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Sunchica VESELINOVSKA, MSc.
NI Cinematheque of North Macedonia, Skopje

THREATS AND PREVENTIVE MEASURES FOR PROTECTION AND SAFEGUARDING THE ARCHIVES MATERIAL

Abstract: The paper highlights the role and the significance of the archives, as well as the threats to the archived materials. Furthermore, it provides a description of the measures for protection and safeguarding of the archive materials and for repair the consequences. Finally, the paper provides a general overview of the research regarding the status of the archives and tries to underscore the inevitability of preventive protection of this type of cultural heritage.

Keywords: archives, archive materials, preventive measures, repair.

Libraries, museums, archives, and other institutions have the privilege of safekeeping the heritage from the past. The archives are a product of the human need not to forget the past. Archived material, as a basic source of knowledge about the past, represents a special type of good which, due its specificity, requires a professional and a methodological approach to protection and processing. Hence the understandable inevitability for specialized institutions to which society has entrusted the complete care for and protection of this type of cultural heritage. The preservation of archive materials stored in depots, being the carriers of invaluable information from all spheres of societal life in the past, but also in the present, represents a legislatively mandated obligation requiring constant care for and a dynamic approach to the issue of protection and undertaking appropriate measures for slowing the natural aging of the material and prevention of unnecessary damage.

The safekeeping, care, and protection of the archive materials, in any form, is entrusted to the archivists, rightfully known as "the keepers of truth". The archives material, as a cultural good and a testament to the national identity, should enjoy a priority protection at any given moment of history. Still, the archives material ages and degrades, and it might be completely destroyed.

Threats that jeopardize the archives materials:

- The natural of the archive materials itself,
- The environmental conditions,
- The way the archive materials are used and
- Natural disasters and manmade disasters.

The awareness of these dangers that threaten the archive materials should be a great incentive to undertake preventive measures for protection and safeguarding of archive materials. These issues are current in the archives and all other institutions which safekeep or make cultural heritage. Preventive protection aims at preventing the unnecessary damage or destruction and slowing the natural aging of the archive materials. In addition, natural disasters and manmade disasters can also permanently damage the archive materials.

Figure 1: Flooded and burnt archive materials

Therefore, every archive should undertake some preventive measures for protection and safeguarding of the archive materials from possible natural or

manmade disasters. Such disasters have huge consequences and the archives often suffer irreparable damage. These disasters usually occur unexpectedly and therefore every institution should prepare to respond to such situations and should develop a plan with detailed description of the elements of the preparedness and rescue.

The plan for protection and rescue from natural and other disasters usually comprises 5 stags:

1. Threat assessment;
2. Preventive protection measures;
3. Preparedness measures;
4. Rescue and
5. Repairing of the consequences.

Before preparing the protection plan, one needs to assess all the threats, which could be divided into three parts: external, internal, and threats caused by harmful human activity.

The risks outside of the facility should be assessed by looking at the topographic, dominant environmental, and geological characteristics. We should primarily look at the storm frequency, earthquakes, possible damages due to the proximity of trees and other facilities, assessment of the threats due to the proximity of lakes, rivers, the threats from groundwater, flooding and landslides, the threat of electrical discharges as a precursor to fires etc. Furthermore, we should consider the location of the facility relative to the environment: the proximity of industrial facilities and power plants, junctions and busy roads, the proximity of flammable materials or explosive materials or materials that release increased concentrations of harmful substances. The proximity of strategic facilities such as military barracks, police stations, airports, proximity of other important institutions, societal and political facilities and media facilities can include the risks related to civil disturbances, terrorism, or war.

The risks within the facility refer to the risks of fire die to faulty electrical or gas installations, machines, or equipment, glowing or red-hot surfaces of electrical devices, various lamps, heaters, laboratories within the facility etc. The risk of flooding usually comes from the water infrastructure such as roof gutters, water supply networks, air-conditioners, or fire extinguishing systems. Fire and floods can also occur due to human negligence, noncompliance with fire protection measures, faulty water installations, heaters, not-fully-extinguished cigarette butts, but also arson.

The assessment of the overall security inside the facility as well as any external threats should also consider the risks of intentional damages inflicted by activities such as burglaries, civil unrest, war, etc. In addition, one should also

consider the danger of unauthorized divestiture of documents in collections of great importance from a political, historical, or a religious standpoint.

Figure 2 *Burnt archive of Bosnia and Herzegovina*

Measures for preventive protection

The preventive protection measures are undertaken after the risk assessment in order to mitigate or prevent the consequences from natural disasters and adverse manmade activities. After the threat assessment, one should consider the specific activities related to the different factors surrounding the facility such as construction activities, security, accommodation, insurance, protection against water, protection against quakes and landslides, fire protection and security protection. With respect to the facility itself, the needed preventive measures that will provide for protective elements include: dividing and retaining walls for protection against landslides or land erosion, if necessary, construction of drainage channels for removal or retention of smaller quantities of water and floods. Trimming or cutting of old and damaged trees near the facility. To prevent damages to the facility during storms, the windows and the doors should be protected with appropriate shutters and protective bars, as well as the mandatory lightning protection. One should constantly provide for supervision of construction activities close to the building, as well as unauthorized access in order to detect the signs of possible threats in due time. Security is an important element for any facility, as well as for the archives. Therefore, it is essential to have, controlled access to the facility, installed burglar alarm etc.

Protection against water

The floods caused by rivers, torrential rains, faulty water supply installations, consequences from firefighting, earthquakes and those caused by human negligence, always lead to the same type of damage, only the scope is different. When talking about floods, the rescuing of the material becomes difficult because of the lack of spatial capacities to store and dry the flooded materials. The activities for protection against floods should include regular maintenance of all the water supply systems, diverting all of the installations that pass over the collections. However, should this prove impossible for some reason, one should install a "barrier system", i.e. a system of pipes and protective metal profiles in order to enhance the security of the location.

Protection against fires

Fires can occur inside or outside of the facility. In order to mitigate the risk of fire, the facility must regularly inspect and maintain the electrical installation and all of the electrical equipment. The doors should be fireproof, the use of the electrical devices should be controlled or limited, smoking should be prohibited, etc. All parts of the facility should have smoke and fire detectors that automatically trigger the alarm and warn the people in the facility and call the fire department. The facility should have an appropriate number of fire extinguishers, as well as installed automatic fire extinguishing system. Firefighting systems using gas are most suitable for smaller and enclosed spaces, since they cause less damages than water-based systems. There are also water-mist systems that are less harmful than the water-based system, whose effect is quicker. All fire extinguishers and fire extinguishing systems must be regularly maintained in order to prevent any sudden damages because they were triggered unexpectedly or due to their failure during key moments.

Measures of preparedness

The response to natural and other disasters requires the preparation of a protection measures plan, defined as a clear and precise document that stipulates preventive and preparatory measures for mitigating the potential risk. When preparing the plan, the facility should always consider new experiences and share experiences with other similar institutions in the country and abroad.

The plan prescribes the response and recovery procedures after the catastrophe. It should be in line with the risk assessment and the available resources and a person in charge of the disaster plan should be appointed. This person should have a greater professional experience, should compose a disaster response team, should be able to cooperate with other responsible officers of other institutions, as well as have the authority to mobilize staff and allocate funding for protection in case of a disaster. Every institution is unique and needs

to develop a plan for itself, for the facility, the material that it holds and the environment. Therefore, no universal instructions for the development of the plan exist, only guidelines that refer to the principal and the most important activities that a plan should contain. Every institution should make its own assessment and its own plan for protection.

The plan should contain the following:

- Contact information for all employees in the archives, responsible institutions, emergency services, the neighboring facilities, other archives, companies, and other institutions that can get involved in the cooperation during the response to the disaster;
- A sketch of the facility: number of floors, windows, entrances, exits, fire detectors and fire extinguishers, water and gas installations, heating installations, elevator controls, electricity switches and water valves and the protection and rescue gear. Furthermore, the plan should contain communications and staff evacuation procedures, as well as lists of priority materials from the different department, comprehensive guidelines for rescuing the materials, facilities for inventorying and packing damaged materials, temporary storage locations – identification and designation of the materials, contracts with freezing and vacuum drying services, various documents made in multiple copies, transporters, means for repairing available to the institution etc.

Any changes of the circumstances related to the facility and other nearby facilities, collections, staff complement etc., also influence the plan. Therefore, every three months the plan should undergo minor revisions and major revisions every year. In addition, the staff should be educated and trained to properly respond to crisis situations, in accordance with the plan.

Rescue

The rescue measures after the accident are implemented in three stages:

1. Initial measures for protection and rescuing;
2. Rescuing and drying;
3. Long term restoration program.

The initial measures for protection and rescue refer to the time when the disaster occurred to the time when the rescue of the materials starts. When a disaster happens, it is necessary to follow the established procedure for notification, alerting, and contacting the designated staff members and the relevant emergency services. If a disaster happens outside of the working hours, then the security officers will detect it and they should be familiar with the notification process. If possible, the staff should undertake the basic measures to remove the cause of the disaster, such as switching the water off, using the fire extinguishers etc. However, if the threat spreads or if the facility faces a large

natural disaster, then the disaster response team assesses the situation in order to determine the proper response. The next step involves rescue and evacuation. In the event of a developed fire, a person can stay in the facility about 5 minutes and then he/she will suffocate unless evacuated. First the emergency services undertake certain activities, followed by an assessment of the situation and stabilization of the environment, disconnecting the main flow of electricity, protection of the undamaged material with plastic covers, pumping of the water out etc.

The rescue measures depend on the scope of the natural or other disaster. Every situation has its own problems and therefore there are no strict rules as to what could happen. These situations require swift improvising and adjusting to the moment.

Before undertaking any activities, the damaged facility and the materials should be recorder or photographed for the purposes of later analyses. The materials damaged by the water should be transferred to previously chosen locations for reconstruction. The materials damaged by the water can either be cleaned and dried or it can be relocated, frozen and repaired later. The material taken from the facility has to be properly inventoried and marked for easier tracking later. The units of the material should be transferred individually, in order and the closed material may not be opened nor the opened sheets may be closed, and sheets stuck together may not be separated. Proper air circulation should be provided in the area where the material dries in order to prevent mold development and speed up the drying process. The excess moisture should be removed from the material using absorbing paper or should be lightly wiped off using proper materials. For materials written in color, the objective is to facilitate the ink diffusion by placing absorbers on either side of the damaged sheet and absorb the excess water. Glues individual sheets and all materials with soluble ink or written on laminated paper should preferably be sent for freezing in order to prevent further damage and destruction of the material. Each piece of material should be packed separately in plastic covers and boxes which have to be market with waterproof ink (the markings should indicate the name of the institution and the content of the material – the inventory number and other documents, shelf number, etc.). The institution should keep records of any material that has been sent outside with prepopulated forms for such situations. If the transportation of the materials to the designated freezing facility lasts for several hours, then the vehicle should have a freezing system. Freezing allows stabilization of the material for a longer period of time and this procedure plays a big role in rescuing large quantities of soaked material. Photographs are best rinsed with running water to avoid any mechanical damage and to dry them in a drying machine. It is best to consult professionals regarding the measures for protection and rescue of photographic and electronic materials.

Figure 3: *Moisture absorption of flooded archives materials*

Repairing of consequences

After the disaster comes the reconstruction and by normalization of the situation. If the facility did not suffer to much damage then it is renovated and if the facility is damaged to the point where it cannot be restored to its prior condition, one should consider transferring to a new facility or possibly building another facility. For the building renovation, it is useful to seek the advice of civil engineers and architects that have the knowledge for building this type of buildings. In addition, the microclimate conditions should the adjusted in order to prevent the development of mold. The space should be dried, and the electrical and water installations should be checked. The materials can return only after the conditions have stabilized.

After the repair, the disaster should be analyzed, the performance of the disaster planning and prevention system should be assessed, and these experiences should influence the new rescue plan. The experience suggests that when developing emergency plans, they should focus as much as possible on prevention. This means that it is necessary to anticipate, provide and systematically implement all of the activities for maximum protection under the so called "normal circumstances" in order to prevent disasters or to mitigate its consequences and adverse effects. Nevertheless, one should always bear in mind

that in the event of large nationwide disasters, 100% realization of the planned responses is not even possible.

An exceptionally valuable cultural heritage accumulated throughout history in Macedonia. Some of that heritage is preserved to this day, and some, for various reasons, is forever lost as a valuable memory. The archive materials constitute an important part of the movable written heritage. Most of this heritage is kept in the archives.

The protection and safeguarding of the archives and documented material, according to the Law on Archive Materials and the other regulations and manuals, is regulated as follows: the conventional and nonconventional archive materials, depending on its shape and size is safeguarded in appropriate facilities protected from moisture, inappropriate temperatures, direct sunlight, and other types of adverse effects. Unfortunately, most of the holders of such heritage constantly face problems with the depository capacities. Very few archives have proper conditions for safeguarding and protection of the archive materials. Usually the archives are located in inappropriate facilities, basements and attics, halls and hallways, warehouses and garages traversed by all kinds of water supply, thermal, sewerage installations which threaten to easily damage the archived materials even in the event of the slightest mishap. There are frequent examples where, due to lack of shelves, the archived materials are unprofessionally and irresponsibly kept on the floor, in offices, in closets, desks etc.

Figure 4: *Nonstandard storage of archive materials*

Insufficient space is a big problem for the departments of the National Archives, precluding it from performing its legally mandated obligation to receive properly ordered and recorded archives material older than 20 years and keep it safely. The archives are located in purposefully built or adapted facilities, or depositories that do not meet the standards for protection and safekeeping of the archive materials. They face lack of technical equipment, insufficient surveillance equipment and alarm systems for access control, automatic smoke and fire detectors, insufficient equipment and means for protection against natural and other disasters, inappropriate equipment for evacuation of the archive material, an obsolete system for protection against electrical discharges etc. Unfortunately, even the newly build facilities did not consider the need for appropriate space for storing the archive materials. In addition, the archives also face the issue of insufficient number of employees, which is not in accordance with the actual needs of the archive sectors, as well as the issue of inappropriate skills sets, insufficient training of the archive personnel etc.

Conclusion

The information regarding the status and the assessment of the threats to the archives, a combination of the past and the present, suggests the need to raise awareness of the importance of the protection of the archived heritage, to implement a clear strategy regarding the requirements in accordance with the international standard for archives operations and a very high professional level of the preventive protection, as a priority that requires maximal commitment. Furthermore, the professionals and the other entities directly involved in the protection of this type of heritage, according to the effective legislation in Macedonia, should explicitly emphasize the need for preventive measures and efficient protection of the archive materials.

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