ORGANIZED LOVE:

An Archival Workflow for MLF Productions

&

The Newport Folk Festival Archive

By

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PART I

Introduction:

      This thesis report documents the development of a relational database and digital asset management workflow for MLF Productions. Part I begins with background information to provide context for the collection and the archival issues that this project aims to address. Continuing, it describes the process of determining business needs and functional requirements, data modeling, and database creation. It concludes with recommendations for further implementation of sustainable policies and procedures for effectively managing the collections, which will be necessary for efficient and structured use of the database. The accompanying appendices include the data model and controlled vocabulary. Part II is a step-by-step instructional guidebook for using and managing the database, catered to MLF Productions staff.

CHAPTER 1: The Collection & The Project

1.1 BACKGROUND ON THE COLLECTION

MLF Productions is the production company of director and documentarian, Murray Lerner. An alumni of Harvard and Yale, and co-founder of Harvard's first film production society, Lerner has directed numerous feature films, shorts, commercials, and television specials, and taught university courses is film history. Many of his films have received awards in the United States and abroad, including "From Mao to Mozart: Isaac Stern in China" (1980), Academy Award winner for best documentary in 1980; and "Festival!" (1967), which won the San Giorgio Award at the 1967 Venice Film Festival and was also nominated for an Academy Award. Focusing heavily on the music scene during the late 1960s', he produced several other music documentaries, including "The Who: Live at the Isle of Wight Festival 1970" (1996), "The Other Side of The Mirror: Bob Dylan at the Newport Folk Festival" (2007), and "Message to Love: The Isle of Wight Festival" (1995/1997), to name a few. He was also a pioneer of 3-D technology, with his film "Sea Dream" (1978) being the first 3-D picture at the Cannes Film Festival, shown in stereoscopic Space-Vision. After more than 60 years of production, the MLF collection is expansive and continues to be used in contemporary productions and research projects.

MLF currently houses virtually all of the production elements for every film and video project that Lerner has produced. The materials include a wide range of film, magnetic, and digital media formats from every phase of production, from pre-production documentation, still photos, camera logs, and other paper ephemera to original camera

and sound elements and exhibition copies in multiple languages. Many of the materials

are related to Lerner's early documentary work capturing footage from the Newport Folk

Festival and the Isle of Wight Festival. MLF's Newport Folk Festival Collection is

comprised of more than 80 hours of footage, shot exclusively by Lerner and his camera

crew, documenting the festival between 1963 and 1966. This footage was used primarily

to produce *Festival!* (1967), but was also used for *The Other Side of the Mirror(…)*. The

collection features performances and interviews with legendary folk and blues artists,

including Joan Baez, Bob Dylan, Mississippi John Hurt, Johnny Cash; Peter, Paul, and

Mary and countless others. In addition to documenting some of the most infamous

performances in many of these artists' careers, Lerner also captured the experiences and

commentary of festival audiences in candid interviews; working class adults, local

spectators, and rebellious youths alike shared their ideas about music and artists and their

significance to the cultural, political, and musical movements of the era.

In 2012, what were believed to be all of the camera originals and audio masters in

the Newport Collection were digitized as the first phase of what has since been a long and

complicated preservation process. That project was begun with the goal of making the

footage available to students, researchers, and filmmakers, as well as a way for MLF to

continue to utilize the footage for future productions. The possibility of donating or

depositing the entirety of the Newport Collection to the Library of Congress was also an

impetus for preservation, but discussion and planning for this was halted due to

complications following digitization. Beyond these reasons for digital preservation, MLF

has not established a long-term plan for any of the collections.

To facilitate immediate access to this new digital version of the collection, MLF staff has been slowly matching every angle of every performance with the digitized audio and building a complex Final Cut Pro timeline that enables them to find specific footage of individual performances and interviews. While this arrangement has been sufficient for MLF's needs so far, Production Manager Eliot Kissilef, discovered several post-production elements (work prints, mag track) for which they could not identify a corresponding digital file, which lead him to believe that there may be more items not yet digitized because they could not (and perhaps *cannot*) be located. This issue of identification stems from conflicting and insufficient metadata about the physical and digital assets in the collection, as well as a larger issue - the lack of organizational and archival best practices in the MLF workflow.

1.2 EVOLTION OF THE PROJECT

This thesis project grew from a plan to develop a relational database to provide MLF with a method for cataloging production elements and determining if there is any more unpreserved footage. The complexity of the Newport Folk Festival Collection revealed how this project is also an opportunity to explore larger issues surrounding the incorporation of an archival workflow into a production environment, and prompted the decision to develop a database solution that will enhance intellectual control of MLF's *entire* collection by using the Newport Collection as a testing ground. In tandem with the creation of a database, a minor assessment of their collection management practices was needed in order to present a plan for carrying out archival practices necessary for the eventual implementation of the database. While physical condition and environmental

control were considered during the assessment process, it became clear that addressing

basic organizational issues was a higher priority, and that in order for the implementation

to go smoothly, a transition plan would be essential to guiding the process[1].
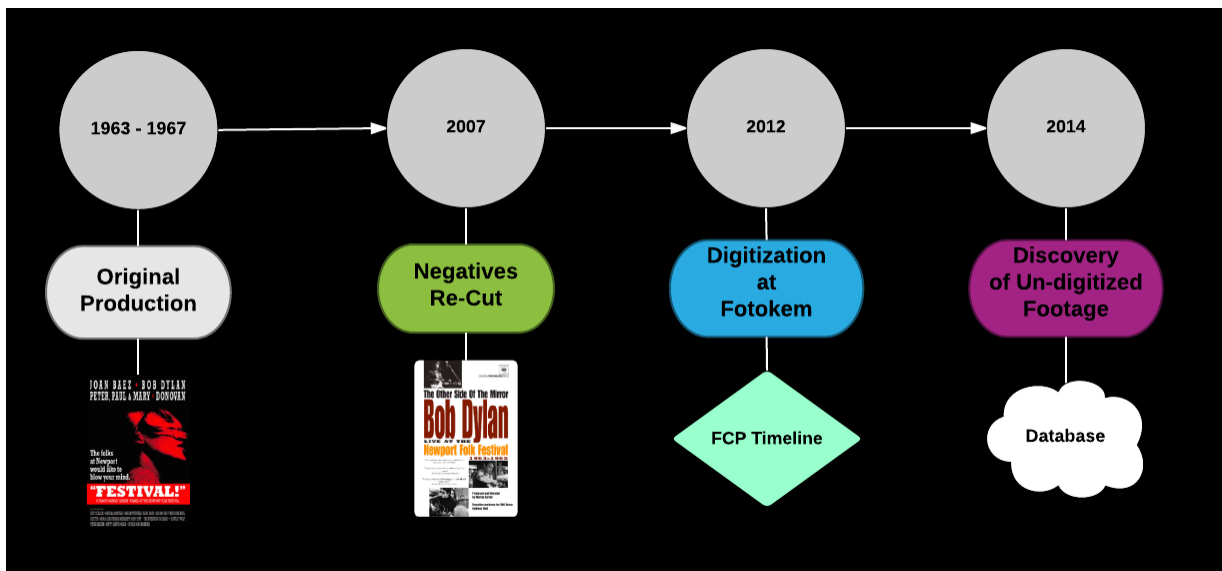
Figure 1: Newport Folk Festival Collection timeline of activity.

CHAPTER 2: The Database

2.1 DATABASE PLANNING:

2.1.1 Risk Assessment: The SPOT Model for Identifying and Describing Risks[2]

To begin development on the database, and outlining a transition plan for MLF, I

chose to conduct a risk assessment to identify and name the aspects of MLF's

workflow that were most in need of attention. To do this, I used the SPOT (Simple

Property-Oriented Threat) Model for risk assessment, which was developed to aid in

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[1] Figure 1 provides a simplified visualization for the digitization history of the Newport Folk Festival

[2] Vermaaten, Lavoie, Caplan. "Identifying Threats to Successful Digital Preservation: The SPOT Model for Risk Assessment". *D-Lib Magazine*. September/October 2012. Volume 18, Number 9/10. http://www.dlib.org/dlib/september12/vermaaten/09vermaaten.html

the identification of weaknesses in an organization's digital preservation workflows and strategies. The model defines several "properties of successful digital preservation" and describes scenarios that endanger or *threaten* those properties. While the business goals at MLF have been almost entirely focused on production and distribution of materials, the Newport digitization project has created a need for restructuring their approach to physical and digital asset management. Although the SPOT model was intended for application in *digital* preservation environments, I have expanded its use to accommodate MLF's physical collection as well.

The SPOT properties Availability, Identity, Persistence, Renderability, and Understandability, are those most relevant to this collection. For each property included in this assessment, the associated threat (or threats) recognized at MLF will be listed and described:

Availability:

- "A digital object is not selected for preservation, either intentionally or unintentionally, and subsequently disappears."

- "A digital object is unavailable for preservation activities, because it cannot be located, or because it is purposefully withheld from preservation activities (e.g., the owner refuses to grant preservation permissions to a repository)."

Considering that the digitization project was in part sparked by an interest in providing the Library of Congress with preservation quality masters of the Newport Folk Festival Collection footage, and that MLF does not consider itself to be an archival repository, it is reasonable to say that the collection overall has not yet been selected for

preservation, save for the Newport camera negatives. Efforts had been made to begin the

process of preservation on a larger scale, but employee turnover and lack of

documentation has thwarted these efforts so far.

Identity:

- "Sufficient metadata is not captured or maintained."

- "Linkages between metadata and the objects that the metadata describes are not

  captured or maintained."

While a great amount of metadata has been created about all items in the

collection over the course of decades, and especially since digitization, the failure to

provide, and require the use of, item-level metadata during the digitization process has

resulted in metadata that is inconsistent and insufficient. This problem stems from the

fact that there has never been an established protocol for creating and/or maintaining

organization of documentation for items in the collection. The lack of protocol has lead to

unlabeled rolls of film being transferred to unlabeled cans, and placed in boxes with

obscured annotations, digital folders being labeled in an arbitrary manner, and their files

being renamed to match barcodes that do not originate from MLF. Insufficient metadata

and metadata maintenance has lead to the second threat listed above in such that the

metadata created by previous MLF staff has been left in disarray, without a clear record

explaining the relationships between documents and the collection items they refer to.

For example, only during this project did the current Production Manager discover a file

titled "Newport Library Log", which contained important documentation about digital

backups, including the inventory of their LTO tape collection. Because the previous

employee left the project without creating any record of what he/she had done, the status

of MLF's backups has remained unknown.

Persistence:

- "Improper/negligent handling or storage."

- "Useful life of storage medium is exceeded (e.g. media obsolescence, mean time

  to failure exceeded)."

Environmental conditions and physical storage are an area of concern for MLF, as

they do not control the temperature or relative humidity of their offices, and the

condition of their physical containers for film and audio materials is less than

ideal. However, the risks to physical materials are dwarfed by the risks posed by

the lack of monitored digital storage. Storage capacity of their hard drives has

been brought to its limitations, and is supplemented by numerous individual

spinning disk drives, the life expectancy of which is not recorded or monitored.

Renderability:

- "It cannot be verified that a rendering of an object retains significant

  characteristics of the original (e.g. a repository is unable to perform sufficient

  quality assurance on migrations due to volume…)."

It is not known whether quality assurance was performed on any of the file

migrations that the digital collections have undergone, as no documentation of this

has been identified. MLF does not yet have a protocol or any specific tools for

checking the quality of their digital files.

Understandability:

- "Sufficient supplementary information for all groups of intended users is not obtained or archived."
- "The interests of one or more groups of intended users are not considered."
- "The entire representation network is not obtained or archived, with the consequence that supplementary information is itself not understandable in the future."

Because preservation is a relatively recent concern for MLF, there have not been any efforts to outline who the future stewards or users of the collection will be. Furthermore, the work of previous MLF staff did not sufficiently take into consideration the needs, experience, or interests of future staff, which has perpetuated a cycle of insufficient information. For example, a database exists that was created by a previous editor who worked on materials from the Isle of Wight Collection. Following an update to the platform software for this database which damaged its structure and design, is has been used in a limited form. Few staff members were trained in its operation, and no documentation about its operation was created. While it is understandable that, as a member of the production crew (and likely not an archivist), the priority at the time was to the production project at hand, it has left MLF with a system it is not prepared to maintain.

2.1.2 Business Requirements

From identification and assessment of the risks outlined above, it was clear that MLF

needed to focus heavily on matters of intellectual control and data integrity, with the

condition of physical items sharing a number of risks with the digital collections. This

further confirmed the importance of defining protocols to govern the creation and

implementation of a database. At this point, I developed a list of business requirements

that were developed with and approved by MLF in preparation for outlining the

functional requirements of a database solution:

1. Establish and document designated storage for all physical and digital objects in the collection.
2. Identify, locate, and browse all physical and digital objects.
3. Describe the content of collection materials.
4. Identify and maintain relationships between objects.
5. Establish protocols for describing, and organizing digital objects.
6. Develop administrative policies and user permissions and access to maintain the security of all digital assets.
7. Prevent data loss.
8. Understand (and ensure future understanding of) information about assets, production projects, and preservation or production actions.
9. Link physical objects to their various generations and digital instantiations.
10. Clearly identify physical objects that should but do not have digital instantiations.
11. Document and manage complex relationships between assets, objects, and shared content across multiple instantiations.
12. Develop and enforce standardized terminology for describing collection materials.

2.1.3 Functional Requirements

The following functional requirements describe the system functions desired in

MLF's database that will meet the needs outlined in their business requirements. The

functions have been separated into four identified contexts in which the database will

be used: Administration, Description, Access, and Display. Each function includes a

correlating business requirement.

Administration:

FR No.	BR No.	Requirement Description
1	6	Provide a mechanism for creating user accounts with different access and use permissions
2	n/a	Provide software support and instruction.
3	2	Generate unique, serialized, non-modifiable identification numbers for each new record.
4	7	Provide a feature for requiring / ensuring the inclusion of fixity and checksum data about objects described.
5	12	Allow creation and easy modification of controlled vocabulary terms.
6	8	Provide a feature for scheduling regular backup of records and the database.

Description:

FR No.	BR No.	Requirement Description
7	11	Provide a feature for repeated association of certain records.
8	11	Using identification numbers, provide a feature for selection and use of related records within individual fields.
9	3	Require the use of predetermined values for metadata fields.
10	3	Allow the required completion of certain fields.
11	3	Provide a feature for retaining descriptive metadata.
12	1, 2	Provide a feature for retaining location information.
13	3	Provide a feature for inserting images in records.
14	4, 9, 10	Use automatically generated serial IDs to link related records.

Access:

FR No.	BR No.	Requirement Description
15	2	Provide a feature for searching for records by content type or item type.
16	6	Require a password for accessing the database, unique to each user account.
17	5, 7	Prevent modification of specific fields.
18		According to metadata mapping, export data as XML records.

Display:

FR No.	BR No.	Requirement Description
19	10	Provide a feature for generating reports about collection holdings.
20	10	Allow for advanced sorting of records and search results.
21	5	Automatically trigger alerts dialog windows upon improper data entry, with instructions for correct input.
22	n/a	Allow for customization of colors, designs, and styles.
23	11	Using buttons controlled by internal scripts, allow for easy navigation between records within the user interface.
24	n/a	Provide options for viewing records individually or as a list.
25	11	Allow display of multiple records in a single window.
26	5	Hide or show specific fields according to calculations and specific data entry.

2.1.4 Use Cases:

To conceptualize how these business requirements will be put into action, two use cases were developed to describe workflows that will be most common once the system is in place. These workflows illustrate the desired step-by-step the process for cataloging and searching items in the collection:

2.1.4.1 - Use Case 1

Archive Cataloger: Identifying and cataloging related items.

A cataloger has physically inspected a reel of 16mm film that contains footage of an event. The event and the digital items in the collection have already been fully cataloged. The cataloger has been assigned a user account with appropriate permissions for their position and would like to create a new database record for this film reel and identify any related digital items that were created from the same preservation master item.

Workflow:
1) Cataloger logs into the database.
2) Cataloger selects the interface for creating and browsing items.
3) Cataloger selects the option to create a new record, selects item type: "physical".
4) Cataloger copies the unique identifier generated with the new record directly onto the physical item.
5) Metadata about the physical item is logged in the new database record.
6) Event and content metadata are added from drop-down menus.
7) Cataloger opens a new item-window, selects Find mode to search by content.
8) Cataloger inputs the exact asset and content metadata present in the physical object record that was just created, selects item type, "digital", performs search
9) Database returns results listing every digital item that contains that exact combination of asset and content information.
10) Cataloger locates the digital file that matches the item description and reviews the content using an access file to confirm the content is the same.
11) Cataloger locates the unique identifier of the preservation master item used to create the digital file on the digital item record.
12) Cataloger copies the preservation master item's unique identifier to the appropriate field on the physical item record.

Cataloging Approval / Confirmation Workflow:
    a.   To confirm that a relationship has been made between the asset and the physical and digital items:
        1) Cataloger navigates to the Event interface and searches for the desired Event.
        2) Database returns a list of results indicating every item (physical or digital) record that containing footage of the selected Event.

    b.   To confirm that a relationship has been created between the preservation source object, the work print, and the digital item:
        1) Cataloger navigates to the Item interface, selects Find mode in both, and inputs the preservation source ID into the proper field.
        2) Database returns the item record, including a list of every item (physical and digital) that is a related derivative of that preservation source item.

2.1.4.2 - Use Case 2

Production Manager: Browsing and finding assets for footage requests.

All physical and digital items from 1963 of the Newport Folk Festival Collection have been thoroughly catalogued and processed, and the Production Manager (PM) has been given a database user account with appropriate permissions. A client has contacted MLF requesting footage and audio of The Freedom Singers' performances. The PM would like to browse the collection to identify the best shots of those performances, and the location of their associated video clips with synced audio and time-code overlay (service files) – as well as their HQ production files which were transcoded from the preservation master files (transcodes). Once found, the Production Manager will be able to create and provide the client with a package of files for review.

Workflow:

1) PM logs into the database and navigates to the content interface.
2) PM selects the Find mode

3) PM selects "Freedom Singers, The" from a drop down menu listing the existing contributors in the database.
4) PM inputs "1963" into the field that contains the Event date, and selects "Newport Folk Festival Collection" from a drop down menu that lists the collection name associated with the desired content.
5) PM clicks "Perform Find" button.
6) Database returns a series of records for each appearance of The Freedom Singers in 1963 at the Newport Folk Festival, which in turn contains records for the associated shots and items associated with those appearances.
7) PM browses through a list of shots and audio takes to determine if there is sufficient coverage of each appearance and each performance.
8) PM navigates to the section of the record that displays the items containing footage of these appearances.
9) PM locates the digital item that is named and catalogued as being a compilation of footage with synced audio track and time-code overlay.
10) PM clicks a facet on the interface that opens a window for that digital item record, which also displays records for the appearances captured on that item.
11) PM identifies the item's location on MLF's digital production storage device.
12) PM navigates to the file and opens it to review the content and quality before copying it to a thumb drive or disk to deliver to the client.

2.2 DATABASE CREATION
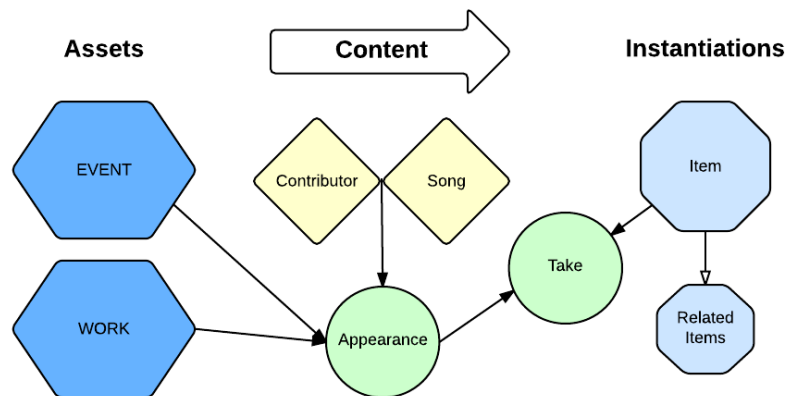
Basic structure of the collection: a simplified version of the entity relationship diagram, Appendix II.

For reference, the following lists briefly describes the defined entities used to structure the database:

Event: A recording of a live event, such as a performance or interview.

Work: A completed film or project, such as "*Festival!*" or "Sea Dream".

Contributor: A person or established group, such as Jimi Hendrix or The Freedom Singers.

Song: The title of a song, which can be performed by any number of Contributors.

Appearance: The occurrence of a Contributor at an Event or Work, which is captured by a Take and sometimes includes a Song.

Take: The most granular level of a recording on an Item, either picture or audio, and which is used to capture Appearances.

Item: An object (physical or digital) in the collection related to one or   more Events or Works, containing Takes of Appearances by Contributors.

Flat: A compilation reel or large batch of items (film rolls) within a can.

2.2.1 Structure & Platform

As described in the introduction, it was decided that the database should allow for cataloging not only of the Newport footage, but also of production materials related to the other various films produced by MLF. The data model therefore differentiates between the events captured as documentary footage, and the completed films that were created using that footage. The MLF collection as a whole contains several complex relationships that can be described as consisting of *assets*, *content*, and *instantiations*. The assets are represented by "Events" (recordings of live events and interviews), and "Works" (complete short and feature films produced by MLF Productions), and the content of which includes footage of "Contributors" (people or organizations, such as an actor, individual artist or performance group). A majority of the collection consists of concert

footage, so the inclusion of "Songs" was necessary to enable the description and search of specific Contributors' performances in Events. These four entities are joined by their "Appearances", as in the occurrences of multiple Contributors at various Events, performing different Songs, as well as the appearance of Contributors simply as actors or crew in a short or feature Work.

Appearances (and by relation Events, Works, Contributors, and Songs) are manifested through the use of "Takes" within various instantiations, or "Items" that are related to the assets. An important aspect of developing the data model, the term Take was chosen in consideration of the fact that the nature of documentary footage requires us to look back on the collection and define Takes according to a new set of rules. Ordinarily, in feature filmmaking, the scenes and shots would be outlined beforehand, and a production crew would record multiple Takes for each shot. The Take applies to audio track recording as well. For this reason, "take", seemed a more suitable, more granular choice as a compromise that would enable description of audio, video, and film items. For MLF, Takes are considered the building blocks of the collection Items, which are differentiated from one another by the use of a controlled vocabulary for two Item Types - "physical" or "digital". In order to document relationships between generations of Items, a relationship was defined to reflect how a single item could be the source of another item (as in how a camera negative is the source for a digital preservation master or work print, for example). All items will be cataloged at the camera roll and Take level, and there are numerous individual rolls as well as rolls that have been compiled onto reels. It was therefore necessary to include the entity "Flat" – a production term that describes a reel that is a compilation of rolls or pieces of rolls. These eight entities were

used to create Tables and Fields within the database. The complete data model is

documented in an entity relationship diagram, included in Appendix II.

FileMaker Pro was chosen as the database platform after a number of

considerations were taken into account. Most importantly, financial resources at MLF are

limited, which contributes to a high staff turnover and inhibits the use of specialized

collection management applications such as Collective Access or ArchivesSpace due to

the need for developers with specific expertise as well as the organization and stability to

maintain server space. FileMaker is widely used, easily configurable, and has a vast

support network that includes documentation, forums, and tutorials. This affords MLF

staff the ability to access, alter, and extract information from the database without

extensive training, and also to hire outside consultants to assist when necessary, who are

easily found. FileMaker also features the ability to easily customize permissions for

various user accounts, which will be essential to implementing security and upholding

roles and responsibilities at MLF. The customization of themes, colors, and styles,

however minor, is another appealing feature, and one which I think may aid in the

cultivation of MLF's company identity – an aspect that I think, with some attention,

could also help contextualize and foster long-term commitment to the collection as a

whole.

2.2.2 Metadata Standards and Schema

Rather than exclusively using a specific metadata schema, I've chosen to base my

schema on PBCore elements and attributes. This was done to standardize the terminology

used at MLF as well as provide future archivists with a better framework for exporting

catalog records. Within an active production environment, MLF's collections share many
of the same characteristics of those in the public broadcasting industry. However, PBCore
does not support the level of granularity needed for describing the documentary content –
a central component of MLF's workflow. Working closely with MLF, I developed a set
of attributes which reflect the technical, descriptive, administrative, and structural
metadata needed for cataloging MLF's collection.

2.2.3 Controlled Vocabularies

Lerner and the MLF Productions crew kept detailed documentation about their
production process, and were consistent in their use of terms to describe the structure and
content that they captured. To maintain this consistency within the production workflow
and make the cataloging transition as seamless as possible, I used many of the same terms
that had been used across MLF's current system (including their Final Cut Pro timeline).
Developing the vocabulary used for generations of physical and digital items was
essential to setting a groundwork for accurate identification and cataloging of the wide
range of media types and formats and their iterations. Drawing from sources such as the
Open Metadata Registry's listing of PBCore instantiation generations[3], as well as
BAVC's preservation glossary[4] and various filmmaking handbooks, I was able to develop
a controlled vocabulary that is intuitive and practical for MLF's purposes and also
familiar within the production industry and preservation field. Appendix I includes a
complete list of the controlled vocabulary.

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[3] The Open Metadata Registry. Web. metadataregistry.org/concept/list/vocabulary_id/147.html
[4] Bay Area Video Coalition. Preservation Glossary. Web.
www.bavc.org/preservation/resources/preservation-glossary

2.2.4 Database Installation & Design

Installation of FileMaker Pro 13.0v5 for creation and testing of the pilot database

was carried out on my personal laptop using the FileMaker Pro Quick Start Guide. After

a trial period, test records in the database will be deleted and the platform will be

installed at MLF's production station, an Apple iMac 3.4GHz Intel Core i7 with 16GB

memory, running OS X 10.8.5.

Using FileMaker's "Manage Database" tool, the first steps of design involved

creating the tables and fields for each entity and attribute, respectively, which were

outlined in the data model and metadata schema. Fields were then edited to designate

their data "Type" and define "Options". FileMaker uses eight data types: Text, Number,

Date, Time, Timestamp, Container, Calculation, and Summary. Field Options enable a

user to edit the "Auto-Enter", "Validation", "Storage", and "Furigana" (language

translation) settings that establish their rules, behavior and functions with the tables

(Figure 1). In addition to creating fields for each entity's specific attributes, each table

was given Primary and/or Foreign Key fields used to create relationships among tables, a

method which follows the standard "Parent-Child", or "One-Many", entity relationship

framework[5].

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[5] Hoberman, Steve. *Data Modeling Made Simple: A Practical Guide for Business and IT Professionals, Second Edition*. 2009. Ch.6, Section 4, "Cardinality Explained".
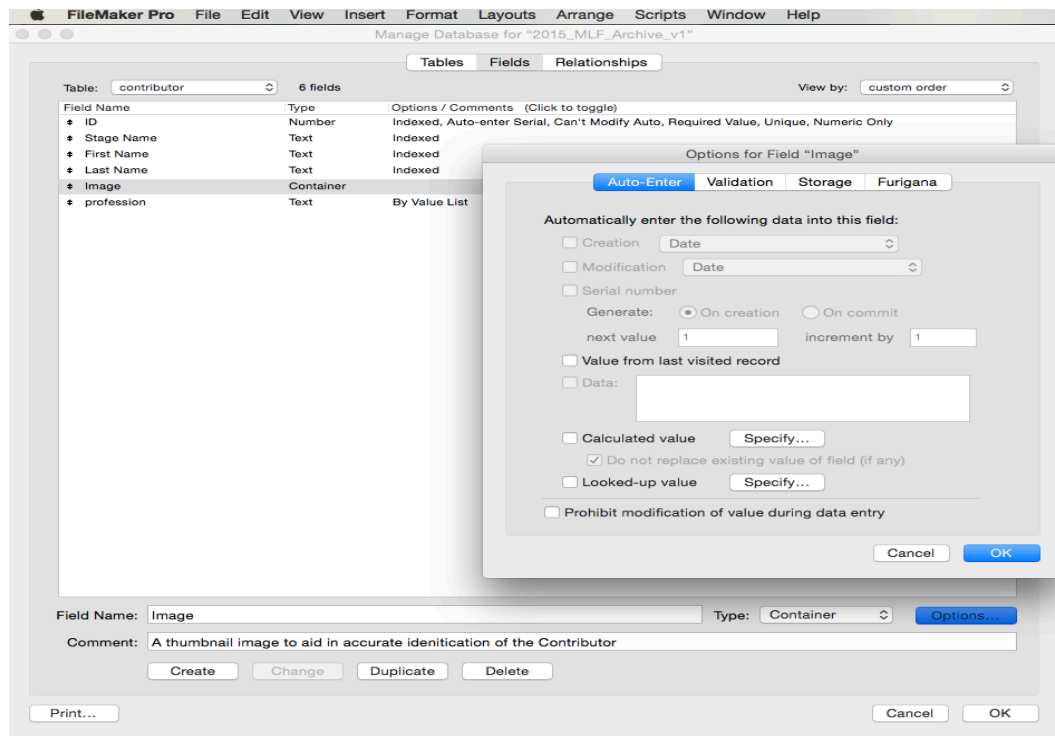
Figure 2: "Manage Database" interface and field "Options" dialog box.

To enable the creation of relationships, foreign key fields were given to "child"

entities to match their respective "parent" tables' primary key fields, which contain

unique, automatically generated serial numbers that cannot be modified by the user.

FileMaker uses an interactive Relationship Graph (an entity diagram) to enable the

creation of relationships by dragging the curser from a parent table field to a matching

child table field. That relationship is then edited to establish the type of relationship and

rules for record creation and/or deletion through use of "Portals" and matching fields
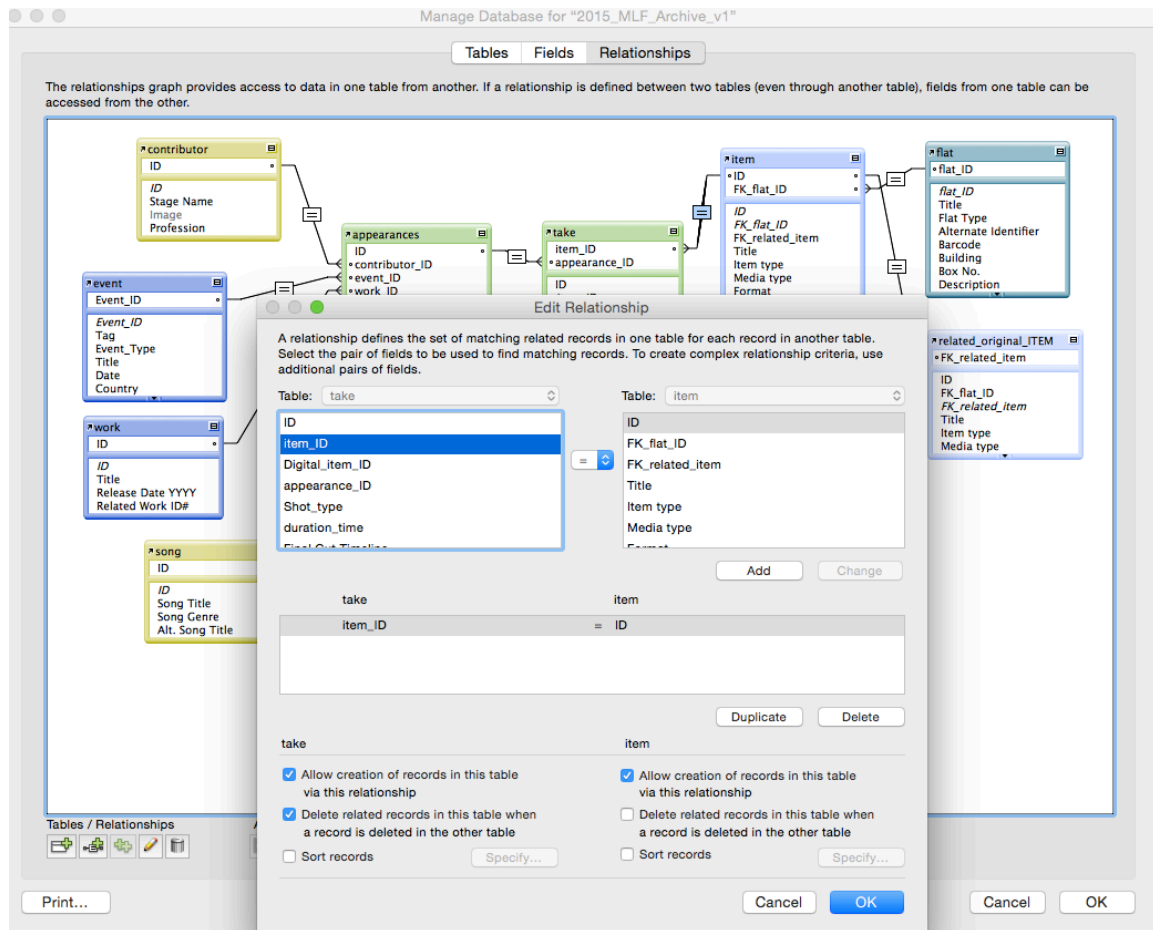
between the two tables (Figure 2).

Figure 3: Relationship Graph and "Edit Relationship" dialog box.
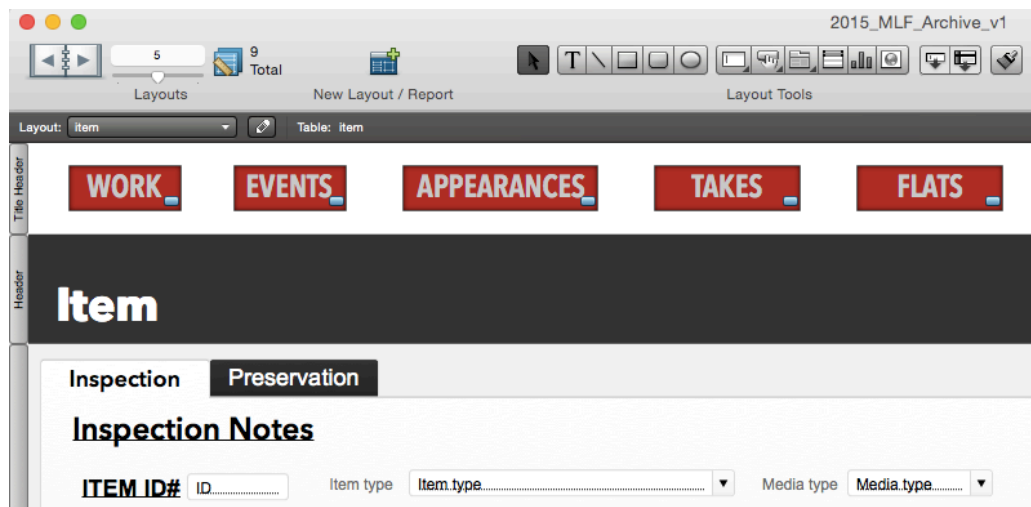
2.2.4.1 Design Layouts

Figure 4: Snapshot of the "Item" Layout in editing mode, with navigation buttons and data fields.

In general, relational databases themselves are not end-user friendly and instead require the use of a front-end or user-interface. A FileMaker Pro Layout is the users' interface for creating and displaying records and entering data. Figure 4 provides a snapshot of a Layout that was created for entering data about collection Items and creating Item records. Each Layout is created in the context of a specific table, and the data within each Layout must follow the rules and relationships established for that table and its fields. The number of Layouts can be limited to organize data more efficiently and allow users to access and interact with data from multiple tables and fields according to relationships, including from tables that are more than one step away. There are a great number of features used to edit the layout, including the position and size of items on the Layout, themes, colors and text (fonts and text sizes), and - most importantly – data behavior and formatting (field editing). Some of these features are also editable through the field Options dialog box via the Manage Database tool. An integral part of the MLF database was the incorporation of "borrowed" fields and Portals. A "borrowed" field is the use of a field in a Child table's layout that originates from a Parent table, and a Portal is a "Layout object" used for displaying and creating data within Parent table Layouts from a number of fields (one or more) in their respective Child tables. These two features are the key devices by which the Primary and Foreign Key fields come into play within the database structure[6].

To facilitate easier maintenance and management of data in individual tables, I created Layouts for each table. To provide a more efficient and condensed cataloging interface for MLF staff, I also identified the main approaches by which data will be accessed and input, and built those Layouts to enable data entry and display according to

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[6] FileMaker Pro Glossary of terms: http://www.filemaker.com/help/13/fmp/en/html/glossary.html

MLF's needs. These five Layouts – Events, Appearances, Takes, Items, and Flats - are easily navigable through the use of buttons that jump between each one. By using the "Tab" layout item, I was able to clearly organize certain fields into overlapping sections separated by labels, with each tab containing different information that relates to that record. This was done simply to create a more user-friendly data input and retrieval interface, and to avoid the Layout from appearing cluttered due to the highly granular nature of catalog records.

　　　　To more clearly illustrate the functionality of the Layouts, the following list summarizes the main use for each one:

- **Event**

- **Work**

Contain descriptive metadata about each top-level Event and Work entity, and display summaries that list their related Appearances and Items.

- **Contributor**

- **Song**

Used as reference tables that contain records for individuals / groups (with images for identification during data input) and song titles captured in collection items.

- **Appearance**

- **Take**

Used for defining the intersections and relationships between Events, Works, Contributors, Songs, and Items.

- **Item**

- **Flat**

Used for cataloging collection materials as individual rolls or compilations, as well as their locations & generations; Items also contains a portal for logging Takes and Appearance information.

CHAPTER 3: Collection Assessment

3.0   GOALS AND INTENTIONS

During development of the database, meetings with MLF staff were held for

discussion of the current workflow, collection management procedures, and status and

history of the collection. These discussions provided a broader picture of the issues

contributing to MLF's organizational and procedural problems, and provided an

opportunity to propose conducting a collection-level assessment. By doing this, I was ablt

to gain a snapshot of the collection storage and environments and pinpoint other areas of

priority.

3.1   SCOPE AND METHODOLOGY

Initially, this project was intended to begin with an inventory of the Newport

Collection as a whole, and aimed to include comprehensive inspection and identification

of the physical items. However, conversations with MLF staff revealed that much of the

material has been used in multiple feature film projects, and the work prints, negatives,

and audio reels have been repeatedly recut and re-edited to suit the needs of a given

production. At this point MLF was primarily utilizing the digital audio and video

transfers of the original Newport materials. Understanding the state of the collection was

a contributing factor to placing database development as a top priority.

Defining inspection protocols is a necessary step in preparation for testing the

database, as the inspection process will reveal much of the descriptive and technical

metadata about a given item, but due to the complex state of the collection, it was

obvious that inspection of the physical items would be a time-consuming process.

Therefore, for this project, we decided to inspect only a small portion of the Newport

Collection, beginning with footage from 1963, with the intention of using the inspection

process as an exercise that would facilitate testing and troubleshooting while also

providing an opportunity to create standardized inspection and cataloging procedures that

will be integral to implementation of an archival workflow.

3.2   STATUS OF THE COLLECTION

A brief assessment of selected boxes and items confirmed that the production

process has resulted in numerous rolls and compilation reels, with single frames and short

sections of rolls in various states of arrangement and storage. Physical footage from 1963

alone, which covered three days of performances, was estimated to amount to over 200

individual items – some single reels and some small pieces within collections of tiny rolls

in a single can. Years 1964 through 1966 were estimated to contain a great deal more

footage per year, as the budget for the project increased and production teams grew to

allow for a larger camera crew and more materials.

A full inspection was carried out on one individual reel of 16mm work print,

which entailed hand inspection, identification and documentation of the footage content,

and identification of any digital versions of the footage. This was done by viewing the

film on a Steenbeck flatbed editing suite and referring to original hand-written

documentation of the performance schedules and line-ups, as well as cross referencing

new documentation and metadata related to the digital objects supplied by previous MLF

employees. Descriptive, technical, and condition metadata was captured in an Excel

spreadsheet. This process helped gain perspective on how to approach the creation of a

data schema and model, and the information gathered became a reference for developing

controlled vocabularies and determining which entities, fields, and attributes would be represented in the data model.

The digital items in the collection amount to approximately 444 video items and over 120 audio items. The original digital items – the first set of uncompressed masters and compressed derivatives of the camera negatives and ¼" open reel audio materials - amount to approximately 8.4 TB of data. These files were duplicated according to a previously established RAID 1 storage configuration. Exactly how the RAID was maintained and used is unclear due to lack of documentation, but following the departure of the previous archivist, each drive was subsequently used independently. Because of complications with the organization and storage of digital items on MLF's current array of hard drives and the existence of duplicate files on each drive, at this point it is difficult to get an exact count of the entire digital collection (video, audio, and images). As of now, a selection of the digitized footage has been made available for licensing through arrangements with the licensing company known as Historic Films, but MLF maintains rights to continue licensing it independently as well.

3.3   FORMATS, STORAGE, AND CONDITIONS

To determine priorities for the organization and management of the collection items (physical and digital), it was helpful to take a rough inventory of the various formats and their current conditions. Dividing the collection by Item Type (physical vs. digital) allowed for a more efficient assessment.

Digital Collection:

The "digital collection" is primarily comprised of audiovisual items - digital video and audio masters, their duplicates, and their compressed derivative files. However there are many digital documents that are important sources of metadata related to the collection. Digital video masters were delivered by FotoKem as 10-bit Uncompressed 4:2:2 YUV QuickTime-wrapped files, 1920 x 1080, with one channel of audio (LPCM) although the Newport footage was captured separately from the audio. These files were then transcoded in-house to create Apple Pro Res 4:2:2 (HQ) derivative files in QuickTime wrappers, with one channel of audio (LPCM) for editing in Final Cut Pro. The audio masters are Uncompressed 96k/24-bit Waveform Audio files with one audio channel, and the derivatives are 48k/16-bit AIFF-C files with one audio channel.

Digital Storage:

The storage of digital items in the collection has posed several challenges in planning the database. MLF currently has four active Pegasus R6 RAID drives (six bays each) and one Pegasus R4 drive (a single four-bay drive). As mentioned before, the R6 units are believed to have been mirrored at one time (with the "Y" drives being the copies of the "X" drives) but have since been used individually. The person who implemented and subsequently abandoned the RAID system is not available for comment or consultation, and left very little documentation to indicate why the drives are no longer mirrored.

Currently, all four drives are in use and have had new files created on them during various production projects. There are duplicates of the digital files across all drives.

Uncompressed and derivative video and audio files are stored on both Newport_X_01

and Newport_Y_01, but in different orders and in different folders. Each drive has a

capacity of 10TB.

The following is a list of the drives and their *estimated* volume and current

available storage:

Name of drive:	Storage currently in use:	Available space:
Newport_X_01	9.3 TB	700 GB
Newport_X_02	9.2 TB	800 GB
Newport_Y_01	9.5 TB	400 GB
Newport_Y_02	9.6 TB	400 GB
Newport_Z_01	5.5 TB	500 GB

Following digitization of the Newport negatives, the Uncompressed and Apple

ProRes video files were transferred to HDCAM and backed-up onto 2.5TB LTO-5 tapes

which reside in the office with the rest of the collection. There are separate sets of LTOs

for each generation of digital file. The digital collection continues to be used to sync

audio and video footage and create combined digital masters, which are stored on four

2TB external hard drives (total number of external drives changes frequently, as some are

used for transport and some for storage of production materials).

As of yet, neither the digital items nor the storage devices have been inspected by

the current staff. If the previous archivist captured file fixity or checksum information,

the documents are stored in a folder or file that was not clearly identifiable, but may exist

somewhere on one of the five main drives. Adding to the dangers posed by retaining all digital copies and backups in one geographic location, the lack of an established system for verifying the integrity of files and storage mediums puts the digital collection at risk for data loss or corruption[7].

Physical Collection

The majority of physical materials on site from this collection are as follows:

- ¼" open reel audio

- 16mm and 35mm camera negative, reversal, prints, and audio track (magnetic and optical)

- Analog and digital video tape

Physical Storage:

- **Macro-environment**

All (or perhaps most) of the negatives for the Newport footage are currently stored at the FotoKem laboratory in Los Angeles, CA. According to the vault manager, the vaults at FotoKem are kept between 65°F and 70°F, with an RH of about 50% that is unregulated.

Work prints, internegatives, interpositives, opticals (titles, mattes), and sound items are currently stored in the MLF office space and in MLF's storage vault at the Film Center Building. Heat temperature in the building is controlled by the building's

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[7] Standards, Practices, and Infrastructure Working Groups: National Digital Stewardship Alliance. "Checking Your Digital Content". 2014. Web. Accessed April 10th, 2015. www.digitalpreservation.gov/ndsa/working_groups/documents/NDSA-Fixity-Guidance-Report-final100214.pdf

superintendent and air conditioning is controlled by MLF only in the office space. Exact temperature and relative humidity are not regulated in either space.

The International Organization for Standardization (ISO) recommends that long-term storage environment for photographic safety film and magnetic media be maintained 54°F or cooler, with a relative humidity level of 30-50% and for acetate film to be put in cold storage of at least 40°F. To accommodate both use and storage, the ISO states that 68°F, 40% RH is acceptable. Prolonged exposure to a RH higher than 50% will increase the risk of hydrolysis-based decay in film and magnetic materials, and conversely, materials exposed to RH less than 30% for a significant amount of time may dry out, causing brittleness and increasing the likelihood of damage during playback. While the negatives at FotoKem are being stored in fairly acceptable environmental conditions (with the exception of the lack of RH control), without regulation of the environment at MLF, the materials in on-site storage and office spaces are at risk.

Several of the films that were briefly assessed exhibit signs of acetate decay in the form of a strong vinegar smell. The magnetic sound items were in particularly bad shape, with several reels of 16mm full coat mag tack exhibiting brittleness and severe shedding of their magnetic coating. The National Film Preservation Foundation recommends copying magnetic sound materials as soon as possible because of their particularly fragile nature.[8] Because of the risk of further spread of vinegar syndrome, I've recommended testing all items in the collection with A-D strips and separating the decaying items from the rest of the collection until they can be inspected and catalogued. Ideally, these items should be kept in cold storage off-site, but the limitation of resources at MLF necessitates

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[8] National Film Preservation Foundation. *The Film Preservation Guide.* 2004. p. 17. Web.
http://www.filmpreservation.org/userfiles/image/PDFs/fpg_2.pdf

deciding what is most practical and achievable, as well as giving priorities to the

materials with the greatest value and highest risk of loss.

MLF could invest in a small refrigeration unit for use in the vault or in the office.

The cost of this unit would depend on the size requirements, which will be determined

upon future inspection and assessment. The additional use of molecular sieves inside the

cans stored on-site would help absorb moisture and could be used only for items that are

particularly in need. These would be good first steps in slowing the process of decay for

those items, and allowing some extra time to determine if they contain unique or valuable

content.

In regards to the negatives stored at FotoKem, it seems practical to think about

where those items will be kept when they are eventually shipped back to MLF. To ensure

their long-term preservation, it is recommended that they be stored off-site with an

organization that handles conservation of moving image materials. Northeast Historic

Films offers reasonable monthly rates for cold and frozen storage, and could be an

appropriate place given their interest in conservation of films related to the Northeast

region.

- **Micro-environment:**

Best practices for film care recommend storing film on 3" inert plastic cores,

inside inert plastic cans[9]. This is recommended to prevent damage from too much

tension, popped strands from improper wind, and films coming unwound from a reel and

getting bent or tangled. Most of the physical items in the collection are contained on

yellow plastic cores in metal cans and paperboard boxes inside of standard brown

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[9] See the Home Storage Guide at FilmForever.org: http://www.filmforever.org/chap7.html#chap7_3

cardboard shipping boxes. None of these items were wound particularly flat – most had popped strands and many were not taped down. Items that are not stored on cores are short enough that they have been wound by hand into small individual rolls, or are loose sections or series' of individual frames inside of their containers. There are also several presentation reels that are stored on metal reels.

Each container has annotations written during the original production and during subsequent production projects. These annotations provide some useful information about the inventory of the boxes, but some films have been moved or edited without documentation, leaving the annotations questionable but sometimes useful as a general guide. It has been noted by the Project Manager that most of the materials that had been kept in paperboard boxes did not exhibit any signs of vinegar syndrome, whereas several films and audio materials in metal cans were in an advanced state of decay. This is likely due to the combination of unregulated relative humidity and temperature, and lack of circulation inside of the metal cans.

While a comprehensive inspection of all physical items will likely be done during the cataloging process (following implementation of the database), prioritizing items in the collection should be a major aspect of preparation for inspection, and rehousing high-priority items would aid in their long-term preservation. Metal cans and paperboard boxes should ideally be replaced with archival cans, and films be transferred from shipping/presentation reels to 3" inert plastic cores. Proper housing can contribute to the lifespan of a material by providing structural support and protection of the material against external contamination such as rust, dirt, and moisture.

I've also recommend replacing the brown shipping boxes, many of which are tearing or collapsing, covered in several layers of old packing tape, and filled with dirt, rust residue, and dust. For priority items, ph-neutral archival boxes with removable lids would be ideal, and other items may just be placed in new cardboard boxes, preferably with lids. Boxes like these, although generally smaller, are more manageable. The annotations on the boxes can be transferred to a document and new packing lists should be made to describe the contents. These packing lists can be printed and taped to the front of the boxes, which should be labeled and cataloged in the database.

The analog video cassette materials have been stored upright in clean plastic cases, and have so far not exhibited any signs of decay. Most items have been properly wound and did not show popped strands or pack slip. For those that are identified as masters or unique material, digitization should be the top priority in consideration of the risks to magnetic media in an environment with fluctuating environmental conditions. The optical disks, most of which are commercial copies of feature films by Lerner and videos used for research, are generally not a priority for rehousing.

3.4   INTELLECTUAL CONTROL AND METADATA

Descriptive Metadata:

Digital file names were created using the barcode identification numbers and roll numbers given to the physical negative cans by FotoKem, which were provided to MLF when the files were delivered in 2012. Furthermore, the roll numbers that are listed in FotoKem's metadata (an Excel spreadsheet) were applied by FotoKem during the digitization process and do not match the original MLF roll numbers, however, the

original roll numbers were also possibly made obsolete during the production of "The

Other Side of the Mirror: Bob Dylan Live at the Newport Folk Festival 1963-1965"

(2007). There is no standardized file or folder naming convention or structure

implemented as of yet – these files were named according to decisions made by the

previous archivist.

In regards to the Final Cut Project, sequences in the timeline have been renamed to

content-specific descriptive titles – and therefor do not match the file names that they are

linked to on the hard drive. This situation has complicated the issue of linkages between

timeline clips and media being broken and unable to be reconnected with FCP's Media

Manager, and has lead to staff needing to re-identify media before clips can be re-linked

to the files on the hard drives.

The prevalence of box and container annotations has been described in the previous

section. These annotations originated from written documentation made by cameramen,

other production staff, and Murray himself during initial capture of the footage, and were

to some extent updated by hand during subsequent productions. While the information

provided on the boxes and film cans should definitely be retained for future record, some

of it is inaccurate and/or obscured from damage to the containers.

Much of the relevant written information - festival schedules, set lists, performer

names, song titles, box inventories - has been transcribed onto Excel spreadsheets. This

transfer of information has been done by several MLF staff members, with a bulk of them

having been made for the purpose of building the Final Cut timeline.

Technical Metadata:

As a production company operated by film industry professionals, documentation of technical metadata about physical items has not been a huge priority; the staff's familiarity with production media formats and the original production documentation has sufficed. Especially since digitization of the negatives, there has been little effort towards documenting and labeling item generations. Technical metadata about the digital items is generally only available through the use of the QuickTime Media Info tool, although some folder names and file names contain technical metadata, such as the derivative video files, named with "Pro Res" in their title, and the audio files, which include information about their sample rate to indicate whether they are masters or derivatives.

Structural Metadata:

Prior to the development of the database, information about the relationships among items and hierarchies that govern their generations had only recently (and to a limited extent) been captured, and only in the form of spreadsheets. The most reliable source for this kind of metadata was the original camera logs that list roll numbers for each camera. But since the roll numbers for the Newport footage were altered during digitization, that documentation serves mostly to indicate how many angles should exist of a given Event recording. Still, these logs are invaluable to the investigative process and provide a reliable reference for ensuring that all footage will be accounted for in the future.

More related to the need for media management protocols, but still a matter of structural metadata[10], it is worth noting that there is not currently a protocol for linking media in the FCP timeline, or a designated 'production' media drive, so files have seemingly been linked arbitrarily by various editors over the past few years. While the FCP project generally links derivative files as clips for editing, some uncompressed masters were also identified as linked media. Files are also being referenced from differing drives, rather than one dedicated drive.

Preservation Metadata:

- Digitization metadata: Knowing that the Pro Res files were created in house, it would be useful to know how they were created and migrated across their current host drives – with what software and if any digital migration tools were used – but none of this information has been found.

- File fixity & checksums: As mentioned in the previous section detailing the current digital storage methods and associated risks, file fixity information and checksums have either not been created or are yet to be found.

- Rights: Portions of the Newport Collection were sold for use in the Bob Dylan documentary mentioned earlier, but Lerner retains some negatives and many work prints that include the same footage. It is important to document whether this footage should be made available for restricted access, or whether it should be de-accessioned. So far, editors have avoided syncing digital audio and video that contains Bob Dylan because it MLF cannot currently profit from its use, but it

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[10] Council on Library and Information Resources. "Structural Metadata." Web. Accessed April 7th, 2015. www.clir.org/pubs/reports/pub87/appendix.html

should be considered that this footage also *costs* MLF digital and physical storage

space in addition to posing rights complications.

3.5   SUMMARY AND NEXT STEPS

In preparation for further physical inspection, rehousing, labeling, repacking, and

eventually cataloging, a list of necessary supplies was created and provided to MLF,

including a few simple items like paper-tape, lint-free cleaning wipes, and 98% isopropyl

alcohol, which have been ordered. MLF already owns the necessary equipment for

inspection and viewing of materials, such as a flatbed film viewer and rewind bench.

Selecting items for long-term conservation should be a priority, and in order to establish

control over all of the physical elements of the collection, it is recommended that the

negatives be retrieved from FotoKem and placed in a facility dedicated for film

preservation. Again, considering the historical and regional significance of the collection,

an organization such Northeast Historic Films would be ideal. Below is a summary of

estimated costs for the main recommendations I have put forth regarding the physical

items in the collection:

AD strips $60.00 (1 pack, 250 strips)[11]

Molecular Sieves $37.85 (1 container, 120 packets)[12]

Cold storage $167.00 / month ($3.34/cubic ft. for 50 cubic ft.)*

Frozen Storage $334.00 / month ($6.68/cubic ft. for 50 cubic ft.)[13]*

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[11] Image Permanence Institute. "AD Strips". Web. https://www.imagepermanenceinstitute.org/store/media-preservation/ad-strips
[12] Kodak Motion Picture Products Price Catalog. 2011. Web.
http://www.motion.kodak.com/motion/uploadedFiles/QA_PCB_February2011.pdf
[13] Storage prices calculated from Northeast Historic Films, Standard Rate Sheet and Space Allocation, 2014.

* *Anticipated storage size*.

In regards to recommended actions for addressing the issues evident in the *digital* collection, the following summary presents the recommended first phases, or steps, for establishing a stable environment for implementation of the database. The phases were developed in an order that prioritizes administrative and organizational stability, to enable safer and more structured cataloging (Phase 4). By starting with foundational changes to improve the organization of their digital collections, MLF can begin to safely incorporate cataloging into their daily workflow, which will provide immediate access to their collections and enable the production team to see the benefits of the archiving process.

Phase 1:

- Assign roles, responsibilities, and schedules

- Re-establish control and organization of the RAID

- Establish a protocol and schedule for backing up the RAID

- Develop a metadata document template and/or protocol to provide vendors with when materials are sent out for digitization.

Phase 2:

- Implement digital storage protocols & naming conventions for newly exported files and Final Cut Project tabs, bins, clips, sequences, as well as physical items.

- Develop a queue and schedule for renaming and packaging files

    o Create a duplicate FCP Project for the purpose of restructuring the clip references to align with the new digital storage configuration.

   o Ensure that no major changes will occur within the old Timeline that

     would make the new Timeline obsolete during the transition – if changes

     are made, they must be made to both projects to ensure that work does not

     have to be re-done later.

Phase 3:
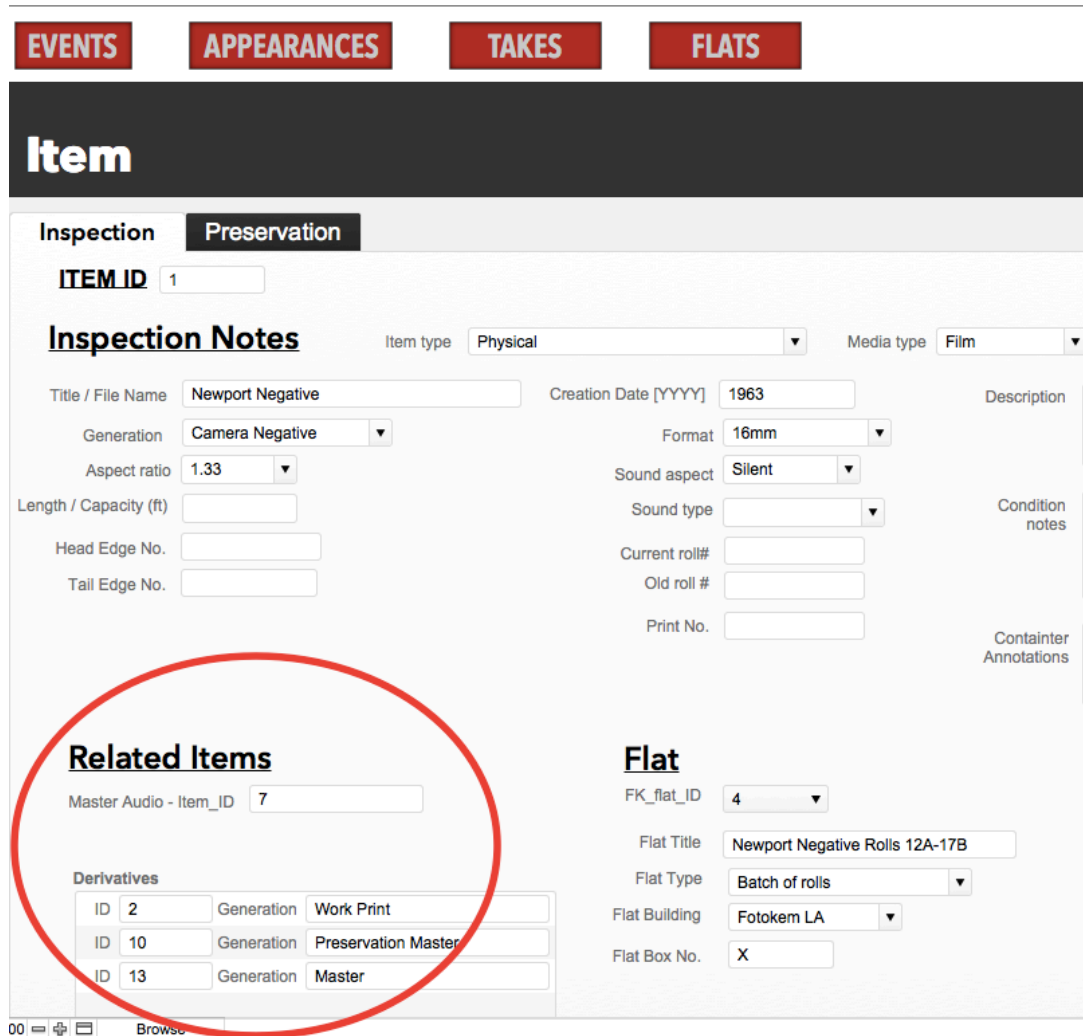
- In Duplicate FCP Project, separate linkages from FCP Timeline to archival

 storage, if present:

   o Check linkages to make sure clips are not referencing files from the drive

     designated for archival storage.

   o Re-link clips to renamed, packaged files on the drive designated for

     production storage.

- Check new timeline for broken linkages and compare old and new projects.

- Implement *new* FCP Project as primary export tool.

Phase 4:

- Catalog digital collections, to align with production priorities and begin

 streamlining the process of locating production material.

- Establish priority levels for cataloging sections of the physical collection, modify

 according to production priorities and when necessary for preservation of highly

 at-risk materials.

  Prior to these implementations, more testing of the database will be required to ensure

that it is a stable and viable solution for MLF. As of this report, the database has been

used to create records that accurately represent the structure of the collection, and to catalog technical metadata for (and relationships between) camera and audio originals and their physical derivatives and digital preservation masters, digital preservation masters and their compressed derivatives, and how the top level Events and Works relate to their various instantiations (Figure 4).

Figure 5: Item record with related generations.

As an initial user-study, fellow MIAP student Dylan Lorenz (who is currently doing an assessment of the physical and digital audio masters in the Newport Collection) used the database to catalog a number of items for which he collected detailed metadata using

the controlled vocabulary and attributes developed during this project. His items were successfully cataloged, and the process revealed a small number of navigational and conceptual flaws, and limitations with the FileMaker platform that were discussed with MLF. Some minor restructuring and re-designing must be done to accommodate FileMaker limitations that prevent the display of certain data from related records, and also records that are nested within hidden "Tab" Layout objects. These changes will also better facilitate the ability to export Item records and create printed reports that adhere as much as possible to the PBCore metadata standard and accurately reflect the structure of the collection. As the software has not yet been installed at MLF, the database has not yet been fully tested within its intended environment.

The creation of database reports, or summaries, has become a priority for MLF as a form of analog back-up of the database records. Recent design updates to the database include a Layout and script trigger for displaying all Items that have been backed up onto LTO tape. This will help MLF keep track of where backups are located, what percentage of the collection has been fully preserved, and provide a Layout that can be easily printed or exported as a .pdf or spreadsheet in the future. I aim to create more Report Layouts once we have more clearly defined what data will be most relevant and practical for MLF to summarize – what kinds information about the collection will enhance its value and make the best use of the database, as well as serve as an archival resource for future researchers or archivists. These developments will likely occur as more testing and cataloging informs how the database should be fine-tuned.

Part II of this report, the "MLF Archive Handbook", is written under the
assumption that the proposed transitional recommendations are implemented, and
includes an introduction to the database design, instructions for use and administrative
management of the database, documentation about the structure of the production-to-
archive workflow, and a step-by-step guide for completing the cataloging process and
accessing completed records via search and creation of reports.

3.6   CONCLUSION

"That's all nonviolence is…organized love."

- Joan Baez

One of the most important aspects of this project has been the consideration that this solution may not (and likely, *will* not) work for MLF forever. Considering the company's history of frequent and rapid change in staff, resources, and financial priorities, the goal of this project was not to create a perfect tool, but to create a tool in a way that allows MLF to safely experiment with it, and possibly (hopefully) incorporate it, without endangering the collection; to *confront* the root problems without further *contributing* to their already existing archival issues. This idea draws from recognition of the importance of a formal succession plan as a key component to the overall infrastructure for long-term preservation, and one that will be essential to helping MLF maintain their materials and ensure that future stewards are given the resources they need to continue the archival process throughout the life of the collection.

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PART II

MLF PRODUCTIONS
Archive Handbook

Created by:
Genevieve Havemeyer-King
May 2015

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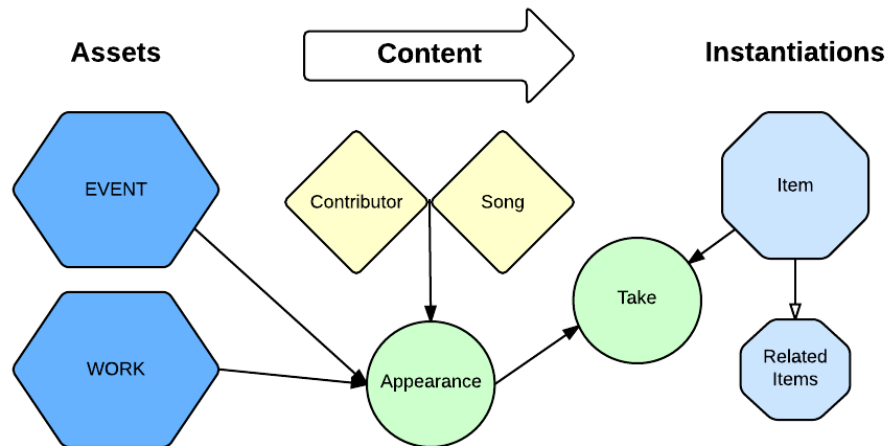
Introduction

Figure 1: Collection Entity relationships

This handbook was created to familiarize users with the FileMaker Pro database and its function within the Production and Archive workflows, which involve searching and cataloging MLF's audiovisual collections. It also serves to provide MLF Staff with a resource that supports the accurate, efficient, and strategic management of collection materials.

The database is structured to accommodate MLF's need to identify and describe relationships between Events and Works (Assets) and related Items (Instantiations), and relationships among Items (generations), while also enabling users to catalog, search for and locate specific Content with a high level of granularity.

Figure 1 provides a simplified illustration of the relationships between collection materials and the various items in which their content is captured. Familiarity with the collection entities (also illustrated in Figure 1, above) is important and should be considered a prerequisite for handling and cataloging materials (see Section 3.3.4).
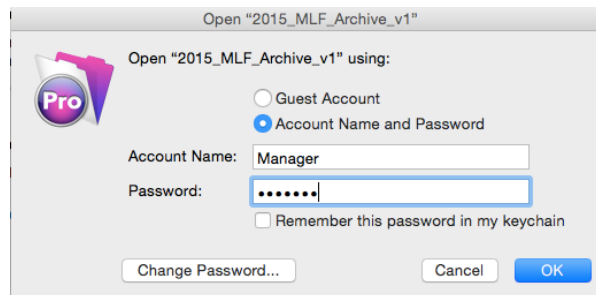
Chapter 1: The Database

1.1 Logging in:

Figure 2: Log-in dialog box.

- o Open FileMaker Pro and select the database file from the "Favorites" dialog window, or from the File > Open menu.
- o Enter your Account name and Password
  - Each account has customized permissions, overseen by the Production Manager or Archivist. For information about managing accounts, see section 2.3.

1.2 Tables, Fields & Layouts

Layouts are based on the eight entities that represent the components of MLF's collections. These entities and their attributes were used in the creation of database tables and Fields, and their corresponding database Layouts. There are eight Layouts and within MLF's database, and one Report: Event, Work, Contributor, Song, Appearance, Take, Item, and Flat. The Layouts represent the tables for which they are named, but contain data and links to other tables and Fields in the database. Database Reports are also a kind of Layout, but will be covered in section 1.8. The following list describes the general uses of each Layout:

- • Event
- • Work

Contain descriptive information about Events and Works, and display summaries that list their related Appearances and Items.

- **Contributor**
- **Song**

Used as references tables that contain records for individuals or groups (Contributors), and song titles (Song) referenced in Appearances.

- **Appearance**
- **Take**

Used for defining the intersections and relationships between Events, Works, Contributors, Songs, and Items.

- **Item**
- **Flat**

Used for retaining technical metadata for individual rolls (Items) and compilations (Flats), as well as their locations & generations; Items Layout contains a portal for logging Takes and Appearance information as well.

1.3   Creating Records

Records are created using the carious Layouts, and preferably in "Form" mode (rather than "List" or "Table" mode) by clicking the "New Record" button in the FileMaker toolbar. Each new record is automatically saved, so it is important to only create records if time allows for the record information to be completed.

1.3.1   Creating New Asset Records

Creation of Asset records must done in advance of cataloging Instantiations, or Items and their respective derivatives and versions (Related Items). This is because relationships to Assets are defined from within the Item record, and the Asset must first be available for selection from the provided drop-down menu therein. At MLF, the audiovisual Assets are limited strictly to finished MLF productions (Works) and documentary footage of live events captured on a given day (Events).

1.3.1.1   Event Records

Events are thought of as belonging within *sub-collections* of the greater MLF Productions Collection, e.g. The Newport Folk Festival Collection, or The Isle Of Wight Collection. There are several types of events, which are available for reference in the Controlled Vocabulary section of this guide, but in general the term Event refers to a specific performance or other self-contained event on a given day, at a given time. For example, the "1963 Sunday Morning Gospel Session" and the "1964 Interview with Newport Teenagers" are considered separate events. The Gospel Session is a performance, and the Interview is, surprise, an interview.

- Interviews only represent a new Event if it is not explicitly related to a performance or workshop.

1.3.1.2 Work Records

A "Work", as mentioned above, is a completed project, such as *Festival!* or *Magic Journey*. Works are catalogued only by their type, title, release year, and description. The Works Layout displays all of the Item records which have been catalogued for materials related to this completed production, e.g. a final negative, a/b rolls, a release print reel, a trailer, etc.

- Relationships between and Items and a Works are made from the Item record Layout.
- Takes are not logged for Works – logging already produced content is not a priority.
    - o Items can be linked directly to related Works via the Item Layout (see Chapter 3 for more detail).

1.3.2   <u>Creating New Reference Content</u>

Contributor and Song tables are used to log Content, and their Layouts are only available for selection from the Layout menu in the FileMaker toolbar (see Figure 3), and not via a navigation button. They are only used for reference, to enable multiple people and songs to be cataloged within a single item, and do not represent Assets in the collection.
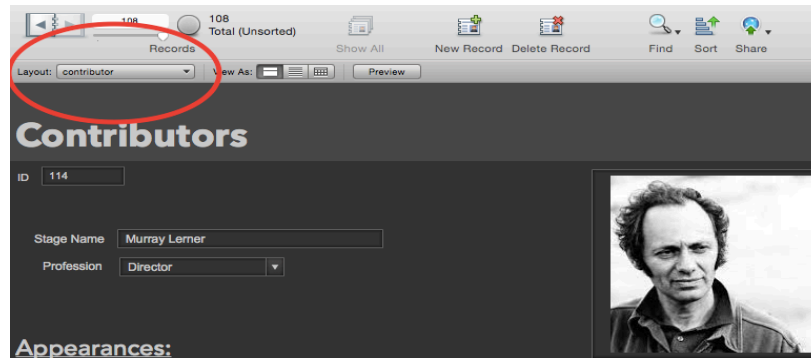
Figure 3: Layout Menu location.

Contributor records are made for individuals such as artists, producers, actors, etc., and for groups, such as a band or dance troupe. Song records are created for individual song *titles*. These records are made accessible for use via drop-down menus in the Appearances Layout, Takes Layout, and within the Takes section of the Item Layout (which is actually just a "portal" to the Take Layout), so it is important to create them prior to cataloging an Item.

Note: When creating a new Contributor or Song record, if a record with the same name or title already exists, it will auto-populate based on data in already existing records. Avoid creating duplicate records, and blank records, by checking beforehand using the "Find" mode (see section 1.7 for more detail on searching for records).

1.3.2.1   Contributor Records:
Contributor records consist of a stage name, a profession, and an image for identification purposes.

- Inserting images into contributor records:
    - Select the image box with the curser (it will highlight blue)
    - Select "Insert > Picture" from the FileMaker application menu. And select the proper image from the MLF "Contributor Images" folder on the Local drive.
- Stage names & character names:
    - Contributors in MLF's collections will never be described by any name other than what they are publicly known as.
    - When a Contributor plays a character in a Work, the character name should be included in an *Appearance* record under "Contributor character name" field in the Work tab.

1.3.2.2   **Song Records**:

Songs records are cataloged with title and genre only. A song that has multiple versions sung by different artists is still considered a single Song record. The different versions are represented their inclusions in various Appearance records. Sometimes the genre is unclear, in which case, leave the genre blank until further research can be done or you're able to listen to the audio.

1.3.3   **Creating New Item Records**

Item records are created for physical and digital items in the collection, such as films and videos, and digital media. Item records are by far the most detailed components of the database, and require a great deal of research to complete. It is through the Item records that MLF is able to track the relationships between original recordings and their various generations, and thus document which items in the collection have been digitally preserved or not. They are also an integral part of the ability to locate footage for requests in the office and within the Final Cut project.

1.3.3.1   **Item ID's:**

Every time a new Item record is created, the database automatically generates a unique serial number for that record (Figure 4). For Items, this serial number will be used as a unique identifier that will be written by hand onto the leader and labels for films and videos. It will also be used for digital Items, but will play a smaller role in those Items' location and identification. These ID's are used throughout the database, and enable a user to easily navigate between individual Assets, Takes, Appearances and, of course, Items.
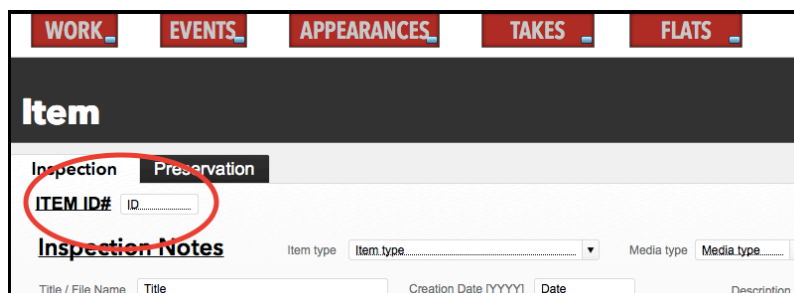

Figure 4: Item ID# location.

1.3.3.2 Inspection & Preservation Note Fields:

Item records are comprised of two sections: "Inspection Notes" and "Preservation Actions". Inspection Notes refer to technical metadata, location information (including Flat location, explained below), related items, and logged content; "Preservation Actions" refer to treatments and notes that document how an item has (or hasn't) been processed, such as cleaning and testing for decay, and rights status.

Within the Inspection Notes section, fields are defined by the Controlled Vocabulary (Appendix I) for physical and digital items and by terms that pertain to the physical condition, location, and relationships of a given item. Familiarize yourself with the fields provided on a new record and refer to the Metadata Schema (Appendix II) for the complete list and description of every Item attribute.

Disappearing/Reappearing Fields:

Many fields are selectable only through the use of drop-down menus, to ensure that data is uniformly entered. Upon selection of certain Item Types and Media Types, some fields on the layout are made invisible, or unavailable for use because they do not apply to the certain physical or digital items or media types. This is just to provide a less cluttered cataloging interface – if a mistake is made and one must change the item type or media type, fields will reappear if they apply.

1.3.3.3 Items & Related Items

The relationship between Items is structured such that a given Item can be a *source* item or a *derivative* item, or both. For example, a digital preservation master, "video_p.mov" is both a *derivative* of the camera negative that was scanned and also the *source* for the transcoded (derivative) file "video_m.mov".

This is made possible by the careful use of the unique Item ID#'s and the ability to select Item records by their ID number from a drop down menu near the "Related Items" section of the Item Layout.

- If the Item is a derivative of another Item, an ID selected from the

"Source Item" field. The derivative then appears in its source's Item record under "Derivatives".

- Figure 5 shows the Related Items section of a digital preservation master's Item record. As you can see, it was created from one source item – a camera negative, Item #1, and it has one derivative – a service file, Item #12.

Figure 5: Related Items of a digital preservation master Item.

1.3.3.4 Logging Content

Within the Item record is a window (a "portal") that displays fields for Takes and Appearances, and for inserting images for each Take – "screenshots". This window is the primary tool by which relationships are made between Items, Assets and Content.

Note:
- ***Content is only logged for Items that are related to Event Assets – not Works.*** (See sections 1.4.2 and 1.6.2 for more details)
- To log content, you must begin by selecting a Take Type from the drop down window, which generates a new Take record.

Take Log

The Take Log in the Item Layout creates records in the Takes table[14] that document the duration, angle or type of shot, and whether the shot was recorded with sound (or whether it is a sound recording entirely). There is also a Take Layout, which can be used when logging a number of very similar Takes on the same item (e.g. when several people are singing the same song at once on stage), but use this

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[14] See section 3.1 for more detail about the definition and function of a Take.

Layout with caution and pay attention to the Item ID number to ensure you are selecting the correct Item.

The Take Log also includes drop-down menus and fields for logging Appearances – see section 1.6.4.2, following this section.

Some rules about Takes:

- **Final Cut Timeline Information:**
  - o After logging Takes during the Inspection and Cataloging process, these takes must be located within the Final Cut Timeline. Timeline location information is then logged within the Take window for easy identification by the MLF Production team. See Chapter 3 for more rules about including the Final Cut Project information.

- **Adding screenshots to take logs:**
  - o While viewing the Item during the Inspection and Cataloging process, take a clear photo or screenshot of the Take you are logging and save it to the Local drive in the Take Screenshots folder.
  - o Select the "screenshots" field in the Take widow, and navigate to Insert > Picture to place the proper image.

Appearance Records

- Within the Item Layout, Appearance records are created via the relationship between the Take and Appearance tables (see section 1.2).
- *Pay close attention to the Appearance ID – the same Appearance can be captured upon multiple Items* (e.g. because multiple cameras recorded a single performance).
  - o An Appearance record can be used multiple times by selecting the proper Appearance ID from the drop-down menu in the "Appearance_ID" field within the Take window. This can be a confusing technique and should be demonstrated by an Archivist or Production Manager. *See Section 3.1 for more detail.*

       ○   "Set Order" describes the order that the Appearance occurred in real-time during an Event. (e.g. whether a band played first, second, or third on Friday night). Including this information will aid in determining if MLF has full coverage of an Event.

1.3.3.5 Flats

A "Flat" is basically a compilation of individual Items. An Item is located on a Flat if...

- It is identified among multiple, <u>clearly identified</u> rolls spliced together on a single reel.
- It is amongst multiple rolls contained within a single can and cannot (or should not) be re-located to its own can.

1.4 <u>Searching Records</u>

Using the Appearance Layout:

The Appearance Layout is the most granular interface for searching for Items with specific Content. It is the intersection of every component of the collection, and provides direct access to both individual Takes and related Item records.

Figure 6: Appearance Layout.

To perform a search:

1. Select 'Find' mode in the FileMaker toolbar.

2. Use the drop down menus to select or input data about your desired Appearance type, Work, Event, Contributor, Song or combination of the above.

3. Select "Perform Find".

4. Takes that fit your search criteria will appear in the Take portals, which are separated by Item type.

5. Click on the Take ID or the Item ID field to open the related record in a new window.

Using the Event or Work Layouts:
The Event and Work Layouts may be used in the same way as the Appearance Layout for searching, but Takes are not displayed. It is a good way of viewing a general summary of the Items related to these Assets, but one must use the Appearance Layout to see precisely which Items contain which Appearances, and what type of angles and recordings MLF has of those Appearances.

The Items are displayed in separate windows to distinguish the physical collection from the digital collection and make Identification of generations more intuitive. Item ID and Appearance ID fields can be clicked to open a new window for a related record.

Figure 7: Event Layout.

1.5   Reports[15]

- **LTO Tape Library:**
  The LTO Tape Library Report is accessed through the Layouts Menu, and functions by use of a script that filters records according to predetermined search criteria. When the LTO Tape Library script is run, the report will display all of the Items in the collection that have been backed up on LTO tape in a list which can be printed, or saved as a PDF or spreadsheet.

  Before invoking the script, the layout will simply display all of the Item records in a list, or can be used to search based on other criteria by using the fields within the LTO Layout (but this would be silly, since there are other Layouts that are better for searching).

  To view and print the report:
  1. Select the LTO Tape Library report from the Layout menu.
  2. Click the "LTO Tape Library" title on the Layout, *which is actually a button that runs the script.*
  3. Select 'Preview' from the toolbar above the report.

---

[15] This section is in-progress and will include reporting for asset and item-level collection inventories in the future.

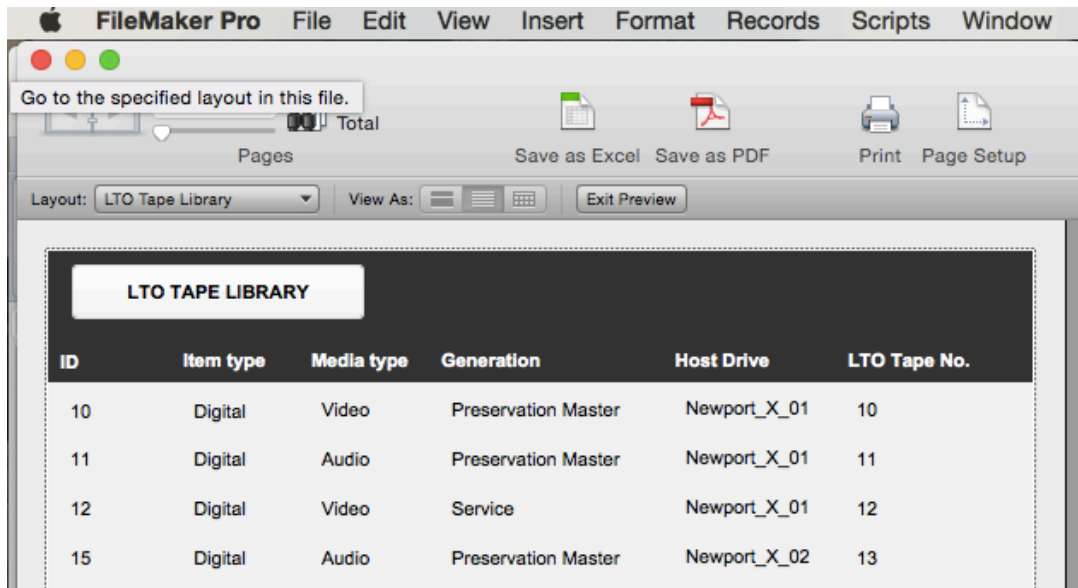4. Print or export the list using the provided buttons in the tool bar.

Figure 8: LTO Tape Library.

Chapter 2: Managing the Database

2.1 Structure

The database structure is based on a traditional "Parent-Child" framework, in which tables are related through primary and foreign key fields (unique serialized ID numbers generated automatically with the creation of new records). The structure can be viewed via the Relationship Graph by a user with administrative access (such as a Manager or Archivist) who is familiar with the design features of FileMaker Pro. The relationship graph enables an administrator to create and edit relationships between tables in the database, and therefor between records created in the context of those tables, for example, between a Work and an Item.

Note: Do not make any changes to the tables, fields, or relationship graph without consulting the Archivist or under the supervision of an experienced FileMaker database developer. Improperly made changes can result in the loss of records and may compromise the database altogether.
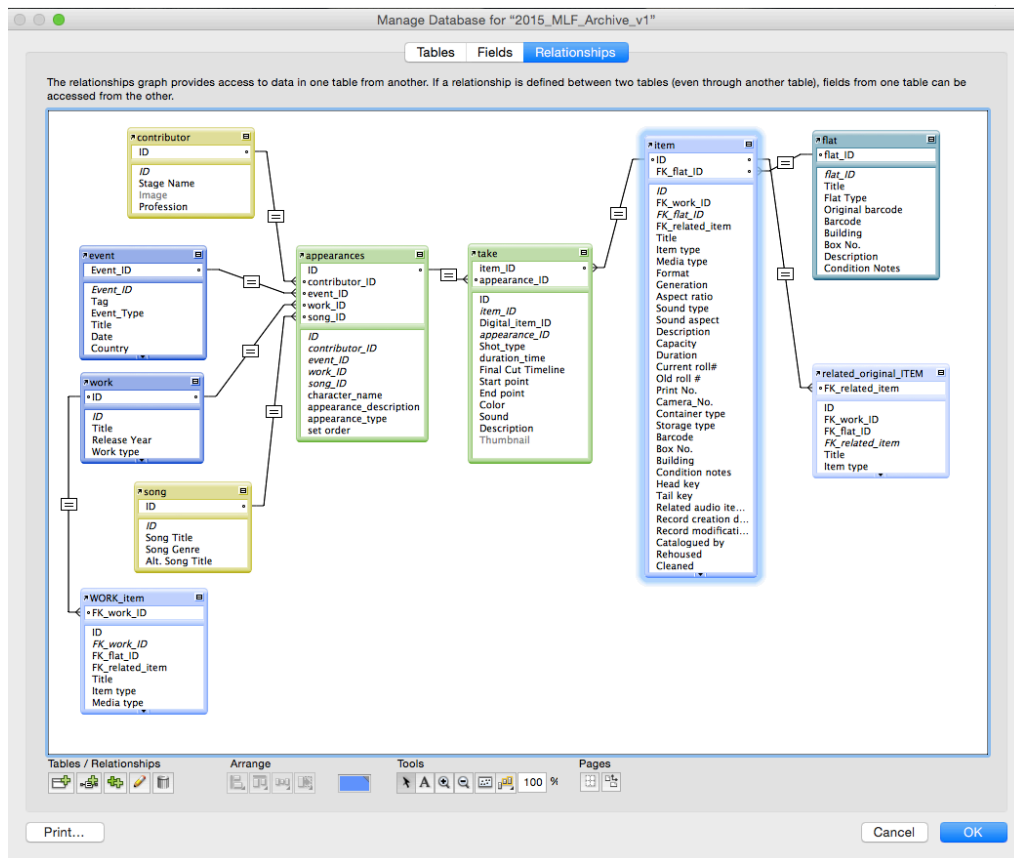
Figure 9: LTO Tape Library.

2.2   Value Lists

Value Lists are mainly used for implementing MLF's Controlled Vocabulary and for streamlining data entry; a given category (format, item type, media type) contains a list of words that are used in drop-down menus, multiple choice check-boxes, etc. within the various Layouts.

These lists are editable and can be accessed and added to by selecting…

<div align="center">File > Manage > Value Lists</div>

Value lists also have specialized functions for displaying data from select fields. Explaining this technique is beyond the scope of this guide, and concerns advanced modification and editing of database and layout design, but may be explored further using FileMaker Help.
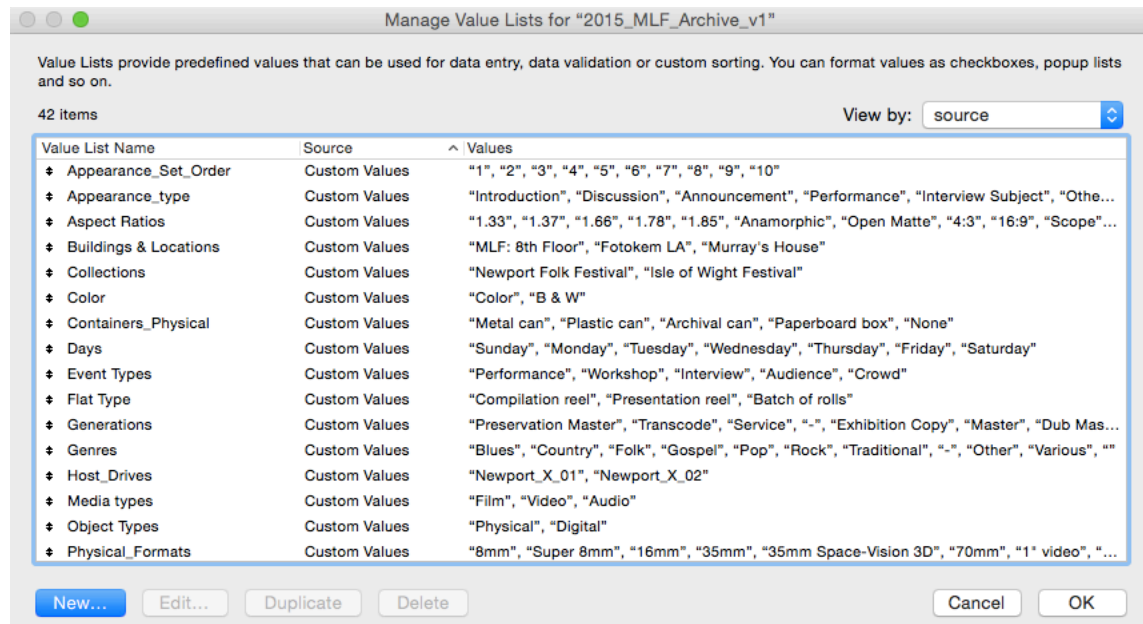
Figure 10: Value Lists window.

2.3   User Accounts, Passwords & Permissions

User accounts are established for MLF staff to provide security and prevent loss of data due to misuse. The Archivist and the Production Manager have full access to the database and can manage the permissions for other accounts, such as which layouts and menus can be accessed, whether or not records can be created / deleted, etc.

User accounts are password protected. There are currently four account types, whose permissions can be viewed by selecting…

File > Manage > Security

- Production Manager
- Archivist
- Guest
- Cataloger

Figure 11: Security & Accounts window.

2.4 Backing-Up the Database

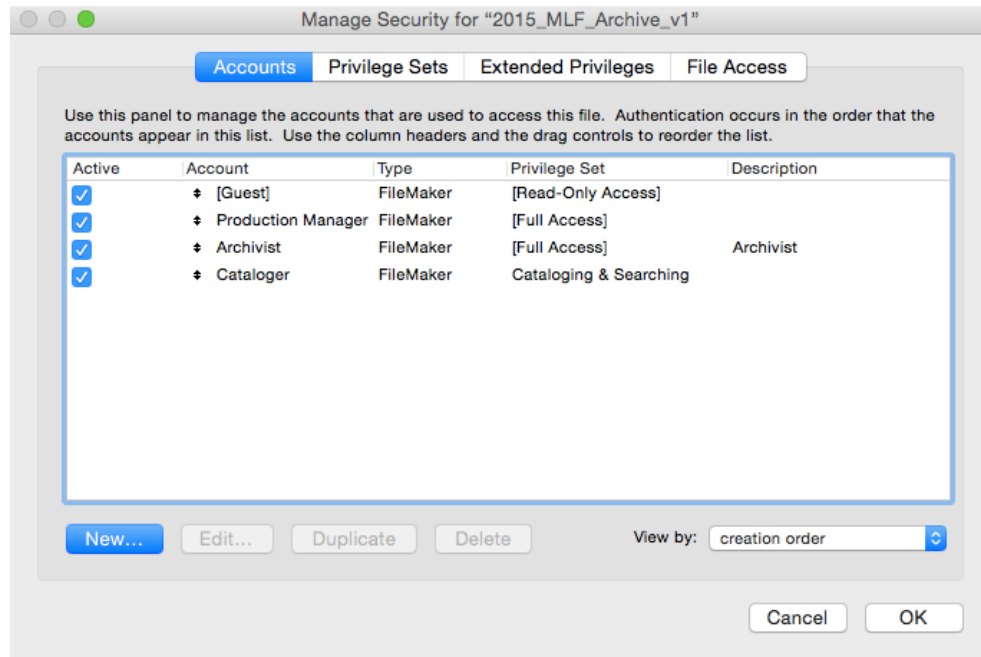The database has been configured to automatically save a back-up copy after it has been closed every 5th time. This back-up copy replaces the old back-up copy every time the back-up script is run. This copy is set to save in the Database Backups folder, which is located in the Home folder on the Local drive of the host computer[16].

It is important to **COPY (not move)** this backup onto the dedicated Database Backups remote hard drive every week. The current manual backup schedule is:

<u>Every Friday night, 6:00pm, or before computer shut-down</u>

The 2nd backup file, copied to the remote drive, should be renamed: add the current date [MMDDYYYY] to the end of the file, so it reads: "MLF_Database_**MMDDYYYY.fpm12**"

It is important to monitor and document testing of all storage devices in

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[16] The Backup script Save Copy As location must be updated if the database is moved to a new station.

order to anticipate failure or expiration.

Chapter 3: Inspection & Cataloging

3.1 OVERVIEW

Cataloging workflows differ slightly between the two Item Types in the collection - Digital Items, and Physical Items – and will be described separately, in order to provide a more detailed instruction for each of them.

Cataloging is a two-phase process:
1) <u>Inspection</u> – Condition assessment and/or cleaning and collection of technical information

2) <u>Viewing</u> – Identification and "logging" of content, commonly referred to as the creation of a "shot log", but at MLF, we call them Take Logs, because the collection includes audio *and* visual materials.

3.1.1   Content: Some Definitions

The "Take": A section of footage between cameras' start and stop points, with a couple specifications and exceptions, for instance:

- Take careful notice of splices – splices can mark a point of repair or editing of a single roll, or the attachment of a new roll that was shot from another camera, which would indicate that the item is actually a compilation of *several* items (a "Flat").

- If the individuals or content of a Take changes dramatically without the camera stopping, the point at which this change occurs (the footage number, in length), marks the beginning of a new Take (e.g. Bob Dylan walks on stage to join Joan midway through her performance and finishes her song with her). Note the circumstance of this Take clearly in the Description area of this item's database record.

The "Appearance": The occurrence of a single Contributor, in a single Event (or in a single Work), performing a Song or giving an introduction etc..

- An Appearance in an Event has a "set order number", which corresponds to the historically documented set-list of a given Event – or, the point during a performance or other event at which an Appearance took place in real life.

Note: Appearances must be thought of as singular entities, much like Events or Works, because the same Appearance will be documented on multiple instantiations. Example:

- To catalog The Freedom Singers performing "Woke Up This Morning" at the 1964 Saturday Afternoon Concert, you must first search - using the Appearances Layout – for a record of that performance. If it has already been cataloged, make note of the Appearance ID for continued use. When you reference that Appearance ID in an Item record's Take Log, you are creating a link between that Appearance and the new Item.

3.2   DIGITAL ITEMS

3.2.1   Digital Inspection

- **Production-to-Archive Overview**
  The digital collection begins with the Production Team. When Production creates or receives a new digital item, it must be named and packaged according to MLF protocols[17]. It is important to note that archiving involves the use of the Bagit specification, which follows a different folder structure and will be covered :

Folder Structure & Naming Convention:

NFF_1964_L9234567_14a

       Master

           - L9234567-14a_M.mov

       ProRes

---
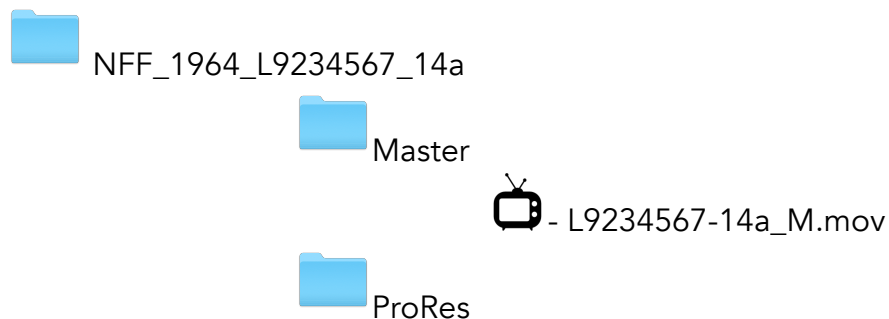
[17] As of May 4th, 2015, these protocols are still under development and on pause during relocation of the collection.

📺 - L9234567-14a_T.mov
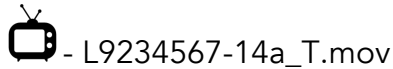
- When a file is slated for archival storage, it is securely copied to the Archival Staging Drive for approval and processing by the Archivist or Cataloger.
  - o Quality Control: It is the responsibility of the Production Team to review their files before submitting them for archival processing. This consists of observing the file to check for any problems or digital artifacts.

- **Digital Archive Staging Drive**
  The Staging Drive is a dedicated storage device for queuing file packages. It should be kept clear of clutter and should be monitored for integrity on a regular basis.

- **File Package Approval**
  Once an Archivist has inspected and approved the structure and naming of a file package, the logging process can proceed.

3.2.2   Viewing & Logging: (Digital)

For each digital item, create a new Item record in the database (see section 2.2 for further instruction) and provide all available technical and descriptive metadata.
- Technical Metadata:
  - o To retrieve detailed technical metadata, I recommend using the **Media Info command line tool**[18], already installed on the MLF database host computer:
- Content: *Please see the instructions for logging content in section 3.1.2*
- **Final Cut Timeline:** Document the following…
  - o **Bin & Clip name**
  - o **Timecode, in & out points on a specific clip.**

3.2.3   Packaging with BagIt

BagIt is an archival file-packaging format differs from MLF's folder

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[18] Ubuntu Manuals, MediaInfo:
http://manpages.ubuntu.com/manpages/precise/man1/mediainfo.1.html

structure. Only files that are to be considered *archival* should be packaged and processed using BagIt, as once the bag is created and a checksum is generated, any production use or modification of the files therein will alter the checksum. Packaging files using BagIt creates a checksum that can be verified to monitor the integrity of the file(s). A tutorial for how to use BagIt can be found here:

North Carolina Department of Cultural Resources, Installation and Use for Transferring Digital Files[19]:
https://www.youtube.com/watch?v=14ZPtYLtUYA

3.2.4   Archival Directory

Once the items are bagged, they can be migrated to the archival storage drive, and copied to archival back-up storage, in its appropriate Collection folder directory[20].

3.3   PHYSICAL ITEMS

3.3.1   Physical Inspection

FILM:
Step 1
Gather necessary cleaning and inspection supplies (film cleaner, film wipes or cleaning cloth, latex gloves, loup, splicer, permanent marker, and clean leader stock, notepad).

Step 2
Apply a new **barcode label** to the lid or outward-facing side of the container (can/paperboard box/cassette case, etc).
*Apply labels in a uniform way that ideally follows the method of previous catalogers. This aids in visual identification.

Step 3
As you wind through the film, take note of the following, as applicable:
Format
Process (positive / negative)
*Edge Numbers

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[19] Be sure to modify your command line to accommodate use of the newest BagIt version.
[20] Directory under development during collection relocation.

Overall condition

<u>Things to consider:</u>
- Is it a Flat (compilation reel)? If so, are there clear separations / leader sections between the rolls? Edge numbers will be a good tool for identifying which negative roll an item is related to. Keep a detailed list of the Head and Tail edge numbers for each sections you identify, don't worry if the list is long.

- If the can you're working from contains multiple items, inspect and log each item individually – don't try to inspect multiple items at once, and transfer notes in batches. It will get confusing. Each item will receive it's own new leader, and this is most efficiently done when viewing on the Steenbeck.

VIDEO:
Step 1
Perform a visual examination of the tape:
- Manually advance and rewind the hub to check for sticking.
- Check for crayon / waxy / foot smell, which may indicate binder hydrolysis, or "sticky shed".

Step 2
Insert the tape into the playback deck – inspection and viewing can be done simultaneously with videos.
- If it is not safe to playback, (i.e. if you observe shedding of magnetic particles, mold, damage to the tape, or the tape will not advance manually.), set tape aside (keeping careful note of the location information) for further inspection by a Manager or Archivist, or proceed to creation of a new record and note this issue clearly in the description. Try to complete the record as completely as possible.

3.3.2   <u>Viewing & Logging: Physical Items</u>
FILM:
Step 1
Place the film on the Steenbeck*, heads out, and slowly play back the film. For each Take, note of the following information:

Footage numbers at start and end of each Take:
  (e.g. "start 10 ft, end 50 ft", etc.)
Take Type (Pan, Close-Up, low-angle, etc.)

Event or Work Title
Names of individuals
Locations

…And any other important information about the way the footage was captured or the subject(s) of the recording. **When you reach the tail of the item, do not rewind yet.**

Step 2
Create a new database record.
(see section 2.2).

Step 3
Attach new leader to the tail and head of the item. Clean the film as you rewind:
Write the new barcode number and ITEM ID# (top left corner of the Item record) to the leader using the following convention:

[HEAD/TAIL]   [ItemID#]   [Title] - [Generation] - [YYYY] - [BARCODE#]

Example:
HEAD   ID#: 117 - Newport Presentation Reel - Print - 1967   - 543JK00001

Step 4
• Transfer all of your inspection notes to the new database record, and complete the additional fields where applicable.
• Locate the identical Takes you have logged in the Final Cut Timeline and include the Timeline info in the Take log:
   ○ **Bin & Clip name**
   ○ **Timecode, in & out points on a specific clip.**

Step 5
(Double and Triple-check your work…)
Return the item to its box and/or shelf. If an item does not have a designated box and/or shelf location, assign with help from the Manager or Archivist.

VIDEO:
Step 1
Spot check the tape and note any errors, damage, or other information about the condition of the item.

Step 2
Rewind the tape and playback in full to log Takes.
(If preferable, inspection and logging of Takes can be done simultaneously)

IMPORTANT NOTE: _Be sure to include location information in all_
Item records, and do so with the utmost attention to detail – if this
information is incorrect, the item is considered lost!

4.0   SUPPORT

This page includes the names and contact information of MLF staff who
can offer support and information about the database and archiving
protocols. Keep in mind that information regarding specific FileMaker
functions and features can be found using the software's Help feature.

Name: Number: E-mail:

1. _____

2. _____

3. _____

4. _____

5. _____