Michael H. Faber

Protecting people in the museum

Aspects and desiderata of prevention, risk and emergency management

Disastrous examples

On a Monday in May 2019, thousands of tourists were standing in front of the Louvre's closed doors. Security personnel were on strike against the "unprecedented worsening of conditions": not only the treasures on display, but also visitors and staff were at risk. "The Louvre is suffocating", the newspapers wrote.

We remember the terrorist attack on the Bardo Museum in Tunis in 2015, where 24 people were killed. We also remember the Jewish Museum in Brussels in 2014, where another attack caused the death of four people. Terrorist attacks targeting cultural heritage visitors are disasters without warning. So are earthquakes. In these cases, there is little chance to find security.

However, we also had disasters with injuries to people that could possibly have been prevented, had there been more sophisticated security concepts. As an example, 13 people were seriously injured by lightning at a Festival in the Archaeological Park Xanten in Germany

in 2009. Two of the guests needed to be revived. This is an example of a disaster with a warning time of several hours, giving chances for an evacuation in good time, but those chances were not used in an appropriate way.

Another case happened in 2010 in my open-air museum: at its traditional fair, hundreds of spectators witnessed a high-wire artist fall off a rope. Before the rescue helicopter reached the spot, a television team had already arrived – by helicopter! Visitors filmed the accident with their smartphones as well. It was important not only to take care of a traumatized artist, but also to keep visitors, fair people and the press under control.

A year later, visitors to the British open air museum Beamish were in shock: a seven-year-old boy, member of a Living History group, was run over by a steam engine in front of his father and the public. He died. There were no safety precautions. The museum had to be evacuated.

A lack of security concepts for assets and people

Given the many events in the destruction of cultural assets in museums and other cultural institutions all over the world, organisations like ICOM and ICOMOS are increasingly concerned with the protection of cultural heritage at international level. At a more local level, preventive cooperation between cultural institutions and security forces, civil protection and fire departments is increasing in many countries. However, we still miss an adequate examination of the protection of people in cultural institutions.

It is absolutely necessary and crucial to have integrated security concepts which relate to cultural assets *as well as* to people (visitors and staff) at cultural sites. In February 2020, the Greek Minister of Culture and Sports called for a security conference. The topic was a

revision of risk management for the Acropolis – for its treasures, of course, but also for its 5 million visitors every year. The example of the Acropolis shows that integrative concepts, tailored to the particularities of a cultural institution, must either be optimized, or have to be developed completely.

In most European countries, guidelines for occupational safety apply to museum employees. For the respective design of these guidelines by member states of the European Union, the European Framework Directive (1989/391/EEC) is the most important legal act. But it remains "just" a framework, establishing general principles for managing safety and health, such as responsibility of the employer, using risk assessments to improve company processes, workplace health and safety representation.

Basic safety measures for visitors are not standardized by the EU. Even at the national level, there are no unified provisions. Following the catastrophy of the Love Parade in Duisburg in 2010, regulations have been developed in Germany, at the state level, for highly frequented sites and open-air events. However, these regulations remain too vague in their definition of the requirements for a security concept. The concrete development of concepts, tailored to the respective risk situation, is left to the institutions, organizers and local authorities involved.

Therefore, museum organisations like ICOM must give efficient support in this: they are required to make recommendations for an integrative security concept, or even better to develop "operating instructions". An enormous task.

Fig. 1: Security and emergency equipment for large events at the museum. Source: Michael Faber.

The HSSE security concept

Such an integrative security concept has long been established in large companies and should inspire us to adapt, further develop and apply in the museum world as well. It's called HSSE. The accronym stands for Health, Safety, Security and Environment. The concept thus implements four essential areas that are closely interrelated:

H = Health
This is basically about the well-being of employees, contributors and guests. Examples of implementation include:
   ▪ the fulfilment of operational and occupational medical requirements, e.g. appropriate work aids for employees;

- a sufficient number of benches for visitors, measures to reduce barriers for visitors with disabilities;
- the protection of visitors to an open-air museum with animal husbandry from zoonosis (infectious diseases transmitted between animals and persons).

The aspects of safety and environment are also addressed here. In contrast to German, where the word *Sicherheit* covers both notions, the English language has two terms to designate (and distinguish) two aspects: safety and security.

S = Safety

Safety means protecting the environment and people from "intrinsic" dangers that can arise from an object, for example from the operation of a historical machine or the use of a horse and cart. Safety also means the installation of measures protecting people: the automatically self-closing fire protection door, the escape route etc.

S = Security

Security refers to protection against wrongdoing by other people. An example of wrongdoing could be when the self-closing fire protection door is open and jammed with a wedge due to the high frequency of people passing. Security also means an appropriate and safe use of security systems and objects.

E = Environment

Finally, museums are not disconnected from their environment – in many senses of the term. As the recent discussion about a redefinition of museums led by and within ICOM stated, museums have to participate in environmental protection and sustainability wherever they can do so. For example, open-air museums are not allowed to use pesticides in the maintenance of their historic gardens and fields. Likewise, when preserving or restoring objects, environmentally

harmful substances must be avoided. In the context of security concepts, environment as physical surroundings of the museum also have to be taken into account: what are the (potential) dangers arising from the environment? For example, what could be the dangers coming from the vicinity of a chemical factory next to the museum, or a temporary civil engineering site in the neighbourhood? Since the collapse of the Cologne City Archives, we have to be aware that there must be better prevention here.

A cycle of measures to be taken

The following cycle of measures results from the HSSE concept. First there is a need to identify and quantify the potential risks. The next step is to plan the possible response to those identified risks, followed by the implementation of the risk prevention measures and the appropriate training of staff. Finally, those measures have to be monitored and controlled. Then the cycle starts again with risks that have been under-evaluated in the previous round.

Identification of risks: Qualitative and quantitative risk analysis
The risk analysis has to be both qualitative and quantitative. In the qualitative risk analysis, the type and effects of a damaging event are assessed. For example, what could be the effects on the visitors of a strong storm sweeping over an open-air museum with forest areas? In the second step, the quantitative analysis is carried out, evaluating the frequency or probability of occurrence. In our example: how often did such storms sweep over the museum in the past five years? I remember from my museum: we have two to three strong storms a year!

Another example: Many older people and those with reduced mobility use the elevator of a multi-storey museum. What is the risk

of vulnerability, what dimension can it have if the elevator cannot be used – in the event of a fire for instance – and people have to be evacuated via a staircase? Added to this would be the probability of such an event. This can be classified as low, but the general risk remains.

Disaster research offers methods to record the spatial-temporal probability of a damaging event with the damage potential or vulnerability in a matrix. This is basically helpful for the risk assessment, but with regard to the protection of each individual also problematic. The quantitative analysis may therefore only serve as an additional risk assessment.

Different methods of so-called "crowd management" make it possible to simulate the mobility behaviour of large numbers of visitors, flows and bottlenecks in real or virtual terms. To this end, consultant companies offer services, which are very expensive. I recommend that you first think about your visitor behaviour, refer to your experience, and then simulate it yourself.

An indispensable criterion for risk assessment is the assessment of the visitors: their expected number, demographic composition and their possible behaviour.

All this can be shown in a table with percentage subsets and respective hazard potential. This assessment is particularly necessary when we expect a high number of visitors at the same time.

Fig. 2: The risk management chain. Chart: Michael Faber, 2020

Risk response planning

After the hazard analysis, prevention planning begins. This includes determining the required rescue services. In Germany, two algorithms are used for this. Both work with a system of points.

With the so-called "Maurer algorithm", developed by the former chief of the Hamburg fire brigade Klaus Maurer, a point value is assigned to the expected number of people. This value is multiplied by a factor that results from the risk potential due to the type of event. The result can be used to determine whether and how many paramedics, emergency doctors and ambulances have to be on site. The "Cologne Fire Brigade's algorithm" is more complicated but more precise, as

it also evaluates weather conditions, possible inadequacies of the location, public behaviour, time needed for the arrival of rescue equipment etc. Normally, the Maurer model should be sufficient for our calculations.

Implementation of risk measures and trainings
The signposting of escape routes and shelters, the provision of first aid kits, defibrillators, megaphones, radios, high-visibility vests for the museum staff designated as helpers to a set with privacy and barrier material: all of these belong to the range of tools to be implemented. For large events, an operational site plan may be required, showing the location of such material, but also directions for ambulances, areas for a mobile accident assistance station, or the landing of a rescue helicopter.

Also necessary is the training, to be repeated at regular intervals, by <u>all</u> museum personnel as well as joint exercises with the fire brigade, emergency services and the museum staff. The museum's switchboard may have, like in my museum, the special task of communicatively coordinating all risk analysing and all emergency measures. Accordingly, its staff must be specially trained.

Monitoring and control
Monitoring and control relate to the review of training results, operational readiness of the equipment and the assessment of implemented measures. It also takes into account all debriefing and lessons learnt from specific events in the museum.

Identification of insufficiently recognised risks
Monitoring and control can also show which risks have been underestimated up to that point. From these learnings, the last point in the chain of risk management can be derived: the identification of

insufficiently recognised or underestimated risks. Once identified, the process starts again with the risk analysis etc.

Finally, let me add the following: the Covid-19 pandemic and the subsequent lockdowns have shown how complicated the process of restarting museum operations can be when it has been shut down. Damaging events can also make a lockdown or temporary closure necessary. Considerations leading to find the way back to normal after a disaster event should also be part of an all-encompassing risk management.