



ACCU Group Training Course 2022

Country Reports



**Creating a new 'best practice' in the management of
Australian cultural heritage.**

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The problems facing the protection of Australian cultural heritage are varied and ever evolving. The vast variation in the Australian landscape has borne an equally deep variation in the archaeological record. This record is protected by multiple protective legislative acts and Aboriginal and Torres Strait Islander cultural heritage acts across all states and territories. The primary legislative pieces being *The Burra Charter* (for Historical Heritage) along with the *Aboriginal Cultural Heritage Act* and the *Torres Strait Islander Cultural Heritage Act* (for Indigenous cultural heritage). As an early professional within the heritage discipline, the learning curve of deciphering the terminology and legal obligations within all of these acts is steep.

I am a cultural heritage officer for the Queensland Department of Transport and Main Roads, I help my department manage the heritage of over 33,000 kilometres of roadway, snaking through 1.853 million square kilometres of countryside. We also manage waterways and sea country along almost 7,000km of coastline, including entry points into the Great Barrier Reef. Despite this broad region, the main problems I have encountered while managing cultural heritage can be split into 2 overarching areas; Climate change and slow legislative review processes.

Impacts of accelerated climate change.

Like the material remains of cultural heritage throughout the world, the recent acceleration of climate change has devastatingly impacted sites throughout Australia. The region in which I work is blessed to include multiple World Heritage listed sites, including the Gondwana Rainforest. In the January of 2020, this site was involved in one of the most widespread bushfire events Australia has experienced. In addition to this, several of the roadways throughout the area are recognised as having a state level of heritage significance. Binna Burra Road, Tamborine Mountain Road and Geissman Drive are some of the oldest roads in Queensland and still have heritage infrastructure, such as culverts and drains in use. Binna Burra Road was significantly damaged by fire and the fire fighting efforts. In moments of extreme threats, the safety of people rightly takes precedent over heritage. In Australia, in the event of an emergency, all environmental and cultural heritage constraints and permit requirements are voided for a government mandated period. For the 2020 Binna Burra fires, this period was initially 60 days. For these 60 days, fires were fought and thankfully extinguished, burned vegetation was bulldozed then removed and roadways and road batters were shored up and secured, without the need for damage mitigation or risk assessment to either heritage or environmental matters. After the 60 days expired, all works had to be resurveyed, re-assessed and new management plans compiled. Also, because works were continuing in these areas, assessments for risks to remaining heritage, had to be completed to ensure compliance with reinstated legal obligations. Consultation with the state heritage department is still ongoing, over 18 months after the event. The fires not only impacted the remaining heritage infrastructure, it devastated the environment. What was once called one of the most beautiful drives in Australia, became a reminder of one of the worst events in Australia's natural history. How Australian's and other visitors viewed the landscape has completely changed. The Gondwana Rainforest has this special ability to make you travel back in time. Standing under the canopy of the giant trees, it is not hard to imagine what 5,000 years ago seemed like, you can hear it, smell it and see it. After the 2020 fires, sections of the rainforest were violently thrust into the 21st century. Finding ways to manage

the risk of fire to heritage throughout my region is a priority. But how to do this has been a combination of trial and error, inciting apathy from some and outrage from others. Some want large fire breaks bulldozed through the landscape and additional roads constructed for ease of access and escape. While others have accused the transport department of deliberately sacrificing environmental and heritage significance to build more roads. At this stage, I believe that further extreme events are inevitable, and the utmost priority is the accurate recording of what we have remaining, combined with a proactive presence within all construction projects in the area. But this may be effective for the management of one site, but when multiple sites are impacted by multiple events, managing cultural heritage within an emergency situation can seem daunting and overwhelming.

In addition to the fires of 2020 the region also experienced an influx of extreme weather events. After many years of drought, the region experienced several storms over a matter of weeks, which saw a year's worth of rain fall in a month. This caused mudslides and cliff collapses throughout heritage protected areas, including Tamborine Mountain road. In one night, several tonnes of rock collapsed from a cliff overlooking Lahey's Lookout in the Lamington National Park section of the Gondwana Rainforest onto the roadway and houses below. This blocked access to the top of the mountain and destroyed large sections of rainforest. For over 6 months now, this section of the rainforest has been completely inaccessible to the public due to safety concerns and construction efforts. This has introduced many additional challenges that were not anticipated. Several tonnes of rock have fallen and needs to be moved. It is always preferred to keep material as close to its source as possible, but how to distribute that much rock without further impact to the area? In addition to this, with the closure of this roadway for so long, Gondwana Rainforest has begun to reclaim sections of the road due to lack of interference from people and vehicles. Tamborine Mountain Road is an area of high historical heritage significance, there are heritage features over 100 years old, still in use throughout the roadway. There are drystone walls build almost a century ago, still hold up steep cliff sections around hairpin bends, troughs that once watered the horses that delivered goods to the mountain area still have natural spring water flowing into them. How do you manage the risk to a heritage site, when it is unsafe to even see the site? How do you respect the environmental significance of an area when it is rapidly deleting the historical significance of a site?

It is not just historical heritage that is being impacted by climate change, several Indigenous sites that are situated within Department land have become threatened by fire and weather events. The Cunningham Gap highway sits adjacent to a sacred women's site for the local traditional owner group. This site includes a birthing stone and several story places that are sacred to the Yugambah people. A fire, started by a lightning strike in a nearby national park, raced through the area destroying a portion of the stone arrangements and setting. This fire also destroyed vegetation on a cliff face above the site, causing the slope to become unstable. Regular rockfalls and collapses are occurring, furthering the damage to the area and creating a situation too hazardous to allow any heritage preservation or mitigation activities to commence. While Queensland has historically experienced extreme weather events in the past, it was not at the frequency we are currently experiencing. It is the density of events that have highlighted the second overarching problem facing Australian archaeological and heritage sites, a slow and convoluted legislative review and update process.

Outdated Legal Protection

As an archaeology and heritage management students within Australia, we are taught that Australia's heritage conservation and preservation frameworks were some of the world's leading and ground-breaking legislature. *The Burra Charter* was an innovative document aimed at a practical approach to heritage

management, it was to be the reinvention of *The Venice Charter*. This document was also the framework for many other country's heritage management strategies. There is no doubt that this may have been true in 1979 when the document was ratified, but the framework is now over 40 years old. Attempts have been made to update and keep the conservation document relevant but this process lags behind an ever-increasing need for innovative conservation. Each state within Australia, shapes its own heritage legislation, based on the Burra Charter. The Queensland Heritage Act 1992 is the relevant framework for my area in regard to historical heritage management. *The Aboriginal Cultural Heritage Act 2003* safeguards Indigenous heritage. Both documents have had repeated reviews or attempted reviews, but there are still massive gaps in protection and the *Aboriginal Cultural Heritage Act* has a concerning amount of grey areas that have been manipulated to the detriment of Indigenous heritage. I am very aware that although I work within the archaeological and heritage management industry, I primarily answer to a construction company. The Department of Transport's focus is on building and maintaining transport infrastructure. I am not averse to progress and don't believe the solution to heritage conservation is to freeze it in time, but an increasing population and a population's needs seem to always take precedent over the preservation of cultural heritage.

As a Queensland government department, we are encouraged to set the benchmark for best practice and be open to transparent reviews of procedures. But this approach is not embraced by all industry professionals. The prevalence of gaps in legislature encourages unscrupulous behaviours from some third-party providers to Traditional Owners. The largest gap I have encountered is the fact that the Aboriginal Cultural Heritage Act is self-regulated. It is up to the principal to ensure they are following the duty of care guidelines for the act. It is only when a traditional owner group raises an issue with the state department that any issues can be addressed. This places a great deal of pressure on Traditional Owner parties, some groups are the custodians of areas that cover thousands of kilometres. This policing places a great strain on resourcing and resources. Some custodians simply don't have the capacity to know every construction project happening within their jurisdiction. Also, many local planning schemes do not require the need to consult either the centralised Aboriginal Heritage Database or the Traditional Owner group. It is evident that construction and planning industries move faster than heritage. By having such a reactive approach to protecting heritage I fear that many sites are being damaged, minimally protected or even lost completely.

Although it was not a project I was directly involved in, I have had the misfortune of working with a Traditional Owner group while they have fought with another developer about a shopping precinct being built adjacent to a Bora Ring complex. There had been no consultative process and they were only made aware when ground-breaking activities had commenced. The strain this placed on the group was immense, it was taxing both from an emotional viewpoint and a resourcing front. Group members had to be removed from other active projects to respond to the threat to a sacred area. The threat to a sacred initiation site also saw, some initiation processes accelerated, and normal cultural processes couldn't be followed. This project is still ongoing, and a costly legal battle has ensued, further taxing the Traditional Owner group. *The Aboriginal Cultural Heritage Act 2003* has been in review for several years, postponements have held up any meaningful changes to the protective act. The archaeological community agrees that something needs to change and soon, but the governmental processes needed are slow. The slow reactionary timing and the accelerated threat of climate change and construction to heritage is a dangerous combination.

This has been a simplified overview of two main areas of concern that I have personally experienced as a new professional within the heritage industry and all fall within the past 2 years. These issues are not limited to Australian archaeology, but I believe that the Australian archaeological community has no reason not to set the precedent for best practice. I regularly administer cultural heritage risk inductions to construction contractors, informing them of their obligations in protecting cultural heritage. I stress that it is not only a

legal obligation it is a cultural obligation as Australians, to protect what we all value. Cultural heritage is a non-renewable resource and once it is gone, it is gone forever.



Problem and Needs for Cultural Heritage Protection and Restoration Activities in Bangladesh

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Bangladesh has numerous problems and needs for cultural heritage protection due to a variety of cultural materials, heritage sites, and artefacts made of brick, stone, wood, metal, terracotta, bone, ivory, paper, and textiles, all of which are bearers of ancient human traditions. Each area in Bangladesh has a diverse culture with unique heritage sites, artefacts, and various challenges. Despite the need to decide the best approach for each and every circumstance, this paper will address only the main problems and needs.

Limitation of Specialists and Human Resources in Cultural Heritage Protection

There are many cultural heritage sites in Bangladesh, such as ancient temples, viharas, mosques, monuments and historic houses, including 518 archaeological sites protected and listed by the Department of Archaeology (DoA), with two as World Cultural Heritage sites, namely (a) Historic Mosque City of Bagerhat, and (b) Ruins of the Buddhist Vihara at Paharpur, plus five sites on the World Cultural Heritage tentative list, namely (c) Mahansthengarh and its Environs, (d) The Lalmai-Mainamati Group of monuments, (e) Lalbagh Fort, (f) Halud Vihara, and (g) Jaggadala Vihara. Apart from these heritage sites, Bangladesh also has different types of museums, namely the Bangladesh National Museum, Liberation War Museum, Father of the Nation Bangabandhu Sheikh Mujibur Rahman Memorial Museum, etc., as well as different archaeological museums administered by the DoA. There are many government, autonomous, and semi-autonomous organizations working to protect and conserve the cultural heritage under the guidance of the Ministry of Culture Affairs of Bangladesh. Additionally, teaching and research on cultural heritage management and protection take place at different universities and specialized non-government organizations. As a leading government organization, the DoA under the Ministry of Cultural Affairs protects, conserves, restores, renovates, studies and researches, and develops and utilizes the cultural heritage of Bangladesh. The DoA has five sections—the Administration, Antiquities & Protection including a heritage division, Publications, Engineering, and Chemical sections—located at the head office in Dhaka, with the remainder of its organization divided among four regional offices located across Bangladesh. As Bangladesh has eight administrative divisions that include a total of 64 local districts, the current central sections and regional offices of the DoA are not enough to protect all of the nation's cultural heritage, which is a major problem. But the DoA's General Director is trying to minimize the problem by increasing the specialists and human resources trained in archaeology, especially in the areas of archaeological survey, excavation, and exploration, as well as in museology, cultural heritage protection and conservation science, epigraphy, etc. For this reason, officers of the DoA are sent to different training courses at the national and international levels to study and exchange knowledge about heritage protection, conservation, restoration, and renovation.

Limitation of Laboratories for Cultural Heritage Protection

To perform chemical tests and treatment for cultural heritage protection, there is a chemical laboratory at the DoA and another at the National Museum, both located in city of Dhaka, Bangladesh. But these two laboratories are not enough to conduct all of the chemical tests and treatment needed for cultural heritage protection for the whole of Bangladesh. There is also a deficiency in the numbers of specialists and human resources trained in executing the tests and treatments necessary for protecting the country's cultural heritage.

Destruction of Cultural Heritage

Threat of destruction is a great problem for cultural heritage sites and artefacts in Bangladesh. This destruction can result from the following causes.

- (a) Thieves steal artefacts from ancient cultural heritage sites, namely temples, viharas, mosques, monuments, historic houses, and archaeological mounds, to sell them on the black market.
- (b) Some rural people directly destroy ancient cultural heritage sites through illegal occupation of public land recognized as archaeological sites, especially archaeological mounds.
- (c) Some rural people also destroy archaeological sites by digging soil for sale, especially archaeological mounds.
- (e) Earthquakes have at different points in time had a harmful impact on ancient cultural heritage sites in Bangladesh. For example, several cultural heritage sites, including the ancient Sateraratna temple of Comilla district in Bangladesh, were destroyed by an earthquake in 1878.
- (f) Climate change and its gradually increasing impacts have started to have direct and indirect effects on ancient cultural heritage sites in the coastal areas of Bangladesh, in addition to threatening the way of life of the people in both the short and long terms. Due to the continual increase in temperature fuelling climate change, mechanical weathering brought by cyclones born from atmospheric depressions, and the resulting cyclonic floods and increased amounts of rainfall, etc., have had a direct impact on cultural heritage sites. These sites have begun to face the harmful effects of long-term mechanical, chemical, and biological weathering due to the sea level rise as a result of global warming, bringing increases in saline water intrusion, excess rainfall, and tidal surges or flooding during cyclones, etc., as the impact of climate change.

Although Bangladesh has different laws and rules for cultural heritage protection, it is difficult to stop or restrain the above-mentioned human and natural threats of destruction of ancient cultural heritage.

For this reason, the DoA of Bangladesh has appointed temporary workers and regular employees who help the DoA protect, take care of, clean, and preserve cultural heritage sites, as well as report directly to the DoA when these sites face an emergency. However, there is a real need is to convey knowledge of these threats to everyone in Bangladesh, especially students, the young generation, religious persons living in and using the cultural heritage sites, and local administrative organizations. Although the DoA is currently trying to develop and carry out projects to provide such knowledge for the people of Bangladesh, it needs help from other countries with regards to relevant case studies, and forms of training and methods, necessary to solve this problem.

Damage to Cultural Heritage Due to Development

Bangladesh has different laws and rules such as the Antiquities Act 1968, Archaeological Works Code, Conservation Manual, and Immovable Antiquities Preservation Rules, to protect cultural heritage sites. Under these laws and rules, it is necessary to conduct studies and excavation when carrying out development projects on land adjacent to the cultural heritage sites. But damage to cultural heritage still results from development, from aspects of land use as well as from private construction projects such as housing, and other forms of development.

Management of Cultural Heritage Sites:

There are numerous problems regarding the management of cultural heritage sites. First is the management of archaeological mounds containing cultural heritage materials after an archaeological excavation. Many sites do not have a permanent roof to protect the excavated areas, along with any surviving architectural features and remaining artefacts, even though the excavated artefacts will be exhibited in the site museum. The second problem is how to control tourists who come to these ancient cultural heritage sites and cause problems such as scrawling on the stucco walls, the stone art, and the terracotta art of ancient buildings,

stealing artefacts, climbing the ancient buildings, touching mural paintings, etc. In addition, poor landscaping and planning is also a problem. Buildings set up in close proximity to temples, mosques, and ancient monuments are often poorly matched to their settings, impairing the scenic value of the heritage.



Figure 1 An example of an ancient bridge that was partially destroyed and inundated.



Figure 2 An example of the wall of a temple defaced by tourists.



Figure 3 An example of an ill-matched building set up next to an ancient mosque.

Protection, Conservation, Restoration, and Renovation of Cultural Heritage

As it is difficult for the other specialists to protect, conserve, restore, and renovate the ancient cultural heritage under its jurisdiction, the DoA of Bangladesh always tries to conduct training courses to teach local personnel about the protection, conservation, restoration, and renovation of heritage sites, artefacts, as well as their proper documentation. These courses help local officials carry out the primary maintenance for heritage sites and artefacts by themselves without depending on specialists for matters of scientific protection, conservation, restoration, and renovation.

On the other hand, the protection, conservation, restoration, and renovation of ancient cultural heritage sites, especially temples and mosques, are often done by local organizations and management committees. Local management committees of temples and mosques in Bangladesh have enough money from donations to protect, conserve, restore, and renovate this heritage by themselves. Accordingly, they do not wait for projects planned and led by the DoA, which require one year or more for approval and thus one or two years before they can begin. Local organizations and management committees of temples and mosques will contact local construction companies which lack methodological knowledge and experience in the protection, conservation, restoration, and renovation of ancient cultural heritage. For this reason, the DoA cannot be involved in this kind of cultural heritage work.

In conclusion, the problems and needs for cultural heritage protection, conservation, restoration, and renovation activities in Bangladesh mainly come from the limitations of budget, knowledge, understanding, and specialists necessary for properly protecting, conserving, restoring, and renovating cultural heritage.



Problems and Needs for the Protection and Preservation of Heritage Sites in Bhutan

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Unlike many other countries, the heritage sites in Bhutan are living heritage sites and the heritage buildings have people using them for various purposes. In this lies the greatest challenge for preservation, protection, and management of the heritage sites and buildings. The heritage sites in Bhutan consist mostly of religious buildings and sites. The heritage sites that my office (Department of Culture) works on include cultural sites, heritage buildings (*dzongs*, *lhakhangs*, and monasteries), and archaeological sites.



Figure 1 Punakha Dzong (located in Punakha district)



Figure 2 Paro Taktsang (Tiger's nest, in Paro district)

Problem 1: Urbanization

Urbanization is one of the key problems resulting in the loss of heritage sites and buildings in Bhutan. Development activities in and around heritage sites have directly or indirectly resulted in the destruction or damage to the aesthetics of heritage sites. All heritage buildings and structures in Bhutan are either built of rammed earth or stone masonry with timber framing. The use of such local construction materials without any chemicals has ensured their long life for many years. However, due to urbanization, the use of cement has caused the deterioration of the integrity of such heritage buildings. Moreover, people's preference for modern reinforced concrete buildings to replace old structures has resulted in the disappearance of many heritage sites and buildings.



Figure 3 Trong village in Zhemgang district. This clustered village is a cultural site where the traditional houses display the most beautiful workmanship of stone masonry walls. However, urbanization has resulted in the construction of modern concrete buildings in between traditional houses with beautifully built stone masonry.

Lack of data is a problem faced by conservation professionals in Bhutan for the protection of heritage sites and structures. There are no definite records or documentation of the heritage sites, which ultimately leads to difficulties in monitoring the heritage sites in Bhutan. An inventory of heritage sites is of utmost importance, especially to a developing country like Bhutan where every nook and corner has development activities and construction work being carried out.

Problem 3: Lack of Awareness

Since most of the people residing in and using the facilities provided by the heritage buildings and sites are religious people and monks, it is very difficult for conservation personnel to persuade them about the need for protection and preservation of heritage sites. They have a mindset that diverges more towards dismantling all old heritage buildings and reconstructing them. This clearly shows their lack of awareness regarding protection and preservation of heritage sites and buildings. In Bhutan, almost 30% of the *lhakhangs* (temples) are reconstructed, thereby losing the essence of their heritage value.

Considering all of the problems listed above, the following are the needs for addressing these problems regarding the protection and preservation of heritage sites in Bhutan.

Need 1: Professional Development

It is important for heritage specialists to continue their training throughout their professional career by attending training courses, conferences, and building upon their skill sets. Keeping up with the latest advances in technology is just one example. New information technologies provide conservation professionals with tools that can efficiently record information with improved precision, and can offer better management capabilities for communicating and sharing results. Today, the application of information technology is a means to improve public understanding of and access to cultural heritage. One example is the application of Q-GIS in the documentation of heritage sites across in Bhutan, which has enormously helped in the tracking and plotting of thousands of sites.

Need 2: Creation of Awareness in the Public

Bhutan struggles to achieve awareness on the part of the public, as conservation professionals seek to advance the notion of conservation among a public that is more oriented towards development and the idea of bringing modern structures to heritage sites. Creating awareness in the public regarding conservation and

the importance of protecting heritage sites would enormously help in preserving and promoting the value and integrity of heritage sites in Bhutan. At the current time, due to the developmental stage of the country, the public leans more towards modern structures. Creation of awareness is crucial at this stage.

Need 3: Public Engagement

Organizing events open to the public to attend or participate in is a way to celebrate heritage as part of the community and society. This should foster community ownership whereby a sense of community vitality can be achieved. In Bhutan, the Department of Culture has been working on the protection of heritage sites and buildings through the engagement of communities such that the conservation works are directly owned by the local community together with the benefits that come with conservation. One such example is the Stewardship Plan of Nobgang Village, which aims to achieve sustainable and vibrant community vitality through the protection of heritage buildings.



Figure 4 Picture of Nobgang village in 1907 by John C. White



Figure 5 Present view of Nobgang village. The conservation of the house seen in the picture is carried out with support from the community as part of the Stewardship Plan of Nobgang Village.



Cultural Heritage Protection Activity in Cambodia

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Cambodia is rich in cultural heritage sites such as Sambo Prei Kuk, Angkor, and the Temple of Preah Vihear, which are registered as World Heritage sites. There are more than two thousand temples and fifteen thousand archaeological sites across the country, including prehistoric sites, settlement mounds, ancient hydraulic structures, industrial kilns for ceramics, and other traditional structures of which are all part of the national cultural heritage and world culture heritage. These cultural heritage sites present problems and needs for their protection, preservation, and conservation to promote the value of the nation's cultural, environmental, and historical resources. Many archaeological remains and temples illustrate the needs of outside zone protection at the Preah Vihear and Angkor sites, and the need to protect the national cultural heritage in general against illegal looting. This paper will indicate the main management issues, problems, and needs for outside zone protection of Cambodia's national heritage.

Management of Archaeological Sites in Cambodia

Cambodia has created a series of national and regional laws to protect the national cultural heritage and archaeological sites. Those heritage sites are managed by APSARA, the Preah Vihear and Sambo Prei Kuk National Authorities; the Provincial Departments of Culture; and the Cambodian national commission for UNESCO, which works to protect culture heritage sites. The purpose is to protect and prevent any harm to the historical and cultural heritage of the Kingdom of Cambodia. The government of Cambodia has also created specialized administrative officers and the Department of Cultural Heritage Police supervised by the Ministry of the Interior, whose sole responsibility is the management, preservation, and protection against illegal looting etc. of world and national heritage sites.

Recently, all Cambodia national authorities under the Ministry of Culture and Fine Arts have been continuing to focus on the management, protection, and inventory listing of heritage sites by archaeological surveys from 2008 until the present. Indeed, the research methodology of surveys is based on remote sensing and on archaeological prospection surveys of underground conditions, in areas such as the outside zone of protection at the Preah Vihear and Angkor sites, to protect the national cultural heritage in general against illegal looting, destruction, alteration, and excavation that affect archaeological sites. Mapping and inventory work registers the temples, foundations of religious buildings, ancient settlement mounds, ancient ponds and *barays* (large reservoirs) or other parts of the ancient hydraulic systems, which are found both inside and outside the zone of protection. Furthermore, the outside zone of archaeological sites has recently become of significance for management and protection, because those areas have been disturbed by looting and/or are in a dispersed condition. These Cambodia management activities, therefore, have been supported by establishing laws and regulations to protect the national heritage issued through a Royal Decree and Sub-Decrees, and they are being carried out by conservation and professional officers of the Provincial Department of Culture.

Problems of Protection and Preservation of Archaeological Sites

Problems of preservation and protection of archaeological sites include a lack of education in the rural areas and illegal trading during the period 1988-1990. It was a serious concern when uneducated villagers who

needed money engaged in the sales of statues and artifacts obtained from illegal excavations at settlement mounds, temples, and ancient features such as human burials.

In addition, a global crisis of cultural racketeering has been associated with the looting, trafficking, and consequent destruction of cultural heritage. Especially, through official or unofficial routes, these activities have brought adverse effects to the local and global economy, cultural well-being, and national security. Furthermore, during the period between 1988 and 2010, approximately 377 Khmer antiquities are known to have been traded abroad with 71% having no published provenance and only 29% having a listed provenance or ownership history.

Therefore, the following causes are behind the needs for the protection of national heritage in Cambodia.

- Lack of knowledge on the part of villagers who have destroyed archaeological sites
- Urban development, with disregard for the national cultural heritage
- Land encroaching on heritage sites for agricultural activity
- The looting of artifacts at archaeological sites
- New pagoda construction destroying ancient site remains
- Theft of sculptures and artifacts from archaeological sites for sale to illegal traders
- Rural villagers destroying public land or undeveloped land

Moreover, there is development conducted without proper archaeological survey, and land encroachment for agricultural purposes. These are still important factors affecting archeological sites, and it is difficult to control and stop these activities. Sometimes this kind of development, such as the construction of new rural roads in the outside protection zone of the Preah Vihear and Angkor sites, can destroy some parts of archaeological sites (Figs. 1, 2). Some people who live nearby the road construction will collect the uncovered ancient pottery, metal objects, and stone statues and take these to their homes (Fig. 3). All archaeological sites and artifacts represent important data for future research and documentation, and are materials for the protection of Cambodian national cultural heritage.



Fig. 1



Fig. 2



Fig. 3

The Needs for Cultural Heritage Protection Activities

Cambodia needs to initiate and strengthen cooperation among ASEAN countries in order to combat the illegal selling of tangible culture heritage objects, and to protect against their destruction in the region as a whole. The following concrete measures are required:

- Strengthen the legal frameworks related to illicit trade and trafficking of antiquities in order to prevent the looting of antiquities to sell abroad.
- Negotiate the return of tangible cultural heritage to the countries of origin that has been lost due to illicit trading and trafficking.
- As a member of the ASEAN community, the parliament of Cambodia could sign a Memorandum of Understanding on cultural heritage with other members to protect heritage and seek the return of illegally trafficked heritage.
- Develop human resources for cultural heritage work (research and documentation).
- Adopt modern technology for monitoring archaeological and heritage sites.
- Build up the capacity in techniques for cultural heritage protection and restoration.

- Launch outreach programs focusing on educating local communities about cultural heritage value.
- Build cooperation among relevant institutions for the understanding and protection of cultural heritage.

In conclusion, some problems and needs for cultural heritage protection and restoration activities in Cambodia mainly come from a lack of technical staff, a lack of knowledge on the part of villagers and local authorities, from urban development, from land encroachment for agricultural activity, from new pagodas destroying the sites of ancient remains, from thieves stealing sculptures and artifacts from archaeological sites to sell to illegal traders, and from rural villagers destroying public lands or undeveloped land.



Problems and Needs for Cultural Heritage Protection and Restoration Activities in India

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Trans-Himalayan states and other states of India accommodate many well-known and lesser-known heritage sites that need immediate attention by the experts and young professionals of heritage and culture. In this report I will be bringing forth some lesser-known yet important sites that I have visited throughout my fieldwork since the start of the pandemic, and discuss some problems and key areas that need to be addressed. The sites will include mostly ancient built structures, a Jain cave, and a painted rock shelter.

Site study 1: Jageshwar Dham temple complex and old village structures

The complex along with the village is situated in the Almora district of Uttarakhand, and consists of a group of 100 temples dating to between the 7th and 12th centuries. It is one of the many important pilgrimage sites in India. The temples are made of local steatite and are in working condition. Rituals and prayers performed in the temples by the priests and the tourists create lot of unnecessary damage and debris which could be avoided even while the rituals are being performed. Due to low temperatures the deterioration of the structures has never accelerated but over the past few years, due to the shift in climatic conditions, the temple structures and the valuable aesthetic stone carvings and inscriptions are vanishing due to deterioration. The complex is under legal protection of the Archaeological Survey of India (ASI) and has been documented by the Indian National Trust for Art and Cultural Heritage. Additionally, a temple committee run by local priests and people also takes care of the intangible cultural practices related to the temples, which often leads to clashes between the ASI and the temple committee. The village itself is very old and exhibits old wooden structures and doors with carved wooden facades called *likhai*. These wooden structures are former resting lodges for the priests, with attached wooden facilities for cattle. These wooden structures are lesser known. The village's craftsmanship and tourism has been adversely affected due to the pandemic, and as a result people are migrating out of the village in search of jobs and new means of livelihood, leaving their old way of life behind.



Jageshwar group of temples



Biological growth on wooden facade
known as *likhai*

Site study 2: Painted rock shelter named Lakhudiyar

Lakhudiyar is located in Barachina village, Uttarakhand. The rock shelter has prehistoric paintings said to be of the Lower or Upper Palaeolithic period according to a few scholarly articles. No absolute dating method has been used to determine the approximate age of the rock shelter art. Lack of adequate documentation has prevented art historians and scholars from conducting any kind of research or further studies regarding it. Due to biological and natural factors, the rock art of Lakhudiyar and many other rock art examples in Uttarakhand are fading before even being properly documented.



The site is under protection by the ASI. Due to lack of awareness on the part of the local authorities and community, Lakhudiyar has been neglected in research and investigations. The site was previously recorded as having pictograms of red, white, and black pigments. However, during my field visit, only pictograms made of red could be found and recorded. Unfortunately, in previous publications the photographed pictograms were not specified with the location on the rock shelter showing the scale.

View of Lakhudiyar rock shelter



Image of a pictogram

Site study 3: Jain wall paintings of Ellora

One of the UNESCO World Heritage Sites in India, these caves have been abundantly studied in terms of art history. Surprisingly, while the tempera style wall paintings have not been dated using any absolute method, they are estimated to have been carved and painted in the relatively short period from 462 to 481 CE. Increases in the frequency of tourist visits, combined with environmental factors, has led to the deterioration of the ancient wall paintings. The paintings have been documented by art scholars for their specific research from the perspectives of the philosophy of art and aesthetics only.



Deterioration of a wall painting on the ceiling of Cave no. 32, depicting celestial beings dancing and singing

Conclusion

These sites are not meant to last for eternity; however, we can always try to extend their life span through implementation of ethical practices while simultaneously documenting, examining, and researching these examples of ancient art using modern methods such as multispectral imaging, reflectance transformation imaging (RTI), and non-destructive/non-invasive techniques, which could help in understanding the materials and technology that could be further used for their preservation and innovative utilization. These ancient designs are the living product of a distinctive cultural expression. The local communities and artisans and the upcoming generations of native professionals and scholars of history need to be aware and to make joint efforts to build sustainable heritage management programs, along with conducting ethical practices in cooperation with various NGOs, which will require initiatives taken by younger professionals like ourselves which others can support.



Problems & Needs for Cultural Heritage Protection & Ongoing Practices in India

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India is a country with a rich reserve of various types of cultural heritage, including both tangible heritage such as archaeological and architectural sites, art objects, etc., and intangible heritage in the form of folklore, oral histories, ancient languages, and so forth. This short report is an introduction focusing primarily on aspects of the tangible cultural heritage in India, and issues related to the same.

India's built heritage includes various types of structures and monuments, of different scales including residential to institutional, religious temples to monasteries, forts and palaces to caves and ruins of entire civilizations and cities. Having such a diverse reserve of cultural heritage has its own set of challenges, which is the main focus of this report, where I have tried to highlight some of the key and important issues as mentioned below.

1. Prioritization & Negligence

Issue: One of the major disadvantages of having such diverse built heritage is the fact that managing the same is always a challenge. Heritage plays a very important role in the tourism industry of India, with most of the tourists coming to explore the rich culture of the country. As a result of this, over many years, monuments and historic places which have tourism potential have always taken precedence over less important and smaller structures and monuments. Due to this, many lesser known and small-scale structures remain ignored and in a derelict state. Similarly, prioritization exists in various other fields such as religious and institutional structures as well, where the more famous temples are conserved and better maintained than lesser known temple structures.

Example: The Hill Forts of Rajasthan due to their rich cultural background and artwork are far more famous and thus well conserved as compared to the lesser known, smaller forts in Maharashtra, Punjab, etc. Similarly, the Buddhist caves of Ajanta and Ellora are far better maintained and regulated compared to other smaller caves in Maharashtra.

Needs: It is a fact that such prioritization and hierarchies placing some monuments over others will always remain and cannot be avoided, but a better structural framework needs to be introduced at the organizational level to maintain a healthier balance between these heritage sites and ensure that the smaller, lesser known structures are also well conserved and not completely neglected.

2. Development Pressures

Issue: In a fast-developing country such as India the built heritage is always under pressure to make way for new development, especially in historic cities like Jaipur, Ahmedabad, Varanasi, etc., where entire cities are an integral part of the cultural heritage of the region and have been sustained over the years, but are under enormous pressure to allow growth and development for the local residents. As a result of this many of these regions are losing their built heritage and their traditional essence of place to make way for development.

Example: One of the prime examples would be the finding of two *kunds* (tanks or small reservoirs of collected rainwater) in Jaipur. During the ongoing development works of metro rails in Jaipur, two ancient *kunds* were discovered which had filled in over the years and main arterial roads had been laid over them. Thus, for many years these *kunds* were completely lost and the local community did not know that they had ever existed. However, on discovering these sites, extensive efforts were taken by the government to restore the *kunds* as part of the city's heritage fabric.

Needs: Efforts are already being taken at various levels, from local authorities to state and central governments, to ensure that the built heritage is not damaged by development, which include hiring professionals to oversee the development projects from a heritage conservation point of view, setting out strict rules and regulations, etc. However, better management on a larger scale of urban planning is required to ensure that our built heritage does not succumb to modern development pressures.

3. Insufficient Data & Archival Records

Issue: Another key issue is the fact that many heritage structures and monuments have very basic or no archival documentation or detailed recorded data. Many times the documentation is not done at all, or has been misplaced or degraded over many years passing from generation to generation, and in all but a few cases the documentation is thus not preserved and maintained correctly. This is a major concern as one of the key aspects of conserving/restoring built heritage is archival research and analysis, without which restoration works need to be based on conjecture and on references to other similar examples of built heritage found in the region. Apart from the conservation issues, lack of archival data also means less information from a tourism point of view, which is equally important in a country like India.

Example: The archaeological ruins of the abandoned village of Kuldhara represent a classic example where an entire town exists in the form of ruins, but there is absolutely no archival data regarding the lifestyle, planning, architecture, history, etc., of the community except oral history and folklore passed down over the generations. Thus, taking up any sort of conservation work becomes extremely difficult and is completely conjectural. Additionally, the only information about Kuldhara that can be shared with tourists is based on speculation about disturbing causes behind the sudden disappearance of the entire community, and legends of related paranormal events experienced in the region.

Needs: Lack of archival records remains one of the major concerns, and government and local organizations are already taking up multiple projects for documenting our built heritage, but the scale of these efforts is currently too small and distributed among small-scale organizations. Thus, much more focused and concrete efforts need to be taken up to document the existing built heritage to create an extensive database for future use, and more importantly, extensive efforts are required by professionals to sift through ancient documents and records to extract the existing available information. Also, it is equally important for historic structures and monuments to be documented in their current condition to create an extensive database of information and archival records. Apart from these issues, modern technology also needs to be introduced for specifically these efforts, in which old documents and manuscripts need to be translated into digital format to preserve the data for future generations.

4. Lack of Awareness

Issue: Another important issue is the lack of awareness regarding the importance of our heritage, and the problems arising due to the same, such as vandalism, encroachment, etc., which remain a major threat and concern. Lack of public awareness and surveillance leads to major vandalism threats to monuments, including damage to property, littering, etc. Another aspect of the lack of awareness is the fact that many of the heritage structures are under government or public use, and as a result encroachment can be observed in many places, ranging from constructing new walls and spaces to appropriating entire sections of heritage property as part of expansion. This also leads to heavy losses to the cultural heritage of the country.

Example: Maluti is a small village near West Bengal and was supposedly home to nearly 102 or more temple structures. These temples are of the Odisha architectural style and had a unique façade treatment detail of baked terracotta tiles fixed to the façades, and these terracotta tiles depicted various scenes from religious manuscripts. Over the years, due to lack of awareness and negligence, many of the temple structures have become dilapidated with only around 45 structures still standing. Also, the local villagers have removed many of the terracotta tiles from the temple façades to decorate their individual homes. All this has led to an

enormous loss of a very unique unexplored part of the cultural heritage of India. Multiple efforts are being taken up by the authorities to conserve the remaining temples and to spread awareness amongst the people of the village.

Needs: Various efforts are required such as organizing awareness programs, explaining the importance of heritage from cultural and other points of view, and setting up stricter by-laws and regulations to monitor and regulate heritage precincts. The government has already undertaken the launching of various such programs to spread awareness.

The above-mentioned points are only a few of the many such challenges faced in India for the preservation and conservation of our cultural heritage, and all points cannot be mentioned in this report.

On-Going Conservation and Preservation Practices in the Country

Heritage conservation as a field, and awareness of the need for conserving our built heritage, are still growing phenomena in the country, but have increasingly become one of the major points of concern and have developed vastly in the past few years. Various organizations at the national level such as the ASI (Archaeological Survey of India) and individual State Archaeology Departments have been set up along with other local organizations to tackle the enormous task of conserving and developing the cultural heritage of the country.

Though the field is constantly growing and evolving, many aspects involved such as methods of restoration, conservation by-laws, means of interpretation, etc., have not evolved and are still practiced under outdated systems. Also, we need to understand that in a diverse country like India different sites may need different approaches based on some of the points already discussed in this report and many other controlling factors, and that having a blanket system of conservation may not always work for all of the sites; thus a need to broaden the perspective and have a site-specific approach is imperative. For example, complete restoration and conservation including façades and decorative artwork will work for the grand forts and palaces in Rajasthan, but may not be that relevant for military forts in Maharashtra and Punjab, where damage due to the history of wars is an integral part of the historic fabric and something that should be retained for people to explore. Similarly, inflicting strict heritage conservation by-laws on smaller heritage residential structures would not prove effective, as this will restrict the development and growth of living standards of the residents; thus a somewhat constrained but liberal set of regulations should be designed to maintain the heritage aspects of structures and allow the people residing in them to improve their personal living standards.

Another aspect which I feel is currently lacking in the ongoing conservation practices in the country is the use of modern technologies and facilities to improve the overall quality of conservation, and most importantly the interpretation of these sites, making the experience a lot richer and informative for tourists who are an integral part of country's economy. For example, using 3D mapping technology to document heritage structures rather than the traditional physical surveys, using interactive interpretation methods rather than the traditional sign boards and panels, etc., would greatly help to improve and develop the overall conservation and interpretation efforts of the cultural heritage in India.

Conclusion

The term *symbiosis* is most important and relevant when it comes to the cultural built heritage of India. As discussed before, in spite of the many challenges and issues, heritage conservation practices are increasingly developing and evolving in India and awareness regarding our heritage is also increasing, thus creating and maintaining a balance between the needs of preserving heritage and current living standards by infusing key elements such as heritage control by-laws, modern technology, sensitivity towards our heritage, etc., is of utmost importance to help preserve and maintain the unique cultural environment of the country for future generations.



Problems and Needs for Cultural Heritage Protection and Restoration Activities in Architectural Conservation

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India is home to heritage of varied cultures spanning different time periods and this heritage is the pride and reflection of the diverse cultures that coexist here. But sites of historical importance in a country like India are often left to neglect due to their massive numbers, and a lack of relevant knowledge and resources, leading to the decay over time of evidence which might have otherwise helped in developing an understanding of the history of a specific region/area and which could then become a potential resource for local economic growth. Most of the work for the identification and protection of historically important sites in India traces back to the pre-independence period when the Archaeological Survey of India was founded in 1861, and eventually more than 3650 ancient monuments/archaeological sites of national importance were brought under its management. As of now around 37 sub-circles of the ASI manage this vast heritage under the AMASAR Act of 1958 (Ancient Monuments and Archaeological Sites and Remains Act) with the support of the National Monuments Authority which came into being in 2010. Apart from this there is also a huge amount of unprotected and unidentified heritage which now needs attention. The three cases below briefly illustrate key points on the state of heritage, problems in managing it, and the need for protection.

Case 1: Heritage sites under the protection of the national and state governments



The example chosen here is the Lakhamandal Temple in Dehradun district, designated a site of national importance in 1909, although the temple precincts still await a proper management plan. The importance of the site can be well understood as initial studies revealed its time period to be around the 5th century. An inventory was carried out in 1928 followed by an excavation in 2007, which was abandoned midway leaving numerous finds exposed to weather and the elements. According to a study I conducted in 2013–14, the following major issues were identified as potential threats to the site:

- (1) Absence of research and maintenance, and lack of management of the site.
- (2) Instances of artefacts being carried away and finding use as boundary markers or as grinding stones, due to a lack of awareness of the people of the locality.
- (3) Robbery of exposed artefacts, finding their way into the black market.
- (4) Instances of vandalism of the artefacts by people visiting the site, often due to associated myths.
- (5) Insensitive construction in the immediate context of a historic site, despite laws that are in place.
- (6) Lack of knowledge amongst local communities and of pride in their heritage, as they are not participants in the heritage management process.
- (7) No long-term planning for improving the context and economics of the place, resulting in a haphazard multiplication of structures to within a few meters of the historic site, thereby damaging its aesthetic value.

The main standing temple at the historic settlement of Lakhamandal.
Image Credit: Author

Case 2: Historic settlements located adjacent to nationally protected heritage sites



The old town of Leh located below historic Leh Palace is situated in the union territory of Ladakh. Built in the 16th to 17th centuries, the nine storey high structure of Leh Palace constructed of stone, mud, and timber is a well conserved site of national importance and holds a strong resemblance to Potala Palace of Tibet. However, the traditionally built settlement in its immediate context is time and again threatened by insensitive building activity, an example of which was the Rajiv Awas Yojana scheme introduced in 2014 when the entire historic settlement was identified as a slum area owing to the lack of proper infrastructure and maintenance of the traditional mud dwellings. It was only after the strong opposition of the locals and the NGO Tibet Heritage Fund, which was already working on the restoration of the historic precinct including the upgrading of the infrastructure, that it could be saved from complete demolition and the building of concrete dwellings in this historic settlement. Being engaged with the Tibet Heritage Fund since 2013, I have had a chance to contribute in multiple ways and in my view the following major issues hold potential threats to this important historic site of Tibetan culture and architecture in India:

- (1) Lack of support from government agencies in terms of policy making and funds to carry out the conservation and restoration works.
- (2) Lack of proper understanding between various government departments for carrying out infrastructure improvements in a coordinated manner.
- (3) Lack of pride amongst the locals as motivation to protect their heritage.
- (4) Absence of a planned sustainable development model necessary for tourism and other activities, as it is an eco-sensitive region.
- (5) Lack of motivation and support for trained craftsman to carry forward traditional knowledge.
- (6) Lack of knowledge for engaging and training local communities to make them participants in the process of maintaining and protecting their heritage.
- (7) Unregulated building activities in the historically important area, despite the laws in place, due to lack of surveillance, pointing to the need for stricter laws and special incentives for local residents to maintain their heritage.
- (8) The original owners leaving the place due to lack of facilities and sub-letting the historic houses.

(Left) Leh Palace as viewed from the settlement below (Right) The settlement below the historic palace
Image Credits: Author

Case 3: Isolated structures and places of historic value belonging to private stakeholders or distributed in old cities and along forested areas, deserts, rivers, etc.

The majority of India's heritage falls under this category and is largely under no protection. Various NGOs, cultural organisations like INTACH (Indian National Trust for Art and Cultural Heritage), and individual experts have been working constantly to save whatever possible but there remains a lot more to be rescued. Apart from the heritage distributed across cities, a major portion is still unexplored in the indigenous regions and remains to be rescued and researched, comprising petroglyphs, historical artefacts, etc., which are often destroyed unknowingly during infrastructure development or construction activities due to lack of awareness.



Images of a historic structure before (Left) and during restoration (Right), belonging to a private stakeholder.
Image Credits: Author

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What needs to be done

- 1) Better identification, research, and documentation of heritage structures and historical sites.
- 2) Better opportunities and involvement for trained professionals such as historians, archaeologists and conservation experts at various levels of research, development, and management of historical sites, instead of only engineers or contractors who have neither knowledge nor experience, and often conduct insensitive interventions that cause further damage to the historic materials.
- 3) Educating the communities directly associated with the particular historic sites, and involving them in the process of documentation, research, and long-term management of the historic setting.
- 4) Introducing special incentives for private stakeholders for the maintenance of historic sites and making them aware of the possibilities of conservation and adaptive reuse.
- 5) Developing short-term and long-term plans for the development of historic sites including associated tourism-related activities, such that in the long term the heritage is managed well and not completely lost due to unregulated tourism activities, as happens with most of the heritage sites in India.
- 6) Imparting regular training to professionals for knowledge building, motivation, and learning new technologies.

- 7) Involving locals, historians, archaeologists, and conservation professionals working in the particular region while making policies or development plans for heritage sites in that region, to have a more holistic and culture-oriented development.
- 8) Understanding that development is possible while protecting the heritage, and that these goals can co-exist if planned thoughtfully.
- 9) Developing knowledge about the importance of heritage in the schools to create better awareness.
- 10) Promoting use of traditional materials and techniques in conservation works.



**Problems and Needs for the Protection and Preservation of Urban
Heritage Sites in Indonesia**

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Indonesia is the largest archipelagic country with a diverse range of natural and cultural resources. Following Law Number 11 of 2010 concerning cultural heritage, the government's heritage management efforts are being carried out for the relevant objects, buildings, structures, sites, and areas. The following problems and needs regarding heritage sites are based on my perspective, as an archaeologist for Indonesia's Islamic and Colonial Eras, that Indonesia still has heritage in conditions that are susceptible to risk. According to the Ministry of Education and Culture data, the most susceptible heritage conditions can be found on Java Island. At the same time, Jakarta is the province with the highest number of objects of cultural heritage, registering as many as 28,237 items. In this report, I try to unravel the problems and needs for managing cultural heritage in one of the urban heritage districts with the largest number of historical buildings, namely the Jakarta Old Town area.

Damage risks to heritage buildings

There are at least two main factors causing damage to buildings in the Jakarta Old Town area, namely flooding and the buildings being unoccupied. More than 40% of Jakarta's area is lowlands that are below sea level. In addition, Jakarta is also a downstream area of rivers in the north. This condition causes Jakarta to be prone to flooding, including the Jakarta Old Town area. There are two types of floods that threaten the Jakarta Old Town area: alluvial floods and coastal/estuarine floods.

In addition to the threat of flooding, many historic buildings in the Jakarta Old Town area are not inhabited, thus worsening the condition of the buildings becoming damaged. The private sector predominantly has ownership status for these buildings. The cost of renovation, maintenance, and strict regulations governing these procedures are the main factors for many buildings being uninhabited.

Identification as being at special risk for damage caused by floods rarely gets attention for Old Town heritage management buildings. Suppose the historic environment is to be safeguarded from flood damage. In that case, integrated flood-risk management is required, and efficient communication between all parties is critical to ensuring the proper response. Local risk management requires collaboration with national organizations such as the Environment Agency. An interdisciplinary research team also needs to have a significant role in helping manage the risks and providing integrated emergency management.

Management of cultural heritage sites

The absence of regulation that explicitly covers the area's management of cultural heritage becomes the most crucial issue. The Jakarta Old Town area has received more attention from the Provincial Government of Jakarta because it is the strategic area of socio-cultural interest with high historical value and reflects the historical stories, lifestyles, culture, and civilization of Jakarta's society in the past. The efforts of the Jakarta Provincial Government to manage the Old Town area are still hampered by various problems, such as irregular traffic, decreasing quality of the surrounding environment, and divided administrative boundaries. The Jakarta Old Town area management is also considered overlapping because there is no clear division of tasks and responsibilities. Cleaning, security, and parking problems often cause dilemmas because there is no coordination between the Jakarta Provincial Government and the West Jakarta Municipal Government, and between the administrative villages and sub-districts. The Provincial Government of Jakarta has

established the Area Management Unit (UPK) of Kota Tua (Old Town) Jakarta. This has limited authority to coordinate with other institutions that deal exclusively with security, cleanliness, permits, and data collection and public information services. Those problems are seen in the Jakarta Old Town area. The local government regulation of the area's specific management, including matters of preservation, regulation, and development, must be prepared in detail assisted by the central government.

Restoration and renovation of heritage buildings

Based on observations, there have been no environmental impact assessments for several projects that have been implemented in the heritage area. Assessments of impact within the area have been limited to one based on observations made by the UPK of Kota Tua Jakarta, and it only includes the physical impact. It has not incorporated the socio-cultural impacts, such as the potential gentrification of the area due to the positive impact of business, attractions, and events, and the negative impact of the public crowds. Meanwhile, the renovation of buildings within the Jakarta Old Town area is also not attended by any specific impact assessment. The utilization of buildings is left entirely to the owners of the buildings.

In managing heritage, it is essential to maintain the original values of the heritage. The process of maintaining these original values involves mostly highly technical procedures and requires specialized knowledge and skills. Technical management of the Jakarta Old Town area includes efforts to maintain the authenticity of the architecture and the attributes of heritage materials within the area. The local authority must have the ability and power to implement an environmental impact assessment for each project to restore and renovate the built heritage in the Jakarta Old Town area.

This brief report is about problems and needs for protecting and preserving the Jakarta Old Town area as an urban heritage site in Indonesia. The most challenging issue of urban heritage management in Indonesia is the preservation, management, and utilization of privately owned heritage buildings. We are now struggling to coordinate with local governments and the land and building owners to work towards preserving, conserving, and managing heritage sites.



Problems of Preservation at the Plaosan Temple Site

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General overview

Plaosan is one of the Buddhist temples located in Bugisan Village, Prambanan District, Central Java, Indonesia. It was built by the king Rakai Pikatan for his wife, Pramodhawardani, in the mid-9th century.

Covering an area of 47,332 m² at an elevation of 163–165 m, the site is a complete and unique temple complex. There are 2 main temples, 72 ancillary temples, 254 ancillary stupas, plus ancient trenches, *mandapas*, ancient footpaths, fences, and gates. The Plaosan Temple site is divided into two areas, namely the North Plaosan Temple (Fig. 1) and South Plaosan Temple. Considering the number and variety of buildings, there will be various problems and challenges faced at Plaosan, described as follows.



Fig. 1 The North Plaosan Temple*

1. State of preservation

The temples have been preserved and protected through conservation and restoration measures. The restoration activities have been carried out since 1940. The 2 main temples of North Plaosan have been restored from base to superstructure, as well as other 28 ancillary temples. The rest of the 298 buildings are mere piles of stones. The problem faced in the field of restoration is the limits on budget and human resources. In a single year only one or two buildings can be restored. If there are still 298 structures, then it will take hundreds of years to complete the restoration. Restoration measures require human resources with certain qualifications whose knowledge is not obtained from school but based on experience. One skill is that of stone seekers whose job is collecting stones that are useful for restoring temples. Stone seekers are usually old and it is difficult to find replacements when they retire.

2. Conservation problems

North Plaosan Temple was built with two types of stone, andesite and tuff. Most of the structures built with andesite were in stable condition while the tuff stones were endangered. Climate strongly influences or even determines the nature of the mechanism by which a stone will weather. In Indonesia, which has a tropical climate, seasonal and diurnal temperatures are more constant while the humidity is consistently high. Moreover, annual precipitation in the form of rainfall is almost double the level of precipitation in temperate regions. These differences imply lower susceptibility to thermal stresses, but more importantly, greater susceptibility to water and moisture.

The disparity in weathering between climates may be exacerbated by the porosity of the stone. In the case of tuff, the large volume of open pores (the porosity of tested stones varied from 41% to 49%) implies a larger surface area accessible to deteriorating factors, thus increasing its propensity to weather as compared to less porous stone such as andesite. The Plaosan Temple site is part of a natural landscape, and as such, it

includes many forms of vegetation and animal life which can only thrive in an environment that has a constant supply of moisture. Water is suspected to be the main deteriorating factor, causing powdering, spalling, and flaking of the stone (Fig. 2). These conditions are presumably responsible for the loss of the stone surface. The deleterious effects of capillary rise are evidenced at the base of the structure. The zone of rising damp exhibits disaggregation, powdering of the surface, and some softening of the subsurface. Immediately above



Fig. 2 Weathered tuff*

this zone, the surface is hardened and suffers from flaking, delamination and spalling. It is postulated that the mechanism causing this condition is the action of water dissolving the silica in the matrix and rock fragments, and transporting the dissolved silica towards the surface of the stone. There it evaporates to form a precipitate of amorphous silica which will subsequently harden into a deposit. This reduces the surface porosity of the tuff, further impeding the evaporation of water, so that any further silica deposition now occurs at the subsurface level. This in turn leads to spalling. The cycle repeats itself as long as there is a sufficient supply of water and moisture to dissolve the silica.

The implication for the weathering of this water-sensitive stone in the tropics suggests an accelerated rate of decay due to the availability of water, compounded by other mechanisms directly related with water supply to the stone. This poses a challenge for the study of weathering of tuff in a tropical environment. The multiplicity of narrow capillaries and extreme porosity of tuff requires a low viscosity treatment. To obtain preliminary information for appropriate conservation treatment, an ethyl silicate was chosen as the consolidant because previous experiments on the consolidation of tuff showed that silica-based products gave good results, being chemically akin to the siliceous stone. Samples were treated with SILRES BS OH 100 according to the manufacturer's specifications. The treatment was applied using a brush, wet on wet. During this research, we found out that the tuff stones have a unique characteristic compared with andesite. The consolidation agent penetrates into fragile andesite to a depth of about 1–2 cm, while only 1–2 mm for fragile tuff. We have tried diluting the consolidation agent using alcohol and applying it 3–9 times using a brush but the results are still the same. I think it will be our greatest challenge for tuff conservation because we still do not have a solution for the problem.

3. Settlement around the site

The Plaosan Temple site is also the core of a cultural landscape. Environmental elements that still exist today, such as rivers, nearby rice fields and other agricultural areas, rural settlements, and Mount Merapi in the north, form the charm of the cultural landscape supporting the Plaosan Temple site as heritage that must be preserved. People who live around Plaosan have cultural, economic, and social potential that deserves to be developed. Community empowerment is carried out by developing the potential of Indonesian traditions for the improvement of economic standards. This has been implemented through promoting the traditional art of *gamelan* to the younger generation, and training in silkscreen printing for items such as t-shirts. Empowerment of the community around the Plaosan Temple through *gamelan* and so forth can increase cultural activities around the temple, while the silkscreen printing is expected to help improve the economic standard of the population.

Figure 1 shows a map of the current situation of Plaosan. It can be seen that only a small part of the area is owned by the state (the green areas) while most of the land is privately owned. This can result in uncontrolled growth. Therefore public land acquisition is an activity that has always been carried out until now.



Fig. 4 Situation map of the Plaosan Site*

4. Site utilization

A massive information campaign through websites and social media has indirectly contributed to the tourism promotion of the Plaosan Temple Site. This effect can be seen from the numbers of tourists, both domestic and foreign, which increase every year. The Plaosan Temple site has also been used for various other purposes, such as social, educational, scientific, religious, and for cultural development. However, utilization in the tourism sector dominates over other fields.

Conclusion

The Plaosan Temple site is architectural cultural heritage that represents traditional wisdom, knowledge, and an ability to integrate symbolic/conceptual aspects in the construction of sacred buildings, along with technical aspects required for its construction, along with a balanced relationship with the environmental setting. With regard to the various problems that have been raised, it is hoped that there will be interventions for better protection and preservation of this heritage in the future.

*All pictures and photographs belong to Institute for Preservation of Cultural Heritage in Central Java



Problems and Needs for Cultural Heritage Protection and Management in New Zealand – a focus on Archaeological Sites

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Cultural heritage in New Zealand is rich and diverse and predominantly relates to both the indigenous Māori culture as well as European settlement in the 19th century. Archaeological sites are defined as any place in New Zealand that was associated with pre-1900 human activity, where there is evidence relating to the history of New Zealand that can be investigated using archaeological methods. Protection of cultural heritage across New Zealand is covered by various legislation. With regards to archaeological sites we have the Heritage New Zealand Pouhere Taonga Act (2014), where it is illegal to modify or destroy an archaeological site without authority from Heritage New Zealand. Other legislation includes the Resource Management Act 1991 where protection of historic heritage places from inappropriate subdivision, use and development is a matter of National importance, and includes protection of selected sites on a schedule; the Conservation Act (1987) for land held by the Department of Conservation (DoC); the Reserves Act (1977) for historic reserves where heritage is the paramount resource to be protected and preserved by the DoC. The Protected Objects Act 1975 is administered by the Ministry for Culture and Heritage and regulates taonga tuturu (50+ year old objects related to Māori culture and society) and New Zealand archaeological objects (materials removed from a New Zealand archaeological site). We also follow the principles of ICOMOS. Māori hold a special place in the identity and life of New Zealand through a partnership between Māori and the Crown under the Te Tiriti o Waitangi / the Treaty of Waitangi (Te Tiriti). Māori iwi/hapū (tribes) mandated to the Auckland/ Tāmaki Makaurau region alone number 19 (the largest total in NZ) and consideration of Māori cultural values, tangible (sites/places) and intangible (wāhi tapu/sacred areas) forms a key part of cultural heritage in New Zealand.

Having the above legislation in place provides a good framework for cultural heritage protection in NZ; however, the legislation does not always marry well nor is well understood by the public and developers, and we deal with problems arising from dual process (when conditions issued with the resource consent conflict with Heritage NZ legislation) and confusion as to what legislation (and subsequent procedures and protocols) are relevant to people and their particular developments. Consultation and advice from iwi / mana whenua is at times considered the only consent needed when heritage and archaeology is involved – however, this can conflict with the legislation where archaeological sites are concerned. At worst, the confusion and lack of clarity as to what rules apply to archaeological and cultural heritage sites leads to unauthorised damage and destruction to cultural heritage sites and places which can lead to criminal prosecution.

My role as an archaeologist at HNZPT focuses on administering the HNZPT Act (2014) with regards to archaeological sites (recorded or not yet discovered) of which there are over 70,000 recorded on our national site recording scheme (New Zealand Archaeological Association ArcSite database). In my role I provide advice around, and process, archaeological authorities (to modify or destroy sites) which allow controlled management of site modification when sites cannot be avoided. Our office processed 99 authorities last year, with a total of over 530 across the country in total. These include authorities for known sites, unknown sites, and specialist authorities for emergencies. However, in my role I also advocate for best heritage practice with a focus on archaeological sites, through contributing to submissions on Plan Change and Resource Consent applications relating to historic heritage places, structures/buildings, and I provide advice and feedback on management plans and conservation plans.

In this short paper I will touch upon some key challenges/problems in my work as an archaeologist in Mid-Northern Office (based in Auckland / Tāmaki Makaurau) of Heritage New Zealand; discuss examples of how we approach these problems; and look at what is still needed in the cultural heritage sector in New Zealand heading over the next decade.

Problem 1: Achieving a balance between large infrastructure development and the protection of cultural heritage

In the Mid-Northern region we work on multiple large infrastructure projects with roading, telecommunications and energy providers, which span many kilometres and across many areas including rural, coastal and urban environments. Auckland / Tāmaki Makaurau is one of 16 regions in NZ; it includes a metropolitan area, small towns, islands in the Hauraki Gulf and has the largest population in NZ. Our office also covers the Coromandel Peninsula and Hauraki Plains where there are many industrial and mining (gold, minerals) sites from the 19th century. The Mid-Northern region is culturally diverse, and our cultural heritage sites reflect this with sites recording first human occupation of our country in the 14th century to 19th century settlement and development of towns and industry.

Movement around the Auckland region is predominantly via large motorways and arterial roads maintained by Waka Kotahi - NZ Transport Agency and Auckland Transport, although we also have bus, rail and ferry services. Chorus are our main telecommunication provider, and they are rolling out largescale ultra-fast broadband across the region, and multiple energy companies are building new towers and lines across Auckland. We are, though, a city dominated by car users, and pressure for a more efficient and safe road network means undertaking widening/safety upgrades; new road constructions including bridges; building bus-ways and stations; upgrading railway lines and building new stations and tracks. Cultural heritage sites are at risk from development of this kind. In order to try and identify the key sites and heritage areas at the front end of project design, in my role I help develop and maintain key relationships with infrastructure providers, government organisations and consultants in an effort to avoid and/or minimise adverse effects on sites.

Example: State Highway 22 The expansion of an existing small town called Drury into a major town settlement. The development includes upgrading roads like State Highway 22 (under a Notice of Requirement) as well a town centre expansion and new housing. There are 17 recorded cultural heritage sites within the development footprint, of which 11 are archaeological sites. Interaction throughout the planning stage was important to identify statutory requirements push for best heritage practice. For example one of the archaeological sites (a 19th century cemetery) was to likely be modified by the works; we advocated for avoidance of the site based on high heritage values. The design was subsequently altered to avoid this site. However, a 20th century heritage structure on the opposite side of the road cannot be avoided due to this redesign. Options are being explored to relocate the structure within Drury to maintain the cultural connection with the place and retain some heritage values. We have established that an authority will be required for modification of some sites which cannot be avoided including any unrecorded sites. So where some cultural heritage is lost, other sites are retained with the aim to create some balance in heritage protection and infrastructure upgrades resulting from urban development.

Needs – Communication is key between all stakeholders, heritage organisations, mana whenua and other affected parties. Promotion of the benefits of protecting cultural heritage sites and places needs further attention to encourage design innovation that incorporates historical narratives and preserves site for future generations. There is also a need for more specialists to be trained in assessing heritage landscapes not just archaeology so that we can achieve more varied heritage outcomes.

Problem 2: Understanding the effects of climate change particularly in coastal zones and implementing appropriate monitoring and management strategies

The coastline in Auckland spans some 3,700km long and within the Hauraki Gulf / Tīkapa Moana there are over 14 islands, all which have cultural heritage sites. Climate change and the effects on coastal sites is of prime importance to us country wide, with many sites being affected by accelerated erosion caused by king tides, storm surges, inundation, and increased ground-water run-off. Sites most at risk in Auckland region are koiwi (human burials) and urupa (Māori cemeteries), shell midden and settlement sites and shipwrecks. This is demonstrated by an increase in koiwi exposed on Waiheke and Rakino Islands and beaches across the region and this problem will only increase over time. The NZAA have established a Climate change and Cultural Heritage Portfolio designed to provide national direction, coordination, and advocacy on behalf of the NZAA. Heritage New Zealand has provided input into the National Climate Change Risk Assessment for NZ (2020) with heritage listed as one of 43 priority risks. The risk assessment recognises the importance of social and cultural resilience through heritage (tangible and intangible), taonga and Mātauranga Māori (Māori knowledge). Despite a government announcement for a Climate Change Adaptation Act to be formed, we are yet to have direct policy to guide response and action. Councils are developing 'Coastal Management Framework' where Coastal management Plans are being co-designed with mana whenua to manage council owned land including managing the effects of climate change.

Example: Motutapu Island A significant cultural landscape is Motutapu Island which has over 380 recorded archaeological sites representing an occupation history encompassing nearly the full span of human settlement in NZ. The island consists of over 1,527 hectares and the majority of sites (374) relate to Māori settlement and use of the island. DoC administers the majority of the land which it co-manages with Ngāi Tai ki Tāmaki (mana whenua). There are also two concessionary groups on the island. These layers of ownership, co-management and concessionaries adds complexity to the management of the cultural landscape; the majority of the island is run as a farm but includes historic reserves, native revegetation areas, plant nurseries and a camp all within an extensive archaeological landscape. Heritage NZ is overseeing the development of a Heritage Management Plan for the island, designed to ensure that heritage places are cared for to preserve their meaning and importance for present and future generations. However, climate change is presenting challenges to many of the sites. The Sunde site, for example, documents footprints (human and kuri/dog) in the ash of the eruption of Rangitoto Island c. 1400AD, and is one of four known archaic period sites on the island. It is also protected on the Auckland Regional Plan (Schedule 1/134) and is one of most acclaimed sites in NZ. However, it is in an at risk location on the northwest coast of the island and mana whenua have reported that it has been adversely affected by environmental processes, and it is not clear just how much of the site survives. A detailed condition assessment is urgently required along with many other sites at risk on the island. We are working on a partnership with DoC and mana whenua to implement a survey and monitoring programme, to train Kaitiaki (environmental monitors) how to utilise archaeological methods for monitoring and recording. In order to ensure consideration of all affected parties, the future management of the sites need to work in partnership with Māori, acknowledging the importance of Mātauranga Māori (Māori knowledge) to achieve common conservation goals.

Example: HMS Buffalo Shipwrecks are examples of cultural heritage that are not protected well in NZ, with many sites recorded archaeologically but not protected on district or regional plans. In Whitianga Harbour, Coromandel Peninsula change in tidal processes has accelerating the breaking up of the wreck with pieces of the HMS Buffalo being washed ashore, the most recent being earlier this year following a storm event. We are supporting and working with the Mercury Bay Museum and maritime archaeologists to help record and conserve the timbers and support the development of a conservation plan for management and

conservation purposes. Further conversations with the Waikato Regional Council and Thames Coromandel District Council to discuss scheduling wrecks to afford them some protection is also required.

Needs – Clear need for urgent policy development nationally for climate change action with regards to cultural heritage sites. Locally, impetus needs to be placed on establishing site monitoring projects in the gulf islands in particular, and working in partnership with mana whenua to ensure a balanced approach is and detailed dataset is gathered to develop suitable adaptation responses in coastal environments.

Conclusion As an archaeologist working for Heritage New Zealand I am able to administer legislation around archaeological site protection, modification and management of cultural heritage. This includes advocating for best heritage practice with key government organisations, mana whenua, stakeholders, developers and the general public. There are still clear challenges in dealing with the adverse effects climate change and economic and urban expansion which require attention heading into the next decade which need to be brought to the fore, which form a key part of our planning for the immediate future. Where physical protection is just not viable then implementing mitigation strategies and measures to offset adverse effects are essential.

Websites and links to legislation and policy

Heritage New Zealand Pouhere Taonga Act 2014:

<https://www.legislation.govt.nz/act/public/2014/0026/latest/whole.html>

Heritage New Zealand: <https://www.heritage.org.nz/>

Resource Management Act 1991

<https://www.legislation.govt.nz/act/public/1991/0069/latest/DLM236704.html>

Department of Conservation: <https://www.doc.govt.nz/>

Conservation Act 1987: <https://www.legislation.govt.nz/act/public/1987/0065/latest/DLM103610.html>

Reserves Act 1977: <https://www.doc.govt.nz/about-us/our-role/legislation/reserves-act/>

Protected Objects Act 1975: <https://mch.govt.nz/nz-identity-heritage/protected-objects>

Auckland Council - The hapū and iwi of Tāmaki Makaurau:

<https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/auckland-plan/about-the-auckland-plan/Pages/iwi-tamaki-makaurau.aspx>

New Zealand Archaeological Association <https://nzarchaeology.org/>

National Climate Change Risk Assessment:

<https://environment.govt.nz/publications/national-climate-change-risk-assessment-for-new-zealand-main-report/>

HMZ Buffalo links <https://mercurybaymuseum.co.nz/hms-buffalo-project/>



Problems and Needs for Cultural Heritage Protection and Restoration Activities in Sri Lanka

-Based on specific mural painting and stone cultural heritage sites in Sri Lanka-

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It is imperative to mention that there are thousands of cultural monument sites, including hundreds of mural painting and stone cultural heritage sites, scattered all over the island of Sri Lanka, with various historical, aesthetic, and religious attributes. The apex governing body, the Department of Archaeology of Sri Lanka, takes responsibility for conserving and managing the cultural heritage, including research work. These sites are protected by the Antiquities (Amendment) Act, No. 24 of 1998, titled “An ordinance to provide for the better preservation of the antiquities of Sri Lanka, and of sites and buildings of historical or archaeological importance in Sri Lanka,” which is an amendment of section 2 of the principal act.

Specific problems, issues, and threats for cultural heritage protection and restoration of mural painting sites and stone cultural heritage in Sri Lanka

- Limited investigation and research work has been done on mural paintings and on stone heritage of the country due to the lack of technically and chemically knowledgeable field officers. Lack of analytical instruments for the scientific investigations is another burning issue.
- Lack of systems for monitoring natural and continuous deterioration of these two types of cultural asserts makes it difficult to implement preventive conservation measures by the principal heritage management authorities.
- The rapidly decreasing traditional skills and talents of the direct descendants of former master painters suggests that if this trend continues, traditional knowledge of preparing paint using natural materials will also be lost in the near future.
- Use of vast stretches of lands for new development projects such as irrigation, agriculture, settlements, and highways directly threatens loss of the authentic value of cultural landscapes.
- Lack of adequate management plans for cultural heritage sites, which should be based on a clearly defined governance and communication structure, and which set out the short-, mid- and long-term strategies for both conservation and visitor management, as well as budget planning.
- Lack of disaster management plans for the protection of cultural sites against natural sudden changes is another major issue. It is clear that cultural sites which are distributed throughout the island are at risk to floods, landslides, and tsunamis, notably along the coastline.



Golden Temple of Dambulla – World Heritage Site

-Lack of visitor management plans for cultural heritage sites. In particular, there is currently no practical tourism management plan for the World Heritage properties, and one is urgently needed, due to the large number of tourists and pilgrims visiting the sites.

There may be other threats which can cause the loss of outstanding universal value, integrity, and authenticity, which can lead to removal from the World Heritage List.



Biological, chemical and physical deterioration factors

There are similar problems affecting most cultural sites in Sri Lanka, for example the five caves in Dambulla, and conservators are now investigating how to take care of these problems. The problems are due to fungi, potter wasp nests, water leakage, and damage by visitors, etc. There are also number of statues which display multiple cracks, plus damp areas on the mural paintings, mainly due to water leakage and termite attacks. There is a lack of adequate mechanisms for measuring and recording the atmospheric conditions of the cultural heritage sites, such as the relative humidity, temperature, and dust levels, etc., which are as relevant as the numbers of visitors.

Needs for protection and restoration of mural painting sites and stone cultural heritage

Few scientific studies have been conducted on Sri Lankan stone sculptures and wall paintings by scientists in the field of Sri Lankan archaeology from 1960 to date. The objectives of such study should include understanding the utilization of materials and techniques by ancient artists. Although these matters were mentioned in ancient documents, insufficient knowledge of them has been provided by previous historical research. It is therefore necessary to conduct such research based on the scientific analyses in the field of material science for the conservation and preservation of the cultural heritage of Sri Lanka. Accordingly, the staff of the conservation section is requesting the organization of workshops and training programs from collaborative and distinguished foreign professionals. It would benefit the local conservation staff to build up their capacity and creative capabilities.

It is of vital importance to find opportunities for foreign visits (for participation in workshops/training programs to acquire professional knowledge and skills) provided by foreign countries, and to invite foreign experts to arrange short-term conservation workshops and so forth at archaeological sites in Sri Lanka. Educating our conservation staff in advanced techniques through such short-term training programs, while providing research prospects to the visiting academics, thereby raising our professional standards and improving research publications, are the expected opportunities.

Precision digital recording and documentation systems need to be established and used for methodical conservation work. New scientific and technical tools and innovative skills are also needed to improve data for entering into the documentation systems. Preparation of detailed condition reports and the regular monitoring of conservation sites also need to be followed, along with taking necessary steps for the preservation of mural paintings and stone monuments, including making damage surveys and restoration plans.

A management plan should clearly set out the governance structure of the property, with the roles of all the key stakeholders identified. The plan must focus on short-, mid-, and long-term strategies as required by the new government system. The management plan should clearly set out the management structure for the property, with defined responsibilities, and it also should address its state of conservation and set out a visitor access strategy

that determines the number of visitors permitted at each site, and where to enforced a no flash photography policy, etc.

The operation of a website is an important part of the promotion and advertisement aspects of the management of heritage. Though this may bring more visitors, whose large numbers are problematic, it can also be used as a means of monitoring.

Another need is to establish a research laboratory, which can be utilized for mural painting conservation and stone conservation. Such a facility could accommodate undergraduates and postgraduate students in research collaborations. This would allow them to share in the research experience and knowledge of the professionals. Further this will improve the skills and knowledge of both the higher and minor staff who are employed in the chemical conservation section, by allowing them to obtain exposure to modern techniques and instrumentation in these disciplines.

It is important to sustain a well-organized unit when dealing with foreign specialists. It is more productive to maintain a complete database including conservation reports produced by qualified conservation officers from the past to the present. This knowledge can be used as a resource in conducting future conservation. Due to the lack of recognized institutes for gaining professional knowledge in Sri Lanka in the fields of painting and stone conservation, foreign training is considered the only way to achieve the desired skills, and the knowledge gained



through such foreign training can be applied to a professional carrier in Sri Lanka as a conservator.

Sigiriya Paintings – World Heritage Site

Thiwanka Image House

It is necessary to continue with the research and identification of solutions for the problematic issues affecting the property, with the help of local and international experts in the relevant fields.

It is also vital to update the management plan based on a clearly defined governance and communication structure.



Gal Viharaya Open Image Complex – World Heritage Site

To improve the management of the site, a site management committee should be created which includes representatives of the government, and the local community, as well as experts. This committee should meet at least bimonthly, to discuss and decide on all matters related to the conservation and management of the World Heritage property, including for example the maximum number of persons allowed to enter each area of the heritage site at once, as control of the visitor numbers allowed is crucial to managing the areas.

Another need is to introduce and enforce, as soon as possible, a policy prohibiting visitors from using flash photography inside cave heritage such as Sigiriya and the Golden Temple of Dambulla, as this is one of the main causes of the change in color of the ancient paintings.

Establishing such a tourism management strategy within the coming years, especially including the maximum number of persons allowed to enter heritage sites at once, is likewise imperative for all World Heritage properties of Sri Lanka: the Golden Temple at Dambulla Cave, the Gal Viharaya Open Image Complex and Thiwanka Image House at Polonnaruwa, the rock paintings at Sigiriya, etc.



Problems and Needs for Cultural Heritage Protection and Preservation Measures in Sri Lanka

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The Department of Archaeology, as the apex institution overseeing efforts to recover, analyze, protect and conserve the archaeological heritage of Sri Lanka, has an enormous collection of artifacts, including items of organic and inorganic materials, housed in 32 archaeological site museums such as Galle Fort, Kandy, and Anuradhapura, which are historic buildings. In addition, our collection is rich with a huge variety of archaeological objects recovered from terrestrial and underwater sites.

As an archaeologist and a conservator, I am currently responsible for identifying threats to the artifacts and establishing priorities for protecting these assets against risks, and also for determining specific preservation methods. Therefore, this report identifies the main problems and needs concerning the preservation and management of archaeological objects in Sri Lanka.

Problem 1: Environmental conditions for the collection

Sri Lanka is one of the countries with the most abundant cultural heritage in the tropical climate zone. Therefore, preservation of heritage under the peculiar conditions of this climate is connected with a considerable number of inherent problems.

The main problem that we face for the collections in Sri Lanka is to protect them from deterioration caused by interaction with the surrounding environment. Environmental processes and weather events have a significant impact on preserving artifact collections in my country. Materials that have been kept indoors and outdoors without any protection are affected by changes and extremes of temperature and humidity, and the action of rain, microorganisms, and other factors. Objects can be affected by physical factors, including cracking, flaking, detaching, fading, yellowing, embrittlement, pitting, warts, and a host of other biological and chemical changes as factors causing deterioration.

The majority of metal objects in Sri Lanka face dire situations regarding active corrosion, including crevice corrosion, pitting corrosion, and bronze diseases due to the effects of chloride. Chlorides are present in almost all types of water and soil and cause problems mainly when metal is used, such as pitting and bronze disease, and also corrosion cracking at high temperatures. Iron rust is caused by the oxidation of iron in the presence of moisture in the tropical environment. The chemically unstable orange appearance of rust is porous, which allows moisture, oxygen, chlorides, sulfide and sulphate to reach the bare metal.



Fig. 1 Products covered by corrosion

In Sri Lanka, it appears that one of the leading causes of the deterioration of stone, especially for crystalline limestone, is rain. Moisture and salt can do the most damage to porous stone. Porous stones sitting on the ground can absorb dissolved salts through capillary action. When the moisture evaporates, the soluble salt left behind crystallizes and gradually breaks the structure of the stone. In addition, inappropriate older conservation methods or materials such as cement provide soluble salts to the objects, for instance the Maligawila statue. This may also be the reason for the flaking that can be seen in many of the gneisses, particularly at Pollonnaruwa in the North-Central province in Sri Lanka—weathering first of all inflicts damage as humidity, but large and small plants also damage monuments and historic buildings in Sri Lanka. Substantial erosion by wind is another significant cause of damage in Sri Lanka.



Fig. 2 Damage due to weathering

Another reason is lack of space in museum storage premises. Whole artifact collections of the museum are stored in the same storage room, even though they need different climatic conditions for proper keeping. Therefore, objects have been abrasive to each other or have become severely stuck together.

Finally these collections are under the threat and in unstable condition due to a lack of technology as well as inappropriate storage and display.



Fig: 3 Inappropriate placement (Bad Storage)

Problem 2: Lack of funding

Apart from the more technical problems of preserving the monuments and collections, the Department of Archaeology also faces the problem that its own personnel and financial resources are insufficient for coping with all of the challenges involved in preserving such an enormous cultural heritage. Therefore, it is necessary to secure separate funds as financial assistance directly received from local and international donors. As an example, through the Projects of Ambassador's Fund for Cultural Preservation in 2009, 2012, and 2015, funding was requested for the preservation of archaeological collections by building physical facilities in order to preserve and manage public archaeological collections for future generations.

Needs 1: Preventive conservation measures

In order to maintain the collection, the museum should maintain the proper preventive measures through proper handling, storage, appropriate packing, climatic control with monitoring, and display practices for the artifacts, reducing the impact of these factors. In addition, proper preventive measures are needed for stabilizing or at least slowing down an object's rate of deterioration. Therefore, I suggest that every object should be inspected periodically to assess the type, significance, use, and condition, in order to check the causes or signs of deterioration.

When deciding on the environmental requirements for the long-term preservation of cultural collections, including those housed in museums and galleries, it is necessary to consider many parameters, which include the collection management plan, building maintenance plan, improvement plan for the museum and its gallery, a disaster management plan, a risk management plan, and a conservation plan. In brief, regular inspections, maintenance, and cleaning schedules for the collections, in other words, good housekeeping with proper management, are the basis for prevention of deterioration. These inspections should be documented manually and digitally saved as part of the museum's records. Every museum should have a collection storage area that is separate from the exhibition areas. Also, proper storage units, cabinets, and shelves are essential for storage locations and display cases under controlled micro-environments with security measures.

As an example, preventive conservation measures are being applied for archaeological materials in the Anuradhapura Archaeological Museum, Department of Archaeology, through replacement with new display cases for creating a safer environment. These collections had been under threat and were inherently

unstable due to lack of funding and lack of technology, resulting in inappropriate storage and display for generations under conditions that were not conducive to preservation. The entire collection of the museum was put in storage because the museum building of Anuradhapura is being renovated using local governmental institution's funds. The museum has been closed more than four years due to the pending set-up of the new display cases under the Ambassador's Fund for Cultural Preservation (AFCP) funding.

Needs 2: Professional development

In order to safeguard cultural heritage for future generations, it is necessary to train heritage professionals in proper conservation and preservation. We greatly need studies with detailed technical information from observations and examinations before conducting treatment. Therefore, it is crucial for conservation professionals to participate in training programs throughout their professional careers, to update their knowledge by attending courses, workshops, seminars, and conferences, in order to build their skills.

The Sri Lankan conservation team also needs sufficient training with updated methods and techniques to take full responsibility for managing the conservation laboratories and conserving archaeological materials. Therefore, it is imperative that we have theoretical knowledge and training through formal professional courses with modern technology and updated techniques, as an appropriate adjunct to our professional careers.

Conclusion

This report has identified the main problems and needs for the preservation and management of archaeological materials in Sri Lanka. Proper response to those different needs will help to achieve better preservation of the heritage for tomorrow.