



The Catalyst Solution

A case study in the loss of institutional knowledge and a new approach to the process & outcome of inventories for audiovisual collections

by joshua ranger
senior consultant
avpreserve

Introduction

Archivists, librarians, conservators, and allied professionals are familiar with the old adage to document the work one does and the collection management / collection care decisions one makes, because what if you get hit by a bus tomorrow and no one can make sense of your collection, know what conservation actions were taken, or know how to find things. It's very good advice, but we tend to take it lightly, probably because it sounds like "wear clean underwear" advice from our mom. One does not go through life expecting to die (life would be incredibly unpleasant otherwise) and we tend to act and plan accordingly.

But this kind of thing does happen. Literally.

In 2012 AVPreserve was approached by a cultural institution to help figure out what to do with their audio collection. The materials themselves dated back to the late 1930s, representing recordings of various events and performances that had occurred at the institution. The historical building was soon to go under a major renovation in the basement areas where the bulk of materials were stored, and the institution needed both to move the materials out and to determine what they actually had. There was no existing inventory, as well as no institutional knowledge beyond what little might remain based on the history of the events. This lack of collection knowledge was due to the fact that the caretaker of the collection – the audio engineer who had recorded much of the content over the previous thirty years – had been hit by a bus while riding his bike to work several years prior.

I hope that the use of this as a case study or the seeming irony of the scenario does not diminish the tragedy of the event, but underscores the fact that these types of things do happen, i.e., the total loss of institutional knowledge that is maintained only in one's mind. In the old adage the tragedy of being hit by a bus is used to express the randomness and suddenness of such an event, but it is the same result in an archive if the caretaker suddenly retires, moves to a new job, or is otherwise no longer available.

This was the reality of the situation, however. The institution needed an inventory so they could figure out what to do with the materials, part of which was determining what materials were historically important, what materials were not actually created by them, and which items were at high risk for degradation or damage. Equally important, there was also the hurry to get the assets out of a future construction zone in a manner that would not damage them and that would make it easy to find items they had prioritized for reformatting.

In order to help the institution I developed a plan to create an item-level inventory of the collection while boxing the materials for transport and storage.

The Scene

Materials were stored in three primary locations. In the basement were two areas that held mostly 1/4-inch open reel audio dating from the 1970s–1990s. One space was a throughway between separate workspaces in the back and front of the basement. On one side were metal shelves holding the tapes, and on the other were staff lockers and space used for temporary storage of equipment. The shelving units were located under exposed water pipes that had a number of leaks. These were the large pipes that were part of the building's water heating system, which also meant that there were frequent fluctuations in temperature and humidity in the space directly below them.

The second basement site was an ad hoc storage closet that had a combination of painted metal

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shelving and DIY built-in wooden shelving. This was an odd triangular shaped room filled almost entirely by the shelving, as well as with equipment and personal affects (audio gear, biking gear, clothing) of the former caretaker.

In both locations there was a thick layer of dust, plaster, and other debris that had settled over the materials after years of being stored in a basement and not being handled regularly. The moisture in the basement had turned some of the particulate into a thick, greasy consistency, and under the pipe leaks there were areas of mold.



Particulate covered boxes

The third location was on a mezzanine level in a storage closet primarily used by the facilities staff for cleaning and maintenance equipment. In the rear of this alcove area was a small wooden unit with three shelves holding 16 inch lacquer transcription discs dating from the late 1930s–1950s. It was unknown how long the discs had been stored there as they were from an early period of the institution’s history and had only been recently discovered. Based on the recording dates it was almost a certainty that there would be a mix of metal-based and glass-based discs. Due to their fragility and a lack of adequate storage space, the discs had never been reviewed or moved after their discovery.

The discs on the mezzanine would not be affected by the construction, but their age, condition, and content made them a high priority for immediate preservation action.

Portions of the collection were organized in an approximate order correlating to the source of the recording and record date. This was primarily the case in the basement storage closet, likely because many of those tapes were produced as part of the audio engineer’s side business producing recordings for individual musicians and singers, as well as for various publishing and advertising firms. Those assets were not a part of the institutional collection, but they were mixed in with organizational assets and they would have to be separated from the others as part of the prioritization and assessment processes. There were also a number of commercial recordings (both published and dubbed from other sources) that needed to be separated. In these cases

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it was important to separate out the non-institutional assets to get a better sense of the actual scope of the collection, to prioritize and budget more effectively, and to focus the cataloging time on the actual assets.

Approach

Prep

Before starting I spent half a day on site to prep for the inventory and packing work. First I did a rough estimate of the number of items and format types so I could budget for equipment needs and plan out a timeline. This was fairly easy with the open reels because they were all on shelves and, for the most part, they were all 10.5-inch reels. The only exception here was a fair number of pancake reels. Especially when bought in bulk, audiotape can be purchased sans reel with the tape wound around a NAB hub (like when film is stored on a core) or wrapped around a post that is a part of the packaging. Using the NAB hub the tape can then be placed on split reel platters for recording, or any amount can be wound off onto a reel for shorter recordings. Bulk tape like this is typically shipped on stackable Styrofoam platters.



Pancake reel in styrofoam platter

The pancake reels were stored stacked up on shelves, each generally with a brief annotation on the slim edge of Styrofoam denoting the content. The original plan was to either flip the reel into a standard cardboard reel box with a NAB hub plastic insert, or simply place the Styrofoam platter in one of these boxes without the hub. An alternate method had to be derived because it was determined that moving a reel-less tape would risk unspooling and would be too time-consuming for the project deadline. Also, at this time we discovered that most major manufacturers had recently discontinued production of this cheap cardboard housing and much of the existing stock out there had been bought up. We could find no reliable source that could ship the number of boxes required within the time and budget.

The transcription discs were also difficult to estimate because I did not want to shift them before boxing them in order to avoid breaking any glass-based discs. I counted sleeve edges as accurately as possible, but that count ended up being not entirely correct because sides 1 and 2 of the single-sided discs were frequently bound together with string. Intellectually they were

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considered to be a single object, but for assessment purposes quantifying the number and type of discs, they were considered two distinct objects.

Another issue that needed to be resolved before we started was the extreme dust and particulate. For health reasons (and for *ick* reasons) I did not want to make the inventory staff handle very dirty or moldy materials. I used a backpack vacuum with a HEPA filter to clean all surfaces of tapes and shelving as well as I could. I picked up a lot of dust and large debris (plaster, concrete, screws, prosciutto sandwich), but the greasier residue could not be removed. Additionally, I informed inventory staff to leave any moldy items for me to deal with.

Equipment

Because the primary purpose of boxing items was for transport and short-term storage, use of archival, acid-free boxes was not necessary. The overarching concern was protection and stability of items during transport and temporary storage, and it was important to find boxes that adequately fit large media (11–16 inches in diameter) without a lot of extra space in the box and without overloading the box. I selected double-layer cardboard boxes in cubic proportions: 12x12x12 for the audio reels and 18x18x18 for the transcription discs. The 12-inch boxes were just a little larger than the 10.5-inch reel boxes and could store 20-25 reels (reel boxes have variable thickness). I chose the 18-inch boxes to leave room for padding the 16-inch discs on all sides, but also because it was the closest standard size. Non-cubic boxes would have had to have been custom made and, therefore, they would have been much more expensive. The only issue was that this would end up leaving lots of extra space in the box. Transcription discs are extremely heavy, and 18 inches of them would be way too much for a person to lift or for the box to hold. I estimated the number of discs per box at 50 (still very heavy), but would still need a solution for filling the empty space so the discs would not shift.

As a general rule, it is important to select the right type and size of box for the materials and for the situation, and then to properly pack the materials in the box. Frequently, standard archival and bankers boxes are not the right selection for audiovisual materials. I often see boxes that are overfilled, which causes structural damage to the box, leads to lids sitting unevenly and boxes unable to be safely stacked, damaging pressure on materials in the box, and poor arrangement of items packed in to save space. I also see boxes that are under-filled that, when stacked for long periods, get bent or squished, providing no protective support to the materials inside. If you are using boxes to store audiovisual materials, it really matters to use high quality, sturdy boxes that are of a proper size, are not stacked too high, and are not stacked with heavier boxes on top of lighter ones.

Other equipment included nitrile gloves (black, so we looked cool); filtered masks to mitigate the dust/particulate/mold/decaying plastic odor; kraft paper, bubble wrap, and cardboard squares for packaging and filler; and of course plenty of tape and markers in addition to our inventory gear.

Process

The process required two parallel efforts of inventorying and boxing of materials, which, due to a pressing construction start date, had to be completed within a two month period. This was a perfect match for our Catalyst inventory process. With Catalyst, materials are imaged onsite using mobile imaging stands. Inventory creation is then completed offsite through use of our custom software that combines views of the images with a data entry panel. Taking advantage of the Catalyst process, we could quickly image and box materials without the need to move items offsite or to set up cataloging stations onsite. And the materials would be ready to move within

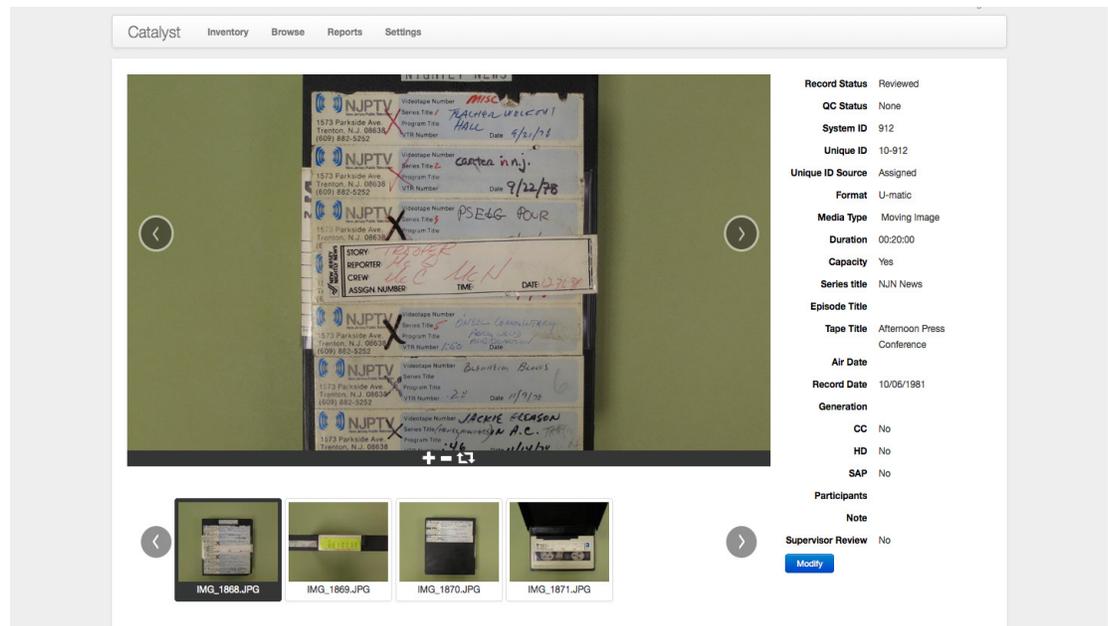
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two weeks even though the inventory itself may not be done.

Catalyst Process

Described at a basic level, our Catalyst approach uses barcodes that denote location and format for each object, mobile imaging stands that can be used directly where the materials are stored, and web-based cataloging software we have developed ourselves. A team of imagers takes photos of every surface of an object and any paper inserts that contain information about the asset. These photos are arranged and uploaded to a central server at the end of the day. Our Catalyst software processes the uploaded files, splitting a series of asset photos into an individual record and automatically assigning an ID, a Location Code, and the Format—all based on the barcodes assigned to each object.

At this point the automatically created records can be assigned to cataloging staff who are at a location somewhere offsite. Through the software interface, catalogers can view all of the photos associated with a single item in a simple slideshow-like interface (which also allows for rotating and zooming in/out of the image) next to which is a data entry panel. Inventory fields are minimal, primarily related to format information, location, duration, and basic descriptive information such as titles and dates – enough information to identify, prioritize, and plan for preservation. Where possible controlled vocabularies are used, and may be extended to accommodate fields such as Name and Title where the scope of possibilities may be unknown.



Catalyst interface - Image from a different project

Depending on the degree of handling (larger items, fragile items, and items with lots of paper inserts take longer) imaging staff can average 45–60 items per hour. With efficiencies in the cataloging software (fields automatically entered through processing and use of controlled vocabularies and auto-complete entry) catalogers can average 25–35 items per hour.

Location Codes

Normally the items in our inventories are tied to a location code at the shelf or box level where it is stored. In this case, we were moving from shelves to boxes, and then moving the boxes. As I built and taped boxes for the team, I gave each one a unique ID that denoted original storage location and format type. When we were able to determine that a series of items were private recording content, those materials were grouped and the unique ID reflected the content source (such as the publisher name, for books on tape) and format rather than the original shelf location.

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Handling Audio Reels

After an item was imaged it was placed directly in its new box. When the box was filled I gathered it, taped it up, and set it aside. This was very simple for the 1/4-inch reels that had housing, as they fit nice and snug in the box. For the pancake reels, we placed bubble wrap in the bottom of the box, slid a stack of Styrofoam platters in the box with the opening facing out from the side (not at the top of the box), and placed another layer of bubble wrap over the top and front of the stack before sealing the box. Arrows and a note that said “This side up” were drawn on multiple sides of the box to help try to prevent items being flipped.

Moldy tapes were separated and packed together in a “dirty” box. There was an additional problem of unhoused reels and pancake reels that had either started unspooling and were a pile of tape, or that had extreme stepped packs. A stepped pack occurs when a large section of the wound tape shifts away from the normally flat tape pack, creating a step of sorts. In some cases the step had actually come completely separated from the pack and was sitting on top of it. Though the former tightness of the wind persisted and kept these separated units whole, the step cannot physically be pushed back into the gap, let alone considering the fact that it would likely unspool or get damaged if attempting to do so. In a few cases if a small amount of tape at the outside of the reel had become unwound I would attempt to wind it back by hand to prevent damage during storage, but that is not a simple or highly recommended approach. A clean workspace and a 1/4-inch deck would be required to properly address the wind issues, but that was not a luxury we had.



Unwound and moldy audio reels



Because these unwound or severely stepped pancake reels could not be stacked without risking edge damage or other physical damage to the tape itself, they were distributed one to each box to sit as the top of a stack. A few not so severely stepped reels were grouped together in a box, but were not stacked to full height in the box to limit pressure.

Handling Discs

Transcription discs took more work. To start, the bottom and the sides of the boxes were lined with bubble wrap, and a cardboard square was inserted at one end to provide more stability support. After each disc or set of tied together discs was imaged and placed in the box, a cardboard square was inserted to prevent it from falling and to separate it from the next disc. After 50 discs (or 25 disc pairings) were placed in a box, cardboard spacers were made to fill in the extra space beyond the last cardboard square, and bubble wrap was placed on top of the box before it was sealed. This process created plenty of buffer space on all sides and, because the cardboard squares were taller than the discs, there was increased structural support in case something was stacked on top of the box.



Shattered glass-based audio disc

In the case of already broken or shattered glass-based discs and severely delaminating discs, the disc was placed between two squares of cardboard that were taped together on all sides. Label information was written on the outside of the cardboard. All broken discs were grouped together, as were all “dirty” discs. Additionally, metal based and glass based discs were separated. I completed this pre-sorting as I retrieved items off the shelves and brought them to the imaging team.

As mentioned above, in many cases two single-sided discs representing a single program were bound together with string. This string was not removed and the two items were documented as one record/conceptual unit. It was felt that the intellectual arrangement of this grouping was important, and we tried to avoid any extra handling that might lead to damage or loss of these fragile discs. In these cases within the inventory record the duration was doubled to account for both discs; we added a field to denote “Side 1”, “Side 2” or “Sides 1 and 2”; and we added checkbox field to note two discs so that we could get a reliable count of the total number of objects.

Cataloging

The data entry process was straightforward. Catalogers reviewed the images of an object and entered the data. When certain data was not present the field was left blank, except for Duration and Title, and in cases where the information could be comfortably inferred from context. In the case of Duration, when the exact run time was not recorded, we either defaulted to the potential maximum content duration if marked (as with most cassette-based media) or used an assumed program duration based on the collection type and observed recording habits (e.g.,

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60 minutes assumed for 1/4-inch reels). In these cases a checkbox was ticked to denote that the value entered was the potential capacity of the item, not the actual duration. All durations were rounded up to the nearest whole minute to aid calculations and to avoid problematic data corruption that can often occur when migrating times and dates.

For items without a distinct Title, one was assigned based on annotations, selecting the most pertinent information that would give the best sense of content, source, and use in the production process. Completely unlabeled content was given the title “Unlabeled”. There was a slight difficulty here in training people to move from the concept of presenting annotations exactly as-is, reflecting the artifactual state of the object, to the concept of logically creating titles that are meaningful and searchable. There was a steep learning curve both to this as an approach and also to getting familiar enough with the collection that names, abbreviations, content types, and other information became more immediately recognizable. The catalogers created a shared document listing common names, terms, and abbreviations, and I made an effort to continually reinforce that it was okay to make educated guesses and to combine information from the housing, the tape, and any inserts to generate a more useable title. There was some eventual success, but as in anything, it’s challenging to balance moving quickly with moving thoughtfully.

The fields captured included:

Box Location ID

Unique ID

Format

Title

Duration

Event Date

Record Date

Condition Note

Of these, Location, ID, Format, Title, and Duration were required. This was done to help keep track of items, to prioritize them for reformatting, as well as to plan a timeline, a budget, and storage needs. We needed to identify which content belonged to the client and was of high historical value. We also had to be able to find items after they were boxed and moved, and we had to identify what specifications and resources would be required to reformat the material. Condition notes were kept to a minimum, primarily to denote items that were affected by mold, delamination, severe unspooling, or breakage. Dust and poor tape packs were ignored because those issues affected the majority of items, making the distinction less meaningful.

Outcomes

In the course of about one month with a team of three imagers/catalogers we photographed, boxed, and documented approximately 3,300 1/4-inch reels, lacquer discs, audiocassettes, CDs, and DATs. There were also several hundred LPs that had to be boxed and moved from the space, but they were obviously commercial works and were not included in the inventory. We could not be 100% certain all of the time about which items were non-assets, so erring on the conservative side (if in doubt, include it) some non-assets were included in the inventory. We were able to identify a significant number and separate them, and also classify potential non-assets in the database.

Using the inventory we were able to identify a number of important recordings among the reels

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from the 1970s–1990s of musicians, public speakers, and theatre groups that had performed at the institution, an important aid to prioritization and eventual fundraising. The lacquer discs were much simpler in this way because they were almost entirely recordings of the same, historically significant program. The discs were also more consistently labeled with the program name, date, and time at the least. A portion of discs had the episode title and/or guest names on the label, but there was a good portion without that information.

In doing research to try to find a listing of episode information to enhance the inventory, I discovered that a large archive in another state held a collection of this same program and had a number of records in their online catalog, but it did not include the entire program history. The collection held by our institution also did not include the entirety of the program history. I exported the records from that archive and ran a comparative analysis against our inventory, finding that the gaps in their records were mostly filled by our records and vice versa with very little duplication. I contacted the archive to ask if the online records represented all of their holdings for these materials, but they were unable to tell me and said it would require an in person visit to do my own research. At one point in the history of our client institution they merged with another entity, a relationship that lasted for around twenty years until it was disbanded and the institution we were working with became independent again. Many of the institutional archives had been moved to this larger entity in that period, and the collection at the large archive was a donation from that entity. I have a theory that these are split holdings of the full collection based on the historical circumstances, but I have been unable to confirm that.

Ultimately these recordings will require reformatting. For the lacquer discs this need is incredibly urgent due to the heightened risk of delamination and breakage that is already affecting the materials. There is also an urgent need to address mold conditions in discs and tapes before the content is lost, and there were visual signs of tapes affected by Soft Binder Syndrome (often broadly referred to as Sticky Shed). This will require significant fundraising and a plan to manage the digital files resulting from reformatting.

Conclusion

An inventory like this is just a first step – a necessary first step that provides the information (How many items do I have? What are the formats? What is the duration? What condition are they in? What is the type of content?) needed to prioritize and select materials; to get cost estimates from reformatting vendors; to calculate how much digital storage space will be required; and to fundraise, advocate, and properly care for the original materials. It is a necessary first step, but unfortunately one that is often impeded by logistics and assumed resource needs. Our Catalyst approach is designed to get the job done in a short amount of time at a reasonable cost for the amount of work done and the deliverable. We are in a crunch for the amount of time we have to get audiovisual collections reformatted before they are completely lost. By speeding up that time from having nothing to having an item-level accounting and solid data that can be utilized for planning, we hope our efforts will help move collections towards reformatting more quickly so that resources can be focused on those efforts rather than lengthy processing or description efforts that could more easily occur post-reformatting.

AVPreserve is a full service media archiving and data management consulting firm. We partner with Archives, Museums, Government Agencies, Corporations, Media & Entertainment, and other organizations that create or collect media to help them manage, access, and preserve their valuable assets and data. Our services address the full lifecycle of collections, from assessment and preservation planning for analog materials, through project management of digitization efforts, to the various aspects of digital preservation and file management, including DAM selection, taxonomy development, policy and workflows, and development of software solutions supporting preservation and access.

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