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SI 678 Preserving Sound and Motion

Class 6 – Motion: Processes and Digital Cinema
Themes

- Film preservation
- Media Transfer
- Artifact and product

“Colorization modifies and shifts what is presumed to be the permanent arrangement of the film as historical artifact in cultural history: it tampers with the inventory.”

Film-based Artifacts

<table>
<thead>
<tr>
<th>Time</th>
<th>Source</th>
<th>Prod. Intermediate</th>
<th>&quot;Original&quot;</th>
<th>As Is</th>
<th>As Was</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>Film</td>
<td>Film</td>
<td>Film</td>
<td>Film</td>
<td>Film</td>
</tr>
<tr>
<td>1990</td>
<td>Film</td>
<td>Mix</td>
<td>Film</td>
<td>Mix</td>
<td>Film</td>
</tr>
<tr>
<td>2010</td>
<td>Mix</td>
<td>Digital</td>
<td>Mix</td>
<td>Digital</td>
<td>Mix</td>
</tr>
<tr>
<td>2020</td>
<td>Digital</td>
<td>Digital</td>
<td>Digital</td>
<td>Digital</td>
<td>FILM</td>
</tr>
</tbody>
</table>

Source Undetermined
“Digitization Chain: An Integrated Process.”
European Film Heritage on the Threshold of the Digital Era.
Digital Data Storage

**EXAMPLE OF DIGITAL STORAGE:** a lot of data……a lot of tapes

*Capacity for 10,000hrs of digitised film*

<table>
<thead>
<tr>
<th>Output format</th>
<th>HDTV</th>
<th>2K</th>
<th>4K</th>
<th>Nb Tapes at 4K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Capacity</td>
<td>3.74 PB</td>
<td>10 PB</td>
<td>41.3 PB</td>
<td>82,600</td>
</tr>
<tr>
<td>LLC 2.6</td>
<td>1.4 PB</td>
<td>3.85 PB</td>
<td>15.9 PB</td>
<td>31,800</td>
</tr>
<tr>
<td>Lossy Compression of 5</td>
<td>0.75 PB</td>
<td>2 TB</td>
<td>8.26 PB</td>
<td>16,520</td>
</tr>
</tbody>
</table>

1 PB = 1,000 TB = 1,000,000 GB    1 Tape = 0.5 TB

Maximum Throughput 30 Mbytes/sec

Time to UP/Download 0.5 TB: 278 minutes = 4hr 38 minutes

Source Undetermined
Film preservation process

- Proper storage as foundation
- Duplication of film stock
  - Pre-inspection
  - Detailed preparation
  - Printing
  - Inspection and QC
- Restoration
  - Color correction (intent)
  - Assembly from multiple sources

Color and culture

- Reproduction of Caucasian skin color as dominant force in color film technology
- Color films are cultural creations
- Laboratory control
- Production and film processes controlled for “white”

Color and culture
Film preservation
Colorization
Artifact and product

• Winston, The Case of Colour Film, 1996.
Color restoration

- Documentation on film production and manufacture is an important part of the film’s context.
- Modern science in the service of authenticity
- Tension between authenticity and modern
Artifacts and archives

- Is authenticity relative?

“There is a lot at stake in the establishment of stable reference points – the reproduction of the authentic.”

“In the end, the question of colorization is emblematic of the impossibility of stable histories.”

Popular culture’s “resistance to the kind of cultural stability signified by museums, archives, catalogs, artists and originals.”

Acland, “Tampering with the Inventory,” 1990.
Themes

- What is digital cinema?
- Digital intermediates
- Managing a film restoration project

“For media of the Internet age, the only alternative to storing fragments that point to a foregone experience is to accept the necessity of remaking that experience even if the work changes in the process.”

(Jon Ippolito, 2007)
Digital intermediates

- Quality of digital conversion tools
- Data transfer versus digitization
- Sampling
  - Resolution
  - Color spaces and gamma correction
  - Dynamic range issues
  - Data tradeoffs
- Film to video and digital
  - Keys, time, bar coding

• James, Digital Intermediates (2006).
What is digital cinema?

- Capture, production, mastering
  - Distribution, projection, re-use
- Lucas, Star Wars II (2001)
- Advantages
  - Copying, some simplicity, control, delivery
- Disadvantages
  - Immaturity, cost, some complexity, impermanent (formats, media)

McKernan, Digital Cinema (2005)
DLP Cinema Projection

http://www.dlp.com/default.aspx
Hard lessons learned so far

Digital cinema
Intermediates
Project management

Early lessons learned on preservation
- No technological quick fix (video)
- Don’t compromise quality (nitrate)
- Preservation isn’t one shot
- Look to multiple re-uses

Usai: “There is something depressingly safe, condom-like, in the digital image, and as much as I respect it and realise its creative potential, I cannot really feel anything when I experience it.” [Film Is Dangerous, p. 137]

Why is this important?

- Bleeding edge with deep pockets
- Consumer market drives affordable technology
- Partnership between government (R&D) and business
  - IS&T (www.imaging.org)
- Potential to adapts technologies for quality and cost effectiveness

Digital cinema
Intermediates
Project management

• Hollywood Vaults
Thank you!

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