.org/pubs/reports/pub54



- Binder--Functions as a carrier for the recording material & Bonds it to the substrate
- Substrate--Base material on which the recording material is coated (eg. an aluminum platter or a thin ribbon of polyester film)

Tape Substrate

- Early tape used cellulose acetate
  - Moisture/hydrolysis
  - Vinegar syndrome
- More recent tapes are polyester terephthalate (PET) or polyethylene napthalate (PEN)
  - Chemically stable
  - Resist hydrolysis and oxidation

Magnetic Particles

- **Store recorded information**
- **Change in magnetic properties can result in loss**
  - **Magnetic remanence - ability to retain a magnetic field**
  - **Coercivity - ability to resist demagnetization**
  - **Magnetic deterioration of the metal particulate and chromium dioxide materials**

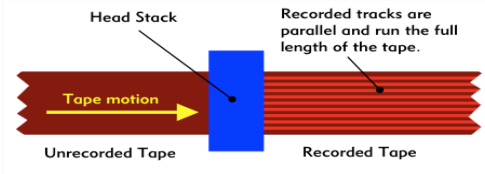
Binder Layer

- Holds the magnetic particles to the base
- Where the problems are likely to occur
  - binder-base adhesion
  - oxide shedding
  - dropoff
  - hydrolysis
    - sticky shed
    - magnetic head clog
- Tape baking as one solution

Video Cleaning Machine

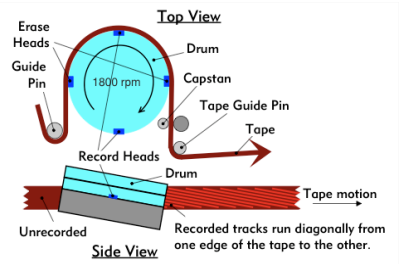
Longitudinal Recording

Van Bogart http://www.clir.org/pubs/reports/pub54



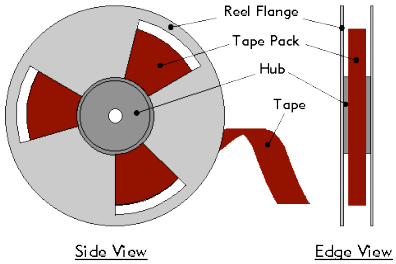
Helical Scan Recording

Van Bogart http://www.clir.org/pubs/reports/pub54

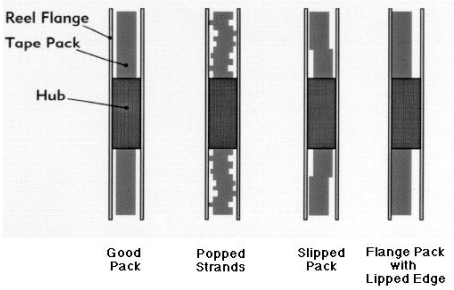


Tape Pack Problems

Van Bogart http://www.clir.org/pubs/reports/pub54

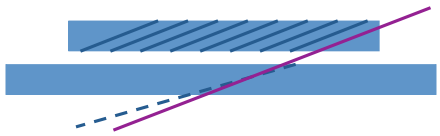


Tape Pack Problems



Packing problems can lead to playback problems

- Tracks for helical scan can be skewed



Storing Tapes

- Tapes should be stored fully wound in one direction or the other
- Store tapes upright (like a book)
- Do not store near potential magnetic fields
- Storage cases should be opaque and kept away from source of light and humidity
- Do not store tapes in plastic bags
- Exercise the tape every few years

Temperature & Humidity for Tape Storage

- Variance of less than 2ºC and 5% RH per 24 hours
- Ideally 8ºC and 25% RH
- Other options
  - 20°C (68°F) and 20-30% RH
  - 15°C (59°F) and 20-40% RH
  - 10°C (50°F) and 20-50% RH
- Never store below 8ºC

amianet.org 2003, & ISO 18923

NDIIPP's Preserving Digital Public Television project

Pushing Metadata Gathering Upstream: The Problem

TRADITIONALLY…

- Very little metadata required for preservation accompanies an object to a repository.
- Archives, libraries and other repositories must create (or re-create) most of the necessary metadata.
- This requires many manual hours, and significant resources - both time and money.

IN THE DIGITAL WORLD…

- This doesn't scale up. Repositories will be unable to continue in this manner, as more metadata than ever is required.

But much of the necessary metadata has already been gathered during production

- For each element/clip, production team usually notes source, date, place, people, and other descriptive info
- But this is treated as internal information, and often various parts of the info are distributed among the personal notebooks of different production assistants
- There is seldom a central location for this info, and the info is seldom turned over to the archive (which later tries to recreate much of it)

Similar issues w/other content types--E-Journals

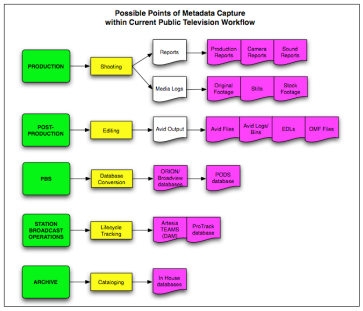
- "The necessary or additional metadata cannot be effectively and satisfactorily produced either as an afterthought post-production process on the publisher's side or as a pre-ingest conversion activity at the archive's end. Approaching e-archiving in this fashion leads to distribution delays and a more complex production and distribution scenario, with all the accompanying potential to introduce production delays and errors."

- Yale University, YEA: The Yale University Archive, One Year of Progress, 2002

We need to find ways to push metadata access upstream

- Digital requires even more metadata than Analog
  - As the workflow becomes file-based, the need for robust and accurate metadata will become critical. File relationships, video codecs, bit rates, and rights information must be explicit, accurate, and immediately accessible. This will require a much deeper level of metadata than is currently captured in tape-based archives.
- We can't continue to supply this metadata at ingest; that won't scale
  - Obtaining the necessary metadata at the end of production and broadcast life cycle is not feasible. Metadata will need to be systematically gathered during the production lifecycle and submitted with the programs to the preservation repository.

Examined Potential Points of Metadata Capture



Examined Potential Points for Metadata Capture

- Much of the necessary metadata for preservation is already generated by the production unit, but discarded after their internal use. This needs to be captured throughout the workflow.

- "Those in the production unit are the creators and have first hand knowledge of who, what, where, when, and why the content was created." -- Mary Ide and Leah Weisse, WGBH Archivists.

Proposed Solutions…?

- Preservation becoming a shared responsibility between content creators, distributors, curators, and preservationists.

- Partnerships are needed to come to unified solutions.

- Preservationists seek reliable metadata back upstream in the production workflow...

Libraries/Museums/Archives-

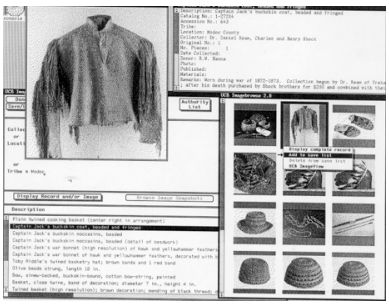
- Original objects
- Interpretation
- Metadata
- Reformatting

The VirtualMuseum: The Next Generation (2004)

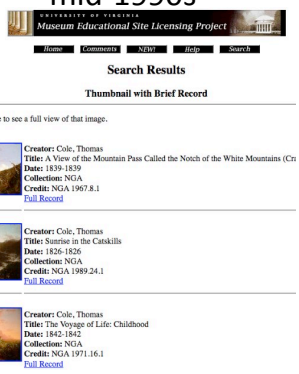
Museums have traditionally been much more elite than libraries

- Highly selective
- Highly interpreted (often favoring a single interpretation)
- Driven by curators
- Not particularly concerned by access issues

mid-1980s



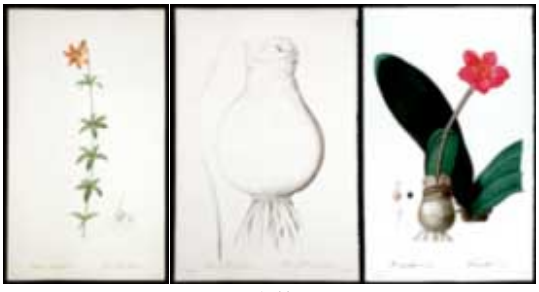
mid-1990s



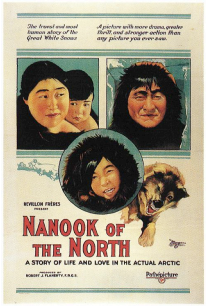
The Prints and Photographs Reading Room, Miriam & Ira D. Wallach Division of Art, Prints and Photographs, Center for the Humanities, Special Collections at the New York Public Library

Botanical Prints at Met Museum

Lilium Penduliflorum (Canadian Lily, Wild Yellow), Amaryllis Josephinoe (Josephine's March Lily), Hoemanthus Coccineus (April Fool),



Robert Flaherty, 1922



Violating Copyright

Paradigms Shifts needed

	Old	New
Physical preservation	atmospheric cntrl	ongoing mgmt
What to save?	artifact	idea + ancillary material & documentation
Cataloging	Individual work in hand	FRBR
Later access	Artifact & documentation	Restaging, ancillary material & documentation

Digital Media at the University

Howard Besser, NYU Moving Image Archiving & Preservation Program

- http://www.crl.edu/archiving-preservation/digital-archives/metrics-assessing-and-certifying-0
- http://www.nyu.edu/tisch/preservation
- www.ils.unc.edu/digccurr2007/papers/besserVanmalssen_paper_4-1.pdf
- http://dlib.nyu.edu/pdptv/
- http://www.iasa-web.org/tc04/
- http://www.nfsa.afc.gov.au/screensound/screenso.nsf/
- besser.tsoa.nyu.edu/howard/Papers/vm_tng.doc
- http://besser.tsoa.nyu.edu/howard/Talks/