

Outliers: A Basic Guide to the Preservation of Analog Moving Image Collections in Non-Moving Image Archives

I. Introduction

In an ideal world, all moving image material would be kept in a moving image archive. The specific preservation needs of film, magnetic tape and digital video are utterly unique among media and to be fulfilled properly, require any number of specially-dedicated resources, from storage units and environmental controls to inspection, repair and viewing equipment. It's common sense to say that the best place for any moving image record, then, is to be looked after by an institution whose mission statement and priorities are especially built to accommodate those needs. But of course it is entirely unreasonable to expect this to be the reality in every case. Even if they had an unlimited acquisition budget, all the moving image archives in the world combined wouldn't have the space or time to take in the staggering amount of material that exists. Part of the duty of the moving image archivist thus becomes finding a way to look after, to the best of their limited, indirect means, those materials that may never even cross their collection. One of the best methods available to us in this task is to produce and make readily available the same information that we, as moving image archivists, use to guide our preservation actions. The most thorough surveys and studies may not be especially convenient for professionals who, again, are not necessarily considering their moving image materials as a high priority, but best practices guides can condense the collected knowledge of our field into more readily accessible instructions.

This is hardly a new idea, but complications arise in determining the content of such guides. First is the targeted audience: audiovisual and moving image material is used and collected by a staggering array of social communities, and each have their own needs and concerns to address. There is also that perpetually haunting issue of obsolescence, of information contained in such a guide becoming out-of-date and irrelevant because of shifts in technology, philosophy or practice. The audiovisual archivist must monitor these developments not just for the sake of their own work, but to ensure that the advice they disseminate to others remains pertinent.

Increasingly, events like Home Movie Day and groups such as Activist Archivists are bringing attention to moving images that have fallen outside the purview of the traditional archiving world. This is noble and crucial work, and that spirit of vigilance was certainly an inspiration in the origins of this project. But ultimately I have chosen to focus on a different sort of material falling outside the bounds of moving image archives: audiovisual records that have been collected, incidentally, by non-audiovisual archives. That is, the primary concern here is institutions whose goals and acquisition policies target paper documents, artwork, or other materials, but by whatever circumstance, find themselves responsible for audiovisual works. There is an advantage to examining these situations: as we are still staying within the general realm of

archiving, there is no need to address, on a philosophical level, the overall need for preservation. The issues at hand are likely to do with the proportion of an audiovisual collection relative to the archive's general holdings (and corresponding allocation of resources), not convincing the archivists involved of the potential value of the materials in question. This is intended to be a guide merely for those who do not have specific education or experience in the preservation of audiovisual records, and because of institutional priorities are unlikely to be able to provide ideal care.

Unsurprisingly, prior work has been done in this area – considering their professional overlap, it would be shocking if moving image and non-moving image archivists did not communicate on such matters. But in searching available guides and web sites, two trends emerged: first, again, the issue of outdated literature. Searching for film or video preservation recommendations in *The American Archivist*, the main publication of the Society of American Archivists (an organization that represents the prime demographic for this guide), for instance, returns a few relevant bibliographies and articles, but very little published past the 1990s. Such pieces might not even address the opportunities and dilemmas posed by advances in digital preservation – and even if they did, technology has advanced since then so as to make any kind of specific technical recommendations suspect by today's standards. Of course, attempting to address present-day conditions will invariably result in the same eventual outcome of obsolescence; but this is a natural cycle, and a system of constant updating and revision is highly preferable to not even tackling the issue at all, and simply leaving questioning individuals to their own devices.

The other pattern that emerged is the practice of simply referring to in-depth manuals designed either by or for moving image archives. The information contained in the NFPF's *Film Preservation Guide*, the AMIA-sponsored Home Film Preservation Guide (www.filmforever.org), the National Film & Sound Archive of Australia's online preservation handbook, and other such resources, is certainly of quality and laid out in clear terms; however they often assume a level of dedication and priority given to the materials in question that non-audiovisual archivists may not be able to offer, even if desired. These sources are invaluable as guides to the ideal conditions of moving image storage, handling, access and treatment, but there is value to addressing and offering minimum guidelines that recognize (and to a degree, accept) the limitations facing most of these outlying audiovisual collections.

In an attempt to counteract these problems, I tried to ascertain what would be the most strictly relevant and useful information regarding audiovisual preservation through personal discussion with such non-audiovisual archivists. Though the specific needs of every individual institution and collection will surely make it impossible to ever create a true one-size-fits-all guide, the universal concerns were these: the safety of the audiovisual material (both in the long-term and short), and the guarantee of access to researchers or the general public. Both the structure and content of this guide were thus laid out with these interests kept constantly in mind.

This guide is intended not to be comprehensive but condensed and accessible. In relevant areas, links and references may be provided to assist users with peculiar situations or more in-depth questions not addressed here (such users also may want to consult the bibliography at the guide's end). The goal is to create a basic, troubleshooting-style workflow for archivists who become unexpected caretakers of audiovisual content rather than active pursuers of this material; a first stop, less intimidating than jumping straight into a possibly unnecessary or at least unrealistic best-case scenario. It will cover, as best it can, two major categories of analog audiovisual/moving image media formats: celluloid film and magnetic videotape. The decision for not including born-digital records at this moment is generally related to the ambition of this project: the issues facing these kinds of materials are manifold, highly technical, and worthy of a whole guide of their own. It is also a discussion evolving fast enough to make a simple, straightforward piece of the kind desired here nearly impossible. Discussion of digital preservation will thus be limited to its relation to the analog materials described herein.

II. Inspection, Assessment and Handling

General Guidelines

The critical first step in caring for audiovisual materials is simply proper identification of the records at hand and their condition. Further measures for both preservation and access will largely depend on the moving image format, and the problems of deterioration and loss unique to that format. While identification is generally not a difficult matter, in the days when the Internet provides a wealth of leads and examples on even the most superficial of clues, inspection is the first true difficulty faced by the non-audiovisual archive. A lack of specialized equipment and supplies creates an immediate roadblock to the safest or most thorough inspection methods, but it is impossible to properly assess priorities without completion of this task. Visual inspection, then, is generally the best method available to the untrained moving image archivist.

For the purposes of this guide, we will assume that the archivist will have certain basic supplies available to them, tools that are used throughout the profession and are not unique to audiovisual materials. These may include:

- cotton or static-free nylon gloves
- dust mask
- lint-free/microfiber cloths
- safety glasses
- loupe

All inspection should take place in a clean, ventilated, well-lit environment. Gloves should be worn, particularly when handling film or videotape. Wash and thoroughly dry hands before inspection, and keep food/drink away from the work area.

If the audiovisual materials have been kept in cool/cold storage (54°F or below), but are to be inspected in a space at room temperature, allow time for the materials to acclimate to the new temperature (at least one day) before attempting to open/inspect.

It is a good idea when carrying out any first assessment to complete some sort of inspection form or at the very least to take and save notes on the conditions encountered and measures taken during the inspection by the archivist. Provide a date on these notes so that future inspections can be sure of the preservation history of the object.

Film

Step One: Opening/Inspecting the Can

A film's can may be a first indicator of the condition of the filmstrip itself. If the can is metal, rust is a sign of chemical reaction, never a good sign for the long-term stability of the record. When handling/opening a rusted film can, it is advisable to wear a dust mask and perhaps even safety goggles, to protect from potentially dangerous fumes and stray particles. If the can is dented or rusted shut, it is acceptable to use a screwdriver or other flat tool to pry open the can, but exercise extreme caution!

Step Two: Visual Inspection of the Print

At this point, the *gauge* of the film (its width, measured from edge to edge; most commonly 8mm, 16mm or 35mm in America) is relatively inconsequential. A note should be made if possible for later issues of cataloging and access, but of more immediate concern for the safety of the film itself is the method of storage and the film's *base* (the kind of transparent plastic used to originally manufacture the film stock).

Film prints can be stored in one of two ways: on a *reel* (used for projection), or a plastic *core*, a hub around which the film is wound, encountered most often when the film was stored in a production environment. If the film is on a core, be very careful when removing it from the can; the core should be supported with a hand to prevent it from popping out. Regardless of whether the print is on a reel or core, take care to only touch/hold the edge of the filmstrip when handling.

Complete inspection of a print either on reel or core requires the use of a *rewind*, a pair of tools affixed to either a table or portable bench that allow the archivist to wind through the film slowly, without placing undue stress on it. Viewing a print stored on a core also requires the use of a *split reel*, two flat discs that split apart to accommodate the core. These are examples of the specialized, somewhat expensive equipment the non-audiovisual archivist may not have available to them, making it difficult to fully identify damage to the film's surface (tears, broken perforations, scratches, image fading).

DO NOT project the film if no inspection for such mechanical damage has been made. If the proper equipment becomes available and such tears and breaks are visible, also DO NOT project the film until they can be fixed by

an archivist or projectionist trained in film repair.

Other problems may, however, be easily spotted even through a simple visual inspection of the outside of the print. Many of these have to do with the decay of the film's base. *Acetate* film (probably the most common base format, used for amateur 16mm films starting in the 1920s and professional 35mm environments starting in the early 1950s) and *nitrate* (used for 35mm from the late 19th century to the early 1950s) are both capable of significant deterioration if not kept under proper conditions. Consult the following chart for easily visible signs of damage:

<u>Problem</u>	<u>Symptoms</u>
Mold, mildew, fungus	White spots on exterior of print (usually in an organic, interlaced pattern)
Acetate decay (<i>vinegar syndrome</i>)	Vinegar odor; white powder on edge of film; curling of the film's edge; "spoking" pattern emerging on film roll
Nitrate decay	Unpleasant odor (strengthens as deterioration increases); brownish discoloration; eventual congealing and disintegration

A third type of base, *polyester*, was introduced in the late-1960s/1970s and for the moment does not have any known problems with decay. The base type can generally be determined by edge codes (see: Step Three, below) or through context clues of the film roll's age and gauge.

Any films exhibiting such symptoms should be kept isolated from other materials, as exposure can help hasten deterioration. Acetate and nitrate decay can not be reversed once it starts to occur, but can be slowed with proper storage techniques (see Section III). If the information on these films are of critical importance or value, the archivist may want to consider contacting an outside vendor to copy the content before it is lost completely.

DO NOT project a film exhibiting any signs of mold or base decay. This can result in damage to both the projection equipment and the film itself, and can contaminate any other materials that may be run through the projector later.

Mold and fungus can be cleaned, but this is a potentially hazardous task (mold spores can be harmful to one's health) and again requires specific film cleaning supplies and rewinds. Consult more detailed guides (see bibliography) for specific instructions if such a task becomes necessary.

Step Three: Gathering Other Information

The print's origin date can be estimated using what are known as *edge codes*, a series of standardized symbols printed by the manufacturer along the edge of the film stock. Even if a rewind is unavailable and the whole print can't be

examined, the archivist can carefully unwind the very beginning of the roll until an edge code can be found, using a loupe (a strong light source will definitely be necessary for this code to be properly visible). For Kodak, the source of most American film stock, edge codes were used for all common film gauges and repeated in 20-year cycles: a chart that tracks the corresponding edge code to the year of production can be found here:

<http://www.filmforever.org/Edgecodes.pdf>

Once a manufacturing year has been identified on this chart, it is likely that the film itself was produced either during or soon after date. Kodak edge codes will often also usually identify acetate base film with the word "SAFETY."

Videotape

Step One: Inspecting the Reel or Cassette

Magnetic videotape is housed in one of two general formats: on reels, similar to those of film, or inside cassettes, which can vary greatly in size and shape depending on the manufacturing company and brand. The creation of videotape was never standardized to the same degree as film manufacturing, resulting in a significantly larger number of potential formats, many of which used proprietary technology (as in, a videotape that will only work inside a videotape player/recorder built by the same company as the tape, and furthermore only for that specific tape format). Thus, perhaps the most important information to be gleaned from initial inspection is to identify that specific format, which will determine almost all further steps in viewing and access.

The following is a list of the most common types of videotape to be found in archival collections, but be aware that there are variations even within these categories.

- 2" quad (open reel)
- ½" open reel
- ¾" Umatic and Umatic SP
- Betamax
- Betacam and BetacamSP
- VHS and S-VHS
- Digital Betacam
- DVCAM
- MiniDV

In distinguishing between these formats, one must almost certainly consult with another resource, such as the Texas Commission on the Arts' Videotape Identification and Assessment Guide:

<http://www.arts.texas.gov/wp-content/uploads/2012/04/video.pdf>

Magnetic tape is much more difficult to visually inspect without playback, as one can with film. In fact, when the tape is contained in a cassette, it is more or less impossible. However, mold, mildew and water damage may be spotted on

the outside of the cassette, through the cassette window (if there is one), or on a tape reel.

DO NOT attempt to play the tape if any sort of contamination is visible. This can clog the playback equipment; damaged tapes must be cleaned first.

Another symptom to watch for in initial inspection is odor – magnetic tape was for some time manufactured on an acetate base, and just as with film is vulnerable to deterioration. If there is a strong vinegar odor, DO NOT attempt to play the tape.

When handling videotape cassettes, archivists should simply take care to only touch the outer shell, and avoid touching the spools or any exposed tape. For reel-to-reel or open reel tape, handle only by the edges of the reel and the hub.

Step Two: Playing the Tape

However, if there are no obvious outward signs of damage or deterioration, there is no way to inspect the condition of the actual image signal on a tape without playing it. If the archive has the relevant playback equipment available, the tape should be played, but cautiously. The archivist should vigilantly listen to the sound of the tape running through the playback machine: a high-pitched squealing can be a sign of *sticky shed syndrome*, a common issue facing videotape that results from hydrolysis. If the archivist detects this or any other kind of unnatural sound emanating from the machine (even the untrained ear should be able to easily detect such problems), they should stop playback immediately and, for now, simply make a note of the issue; dealing with sticky shed syndrome unfortunately has no clear-cut solution (addressed in Section III).

Meanwhile, the archivist should also monitor the strength of the image signal, watching for any visual issues with the playback. Problems with the physical material that makes up videotape makes even the most durable formats prone to issues like *dropout*, which results in distracting, unintended black lines on the image. The severity of these and any other signs of signal loss or physical damage to the tape should be noted and described carefully. Some of these problems may be solvable through cleaning of the tape and/or the playback equipment, but the extent of the damage may help determine if the the archive wants to consider re-mastering (see Section V).

Step Three: Rewinding

If possible, all tapes should be rewound to their original starting playback position before being placed into storage. The proper position can vary from one tape format to another, but in the most common formats, this means that the tape should be wound on to the left-side spool.

III. Storage and Preservation

Film

Step One: Rehousing

Based on the findings in Section II, film rolls may need to be rehoused before being placed in storage. Rusted metal cans should be replaced with a plastic can or box of corresponding size. This is an outside purchase from a qualified vendor, but should be relatively inexpensive compared to most film-related supplies; previously used cans are even acceptable, if they can be found and the archivist is reasonably sure that they were not used in the past to house decaying film rolls.

Step Two: Reasonable Storage Conditions

This is possibly the most important element of protecting film collections. Nitrate, acetate and polyester films can all be extremely stable materials if stored under the right conditions. The great advantage here for non-audiovisual archivists is that the same general principles that guide the storage of paper materials hold true for film. Low temperature and low humidity greatly increase the shelf life of film materials, so as long as such a collection is held even 15°F below room temperature and between 30% and 50% relative humidity, the archivist can take comfort that they are taking reasonable measures to help the long-term life of the record.

Generally, though, the colder the better. If the films are likely to be used, current recommendations suggest storage at 40°F; if the collection is not likely to be frequently requested, a better option might be freezing the films (32°F or lower) to provide truly extended life. Such cold storage or even frozen vaults are major structural undertakings, and likely to be beyond the means and priorities of a non-moving image archive; however, small collections can be kept in off-the-shelf frost-free freezers, a more reasonable purchase. In the case of the latter, however measures must be taken to protect the film from high humidity; careful packaging can accomplish this (for more detailed instructions, see: www.filmforever.org).

Overall, though, one of the most important factors in storage is the stability of the environmental conditions. Films kept at a steady temperature of 54°F and relative humidity of 30-50% will fare far better than films stored in a freezer that constantly fluctuates between, say, 26-36°F. Beyond such specific measurements, this means such basic, practical measures as keeping films out of attics or basements, away from direct sunlight and windows, and nowhere near heaters, radiators or sprinklers. Again, these are general principles of archiving that should be familiar even to the non-audiovisual archivist. Meeting these basic conditions might not provide the item with extended life, but it meets the archivist's fundamental responsibility of preserving the object by keeping it out of directly harmful situations.

If the films are stored on reels, the cans should be stored vertically, to prevent damage from the film roll pressing against the reel. If the films are stored on cores, they should be stacked horizontally.

Step Three: A Note on Nitrate Film

The above recommendations can generally be followed for acetate and polyester film, but storing nitrate film

provides extra challenges because its particular chemical makeup defines the material as a serious fire hazard. The National Fire Protection Association offers official guidelines for the storage of nitrate film, including the construction of specially-designed cabinets, sprinkler systems, and vents. Freezer storage is also necessary not just to extend the film's life, but as a fire deterrent. It is also worth noting that in many locations, these guidelines may not just be suggestions, but law. It should go without question that nitrate should not be stored together with acetate or polyester film.

Generally speaking, any institution that finds itself with anything more than a few rolls of nitrate film will most likely want to arrange off-site commercial storage, or even transferral of the collection to another archive with specialized facilities. If the nitrate has deteriorated (see Section II) to the point where it is impossible to copy, it must be disposed of through authorized hazardous waste dropoffs.

Videotape

Step One: Addressing Sticky Shed Syndrome

Sticky shed syndrome is not currently thought to be reversible – however, a school of thought advocates for the process of *tape baking*, whereby tapes exhibiting the signs of sticky shed can be temporarily stabilized. This may give the archive enough time to create a new copy of the tape for preservation and/or access purposes. More sophisticated methods for baking involve scientific ovens, but if this kind of equipment is unavailable, several DIY designs are freely available on the Internet; the essential process is simply to heat the tape, and extraordinary measures may not be necessary.

However, there is some controversy in the moving image archive world at the moment regarding whether baking simply temporarily relieves sticky shed, or if it can actively accelerate the deterioration process. Deciding whether to bake a tape displaying sticky shed syndrome will most likely go hand-in-hand with the question of access and copying for preservation purposes (see Section V).

Step Two: Rehousing

For videotapes in a cassette, such as VHS, if the cassette is contained in cardboard or another kind of paper sleeve, it should be rehousing before being placed in long-term storage. Paper containers are susceptible to their own degradation, and exposure of the tape to such chemical processes should be minimized. Plastic tape cases should be easily attainable for purchase on the Internet, new or used.

Step Three: Reasonable Storage Conditions

Again, as with film (see above), videotape is ideally stored under stable, cool, dry conditions. Tape on open reels and in cassettes should be stored upright; for cassettes, this minimizes the risk of water damaging the tape through the exposed flap on the cassette. Keep the tapes away from direct sunlight, vents, radiators, water pipes, or other risky locations.

A unique consideration for videotape is also the threat of demagnetization. This is an unlikely problem, but unique cases have occurred. Make sure the tapes are stored away from motors, transformers, loudspeakers, vacuum cleaners, TV sets and computers.

Videotapes should absolutely NOT be frozen. This can lead to hydrolysis and the previously-mentioned sticky shed syndrome.

IV. Organization and Cataloging

Step One: Selecting a Catalog Framework

Making recommendations for the cataloging of moving image materials is not an easy task to make in a guide this broad. A number of standardized cataloging manuals and controlled vocabularies have been developed to assist repositories with describing their moving image materials – the 2000 version of the Archival Moving Image Materials cataloging manual (AMIM2), for instance, or the European Committee for Standardization (CEN) set of elements for describing cinematographic works (EN 15744).

However, these standards, specifically designed for moving image works, are generally implemented most easily in moving image archives, with the entire catalog framework built around the need to describe and search through audiovisual materials. A non-audiovisual archive's concern is likely not to be just in creating accurate catalog records for audiovisual materials, but somehow incorporating those records into a cataloging system that also (probably primarily) serves paper documents, artwork, or another particular media format.

The strategy for an archive's cataloging framework therefore needs to be determined on a case-by-case basis. However, it is important in these situations to keep the focus on the institution's targeted user: that is, how and whether the items can be accessed by researchers, scholars, amateurs, etc. An archivist may find a way to squash an audiovisual record into a cataloging system not designed for it, but that record will remain useless if the user is unable to intuit the cataloger's method.

Step Two: Recommended Access Points

To that end, the following are some common searchable data elements used in moving image archives; for the non-audiovisual archivist, these are then some of the most important pieces of information to keep in mind when creating a moving image record. A researcher or other user interested in moving image material is likely to use these categories when carrying out their searches:

- Title (including potential alternate forms)
- Creator (often director, but could be a producer or artist, depending on the cataloger's judgment)

- Credits (other names associated with the film, such as cast or crew members)
- Date of Production
- Gauge/Format
- Genre

Using a controlled vocabulary for the genre category (such as the Library of Congress Subject Headings or the Moving Image Genre-Form Guide) can help the cataloger with coming up with appropriate, and standardized, terms. All of these data elements do also generally assume that the archivist was able to in some way view the material back in Section II; if that was not the case, the cataloger must simply describe all known information about the material, to the best of their abilities. Searching through supplementary documentation (e.g. labels, paperwork found with the audiovisual materials, acquisition records) is probably the best way to do so.

The most important thing is to keep the user in mind when cataloging. As with any kind of format, audiovisual material should be organized and cataloged in a manner that makes intuitive sense for someone who works outside of the archive in question, or even outside of the archiving profession in general.

V. Access

Step One: Deciding Active vs. Passive Access

Passive access refers to the archival practice of generally waiting until an individual researcher or an organization approaches the institution with a request for access to certain materials. This is a fundamentally reactive process – the archive determines whether the request can be fulfilled, as well as the conditions of how and where the material can be viewed, based on the individual circumstances of that request. Active access refers to the archive itself taking the lead in offering its materials to the wider community, putting together educational programming, exhibitions, screenings, and other activities.

Before seeking out any practical measures, the archive needs to make a philosophical decision regarding access to its audiovisual materials, and whether it wants to offer active access, passive, or (probably ideally) a certain combination of both. In all likelihood, this will be the same as its general access policy for all media and formats; mission statements and institutional priorities may very well already be laid out.

Step Two: Inspecting Equipment and Determining On-Site Access

Up to this point, the moving image record itself and its safety has been of most importance. However, the complication of providing access requires, of course, that a piece of audiovisual material be not only safely preserved but safely viewable. For films, this requires a working projector (compatible with the gauge of the film materials), and for video, a working playback machine such as a video tape recorder (VTR) or videocassette recorder (VCR).

If the archive has the relevant equipment available, it in turn will need to be inspected and most likely cleaned before it can be used to access the desired moving image material. This is not an exact procedure that can be detailed here, as a huge range of manufacturers and products have existed to address projection and video playback material, each one with their own elements of particular concern. However, here are some recommendations for finding proper cleaning procedures or for troubleshooting malfunctioning equipment:

- Consult with manufacturer's instructions – instructions may have been included in the equipment's original packaging, if still available, or in many cases can be found online
- Consult with professionals – outside vendors or development laboratories may be familiar with the equipment's maintenance
- Inquire with other archivists – organizations such as the Association of Moving Image Archivists (AMIA) and the Society of American Archivists (SAA) have open online listservs on which curious professionals can make inquiries with their peers as to proper procedure

If the archive does not have the necessary equipment on-site, they remain beholden to their professional goals of providing access to the materials in their collection. Audiovisual records that sit in an archive without any method of access are as useless as records that have not been preserved in any way. The options for the archive are: purchase the appropriate equipment (possibly expensive depending on the age and obscurity of the format, and still requiring a staff member who knows how to use that equipment); reformat the material, most likely to a digital version; or arrange for the material to be loaned out to other groups or institutions for screening and access purposes.

The first option cannot be relied upon by non-audiovisual archives, considering their institutional priorities and likely budgetary restrictions. The third option is reasonable for archives who place a heavy emphasis on active access, as they are likely to have the time, resources and (perhaps most importantly) the will to perform the outreach necessary to find appropriate destinations for the material and ensure its safety in others' hands. It does nothing, however, to aid the non-moving image archive with passive access; the archive would still in all likelihood be stymied by any unexpected request to view the material, for any purpose. Reformatting becomes perhaps the most crucial method of ensuring on-site access.

Step Three: Reformatting

For the purposes of stability, consistency, and preventing data loss, moving image archives desire, under ideal circumstances, to maintain a moving image format when making a transfer for preservation purposes. For example, this means copying the image information from a deteriorating film roll on to a brand new film roll. This is, however, an expensive process, and non-moving image archives are likely more concerned with maintaining access to the moving image information than with absolute format integrity.

The most reasonable reformatting option, then, is digitization of the material, transferred either to an optical disc (CD/DVD) or a hard drive. Since digital reformatting equipment can be as rare and expensive as all other analog moving

image equipment, this action will need to be performed by an outside vendor. When searching for the appropriate service provider, the archivist must keep in mind and search for the appropriate balance between the following factors:

- cost
- image quality
- convenience of the destination format
- value (historical/artistic/associative/cultural) of the original material

Regarding the destination format for the transfer, non-audiovisual archivists should be advised of the difficulties present in most, if not all, digital formats. CDs and DVDs, as physical carriers, are prone to their own problems of deterioration and damage, and even at ideal conditions (cold, dry, stable) their longevity is dubious. Hard disks, too, have a very uncertain shelf life. And even beyond the specific issues of the physical carrier, digital formats are always limited by the rapidly advancing pace of both computer software and hardware. Obsolescence will always be an issue, as digital materials that sit on the shelf too long may not be playable even 5 or 10 years from now.

Constant migration of moving image material will then always be a concern for the archivist, both for preservation and access copies. This should be factored in when balancing cost and convenience of reformatting – in all likelihood, this will not be a one-time event per se, but an ongoing process.

A further complication in the process of reformatting and creating access copies is the matter of intellectual property and rights management. The intricacies of copyright law are far more byzantine than be covered here in simple terms, but archivists should be aware of the complications that can arise from the underlying rights of moving image material. For videotape, the *Video at Risk: Strategies for Preserving Commercial Video Collections in Libraries* project (see bibliography) does an excellent job of explaining the ramifications of Section 108 of the U.S. Copyright Act and the parameters available to libraries and archives for creating copies of at-risk material.

In general, assuming the audiovisual collection being dealt with is relatively small (in proportion to the archive's general collection, in any case), it may be possible and valuable to conduct a copyright search to ascertain the current rights holders of the moving image material. In some cases the rights holders may even be the archive itself, which would eliminate any concerns about reproduction – any paperwork regarding the original acquisition of the material by the archive should be checked, as such information may very well be located there.

If the copyright status of the material is uncertain (e.g. the rights holder can not be properly identified or contacted), the record is generally referred to as an *orphan work*. The issue of what to do with such material is an ongoing discussion in the moving image archive world, with no straight answer. The U.S. Copyright Office has been (and is still now) reviewing the problem, inquiring as to possible legislative, regulatory or voluntary solutions. An archivist faced with orphan works may be interested in the work of the Orphan Works Symposium, an annual conference dedicated to bringing

these “lost” works back to a state where they may be accessed (see bibliography).

Step Four: Digital Distribution

If a digital version of moving image material is acquired during reformatting, the archive may want to seriously consider the benefits of uploading the file(s) in some manner for online access. It would be up to the institution whether the material would be made publicly available for any and all web visitors, accessible only to certain users (perhaps only to scholars who register with the archive, or to paying customers), or hidden to all but those who visit the archive on-site.

As with Step Three, this action would have serious rights ramifications, and for now the archive would want to be confident in their control of the material and their right to digitally distribute before taking such actions. The ability of archives and libraries to digitize or orphan works is increasingly gaining traction in U.S. Courts, but the issue is not settled, especially when it comes to the extent those works can be made available publicly.

If the archive decides to make some or all of their audiovisual content available digitally, they will likely want to consult with web design and/or IT professionals regarding how the materials will be incorporated into the archive's web site (assuming one already exists) or online catalog. The primary concern should be ease of access for archive users – keeping the digital audiovisual content at least closely connected to its equivalent records in a searchable database, or whatever system is already in place in the archive for finding and requesting content.

Step Five: Retaining Originals

Archivists should keep in mind that reformatting and the creation of either physical or digital access copies does not constitute a replacement for the original record. Originals should always be retained for preservation purposes, even if viewing the original without an access copy is impossible. Besides the high likelihood of at least minimal data loss from any reformatting process, archivists have a responsibility to the authenticity and integrity of the audiovisual record that can only hope to be fulfilled as long as the material is maintained in its original, intended format.

Reformatting for the purposes of creating a preservation copy can be considered in cases where the deterioration of the original carrier is at such an extent that it endangers the long-term life of the record. If the material is this far gone, deaccessioning can be considered once the visual information has been transferred to a new medium.

VI. Bibliography

The following sources were either used as references for the construction of this guide, or are recommended resources for non-audiovisual archivists interested in pursuing the individual issues presented in this basic summary in greater depth.

“Activists' Guide to Archiving Video.” WITNESS. 2013. <http://archiveguide.witness.org>.

Adelstein, Peter Z. “IPI Media Storage Quick Reference.” Image Permanence Institute. 2009. https://www.imagepermanenceinstitute.org/webfm_send/301.

“Archival Moving Image Materials – A Cataloging Manual, 2nd Edition: Contents.” Library of Congress, Cataloging Distribution Service. 2000. <http://www.itsmarc.com/crs/mergedProjects/archmov/archmov/contents.htm>.

AV Artifact Atlas. Bay Area Video Coalition. http://preservation.bavc.org/artifactatlas/index.php/A/V_Artifact_Atlas.

Bigourdan, Jean-Louis, Liz Coffey and Dwight Swanson. “The Home Film Preservation Guide.” Film Forever. <http://www.filmforever.org>.

Bowling, Mary. “Literature on the Preservation of Nonpaper Materials.” *American Archivist* 53, no. 2 (April 1, 1990): 340–348.

Byers, Fred R. “Care and Handling of CDs and DVDs: A Guide for Librarians and Archivists.” Council on Library and Information Resources. Oct 2003. <http://www.clir.org/pubs/reports/pub121/contents.html>.

“Care, Handling and Storage of Audio Visual Materials.” Library of Congress. <http://www.loc.gov/preservation/care/record.html>.

Child, Margaret S. *Directory of Information Sources on Scientific Research Related to the Preservation of Sound Recordings, Still and Moving Images, and Magnetic Tape*. Washington, D.C: Commission on Preservation and Access, 1993.

“Code of Best Practices in Fair Use for Academic and Research Libraries 17.” Association of Research Libraries. Jan. 2012. <http://www.arl.org/storage/documents/publications/code-of-best-practices-fair-use.pdf>.

“Copyright Guidelines.” *Video At Risk: Strategies for Preserving Commercial Video Collections in Libraries* project. Dec. 2012. http://www.nyu.edu/tisch/preservation/research/video-risk/VideoAtRisk_SECTION108_Guidelines_2013.pdf.

DeLancie, Philip. “Sticky-shed syndrome: Tips on saving your damaged tape.” *Mix Magazine* (May 1990): 148-152.

“EAI Online Resource Guide for Exhibiting, Collecting and Preserving Media Art.” Electronic Arts Intermix. <http://www.eai.org/resourceguide>.

The Film Preservation Guide: The Basics for Archives, Libraries and Museums. San Francisco: National Film Preservation Foundation. 2004.

“Film Preservation Handbook.” National Film & Sound Archive of Australia. <http://nfsa.gov.au/preservation/handbook>.

Gracy, Karen F. “Ambition and Ambivalence: A Study of Professional Attitudes toward Digital Distribution of Archival Moving Images.” *American Archivist* 76, no. 2 (Nov. 18, 2013): 346-373.

“Handling and Projecting 35mm Archive and Studio Prints: Voluntary Guidelines.” Library of Congress, National Film Preservation Board. Aug. 1994. <http://www.loc.gov/film/project.html>.

Hansen, David R. and Hinze, Gwen and Urban, Jennifer M. “Orphan Works and the Search for Rightsholders: Who Participates in a 'Diligent Search' under Present and Proposed Regimes?” *Berkeley Digital Library Copyright Project, White Paper No. 4* (January 28, 2013). <http://ssrn.com/abstract=2208163>.

“IPI Climate Notebook.” Image Permanence Institute. Aug. 2005. https://www.imagepermanenceinstitute.org/webfm_send/318.

“Minimum set of metadata for cinematographic works.” European Committee for Standardization. http://filmstandards.org/fsc/index.php/EN_15744.

Pallante, Maria A. “Orphan Works & Mass Digitization: Obstacles and Opportunities.” David Nelson Memorial Keynote Address, Orphan Works & Mass Digitization: Obstacles & Opportunities Symposium, Apr. 12, 2012. <http://www.copyright.gov/regstat/2013/Pallante-OrphanWorks.pdf>.

Puglia, Steven, Jeffrey Reed and Erin Rhodes. “Technical Guidelines for Digitizing Archival Materials for Electronic Access: Creation of Production Master Files – Raster Images.” U.S. National Archives and Records Administration. June 2004. <http://www.archives.gov/preservation/technical/guidelines.pdf>.

“Report on Orphan Works.” U.S. Copyright Office. Jan. 2006. <http://www.copyright.gov/orphan/orphan-report.pdf>.

“Special Issue: Manual for Access to Film Collections.” *Journal of Film Preservation* 26, no. 55. <http://www.fiafnet.org/pdf/uk/fiaf55.pdf>.

Van Bogart, Dr. John W.C. “Magnetic Tape Storage and Handling: A Guide for Libraries and Archives.” Council on Library and Information Resources. June 1995. <http://www.clir.org/pubs/reports/pub54/index.html>.

“Videotape Identification and Assessment Guide.” Texas Commission on the Arts. 2004. <http://www.arts.texas.gov/wp-content/uploads/2012/04/video.pdf>.

Wheeler, Jim. “Videotape Preservation Handbook.” Association of Moving Image Archivists. 2002. <http://www.amianet.org/sites/all/files/WheelerVideo.pdf>.