

## Archives Conservation Discussion Group 2016

### Innovative Approaches to Disaster Response: Real-Life Tips and Tricks

#### ABSTRACT

The session presentations highlighted panelists' experiences with disaster planning and salvage of archival and related materials after natural or man-made disasters. Many institutions need to address issues that arise during significant disasters with resources that are immediately available, and the panelists shared new, adaptive, and practical approaches. Their presentations and the discussion that followed are summarized below.

#### SUMMARY OF PRESENTATIONS

##### MARTA O'NEILL

##### USING NEW APPROACHES TO AN OLD PROBLEM: STILL LEARNING FROM THE ST. LOUIS FIRE OF 1973

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The National Archives and Records Administration (NARA) facility in St. Louis houses the Preservation program, the National Archives at St. Louis, and the National Personnel Records Center in a new building, opened in 2011. The records housed in the facility have very high usage by veterans, their next of kin, federal agencies, and the general public.

The original building, commissioned by the Department of Defense and built by the Army Corps of Engineers, was opened in 1956. This building had no fire walls and no sprinklers, except in the areas where Navy records were held. In the early hours of July 12, 1973, a fire broke out in the building, and burned for three days, with flare-ups continuing for weeks afterward.

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This open discussion took place on May 17, 2016, during the joint CAC/AIC Annual Meeting, held May 14–May 17, 2016, in Montreal, Canada. The moderators organized and led the discussion and recorded notes. Readers are reminded that the moderators do not necessarily endorse all the comments recorded, and that although every effort was made to record proceedings accurately, further evaluation or research is advised before putting treatment observations into practice.

In the areas of the worst damage, the building and records inside suffered both from the fire itself and from water-damage and saturation. After the fire, records that could be recovered were either air-dried, or vacuum-freeze-dried by McDonnell-Douglas in what were then experimental chambers used for the NASA space program. Approximately 6.5 billion records were recovered, but an estimated 16-18 million records were lost in the fire.

Despite damage from the fire and water, recovered records continue to be used by federal agencies, reference staff, and researchers in the reading rooms. The condition of records that survived the fire can vary dramatically, but records may be burned and charred, distorted, browned, brittle, blocked, fused, mold-damaged, or have surface debris, water damage, or tears.

For current use, Preservation staff review all of the records that have been requested each day. Records with only minor damage, such as light discoloration or planar distortion, can be released to the reading room without intervention. Some documents are photocopied or sleeved to facilitate use. Other materials may receive light treatment, such as surface cleaning to remove debris, or more significant treatment to stabilize the documents. A few records are considered too damaged to handle, and so they are completely withheld. Of nearly 50,000 records reviewed in 2015, approximately 2% were treated in some way, and less than 1% of those records were completely withheld for any use.

Fused records pose a major challenge to Preservation staff. These records became fused as a result of surface sizings or coatings interacting with heat and water during the fire. Some records are only fused in small areas, while others are fused across the entire surface. In some cases only a few documents have become fused. In other cases, there may be a blocked stack of records up to an inch thick.

In 2014, NARA Preservation staff consulted with Hal Erickson, previously associated with the Preservation and Conservation Studies program at the University of Texas at Austin. At his suggestion, experiments were undertaken to release fused coated papers using acetic acid, followed by the

introduction of an alkaline reserve. Initial results were promising. Documents separated easily, with little loss. Additional testing and trials will be undertaken to determine the short-term and long-term effects of this treatment.

Preservation staff has also experimented with the use of imaging to provide better access to damaged records, especially those that are so damaged that any handling could result in further loss or destruction. Many of these documents are heavily charred, but ink may be visible on the surface of the paper. The imaging and enhancement of these documents has allowed for information previously thought lost to be revealed.

A pilot project was begun in 2015 to digitize and process images for burned or charred records. Preservation staff developed standards which allowed rapid capture with a single camera, and standardization of the capture process in order to achieve efficiency in the workflow. Records to be imaged were selected according to pre-established criteria, such as significant charring, but lacking fusing or mold-damage.

A number of imaging techniques were considered, including multi-spectral imaging, ultraviolet-induced visible fluorescence, and reflectance transformation imaging. Tests were conducted to determine if changes in contrast in a conventional color image could improve legibility. Although some areas of the documents had some improvement, text could not be universally revealed in this way. In addition, this required lighting adjustments and image enhancements to be made individually for each image, which dramatically slowed the process.

Ultimately, infrared photography was selected. This method provided more successful results. Preservation staff used a 16MP Phase One camera from Digital Transitions, which allows dual spectrum capture. As a result, visible and infrared images could be shot consecutively with the removal or addition of a filter. Images were further enhanced with

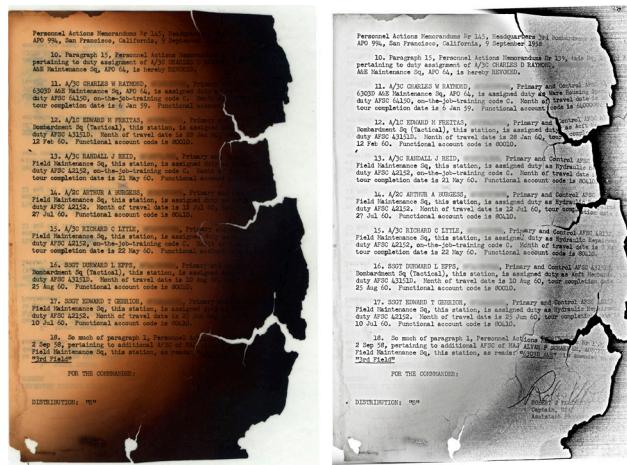


Fig. 1. Before and after image of digitized burned document using infrared photography and Photoshop enhancement. Photo courtesy of Lenin Hurtado, Reformatting Lab, Preservation Programs at St. Louis.

Adobe Photoshop to increase legibility. Figure 1 shows an example of these results. On the left is the digital image of the original document in visible light, and the enhanced infrared image is on the right. Traditional digital images remain an important component of the imaging process, since some markings, including annotations in red pen, can drop out in infrared light. Infrared filters can be used on a wide variety of cameras, so this imaging process can continue even if additional or different cameras are purchased in the future.

Preservation staff in St. Louis are working with conservators and scientists from NARA in College Park, Maryland, to continue efforts to increase access to these fire-damaged records. They hope to develop a testing protocol for the use of acetic acid baths to separate fused documents. Infrared imaging of damaged documents has also been incorporated into standard workflows at the Center. Images of burned records that are too fragile to release to the reading room can instead be delivered in a digital format.

*Marta O'Neill, National Archives and Records Administration,  
St. Louis*

## WHITNEY BAKER

### DISASTER RESPONSE: THE HUMAN ELEMENT

In 2012, the University of Kansas (KU) Libraries experienced a major disaster when a water main broke on a hillside above the below-grade art and architecture library. In the preceding years, Kansas had a number of very cold winters with heavy snowfall, followed by extreme drought in the summers. These conditions led to pavement shifting and water main breaks, which released a large amount of water very quickly. The art and architecture library is located in the basement of the Spencer Museum of Art on the University of Kansas campus. During the 2012 incident, water rushed into the 14,000 square foot space. Half of the space had water coming in from the ceiling, and the entire area had several inches of water on the floor.

Approximately 80% percent of the affected materials were art books. Two freezer trucks containing about 17,000 items were sent to a disaster recovery vendor for vacuum-freeze-drying. The collections space was damaged to such a degree that much of it needed to be reconstructed. Flooring, carpeting, wallboard, and library shelving had to be removed prior to beginning repair. This meant moving an additional 26,000 volumes not affected by the flood to the library's off-site shelving facility.

Thanks to recent training and an up-to-date disaster plan, the emergency response team was able to recover more than 97% of the materials that were damaged in this flood. After the recovery effort, the team members discussed the disaster with hopes of making improvements to the process.

Tip #1: Use reflective construction vests and Tyvek wristbands to better identify team leaders and members in a disaster zone. The library had hundreds of volunteers assisting with the salvage, some of whom were paid by the university. This meant that the university was interested in tracking the hours of these staff members, as well as securing access to the site.

Some of the workers, such as building staff or security, were clearly identifiable. However, volunteers from the library, the museum, the art history department, and other campus departments also aided in the recovery. Shift leaders were given reflective safety vests, and Tyvek wristbands were used to distinguish volunteer workers. Though name tags or lanyards were also considered, the wristbands worked best because they were inexpensive, recyclable, and didn't require someone to be in charge of collecting them at the end of a shift.

Tip #2: Use a large piece of paper for a sign in/sign out sheet. It was necessary to track the hours that staff and volunteers spent in the recovery effort, either for budgeting purposes, insurance, or overtime pay. This detail might not always be incorporated into disaster training but is extremely important. The strategy that worked best in this instance was placing a large sheet of paper near the entrance. Using this system allowed for tracking information that the university administration would need, but also gave a higher rate of sign-in compliance and an accurate hour count.

Tip #3: Provide short training sessions for volunteers at the beginning of each shift. Volunteer training also played an important role in the success of this recovery effort. The library utilized groups of twenty volunteers at a time, and short training sessions were provided for volunteers at the beginning of each shift. The training covered potential kinds of damage and condition problems, as well as the jobs that would be assigned to each volunteer.

In this case, a two-hour recovery shift was sufficient. Working conditions prohibited longer shifts, because there was no HVAC system, and the outside temperature was 107 degrees. There was also no plumbing, so no bathrooms were available in the building. While volunteers may be enthusiastic and want to help, shorter shifts are preferable under these conditions.

The salvage effort was divided into three main tasks. The majority of volunteers were part of a human chain, because the compact shelving used in the space considerably slowed down the recovery. Others assembled or packed boxes for shipment.

Tip #4: Establish a central, networked location for all disaster photographs. Disaster recovery literature states that it is advisable to have a person in charge of communication, and to document the effects of the disaster. The university wanted to remain in control of reporting about the flood until it had a real sense of the extent and scope of the damage. While social media is a great tool with regard to the conservation field, it can complicate situations like this when the institution wants to remain in control of the message. Though

one of the disaster recovery team members was assigned to document the salvage, most volunteers also had cell phone cameras. The library did not want to discourage volunteers from taking photographs that might ultimately be helpful, so staff decided to designate a place on a networked drive where volunteers could put photos taken during the recovery effort. This allowed volunteers to feel like they were helping, but also better controlled how the pictures would be used.

*Whitney Baker, University of Kansas Libraries*

## DEBRA CUOCO

### SUSTAINED RECOVERY: HOW TO SURVIVE A DISASTER AFTER THE INITIAL RESPONSE IS COMPLETE

While salvage efforts at cultural institutions are frequently discussed, what happens after the first 48 hours can often be overlooked. A case study from the Weissman Preservation Center at Harvard University provides the opportunity to examine the full arc of recovery efforts, from initial salvage to sustained treatment, with insight into the challenges faced at each stage of the process.

The weather forecast for Saturday, March 8, 2008 called for heavy rain. At approximately 7:45 p.m., a drainage pipe burst, sending over 500 gallons of water into the Harvard Theatre collection of Houghton Library. The water poured onto four sets of metal flat files, soaking the oversized textile-lined posters and painted canvas backdrops that were stored on top of the flat files. The water then travelled down a flight of stairs and landed on the Emily Dickinson Family Library Collection, also a part of Houghton Library.

Harvard Operations was alerted and called the Library Collections Emergency Team (LCET) to notify team members that collections were potentially at risk. The LCET team is made up of conservators and preservation librarians at Harvard Library, who in turn train staff on all aspects of salvage and preparedness. As part of their duties, team members trade off carrying a cell phone and responding to calls regarding collections emergencies.

Within ten minutes, the on-call LCET conservator was at the library assessing the situation. The flat files contained unique set and costume designs executed in potentially vulnerable media. Because of the quantity and types of materials affected, additional assistance was required. Within an hour, four paper conservators, the senior book conservator, and Houghton Library staff and Operations were on the scene. A decision was made to salvage the materials in-house, as the objects in question were special collections and space was available in the building to recover *in situ*.

Tip #1: Document Salvage Efforts. In the flurry of activity and adrenaline, the team failed to document this disaster with photographs. After the incident, disposable cameras

were added to emergency supply kits. Currently, the LCET cell phone or digital cameras are used to document collections emergencies.

Items in the flat files had varying degrees of wetness. The flat files had small holes drilled inside the drawers that allowed for air-flow, but which also allowed water to travel into the drawers. As a result, every drawer had pools of water. Drawer covers (which conservation staff had asked the library to remove, because the black dye in the cover was water soluble) actually helped to protect the tops of the piles from moisture. The dye bled on the folders, but not on the objects themselves. Items in the bottoms of the piles, on the other hand, were very wet. A quick tip for drying out drawers: take a full roll of paper towels and use it as a sponge. This is not really environmentally sustainable, but works well in a hurry, and full rolls of paper towels are often readily available.

Items were removed from folders, with identifying information torn from the folder. The objects were laid out on tables, floors, or hallways on brown kraft paper. The kraft paper allowed the team to easily write notes to each other or put borders between certain items. This process allowed the team to keep track of the collections and maintain intellectual control of the material.

At 3:00 a.m., movers arrived to help the LCET team roll out the heavy oversized materials. All told, over 1100 paper items and 500 books were recovered. The salvage was a great success; relatively few items needed treatment after drying, and the entire operation was an example of a truly collaborative effort between multiple departments.

**Tip #2:** Don't forget to take breaks. Responders forgot to hydrate and eventually ate dinner at 2:00 a.m. Rather than trading off duties and taking breaks, everyone worked long into the night.

After the success of this initial salvage response, the longer-term recovery efforts proved more difficult. Communication issues and patience proved to be the biggest challenges. The excitement over what had been achieved the past weekend started to fade, and staff grew impatient to return to normal operations. During the first week, curatorial staff began the process of relabeling and re-foldering materials to gain intellectual control of the collections. The LCET team debriefed everyone who participated in the salvage efforts and made sure the event was fully documented, including opportunities for improvements.

**Tip #3:** Make sure you debrief as soon as possible after the event with all staff that were involved. Everyone has a different piece of the story, and it's easy to lose information if it isn't recorded quickly.

One outcome of this post-disaster conversation was the addition of a metal ramp with an attached drain pipe above the flat files. This was intended to divert water leaks from flowing directly into or onto the cases. Water-diverting ramps

have been added to storage areas in other parts of the library as a tool to protect collections.

By mid-week, library and operations staff was understandably eager to reopen spaces to patrons. There was a push to open areas not connected to Houghton Library. This required the movement of many materials that were still drying, particularly designs executed on boards which took longer to dry.

The most challenging collections were the painted backdrops and textile-lined posters, because these materials took considerable time to dry completely. To facilitate the process, the backdrops were re-rolled, flipped, and unrolled daily. Due to their size, this required several people working together. After the first days, finding enthusiastic volunteers to help was often difficult, particularly among staff outside of the preservation department. Examination of the backdrops also revealed some damage that required consultation with a paintings conservator, creating an additional delay.

Before re-rolling the backdrops, a plan was needed for permanent storage, as they could not be returned to the top of the flat files. The backdrops were rolled onto lined tubes and wrapped for storage within the stacks. This was completed within three weeks of the flood. Within a month, all spaces, including the Theatre Collection, were reopened. While this might seem like a relatively short period of time, the library was unprepared for the delay of services to patrons.

In addition to the need to reopen the library as soon as possible, insurance claims needed quick processing. An initial claim had to be submitted within days. Assessments of all affected items and treatment estimates were required by the third week. Excel spreadsheets and supplementary documentation were submitted, and then staff had to wait. Three months later, proposals were requested to justify the claims for a small number of items selected for treatment. And then more waiting. Once this step was complete, treatment began. However, the process was slow, as these treatments had to be integrated with other ongoing projects. Ultimately, it took eighteen months from the time of the initial incident until the hiring of two project conservators to treat the flood damaged materials.

In hindsight, what could have been done differently? LCET, local emergency teams, and Harvard libraries often participate in mock emergency exercises. Discussion includes different kinds of disasters that may occur, how to salvage particular materials, and whether a vendor is needed to aid in the response. Rarely do discussions include what happens after the initial salvage efforts. How much space is needed, and for how long? How will this affect public spaces and services? Is there appropriate in-house expertise for the kinds of objects affected? Are there items that are particularly vulnerable? Each library space and collection is different, and within each there are new challenges. This discussion of details through the entire timeline and how long the recovery would take was missing from previous exercises. The recovery was frustrating both to conservators, who were emotionally invested in

the project, and to curatorial staff, who wanted to get the collections back in order and available to patrons as soon as possible. If the full picture of an emergency event had been covered within a mock exercise, expectations may have been more realistic.

In all, the salvage of these collections was successful, and the lessons learned were beneficial to better prepare the emergency team.

*Debra Cuoco, Weissman Preservation Center,  
Harvard University Library*

#### OLIVIA PRIMANIS

#### TRY THIS: AN ALTERNATIVE TECHNIQUE FOR AIR-DRYING WET BOOKS

When a relatively small number of books are affected by an emergency such as a water leak, conservators frequently air-dry the materials in-house. Often, this means that books are set up on their ends and fanned open to dry. Unfortunately, this can result in distortion of both the text block and the binding, with problems such as curling at the bottom of the text block. Occasionally, the text block will fall out of the binding, or the cloth will separate from the cover because the adhesive has failed.

After the 1986 fire at the Los Angeles Public Library, books were air-dried using a process described as dehumidification drying in a chamber conditioned to 100-110 degrees Fahrenheit and 20-30% relative humidity. The books were dried open in crates as quickly as possible to prevent mold growth. Once dry, many of the book covers and text blocks were distorted. One solution was to press the books. The covers of the books were wrapped in damp paper towels and plastic wrap to re-hydrate the boards. Then the books were placed closed and spine down in a crate and compressed using a wooden dowel. As the covers relaxed with the dampness, the distortion in the book was reduced.

Another option that results in less distortion is to first set up the books to encourage the covers to dry flat, and then air-dry the text blocks. To do this, the book can be placed on the edge of a crate. The crate permits air circulation around the covers and text block. One board hangs down, while the other board is lifted or held open with crumpled newsprint or other material. This should allow the boards to dry in 6-8 hours if they are very wet, or even in just a few hours if they are damp. Drying the boards in this manner allows the cloth covering material and endpapers to readhere and set firmly in place, if a water-soluble adhesive was used. The book can then be set up on end and fanned open to air dry with less distortion of both the binding and the text block.

*Olivia Primanis, the Harry Ransom Center,  
University of Texas at Austin*

DAN PATERSON, *with ALAN HALEY, YASMEEN KHAN & ANDREW ROBB*

#### LARGE-SCALE RESPONSE TO WET BOOKS AT THE LIBRARY OF CONGRESS: TRIED AND TRUE TECHNIQUES

Over the past few years, the staff who serve on the Preservation Emergency Response Team at the Library of Congress have developed a number of approaches and techniques that have improved response and recovery efforts.

Tip #1: Clear signage in the stacks is essential, especially in a large institution. Staff members who are most likely to see a water intrusion in the stacks may not be familiar with the institution's disaster response plan. Since the team added simple signage with clear instructions throughout library stacks, the time in which water leaks are reported and response is initiated has been significantly reduced.

Tip #2: The team has learned that taking the time to do an initial triage increases efficiency in the response process. A first step is to segregate materials based on a few set criteria, such as degree of wetness or type of paper. Over time, the team has noticed surprising differences that influence these criteria. For example, acidic papers often dry faster than alkaline papers or papers that have undergone mass deacidification. Coated papers are also segregated at this stage and sent for freezing so that no additional time is expended on them. Separating materials into groups allows the team to manage the drying process better.

Tip #3: Different binding styles or materials react differently to moisture, and understanding those differences can speed recovery efforts. Library bindings, for example, retain a great deal of water, even when the text block is relatively dry. When library bindings are affected, the team may choose to remove the book from the binding entirely. Although the book must be sent out for rebinding, this action ultimately protects the text block and saves resources by allowing the books to dry more quickly.

Tip #4: When rare materials are affected, curators should be involved in the decision-making process as soon as possible. Curatorial knowledge and input can be critical in prioritizing recovery efforts and resources. In one example, the binding of a 1522 Aldine imprint was wet after a disaster, and the curator advised conservators to focus attention on quickly drying the text block, with an understanding that the volume would have to be treated and rebound at a later date. This decision was made based on the curator's knowledge that several other copies of the same imprint in the collection were unaffected, and that recovery of other wet materials was a greater priority in this context.

Tip #5: For large-scale recovery involving a significant number of books, the recovery team air-dries books directly on book trucks. The books are placed on the truck with pre-cut fluted board positioned between the text block and the cover. Volumes are separated by additional pieces of fluted



Fig. 2. A full shelf of books interleaved with fluted board on a cart.  
Photo courtesy of Richard Herbert, Library of Congress.

board. Figure 2 shows a full shelf of interleaved books on a cart. Using carts allows more books to be set up for air-drying in the available space. Trucks can also be rotated and moved easily, such as for positioning them in front of fans at varying intervals.

The team has found that the flutes in the board can be intentionally oriented to speed drying. For books that are wet near the joint or spine, the flutes are placed perpendicular to the spine. When the truck is placed in front of fans, this encourages airflow towards the gutter. If the text block is wet, airflow can be directed across the text block by placing the flutes parallel to the spine. The book is then positioned on its spine on the truck, which allows the air from the fans to move through the flutes. Drying the books on trucks also provides some restraint, which limits distortion of the text blocks and bindings. It is important to note that books may need to be fanned out for initial drying, especially during triage, before they are ready to be moved to the trucks.

**Tip #6:** In a very few cases when a text block is wet but the binding is dry, the recovery team has experimented with wetting out books *in situ*. A mixture of approximately 90% deionized water and 10% ethanol is brushed out on leaves one at a time to reduce tidelines. As leaves are wet out, the text block is interleaved with Tek-Wipe between every fourth or fifth page. After 30-40 pages are treated and interleaved, the book is placed in the press. The process is repeated over multiple days as the conservator works through the book. This process has resulted in significant reduction of tidelines. It must be emphasized that this is an experimental technique that is time-consuming and labor-intensive, but in the right circumstances, it can be effective.

**Tip #7:** For large-scale events, stabilize materials first, and then deal with registration and statistics. This works well at the Library of Congress, in part because the recovery space is a locked room controlled by key card. Access to the materials is limited to conservation staff and others who are escorted

in, so collection security is maintained. Since recovery may continue for hours or days, materials may arrive in multiple batches over time, potentially leading to confusion in registration. By counting all of the materials at the end of the recovery effort, the team can maintain intellectual control and prevent double-counting as collections move through the space.

*Dan Paterson, The Library of Congress*

DAISHI YOSHIHARA & MASASHI AMANO  
GRASSROOTS CITIZEN VOLUNTEERS AS A SOLUTION FOR  
DISASTER PREPAREDNESS  
*Translation assistance by Kazuko Hioki*

Shiryo-Net is a Japanese volunteer organization, established in 1995, working to preserve historical materials affected by natural disasters. Large-scale natural disasters, such as earthquakes, floods, and mudslides, are frequent occurrences in Japan. Because many locally significant historical documents are in private hands, it is difficult to salvage all of these materials using expert conservators. To combat the effects of these disasters on a local level, regional Shiryo-Net groups have been established throughout the nation. There are 24 Shiryo-Net groups in all. The most recent is the Kumamoto Shiryo-Net, which was formed in the aftermath of the Kumamoto earthquake in 2016.

Shiryo-Net's core membership is composed of historians, but membership is open to anyone. The organization is funded through dues and donations. For example, the Kobe Shiryo-Net consists of 15 staff and 300 members who are students, historians, or archivists.

One of the goals of Shiryo-Net is to increase the number of skilled volunteers to salvage historical documents in the aftermath of a disaster. To this end, it has given many successful recovery workshops throughout Japan. Members are often not experienced in recovery of fragile collections, so the organization works with conservators to teach salvage with materials that are easily accessible. This training is provided by Shiryo-Net members and is open to the public. For example, volunteers are taught to dry documents with paper towels or other materials that can be purchased at a local grocery store. The motto is "anyone, anywhere, easily."

The salvage effort of historical documents after the 2011 Tohoku earthquake and tsunami involved one of these workshops. One of the challenges of training volunteers is that many had never seen or handled damaged materials before. Shiryo-Net members instructed volunteers to recognize the historical significance, component materials, and original format of these records, as well as the risks involved in cleaning them. One of the ways that members approached this was to have the volunteers make historical book models and conduct a mock salvage operation. The book models were buried

in the mud and recovered using the techniques taught in the workshop.

Since 2011, five thousand volunteers have joined the operation in the Miyagi Prefecture alone, and have recovered 20,000 manuscripts damaged during the 2011 tsunami.

*Daishi Yoshihara, National Research Institute for Cultural Properties, Tokyo*

*Masashi Amano, International Research Institute of Disaster Science, Tohoku University*

## DISCUSSION

*Commenter:* Hi, I'm coming to this from more of a library/archives perspective, rather than a conservation perspective, but how much does rarity and value factor into triage decisions?

*Dan Paterson:* Both are factors at the Library of Congress. That's why we try to get the curators involved as quickly as possible after a disaster. For example, there was an incident where we had three first editions of *Ulysses* in the recovery room that we consulted with a curator about. As it turned out, one of them was Joyce's copy, one of them was the copy that was used in the lawsuit as a piece of evidence in order to get the book published, and then one was just generally rare. It was important to find out which one was which during triage. Fortunately, none of them were damaged; it was just their housings that got damp. We really feel like we need curatorial input, because sometimes it's too far outside our area of expertise to be able to make those decisions.

*Marta O'Neill:* I'd like to respond to that in an archival sense. Part of our emergency plan has a list of priority documents and what we'd try to salvage first in a disaster. It really helps to work with the archivists to identify and prioritize those resources when making an emergency plan. Then in the event of a disaster, you can respond according to that list.

*Debra Cuoco:* At Harvard, we do something similar with our Library Collections Emergency Team (LCET). We try to have those conversations with curators and librarians. We also go on tours, which are helpful for having face-to-face communication and familiarity with collections spaces. Even if the particular collection does not have a formal emergency plan with designated recovery priorities, we are able to get a sense from the curators which materials are important or might be considered a salvage priority.

However, in the incident I mentioned, we were unable to locate the curator of the Theatre Collection that night. In the end, I think it actually helped us because we knew we

had to salvage everything without curator input, and we just systematically went through the flat files in order. Also, I'd just finished surveying this particular collection the week before, so I had both an idea of which materials were important and an emotional investment in the recovery. I actually worked in a different area and helped once things were out of the flat files. I think if I had been directly involved in pulling the materials out of drawers, I might have advocated for saving particular collections first. In this case, we knew we had to recover everything, so we just made everything equally important. Certainly in other cases, in other libraries, we try to do the same and get those priorities ahead of time.

*Commenter:* My question is about Shiryo-Net. Does your membership include the institutions or people that own the historical documents? How do you decide when and where to send your volunteers after an event? Do the owners of the documents contact you in some other way?

*Kazuko Hioki* (translating): Shiryo-Net members do a lot of outreach so they can get to know the owners and locations of locally important historical materials. They work to identify and catalog these materials before a disaster happens. Then, in a disaster situation, if the owner is unable to contact Shiryo-Net, the organization's members will know the locations of significant materials in that village. They can then send out volunteers and plan the recovery effort. Sometimes the collections' owners contact Shiryo-Net, but the most important thing is building and maintaining that long-term relationship over time.

*Commenter:* Also regarding Shiryo-Net and disaster response in general in Japan. Is there an equivalent of AIC or a professional organization of conservators upon whom you can call for expertise?

*Kazuko Hioki* (translating): Yes there is an equivalent society in Japan, but it is much smaller. They have one thousand members, but the organization doesn't have full time staff.

*Commenter:* How do you encourage volunteers or members to join Shiryo-Net? Do they find out that your organization exists and ask to volunteer?

*Kazuko Hioki* (translating): Shiryo-Net is a volunteer organization primarily for historians, so new membership is promoted through outreach by current members. Local volunteers also hear about the organization through word of mouth or from the regional Shiryo-Net group.

*Commenter:* My question specifically is about the barcodes that are used by Library of Congress. Are those associated with the books in the interest of preparedness or are they associated

after a disaster occurs to catalog or inventory affected items? What kind of information do the barcodes have?

*Dan Paterson:* We actually do not use the barcodes on books for tracking purposes because of the way barcoding has been implemented at the Library of Congress. We've found that using those barcodes is not the most efficient way for us to keep an inventory in a disaster response. However, there have been times when we've created our own barcodes and put them on flags during an incident.

*Whitney Baker:* It can be useful for inventory purposes if the institution is already using barcodes as part of the cataloging system for books. Then you can scan each barcode into a document and look up the cataloging information later. This is if you have sufficient time to do this, of course.

*Dan Paterson:* Exactly. I think that's been our experience. In theory, we've tried to incorporate it, but it's never been as fruitful as the amount of effort that we've had to put into it.

*Commenter:* It sometimes happens on a large team dealing with disaster recovery, even with volunteers taking short rotations, that one person refuses to stop. Have you encountered this problem and how did you deal with it?

*Debra Cuoco:* We find that it happens a lot. It's very hard to get people to stop. We knew this was a problem, and I mentioned that we forgot to take breaks and drink water. Sometimes it's difficult for people to get out of the groove of what they are doing. What we had to do is make everyone stop and take a break together.

Now we are trying to set up a system with a spreadsheet for longer incidents, because we still have people that work too many hours. Also, it makes sense to stagger expertise during a longer recovery. If you have all of your experts there at the same time, you don't then want to have a period of time where there's no expert present on whatever particular material is being salvaged. The next time we have a large incident, we're going to attempt to get this going.

*Whitney Baker:* For the disaster I discussed, we just told everyone that shifts were two hours, and that was decided by the library administration. That helped set expectations for how long volunteers would be there. A lot of times, disaster situations are such that two hours may be long enough, especially if there are not great working conditions. I would set the tone ahead of time.

*Olivia Primanis:* I think in my experience at Los Angeles Public Library, we had the opposite problem, which was that you would walk into an area and find no volunteers working. It made me think it was very important to have one person

that was completely in charge, so they could guide volunteers to areas that needed assistance.

*Marta O'Neill:* We have a situation where we have a lot of records, so we have a lot of people, which is a good thing. We established teams with a team leader and a particular number of people on a team. The teams rotate with one team relieving another, similar to a shift change. We found that people have gotten into the habit that when their shift is over, the next team comes in.

*Dan Paterson:* I would say that we do something fairly similar to that. There is one person in charge of recovery, and then Conservation will put out a call for volunteers with set time shifts. So there's a defined beginning and ending period for the shift.

*Commenter:* Dan, I have a question for you about drying on the book trucks. Once you have the books positioned with the fluted board, do you feel that it is sufficient for them to be there in that position until they're dry? Do you have to go back and shift the board and continue adjusting until they're done?

*Dan Paterson:* We do check on them frequently, depending on the degree of wetness. A lot of times, we'll check them twice in the first 24 hour period and change the fluted board out. Sometimes there will be more interleaving in there also. Many times we'll use newsprint in addition to the fluted board because the acidic paper wicks the water out well, and it's inexpensive. Or, we may use Tek-Wipe. But we'll check them at least once a day over the course of the recovery effort.

*Commenter:* To follow up on that, do you pre-cut the boards?

*Dan Paterson:* We use scrap board from our box making machine cut into various sizes. We also cut newsprint and the Tek-Wipe into various sizes as well. We have a dedicated recovery room where these supplies are stored, so they are accessible during a disaster.

*Commenter:* Is there a threshold where a book is too wet to interleave with board and dry on the truck? Are the saturated books separated out prior to this process?

*Dan Paterson:* We find this works well for the vast majority of things that we get. The book might be put in the press to get the excess moisture out. Or it might be frozen, which we'd likely do if the book was very saturated.

*Olivia Primanis:* After a fire, you have a bit more time to dry a book than after just a water event, especially a water event

where sewage is involved. In a fire, the heat of the fire kills a lot of the mold spores.

In our instance, some of the large bound periodicals were in the stacks for two weeks, wet, before they were removed and frozen. We found that if we could dry them in about 1-2 weeks after the fire, we didn't have a mold problem. I don't want to say you don't have to move fast after an event, but I think if fire is involved, you have a bit more time. Sometimes that's lucky, because you might not have access to the building.

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