Risk Preparedness and Cultural Heritage
Robyn Riddett

...it is likely that the second half of the twentieth century has been testimony to more massive destruction of heritage than was ever experienced in the past... and it is of significance that the issue of risk preparedness has become a priority theme in international policies towards the end of the millennium.


Why Prepare for Disasters?

Cultural heritage is always at risk of destruction through the natural forces of air, earth, fire and water, man-made accidents and forces of conflict. All are destructive, some are predictable and partly controllable, others are simply overwhelming. In all cases the consequences can be catastrophic. Once destroyed, the direct, or tangible links, to our past are severed, even obliterated, and cultural and social loss is sustained and often openly or quietly mourned. How would we feel if the pyramids at Giza, the Parthenon or the Sydney Harbour Bridge were no more? After a disaster, it is the monuments, keepsakes and mementoes which provide hope for nations, communities and individuals to rebuild, re-establish their lives and identity and continue on.

What Are the Hazards?

The forces of nature can be both friend and foe.

It would be pointless to ask whether fires or volcanoes are good or bad, and it is pointless to judge natural events by human values. Nature without fire would be very unnatural indeed.

Natural disasters occur when nature’s energy is activated in a destructive manner by way of bush, or wildfires, hurricanes, cyclones, tornadoes, tsunamis, floods, landslides, mudflows, blizzards, avalanches, ice storms, earthquakes, volcanic eruptions and impacts from outer space. Natural disasters are damaging, principally because their impact is relatively immediate and often unexpected, frequently occurring over a broad area and with a high concentration of force which results in severe impacts which preventative measures frequently cannot withstand.

In Australia bush, or wildfires, cyclones, floods, are the most likely hazards, although others are not unknown.

Wildfires

Of all natural hazards, wildfires are the most terrifying.

South-east Australia, Canada, the United States and areas of southern France are the most fire prone regions of the world and are annually subject to wildfires which, notwithstanding preparedness, still cause considerable damage to humans, animals, natural and cultural landscapes and built heritage. They start in a variety of ways including natural combustion, uncontrolled fires and arson. High intensity wildfires cannot be controlled - unless extinguished, they will continue until they run out of fuel or there is a change in the weather.

Of all single natural hazard events in Australia, bushfires are the most feared. The litany of disasters over the past 150 years reads like the membership of some satanic cult - "Black Thursday", "Black Friday", "Ash Wednesday". For firefighters, State emergency personnel and victims, each name will invoke stories of an inferno unlike any other.

Floods

Floods can occur anywhere, and along with fires, are probably the most destructive of all disasters. Heavy rainfall, snow melt and the capacity and effectiveness of the drainage basin are the most common causes of flooding. While most floods are a consequence of nature, some are man-made or exacerbated by human activity as a result of mechanical or hydraulic failure or excessive clearing of natural vegetation and landforms.

The Katherine (N.T.) floods of 1998 occurred as cyclone Les dropped 300-400 mm of rain on the surrounding catchment area in two days. Water levels rose, streams turned to torrents and rivers swelled above normal planning peaks. Katherine’s main street was flooded to over 2 metres. Highways and rail lines were cut as the flood spread over 50,000 km of surrounding land. The population, despite research indicating the contrary, were caught by surprise. Marooned in the flood were the Katherine railway station, built in 1926, and an Australian Army mess building dating from 1942, both of which are included on heritage registers. Being inundated to a depth of 1.5 metres, and inaccessible for some time, ‘many documents, photographs and artefacts were damaged beyond repair’ others were salvageable.

Cyclones, Storms and Tornadoes

Storms can be a double-edged sword. Cyclones, storms and tornadoes are typically seasonal and predictable however, they are often extreme and devastating. In terms of sheer power, tropical cyclones are by far the greatest killers of all natural disasters and the primary cause of death and destruction may not be the cyclone itself. In 1970 more people died from the effects of storm surges in Bangladesh where 500,000 people were killed.

In Australia, cyclones have often had remarkable consequences. Cyclone Mahina (1899) swept across the Great Barrier reef and the storm surge destroyed a police camp erected on a 12 metre high bluff. Mackay (Qld.) was completely destroyed in 1918 as was 95% of Darwin in 1974. Cyclone Tracy small in comparison with global standards, it was destructive because it was intense and passed directly over a settled area — ‘had it crossed the coast 50 km or so either side of Darwin, its impact would have been unremarkable’. Severe storms and mini-tornadoes occur anywhere. The resultant damage can be similar, but often with greater consequences because they are so unexpected and intensified over a narrow path. Sydney is often the scene of sudden and severe weather conditions. On 18 March, 1990 hailstones cut a swath of devastation through the suburbs from Liverpool to Narrabeen with hailstones 5-8 cm in diameter. Up until the 1999 hailstorm it had been considered ‘the most damaging thunderstorm event in Australia. This however was eclipsed by the sudden and unexpected hail storm of April, where hailstones, the size of tennis balls landed on cars and roofs, including of heritage buildings, resulting in over 111,500 insurance claims amounting to more than A$1.5 billion incurred.

During Christmas 1999, severe storms whipped through Europe causing widespread damage to property. France bore the brunt with winds in excess of 180 km hr, floods, snow, power failures and transport stoppages. At the Palace of Versailles, an estimated 10,000 trees, many over 200 years old, were destroyed. Lead sheets were blown off the roof and windows shattered. At Notre Dame de Paris, spires were broken, roofing smashed or blown off, gargoyles damaged and a mediaeval stained glass window at Sainte Chapelle shattered. Nearly every historic monument in France was affected first by the storm and then by the shortage of materials and labour. In Rome, the roofs of some old palaces were damaged, including one designed by Michelangelo.
Storms cannot be prevented, although some scientists are looking at ways of disrupting them, but with preparedness the consequences can be reduced.

Earthquakes

Like storms, earthquakes cannot be prevented. While small earthquakes occur frequently in Australia they are seldom of sufficient magnitude to cause serious damage. The two major occurrences in living memory are the 1968 Meckering (WA) quake (6.8 on the Richter scale), which was only slightly less violent than the destructive 1995 Kobe (Japan) earthquake and the infamous Newcastle earthquake (29 December, 1989) (5.6 on the Richter scale) which struck without warning, caused 13 deaths and damaged many heritage and other buildings, some of which were ultimately demolished. This resulted in a unification of Australian and New Zealand Standards and a revision of earthquake hazard assessment in both countries.

Impacts

Lockerbie, September 11 and Milan demonstrated the dangers faced from aircraft impact. Impacts from outer space would be cataclysmic and unstoppable and are not as remote as we might think.

There is no defence. Little would survive.

Man-made Hazards

Building Fires and Accidents

Fire, been the constant companion of civilisation, remains a dangerous friend. The most famous and calamitous building fires in western civilisation were often started by small accidents. The Great Fire of London (1666), started by a fire in a baker’s oven while an overturned lamp caused the great Chicago fire (1871). More recent cultural heritage losses have occurred when the magnificent Russian Academy of Sciences Library, (Leningrad) was razed by fire in 1988. Uppark House (West Sussex, UK) was extensively damaged in 1989 but the collection was saved. Closer to home, the Melbourne GPO went up in flames in the early hours of 10 September 2001, reportedly ignited by a computer. Possums eating through electrical wiring, caused the loss (2001) of Clifton Pugh’s house, at Cottles Bridge (Vic.) which contained over 50 works of art and the late artist’s library. Arson is another cause of building fires.

Industries processes by their very nature can be hazardous and when linked with cultural heritage take on a new dimension. Designed in the nineteenth century and more like a ballroom than an industrial plant, the Melbourne Gas Regulator House (North Melbourne) still distributes gas. Risk preparedness is critical to its survival.

Armed Conflict and Vandalism

Recent losses as a consequence of armed conflict throughout the world have included the Bamiyan Buddhas (Afghanistan) and many sites in the former Yugoslavia. The Oklahoma bombing affected over 300 buildings, 73 of which had recognised heritage significance. Compared with many other regions, Australia is relatively free of civil strife however, September 11 was the biggest wake-up call that we could have had – we cannot be complacent.

While preparedness may not prevent natural disasters, in some instances it can be fundamental in their prediction and mitigation. In the case of man-made disasters it can highlight accidents waiting to happen. Preparedness can lead to response and recovery strategies which can reduce their consequences and lead to successful rehabilitation.
What Can We Do: Strategies for Disaster Preparedness?

It is quite clear that there are some disasters which are predictable and for which we can prepare and in so doing, can often reduce the risk of occurrence and subsequent damage. Prevention is better than cure! It is also clear that there are some natural disasters against which all human efforts would be pathetic, even futile. We must therefore identify an acceptable level of risk and then develop strategies accordingly, bearing in mind that communities increasingly have an expectation that they are safe and that saving of human life is a priority of all emergency plans. Nevertheless we can be pro-active in relation to disasters affecting cultural heritage. We must prepare our own institutions and cultural heritage places for disasters and we must also link in with the national disaster strategies set in place by government.

Mapping, Research and Early Warnings

On occasions, but increasingly less so in Australia and the developed world, preventative measures are not in place, in which case there is no defence against the onslaught of a disaster.

In many areas of the world natural hazards are identified, mapped and studied. In Australia, this process has lead to inter alia 1:100 year flood maps, cyclone and geological mapping and monitoring and research into hazard behaviour. The potential risks are identified, relevant legislation and standards inform prevention and mitigation strategies, including early warning systems. This enables a high level of preparedness through the development and rehearsal of emergency response plans and varying degrees of self-sufficiency in relation to response and recovery strategies. However, early warnings are only effective if they are heeded. The effects of Cyclone Tracy may have been mitigated had people heeded the warning on Christmas Eve 1974 instead of finishing last minute shopping. Likewise the public and emergency services personnel were “completely caught by surprise by the severity” of the Katherine floods notwithstanding at least six recorded serious inundations in the past 100 years.

Disaster Plans

How many times have you heard ‘The fire/flood taught us’ the obvious. What did they lose? How could they have avoided it? Why didn’t they prepare? Lack of staff, time and money are usually cited as reasons for lack of preparedness for disasters, often reinforced with the mistaken belief that because it hasn’t happened it won’t. Don’t be fooled! In these days of public accountability and transparency, to be unprepared is simply not acceptable and can even be seen to be negligent on the part of cultural heritage custodians.

As managers of cultural heritage, we have been preparing conservation management plans since the 1980s yet have we not been as zealous in preparing disaster plans. A lot has been undoubtedly to do with the way governments have approached disaster management. Military and emergency services personnel, the principal responders to disasters, were trained to cope with particular types of disaster principally involving human lives. Cultural heritage was, and often still is, not on the agenda. However, it is our charter as custodians of cultural heritage to conserve it for future generations. While respecting life, our priorities are buildings, sites and collections.

So what is a disaster plan? A disaster plan is what should be in place in every cultural heritage institution and organisation before disaster strikes. The plan should contain a survey of the cultural resources, an assessment of potential hazards and vulnerability and strategies for mitigation (before), response (during)
In the words of the director of the Royal Saskatchewan Museum
The fire response and recovery ... could have been much different if the museum had carried out disaster planning... The most important thing learned is that we were totally unprepared for this emergency. We lacked an effective and well-conceived emergency/disaster plan, a pre-designed strategy to be implemented. There wasn't time or clarity of thought to start developing a plan once the fire had happened. There was too much to think about, too many demands. This resulted in greatly added stress and pressure, similar to travelling over unfamiliar territory without road signs or a map. We found out that it could be done but having a map with clear directions would have made it a lot easier.


and recovery (after). It should cover everything from the organisational structure of the response team (not to be confused with the usual management structure), insurance details (avoid a shock later), authority to expend funds in an emergency, coping with the media or trustees, procedures and resources for the initial response - everything from initial recording and mops and buckets to wrapping and freezing - and later longer-term recovery which will probably occur off site, even over a number of years. There are several useful models to follow. A disaster plan is forward planning for risk reduction, response, recovery and reduction of loss. Places which were familiar may have become completely different, wet and dark. Hazards may impede access and movement through what was once a neat and tidy space. This will impact upon response and salvage. Staff may be in shock. There is little point in trying to establish a response and recovery strategy in the midst of a disaster - it will be too late to be effective. The right decision needs to be made quickly - preparedness is the key.

Typically disaster plans can only be implemented when the site is declared safe by emergency responders. Depending how long this is, it can be quite catastrophic in delaying a response and recovery procedure. After a fire in one room of the Royal Saskatchewan Museum (Canada, 1990) the lack of a disaster plan lead to critical delays in the initial response phase which ultimately lead to huge losses in terms of the collection and a nine-year delay in the development plan.

Ideally conservation professionals should be part of the emergency response team or at least the responders should be informed about access and the heritage value and contents of the place as part of a disaster strategy. At Amerongen Castle (Netherlands) the curatorial staff and emergency responders are both integral to the "disaster plan which is regularly rehearsed and which identifies salvage priorities. If only one thing can be saved what will it be?"

Recovery is usually a long-term activity. If appropriate response and salvage procedures have been implemented, the building or site and the collection will be stabilised, allowing detailed conservation and rehabilitation work to continue over years, and off-site, if necessary, without further degradation to the fabric and objects.

Mitigation Works and Retro-Fitting

Regular maintenance and good housekeeping are vital to a building and can prolong its life in the event of a disaster. Installation of detectors, alarms, smoke and fire doors, shutters, extinguishers and fire suppression systems etc. seismic retrofit, securing loose items, anchoring walls, chimneys, parapets etc. in seismic areas are some of the mandatory or precautionary strategies which should be undertaken. Regular testing will ensure that warning systems are working. Records (sketches, photographs etc.) of the place in its normal state will greatly assist with later recovery processes, including insurance claims.

Responsibilities and Partnerships

In Australia the principal responsibility for the protection of life and property is that of federal, state and local governments which is not dissimilar to the United States model. Overall day-to-day co-ordination of Australia’s disaster preparedness is undertaken by civilian staff at EMA (Emergency Management Australia), which is located within the Department of Defence. EMA is also responsible for policy, communication and information, education and training. Every municipality has a disaster plan in place to cope with an emergency should
the need arise and in times of emergency, trained civil personnel and volunteers are called into action with support from Defence personnel as required. These plans typically cover municipal-wide assets and infrastructure, community needs and priorities and almost never address cultural heritage. Parallel with these are the institution-based disaster plans increasingly being prepared by organisational custodians of cultural heritage. Look and Spenneman have pointed out with reference to the United States that

Cultural resources are seldom if ever mentioned in community emergency plans and if they were, they would not be a high priority since life and safety come first."

This is equally true in Australia as evidenced by the omission of any reference to cultural heritage in the Victorian State Emergency Plan and other state plans, emergency services manuals and municipal disaster plans. To date galleries, libraries, museums and archival repositories have been the most disaster conscious with some kindred organisations, like the National Trusts and the Historic Houses Trust of NSW increasingly preparing disaster plans.

While the Australian approach is commensurate with the leading nations in risk preparedness, what is still missing at the national, and the international, level is a nexus between the two spheres so that more effective and integrated response and mitigation strategies can be prepared and implemented. Partnerships need to be built across organisations, regions, state and national levels. Regional disaster committees must be made aware of the needs of cultural heritage so that it can be incorporated into municipal plans. Close links need to be established between heritage custodians and professional emergency services responders to minimise loss of fabric through well-intentioned but often ill-informed response efforts. Heritage custodians should be trained in emergency services procedures and possibly become part of the emergency response team and emergency responders should be educated about conservation to enable them to make decisions which assist heritage places in the longer term rather than compounding the damage. There is nothing like a disaster to help foster these relationships but by then it is far too late other than for next time. We need to act now!

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She is also Past President of Australia ICOMOS, is Secretary-General of the ICOMOS International Scientific Committee on Risk Preparedness and has been a long-standing councillor of the National Trust of Australia (Vic.). Robyn, together with Geoffrey Down, is presently working on a research project entitled A Risk Preparedness Strategy for Australia's Cultural Heritage which has been funded by Emergency Management Australia.

Endnotes

1. The Violent Planet. BBC. 1998. (video)
5. Tempest 'Tears History, Heritage up by the Roots', The Australian, 30 Dec 1999.