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Finding AV Needles in Manuscript Haystacks: Conducting an Audiovisual Assessment/Audit in Manuscript Archives

Benjamin Harry

ABSTRACT

Many twentieth-century audiovisual formats are becoming obsolete or are physically degrading, warranting the need to digitally reformat this content. The first step is to expeditiously document where and what types of audiovisual materials are hidden within archival manuscript collections. This article describes the efforts of the L. Tom Perry Special Collections (LTPSC) at Brigham Young University to quickly audit manuscript collections to determine the location and format details of audiovisual materials, a crucial first step to inform decisions about personnel requirements, equipment purchases, and grant seeking to facilitate the systematic digitization of audiovisual content.

Introduction

All twentieth-century audiovisual formats are obsolete and are physically degrading, warranting the need to expeditiously document where and what types of audiovisual materials are hidden within archival manuscript collections. This article describes the efforts of the L. Tom Perry Special Collections (LTPSC) at Brigham Young University to quickly audit manuscript collections to determine the location and format details of audiovisual materials—a crucial first step that can inform decisions about personnel requirements, equipment purchases, and grant seeking. As helpful as these assessment actions are, limited resources often discourage institutions from conducting them. The article explains some of the typical challenges audiovisual carriers present to the manuscript archivist and documents the approach taken by the LTPSC in conducting an audiovisual audit using minimal resources. The article outlines the assessment actions taken, and their subsequent renaming as an audit, as we sought to pare down our project to its most essential target components in addressing our audiovisual holdings.

Brigham Young University (BYU), in Provo, Utah, has over 33,000 students with 179 undergraduate majors, 62 master's programs, and 26 doctoral programs. The Harold B. Lee Library is charged with supporting the teaching and research needs of BYU students, programs, and faculty. In addition to significant electronic access resources, the Library has over 98 miles of shelving and over six million print items. One of the gems of the Harold B. Lee Library is the LTPSC, which houses both rare book and manuscript collections. At last count, the LTPSC had approximately 12,000 separate collections and over 86,000 individual containers in its manuscript holdings. In almost every collection, some type of audiovisual carriers are included within these containers (e.g., boxes, cartons).

Manuscript curators at the LTPSC have the responsibility to oversee their collecting areas, which are typically defined by time period: nineteenth-, twentieth-, and twenty-first-century. This includes the shepherding of the materials, once acquired, through the subsequent processing and preservation stages. As the curator of audiovisual materials, Ben Harry is responsible for facilitating sustainable preservation and access to the information contained on audiovisual carriers and supporting the various manuscript curators in prioritizing preservation decisions regarding records in audiovisual formats in their collections. Upon Harry's recent appointment to this position, it was apparent that to effectively engage with department collections, he would require a sufficient level of detail regarding the types and amounts of audiovisual materials found in our collections, of which there was no overarching record.

With audiovisual items, their value is only realized with the ability to properly play back the content stored on these physical carriers. With this realization in mind, our assessment was conducted with an eye towards supporting the reformatting of audiovisual content to digital file surrogates. The content on these media carriers can communicate across space and time through the tonal expression of voices, the grace of movement, the immediacy of the imagery, and the envelopment of sound which offers an irreplaceable visual and aural time-machine experience. The department recognized that the value of these materials justifies addressing the time and budget challenges that preserving these can present.¹

Audiovisual materials require significantly different preservation and access actions than do their paper-based counterparts. This has been recognized for several decades, yet the more recent development of digitization, preservation, and access tools for AV content has led to some breakthroughs in allowing manuscript curators to engage in a much more responsible way with these challenges. Working in opposition to these positive developments, is the physical deterioration of media

1. Hereafter, the abbreviation "AV" will be used for "audiovisual". The word "carriers" has been chosen to describe physical AV materials, which serves to define that the information or content stored on these physical items can be transmitted and stored on various other analog or digital carriers. This transfer process of information from the physical carrier to electronic signal and finally into digital file form is defined here as "digitization".

carriers that were never intended to last forever, and the obsolescence of formats due to technological innovation and developments in content delivery. There is a justified sense of urgency to address the endangered status of the content housed on these carriers. The digitization and digital storage space for AV items can be very expensive, which demands greater need to be thoughtful and informed, yet with time ticking manuscript curators need to be aggressive and decisive in order to make these decisions before they are made for them.

Literature Review

Collection surveys, audits, and assessments are recognized as elemental to understanding collections and how to best fulfill archival stewardships. It is an intuitive principle that “an accurate census of its archival collections enables [an] institution to act strategically in meeting user needs, allocating available resources, and securing additional funding.”² It is exactly for these reasons that the LTPSC decided to conduct our AV audit. The foundational literature on archival management mentions such information-gathering activities in numerous volumes. We will focus on one exemplar here. In her book *Managing Archives: Foundations, Principles and Practice*, Caroline Williams explains that effective surveys do the following:

- Provide clear objectives from the outset.
- Ask the minimal questions to achieve requirements.
- Maintain consistency throughout the completion of each section.³

While these are very useful objectives, this example, and the paragraphs in the book surrounding it, illustrate that information about conducting surveys or assessments is hardly awarded more than a page or two in the general literature. Such overviews will typically only include a list of sound principles to follow because there are too many variables involved to address in detail. And in many cases, due to cost and workforce limitations, assessment of collections is perceived as a luxury that many institutions can at best perform only occasionally. In a 2011 report by OCLC, Martha O’Hara Conway and Merrilee Proffitt state, “Archival collections assessment is an important component of a successful collections management program. In most institutions, however, conducting an assessment is feasible only with additional

2. Martha O’Hara Conway and Merrilee Proffitt, “Taking Stock and Making Hay: Archival Collections Assessment,” OCLC Research, published August 2011, 7, <https://www.oclc.org/research/publications/2011/2011-07r.html> (accessed June 6, 2020).

3. Caroline Williams, *Managing Archives: Foundations, Principles and Practice* (Oxford: Chandos, 2006), 177.

resources. For this and a number of other reasons, collections assessment has not been a regular part of collections management practice.”⁴

But Conway and Proffitt have also sensed some positive movement in the field to increase and facilitate this type of activity: “In recent years... a number of institutions have created or adapted collections assessment tools, employed them successfully, and make them available for use by others.”⁵ Conway and Proffitt include in their report some concrete examples of successful surveys and assessments, providing a helpful resource that bridges the gap between understanding basic guiding principles and actual implementation and adaptation for use in institutions.

The specific challenges associated with AV carriers and their documentation are well-reported. In his 1990 book on archive management for recorded sound archives, Alan Ward notes the trouble these carriers in particular present: “Unfortunately, because sound recordings are compact and efficient information carriers, the work of documenting them, and particularly of describing their contents, is time-consuming and expensive.... It is the rule rather than the exception that documentation systems adopted by sound archive repositories in their early days are found to be too time-consuming when the volume of acquisitions increases.”⁶

Archivist Christopher Ann Paton also describes in detail the challenge of applying arrangement and description practices to audio recordings due to their dependence upon a machine for identification: “Consider the difficulties that sound recordings pose for the paper archivist. They cannot be ‘scanned’ or skimmed quickly by sight alone. The archivist who wants to appraise the recordings, the processor who describes them once they have been accessioned, and the researcher who desires to use them after processing—all require access to appropriate playback equipment.”⁷

Identifying the content on a given AV carrier can be a frustrating and confusing experience. Even when a carrier is clearly labeled and organized, it is impossible to know exactly what it contains until the recording has been played back in its entirety, and sometimes not even then. Old content could have been recorded over, content could be truncated or incomplete, or multiple valuable recordings could be housed on one physical carrier. Locating the correct equipment to access the content on these machine-readable-only carriers can require a significant dedication of time. Paton points out, “To make matters worse, one must listen to the whole recording, at the pace that the recording is meant to be heard, in order to really know what is on it.

4. Conway and Proffitt, “Taking Stock,” 7.

5. Ibid.

6. Alan Ward, *A Manual of Sound Archive Administration* (Aldershot, England: Gower, 1990), 66.

7. Christopher Ann Paton, “Whispers in the Stacks: The Problem of Sound Recordings in Archives,” *American Archivist* 53, no. 2 (1990): 276.

‘Speed reading’ is generally not an option.”⁸ With these potential variations, describing content can become a lengthy detective search with significant demands on personnel and funds. These challenges to providing proper identification complicate many recommended archival actions, resulting in a persistent philosophical and practical gap between paper-based archival practice and media-based application. Although the discussions in Paton’s article center around audio recordings, many of the challenges she presents apply to other analog machine-readable media formats, such as video and film, and can be expanded to include AV in general.

Paton concludes her article with suggestions regarding strategies and an assessment rubric to prioritize audio recordings for preservation. At the LTPSC, we have developed a format-risk value for each media carrier type. This value takes into account our own in-house capabilities, availability of the transfer equipment in general, and the fragility of the original carriers. While beyond the scope of this article, content assessment is the next logical and necessary step once a format audit has been completed. We also developed a content evaluation rubric that is based upon principles of uniqueness, collection appraisal as a whole, and so forth. With the combined uniqueness appraisal rating by the curator and the format risk value, we derive a preservation priority score to facilitate the prioritization of digitization.

While resources such as Paton’s article have pointed out the challenges AV materials pose and have proposed what types of work need to be done, they stop short of recommending specifically *how* it should or could be done. While the literature concretely and convincingly supports the practice of conducting surveys and assessments, this article seeks to bridge the practical gap between the instruction and the application and hopefully encourages engagement with the AV content in manuscript collections by institutions that have not yet taken vital steps to ascertain their collections’ AV holdings.

There are numerous resources that detail best practices for dealing with the conservation, digitization, and access challenges of AV carriers. Particularly of help are the International Association of Sound and Audiovisual Archives’ (IASA) technical guides for the preservation of audio and video recordings. Therefore, in the vein of Conway and Proffitt’s report, this article can be of topical value to the archival community. And in no area is the planned and strategic allocation of resources of such vital importance as with the expensive and time-consuming management of AV content. One of our objectives at the LTPSC was to make this process as lean on resources as possible, and we hope that this report demonstrates that an assessment is a feasible necessity rather than an unaffordable luxury.

8. Ibid.

Meeting the Challenges of Preserving Audiovisual Materials

Manuscript collections that document the twentieth-century and later commonly contain various AV carriers that can be hidden in cartons, folders, boxes and other containers. While some institutions may remove AV items to separate shelving according to format, maintaining the original arrangement of the collection has been our method in the LTPSC. This is similar to many other manuscript and print-based archival repositories.

In order to create a record of the location, format type, and number of these AV carriers, each container must be physically inspected. This can be incredibly time consuming, and it is easy for cassettes to remain hidden in the bottom of a folder. While this step can be tedious and time consuming, it must be performed. Finding aids can be consulted, depending on their accuracy, and this could save a lot of time. This task can be daunting, but if planned and objectives from the outset, it can be thorough and helpful.

The proper identification of the carrier format can also present myriad challenges. Once AV carriers are located, the format must be properly identified or it is still just “tapes,” “reels,” or “videos”. This requires some training, but there are valuable and useful AV identification guides available for training purposes.

For decades, the approach for preserving and accessing AV carriers was to create a second physical copy to reduce wear and tear on the original item and ensure that the item could be played back onsite with available equipment. This led to a frustrating multiplication of materials that required additional shelf space and lacked a clear generational pedigree for finding best copies. The process of discovering and eventually identifying duplicate copies and their provenance can be extremely frustrating, opaque, and costly. This confusion breeds hesitation and has certainly led to the dismay of librarians and archivists when dealing with AV materials. The creation of comparable digital files that allow for quick comparison can go a long way to help alleviate this challenge. The development of digital tools for the preservation and access to AV content in digital file form allows us to mitigate much of the inherent challenges of dealing with these carriers in the long run, but the process of getting these into digital formats can be most challenging and expensive.

Modern digital technologies now allow archivists to create a “preservation file” that can be cloned without loss as the original physical carrier degrades or the required playback equipment disappears. This file or its derivatives can also be played repeatedly without additional wear and can be made accessible through a number of physical locations and virtual avenues. It is an ideal way to provide access and is what most patrons now expect, but it does require the initial appropriate digitization action. Therefore, the facilitation of this reformatting should be the driving and defining goal of any contemporary assessment.

Historically, LTPSC curators and staff have taken the responsibility of preserving and providing access to these materials as opportunity and patron need dictated. But

with a new sense of urgency to preserve these resources before they degrade or become impossible to play back, we needed a more prioritized, comprehensive, and consistent approach to compiling the AV carrier format varieties and numbers in our collection. An AV audit/survey/assessment served as the foundation for the process of systematically digitizing the information housed on the analog AV carriers found in our manuscript archives.

Format Obsolescence

Format obsolescence threatens the ability to retrieve the information stored on twentieth-century AV carriers. Not only are the machines that were used to record and play this media back becoming harder to find, but internal belts and rubber rollers also deteriorate, the capacitors and electronic components stop functioning as they should, and either the machines physically will not play back the media correctly or they cannot correctly reproduce the electronic signal. The technicians that for decades maintained, calibrated, and repaired these machines are also increasingly difficult to find, and their services are often cost-prohibitive.

For decades, these older machines were auctioned off or thrown away as the commercial sector developed superior formats that allowed for enhanced information capture and greater portability. In order to further their commercial needs and to fund the research for innovation, technological companies have developed a plethora of proprietary system formats. Unfortunately, these factors have left many institutions, including the LTPSC, with an incredible number of records on formats that are difficult to identify and to correctly and safely access.

Physical Deterioration

Another risk that limits the ability to preserve and access this AV content is the physical deterioration of the carriers themselves. The materials used to capture and store AV information were never meant to be archival or exist indefinitely. Early film stock types were made of organic materials that naturally breakdown. Although later film stocks were made of more robust polyester materials, this was driven by commercial reasons to reduce damage that could degrade the theater experience. Magnetic media consists of a thin layer of magnetically sensitive material bound to a thin polyester or acetate base tape. The elements used to bind these layers together can become sticky or reversely degrade and cease to adequately hold the two layers together. Grooved media is similarly often a composite of disparate materials that can begin to separate over time. Each of these media forms is particularly susceptible to temperature and humidity. In addition, many of these formats are housed in plastic hulls where tiny parts, such as the small mechanical pieces of a VHS cassette with its springs, latches, and geared spooling, can break, jam, or crack. Because of these challenges, AV carriers must be carefully inspected before playback and will sometimes require a conservation action to allow to them to be properly loaded and played through the mechanism.

Hesitation to play back AV carriers by staff with limited technical knowledge is understandable and not entirely undesirable due to the physical nature of AV playback. The physical necessities of working with analog AV formats can be frightening and potentially disastrous:

- Analog audio recordings are commonly found on grooved media that faces unavoidable wear during playback.
- Magnetic tape is stretched and scraped across a playback head. It is not uncommon for the machines to misfeed or jam, even when properly maintained and operated.
- Motion picture film is clawed and dragged through a mechanical assembly line, leaving permanent scratches.

While neglect is certainly undesirable, it is not always easy to differentiate between neglect and due caution. One can see why a curator or staff member with limited time and AV expertise may have exhibited caution and elected not to cavalierly play back AV materials, which does not necessarily constitute neglect, but could still result in non-action on many of these materials for decades.

But the time to engage with the assessment of these materials is reaching a “now or never” point. Format obsolescence and physical fragility have led a great sense of urgency to the task of getting this information onto new carriers and into formats that will prove accessible for at least the next decades. Not making choices of prioritization today will significantly limit the ability to make those choices in the future. In a recent report titled *Deadline 2025: Collections at Risk*, the National Film and Sound Archives of Australia warned, “There is now consensus among audiovisual archives internationally that we will not be able to support large-scale digitisation [sic] of magnetic media in the very near future.”⁹ There has been a sense of urgency surrounding audiovisual carriers for quite some time, as Christopher Ann Paton advocated in 1990, “Archivists must take responsibility for preservation of recorded sound by beginning to appraise their audio holdings to determine which recordings warrant intensive preservation efforts and which do not. [...] Only by careful appraisal can archivists plan ahead for re-recording where absolutely necessary, transcribing or transferring recordings to other archives where appropriate, and discarding or deaccessioning when the cost of preserving either the information or the audio content exceeds the anticipated value of the recording.”¹⁰ Thankfully many of these carriers have demonstrated more stability than ever anticipated, but there is a consequential time coming when it will be prohibitive to faithfully extract their contents.

9. National Film and Sound Archive of Australia, *Deadline 2025: Collections at Risk*, <https://www.nfsa.gov.au/corporate-information/publications/deadline-2025> (accessed June 5, 2020).

10. Paton, 279.

Case Example: Quarter-Inch Audio Tape

One of the most ubiquitous formats in manuscript archives is that of the quarter-inch audio tape. Differing tape thickness, recording speeds, track configurations, and portions of recording capacity used can make an assessment and duration estimation terribly troublesome when discovering these items in the stacks. Likewise, adequately determining if a specific carrier can be digitized in-house can be equally bewildering. The following somewhat laborious example is included to demonstrate the limitations of properly assessing an AV item.

Tape thickness refers to the literal thickness of the tape, which has been commonly standardized to 1.0- and 1.5-millimeter widths (but of course there are variants). Obviously, more tape can fit on a given reel size if the tape is thinner, allowing for increased recording times when played back even at the same speed. A seven-inch-diameter reel of Ampex 406 at 1.5 millimeters will hold 1,200 feet, while a seven-inch-diameter reel of Ampex 407 at 1.0 millimeters will hold 1,800 feet. If the tape type is known, the thickness may be determined. This information is typically included on the tape's original box, but it is no surprise that tapes are often put into non-original boxes for storage.

Another pressing reason to capture tape type would be to gather data regarding susceptibility to binder hydrolysis, or "sticky-shed syndrome." Preparing and digitizing tapes with this condition requires additional conservation action (or the tape can be irreversibly damaged) and digitization transfer time.

Recording speed may be determined away from the studio, but only if it was accurately recorded on the physical carrier. Tapes' original cardboard boxes often have a checkbox in which to mark the recording speed of $3\frac{3}{4}$, $7\frac{1}{2}$, or 15 inches per second (ips). These checkboxes, however, are commonly left unchecked, and when they *are* marked, the information is not always reliable. Recording speeds can also change on a single carrier. These same challenges arise in determining track configuration, which can double or even quadruple recording duration on a given physical carrier.

Recording speed and track configuration provide real challenges when determining in-house playback capabilities. Non-professional audio recordings are broadly captured in three variations: full track, half track, and quarter track. Each of these configurations requires a distinct playback head, of which most machines have only one. Some machines can be modified to have up to all three, but your in-house capabilities need to be exactly known to determine what you can handle, and this could significantly affect which materials require outsourcing. Recording speed plays a similar role. Most playback equipment has two different speed settings, and some can be set up to include three. But with speeds ranging from $15/16$ ips (inches per second) and doubling incrementally to $1\frac{7}{8}$ ips, $3\frac{3}{4}$ ips, $7\frac{1}{2}$ ips, 15 ips, and 30 ips, the option of only two different speeds per machine can make this challenging. Having the proper intersection of recording speed and track configuration can be prohibitive for in-house transfer or even identification.

Video formats do not have quite the variety of configurations as open-reel audio recordings do due to greater standardization, but video can still present its own issues stemming from tape type, recording speed, recording standard, and variations of carrier capacity used.

As this demonstrates, there are so many varieties to be considered when conducting an audiovisual audit that it can overwhelm, inspire hesitation, or even stymie archives from ever taking such action. To avoid these pitfalls and to prioritize moving through the collections as quickly as possible, we revisited carefully our objectives and their desired goal, as Caroline Williams exhorted us to “ask the minimal questions to achieve requirements.”

Case Study

Applying MPLP Principles to Our AV Assessment

An important factor to consider when performing an audit is the allocation of resources. In presenting their landmark principles of “More Product, Less Process” (MPLP), archivists Mark Greene and Dennis Meissner recommend planning careful, sustainable processes that consider optimal resource allocation.¹¹ Indeed, they later assert that “MPLP, fundamentally, is not about specific processing actions. It is about resource management.”¹² They also state, “MPLP recommendations are broad strokes that can help archivists make decisions about balancing resources so as to accomplish their larger ends and achieve economies in doing so. Practitioners must shape them into their own institutional contexts.”¹³ The prospect of conducting such a potentially time-consuming hunt to locate and describe all AV materials in a repository with limited resources warrants careful resource allocation.

A helpful illustration of the practical interpretation and application of MPLP principles to actions outside of traditional archival practices of arrangement and description was demonstrated in a 2012 article by Shan C. Sutton.¹⁴ Specifically, Sutton distills the major tenets of the MPLP approach that can be applied more universally in “shift[ing] time-consuming, detailed processes toward rapid, minimalist strategies.”¹⁵

11. Mark A. Greene and Dennis Meissner, “More Product, Less Process: Revamping Traditional Archival Processing,” *American Archivist* 68 (Fall/Winter 2005): 208-263.
12. Dennis Meissner and Mark A. Greene, “More Application While Less Appreciation: The Adopters and Antagonists of MPLP,” *Journal of Archival Organization* 8.3, no. 4 (July–December 2010): 175.
13. *Ibid.*, 176.
14. Shan C. Sutton, “Balancing Boutique-Level Quality and Large-Scale Production: The Impact of ‘More Product, Less Process’ on Digitization in Archives and Special Collections,” *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* 13, no. 1 (2012): 50-63.
15. *Ibid.*, 50.

In his article, Sutton explains how MPLP principles guided decisions and were applied outside of the original article's scope in the digitization of the John Muir Papers at the University of the Pacific. Observing how Sutton clarified and concentrated MPLP principles for more universal application, provided us with a helpful model for applying these principles in disparate contexts.

- Of Sutton's tenets, we chose the following as guidelines for our AV audit:
- Expend the greatest effort on the most deserving or needful materials.
- Establish an acceptable minimum level of work and set that as the benchmark.
- Get the most information available in a usable form in the briefest time possible.
- Embrace flexibility.

The following paragraphs describe how we applied these distilled MPLP principles:

Expend the greatest effort on the most deserving or needful materials.

We applied this principle in both our audit and preservation approaches and it was the overarching directive for our prioritized engagement with AV carriers. It was imperative that we apply a great effort to identifying and preserving the materials as quickly as possible as the window for their optimal and cost-effective digitization was closing. Having the materials identified would allow us to narrow down the content that would fit the description of being "most deserving and needful."

Establish an acceptable minimum level of work and set that as the benchmark.

Sutton correctly identifies in his article that establishing a minimum level of work and setting that as the benchmark "represents the linchpin for moving from boutique practices to large-scale production."¹⁶ Under a guiding sense of urgency with these physical carriers, we identified necessary and valuable data points with a focus on efficiency. This became sort of a mantra for us when considering how little description we could gather while maintaining the audit's objective. We strove to make the best use of the staff and student time we have available, to produce the most useful data, and to cut out any less-vital data-gathering practices.

Get the most information available in a usable form in the briefest time possible.

Interwoven into the previous two points, we applied this principle to our uniform descriptions and to our data management, attempting to reinvent as little as possible and simply build upon the methods we were already using. Our output was reduced

16. Ibid., 52.

to as little as adding a column or two of data to the existing spreadsheet that the students were already familiar with (a short discussion of some of the data management tools we explored appears later in the article). The application of this principle also informed our decisions about managing the data collected.

Embrace flexibility.

Knowing that our actions would require revisiting and refinement, we began the project almost haphazardly, but on a very reduced scale. We had such little knowledge concerning our collections as described by physical carrier type, that the only place to begin was to just start opening boxes. We reviewed the data in small increments so that immediate and direct feedback could inform needed adjustments. We tried to stay openminded when accommodating the physical realities of how the collections actually live on the shelves and making adaptive modifications. Throughout the course of the project we transformed role definitions, training practices, and conceptual storage zones, among other alterations from our original approach. As Sutton points out in his conclusion, “By taking part in the continuous self-reflection advocated by MPLP, institutions can seek an appropriate balance in increasing... production... while ensuring that appropriate levels of quality are met.”¹⁷

One of the main tenants of the MPLP approach is to *not* demand that each collection or series be processed to the item level. While our intent with the AV audit was to describe every AV carrier to the item level, we wanted to do so as minimally as possible. The essential requirement demanded a number count of each item specifically according to its AV carrier format and its location in the collection. While the application of MPLP tenets might initially appear to be an odd fit for such item-level specificity, they proved quite useful. The approach allowed us to challenge any preconceptions we had about how to conduct an AV audit. Despite not resembling MPLP at all in practice, focusing on how to make this process as lean and streamlined as possible, is the philosophical essence of the application of MPLP.

Evaluating AV Assessment Tools

It is important to consider tools that are already created to evaluate how helpful they might prove. The LTPSC uses ArchivesSpace to manage our manuscript holdings. ArchivesSpace has an assessment module built in that would need to be judged for its applicability. This is a module where a general assessment note can be included for each collection, at the collection level. There are assessment design features that can be customized, however not to the granularity beyond collection-level. For our purposes of returning data specific to format, curator responsibility, and individual container reports, it wouldn't provide the necessary bifurcation capabilities. While built-in repository delineation could help identify the curator responsibility, and assessment categories could probably be customized to render

17. Ibid., 63.

themselves useful, it would limit all assessment actions to be AV reports only. Considering that collections management might at some time need the assessment function for a task more befitting this tool, and looking for an application that could deliver the data in a more readily readable report across the entire repository's holdings, we opted not to use this. It was simply not fitting the lean and light model of MPLP we were looking for.

Our neighbor university just to the north of us, the University of Utah, had recently embarked on a similar project in their Special Collections at the Marriott Library, in which they planned to assess their AV holdings and then use this data to prioritize preservation needs, seek grant funding, and manage their AV content. The assessment is just one component of a large audiovisual management project in process at their Special Collections.¹⁸

In the course of exploring the decisions made by the Marriott Library, we also compared other assessment tools that can provide support for building an AV carrier database, which encouraged us to revisit our own goals for the audit. We tested some of these AV assessment tools, including the Marriott Library's, with a small sampling of the data we had received. These tools provide great resources and may possibly help other institutions consider their options.

We first explored the Preservation Self-Assessment Program (PSAP), an online tool created by the University of Illinois at Urbana-Champaign.¹⁹ This tool allows users to enter assessment data for objects of a variety of material types found in an archival setting that are outside of basic paper-collection items, including audiovisual carriers. With this software, users can identify an object's AV carrier type and enter useful metadata regarding its content and physical condition. Users also answer specific assessment questions for each object to determine its viability or preservation risk. The tool can also generate several useful reports including endless nested and hierarchically organized groupings to explain the relationship of these items to any subgrouping, collection, physical storage location, and so forth.

After creating an account and entering our data into the PSAP tool and generating some reports, we explored the tool created by the Marriott Library. According to the Marriott Library's project description, they found the PSAP to be too simplified for their needs, and indeed there are even more detailed descriptive and organizational tools built into the Marriott Library tool. Catered to their collections' intellectual and physical specificities, the tool has the potential to capture

18. J. Willard Marriott Library, "U of U AV/DP Assessment," University of Utah, <https://sites.google.com/view/u-of-u-avdp-assessment> (accessed May 2020). They are documenting their assessment, digitization processes, and digital preservation decisions on a website so that others can follow along with this project.

19. "Preservation Self-Assessment Program," University of Illinois at Urbana-Champaign, <https://psap.library.illinois.edu> (accessed May 2020).

in-depth detail for each carrier type, as well as specific content types, such as oral history projects. This could yield impressive management of the library's AV assets and offers tracking individual items from initial physical inspection through completed preservation actions.

One tremendous asset of both the PSAP's tool and the Marriott Library's tool is the ability to prompt and record format-type-specific condition and content data. When an entry is created for a wire recording, the user is asked to enter spool size, presence of rust, and wind-pack condition. When considering audio reels, the user is reminded to check for binder hydrolysis, track configuration, recording speed, pack condition, reel size, and other specific characteristics. This data could be managed in powerful ways to generate reports that can yield both broad and in-depth data.

In relation to our needs, the greatest limitation of the PSAP tool and the Marriott Library's tool was the inability to collect data from large groups of similar materials. For example, we have a single box with 197 audiocassettes within it that were part of an oral history collection. These cassettes have the same basic format, with some small variations of brand, tape type, or length, but which are not of significant differences when considering whether we can digitize a format in-house or would need to outsource it. For content assessment, the curator would likely rate the entire collection as unique or valuable rather than sift through each individual interview to provide specific evaluation. Typically, when items are stored in a physical container (as ours are), mold or some other condition problem occurs at the container level rather than on the individual-item level. With the two AV assessment software tools that we surveyed, we would need to create an entry for each of these 197 cassettes in order to list them.

Through the process of testing these tools, we discovered that there are multiple levels of action under the terms sometimes interchangeably referred to as "assessment," "audit," or "survey." We discovered that while we were initially calling what we at LTPSC were doing an "AV Assessment," our goals were quite different than those of the PSAP and the Marriott Library's projects. While calling this an assessment from the beginning of the project, we began at this point to refer to our project as an "audit." The defining parameters of our project came into sharper focus as we progressed and reassessed throughout the duration of the project. Like the Marriott Library, after reviewing and testing some of these tools, we designed our own tool to meet our specific needs. As mentioned, our intent was to reduce the resources used for the AV audit process as much as possible.

LTPSC's Approach: Seeking Essential and Trustworthy Data

It is the standard practice at the LTSPC to routinely conduct a manuscript shelf-read audit, for which student employees perform most of the work. Our dedicated collections management specialist trains the students to systematically look through each shelving unit and verify what is physically located on each shelf. The main data points they gather are collection information, container number, and physical shelf

location, which are checked against our records so any discrepancies that may have appeared over the previous year can be corrected. As part of the shelf audit, the students also physically open each container to inspect the items for any obvious conservation needs. It is the curators' responsibility to address the conservation needs of the collections, but with such a large number of holdings, it is helpful to have another set of eyes systematically and physically review the materials to report anything questionable to the assigned curator for assessment. This shelf audit is one duty among many others that our collection-management student workers conduct.

Our shelf audit for the 2019 year included an added audit of our AV holdings for the first time. As the students searched through the stacks and recorded which containers are on each shelf, they also identified the format type and item count of audiovisual carriers. This information would allow us to plan our audiovisual preservation and access projects more systematically. Following the MPLP principle of establishing an acceptable minimum level of work, and knowing that we were adding additional work to an already significant task, we pared down the targeted data points as much as possible to minimize the impact on the overall shelf read.

One of the most important decisions we made was determining what data we wanted to gather from the AV portion of the shelf audit. Each carrier contains labels, clues, and symbols, but consistency and clarity can be extremely challenging. Some content and carrier data could easily be captured by the students in a single pass and we wanted them to be able to move through the collections as quickly as possible. We held tightly to the concept of finding the "acceptable minimum level of work" that would provide valuable information yet would not be too broad and unspecific.

Our initial brainstormed wish list of useful data was substantial, but as we considered what we deemed was actually *essential* to the project, our list became smaller, especially when we considered how much time a student might have to search for the data. Handwritten notation can take time to decipher; cases might require opening for information to be located; and content creators could have put this information in a number of places—all of which could dramatically increase the time a student might spend handling a given physical carrier, with the possibility that a good portion of the information would still not be captured after a substantial investment of time. We were also wary of the authenticity and accuracy of this data.

Some information is readily available on the external housing of an audiovisual carrier, but often the collection creator must provide a label with this information. Because these data points can be unreliable and inconsistent, we chose to not ask the students to record information beyond format type and number count. While it is helpful to know a video cassette's video standard (NTSC or PAL, primarily) or the playback speed, duration, and track configuration of the audio recorded on an open reel tape, we determined that much of this data is only truly essentially verifiable at the playback/digitization stage.

Having a good estimation of recording duration time is helpful for preservation project proposals that require outsourcing. Transfer facilities typically bill by the

hour, and many assumptions would have to be made if this information cannot be adequately gleaned through the audit process. We decided, however, that we must live with those assumptions. This information is virtually impossible to verify for some formats when sifting through boxes.

Case Example: Quarter-Inch Audio Tape

Revisiting our case example from earlier can demonstrate how the application of our guiding principles was realized in regards to this ubiquitous yet challenging format.

Tape thickness: difficult to determine based upon box labeling due to re-boxing, or lack of identification overall. While it can prove annoying to the transfer engineer to have a tape run longer than anticipated, without a clear way to identify it, this is not a data point we could gather at the inspection point. For outsourcing, we deem it acceptable to rely on assumptions, or further action could be taken if required for a specific project.

Tape type: having the same identification limitations as with thickness, it would be during closer playback inspection that the actual condition of “sticky-shed” could be determined and appropriate action planned, so it was logical to leave this step to the transfer engineer to determine the state of the tape upon reception in the audio suite.

Recording speed: may be determined outside the studio, but only if it was accurately recorded on the housing. Asking the students to spend time hunting for this elusive data when it is reliable only a percentage of the time would not have been efficient.

Track configuration: We decided to let the digitization engineers make these determinations, as they can use a magnetic viewer to verify track configuration and accurately test for speed when loading up the reel for playback. This does require making some assumptions when calculating recording-duration estimates. We decided that we would simply estimate sixty minutes of recording time per tape and would accept and adjust to variations.

In the digital realm, it is possible to manipulate the speed of a recording. A recording of 30 ips can be digitized at 15 ips and then digitally sped up 200 percent to approximate the original recording speed. However, this is not considered best practice as the aural properties of the original recording are compromised and can only be approximated. This is an important factor to consider when weighing outsourcing costs, costs of purchasing a separate machine to handle different speeds, and the research and aural quality of the recording itself.

As we carefully considered where veracity and expediency met, there would be very few data points we would be returning from this audit. We became anxious that it wasn't enough, worried that we were cutting too many corners. We were concerned that our reports would be relying too much upon assumptions without returning the

specific data necessary. We carefully mulled over the question of what we were going to miss by going so lean, but repeatedly we came down to the same essential data set. We needed the collection information so that we could assign some kind of content value that would serve our prioritization, it was absolutely essential that we identified specific formats, and the final data point was the count of that format in the given collection. This essential and knowable cluster led us to abandon much of the descriptive data gathering that is usually associated with assessing AV carriers and was the focus of the aforementioned assessment tools. Therefore, we derived our own method, effectively reducing our project to an AV audit.

It became apparent that in order to determine the more granular details of a carrier's characteristics required the media transfer environment with its specialized identification or transfer equipment on hand. The delivery of AV carriers into the playback environment necessitates such an investment of resources (selection, paging, location tracking, having an experienced AV technician on hand for proper identification) that by that point when all those resources were mobilized, it was deemed more effective to proceed with digitization rather than settle for mere description.

This was a lynchpin in our deliberations: with very *minimal* investment of resources per carrier, we could return data that would suffice for a good overview of our collections. Only with *significant* investment could we describe in detail, and since that investment was a significant portion of the resources it would require to fully digitize the material, we would reduce the first step to its absolute essential components. Based on substantial experience digitizing AV carriers, we knew that the trained transfer technician will verify any details reported anyway (track configuration, recording speed, presence of sticky-shed, etc.) before taking any action in the digitization process. Thus, gathering the more granular points of data became almost redundant with digitization practices and constituted an inefficiency that outweighed the usefulness of that data for an assessment of scale.

LTPSC's Method: First Assumptions and Continual Retooling

Initially, the only task we added to the ideally-annual shelf-read audit was to verify the presence of AV carriers in a physical container, which would be followed later with a review by the AV materials curator to identify the specific AV formats. The shelf-read results in a very basic excel spreadsheet, with each row representing a physical housing container (e.g., carton, box, folder, or film can). Columns include data concerning collection name, barcode, collection number, box number, and so forth. For the AV audit, we added a column to indicate if there was media present. Given this limited task, we reviewed the first reports from a very small sampling anticipating feedback that would inform refinement and improvement. As mentioned, we had anticipated that retooling and evolution would be part of the process. We just needed to get started and then make adjustments on the fly.

As mentioned previously, the role of the AV materials curator was to look through all boxes identified as containing AV carriers and identify the specific carrier format. It quickly became obvious that there were too many physical storage units for one person to sift through in a reasonable amount of time, as it appeared that roughly one third of the containers had something that might resemble AV material. As a result, we explored three questions: “How much of this work could be assigned to the student collections staff?” “How much training would be required?” and “Where would the tipping point in efficiency and training be reached?”

Basic identification and consistent definition were essential for our audit to be successful. In this initial data collection, boxes identified as having “media” certainly included AV carriers, but they also included photographs, photographic slides, 3D objects, computer discs, and published print items. With a majority of students born into a post-analog world, they exhibited a wide range of varying experience with analog audiovisual formats. Although we are only a generation removed from the era of VHS and cassette tapes, the fact that these and other tape formats are widely unrecognizable to many of the students adds evidence to the argument that they are indeed nearing or have reached obsolescence. In our audit, students commonly described any small-sized enclosed AV carrier format as a cassette and any physically large enclosed format as a VHS tape. Yet most common was boxes upon boxes simply identified as containing “tapes.” Clearly a baseline training was necessary.

Our initial assumption was that manuscript collections would either contain a great deal of AV carriers or none at all, depending on the creator’s activities. This was absolutely incorrect. From our small sample, over 50 percent of manuscript collections had some type of AV carriers included, and our complete data upholds this finding. The University Archives unsurprisingly demonstrated that virtually every department on campus had transferred some kind of record on an AV carrier at some time.

It was apparent that we had overestimated the students’ ability to identify AV carriers without training and underestimated the amount of material that we would find. After inspecting a number of boxes with large holdings of single formats (for example, 96 audio cassettes) it was also apparent that the lion’s share of the total AV carriers were primarily found in a relatively small group of the most popular formats. This led us to determine that with some training, these intelligent and capable students could handle a good portion, if not the majority, of the format identification as well. For example, while wire recordings *do* exist in our collections, they are outnumbered well over one hundred times by the number of compact audiocassettes. Training in identification of audio cassettes was worth investment, the large number of fringe formats could therefore be somewhat glossed over.

We developed a training for students that introduced them to analog AV carrier types according to format groupings and hierarchy. A short explanation of grooved, magnetic, transparent, and optical media storage laid the groundwork for thinking about analogous storage media types. Students also received a standardized format guide based upon these technological groupings (called the AV Format Family

Guide).²⁰ This guide illustrated a taxonomy of AV carrier types broken down into the following categories: audio cassette, audio reel, video cassette, video reel, motion picture film, audio cylinders, audio disc, optical disc, and audio wire. Each of these media carrier formats was illustrated with photographs, helping students understand what clues to look for when identifying material (e.g., if the cassette housing has a door that covers the tape, it is likely a video tape). Conceptually, this also helped the students understand that there are only so many format type variations, albeit a substantial number of specific formats. The specific format variations might seem innumerable, but in reality there are fewer than ten AV carrier-format generations. This reduced feelings of being overwhelmed and boosted students' confidence and familiarity with the carrier types—and even piqued some students' interest.

During the training, it was clear that some students were less interested in understanding the audio and video formats, making it more difficult for them to discern the differences between them. This created a natural separation among student workers based on interest and familiarity. We asked those who demonstrated enthusiasm if they would be interested in greater involvement with the project, to be considered AV support students. We feared that asking each student to wrestle with identifying all AV carrier types would slow the overall shelf-read process, especially for those who had little to no experience or interest.

By the end of the training, we developed a method to make the best use of the varied student labor force: the majority could be tasked with identifying AV carrier presence, identifying the most popular formats or the basic format group taxonomy, and tallying the number of items per container. All of these students would be trained and provided with a physical copy of the format guide that illustrated specific examples organized into taxonomic groups. If an item could not be identified broadly during the initial shelf read, the student marked the entry according to what he or she could determine (i.e., "Reels [20]"). The second pass would later be reviewed and refined by the curator of audiovisual materials or an AV support student. Most students could recognize the most common formats specifically, which the report would reflect: four VHS videocassettes would be identified as "VHS (4)" in the AV audit column. This provided accurate identification of almost all AV carriers and helped separate out truly audiovisual carriers from elements that could be broadly identified as "media." Having the number of items counted required simple verification and eliminated the need to re-count common and homogenous carriers during the secondary inspection.

We quickly refined this method to a three-phase approach. In phase 1, the majority of the students would move through the collection armed with the AV Format Family Guide, identifying which broad grouping the material could be categorized into and providing a numerical count of items. Common formats were

20. This guide draws heavily on the "Videotape Identification and Assessment Guide" provided by the Texas Commission on the Arts (<https://www.arts.texas.gov/wp-content/uploads/2012/04/video.pdf>)

specifically identified if recognized. In phase 2, the AV support student would target only those containers identified as containing audiovisual formats and verify and further describe the items. In phase 3, the curator of audiovisual materials would inspect any unidentifiable or troubling instances marked in the spreadsheet and randomly select a sampling of containers to verify for consistency. This admittedly meant that containers would be touched twice or even thrice, but the phase 1 students were looking for a number of data points within the broader collections management shelf-read, and the AV support student was looking only for specific media types. We felt satisfied that through this method we had an efficient and verifiable report when finished.

LTPSC's AV Assessment Tool

We used the library's existing shelf-read spreadsheet as the template for our expanded shelf-read project tool. We arranged the spreadsheet according to collection, then container, and then AV format to indicate how many items of each format were found in each container (see Fig. 1). Containers were repeated to illustrate multiple formats in a single container. The count of items per format produced reports of items per format type and per curator stewardship delineation. This is certainly not automatically generated and takes a bit of manual data wrangling, but this simple tallying can be relegated to task resources of minimal investment.

	A	B	C	D	E	F	G	H
1	AV Assessment							
2	Collection Title	Call Number	Bay	Range	Section	Shelf	Container Number	AV Format (count)
3	H. Tracy Hall papers	MSS 3204	12	3	B	4	34	VHS (1)
4	Owen S. Rich papers	MSS 2127	12	4	H	1	8	ACASS (10)
5	Lincoln JHS Oral Histories	MSS 3320	12	7	A	1	2	14AT (14)
6	Lisa Mitchell collection	MSS 2149	12	12	J	3	1	35MM (2)
7	Lisa Mitchell collection	MSS 2149	12	12	J	3	1	16MM (2)
8	Lisa Mitchell collection	MSS 2149	12	12	J	4	2	ACASS (1)
9	Lisa Mitchell collection	MSS 2149	12	12	J	4	2	VHS (1)
10	Lisa Mitchell collection	MSS 2149	12	12	J	4	3	VHS (2)
11	Lisa Mitchell collection	MSS 2149	12	12	J	4	4	VHS (4)

Figure 1. L. Tom Perry Special Collections AV Assessment Tool

We created a uniform risk assessment value for each AV carrier type based on typical fragility and format obsolescence. Curators were provided a rubric with which to provide content priority analysis for collections. With each item ranked on a scale from 1 to 5, a simple addition formula and using Excel's "conditional formatting"

	F	G	H	I	J	K	L	M
1								
2	Shelf	Container Number	AV Format (count)	Notes	Curator	Risk	Content	Total
3	4	34	VHS (1)		20th	4	1	5
4	1	8	ACASS (10)		UA	3.5	5	8.5
5	1	2	14AT (14)		20th	3.5	4	7.5
6	3	1	35MM (2)		MAH	3.5	3	6.5
7	3	1	16MM (2)		MAH	3.5	3	6.5
8	4	2	ACASS (1)		MAH	3.5	3	6.5
9	4	2	VHS (1)		MAH	4	3	7
10	4	3	VHS (2)		MAH	4	3	7
11	4	4	VHS (4)		MAH	4	3	7

Figure 2. AV Assessment Tool risk calculation fields.

option creates a visual representation of what materials should be prioritized on a scale from 1 to 10, allowing us to immediately queue the formats we can handle in-house and begin exploring outsourcing options for others (see Fig. 2).

This tool was flexible enough for us to record a box of 197 audiocassettes as a group, add that data into our data pool to quickly assess our holdings, and determine broad approaches to format stewardship. It took only a short time for a student worker to create the report and for the data to be appropriately assigned to a carrier format and to a curator. We relegated the time-consuming and possibly unreliable object-specific inspection for data gathering (recording speed, track configuration, etc.) completely to the digitization phase.

Compiled data

Our goals were to create quickly-generated, flexible data-gathering practices that would allow us to obtain usable data to begin our preservation prioritization and action as quickly as possible. When embarking on an information-gathering project, it is important to define where the assessment begins and where it ends. In our case, we re-dubbed our effort as an “audit” because we only sought to know (1) what formats we have, (2) how many of each of these formats we have, and (3) where the formats reside (collection and container). We created a ranking for prioritization outside of the audit process and will report physical condition information only when there is an outwardly visible need.

Conclusion

Defining the goals of an audit, an assessment, or the creation of an entire AV objects management system to meet individual institutional needs does not need to be daunting. It is as simple as defining the needs and goals and working backward to develop applicable tools or spreadsheets.

Our project was heavy in the audit category but still contained some assessment of carrier and content prioritization. Such a project can be the final report, or an early phase that beginning with an audit, lays the foundation to create an entire database for AV materials for description and preservation management purposes. It is critical to define and establish goals at the outset of a project to engage with the management of AV materials in collections. Working from the end goal backward is the determining factor in many decisions. Under the term “assessment,” several varying project types can be defined, requiring deliberate and careful definition.

The available and powerful AV assessment tools and our quick-audit spreadsheet could certainly be used in conjunction with one another: a survey can initiate the process broadly, followed by individual inspection, resulting in full and accurate description in a tool that will allow for enhanced assessment and management. It might also be useful to create a hybrid tool that can accept groupings from an audit stage and then be expanded when greater resources are available. Such a project would certainly be a worthwhile undertaking.

Time will determine if our shorthand audit was the most effective approach. If in just a few years we find ourselves turning to a more robust and specific assessment tool, that project will likely go much more smoothly as a result of this audit. In addition, because of the expeditious nature of the audit, we were able to begin our systematic digitization projects immediately.

Holding fast to principles of efficiency and resource evaluation based on the MPLP mindset has allowed us to quickly reach our goals. In just over a year’s time (September 2018 through December 2019), we have completed the survey of all 86,000 containers in our manuscript collections. Having shelf reports come in “as completed” allowed us to begin immediately with pilot in-house digitizing projects. We have begun purchasing and assembling increased digitization capabilities for common formats found in our collections. We have solid data to inform and support these preservation efforts. While actions to expand capabilities are still in development, we have prioritized collections we can work with immediately. In addition, the audit has allowed curators to review their AV holdings and set content priorities. We accomplished this without any software development, simply using common off-the-shelf products. Developing an adaptive approach where data was returned in small increments allowed us to regularly refine our processes and maximize the strengths of our workforce.

The impact on our existing collection review activities was so minimal that we are planning on repeating this action in the near future. With a second pass, any shortcomings from early-development audit stages should be remedied. Our training approach will be refined to better serve our student workers. As this will give us a firm grasp on our existing legacy AV carriers in the manuscript collections, we can focus on identifying AV materials in new collections as they are received. Going forward, we anticipate only needing to conduct such comprehensive audits on a five-to-ten-year basis to catch outliers and discrepancies.

We recommend that other institutions quickly address their AV holdings in a similar manner, using the MPLP mindset as a guideline. Postponing an audit of this type only reduces the possibility of taking action in the future as these AV materials and their playback equipment fade from the landscape of affordability.