

DIGITIZATION OF GEOLOGY THESES AND DISSERTATIONS

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Abstract – A leaking pipe damaged a number of the universities theses and dissertations. This resulted in a project to digitize these materials as both a preservation measure and method to improve access to the collection. The specific details of the process of digitizing the geology theses and dissertations are discussed, as well as the problems that were encountered with the geology titles. The decisions that were required are listed, with reasons as to why those decisions were made, and the results of the projects are reviewed. As a result of the lessons learned from this project the University of Wyoming libraries have since digitized all of our theses and dissertations.

On the morning of Wednesday, August 4, 2004, a small hole in a dry pipe fire suppression system caused the failure of that system, resulting in the spraying of 1,804 archival copies of University of Wyoming (UW) theses and dissertations from the Hebard Collection with high-pressure tap water. Since these materials were located in the secured rare book vault in the American Heritage Center (AHC), it was not immediately obvious what had happened. It is estimated that water was spraying for 20-30 minutes before an AHC staff member walking down the hallway around 11:30 a.m. heard the running water and immediately investigated.

The only materials in the Rare Book Vault belonging to the library were the UW theses and dissertations. The rest of the materials were rare books from the Toppan Library in the AHC, which is administratively separate from the University of Wyoming Libraries. AHC staff located the leak, and while relieved that their material was spared, were horrified to see that the water was continuing to spray the first three rows of compact shelving containing the theses and dissertations. University Physical Plant staff were immediately contacted to shut off the water. As soon as the water was off AHC staff transferred the wet theses and dissertations to their cold storage vault, which is maintained at 32 degrees Fahrenheit. The wet shelves in the vault were dried to prevent further damage. The librarian in charge of the Hebard Collection was contacted and informed of the situation.

Library staff immediately responded. The Wyoming bibliographer evaluated the theses and dissertations remaining on the shelves in the vault in order to pin point the extent of the damage. Administrative staff located a freezer plant that would accept the books. Luckily, the High Plains Freezer Plant in Laramie had housed some of the material damaged in the 1997 Colorado State University flood, so they understood our needs and agreed to have space available for the UW Libraries' material the next morning.

On August 5, 2004, a group of volunteers from the libraries arrived at the AHC and packed the chilled, wet books in to plastic garbage bag lined boxes, counting as they packed. The boxes were transported the three miles across town to the freezer plant in the libraries' van. The Wyoming bibliographer had a current inventory of the theses and dissertations in the Hebard Collection. While library staff boxed the damaged books, the Wyoming bibliographer compared items remaining on the shelves and generated a call number/title list of the damaged items. Using her list, systems and cataloging staff changed the status of the damaged material in the online catalog to unavailable. Fortunately, the manual count and the system generated list agreed, and we knew that the extent of the damage was 1,804 theses and dissertations in seventeen subject areas.

The geology theses and dissertations were in the middle of the affected ranges, and many were damaged. The materials in the vault were housed in compact shelving, and it was unfortunate for geology that their shelves were on the open aisle and as a result were wetter than those materials that happened to be in the closed sections of the compact shelving.

Library staff responsible for UW theses and dissertations already had a meeting scheduled with the graduate school on August 12, 2004 to discuss the submission of new theses and dissertations in electronic format only. The discussion was expanded to include how the libraries would like to handle the damaged titles. On August 23, 2004, ProQuest was contacted to see how many of the damaged titles they already had in either microform or digital format. They also explained what they could do for us digitally. We had a preliminary proposal in hand on August 26, 2004.

On September 23, 2004, after the faculty returned for the fall semester, departments with damaged titles were notified of the incident, and what steps were in place to repair or replace the items. Departments with damaged materials were provided with a list of those titles. In October the entire campus was notified about the incident.

The insurance adjuster arrived on September 9, 2004 to assess the damage and determine under what category the damaged materials would fall. At this point funding sources were preliminarily identified, and the Dean of the Libraries directed that we explore digital options for titles that could not be salvaged. ProQuest arrived on October 7, 2004, to explain what our options were for digitization.

Once it was determined that the material was covered under the university's fine arts policy, options for recovery were discussed. The first decision was to have the materials freeze-dried to see how much could be salvaged with this step alone. Quotes were obtained, a contract awarded, and the material shipped to Texas in a refrigerated truck on November 9, 2004. The materials were freeze-dried and returned to us on December 7, 2004. Each title was evaluated to assess its condition and to determine what additional treatment, if any, was needed.

From December 2004 through February 2005 library staff in Technical Services completed the

initial evaluation of the condition of the damaged titles. Some were returned to the stacks with no further processing, but most needed to be digitized, since they were beyond repair. After freeze drying, there were 271 geology titles that required additional handling before they could be returned to the collection.

The committee decided to sacrifice the paper copy allowing the material to be disbound before scanning, since this would result in significant cost savings. The circulating paper copy was pulled from the collection and paired with the damaged archival copy. In cases where the damaged copy was acceptable for digitization, that copy was sent to ProQuest for digitization and the circulating copy sent to the Hebard Collection. In cases where the archival copy was too damaged, the circulating copy was sent to ProQuest. Cataloging staff handled withdrawals and updated locations, and Processing charged the material out to a repair account.

Several problems were encountered in preparing the materials for digitization. First, it became obvious that the graduate school had not enforced their rule against erasable bond paper which turned out to be present in many of the theses from the 1960's through the early 1980's. The typescript on erasable bond from that era could literally be wiped off the page. At first we thought this might be a side effect of the freeze drying, but when the undamaged circulating copies were checked, the print could be wiped off those pages as well. This meant that the paper had to be checked on all damaged copies, and any titles on erasable bond could not be automatically fed through a scanner, but had to be manually scanned page by page. These titles had to be kept separate from the others. This meant that there was a much larger issue to deal with than the water damaged items, one that needed to be dealt with in the future.

Another problem concerned color images that we wanted to preserve in color, most from art theses, but also from geology theses. This was a simple problem to solve, with the specific images scanned in color by ProQuest and appended to the text.

The largest problem was the 271 damaged geology titles, many of which contained large scale maps. The large size of these maps caused problems for digitization. This was further complicated because many of the maps were

hand colored. ProQuest initially expressed concern that the UW maps were unusually large, but after contacting other schools in the region with large map collections, they realized that the maps, while large, were fairly standard.

At this point we had to make several decisions before we could proceed. For geology theses with color illustrations we chose to have them microfilmed in color. While University Risk Management had some concerns about the destruction of the paper copies during digitization, we finalized the decision to sacrifice the archival copy for digitization and have them disbound before scanning as this resulted in a significant cost savings. Even though we still had the circulating copy for local use, this was the most difficult decision to make, and while a consensus was never achieved, a decision was made to disbind the theses and recycle them after digitization.

There continued to be issues with the size of the maps and how we could best deliver a reasonably useful copy in a digital format. The Geology librarian, in consultation with the committee and the Systems Department, agreed that we would go for a quality image, which meant a very large file size, rather than choose a lesser quality image with a smaller file size.

These continue to be problematic since the file size of the high quality images of the digitized maps is currently too large for our campus internet connection to handle. While network technology improvements should eliminate this problem over the next few years, in the short term users are provided access to smaller, less detailed images, and we remind patrons that paper copies of these maps are available in our Geology Library. We are confident that our choice of a higher quality image will provide exceptional access in the future.

In February, ProQuest provided an updated proposal based on the final numbers which included an itemized count of the maps by sizes, which were known to be problematic. The proposal was finally approved and funded by the University, and in May 2006 the last of the geology titles were sent to ProQuest.

The process of preparing the titles before they could be sent out for digitization was labor-intensive. All theses had to be manually examined page by page. It was at this point that

we checked for erasable bond paper. Great care had to be exercised with those titles so as not to wipe the ink off of the pages.

Since our doctoral dissertations had been microfilmed since 1972, ProQuest would be digitizing these titles from the microfilm where possible. We still had to check all of these previously microfilmed titles for color illustrations as they would be rescanned in color and new color microfilm masters would be reproduced.

All color illustrations had to be flagged so the digitization staff at ProQuest would know where they were located within the thesis. All loose photos had to be taped down with double-sided tape. As we only needed the theses to hold together for digitization, we were interested in securing loose objects and not preservation. As we are located in a very dry climate, much of the original glue or tape that had secured these items had dried out and was no longer providing any adhesion. All folded maps, charts and stratigraphic sections had to be unfolded, measured, and repaired where needed.

We found that there were some theses with missing pages and we had to copy and insert the missing pages, in some cases having to track down a departmental or personal copy to get the needed pages. In addition some had other collation errors, such as pages in the wrong order.

We also discovered some theses with three dimensional objects, such as rock and clay samples that could not be digitized. These three dimensional objects were cataloged as accompanying material and transferred to the AV collection.

We were very pleased with the results of the project. UW had never microfilmed our masters' theses so now we have better archival backup, as all theses that were digitized were also microfilmed. Digitization has made the geology theses more accessible for our students, especially distance students, and for other researchers. While we had been microfilming our doctoral dissertations since 1972 and having them included in Dissertation Abstracts, we had never done this with our masters' theses. These are now available in Digital Dissertations, which we hope will increase usage.

This project started with a failed sprinkler system, and while we were not happy with having to deal with a small disaster it did bring to our attention some major problems with our theses and dissertations, especially the erasable bond problem. At UW the theses are turned in to the graduate school and the libraries only received the paper copies well after the student had graduated, so we were not able to exercise any control over the paper the students used. As

a result of this discovery we have since completed the digitization of our entire collection of theses and dissertations. This major project has been time consuming but has been a huge step for us in terms of preservation. As of 2007 all theses and dissertations at UW are only submitted electronically which has streamlined the process and improved access to this important collection.