

Dealing with floods, earthquakes, and volcanic damage. How libraries/archives handle emergencies in the event of natural disasters

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Abstract:

Some considerations related to the preliminary technical and methodological knowledge on emergency and risk to prevent damage from natural disasters to the documentary Cultural Heritage. More knowledge are available in the authoritative reference sources, of IFLA websites. Standard and good practices in case of disaster can help to prepare the reaction to reduce the risks for libraries, archives and museums, and to prepare a specific emergency plan for the risks of damage from water and fire. Disaster causes are happening more for climate change and for other factors related to globalization and crisis. Digital and technology offer possibility to do more: collecting data, exchange and communications. Digitization can support rescue contents and memory of damaged material.

Cooperation among libraries and local institutions at different levels with stakeholders is important to share fundamental experiences during the emergency and reduce resources. Globalization is the most varied violent affecting libraries, archives and museums. The emergency plan, in the library should be prepared and tested related to the strategy of safeguard and protection of local Cultural heritage.

Education and training of all the staff are important to give more responsibility and consciousness to manage and to care of heritage preservation for the future generations. Need more competences and different approaches. The exercises are important, involving all the staff in more new practices to learn and test with the simulation the eventual risk of disaster and working together organized in mixed multidisciplinary teams, group or network and sharing experiences.

Keywords: Education, Training, Emergency, Cooperation, Responsibility

Introduction

This paper will emphasize some considerations as important, related to the preliminary technical and methodological knowledge on emergencies from natural disasters to the documentary Cultural Heritage. More knowledge can be found in the authoritative reference sources, such as those both in the IFLA websites, updated as much as possible, but also on other sites of international partners and associations, like ICOM, ICA, which act in harmony and collaboration with UNESCO, ICCROM, ICOMOS, and other in the website of universities and large documentary and museum library institutions, foundations

and private institutes, and research centers.¹ They offer analyzes of practical experiences lived, tested and studied following emergencies due to disasters of different intensities and sizes, which libraries, archives and museums of all levels and dimensions have to deal with, when involved in few risks and damages.

The causes are the most varied due to more and more the climate change, and also combined with each other, both simultaneously and in later times to: **water**, in the various forms of manifestation of hydrogeological instability between floods, tides, tsunamis, water bombs, earthquakes, or due to phenomena as violent atmospheric events, such as typhoons and hurricanes, hail, snow, and then molds, mud, biological proliferation of insects, or other forms of injury affecting their constituent physical components of the media or other (as inks, colors); **fire**, from overheating, due to high temperatures, or lightning, or arsons, or bombs, terrorist acts, breakdowns in electrical or air conditioning systems or energy or other supplies, are often unforeseen, but frequent.

Poor, inefficient, or absent care of the land and of maintenance of buildings, and as well services, has often become one of the main causes of disasters, even in the everyday and for significant dimensions. Volcanic eruptions are not controllable, nor are they predictable in certain contexts of silent seismic areas, apparently free from such hazards. Equally can be said of landslides and mudslides, sudden collapses. The geomorphological and seismographic knowledge of the territory is important for the identification of hazards in that area, especially on densely populated urban fabrics. Also destruction of forested or cultivated areas, or in hilly, with serious damage to agricultural production and to the preservation of bio-diversity and marine areas. Man-made events or others attributable to climate change, happened in recent times, environmental **pollutions** of air, and toxic gases, as clouds moving into the ether, fumes of various chemical nature and incisive new pandemics with heavy destruction of cycle-live, of productive activities, and of buildings in urban fabrics.

Another emerging feature, more and more is the **global risks crossing all** the Cultural Heritage, different artifacts, and the problem to find appropriate solutions to rescue in the emergencies, situations originated from natural causes, or manmade or environmental pollution affecting Cultural Heritage and Landscape. Climate changes most felt in recent times, resulting in ash and dust, toxic gases and clouds moving even thousands of kilometers and over long periods of time (as dioxin, poisons, toxicity) where Documentary Cultural Heritage and related services is located.

Cultural Heritage sites are unquestionably constrained by conservative conditions of physical or legal management of different types of item, whether unique documents or works, have maintained in their originality, consistency, historical value, as documentation and rarity or preciousness, for the local community as unacceptable loss.

The digitization becomes essential, producing a new representation-reproduction, but not a substitute of the original analog artifact or material. This form of documentation, its knowledge and enhancement, are now a growing reality of heritage too. Digital heritage becomes therefore Cultural Heritage! It also can represent the possibility of recovery of documentary content, information data, in the event of disasters, when the disaster is a total loss, or there is irreparable damage, which makes the items not usable or unavailable. Around the end of 1990 the adoption of standards and recommendations has spread favoring the application of common innovative methodologies and tools to act and data exchange. However, they too, change rapidly, and depending on local economic and organizational availability in the face of emergencies. Thus, in many cases digital data is absent, or not very usable, due to poor quality of implementation and the absence of related metadata.

¹ In PRESCONS and NATLIB Satellite 2023 held in Amsterdam there are more information and cases on how to manage the different level of emergency from the risk to the mitigation and the rescue of material when possible. Many sources are available to consider on how to face anyway particular problem, depending on the local situation. .

The conditions under which one has to operate change more today, than in the past are: the greater spread and use of digital technologies, in globalization, allow possibility of timely response and social communication in networks, with the Internet. There are undoubtedly more theoretical possibilities due to digital evolution and the availability of modern, effective means to deal with rescue activities during post-disaster response, for example: to drain water, or bring water in various ways, to put out fires with the support of helicopters, or have alternative communication in connections and checking automatically any steps. However, even during major emergencies, digital can become unusable, due to disruptions or lack of economic resources, poor logistical organization, low resources, resulting in waiting for flows, yielding to the degradation and destruction of data and tools.

During immediate first aid, managed by local institutions, by **Civil Defense** with volunteers and other **specialized available Corps**, it happens dramatically in areas most affected by social and economic crises, but especially where there are ongoing war, conflicts, or when other forms of physical attacks happen on community property and symbols in cultural places.

For this, we need more **sensitivity** and more **widespread vigilance**, as well awareness towards greater responsibility, in the professionals of libraries, archives and museums, archaeologists, etc. in charge of the management of Cultural Heritage and local communities, are always interested in the management of the documentation and collections in their territory, ancient and modern, cultural and natural heritage, and sites to be protected and preserved for future generations. This happens in certain places where the socio-political organization has laws, rules, plans and funds to be able to intervene immediately.

Not everywhere there is the same possibility of rapid intervention. That is why several international bodies and associations, including IFLA and UNESCO, ICOMOS, ICCROM, are concerned, to establish not only behavioral rules and recommendations and standards, but advocate the need for even concrete intervention coalescing with each other, finding partners, also among stakeholders to support immediate intervention projects and recovery of materials. Depending on the type and severity of disasters, they can offer greater knowledge and interim solutions on how to intervene and mitigate damage, with possible aid giving economic support among different actors.

A consideration on what to do, in case of small or medium emergencies, on the daily agenda of man-made or natural disasters, due to the unpredictable climate changes, increasingly close and high impact, is where the emergency, **alarms**, calling population to attention, or for possible evacuation, or other, such as the search for preventive defense in dedicated places, are not available or sufficient in the face of the unpredictable rapidity of events. We are witnessing dramatic sudden catastrophic situations, or little, and not at all predictable, in many parts of the world. When they occur in densely populated areas, cause human and bio-diversity losses, the response time must be increasingly short. It is difficult to intervene promptly and safeguard all types of Cultural Heritage. Multi-functional and institutional organizations have crucial importance. A strong conscious coordination of the activities to undertake the removal of damaged items or the evacuations.

Education

Education and training underpin periodic demonstration, exercises that prepare teams to deal with disasters, beginning with those most frequently recurring and seasonal. If the context of the assets is an ancient building, for example, dealing with mold due to endemic moisture, is a risk with well-known consequences that are mitigated in emergencies. This risk can be eliminated by preventing their spread and varying habits or behaviors.

In relation to the size of the disaster, and the danger of the first interventions, as a general rule, only the employees of the specialized local bodies, of the agencies, can intervene, but only all coordinated among themselves on the basis of common agreements and known methodologies. Civil Defense, with its crisis units, trained volunteers, firefighters and law enforcement, including the Army, have to intervene in cases of great disasters to rescue people first.

Organized groups of trained volunteers are coordinated by crisis units, at different territorial levels, and operate in situations affected by water, rainfall, torrential rains and of the withdrawal and transport of special materials, or by collapses and sinkholes, caused by earthquakes or by fire, that spread quickly by the winds outside, or even by different causes, and thus fumes, toxic clouds, pollutions of air and water generate hygienic and welfare problems for humans, infect the air and material surfaces, or produce landslides in the case of earthquakes, tornadoes or tsunamis, that also affect Cultural Heritage. For this, specific situational **skills** needed for the purpose to move and recovering goods in the most proper way, to safeguard them and shelter them in appropriate spaces, designated as temporary housing.

It is therefore important also that forms of territorial technical assistance, of stakeholders, for organized emergency services can manage movement in temporary locations, and the security subject to the evacuation of users and staff, as well as affected items. Previous agreements and cooperation is important, with different entities, but before the advent of disasters!

It is emphasized that the staff of libraries, archives and museums must be present and active at every stage of the intervention, to assist with knowledge of materials and information, the asset recovery teams. There are documentary sources on what to do in the first hours after the disaster, that continue to be used over time and that help to know how to operate the first rescue, edited by international associations not only European and American.

I can mention here historically the Swiss cantonal organization of Cosadoca that offered for years a number of exemplary public training opportunities and experiences, borrowed by many, including through IFLA, with Danielle Mincio's great work in training and demanding support in Haiti after the severe earthquake in 2010 that destroyed libraries and archives beyond repair.

Education and training are and must today always be priority assets, indispensable, but often insufficient to move with knowledge. Much has been done and is being done and still needs to be done locally, especially in areas where cooperation is not yet rooted among libraries, archives and museums. The Italian MAB is an agreement of the professional associations AIB, ICOM and ANAI who worked together for years on the theme of emergencies and to improve cooperation into networks for the preservation and enhancement of Cultural Heritage involving also user communities and stakeholders. There are social economic problems and urgencies to be addressed as a priority the correct systematic maintenance of cultural sites, locations of libraries, archives and museums and the contained material should be considered a priority and a mandatory part of current management, and not just intervention in case of emergencies, and damage to heritage. Lack of resources to carry out the activities of periodic verification of locations and tangible and intangible assets, as well facilities does not allow the avoidance of risks due to time and other factors, wear and tear and degradation of media, etc.

Cooperation.

In library systems, museums networks and connections to others, among the conservative documentary facilities in the proximity area is essential to be able to get practical help and possible burden sharing to give continuity to services, affected by natural disasters by sharing library loans or other.

Today, digitization and the use of computer tools and robots, is also increasingly advanced. Looking forward 'artificial intelligence can help to prevent and mitigate damage in the future and imagine scenarios of the emergency and how to respond. Now you can reduce the time of manual compilation of lists and forms in areas where this is impractical due to mud, dirty water, darkness, in the affected underground intervention spaces. Every action, the behaviors to be taken, the forms to be expected and filled out before and during the phases of interventions, the reports and data collections, can be planned, codified and controlled virtually.

The planning of the response steps and responsibilities teams in the first hours after the disaster, the accuracy of the triage and supervision of librarians in the emergency team have to be integrated with those of other institutions, with expert restorers and conservators, together with the special Civil defense volunteers, with their trained operators all in a clear unique chain of command.

Safeguarded in times of crisis is also helped with the **Blue Shield** and UNESCO to coordinate in situations where libraries and collections are at risk. At the national level, many libraries around the world already have “disaster plans for Cultural Heritage”. More information about strategies is available on IFLA website. If you have not yet a disaster risk reduction strategy, you should prepare a plan including the Cultural heritage strategy, describing the role of libraries also in sharing health information, tools, supporting communities (a suggestion of the Sendai Framework)

All the librarians, archivists and conservators are deeply conscious of the value of their collections and, accordingly, of the importance to adopt effective measures and procedures to face emergencies and reduce the negative effects of every type of events. In Lombardy, for this reason they took part in the working group of Region involving representative number of different institutions and the universities on the regional territory.

During this past experience we were able to learn, together, to share and discuss problems with other colleagues and to communicate outside our commitment to security and safety. In fact we had also the opportunity to organize a series of public exercises of simulation on how a library, an archive, a museum can rescue and recover valuable materials after a disaster.

I managed a great working group in charge of book protection for the great region. I really spent a lot of energy in order to manage the local diversities and to raise the awareness of political authorities.

Maybe some of you remember the five laws of library science, published in 1931 by an Indian mathematician and librarian Ranganathan, laws that every librarian in the world considers the foundations of his or her professional approach to librarianship.

I remind you in particular the fourth law: ‘Save the time of the reader’. This means that all patrons should be able to easily locate the material they desire quickly and efficiently. Recently this law has been rewritten

High tide at Venice is the main foreseen risk and the bookseller is always ready to cope with it. Not all the books, but the main part of them are placed on shelves far from the floor or in boats – also gondolas – and in bathtubs. During high tide, the books are protected, and in case of a dramatic tidal wave, the books could even float on the surface of water.

We can also observe that the emergency policy is an organic part of the organization, even a way to attract tourists and to make them potential clients. This is really a good lesson for us, emergency management as a way to add value to one’s venue, to tell the public we care. Of course, we cannot disclose all the details of our emergency plan for security reasons, but we can share with the public the guidelines of our policy.

Considerations.

Therefore, I say three important issues: giving order to objects, adopting a priority list for objects to be rescued, communicating our policy to the public.

Order can be conceptual or physical or both; order can be functional to one aim or another, but rarely to every possible purpose.

In a library there are a lot of means to give physical and conceptual order to books, to use space in a rational way and to help people to find what they want, according to the fourth law of Ranganathan: first of all, book catalogues compiled according to predictable criteria, but also open access shelves organized according to a classification scheme, or stack rooms where books can be arranged for example according to their physical format.

But are we sure that this order conceived for everyday use can help also in case of emergency?

Under emergency conditions, how can conservation, fire, and protection officials react in an effective way and in which order can they operate to rescue and recover valuable material in the most effective and efficient way? Classification schemes, bibliographic catalogues, inventories: are they enough?

In other words: under emergency conditions and pressure of time – or better under the pressure of lack of time – shall we be able to decide quickly which books, or documents, or pieces of art should be put into the “gondolas” first, and in which order?

As a library, we have tried to answer this question, completing the emergency plan with a number of tables and maps where the various sections of our books and documents are clearly identified: their place, their quantity, their value, their priority.

Maps: they show not only the emergency exits but also a graphic description of all important details concerning our collections. Every room or part of it is labeled with a short name and the color of shelves stands for the priority order for rescue in case of emergency. Red for high priority, yellow for medium, green for low.

The maps can be used also with the support of two tables, where materials are listed according to their location, or to their priority. Quantity is also specified in terms of linear meters. You know, quantity is always a crucial factor in case of lack of time.

Table: here materials are listed, according to their location and to their priority – can give further information to help decide where to concentrate the first efforts, depending on the type of disaster and where it happened. Every emergency event is different: origin, gravity, extent, kind of damage, actual or potential, time left to rescue humans and goods. Fire, water, bombs are the main risks for our site (but Earthquake, typical of the Italian territory, is not so probable in Milan).

If a fire has already destroyed a section labeled red, we can try to rescue first the remaining material labeled red. If materials labeled red are far from the scene of the accident, or far from the place where a potential risk is predictable, we can concentrate our efforts on materials labeled yellow and green.

As you understand the maps and tables are not a simple inventory, but they are intended to let: conservation, fire protection officials communicate in an effective way, share and make use of the same relevant information about the collections and react efficiently, also under the psychological stress of emergency conditions.

Of course, the maps require updating: change the place of the furniture, or the books or archival materials. This updating activity helps conservation librarians maintain a high level of attention to every details. Emergency issues affect their everyday life in a very positive way.

The physical disposition of materials, the colors in the maps and the priority order listed in the tables are the result of an assessment whose criteria are described in details in the emergency plan. We have taken into account a number of aspects and applied predefined scales and weights to them: value fragility- accessibility in case of emergency value (also the combination of different elements: historical, material, informative, symbolic value for the community).

Value is the aspect we have given the major weight to. As a result, every section has received a score. In the tables one can see the exact score attributed to each section, while in the maps one can see for each section only one of three colors: a practical synthesis of a complex assessment.

Scheme of the 3 variables, an example: The stack room A1

It hosts 450 m of books and documents, a part of them (corresponding to 80 m), located next to the entrance, comprises materials labeled yellow = medium priority (total score 9): its priority is determined above all by value (score 6), while accessibility has reported score 2 and fragility score 1.

I mentioned a specific proposal of a great contest of a castle. There is a scheme to give materials an order of some use in case of emergency, after the event has already taken place, or before an announced disaster.

It is a proposal suitable for libraries and archives, which manage materials arranged in wide sections, but also for a number of museums. You should not forget that about every museum a documentation center is inside, and also an archive or a specialized library to support the work of its conservators and the researches.

Last, but not least, you ever forget to share with your patrons the librarian's concerns to safety and security That subject should have its own chapter!

Acknowledgments

Thanks to Isabella Fiorentini for having provided elements on the emergency plan and risk management at the Archivio storico civico e Biblioteca Trivulziana in the Sforza Castle in Milan,.

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