Background/Initial Assessment

Ryerson University was interested in addressing the concern of access and deterioration of 23 videotapes, which were donated to the Ryerson University Library Special Collections in 2005. This is a sampling of a collection of over 800 film and video elements that document the career of Dr. Joseph MacInnis, a physician-scientist and oceanographer. Preserving The Past’s creative approach offered Academy Award winning technology to convert the Standard Definition (SD) footage to broadcast quality High Definition (HD). This result not only meets the expectations of current viewers (students, researchers, public) it also readies the footage for re-purposing or licensing.

The footage we were to digitize was original RAW and edited footage of the Titanic when it was re-discovered by Dr. Joe MacInnis in 1985. We realized the historic, scientific and social significance of this audiovisual content as well as its technologically merit as it reveals advancements in underwater cinematography, filmmaking and sound recording.

We commend Ryerson for having the foresight to care for the collection in the best way possible given its unstable medium (magnetic tape). After being awarded the project, Preserving The Past, LLC worked closely with my co-presenter, Beth Knazook, to advise her on the best procedure for preserving the original elements and its content by migrating it to broadcast quality videotape, (Digital Betacam), un-compressed digital video files and H.264 streaming files which will be used to make the collection accessible.
Obsolescence-formats

Many libraries are faced with the problem of obsolete materials and equipment. Some of the elements you may find in your libraries are film, video and audio. Not only are they unable to be viewed and/or accessed, they are at risk of deterioration due to their chemical and magnetic make-up.
The problem with aging audiovisual equipment is that it suffers from inherent deterioration. The strip of 16mm film above shows signs of vinegar syndrome: the film is brittle, the sprocket holes are torn, and the emulsion is pulling away from the acetate layer that is decomposing. Magnetic tapes (both audio and video) can suffer from sticky shed syndrome and frozen hubs and LP’s can delaminate. All of these problems render the content inaccessible.
**Obsolescence-equipment**

There is no doubt many of you have obsolete equipment in your libraries (more likely your empty rooms, closets and basements!) gathering dust. This equipment generally doesn't play and if it does it is extremely dangerous to play the tapes or film because that could cause damage to the original elements.
SD to HD: Academy Award winning technology to convert the files

The collection we received was on ¾” U-matic video tapes (a format popular in the 1980s and generally used for corporate videos, educational videos and music videos) and Betacam SP (broadcast quality video tape generally used by TV News stations and by major motion picture film makers for previewing footage originally shot on 35mm film) The original video footage was imported (captured) into the computer using Final Cut Pro on our professional and maintained video decks. That video signal was output to .dpx files. DPX files represent each frame of the footage. The technology we use converts (enhances) the algorithmic signal on a frame-by-frame basis to convert it from SD to HD. To give you an idea of how many files we are talking about, twenty seconds of footage equals over 6,000 .dpx files!

The original SD file was output to Digital Betacam for preservation and authenticity. The converted HD file was output to Digital Betacam for preservation. The .dpx files, original SD .mov files (Apple ProRes 422 (HQ), and HD .mov files were stored on external hard drives.

The original SD video tapes (3/4” an Betacam SP), new Digital Betacam tapes and external hard drives with all files will be placed being in cold storage. (coldstoragesuites.com)
Maintaining the integrity of the original element

Although digitizing collections makes them accessible we have to remember that digital files and hard drives are tenuous, therefore it is important to ALWAYS SAVE THE ORIGINAL ELEMENT. According to most library mandates it is important to honor the author's intent. Therefore after we imported the original SD video file we output that (SD) file to an external hard drive and used a copy to convert to HD.
**SD to HD: side-by-side comparison**

We decided to maintain the aspect ratio of the image by what is called pillar boxing it. The dimensions of the window are HD 1920 X 1080 but the dimensions of the image is 720 X 480. To make the image 1920 X 1080, while perhaps giving more of a wow-factor, crops the top and bottom of the image. In the image above this doesn't seem like it would make a difference. But if we were converting footage of a building for instance, or in this case, the sunken Titanic, it would crop out the top of the building or ship.

A before and after video comparison can be seen here: [https://vimeo.com/42554871](https://vimeo.com/42554871).
Collections Management: Cold Storage

As mentioned before all the elements, the original tapes, the new tapes, the data drives, and finding aids cross-referencing each were placed in cold storage. It is important to save these elements at an off-site temperature and humidity controlled facility and consider your in-house hard drive a working hard drive. We also recommend having a third back-up drive that is stored off-site near your library.
Taylor Whitney, President and founder of Preserving The Past, LLC, worked in film preservation for several years as Sr. Film Inspection Technician in Hollywood. She assisted the film restoration team of Robert Harris and Jim Katz (Lawrence of Arabia, My Fair Lady) on Rear Window and Vertigo and with such collections as The Sammy Davis Jr., Estate, The Mary Pickford Film Library and The Michael Douglas Film Library as well as with major motion picture studios Columbia, Universal, Fox, Paramount, etc.

Preserving The Past was established in 1997 in Los Angeles, California to address a void in the then fast emerging field of film preservation: institutional, university, library, business, household, estates and private organizations. In 2004, Whitney returned to school to add a formal educational component to her years of expertise in film preservation. Accepted into the inaugural class of a unique program that incorporates museum studies with library science focusing entirely on photography, she earned a Master of Arts in Photographic Preservation and Collections Management at Ryerson University in Toronto, Canada in collaboration with George Eastman House, International Museum of Photography and Film in Rochester, New York.

Preserving The Past has offices in Los Angeles and Rochester, NY offering film, video, audio and photographic digitization, preservation and cold storage services to private collections with clients worldwide. www.preservethepast.com www.coldstoragesuites.com

Many thanks to my co-presenter Elizabeth Knazook, formerly Curatorial Specialist, Ryerson University Library & Archives (now at Stratford Shakespeare Festival Archives), Susan Patrick, Archives & Special Collections Librarian, Ryerson University Library & Archives and our session moderator, Trina Glover, Librarian at Ryerson University. RULA/ASC