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Intro to MIAP final Paper

The Hemispheric Institute Digital Video Archive

Project goals

My initial goal was to undertake a project that would help me to better understand preservation of video and digital video materials that are presented predominantly through web access. Towards that end, my research focused on the Hemispheric Institute's Digital Video Library (HIDVL), a project that entailed both creating a web display platform for video content while also focusing on the preservation of the source materials.

In beginning this project, my methodology was primarily to conduct interviews with a number of people involved in the project from the two groups that support it: the Hemispheric Institute (HI) and the NYU Libraries. The HI is responsible mainly for the acquisition of content while the digitization and preservation aspects are handled by Digital Library Technology Services (DL) at the NYU Libraries. In interviewing persons of interest involved with the HIDVL, I sought to answer policy questions about the types of materials ingested and how these selections were made; questions about the history of the project and its location within the HI's broader mission; and questions about the repository itself and the types of files that are created and maintained for the HIDVL by the NYU Libraries. I also sought to understand the relationship between HI and NYU.

In researching for this paper, I reached out to Diana Taylor, Marlene Cancio, and Leticia Robles from HI to understand more about the HIDVL from their perspective, and am greatly indebted to the generous amount of time Marlene and Leticia gave me in discussing their involvement with the HIDVL. I also met with Melitte Buchman, who is in charge of digitizing content for the NYU Libraries, and who was enormously helpful in explaining the technical services Bobst provides for the HIDVL. I communicated via email with Joe Pawletko about the specific technological aspects of the preservation repository and with Jerry McDonough about NYU's historical involvement with this project. Finally, I will be meeting with Jennifer Vinopal following the due date for this project to learn more about the practical implementation of the repository plan and creation at the NYU Libraries.

My additional methodology included background reading on the history of digital libraries, metadata, and the Preserving Digital Public Television initiative undertaken with NDIIPP money between NYU and the public television entities of Thirteen/WNET, WGBH, and PBS. The latter was recommended by Joe Pawletko, as the repository design created for the PDPTV project is the one that is currently in use at NYU that contains the HIDVL materials, among other things.

The Hemi

My initial research for this endeavor began with the Hemispheric Institute itself. The Hemispheric Institute is a consortium of institutions and individuals that work on performance arts as expressions of culture and politics in the Americas. The HI operates in English, Spanish, and Portuguese and offers courses of study for students interested in the arts and politics as well as venues or avenues for the display of American arts. The HI offers two main components: courses for students and artists that it began offering in 1999 and *encuentros*, the first of which took place in 2000ⁱ.

Because a core part of the HI mission is to explore and create new methodologies for understanding and analyzing performance or the embodiment of art, the HI offers seminars on topics pertinent to the political and cultural history of the Americas. These courses are team taught and urge collaboration among artists and academics. The curricula focus on an artistic aspect such as theater in combination with a political aspect, such as activism or Latin American history. Students can receive college credit hours from their home institutions from this coursework through independent studyⁱⁱ.

HI also offers *encuentros*, or events that are part academic conference and part art festival. These 10-day events take place in various locations around the Americas, and feature performances and other art displays in addition to keynote addresses, workshops, and other forms of scholarly collaborationⁱⁱⁱ. *Encuentros* are organized around a particular theme relevant to the location, and artists and performance works from these events play a significant role in the HIDVL materials.

The HI, and subsequently the HIDVL, was conceived in part by Diana Taylor, a professor at NYU in the department of performance studies at Tisch, in conjunction with academics from universities around the Americas. The project began with startup funding from the Ford Foundation, which continues to fund aspects of the HI ventures today. Financial and personnel support was also garnered through the HI's relationship with NYU: the Institute's administrative location has been in various NYU departments, and it currently resides administratively in the Provost's Office. The HI also has institutional ties with a number of universities and other cultural organizations like museums. These partners pay fees to be

allowed particular access to HIDVL materials. The HIDVL was funded with support from the Mellon Foundation, and currently some of its projects are funded in a part by Abu Dhabi money, funding from the project to create the NYU campus in Abu Dhabi.

The History of the HIDVL

The idea for what is now the HIDVL began in the early 2000s, and was championed by Diana Taylor. The creation of the project began in 2004, with funding from the Mellon Foundation secured in 2005. At the time, issues of digital preservation were coming to the fore, and the Mellon Foundation was already investing energy and funding into preservation around JSTOR and ARTstor. Investment from the Mellon Foundation represented an opportunity to experiment with preservation around digital moving images. The HI had the desire to create a system by which artists' performance works could be distributed and widely seen without compromising the integrity of the works and while allowing the artists to maintain intellectual control. Early goals for this project at NYU were also academic, aimed at providing scholars access to materials necessary for scholarly writing and other development.

While the timing was fortuitous in terms of the access to Mellon funding, it was also fortuitous in the way that the project's needs matched with pilots underway at Bobst. At the time, Bobst was in the process of setting up a large scale 10TB preservation repository, and the needs of the HIDVL project provided a means to work with the ingest of large amounts of digitized video content. Bobst recognized the value of the video materials held by the HI, while also recognizing that it did not make sense for the HI to embark on the creation of a repository since Bobst was already underway on such a project, and because the size of the materials held by HI made the creation of its own repository untenable for such a small institution. The partnership with NYU Libraries grew out of talks between Jerome McDonough, Lucia Wright, Karen Young, and Diana Taylor. The project would entail digitizing and then ingesting video content from HI and the creation of a viewing platform. Initially, the creation of a descriptive metadata format was necessary, since existing formats were insufficient to the particular needs of the HI materials. The metadata forms were to be filled in by HI workers, predominantly interns and graduate students, and converted to MARC standards by the NYU Libraries. The project was to start with the ingestion of 750 hours of video content over the course of a 3 year period. This project also presented an opportunity, according to Jerry McDonough, to bring together different elements within the library staff to allow for a sense of ownership over digital library projects and materials, since at that point the DL staff were seen as somewhat separate from the rest of Bobst library staff^{iv}.

Although the project was conceived of as early as 2000, and began to receive real financial and personnel support in 2004 and 2005, the HIDVL did not go live until July 30, 2008. Following that, a major format migration occurred in the summer of 2010, when the site moved to Flash to allow for better video quality. Currently, the HI is facing a large potential ingest period and hopes to significantly increase content in the relatively near future.

Mutual Goals

Going forward, the partnership between the HI and NYU Libraries benefited from some commonality of thinking about how the project needed to be approached. While access may or may not have been the original impetus for the creation of the video library, preservation became the key for both partners. From the beginning, NYU's interest was founded on the fact that this would be a preservation project; they would not have undertaken the partnership for a digital video access library. Both partners knew that the content would have to be preserved, both in its analog form as well as in digital form. NYU was working on the creation of its own preservation repository, and additional endeavors like the PDPTV project helped to guide the way in which the Library preserved the data. Likewise, the experience with the preservation repository has helped to shape the way in which HI now thinks about all its materials, both moving image and otherwise. Now, preservation is at the fore of all projects and is something that is thought about in early planning stages of artist meetings and encuentros.

The need to go digital, so to speak, was born of the need to create access in addition to preservation. It was generally agreed that having videos viewable on the web was necessary to create sufficient access for artists and academics to utilize the materials. As most of the content that the HI collected was in analog video format, there was a need to actually create digital versions of all the material. Additionally, curation was going to be very important to the project. Both HI and the NYU Libraries knew from the outset that they wanted to create a tool that would appeal to and be useful to academics but also others like artist and the public. As such, in order to make the interface and the material enticing for people other than specialists in fields related to the content, the curation of the video essence and the metadata needed to be carefully managed and thought through.

Once digital copies were obtained, it would also be necessary to find a platform that would show the video without compromising the artists' rights: access was necessary, but preventing people from downloading content, for example, was equally important. The HI and NYU Libraries looked for a streaming format that downloads information in packages in such a way that the entire video file is

never stored even temporarily on a user's computer: as moments of the video pass, those bits are written over in temporary files with subsequent content. When the project first went live, limited capacity meant that the video quality was relatively poor and small in size. With the rising popularity of online moving image content, the need to migrate to a better format became apparent. The HI initially anticipated that artists would be concerned for their intellectual property, but it transpired that NYU Libraries, HI, and the artists themselves all supported a move to Flash for better viewing. At that point, the access became a more important issue than the potential for someone copying the now higher quality video.

In creating the viewing interface, HI and the NYU Libraries both agreed that it needed to have embedded metadata that would automatically be present at all time. Melitte Buchman referenced the drastic difference that can arise from viewing the same video in different contexts: say embedded in a page with comments or on a viewer stripped of all context or as a clip on a show or something similar. Given the historical and political value of the HI's archival materials, it was necessary to have background explanations present at all times, so that video content would never be shown out of context. As such, the DL worked on a descriptive metadata format that the HI would fill out for each video; this metadata is entered as content is digitized and saved in a package so that when video plays on the HIDVL website, it is always surrounded by descriptive metadata to provide the proper context.

Hemi Contributions

The selection of content to be ingested in the HIDVL is solely at the discretion of the HI. Content is selected from the works submitted by artist partners and created at HI events like encuentros. Artists for the HI are generally selected by word of mouth recommendations from staff and through established partners. The HI does not accept just any materials, and does not allow people to simply submit or apply to deposit materials. Within this already restricted body of work that they acquire, what gets selected for the HIDVL undergoes additional scrutiny because of the service agreement with the NYU Libraries. The agreement entitles the HI to 100 hours of video a year to be digitized and ingested into the HIDVL. While the HI has never yet hit this limit, they are always conscious of it in making decisions about what kind of video will be ingested. As such, issues such as quality or relevance or even pacing are taken into consideration. Video of a street performance, for example, where the audio or visual element is unclear might be left out for clarity reasons, and longer pieces may be edited down to the more interesting or relevant clips. Additionally, materials that are compromised in anyway are not

ingested; the HI does not engage in any attempts to recover compromised data, such as wet or moldy videos.

The HI does not typically deaccession materials, and they do not remove content once it is a part of the HIDVL. The idea is that all content once digitized and ingested will be available in perpetuity. In the past only exceptional circumstances have resulted in the removal of content from the HIDVL. First, an artist who did not give clearance to have her materials displayed, and indeed did not want to be on the website, had her content accidentally ingested and posted to the website. Second, there was a situation in which a video was taken at an encuentro of a cultural ceremony, and while clearance was given by the artist to include the materials in this case, the governing body of that particular cultural body later stepped in and asked the content be removed as it was private to their culture and not to be publicly displayed. In both these cases, the HI acted to remove the content completely and permanently from the site and the HIDVL.

In addition to selecting the content that will be digitized, the HI's staff of graduate students and interns are responsible for two other major aspects of the project. First, there is the descriptive metadata for the video content being submitted. This information is collected and entered by HI, working in conjunction with the artist, to both provide the context that will come tied to the video on the website and also to allow for the creation of searchable artist profiles on the HI website. The creation of the form was done by the DL staff, and while it took substantial time to create the form, it is now a fairly quick process for the HI staff to fill it out. In a matter of a few hours, working with an artist, the HI attempts to fill out as many fields as possible.

The HI staff also works to create collections of videos and artist profiles to accompany video material on the website. In addition to the descriptive metadata collected, the profiles are comprised of images, texts, interviews, and biographical information on the artists behind the videos; this material is available in the 3 operating languages of the HI. This, in part, attempts to meet the need for curation to make the content accessible and interesting to parties other than academics.

The NYU legal team helped the HI with the creation of a legal contract form at the outset of the project for use in acquiring the rights to display artists' works. The HI recognizes its privileged position in its partnership with NYU, and that this association gives it many advantages for which there is not even a vocabulary in many parts of the Americas. The idea of digital preservation and digital access to content is still foreign to many, and most artists and institutions do not have the resources to pursue either in

the way that NYU can. As such, the HI is committed to *sharing the wealth*, so to speak, by offering services that stem from its position of privilege to artists who cannot afford such services on their own. As such, artists are not asked to do any digitization or metadata work themselves. The HI and DL will work with artists to get their work in to accessionable formats. The HI is also committed to the fact that they are providing a service to allow for dissemination for artists and their work, and no more. All rights and originals remain with the artists, while HI simply creates preservation copies and access. The contract created with the NYU legal team ensures that rights belong solely to the artist; the HI does not work with materials for which the artists do not hold copyright. Additionally, the contract with NYU and HI is nonexclusive, so artists can continue to display their work in additional venues.

The creation of the contract presented some difficulties that persist today as the HI staff attempt to explain the contract to new artists. This difficulty is matter of language and common vocabulary, an issue that also impacts the HI in its attempts to create inventories for its physical archive, as it prepares to deposit some of its non-video materials into the Tamiment Library. The HI operates in 3 languages: English, Spanish, and Portuguese. In addition to needing staff fluent in all three languages to deal with simple ingest, the difficulty also arises that for many new terms in technology and preservation, there are no equivalents in Spanish and Portuguese. This requires HI staff to not just translate forms and ideas for partners and artists, but also to interpret new contexts into languages that lack the vocabulary to translate and often to even describe procedures like the digitization of content. Particularly moving forward into controlled vocabulary for an inventory of all the HI materials, video and otherwise, this difficulty is still present.

The HI is currently undergoing a format migration of its entire website, the HIDVL included, from HTML to Flash. The HIDVL was integral to this format change decision, as Flash allows for enhanced video viewing. The additional impetus for this changeover is to allow for people to search for key words within the HI site overall, so that they might find video content in addition to other content like profiles, biographies, or encuentro notes about a particular artist, topic, or piece of work.

DL Contributions

The Digital Library Technology Services staff works to manage the digitization, preservation and viewing platform for the HIDVL. The original idea was that they would digitize HI's archival footage over the course of a few years, while adding a certain number of additional hours of new video content each year. The original idea was to ingest 750 hours of content over 3 years, with an additional 100 hours per

year. The HI has not used most of these allotted hours, and will actually seek to catch up, so to speak, as they inventory old materials and take in a number of new materials this spring.

Currently the DL will only take content in 2 formats: NTSCDV, coming from DVs and mini-DVs, and YUV 10 bit like VHS and UMatic formats. These types are digitized into .mov files, as these allow for longer headers than the .avi wrapper. If artists or the HI, or indeed individuals associated with the other projects that the DL does digitization and storage for, have materials not in these two formats such as PAL for example, the DL will help to recommend an outside vendor who can do the conversion. The DL will recommend particular vendors so as to try to avoid quality control issues down the line; with the recent popularity in digitization, there are many companies that will do the transfer, but not many that will do it well. After files are digitized, checksums are created for them, and a tool like JOVE is used to validate the file. This information is wrapped along with metadata and put in the repository. The majority of the content from HI is in video format, but born digital content is increasingly common. This presents some difficulties as artists often receive help with editing or digitizing from friends or colleagues, and they can be left with content they do not understand or for which they cannot provide information, like information about the creation environment. Currently, the DL is receiving increasing amount of HD digital video, and at this point they are unsure about what to do with it. The types of HD files vary and there are no governing standards for this content yet; at this point, the DL will take the files and create checksums and then simply save them, until a workable standard becomes widely adopted. There are no good standards currently for HD content, and while some people have suggested JPEG 2000, the DL does not feel that the format is ready for archival use. The largest concern with this format is that it is proprietary, and currently the DL is involved in the writing of a white paper recommending holding off on the wide adoption of JPEG 2000 for the preservation community.

In terms of the digitization, the DL is also working on quality control standards. This is particularly pertinent when dealing with outside vendors, and also the amount of time it takes to process each hour of video. Currently, Melitte recommends using tools in QuickTime for example to check the quality of the video. This is especially important, because we cannot archive poorly made copies.

The DL adds a considerable amount of metadata during the digitization process. The HI provides the descriptive metadata to accompany the files via a form that allows interns and graduate students to pick options from drop down menus and to fill in blanks. This form contains data on the type of tape, the meeting at which material was collected, the venue for the performance, cast and credits, and rights information. There are also menus with drop downs to fill in discovery data like titles, genres, topics,

and key words. The development of the controlled vocabulary for this form was of particular importance because what existed previously was insufficient to the needs of the material: for example, describing an object as “documentary film about torture victims” became “entertainment” in previous key word searches because the term “film” had mapped to “entertainment” with previous controlled vocabulary. Of the information on this form, it is up to the HI to decide how much and what to fill in; the only exception is the rights information which must be filled out completely for the DL to proceed with the digitization.

Additionally, as the material is digitized, environmental metadata and viewing metadata is created and saved in a PREMIS file that becomes part of the AIP. The DL uses MARCXML metadata fields or imports fields from the Archivist Toolkit. According to Joe, the HIDVL and indeed the entire NYU preservation repository uses the same guidelines developed from the PDPTV project, so I could extrapolate from this that the descriptive metadata is saved as a MODS file, the structural metadata is saved as a METS file, and the copyright information, obtained by the HI using the legal form from NYU’s legal team and entered on the descriptive metadata form, is put in a METS Rights file^v. All these files are saved together as information packages, rather than having all the information put in a single wrapper and saved as one file. This is done to allow maximal granularity: by having the essence and all the associate metadata saved in separate files, things can be modified or culled more easily for the creation of DIPs without having to worry about changing parts that need not be altered. In order to ingest all this material, the AIPs are created using BagIt. The AIPs are joined with checksum and validation data, and this is entered into the repository in batches, as the repository supports batch deposits. Once there, “checksum spiders^{vi}” periodically check for bit rot and other data integrity issues.

The repository in which the files are stored follows the OAIS reference model and is based on the repository specifications from the PDPTV initiative^{vii}. The repository allows for project specific and project independent information to co-exist, which is necessary because NYU’s repository houses content for a number projects and partnerships. Following the PDPTV model, the AIPs are project specific, in this case metadata and essence files are put into bags that are checksummed and validated. The content once there can be checked for bit rot in a way that project independent: all the content that is there can be checked regardless of which project it is from or what kind of essence the files contain.

I was unclear about what kind of program is used on the backend of the project. Joe states that DSpace is used for the asset storage^{ix}, and this is indeed the same recommendation made in the PDPTV project. Melitte stated, as did David Millman, the director of Digital Library Technology Services, that they are in

the process of moving away from DSpace towards asset storage of their own design that is based on Fedora^{xxi}. Joe also says that within their repository model, it is possible to switch DSpace out for another storage tool. The repository uses a combination of open source software, as well as elements that are designed internally, and the AIPs change over time to reflect changing workflow. The repository is on its way to being TRAC certified; they are currently working through the self-audit, and elements of the repository were designed with the TRAC self-audit in mind. In terms of sustainability, the repository uses permanent identifiers for its files in addition to its OAIS model and has backup storage for its content. The content is stored to two machines, and the first primary data server has enough internal power to push its content to the backup secondary data server in case an outage occurs. The data is constantly updated, with daily tape update that is sent weekly to physical storage. Thus, in the case of a catastrophe, only a week's content at most would be lost. The tape backup is geographically separated from the primary and secondary servers, and the physical content itself is stored in Iron Mountain.

The HIDVL has been lucky in the almost universal support it has enjoyed from partners and funders. It has received money from the Ford Foundation, the Mellon Foundation, and the National Endowment for the Humanities. This support, in addition to its relationship with NYU, basically ensures the relatively long term survival of the materials. Additional sustainability issues like storage capacity and the growing scale of the project have thus far been easily managed as the support within the NYU Libraries for the project has allowed for essentially unlimited storage capacity for materials to cope with the project as it grows over time and in scale.

This project has also been fortunate in the way in which the DL is contracted to digitize and ingest a particular number of hours of video annually, as opposed to being contracted for a certain number of labor hours. On the HI side, resources limit the number of hours that graduate students and interns can be employed to do things like enter metadata and create the artist profiles; I suspect that this limit may be partially to blame for the reason why thus far the HIDVL has yet to reach a year wherein they actually are able to request the digitization of 100 hours of tape and so far have only submitted data for 30 hours of video to be ingested this year. On the library side, this restriction of person hours and funding for staff does not seem to exist in the same way. The DL will digitize materials, with one or two people working on content while a programmer will wrap things with metadata and perform fixity checks, with quality control being performed all the while. Another person is in charge of the storage architecture and an additional person was needed to create the page; this is all in addition to the people at HI who

manage the metadata. Once the bags are prepared, a programmer will add new content to the website. All told, when the project began, it took 9 hours or more to ingest one hour of video; as processing and other aspects of the technology get faster, the amount of time will drop but realistically that ratio can only decrease a certain amount given that it is necessary for someone to actually watch all the content to check for quality. The DL has experimented with automated systems for digitizing content, and is currently working on a trial with a SAMMA machine, but thus far making sure the automated system does its job and correcting for its errors means that automated digitization is not in practice faster than doing it manually with a student watching the content the entire time as it is being rendered. Not everything can be done with scripts, and so Melitte estimates that it is unlikely that it will ever take much less than 2 hours to digitize every one hour of video essence^{xii}.

The DL has general plans to migrate their materials, but these plans are not firm as of yet. This initiative is new enough that newer and better formats have not become widely adopted since the project began. Currently the consensus is that things need to be moved off tape, as tape is a liability in that it degrades and the tools required to use it create too much of a dependency. In general terms, the migration plan is that after x number of years when there are new and reliable formats, the current wrappers will be stripped off the current files and they will be rewrapped in new wrappers with their metadata. Obviously, the original file package will be saved in addition to the newly migrated file package.

Changing Goals and Difficulties

While the HIDVL may have started as a foray into digital preservation, the lessons garnered from working on the project and changes in technology have altered goals. In the beginning, the project focused on providing scholarly access, but as time has passed the desire to provide public access has increased. Additionally, the HI sees the HIDVL as a tool embraced by artists themselves as a means of dissemination of information. Whereas in the past an artist would have to submit portfolios for grant or gallery acceptance, increasingly they simply point to their collection on the HI and in the HIDVL. Students and artists utilize the unprecedented access in ways never envisioned at the project's inception. Likewise, at the start of the project a major goal was to preserve the rights of the artist and to prevent unauthorized copying of works was a top priority. However, with the advent of youtube and the increasingly beautiful video content on the web, HI has found that intellectual property has taken a backseat to the desire to see content rendered as nicely as possible on the part of the artists. H.264 has allowed for much better quality video in conjunction with the switch to Flash. Also, the HI has found itself approaching all projects thinking about preservation. Now, heading into an event, they begin by

asking themselves how the materials like ephemera and video recordings can be preserved, even if it all cannot be ingested into the HIDVL or Tamiment.

The HIDVL still struggles with project growing pains, which should be expected seeing as this project is only around 5 years old and is still changing on a pretty constant basis. Until now, nearly all the content has come off of video tapes, but new challenges have arisen over born digital content. The issues around HD video have already been discussed, but an additional issue that HI staff has come up against is with the ever increasingly difficult task of defining “original” when speaking of content and essence. Particularly as artists begin to send clip shows or edited versions of festivals or performances, or as the HI makes these edits themselves out of time constraints, the idea of saving the “original” is tricky in that the clips themselves are their own original while being distinct from the originals of the larger content blocks from which the clips were drawn. Between the HI and DL, on this matter in a particular, there is a lack of consensus over what constitutes originals when dealing with born digital content, particularly edited content, and I gather the two have struggled to find common ground on this issue. This, however, is common to digital works in general so should not be construed as a failing on either HI or DL’s part.

Personal Takeaways

I engaged in this research for two personal reasons. First, because I wish to help a colleague with a project in Chile to create a website to showcase local independent films and second because I wish to pursue more studies in digital video repositories. There are several takeaways to be gained from this, and from my general MIAP experience.

First, institutional partnerships are a must. There is simply no way a small institution like the HI could have managed this project solo. It requires the presence of a larger institution like NYU to garner sufficient funding from outside sources and it requires a large institution to provide the person hours necessary to make a project like this work. When Marlene Cancio became involved in the HIDVL project in 2004, it quickly became apparent that to even get this project off the ground would take more than the employees at HI could manage. At the NYU Libraries, at least half a dozen people need to put in around 9 hours per hour of video content that will eventually be ingested. The startup costs of the machinery itself and the time investment in creating internal software and in cultivating open source programs are far greater than a small institution can provide for itself. It is clear that the only way to

begin to achieve the long term preservation of the undeniably important cultural artifacts held by smaller cultural institutions like HI or small museums is through partnerships with larger institutions.

Likewise, it makes sense and seems necessary to embark on multiple projects at once that will utilize the same architectures and materials: the HIDVL, the PDPTV project, and others like the Real Rosie the Riveter and the New York Historical Society projects at NYU all took advantage of the same storage architecture and policies.

Also, the issue of migration is trickier than I initially understood. Having a plan for migrating materials is obviously necessary for any repository, as formats empirically become obsolete over time. I know from experience how sad I am that I can no longer run the first computer game I ever owned, a CDROM version of *Where In the World Is Carmen San Diego* that operates (or no longer operates) on obsolete platforms and operating systems. Having a concrete migration plan is also necessary if you are to be a trusted digital repository: no trust could be reposed in a system where there is a danger that all files may be lost to obsolescence in a matter of years. On the other hand, creating a concrete plan can be difficult depending on what types of files comprise the bulk of your materials. If you are holding a library of UMatc tapes, your ideal migration workflow would be quite clear. If, on the other hand, you are a new repository created within the last 5-10 years dealing entirely with digital content, it is possible that the need to migrate has not yet come to pass for your materials and that, further, there is no current conception of what future formats might become available for migrating to. It might also be true that formats became obsolete very quickly in earlier days of digital technology, but the pervasive adoption of certain platforms and omnipresence of certain companies and their products means that obsolesce may not happen as fast we might think it will^{xiii}. If a particular file format is around for a decade or more, its longevity may outlast many preservation plans.^{xiv} The HIDVL uses current standards for saving moving image files; right now, there are no known better alternatives, and the only potential alternative, JPEG 2000, is years from being ready. In the absence of knowledge about when current formats will fade and when and what newer ones will become widely adopted, it is difficult to set a concrete plan for migration. When I first heard Melitte's general plan for migration (or that the HathiTrust or Stanford haven't begun to formulate migration plans and only know that at some point they will have to migrate content), I was suspicious. With my expanded knowledge on this, I have to reconsider what an acceptable migration plan might look like, and thus in a related sense, reconsider what might constitute a trustworthy repository.

ⁱ <http://hemisphericinstitute.org/hemi/en/history>

ⁱⁱ <http://hemisphericinstitute.org/hemi/en/courses>

ⁱⁱⁱ <http://hemisphericinstitute.org/hemi/en/encuentro>

^{iv} McDonough, Jerome. Email interview. December 3, 2010

^v Preserving Digital Public Television. Repository Design Report with Attached Metadata Plan. March 2010.

http://www.thirteen.org/ptvdigitalarchive/files/2010/03/PDPTV_ReposDesign_2010-03-19.pdf

^{vi} Melitte Buchman's term referring to the way a program crawls (forgive the loaded term) through the repository performing automated fixity checks.

^{vii} Consultative Committee for Space Data Systems. Reference Model for an Open Archival Information System. January 2002. <http://public.ccsds.org/publications/archive/650x0b1.pdf>

^{viii} Preserving Digital Public Television. Repository Design Report with Attached Metadata Plan. March 2010.

http://www.thirteen.org/ptvdigitalarchive/files/2010/03/PDPTV_ReposDesign_2010-03-19.pdf

^{ix} Pawletko, Josphe. Email interview. November 29, 2010

^x Buchman, Melitte. Personal interview. November 23, 2010.

^{xi} Millman, David. Class lecture to the Digital Preservation Class. New York University. October 18, 2010

^{xii} Buchman, Melitte interview (see endnote x)

^{xiii} Rusbridge, Chris (2006). "Excuse me... Some digital preservation fallacies?" Ariadne 46.

<http://www.ariadne.ac.uk/issue46/rusbridge/?ref=cia-team.com>

^{xiv} Especially since Chris Lacinek says it's okay to think in blocks of time like 5-10 years rather than have a nebulous idea of trying to preserve for 2000 year after the end of the republic or just perpetuity in general.