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Disaster Planning for Libraries: Lessons from California State University, Northridge

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In Northridge we learned that a university with facilities for over 25,000 students can be changed in less than thirty seconds into a university with no usable buildings, no electrical power, no water, and no telephone service. California State University, Northridge (CSUN) is about a mile from the epicenter of the Northridge Earthquake of January 17, 1994 and the damage total for the campus stands at over 400 million dollars. The earthquake happened at 4:31 a.m. on a holiday during semester break, so only a few people were in university buildings during the quake. Fortunately, no one was seriously injured on campus. All of the buildings on campus were damaged, some beyond repair.

When the extent of the damage caused at the university was clear, a decision was made to establish alternative classrooms and offices using hundreds of temporary structures located on lawns, athletic fields, and parking lots. Classes began four weeks after the quake, just two weeks later than originally planned.

The Delmar T. Oviatt Library was closed for almost eight months due to structural damage. Images that illustrate earthquake damage to the Oviatt Library are available on the internet at <http://library.csun.edu/mfinley/quake.html>. Two wings of the library building were eventually torn down and are still being rebuilt.

How did we provide library services without our library building or access to our collection? During the spring 1994 semester, our students used other libraries. Instructional packets about cooperating libraries were prepared and distributed to students. A shuttle bus service was provided between our campus and UCLA, the nearest large university. Our reference librarians worked at other libraries to help lighten the workload created there by the influx of additional users. A toll-free telephone number was set up for database access; Lexis-Nexis, CARL Uncover, and FirstSearch were available to all CSUN students and faculty who had computers.

Operating out of a trailer, our library became a test site for document delivery. They built two dome structures and renovated an old fairgrounds exhibition building as temporary library space. These opened four months after the quake. Some of our employees and

collections have endured being in temporary facilities for over five years.

What happened to government documents while this larger drama unfolded? For several months documents shipments were processed at staff members' homes. We were not allowed into our offices in the library to retrieve what we needed until two months after the quake.

Fortunately, a department chair was able to salvage one vital notebook for us when she was in the building as part of a damage evaluation team. The Government Printing Office sent us a copy of our selection profile and other paperwork. We bought some essential supplies and coped as best we could. We had to do things like walking to a specific place each morning and waiting for up to an hour for the UPS truck to appear so that we could receive our packages. Then we'd go to a different location to get our mail and yet another place to get packages from other shippers. This, of course, was after we figured out where the packages were being delivered and that we needed to be there when they arrived if we wanted to keep them out of storage.

Our Government Documents unit got computers and temporary office space in May 1994, four months after the earthquake. At the end of August, the documents unit moved back into the Oviatt Library. We spent another very difficult year as we coped with a variety of problems and backlogs. Recovery from the scale of disaster we experienced requires years of work, but planning in advance of a disaster can improve recovery.

Examples of disaster planning done before the quake

The most expensive planning done by our library before the quake involved building construction and shelving. The Oviatt Library has three parts: the large original core building built in the 1970's, and two wings that add another 90,000 square feet and a storage facility. The wings were built in the early 1990's, one wing on the east side and the other on the west. The Oviatt wings were deliberately constructed in a different manner than the core to be more earthquake resistant (steel frame versus reinforced concrete).

Unfortunately, this did not turn out as planned. Instead, the Northridge Earthquake gave the engineers an education about steel frame buildings. The older core had damage which engineers expected because of the code standards in effect at the time it was constructed. This included structural damage to concrete, damage to drywall, and damage to nonstructural elements like ceiling tiles. A table collapsed in the Reference Room. Some asbestos contamination occurred. Plus, of course, almost all of the books fell off the shelves and offices were a mess. There was damage to the roof and windows where the wings and core building met, but that had been expected.

The engineers thought at first that the wings, as planned, had escaped serious damage. Several weeks later they discovered that the 4-story high girders in the wings were no longer fastened to their respective foundations; most of the four-inch thick steel base plates had cracked where the girders fastened into the foundation. After three years of figuring out how to fix the wings, at the point when contractors were preparing to bid on the repairs, the slope of the floors was checked again. The engineers discovered that the slope of the floors was increasing and the unstable wings might collapse. So, add another year to our

recovery for demolition of the wings and a couple more years for design and construction of new wings. We hope to move into them by the end of 1999. While this experience can be summed up as "the engineers were wrong," nonetheless the attempt to have an earthquake resistant library building was an appropriate action for the library to have undertaken in advance.

Another thing done ahead of time was to reinforce and brace library shelving to meet the latest shelving standards. This was expensive and inconvenient, but we did it anyway. Why did we worry about making the wings more quake resistant and bracing shelving? The answer is the San Fernando Earthquake of 1971, whose epicenter was about twenty-five miles from our campus. Our shelving in an earlier library building had been damaged by that quake. This time the shelving survived the quake intact. This saved money and time in our recovery. Approximately 600,000 volumes had fallen off the shelves, but we had shelves to place books on when they were picked up off the floor.

We also had what we call our "earthquake book", a record of what call numbers should be shelved where, section by section, in our main collection. This represented another lesson learned from the earlier San Fernando Earthquake and greatly simplified the task of getting books back on the shelves with minimal shifts required as they were shelved.

We knew about the potential of water damage and acted to limit its effect. We had rain damage from roof leaks after the quake. Damp books were packed and sent for freeze drying.

One of our library's most unique features is the Automated Storage and Retrieval System (ASRS). Located in the basement of the east wing, the ASRS is designed to store low-use volumes and provide access to them through robotic warehousing technology linked to the library's online catalog. The storage facility survived the quake undamaged, so when the east wing was demolished, it was taken down to the ASRS level and is being rebuilt over the ASRS. During this process we have had water damage in the ASRS because the fail-safe temporary roofing system failed. We are currently checking 500,000 volumes in the ASRS for water damage and mold. Ironically, more books have been destroyed by the water damage during reconstruction than by the earthquake. After the quake some 15,000-20,000 books had to be rebound, but only a small number were damaged beyond repair.

What should be learned from our library's experience?

Disaster planning and hazard mitigation can reduce damage and help a library recover more quickly. However, there is always more to learn. During the Northridge Earthquake, microform cabinets moved, fell over, and opened despite self-locking drawers. Out of 148 microform cabinets, fewer than ten escaped without damage. Approximately half of the cabinets (70) had to be replaced due to damage which rendered them unusable. We had some piggyback microfilm cabinets to use floor space more efficiently. Almost all of these piggyback cabinets became airborne during the earthquake, despite having been purchased to fit the cabinets that they were mounted on and having been bolted to both the wall and the base cabinets. In addition, the self-locking mechanism failed on many microfiche cabinets designed to allow only one drawer to open at a time, thereby permitting all the drawers to come open. Cabinets with drawer latches also came open, but each latch

had to fail separately.

Think about the space between rows of cabinets when you plan microform areas. Before the quake, the aisles in our Microform Room were more than wide enough for wheelchair access when cabinet drawers on both sides were open. However, after the cabinets moved during the quake and the drawers opened, there was little room left between the rows of cabinets for people. Anyone caught between the rows of cabinets or in the way of the airborne piggyback cabinets at the time of the quake could have been killed or very seriously injured. It is clear that libraries need to find ways to make microform areas safer during earthquakes.

There are three additional suggestions relevant to disaster planning that I want to discuss. Lists of examples and actions for each of these points are included.

First, remember that stuff is just stuff—and I say that with a full understanding that libraries collect and protect stuff and act like stuff is important. But stuff is still just stuff. Plan first for the safety of people. Practice evacuation techniques until they are habits. Learn to practice hazard mitigation as a way of life.

Actions:

- Have your building evaluated by a structural engineer, get recommendations of what should be strengthened or changed to bring the building up to or beyond current code requirements, then find the money, and make those changes.

- If your library has lead paint or asbestos containing materials, abate them. If they are present in your library at the time of a disaster and are exposed, they will be a health risk to all and you could lose your collection due to contamination.

- Read the books that tell you how to make your workplace safer through hazard mitigation and follow the suggestions given. Shelving should be properly bolted and reinforced. Bolt high furniture and cabinets in place with L-brackets. Keep aisles and space under tables clear. Secure lighting fixtures and suspended ceilings.

- Change procedures to incorporate safety, i.e. the purchase order for a new cabinet for your office should also generate a work order to bolt the cabinet to the wall when it is delivered.

- Each employee should be prepared for an emergency. Have emergency supplies readily available: flashlights, hard hats, work gloves, safety gloves, dust masks, packaged water, first aid kits.

- Practice evacuating your building. Afterwards, talk about what you can improve. Such details may include having portable automatic lights in all offices (the kind that plug in and turn on automatically when the power goes off, at which time they can be removed and function as a flashlight). Wearing a hard hat that says "Emergency Team" conveys visual authority to convince the unwilling or frightened to follow your instructions. Carry a pencil and paper so that you can write down information for

emergency personnel such as the location of people injured or trapped by debris.

Develop a disaster plan to deal with catastrophic damage as well as smaller-scale emergencies. We had done some planning in advance, but we did not have a comprehensive disaster plan. We had not planned for the possibility of losing the library building and the entire collection. We should have.

Our experience certainly makes it clear that you should keep copies of key documentation up to date and store at least one copy off site. Until the Northridge Earthquake, even the scientists did not know that we were sitting right on top of a thrust fault that could cause a 6.7 magnitude earthquake, but unexpected and unwelcome are hallmarks of the events we call disasters. Examples of key documentation include:

- Library's disaster plan
- Salvage priorities
- An "earthquake book" that records the library's stack arrangement (what files where) for all collections, including microform
- Accurate floor plans
- Lists of key equipment and vendor addresses
- A list of professional movers and freeze-drying firms
- Phone numbers of other libraries, professional associations, and the Government Printing Office contacts for depository libraries
- Lists of employees and contact information for them
- Library statistics to provide data for insurers or agencies such as FEMA
- Vital computer data files and documentation on what computer configuration and programs are necessary to run the files
- Account numbers, passwords, and similar practical details

Plan for service continuity and recovery just as the commercial world plans for business continuity after a disaster. A number of points that should be considered are listed below.

- How can effective library work teams be set up to make decisions and communicate information?
- How will the library quickly obtain the services of structural engineers or other experts to assess the physical safety of the building so library workers can reenter the building if the building is safe to occupy? Does the library need advance

contingency contracts with various experts?

- Where will the money to do whatever is necessary come from and how long will it take to get the funds?

- Does the library have insurance that covers the disaster? Will the library rely on the Federal Emergency Management Administration for part of the funds needed?

- What kind of documentation of the disaster's effects and the cost of repairs/replacement will be necessary before the mess can be cleaned up? How will the library provide this documentation? (At California State University, Northridge, damage to buildings was videotaped at least twice, with engineering and construction experts present to accurately describe the damage; once before heavy debris was cleaned up and again afterwards to document damage that had been concealed by debris.)
- Where will library employees work if the building is damaged?

- What equipment and supplies will be necessary for the library to function and where can they be obtained?

- If the library building is unusable, where will incoming subscriptions and items ordered before the disaster be processed and housed? How much space is needed for this?

- Where could the collection be moved if the library building has structural damage?

- What parts of the collection are most vital to save or have accessible to users?

- What information must employees have to do their jobs? How and where is such information backed up outside of the library to ensure its availability after a disaster?

- How will computer functions be restored, including both Internet access as well as library catalog needs?

- If you have to institute a salvage operation for water-damaged books in a building without electricity or running water, how will you provide boxes and other salvage materials for the books and emergency lighting, drinking water, food, toilet facilities, and gloves for the workers?

- If the cooperation of other libraries will be required while the damaged library recovers, either to provide staffing or to allow access to their collections, are mutual aid agreements in place before a disaster occurs?

- Is there sufficient staff to do the actions necessary for the recovery as well as to continue the library's regular functions? Where will additional workers be obtained and who will pay for them?

- If the use of volunteers is planned, have appropriate legal waivers and written

training materials been developed to use with community volunteers?

- How can you help maintain staff morale in the midst of turmoil and disgusting conditions?

Please understand that a disaster can happen to your library and that the time it chooses to happen could be in the next minute. An earthquake, hurricane, tornado, flood, fire, or explosion will not ask for your permission in advance. But you can choose to be well prepared. Think about what would make your library a safer place to be during a disaster. Think about what you can do to make it easier for your library to recover from a disaster.

Many of the things you need to do in disaster planning are small steps, easily done by library employees if they are willing to change procedures to enhance safety and to promote service continuity. I hope that you will take steps, however small they may be, to improve disaster preparedness at your library.

Additional Reading

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