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Best practices report for Deep Dish Television:  
*Shocking and Awful: A Grassroots Response to War and Occupation*

prepared by

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## Introduction

From February through April 2007, graduate students in NYU's program in Moving Image Archiving and Preservation – including Joshua Ranger, Sarah Resnick, Loni Shibuyama, and Lauren Sorensen – performed a collection assessment for Deep Dish Television. The students were given one La Cie hard disk drive and one My Book Hard disk drive, each containing production files from the series *Shocking and Awful: A Grassroots Response to War and Occupation*. File formats included Microsoft Word Document (.doc), Final Cut Pro Movie, Final Cut Pro Project, MPEG 2, AIFF, JPEG, Photoshop Files, and Quicktime. The students were asked to consider production workflow, storage media, file formats, as well as file organization, and propose strategies for the long-term preservation and management of the satellite network's digital assets. What follows is a summary of their observations and recommendations.

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## Observations

- 1) Reel names in Final Cut Pro (FCP) do not correspond to DV tape names.

Without corresponding names, the future recreation of projects from source material using batch capture will be impossible.

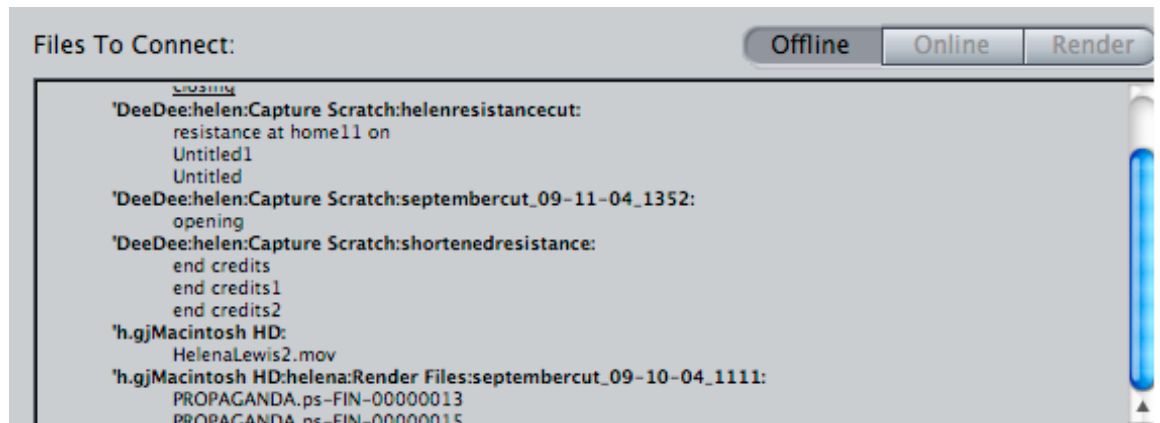
- 2) The files lack standard naming conventions

Files lacking meaningful, consistent, predictable names are more likely to be confused with similar files, increasing the difficulty in storage and retrieval of the media. For example, names like *bill.doc* or *info2.psd* are no longer meaningful outside the context of their initial creation, and become useless for discovery and identification.

- 3) File organization obscured distinctions between episodes, promos and other outputs

- 4) The media files for Final Cut Pro projects were offline

FCP files could not be viewed as the media files had become disconnected from the project files. Recreating projects required manually locating and reconnecting appropriate hundreds of media files. The media files were rendered offline during a standard drag-and-drop transfer onto the La Cie and My Book hard disk drives. Unless FCP Media Manager is used to copy projects from one location to the next, new file connection pathways will not be created during transfer. See image below for an example of broken file pathways.



5. During the transfer process, scratch disk files were observed being trashed

Scratch is not trash!

## Best Practices Outline for Deep Dish Television

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### Tape management

- 1) Stripe every raw DV tape. In other words, for each new tape, record, without stopping, a black signal or color bars from the beginning of the tape to the end. (You might also ask your videographers to do the same with their own raw tapes). This will create a continuous timecode, which will reduce the number of potential complications.

With a continuous timecode, you can:

- automate capturing
- reduce potential complications with rendering
- easily go back to the original tapes, via EDLs, if the scratch disks are lost

Without a continuous timecode:

- you have to capture manually
- you will have to start over again if you lose files
- Edit Decision Lists will not be accurate

- 2) Label all the incoming camera originals as “camera originals.”
- 3) Dub all DV camera originals to striped DV tape, leaving 15-30 seconds at “head” and “tail.” Leaving a head and tail will also reduce potential complications in the capture process. These striped tapes (the dubs) will be kept for the Deep Dish archive. The

camera originals may be returned to the videographers (if that is the policy—otherwise keep the camera originals).

- 4) Click over to the “Save” tab on all tapes.
- 5) Label all the dubbed tapes with the following information:
  - Unique identifier (which will be the exact same identifier you use when naming the “reel” in the capture process)
  - Number, if part of a series (eg. 1 of 3 tapes)
  - Project name (series name, episode name and number, etc.)
  - Deep Dish
  - Videographer’s Name
  - Content description (date and place of recording; visual/event description, etc.)
  - Date of dub/transfer
  - “Dub from Camera Original”
  - [camera on which it was recorded]
  - [if there’s a separate but related audio, etc.]
- 6) Capture from the striped dub tapes. (MAKE SURE TAPE AND CONTAINER LABELS CORRESPOND WITH THE “REEL” NAME IN THE FILE WHEN CAPTURING).
- 7) Once captured, rewind completely.

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## Hard disk drives + file storage

Long-term storage of digital files is a topic that has many varied points of view; the following are outlined in hopes that it will represent these perspectives. However, in a production environment where the master output is tape, the central need is data stability for the short term. However, the organization should decide if hard drive files are of archival value for the organization. Hopefully these options crossover between reliable production data stability, and, should the organization make it a component of their mission, the long term storage and significant file management and upkeep that goes along with determining these files as of long term value. The organization should consider:

- *Future archival value for researchers.* Is there a particularly important property in the digital files that represents the working process of the organization or the meaning of the work in question?
- *Identification over time.* Will the program’s EDL and other documentation be of any use value for any future reconstruction of the work or works?

- *Use value for the organization.* Are the files going to be referred to, or used by the organization in the future? Could fragile tapes be put in jeopardy if they are to be transferred again?

Time code will be maintained from DV tape to file, in the process of striping that was described earlier. It is then critical, if the digital files cannot be maintained over time, that time code be maintained from the original dub following striping, to that final edit master.

Best practices for file transfer do not currently exist in the archival world. The organization should again consider its resources and the expenditure that would be required for upkeep and storage of high-resolution files; and if high-resolution and quality is important for the aesthetic of an individual work. There are a controlled set of transfer settings that the producer may choose in Final Cut Pro; the details of this transfer should be recorded for future storage information and provenance, again if the materials are deemed worthy of long term storage. Consistent practice across projects is useful for allocating resources for storage, but may not be possible if the aesthetic of a work requires higher or lower resolution transfer.

- I. *RAID array.* RAID stands for Redundant Array of Independent (or Inexpensive) Disks (or Drives), depending on the context. It is a type of data storage schema that uses multiple drives for redundancy purposes, and in case of drive failure, another drive will have the same data stored, replicating the failed drive.
  - a. Most sensible in context of organization's production mission.
  - b. With many producers of segments, especially in this particular piece, it is useful to have a central point where files can be accessed, and where drive failure is not an end-all, be-all. And would not require another possibly damaging pass in tape transfer.
  - c. Establish in-house standards for file formats, interfaces, and output.
    - i. File formats. Final Cut accepts Quicktime files; however, for future use purposes, it is advisable to have a source file that is in a non-proprietary format; Motion JPEG 2000 is one of the best options in this regard. The long term viability of file formats is a big issue.
    - ii. Organization may choose to store "edit master" and digital source materials in RAID.
    - iii. Use high confidence level file formats
      1. "Recommended Data Formats for Preservation Purposes in the Florida Digital Archive." - Steve Chapman's document; including documentation and elements.
        - a. Text
        - b. Raster image
        - c. Vector graphics
        - d. Audio
        - e. Video

- f. Database
- g. VR, Virtual Reality
- h. Computer programs

- II. *Long term storage of digital files or digital tape.*
  - a. *Digital Betacam* can be used as a final output format for an edit master, two tapes produced, one stored on-site for duplication purposes, one off-site for redundancy, and a MiniDV or DVCAM for access purposes on-site.
    - i. Advantages
      - 1. Less upkeep
      - 2. Relatively low compression
      - 3. Low risk of obsolescence
    - ii. Risks
      - 1. Magnetic tape
      - 2. Compression
      - 3. No on-site Digital Betacam playback equipment
      - 4. Cannot store digital working files on Digital Betacam
  - b. *LTO storage* should be used if digital files are deemed necessary to save and worth the organization's upkeep and maintenance for the long term. Since there are currently no file format standards, the risk for obsolescence is great. However, if working files are deemed necessary to the organization's archival mission, LTO (Linear Tape Open) should be used as a final output of these files and "edit master" following completion of a project. Media Manager should be used to transfer files from Final Cut Pro, to properly link files. Proprietary software is necessary to access files in LTO drives; it should be investigated whether or not these are compatible with Media Manager.
    - i. Advantages
      - 1. Backward compatibility
      - 2. Non-proprietary drives and media
      - 3. Magnetic tape versus spinning disks (HDDs)
    - ii. Risks
      - 1. Magnetic tape
      - 2. Software required to access materials is proprietary
      - 3. Need to purchase drive
      - 4. File management
      - 5. Upkeep
- III. Based on important metadata (below), file names should be assigned at the inception of the project, and standardized on a project-by-project basis, but basic standards set by the organization. This is so the files will be known as important for any production project.
  - a. Should be human readable
  - b. Brief, including only the most vital data
  - c. No spaces, only underscore marks.
  - d. No odd characters.

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## Documentation + Metadata

Even with proper digital asset management, the loss of files or their relational structure is an inherent risk in the medium. Maintaining reference documentation separate from the video and production files can be a useful means of preservation or restoration of the final project. There are several tools one can use within or separate from Final Cut Pro that can assist in such efforts.

### *Edit Decision List:*

The Edit Decision List (EDL) was created as a means of saving and restoring the timecode data related to edits so that a project can go between different editing systems and between online and offline editing. A side benefit to this is that an EDL can be used to save and restore project edits for preservation/restoration needs.

Every EDL begins with the title of the sequence and whether the sequence is drop frame or non-drop frame.

Each edit point recorded on an EDL is assigned an event number, the information on which is recorded on separate lines of the EDL. The other default fields included in each line are:

- Reel/Tape name
- Track type (video or audio)
- Transition type
- Source tape In and Out Timecode
- Edited clip In and Out Timecode

Notes pertaining to each edit point can also be stored in an EDL. These notes can be used to describe the clip or document effects that are not controlled by the EDL, such as settings for filters, audio levels, and transitions.

### *Tips for creating a “better” EDL include:*

- Maintain accurate timecode
- Create standard naming system for reel (tape) identification
- Keep the reel name short and simple to maintain flexibility
- Unique reel names for each tape and each timecode break
- Use the Note feature to keep track of elements not recorded by the EDL
- Create a print copy of the EDLs for reference purposes in case the digital file fails

### *XML:*

eXtensible Markup Language (XML) is a “markup language” like HTML. It

encapsulates (“tags”) the different elements of a document for purposes of display or organization. What makes XML powerful is:

- It is open standard
- It is human-readable
- It is viewable and editable in any text editing program
- It is non-software specific (it can be transferred to many different programs)
- It is extensible

Essentially, the XML file creatable from a Final Cut Pro project can track all elements of the project. The data can be exported for use in another program, or an XML file can be imported into Final Cut Pro to create an edited project or recreate one that may have been lost or corrupted.

There is an endless number of Document Type Definitions (DTD) for XML. The DTD is the set of rules and field names that define and control an XML file. Final Cut Pro contains a default DTD that can be used unless a high amount of customization is required for a project.

As with most organizational systems, standardization in field formatting, syntax, vocabulary, etc. is necessary for the file to function well.

A print copy of the XML file and of the DTD (both easily printed from a common text editor) should be maintained for reference/preservation purposes in case any digital files are lost or fail. The XML file and DTD can be retyped for continued use. Printing a copy of the DTD used for each project is important – even if it is the same one – in case any future changes are made to the DTD that would cause the XML file to fail, or in case the reference paths to the DTD change or disappear at some point.

#### *Tape List:*

A database or spreadsheet with basic metadata related to the source tapes should be created. This database would ideally trace the life of the source tapes – where it came from, how it was used, what programs/segments it was used for, and what happened to it when the project was completed. Tracking this basic information would, while keeping the database on a manageable level, allow for an improved “paper trail” regarding the video to assist in preserving/recreating a program either by helping to find the tapes, the captured video, or the people associated with the video who might be able to give further information. Additionally, a paper copy of the database should be printed in case a digital file is lost or fails in the future.

Suggested Metadata Fields:

1. Program/Project Name
2. Segment/Episode Name
3. Running Time
4. Producer Name



5. Videographer
6. Source Tape Number
7. Source Tape Title
8. Source Tape Format
9. Date Filmed
10. Date Captured
11. Capture Settings
12. Output Settings
13. Date of Last Edit
14. Tape Returned to Videographer?
15. Rights
16. Tape Location
17. Captured Video Location
18. Notes

*Checksums:*

Checksums are programs that compare transferred/copied files to their source to look for transmission errors, or that check the integrity of stored data. Corrupted data may suggest that migration or other actions are in order. Video and documentation files that are stored long term should have regular checksums applied and recorded to help preserve the reliability of those files.