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The Nineteenth Regular Report



公益財団法人 ユネスコ・アジア文化センター文化遺産保護協力事務所
Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO (ACCU)

ACCU Nara International Correspondent

The ACCU correspondents periodically send reports on cultural heritage protection activities in which they have been recently involved. This is a collection of ten reports submitted by international correspondents in the Asia-Pacific region.

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The Splendid Terracotta Art of Dinajpur *Kantajiu* Temple

Mst. Naheed Sultana, *Regional Director*

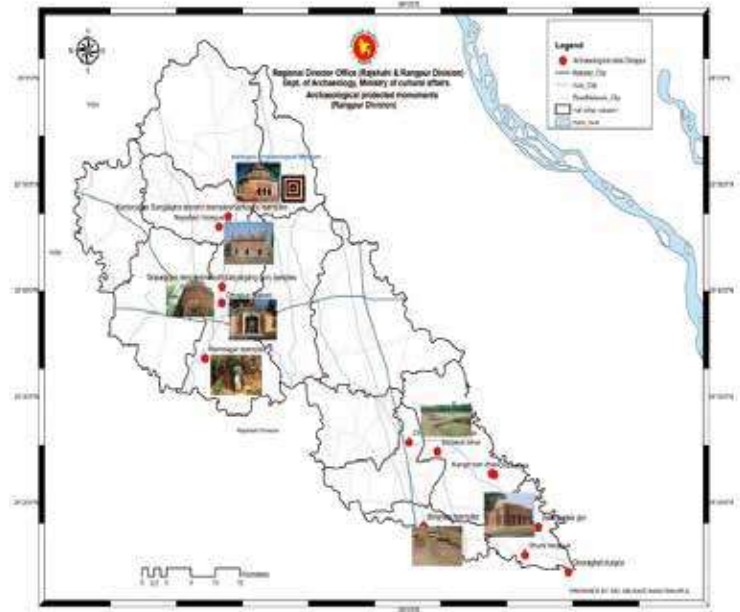
Department of Archaeology, Ministry of Cultural Affairs, Government of the People's Republic of Bangladesh

Introduction: The district of Dinajpur is situated in the northern part of Bangladesh and *Kantajiu* Temple is located nearly 22 km north from Dinajpur District on the west bank of Punarbhaba River, which is locally known as 'Dhapa'. *Kantajiu* Temple is a late medieval period Hindu

temple of Bangladesh. The famous Zaminder *Mabaraja* (landlord) Prana Nath Roy of Dinajpur District started construction of *Kantajiu* Temple in 1704 CE, and his son, Rama Nath Roy, completed it in 1752. Both of them were powerful feudal lords of the Dinajpur region.



Map of Bangladesh.
Location of Dinajpur District (marked in red).



Map of Dinajpur District. Showing *Kantajiu* Temple and other monuments.
(Prepared by Abusaid Imam Tanvirul, Custodian, Rangpur Archaeological Museum).

Short history: From ancient times, this region was part of the ancient state of *Paundrwardhana* kingdom. Again, Devakot, the capital of Lakhnauti was located 18 km south from Dinajpur district town. Consequently, since ancient times, Dinajpur was a very rich and resourceful region of ancient Bengal. Basically, *Kantajiu* Temple was part of Kantanagara fort city. The measurement of the fort city was 15 square km and the city was surrounded by 4 m high mud walls and a 15 m wide ditch all around the city wall (Zakaria 2011) (Zakaria 1989). There were numerous archaeological evidences of Muslim and Hindu architectures inside the fort city of Kantanagara. Among these evidences some structures still survive. The Hindu Zemindars built royal palaces, temples and gates, and excavated large ponds, and so on. The Department of Archaeology of Bangladesh declared this temple as a Protected Monument as per the Antiquity Act of 1968 (as amended 1976).

This temple occupies a prominent place in the realm of splendid terracotta art. The three-storied temple is highly ornamented on both the inner and outer surfaces, columns, archways, cornices and roofs. The terracotta plaques are very small and of various shapes and sizes. So much beautiful terracotta art dating from this period of ancient Bengal cannot be found elsewhere. "The Kantajee temple is Indo-Islamic type of pinnacled or *nava ratna* temple,

though the towers *ratnas* are now ruined. The plan, execution and ornamentations of the temple are the essence of late medieval temple style. The temple is a most expressive and splendid monument, decorated from top to bottom with terracotta panels (Hoque and Hoque 2005:181)".

Architecture: This temple is square in shape and established on a 1-metre-high stone platform from ground level. It is known that the temple was 21.33 m high from the ground level. Every wing of the stone platform is 18.28 m long and constructed in the same square shape of the temple, with every wing being 15.54 m in length. There is a 2.43-metre-wide *varanda* or corridor all around the temple. Every *varanda* or corridor has two large pillars and three pilasters. In the gaps of every wall and pillar there are as many as three large entranceways.

These open passages are constructed with the help of two centred arches. The main prayer chamber of the temple is small in size as well as obsessed. A *Kantajiu* image is placed in this room. There are some small cells around the main prayer chamber. The temple is constructed in the shape of *Dol Mancha* Temple. The 1st floor is smaller than the ground floor and it actually has no rooms. Similarly, the 2nd or top floor is smaller than the 1st. Among the nine



Recent picture of *Kantajiu* Temple.



Pillars, pilaster and three arches of the temple.



A rare photograph of *Kantajiu Navarathna* (nine jewels) Temple. Photo taken before 1897.



The present condition of the temple.

jewels, four jewels were established at each corner of the top of the roofs of the ground floor and the 1st floor, with only one jewel established on the 2nd floor. But these nine jewels were badly damaged by the terrible earthquake of 1897. The temple was largely destroyed in this earthquake.

Terracotta Art: Renowned historian James Fergusson highly praised this temple as a temple of the curvilinear style “One of the best examples of a temple in this style (Curvilinear) is that at Kantanagar ... it is a nine towered temple of considerable dimensions, and of pleasingly



Pleasure trip taken by royalty by boat.



Picture of the daily life of ordinary people.



Representing travel of a king or prince.



Depicting a war expedition.

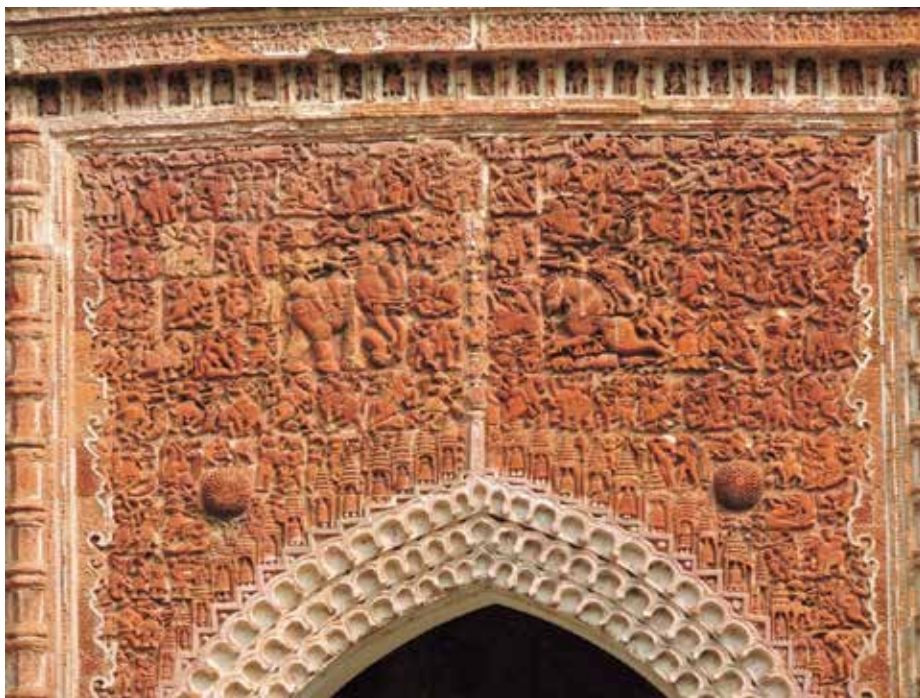
The most remarkable characteristic of this temple is its terracotta art. The most important stories of the Ramayana, Mahavarata and expeditions of Mughal soldiers have been very beautifully and serially decorated on the body of the temple.

Through the terracotta plaques together with those mentioned above, there are also social pictures of Bengalese of the 18th century. The lives of aristocrats are depicted featuring pleasant journeys by boat and palanquin, hunting and many ceremonies, attracting the

attention of visitors. The pictures depicted on the plaques have not been used elsewhere on the body of the temple. From the very bottom of the temple up to the roof the pictures engraved are quite different in nature. “Decorating the finer examples of these temples such as the *nava-ratna* temple at Kantanagar discribed above, every available inch of wall surface both inside and out, including the archways, vaults and columns of all three stories, is profusely decorated with tiny figers and motifs (Ahmed1984:115)”.



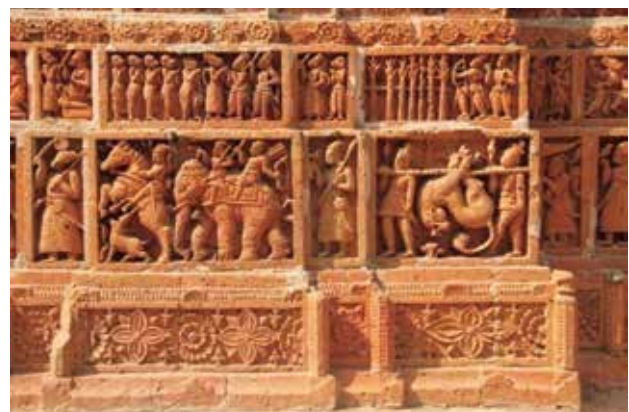
Depicted here two parts of battle between Goddess Kali and Raktabija (left) and battle between Goddess Chandi and Osura (right).



Depicted here two parts of battle field involving the Goddesses Kali and Chandi.



Depicting the daily life of ordinary people.



Depicting the political and social life of the Mughal era.

The terracotta plaques are of very high excellence and even though they were made before 1752 AD, they are still found to be intact and bright. Consequent to the numerous earthquakes and natural calamities, the temple has been



Journey by boat of royal people.

severely damaged. But the terracotta plaques are found to be in comparatively better condition, despite being made of clay and mud.



Depicting of expedition of war.

Living temple: People of the Hindu community worship every day at this temple. A month-long *Rasbs mela* (ritual festival) is celebrated in the temple compound in the Bengali month of *Kartikya* (in November). Thousands of people from home and abroad join in this festival. Besides this, *Sri Keertana* (Commendation of God) in *Buddha Purnima*, and holy baths in full moon of the first month of every Bengali year is celebrated in the temple area. *Dol Purnima* or *Dol Jatra* is a major festival of the Hindu community. This festival is dedicated to Radha and Sri Krishna (worship of the Hindu goddess and god Radha-Krishna).

Conclusion: The architectural style and ornamentation of ancient Bengal occupies a special importance in history. Stone was not available in Bengal; consequently, people chose clay as the prime material for construction and daily use. From the very beginning people started to make houses, utensils, gods and goddesses, temples, daily necessities, and even toys with clay. "One of the remarkable features of these medieval temples is their superb surface decoration with endless panels of sculptured terracotta plaques, depicting both figural and floral motifs" (Ahmed 1984:114). There are many examples of late medieval temples such as Hatiqumrul *Nava-rathna* Temple of Sirajganj, *Boro Govinda* Temple of Puthia, Rajshahi in

Bangladesh and the Vishnupur group of temples of West Bengal in India. Finally, it can be said that the temple architecture of the late medieval period rose to its pinnacle of glory in Bengal. *Kantajiu* Temple is the best example of the late medieval architectural style.

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The Conservation of Preah Vihear of Wat Moha Leap

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In this report, I will introduce the new achievement of a conservation report on wooden Khmer heritage: Preah Vihear of Wat Moha Leap, projected under the leadership of the Department of Safeguarding and Preservation of Monuments, Ministry of Culture and Fine Arts. This report shows an innovative concept in traditional conservation techniques and an understanding of community awareness-raising regarding the protection of modern traditional cultural heritage.

Khmer Terminology used in the Report:

Wat: Buddhist temple-monastery; Literally 'enclosure' in Pali, or *vatta*, it is the term used for Buddhist monastery complexes in Cambodia. Very often it is translated as 'pagoda' due to the influence of French scholars.

Preah Vihear: Major building in a Khmer Buddhist temple-monastery; Sacred form of *vibear*, it is derived from the Sanskrit *vibāra*, it is a major building in a Khmer Buddhist monastery complex that is placed on consecrated ground marked off with *simā* boundary stones. In the *preah vibear* there is the principal Buddha image called *preah ang chi*, which means 'great sacred Buddha'. Before the post-Angkor period, the word *vibear* (*vibāra*) was equivalent to the present-day *wat*.

Preah Vihear of Wat Moha Leap was constructed on the east bank of Tonle Touch, which is the main branch of Mekong River, 15 kilometers to the south of Kampong Cham Provincial Town (coordinates: 11.870383°, 105.423875°) and 63.5 kilometers northeast of Phnom Penh (Figs 1 & 2).

This Preah Vihear is a complete wooden *preah vibear* in Cambodia, built between 1893 and 1908 CE. In the early 20th century CE, the constructed *preah vibear* was a popular choice according to vernacular material available in the country. Preah Vihear of Wat Moha Leap has the Khmer traditional architectural characteristics of *preah vibear chovea buon* (four-finial). From the view of religion, art and architecture, it was created with a sense of passion with domestic resources according to the local people's own taste including geographical and material features.

There is no present-day knowledge of *preah vibear chovea buon* dating from earlier than the 19th century CE due to the wooden material used, the tropical climate and weakening of the structures as a result of insects and war. From the 1920s the new invention of reinforced concrete was introduced to Cambodia; it appeared as the new trend enabling enlargement of scale, and soon most of the 18th and 19th century *preah vibears* were no longer standing, or had lost their traditional design and instead began to take on a modern appearance. Nowadays, this Preah Vihear is known as "the masterpiece and oldest wooden structure in Cambodia" (Fig 3).

1. Conservation

Since 2013, the main beam, upper wall, and ceiling above the Great Buddha statue fallen down due to the poor condition of the structure of the Preah Vihear, which showed the weakness of this building. This Vihear had not been maintained in years, and its structure and mural paintings were heavily damaged in several main sections as follows:

- Roof structure: If we look at it from outside, we can see the western part of the roof had reclined. Besides the roof structure, the roof tiles were also heavily damaged (Fig 4).
- Finials and adorned roof: Cement decorations like roof finials, decorative finials (*chovea*), pediments, and ending finial naga (*neak cheng*) were damaged in many places, and decayed wooden beams support the roof in a saddleback structure (Fig 5).
- Main Beams: Each beam is decorated with dark lacquer and gold stenciling. In general, the surface of lacquer and gold stenciled decoration had suffered from scaling, removal and being covered by a thin layer of dirt and salt. One of them fell in 2013 (Fig 6).
- Columns: In total, there are sixty columns which support the entire structure. Each column is lacquered with decorative patterns in stenciled gold. Typically, the lacquer and stenciled gold on each column were scaled and decayed, and the columns were cracked or broken at the top and bottom, with stains caused by moisture and salt. Five columns were at high risk of collapse (Fig 7 & 8).
- Ceiling: There are five painted ceiling panels. One of these panels failed in 2013 and was heavily damaged. Basically, the paint of each panel of the ceiling was peeling off or cracking, and there were many stains caused by moisture and salt.
- Mural on upper wall panel: In 2013, one of them fell and was heavily damaged. The pigment was scaled in general and dirty from bat and pigeon excrement (Fig 9).

Example of column treatment

Careful study of the condition of the sixty columns which decorate and support the building structure of the Preah Vihear revealed that the majority of them were covered in dust (Fig 10), and that lacquer and gold stenciled decorations had been removed. There were also gaps on the bottoms of the columns and traces of insect attacks on the wood. It was also observed that certain portions were missing from the painted parts.

- Cause of damage: Almost all columns were damaged by the elasticity of wooden material, the humidity of the tropical climate, insects, and human activities including war. Almost all of the columns had lost the center part and bottom (See Fig 7 & 8).
- Treatment: Among the restored columns, those which

were damaged underwent special protection treatment in addition to the measures already carried out on the coverings. This work was carried out as a demonstration of the use of traditional techniques that need to be preserved:

- Emergency treatment of each column by pre-consolidation of the degraded spots of the pictorial layer with an adhesive which removed dust from the surface of the lacquer and gold stenciled decorative motif;
 - Cleaning spots with water and weak ethanol solution, which started with a trial cleaning of the decorative surface of the columns, including both dry and wet cleaning (Figs 11 & 12);
 - Removal of salt from the surface of the lacquer;
 - Replacement of the middle broken vertical hole of columns with new timber for strengthening the structure, and filling the gaps with a mixture of wood sawdust and natural resins (Fig 13);
 - Fixing the scales or gaps on the surface with a mixture of wood sawdust and natural resins or adhesive solution (Fig 14).
- Leveling the structure: Lifting up the reclining structure including the columns to set it at the proper level (Fig 15).

2 Training

Two types of theoretical and on-site practical training on conservation techniques were organized during the project, along the following themes:

- Training on traditional craftsmanship for young

craftsmen from the surrounding villages, resulting in effective and massive participation. This aims to train more craftsmen in the traditional techniques of wooden construction and preventive conservation techniques in order to ensure the maintenance of the buildings of this Preah Vihear and their associated localities (Figs 16, 17 & 18).

- Training on preventive conservation and documentation of wooden structures for students of the Royal University of Fine Arts (Figs 19 & 20).

3 Community contribution

Monks and the surrounding villagers are closely involved in this project's activities (Fig 21).

4 Documentations

Several architectural records were documented in detail. Among those, two main types of documentation were practiced during the project, along the following themes:

- The drawing records of the gold stenciled decorative motif and figures of each column were enriched by a collection of drawings (2D and 3D) and photographs of each of the components of the Preah Vihear (Fig 22).
- The various stages of restoration were enriched by a collection of drawings and photographs (see Fig 13).

Remark: Most of photos and drawings in this report were made during the conservation period by the team of the project, Department of Safeguarding and Preservation of Monuments, Ministry of Culture and Fine Arts

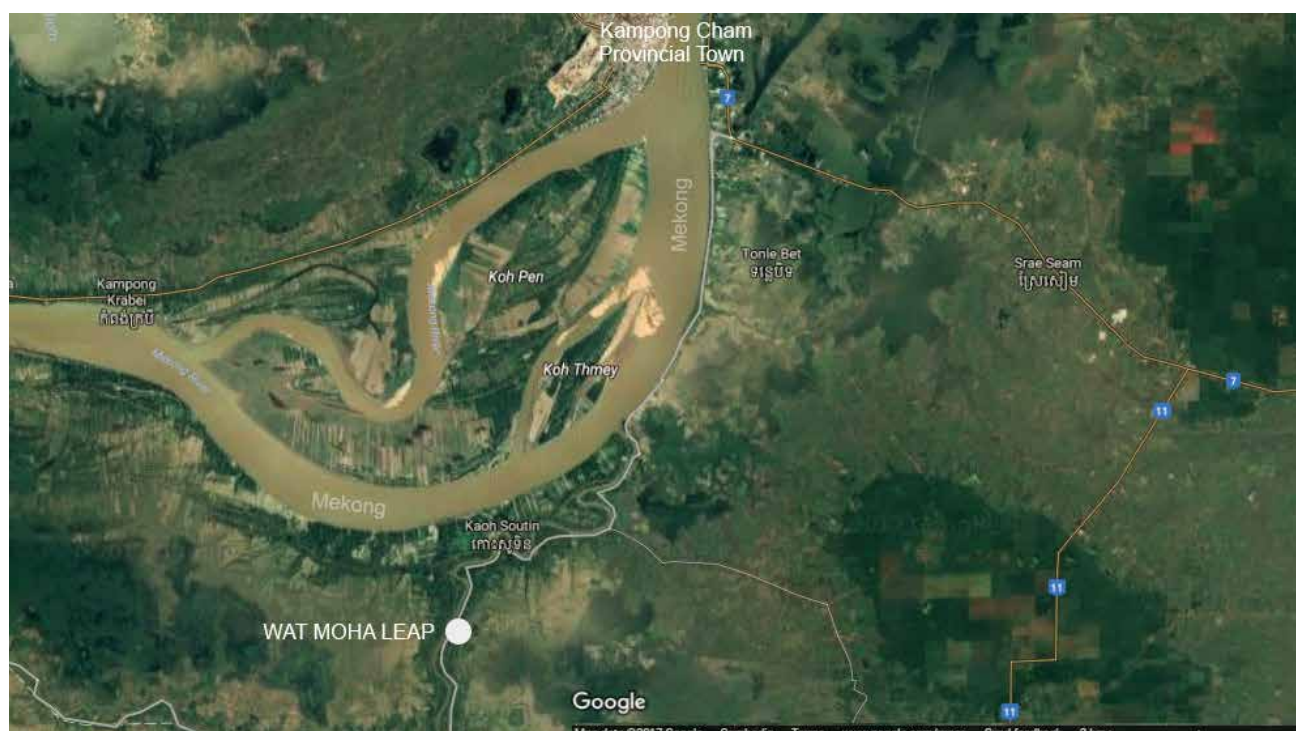


Fig 1. Location map



Fig 2. Layout of Wat Moha Leap from the satellite image



Fig 3. View of Preah Vihear from the south-east



Fig 4. View of Preah Vihear from west and detail of the reclining roof



Fig 5. Broken adorned roof elements



Fig 6. The broken main beam



Fig 7. Column condition and detail



Fig 8. Condition of the bottom of columns



Fig 9. Condition of the upper wall mural paintings

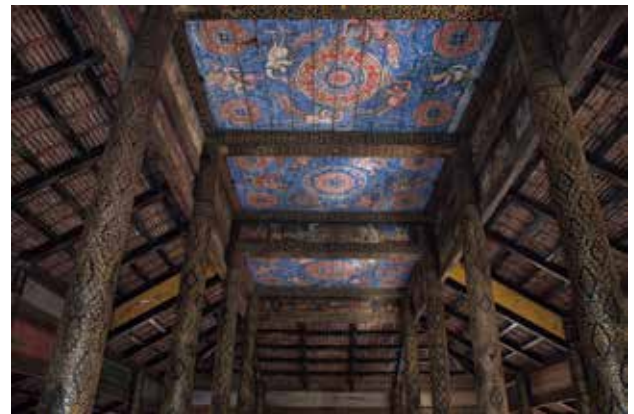


Fig 10. Interior view



Fig 11. Trial test for cleaning



Fig 12. Before and after cleaning

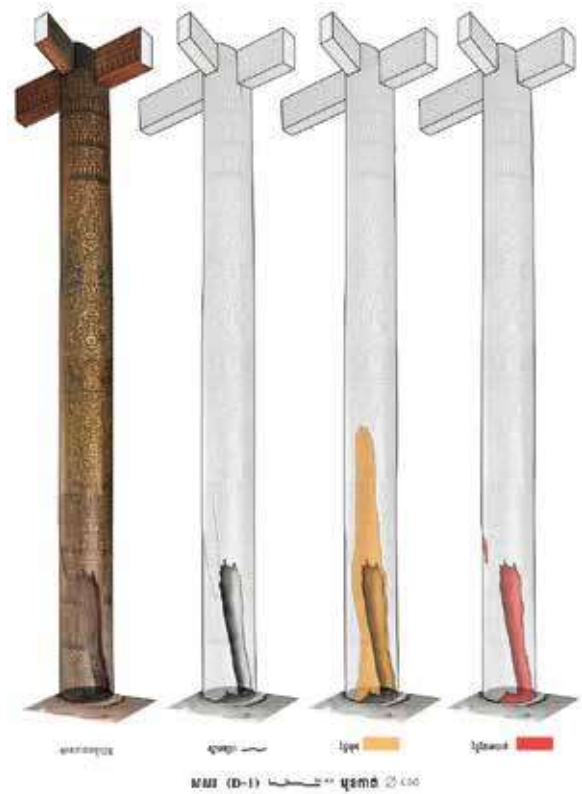


Fig 13. The conservation process for columns



Fig 14. The setting for lifting up the columns



Fig 15. Advice being given by the elder master builder in the village



Fig 16. A builder at work



Fig 17. Training for a young builder



Fig 18. University student recording a motif on a column



Fig 19. Checking the construction structure



Fig 20. Discussion and explanation of the conservation process for a monk and elder



Fig 21. 3D model of wooden structure of Preah Vihear



Fig 22. West view: before and after restoration



Fig 23. South view of the roof: before and after restoration



Fig 24. South view after restoration



Fig 25. Southwest view of adorned roof elements after restoration



Fig 26. Interior view of the Preah Vihear



The Sacred and Cultural Maritime Sites of Fiji — An Inventory in the Making

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ABSTRACT

The Fiji Museum Archaeology Department has, since 2015, begun inventorying the different underwater and maritime sites in Fiji. Ratification of the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage and review of the legislation on the Preservation of Objects of Archaeological and Palaeontological Interest Act (Chapter 264) has had little fruition due to limitations in manpower and resources.

The Fiji Museum has, however, taken the first steps towards realizing the amendment of the legislation by developing and drafting an overarching policy for the institution. The Fiji Museum continues to deliberate on the draft policy encompassing all aspects of its services, which includes underwater and maritime cultural heritage sites, to ensure that Fiji's cultural heritage is protected.

This paper will elaborate on the different types of underwater/maritime cultural heritage sites in Fiji and the inventory process of documenting and creating a database, including challenges and opportunities. It will highlight the importance of the database in assisting the Fiji Museum in its work to raise awareness and provide advice to the government and relevant authorities in terms of the respect, preservation and protection of these submerged historical treasures.

The paper will also highlight the various agencies with common goals to protect underwater cultural sites and discuss the importance of inter-agency collaboration.

Keywords

Cultural heritage, maritime, preservation, and protection

INTRODUCTION

The Fiji Islands

The island nation of Fiji encompasses over 300 volcanic island landmasses. About 100 of these are inhabited, rich in biodiversity and cultural heritage.

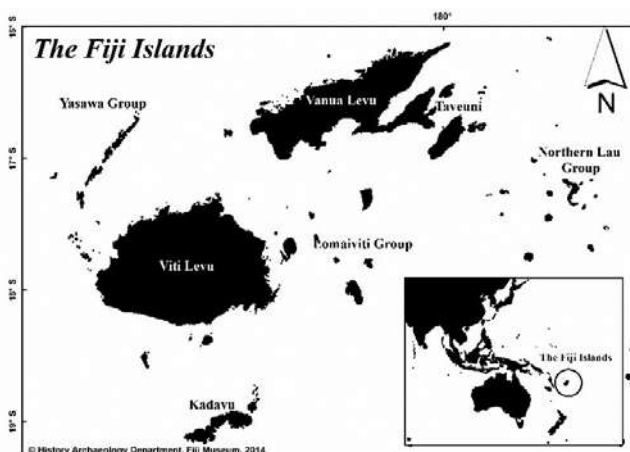


Fig 1. Map of the Fiji Islands

Fiji is located in the tropics of the southern hemisphere and has a total land area of approximately 18,300km² that covers the region positioned between latitude 12N-21°S and longitude 176°E-178°W (Nakoro, 2014).

The Republic of the Fiji Islands is a multicultural nation with a tapestry of cultural traditions of indigenous Fijians (iTaukei), Indians, Europeans, Chinese and other minority cultures. While all the various cultures can be linked to the underwater heritage of the nation through shipwrecks, the iTaukei people are custodians to a special, sacred and mysterious connection to the land, which includes sacred underwater or maritime sites.

In capturing the fascinating connection between the sacred maritime sites and its owners, the Archaeology Department embarked on a digitization project in 2015 to document details pertaining to the sites and protection under legislative powers¹ entrusted to the Fiji Museum. Utilizing the basic Microsoft Access tool, the department developed its maritime sites database.

The Fiji Museum

The Fiji Museum is located at a historically significant site—within an old fortified village that was called Suva. During the expansion of the city, the inhabitants of the old settlement were relocated across the harbor. Today, the area known as Thurston Gardens complements the Fiji Museum in the background. Currently under the jurisdiction of the City Council, Thurston Gardens has great potential for a facelift with plans in the pipeline for this to eventuate before the end of 2017. Adjacent to the Gardens is the historic and newly refurbished Albert Park where the monoplane, the *Southern Cross*, piloted by Sir Charles Kingsford Smith made a safe landing on its first transpacific flight from Hawaii to Fiji enroute to Australia in 1928. Similarly, the northwestern fringe contains the remnants of World War II underground tunnels and the Allied forces military headquarters, which now accommodate the residence of the British High Commission and Fiji's presidential palace and compound.

Since its establishment in 1904, the Fiji Museum has been governed by two (2) pieces of legislation—the Fiji Museum Act and the Preservation of Objects of Archaeological and Palaeontological Interest (POAPI) Act, enacted in 1940. The latter, which is administered by the Archaeology Department of the institution, is the legal instrument covering the protection of cultural heritage sites in Fiji. This legislation has a more generalized definition of cultural heritage where underwater cultural heritage sites such as shipwrecks, planes, sunken villages, islands and the like are not specifically mentioned but in the clause which reads '...or any objects of archaeological, anthropological, ethnological, prehistoric and historic significance....', which covers any form

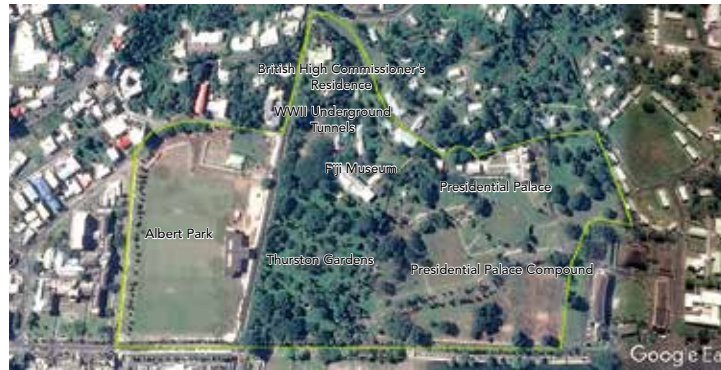


Fig 2. Google Earth image of the location of the Fiji Museum

of culturally significant site or object. As such, the Fiji Museum and the Archaeology Department, with limited manpower and resources, try to cover all aspects of Fijian cultural heritage.

In early 2017, the institution underwent a change in leadership involving the designation of a new Director and members of the Board of Trustees. The driving force behind changes to the Museum's priorities, the new leadership identified gaps in the legislation regarding the safety of cultural heritage sites in Fiji as a target area to be addressed. The Board endorsed the review of the legislation and the Archaeology Department is currently in the process of forming the relevant committees to spearhead this process. These committees will be tasked with the development of policies to strengthen the role of the department and its legislation. The Convention on Underwater Cultural Heritage has also been highlighted as an ideal approach in the near future.

The Archaeology Department

Cabinet endorsed the legislation that governs the work of the Archaeology Department in 1940, however the archaeology unit of the Fiji Museum was not formally established until more than five decades later in 1995. Since its establishment, the Archaeology Department has been involved in the identification, documentation and protection of terrestrial archaeological and cultural heritage sites of the nation. This includes the protection of ancestral village sites, sacred grounds, cemeteries, caves, or any prehistoric or historically significant place from the impact of development.

Today, the archaeology unit at the Fiji Museum comprises four staff members who look after the entire Fijian group of islands. At present, the team focuses most of its effort on terrestrial cultural heritage sites, meeting an influx of community requests to survey, record, document and protect places of cultural heritage significance against the ever-looming threat of development. Most of these issues are related to a complicated land acquisition system that was developed in the early stages of Fiji's colonial administrative system.

The Archeology Department plays a crucial role in the implementation of Archaeological Impact Assessments (AIA) in line with Environment Impact Assessments (EIA) for national development projects such as tourism development, infrastructural development, agriculture,

and other land use development.

In addition to this, the department is engaged in national projects for climate change mitigation and reducing carbon emissions through carbon trading through the Reduce Emissions from Deforestation and Forest Degradation and Foster Conservation (REDD+) and Mangrove Ecosystem Conservation and Livelihood (MESCAL) projects. This includes the setting up of new forest reserves where a rapid survey is warranted. The archaeology team's role in these projects is to identify cultural heritage sites within the earmarked forest boundaries and to examine and record the ancient forest system—in particular, evidence of the impacts of human activities on natural systems.

The Archaeology Department is mandated under the same legislation to issue archaeological research permits for local and international researchers and field schools. During the course of the research, the officers of the Archaeology Department are required to be present to provide advice to researchers, conduct the various traditional protocols on their behalf and ensure that proper procedures itemized in the research permits are carried out.

This paper will explore and discuss the different types of underwater cultural heritage sites in Fiji with focus on traditional maritime sites. It will highlight the inventory process of documentation and the creation of a database to assist in the preservation and protection of these submerged historical treasures.

The paper will also feature the various institutions or agencies with mutual goals to protect underwater cultural sites and discuss the importance of stakeholder collaboration.

MARITIME CULTURAL SITES DATABASE

Fiji is one of the more developed nations in the Pacific region, making it particularly vulnerable to the destruction and loss of significant cultural features related to the history and identity of its people. With limited resources and manpower, the Archaeology Department is at the forefront of defending the nation's cultural heritage from such threats. At present the department manages six databases, as listed below:

1. Terrestrial cultural heritage sites
2. **Traditional maritime cultural heritage sites**

3. Shipwrecks
4. Excavated archaeological research materials
5. Lapita sites
6. Oral history recordings

Excavated archaeological research materials that are kept in the department's storage facility and oral history recordings are managed using the Microsoft Access platform.

Terrestrial cultural sites, maritime heritage sites, shipwrecks, and Lapita sites, on the other hand, are maintained using the Geographic Information System (GIS) program ArcGIS. Since the information has spatial attributes, the ArcGIS program is an appropriate tool for such systematic recording, information analysis, mapping, and data sharing within national authorities on the preservation of cultural heritage sites.

After each survey, the archaeology team members mark each site visited using a Global Positioning System (GPS). The GPS data is later transcribed for report compilation, and corresponds with the national register or database. The database is rather a useful tool in decision-making, advising authorities dealing with national development on the existence of cultural heritage sites in earmarked project areas.

Given that a small team looks after the various functions of the archaeology unit for the whole country, managing four separate databases on ArcGIS was a challenging responsibility that fell solely to the Head of Department. A combination of limited human resources, a lack of capacity among team members and no centralized system contributed to a constant backlog in updating the database.

Ideally, the vast information base managed by the Archeology Department needed to be maintained on a single database as all databases shared common coordinates from the various sites surveyed—the only difference being in the key thematic areas.

In June (2017), the Fiji Museum successfully installed a file server for a centralized mechanism available to all the museum departments. This was a great boost to the institution, as each department ceased to have separate databases with the same content to manage. Soon after the installation of the server infrastructure, the Archaeology Department embarked on a weeklong staff capacity building in the areas of field mapping with the use of conventional survey methods, the use of GPS, GIS and database management including Microsoft Access. This enabled all team members to update the database in a shared folder as and when needed, freeing up time for departmental heads to carry out their supervisory functions, greatly improving productivity.

Merging the four data sets was advantageous and crucial to improving database management efficiency while ensuring that all four themes—terrestrial sites, maritime sites, shipwrecks and Lapita sites—are equally represented in the Archaeology Department's work.

LEGISLATION PERTAINING TO THE PROTECTION OF UNDERWATER CULTURAL HERITAGE SITES IN FIJI

Currently, the overarching legislation (POAPI Act) makes only feeble reference to the safeguarding of underwater or maritime sites. However, it is encouraging that there are agencies that share similar goals to protect Fiji's cultural heritage including underwater sites. In the past year, these agencies have taken a stance on the activities within Fiji's Exclusive Economic Zone propelled by a nationwide implementation of marine protected areas towards the sustainable monitoring and use of marine resources as food supply and transport. The global concerns of mitigating climate change and the different treaties and conventions that Fiji is a signatory to has prompted these agencies to take action.

Below is a list of these agencies, which include government, civil society organizations and regional institutions now in the forefront of maintaining marine protected areas.

Government Agencies

1. Maritime Safety Authority of Fiji (MSAF)

The MSAF is responsible for the registration, regulations and safety of shipping services and shipping routes in Fiji. As a member state of the International Maritime Organization (IMO), the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine pollution by ships, Fiji is trying to secure international recognition for the protection of two (2) significant sea areas recognized for ecological, socio-economic, cultural and scientific reasons which may be vulnerable to damage by international maritime activities (www.imo.org, 16th July 2017) under Particularly Sensitive Sea Area (PSSA) special protection action by the IMO.

Fiji has several maritime ports of entry and two (2) of these have been identified as meeting the criteria for PSSA. This further enhances the local regulations in the protection of maritime cultural significant areas. The two sites, the Beqa Passage and the Vuda Passage, may have shipwrecks and other sensitive cultural components necessary for submission to have the passages protected. The Archaeology Department is a new member of the taskforce for the PSSA. On 14th July, 2017, the taskforce held its second meeting since its establishment and many stakeholders attended. The PSSA taskforce is in the early stages of information gathering and report submission.

2. The Department of Environment (DOE)

Mandated to protect the environment and regulate development procedures in the country, the DOE, under the Environment Management Act (EMA-2005) is vital for the protection of coastal cultural sites. In July 2017, the Fiji Museum was consulted to assist in the protection of three (3) World War II lookouts constructed out at sea threatened by a development

application for the construction of a jetty.

3. *The Fijian Naval Unit under Republic of the Fiji Military Forces*

The Fiji Navy is responsible for maritime needs in border control such as watching over Fiji's exclusive economic zone and organizing task and rescue missions. Similar to any naval force, the Fiji Navy is equipped with a dive team that recently (2017) spearheaded a diving expedition to assess the discovery of seven (7) chests in Fiji waters. The chests were believed to contain explosives and arms. Unofficial information stated that these would have been WWII materials-mine. The Fiji Museum continues to work closely with the Fiji Police to confirm the contents of the chests.

4. *iTaukei Affairs Board (iTAB)*

The i-Taukei Affairs Board is the government arm that looks after any matter concerning indigenous Fijians or *i-Taukeis*. With a crucial mandate for safeguarding Fiji's indigenous culture and traditions, it is vital that iTAB is aware of the significance of the maritime sites, as all the sacred sites are of iTaukei origin. iTAB has access to legal expertise to be able to assist with the protection of intangible cultural heritage.

Non-Governmental Organizations

5. *International Union for Conservation of Nature (IUCN)*

The IUCN is heavily engaged in conservation works in the Pacific and in Fiji, with a regional office in Suva, Fiji. The organization has signed a Memorandum of Agreement with the Fiji Government to provide advice and review legal frameworks, policies, legislation and conventions in safeguarding and protecting Fiji's environment. In 2016, IUCN included the cultural heritage sites (an area that is usually overlooked) in its list of marine protected areas and consulted the Fiji Museum for information and advice (H. Wendt and N. Yakub, personal communication, July 12, 2017).

Regional Institutions

6. *The Secretariat of the Pacific Community (SPC)*

Similar to the role of the IUCN, SPC has the expertise and equipment for underwater surveys. SPC also has a unit that looks after the cultural affairs of the Pacific region and is aware of the significance of underwater cultural heritage.

While these institutions and agencies have a shared vision to promote the protection of Fiji's underwater cultural heritage sites, there is a need to inform these stakeholders on the role and functions of the Fiji Museum in safeguarding UCH. The Archaeology Department needs to lobby and promote the significance of UCH and the need for collaboration between all stakeholders involved.

SACRED MARITIME SITES

Fiji is filled with many traditional or cultural sites and practices which cannot be explained with scientific knowledge. Attempts by Mr. David Attenborough, a BBC

documentary reporter in the early '60s were futile as he tried to explain some of the practices he came across such as the fire walkers of Beqa, the turtle calling in Koro, the fish in the lake on Vanua Balavu.

The map below shows some of the fascinating and respected maritime sites that the Archaeology Department has already captured in its database:

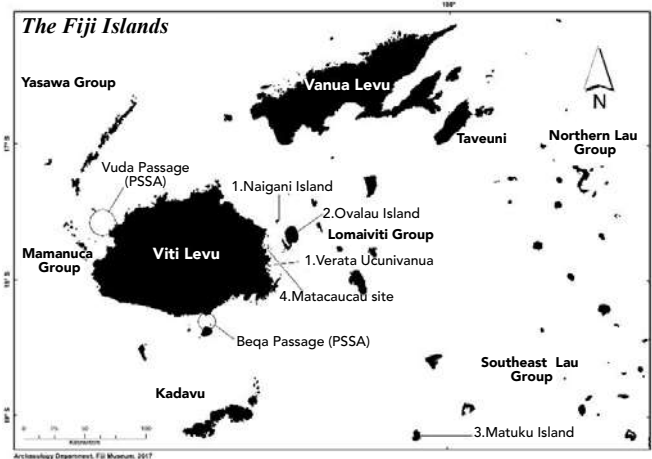


Fig 3. Map showing the names of places mentioned in the Sacred Maritime Sites section.

1. *The sacred fish of Naigani Island*

On the eastern coast of mainland *Viti Levu*, the paramount chief of *Verata*, *Rokomoutu*, holds the traditional title of the '*Ratu*.' It was said that when the first Fijians left Lake Tanganyika in Africa for Fiji, the daughter of *Lutunasobasoba* (the chieftain of the group) asked to take with her some pet fish. In Fiji, these fish (*Sardinella fijiense*) are known as *Daniva*, or sardines that were left in *Verata* waters by the princess. Catching the fish with a spear, the use of fine nets or fishing lines were forbidden. Normally trevallies would swim after the *Daniva* and push them close to land, and during this pursuit there would be the noise of a lot of splashing on the beach. People would normally go to the beach and pick the *Daniva*.

One day when the fish were in *Verata*, *Rokomoutu* tried to use his spear on them. He threw his spear and it missed them and landed on the rocks. He slipped, hitting his knee on the rock (today, the mark of his spear and his knee on the rocks are still evident). Furious, he said to the fish, "go down to *Vatunawa* (present-day *Naigani*) where I will not see or hear you, and when I want to drink boiled water, I will come down for you."

The people of *Naigani* would catch the trevallies as they came close to land with the sardines. Similar to the Norse folklore of Thor and his goats, when consuming the trevallies, the bones are not allowed to be broken. The bones are then carefully placed back in the water where the fish comes back to life. According to the people of *Naigani*, one can easily tell the difference between a newly formed trevally from an old one, and this is a traditional practice that is still carried out today.

2. *The sacred passage between the island of Ovalau and Naigani*

One of the oral accounts collected from *Naigani* was that there were two cousins named *Laginiwasa* and *Rakavono*. One day, the cousins ate the young germinating coconut palms, which is called 'vara' in the iTaukei dialect. The *vara* had been planted by *Laginiwasa's* father *Ratu* (chief) *Matanabalavu*. Hearing *Ratu Matanabalavu* coming, *Rakavono* fled, but not before he was seen by *Ratu Matanabalavu*. Encountering *Laginiwasa* and enraged at his behavior, *Ratu Matanabalavu* banished him from the island. *Laginiwasa* took his double hull canoe (*drua*) and fled to the island of *Moturiki*, which is south of *Ovalau* Island (Nunn, 2001).

A few days later, *Ratu Matanabalavu* confronted *Rakavono* and told him that he must leave the island as *Laginiwasa* had done. Lacking his own *drua*, *Rakavono* swam to *Rukuruku* on the northwestern coast of *Ovalau* island (Nunn, 2001).

According to the oral narrative, the path that *Rakavono* swam is a warm passage about 8 kilometers in distance. Several fisherfolk from both *Naigani* and *Ovalau* have swum the passage without any swimming aids, stating that the warmth provided buoyancy and any cold water encountered during the swim meant that the path *Rakavono* swam was not being followed.

3. The sacred stone of Matuku

Matuku is an island located in the *Lau* group (southeast of *Viti Levu*). It was also the only island in the *Lau* group that was not conquered by the Tongan army led by the Tongan prince, *Enele Ma'afu'out'itonga* (around the 1840s). On the eastern end of the island is a stone which is submerged during high tide. This reddish stone is almost rectangular in form with dimensions of about 1 meter x 1.5 meters, and can be found amidst beach cobbles near *Levukaidaku* village. The stone displays the traditional relationships between *Levukaidaku* and the neighbouring village, *Raviravi*. According to the oral accounts collected from both villages, giant tidal waves occur instantaneously when a villager from *Raviravi* walks past the stone.

Similarly, another reddish stone which is smaller in size and located about 20 meters west of the first one, happens to cause giant tidal waves when it is disrespected through speech or action.

The giant waves can only be calmed when a clan² member from *Levukaidaku* performs a ritual by covering the red stones with leaves from a particular tree.

4. The sacred mosquito crevice, Matacaucau

Along the east coast of the main island, *Viti Levu*, there is a mysterious maritime site. This is a crevice at the foot of a cliff at high water mark. The crevice is called '*Qara ni namu*.' *Qara* means opening and *namu* is mosquito. The *Qara ni namu* has a mythical history behind it. It is said that this was a gift by *Rokomoutu* who was the leader of a migrating party from the hills of *Nakauvadra*. While sailing across towards *Verata Ucuivanua*, strong winds tore his sails and he decided to seek shelter close to land to mend his sails. As a gift for the people that helped him,

Rokomoutu presented a parcel containing mosquitoes, which was supposed to be his present to the *Turaga na Ratu* from *Verata* to awake him every morning. This was instead gifted to the people of *Matacaucau* for their assistance.

The villagers of *Matacaucau* relayed stories that anyone who disturbed the *Qara ni namu* would suffer dire consequences in that mosquitoes would swarm the village resistant to repellents and sleeping nets. It was also relayed that during ceremonial festivities young men would purposefully stir the *Qara ni namu* to keep the visitors awake the whole night, specifically the women.

CONCLUSION

Pacific Islanders are deeply connected with the ocean. The ocean as the source of life, the medium for transportation between islands and sustaining livelihoods—much of the Pacific's history is related to the use of the ocean, and some of it is now underwater.

Similarly, the Fiji Islands are littered with historical sites related to the ocean. Given that human and financial resources are lacking, the Fiji Museum will slowly proceed and continue to document underwater cultural heritage sites working in collaboration with government agencies and NGOs in creating awareness on the significance and protection of UCH.

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- In a traditional iTaukei community, the hierarchical structure begins with a tribe (*yavusa*). The structure of a Fijian community is broken down into clans (*mataqali*), followed by family units (*tokatoka*). In one village community, there would be 1 or 2 tribes with numerous clans. Under each clan are several family units.



Osmania University Women's College (Former British Residency Complex), Hyderabad Restoration of the Traditional Madras Terrace Roof System

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Introduction

A detailed study and analysis of the Madras terrace roof system of South India with some references to the British Residency of Hyderabad was presented by me in the 11th Annual International Correspondents Regular Report. The conservation of the British Residency complex, under the consultancy of Bangalore-based Heritage Matters was jointly undertaken and sponsored by Osmania University; the State Department of Archaeology, Telangana; and the New York-based NGO, World Monuments Fund. The conservation and restoration works were executed by Mumbai-based Jeernodhar Conservators Pvt Ltd. This article constitutes excerpts and photos taken from the

Conservation Report prepared for the State Archaeology publication, in addition to the author's observations.

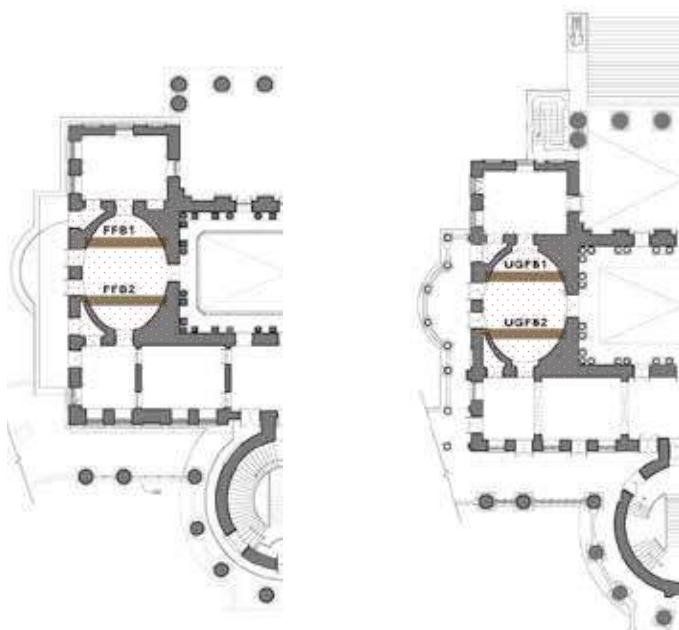
The Madras terrace roof over the western oval room collapsed in 2014. A temporary sheet shed was constructed on the terrace above this roof to protect it from rainfall but the collapse was inevitable. The causes as detailed in the previous report were: deterioration of the beam due to termite infestation, rotting of beam ends due to water ingress from the terrace over decades, less bearing of the beam on the masonry wall compared to its size and span covered, and increased dead load from roof due to multiple additional layers of waterproofing.



Palladian rear view of the British Residency



The exposed Madras terrace roof after removal of the false ceiling tin sheets with the deteriorated primary beam



The upper-ground and first floor plans showing the primary beams in position and the roof area under collapse and reconstruction



A worm's eye view of the oval room with the exposed temporary sheet roof, after careful dismantling of the Madras terrace roof components and primary beam FFB2. The FFB1 beam remained intact.

The Reuse & Restoration of the beams and existing members

The original beam (FFB2) from the first floor ceiling collapsed from the terrace, bringing down with it part of the first floor roof, as well as the beam (UGFB2) from the upper ground floor ceiling. The existing condition of the huge teakwood beams, measuring 0.45 x 0.35 x 8.6 m, was thoroughly assessed by conservation architects, a team of skilled carpenters and through Ultrasonic Pulse Velocity testing (Non Destructive Technique) to identify deteriorated sections of the beams, determine their homogeneity and detect the presence of cracks, knots, voids, etc. After assessing the condition of all the beams, it was concluded that the beam UGFB2 had broken into three parts and if

consolidated and reused, would have two joints closer to the centre of the beam, which was not an ideal solution from the perspective of both strength and heavy load transfer. However the sound parts could be reused in other parts of the building where smaller sections may be required. The beam FFB2 was in better condition with about 3/4 of its longer length available for reuse. After more accurate and detailed measurements as well as numerous discussions, FFB2 was consolidated with other wooden members to acquire the desired size and used to replace the UGFB2 beam on the upper ground floor ceiling. A new beam was procured to replace the FFB2 beam for the first floor (terrace level roof) ceiling.



Thin rusted ornamental sections of iron sheets that had detached themselves from the wooden rafters of the oval room ceiling, above which rests the madras terrace roof



Wooden members of various sizes used to fix the beam FFB2 to replace UGB2



Consolidation and SS capping at both ends of the beam FFB1 in situ



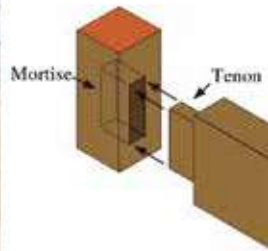
The teak wood procured for the new FFB2 beam



Planing and processing the teak wood for the new FFB2 beam

The deteriorated sections of the beam FFB2 were cut away and all the loose material of the beams, old MS nails and screws were carefully removed and kept for reuse. The size of the original beam that was now available for reuse was 0.40 x 0.30 x 8.3 m. Six wooden members of various sizes were required to fix the beam. These members were cut using the old wood dismantled from the building, which were chiselled and given a smooth finish using a wood planer. The beam was fixed together using four different types of jointing techniques: mortise and tenon joints, nuts and bolts, adhesive, and SS clamps.

An optimal combination of all four was chosen to ensure maximum strength and stability for the beam. Since the joint between the old and new wood was a 1/4 section of the beam, ensuring durability and strength was necessary to prevent cracking or buckling. Mortise and tenon joints were required to join different members to the main beam, while nuts and bolts and SS clamps were necessary to hold all the separate wooden members together to prevent any movement amongst them. The joint between the surfaces of the beam parts were reinforced through application of a high strength translucent epoxy resin (Araldite) over the entire area of the surfaces being joined, including the groves.



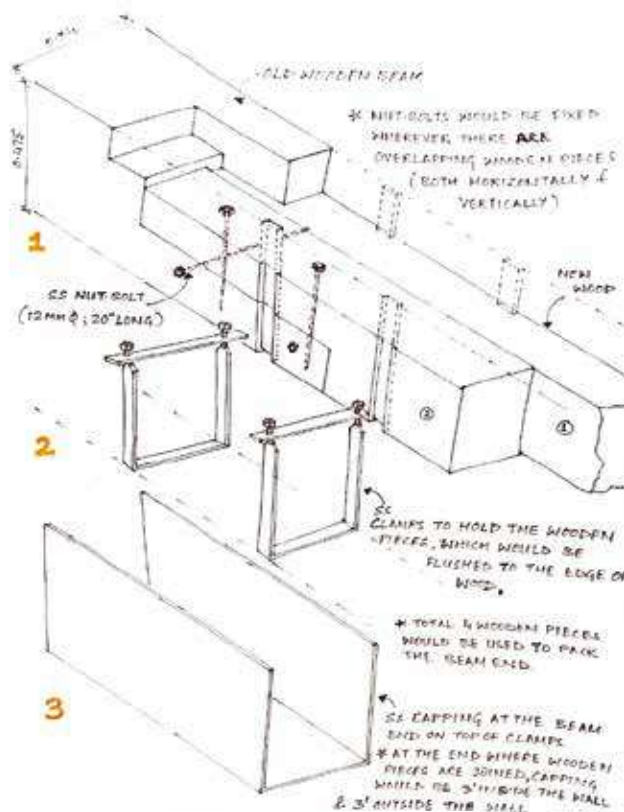
New sections of wood with tenons were fixed into mortise grooves made in the existing FFB2 beam



SS rods 500 mm long and 12 mm in diameter with nuts and bolts were used at 1 foot c/c distance, both vertically and horizontally, to hold the parts together



Application of anti termite coating on the new FFB2 and old FFB2



SS clamps (6 in number), each with a width of 25.4 mm, were used to hold the consolidated beam end together. They were coated with an anti-corrosive paint.



Lifting the new FFB2 beam over the terrace and placing it in position



A conceptual diagram illustrating the jointing details of the new members of the beam

Reconstruction of Madras Terrace Roof (refer to 11th Annual Report for details of its traditional construction)

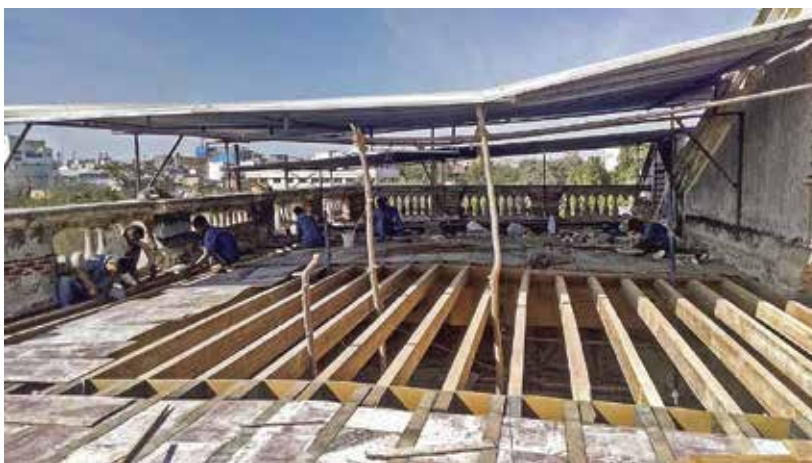
The collapse of FFB2 and UGFB2 supporting the Madras terrace roof of the western oval room led to the collapse of a large part of the roof. As a result, there was a need to reconstruct the Madras terrace roof over the western oval room. After careful removal of the extant roof, it was observed that the cross-section of the Madras terrace roof was a variation from the typical section, in that it had only one layer of brick masonry (compared to the traditional two layers) over the wooden structural members. The top of the roof was covered with a bitumen layer (later addition) which was first removed. Below it were three layers of *chadurbilla* (flat square clay tiles measuring 10 cm x 10 cm x 1 cm), which were removed carefully and salvaged for reuse. The layer of lime concrete waterproofing (*kappi*) (12.50 cm thick) below the tiles was dismantled, followed by prudent dismantling and salvaging

of the brickwork. The deteriorated wooden joists in Madras terrace were dismantled by removing each rafter carefully while the beam (FFB1) was retained in situ. Thereafter, the temporary GI sheet shelter on the terrace (which had been erected four years earlier to protect the roof) was removed before the beginning of conservation works.

The Madras terrace roof uses bricks of a different size from those used for regular construction works. As this size is no longer commercially produced, the option of custom-made bricks was explored. However, considering the huge lead time and quality issues that may arise with the custom making of bricks, it was decided to procure class 1 wire-cut bricks of a standard size (22 cm x 10.1 cm x 8.25 cm), soak them in water and carefully cut them on site into three parts to achieve the required size of 22 cm x 3.25 cm x 8.25 cm.



Carefully dismantling the deteriorated lime concrete and later additions on the roof



The new wooden rafters in position and ready to receive the thin section of bricks laid at angles

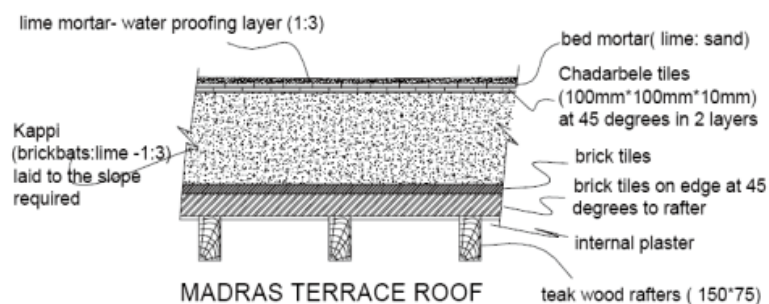
Once the old heavy beam FFB2 was consolidated and prepared on the ground, it was lifted by a crane over the western balcony and through the door and installed in its exact position in the oval room while manually guiding it to the position of UGB2. The wall bearings were prepared for installation by completely removing the parts of the old beam, and clearing the debris. The whole process required a lot of manpower, patience and precision with controlled movements. The new teakwood beam that was procured to replace the old FFB2 was processed on site and installed with adequate bearing on the wall after clearing the debris. Both FFB1 and UGB1 were consolidated in situ by the carpenter's team. They were in fair condition so it was decided to consolidate the minor cracks, remove the loose material and finish the rough edges to give them a final processed appearance. These consolidated old beams were provided with an SS capping at both the ends in the wall and at the centre. The beam ends were packed firmly with brick masonry in lime mortar in a ratio of 1:3 (lime:sand). There were a total of 75 joists in the whole wooden structural system of the first floor Madras terrace roof. New

teakwood joists (for replacement of the ones damaged in the collapse) were prepared and installed in the existing groves for joists (brush coated with an approved anti-termite solution and marked with a seal bearing the number and the date of intervention), with one end in the brick masonry, and the other end resting on the wooden beam. The whole framework was allowed to stand for a month (to allow for any expansion/contraction), after which the top of the teakwood rafters were painted with Black Japan (anti corrosive black bituminous paint) for protecting the concealed areas of wood from damage.

Shuttering for laying the brick courses followed the structural framework. The first course of brickwork was laid on edge, at an angle of 45° to the joists. The second course of the brickwork was laid flat, in a direction perpendicular to the first course, and commenced simultaneously as the laying of the first layer progressed. After the laying of the brick courses were completed over a month and allowed to set completely, the lime concreting of the whole roof commenced.



Standard size bricks were finely machine cut into the required size and laid at a 45 degree angle to the joist. Finally, the gap between the teak wood joists on the ceiling was plastered and painted.



New sections of wood with tenons were fixed into mortise grooves made in the existing FFB2 beam

Lime brick bat cobba (*kappi*) or lime concrete is a traditional waterproofing technique, which is still pursued in conservation practice to protect historic structures from water seepage. The thickness and layers of material vary from region to region depending upon the rainfall that the region receives and local resources available. The existing layer of *kappi* laid over the Madras terrace had an average thickness of 12.7 cm (5"). This included three layers of *chadurbilla* (terracotta clay tiles measuring 10 cm x 10 cm) tiles in lime mortar, on top of the lime concrete. The concrete waterproofing had deteriorated severely over the years due to structural cracks, tile-delaminating, lack of maintenance, rainwater penetration, the addition of incongruous materials like cement concrete layers and bitumen tar felt that had altered the drainage slopes etc and eventually caused a lot of damage. Before laying the new waterproofing layer, the existing old layer was carefully dismantled using hammers and chisels. The materials used for this process are fired hydraulic lime, brick bats (prepared on site) and additives like *surkbi* (brick powder), jaggery, marble powder, *saras* (animal fat) and water.

The raw materials required for achieving a concrete roof of an average thickness of 17.8 cm (7") are considerable in terms of quantity, and it took a full day to be lifted and

stored on the terrace. A grouting solution made of slaked lime, water and additives was poured evenly on the cleaned and cured surface of the terrace floor and sufficient absorption into all the surface cracks was ensured. This was followed by mixing and laying a mixture of brick bats and hydraulic lime (*kappi*) prepared the previous day. The casting of a lime concrete roof by this method majorly involves repeatedly ramming the surface using wooden bats to ensure total compactness through the day. All the water is allowed to evaporate through the night, and the second layer of *kappi* is added the next day such that the levels are adjusted and the required slopes are achieved for effective drainage of water. After compaction, the total average thickness of the lime concrete is 17.8 cm (7"), with the maximum thickness at the higher end being 2.8 cm (9") and the minimum at the lower ends being 12.7 cm (5"). After another round of grouting to remove fine cracks, the ramming process is repeated for over a week to ensure total water tightening. The edges are sealed with *gola* (rounding off the corners and smoothing curves at the junction of the horizontal terrace and vertical parapet to ensure water does not accumulate and penetrate) and the entire roof is covered with wet gunny bags for thirty days to prevent the development of any cracks. The terrace is always worked in sections to ensure correct slopes are achieved for every defined patch of surface area.



Brick bat cobba and burnt lime (*kappi*) before mixing, laid to achieve the required slope



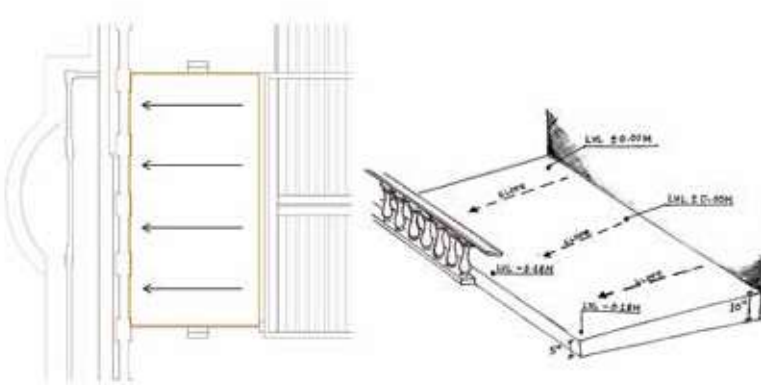
After the second layer of *kappi* was laid, it was levelled with a wooden or aluminium member and further flattened by ramming



Ramming the terrace with wooden *kurchi*



The completed lime concrete roof over the Madras terrace roof, above the oval room



A sketch showing the direction in which the restored terrace slopes and its varying thickness



The edges of the terrace roof sealed with *gola* in lime concrete



Reinstallation of Mural Mosaics at Dewan Bahasa dan Pustaka (DBP) Building, Kuala Lumpur, Malaysia

Professor Dr. A Ghafar Bin Ahmad, *Professor*

School of Housing, Building and Planning, Universiti Sains Malaysia

Introduction

Established on 22 June 1956, Dewan Bahasa dan Pustaka (DBP), or Institute of Language and Literature, is a prominent public body responsible for administering and managing the use and practice of the Malay language and literature in Malaysia. The Malay language is recognised as the national language based on Article 152 of the Constitution of Malaysia. The DBP headquarters, located at Jalan Dewan Bahasa in Kuala Lumpur, consists of a high-rise tower, an office block and a main hall known as *Balai Budaya Tun Syed Nasir*. The office block and the main hall were designed in 1961 by a local architect, Sharikat Yoon Thim Lee, and construction was completed in 1962. In 2009, the DBP office block and main hall were listed as Heritage Buildings under the National Heritage Act 2005 (Act 645) in an effort to safeguard their immense historical and cultural significance for posterity.

The front facade of the DBP main hall is renowned for showcasing unique mosaic mural design as a creative manifestation of the Malay language and Malaysian culture after the country gained independence from the British in 1957. Nonetheless, over a fifty-year period, the invaluable mosaic mural design was in a state of disrepair due to lack of building maintenance, dampness on walls, weak adhesive on aged and weathered mosaics, loose fibre mesh, air pollution and traffic vibration. A dilapidation survey was conducted to determine the condition of the DBP mosaic wall, including common mural defects and their causes. Non-destructive methods involving moisture meters and rubber hammers were used to detect dampness and faulty mosaics on the exterior wall. The dilapidation survey revealed that some of the mosaics were loose, detached, broken, missing or had fallen off. In February 2014, the Government of Malaysia through the Ministry of Education allocated a budget of RM23,663,307 (USD5,642,855) to restore the DBP office block and main hall. Restoration works also included reinstallation of the DBP mosaic mural design for an amount of RM1,490,122 (USD355,341). The entire DBP project was completed in December 2016.

Significance of Mosaic Mural

Decorating a building with mosaic murals is an uncommon practice in Malaysian architecture. Only a few buildings built in the 1960s in Kuala Lumpur were adorned with murals of acrylic or ceramic mosaic tiles. Two notable examples are the National Museum built in 1962, which has two mosaic murals placed at the front façade, with each mural measuring 35.2 m x 6.52 m; and the DBP mosaic mural measuring 20.2 m x 10.8 m.

The DBP mural image was originally created in 1961 by Ismail Mustam, a 17-year old high school student of the Victoria Institution, Kuala Lumpur, who won a design competition organised by the National Arts Council.

Ismail's winning mural design, entitled "The Malayan Way of Life and the National Language", captured the essence and spirit of multiculturalism in Malaysia by celebrating ethnic and religious diversity in the various sectors of agriculture, industry, education and technology. Ismail's captivating mural design was arranged in five sections, each depicting an impetus of the country's development. The middle section featured five men standing by an open book decorated with a single leaf of *Borassus* (Palmyra palm) known as *daun lontar*. These men represented a Malay, Chinese, Indian, Sikh and Eurasian of a multiracial Malaysian society bearing a message of unity. The top section portrayed the diverse religions and beliefs as practiced by Malaysians. The left section focused on the nation's vibrant economic base of agriculture, commerce, mining and industry. The right section depicted timeless local arts and culture of the Malay martial art *silat*, traditional games such as spinning tops and art performance. The bottom section displayed Malaysia's development in infrastructure, transportation, electronics, energy and communications. In 1962, Ismail's victorious design was embodied as an artistic mosaic mural on the DBP exterior wall.

Characteristics of Mural Mosaic

The DBP mural is unique because it was built on a curve-shaped wall. The length of the mural is 20.2 m, and the height varies between 9.6 m to 10.8 m. The mural contains more than 1.48 million pieces of ceramic mosaics. The original ceramic mosaics were mostly imported from Italy. Each square mosaic has a glossy surface of 11 mm x 11 mm and features a slightly concave-edged design. The thickness of each mosaic is 3 mm. Based on related scientific studies and laboratory tests, the ceramic mosaics were made of clay, quartz, feldspar, talc and wollastonite. More than 60 different shades of colours were used in the making of the DBP mural. Brown was the most commonly used colour in the mural, followed by blue, beige and grey.

Principles of Mural Mosaic Reinstallation

Since the DBP building was listed as a Heritage Building under the National Heritage Act 2005 (Act 645), all work method statements and interventions including documentation, repair, restoration, conservation and reinstallation of the mural mosaic were approved by the designated building conservator, consultant architect and the Department of National Heritage (DNH) prior to the commencement of works on site. Reinstallation of the mural mosaic was based on the following principles:

- i. To retain the authenticity and integrity of the mural.
- ii. To maintain the original image of the mural.
- iii. To ensure that the colours for all new mosaics match the existing ones.
- iv. To replace any missing or broken mosaics with the closest possible material of the same size, shape,

- form and thickness.
- v. To apply proven methods and techniques for reinstallation of the mural.
- vi. To document and record the conditions of the mural before, during and after reinstallation.

During the mural mosaic reinstallation process, the appointed contractor engaged a building conservator and several mural experts in order to ensure that all works carried out were in accordance with the appropriate principles outlined by the consultants and the DNH. Regular technical and site meetings were held at the site to keep track of the work in progress. Reinstallation of the DBP mural involved six main stages as follows:

Stage 1: Site Preparation

- i. Identify a suitable location on site to build a sturdy working platform.
- ii. Provide access to a scissor lift to be stationed on the platform for photography.
- iii. Erect scaffolding on the platform for the entire mural reinstallation works.
- iv. Create work areas and vertical access for the upper levels of the mural surface.
- v. Construct temporary roofing above the mural surface.
- vi. Cover the mural surface with plastic sheets to protect it from direct sunlight and heavy rain.

Stage 2: Mosaic Mapping

- i. Establish a grid system to divide the mural surface into small grids.
- ii. Provide special codes for all grids for cross referencing and rechecking.
- iii. Document the entire mural surface using 3D terrestrial laser scanning.
- iv. Photograph the entire mural surface using high resolution quality photography.
- v. Store all data in a computer database for future records and reference.

Stage 3: Mural Inspection and Identification of Defects

- i. Inspect the entire mural surface.
- ii. Record areas of mosaic defects.
- iii. Determine the causes of mosaic defects.
- iv. Clean the mural surface from algae, dirt and dust using soft brushes and low-pressure water jets.
- v. Detect any areas of porosity on the mural surface using rubber hammers.
- vi. Remove and salvage loosened mosaics from external walls.
- vii. Collect all fallen mosaics scattered on the ground level.
- viii. Conduct structural forensic testing on wall substrate.
- ix. Analyse the characteristics and composition of mosaics.

Stage 4: Treatment of Mural and Wall

- i. Remove all mosaics from wall.
- ii. Keep all mosaics in designated labelled boxes.
- iii. Transport all mosaics to factory for treatment.
- iv. Clean each mosaic using soft brushes and low-pressure water jets.

- v. Inspect and dispose of any broken mosaics.
- vi. Salvage and separate mosaics based on colour shades.
- vii. Code and store mosaics in labelled boxes.
- viii. Keep wall substrate dry and avoid any dampness.
- ix. Protect wall with plastic sheets.
- x. Document the treatment process.

Stage 5: Reproduction of Mosaics

- i. Verify the percentage of salvaged mosaics.
- ii. Determine the design and reproduction of new mosaics based on the colours and characteristics of the existing mosaics such as composition, shape, form, size, thickness and type of surface.
- iii. New mosaics were custom-made and imported from China.
- iv. Match new mosaics with the captured mural image based on the high resolution photographs.
- v. Prepare 30 cm x 30 cm sieve plates for mosaic matching.
- vi. Place fibre mesh and waterproof glue over completed sieve plates.
- vii. Dry and polish mosaics on the sieve plates.
- viii. Refer each sieve plate to the special grid-based coding as stated in Stage 2.
- ix. Transport new mosaics to site for reinstallation of mural.
- x. Document the reproduction of mosaics.

Stage 6: Reinstallation of Mural

- i. Repair any cracks on wall substrate.
- ii. Resurface wall substrate with the same material as the existing ones.
- iii. Apply a 30 cm x 30 cm waterproofing membrane coating of acrylic-based sealer Staydry SM100 on wall substrate and at the back of mosaics.
- iv. Staydry SM100 provides extreme adhesion when applied to the wall substrate.
- v. Apply water proofing membrane coating of acrylic-based emulsion Stayflex Super on wall before fixing the mosaics onto wall.
- vi. Stayflex Super is an elastomeric membrane with crack-bridging capabilities.
- vii. Mosaics are reinstalled based on the grid system established earlier following the captured mural image.
- viii. Reinstallation of mosaics beginning from the bottom left moving upwards and sideways.
- ix. All gaps between mosaics including mortar to be filled with Stayflex Super.
- x. Apply water repellent onto the mural after reinstallation of mosaics.
- xi. Document the reinstallation of the mural.

Mosaic Mapping

Prior to the reinstallation of the DBP mural, a mosaic mapping task was carried out to document and record the actual mural form, shape, location, colour range and measurements. This mapping process also captured the actual mural image based on the wall position. This process was very important to retain and maintain the composition of the mural images, different shades of colours, and the location of each mosaic piece during the

reinstallation of mosaics. The documentation and recording of the mural were carried out using high resolution photography and 3D terrestrial laser scanning. These methods were proven to be very successful in managing and recording the mural profile efficiently, particularly the colours, composition, patterns and position of each mosaic on the curved wall.

High Resolution Photography

Before high resolution photography was carried out, the DBP mural surface was divided into small grids. Each grid was coded for easy reference and guidance during reinstallation work. High resolution photography is a technique using a full frame digital single-lens reflex (DSLR) camera equipped with a standard 50 mm lens. Multiple images can be captured in a systematic pattern to produce a close to non-distorted photographic effect. Based on the designated grid system, a scissor lift was used during the photography process. It is important to maintain an appropriate distance between the camera and the mural surface to allow sufficient overlapping of grids during the mapping process. The photography process required good natural lighting to maintain good photo exposure. All photo grids were matched together to obtain the actual mural image for mosaic location and reinstallation.

3D Terrestrial Laser Scanning

3D terrestrial laser scanning was used to record the precise mosaic patterns and dimensions on the curved surface. It is a ground-based technique that captures the specific position and dimension of images, objects or buildings in digital format. It collected data in point cloud form through millions of laser pulses or distance measurements using a stationary laser scanner and a digital single-lens reflex camera. An accurate grid system could be established when mapping was processed using AutoCAD. Utilising 3D terrestrial laser scanning on the DBP mural surface enhanced the ability to differentiate between the various colour shades, which was often difficult with the human eye. This technique was proven to be useful when discerning two or more patterns of semblance colours located in close proximity. 3D terrestrial laser scanning also helped to single out those mosaics which had faded due to exposure to direct sunlight, dirt or dust over the years. By using the properties of point cloud reflection on different colours, the resulting multiple hues could help to point out colours that closely resemble each other which otherwise could not be recognised by photography or regular colour differentiation techniques.

Conclusion

The reinstallation of mural mosaics at the Dewan Bahasa dan Pustaka building in Kuala Lumpur provided a valuable learning experience and challenges to all individuals and organisations involved in the project. Since this mural mosaic reinstallation project was the first of its kind in Malaysia, it was very important to engage suitable consultants and local experts to manage work documentation and execution. Detailed researches, in-depth discussions and technical meetings were carried out at regular intervals to facilitate timely work progress. The

six stages of the mural reinstallation also required good coordination and clear communication among all parties including the building contractor, sub-contractors, building conservator and material suppliers to ensure project completion as scheduled. Unpredictable weather conditions were also a critical factor in this reinstallation project since the mural wall is located outdoors and therefore directly exposed to intense UV light, lightning and heavy rainfalls. Hence, temporary roofing and plastic sheets were fixed over the exterior wall surface to protect the wall substrate and the newly laid mosaics from sunlight, rainwater penetration and dampness. Another challenge faced during this project was the outsourcing of the new mosaics from China, which involved a complex and meticulous process of mosaic design, reproduction, replication, delivery and technical coordination. Despite encountering many challenges during its reinstallation, the DBP mural is now successfully reinstated at its designated location, to be safeguarded and treasured by future generations. It is imperative that the DBP mosaic mural, as an icon of Kuala Lumpur, continues to inspire and stimulate the perpetuity of the Malay language, literature and cultural expressions within a multicultural Malaysian society.

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The author wishes to thank the Ministry of Education, Malaysia, Dewan Bahasa dan Pustaka (DBP), Public Works Department (JKR HQ and JKR WPKL), GDP Architects, Cendekia Teknik Sdn. Bhd., PU Profile Sdn. Bhd., the contractor's building conservator Shahrudin Shabri, Geodelta Systems Sdn. Bhd., Staydry Coatings Sdn. Bhd., and the School of Housing Building and Planning, Universiti Sains Malaysia for making this project and article possible.

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An artist's rendering of the old office block and main hall of the DBP, with the front facade showcasing the unique mosaic mural design.



View of the DBP mural in the 1960s.
(Source: www.pinterest.com)



The DBP mural measures 20.2 m in length with varying heights of 9.6 m to 10.8 m.



The DBP mural is unique because it was built on a curve-shaped wall.



The DBP mural image was originally created in 1961 by 17-year-old Ismail Mustam, whose winning mural design entitled "The Malayan Way of Life and the National Language" captured the essence and spirit of multiculturalism in Malaysia by celebrating ethnic and religious diversity in various sectors of agriculture, industry, education and technology.



Mr. Ismail Mustam, age 71, the DBP mural image designer (second from the right) during a mural workshop conducted at the DBP on 11 March 2015.



The DBP mural contains more than 1.48 million pieces of ceramic mosaics, with each mosaic measuring 11 mm x 11 mm with a thickness of 3 mm.



A dilapidation survey was conducted to determine the condition of the DBP mosaic wall, as well as common mural defects and their causes.



The dilapidation survey revealed that some of the mosaics were loose, detached, broken, missing or had fallen off.



During site preparation, a suitable location was identified on site to build a sturdy working platform to place the scissor lift and scaffolding.



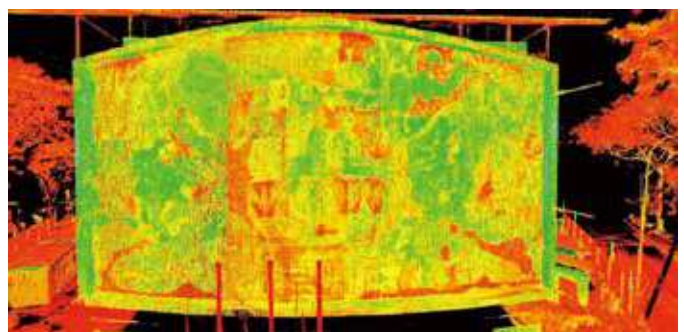
Before reinstallation of the mural, scaffolding was erected on the platform and temporary roofing was fixed on the roof for the entire period of the mural reinstallation works.



Before high resolution photography was carried out, the DBP mural surface was divided into small grids.



A scissor lift was stationed on the platform for the high resolution photography process.



The 3D terrestrial laser scanning of the DBP mural was very efficient in managing and recording the mural profile, particularly the colours, composition, patterns and positions of each mosaic on the curved wall.



During the mosaic mapping stage, each grid was given a special code to be stored in a computer database for cross referencing and rechecking.



An important stage in the conservation works involved the removal of all mosaics before treating the wall substrate.



All cracks on the wall substrate were repaired before resurfacing the wall substrate with the same material as the existing one.



The mural surface was covered with plastic sheets to protect it from direct sunlight and heavy rain.



Separation of salvaged mosaics based on different colours and shades.



The colour matching of mosaics required clear and sharp eyesight.



The reinstallation of mosaics began from the bottom left, moving upwards and sideways.



The mosaics were reinstalled based on the grid system established from the captured mural image.



It was important to check the reinstalled mosaics which were positioned according to the grid system.



Removal of the plastic sheets and dismantling of scaffolding after reinstallation of the mural mosaics.



Regular site inspections were jointly conducted by the Public Works Department (JKR HQ and JKR WPKL), Department of National Heritage, Dewan Bahasa dan Pustaka, consultant architect, consultant building conservator and contractor team members to ensure that the project was completed on schedule.



Final photography process after reinstallation of the mural mosaics was completed.



View of the DBP mural after successful completion of the project in December 2016.



As an icon of Kuala Lumpur, the DBP mosaic mural continues to inspire and stimulate the perpetuity of the Malay language, literature and cultural expressions within a multicultural Malaysian society.



Some Newly Found Cultural Heritage Sites in Mongolia

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The Ivdein Gol deer stone with Runic inscription. In summer 2015, expedition members of the Mongolian-American Joint Project “North Mongolia” discovered a deer stone when they surveyed the basin of the Ivdein Gol River, one of the tributaries of the river Shishged, in Renchinlumbe soum, Khuvsgul aimag. G.Burentugs, who is a member of the above expedition and a specialist in immovable heritages at the Center of Cultural Heritage of Mongolia, recognized that an ancient inscription had been written on the deer stone and he first defined it as an Ancient Turkic Runic inscription. [Burentugs 2017: 113, 116, 119-120]

On October 5, 2016, he gave the author some photographs of this newly-found deer stone. Thus, the first reading of the inscription, which was based only on photographs, was published in June, 2017, although it was partial. [Munkhtulga 2017]

On March 2, 2017, we went to the place where the inscription was found and carried out the first complex epigraphic documentation. (Fig. 6)

The deer stone is located in front of the mountain Khosyn Uzuur. The standing lower part of the deer stone measures 68x30x14 cm in size. (Fig. 1) The upper part, which measures 111x32x15.5 cm, is located 99 cm to the east from the lower part. (Figs. 2, 4 and 5) When we were documenting the upper part, we newly revealed lines of the inscription on its west side. (Fig. 3)

Undoubtedly, the Ivdein Gol deer stone with Runic inscription is absolutely endangered. On August 26, 2017 Mr. Chinbat, who is an employee of the cultural center in the local administration informed me that after our field research, some local people dug below the deer stone to find something else.

The Uvur Khadan Khushuu petroglyph. On March 2, 2017, when Mr. Chinbat guided us to the Ivdein Gol deer stone, he showed us a petroglyph which was drawn with red ochre on a cliff on the front shoulder of a hill called Uvur Khadan Khushuu, the southern end of the Chantsan Mountain. (Figs. 7 and 8) There are depicted two quadrangular frames and a human figure on the coarse surface of the cliff. (Fig. 9) The upper frame measures 24.5x23.5 cm. The strokes of the frame are 1-1.5 cm wide. Its inner side is filled with many drop-like figures. A standing man figure measuring 13.5x9.7 cm is 5.2 cm below the upper frame, along its central axis. The second frame is 6 cm to the left down from the man figure. It measures 23.5x23 cm. Its strokes are 1 cm wide. There are no dots inside this frame.

In technique and stylistic features, the Uvur Khadan Khushuu petroglyph is dated to the Bronze Age.

The Toonongiin Am petroglyph site. On July 7, 2017 we found a petroglyph site in a place named Toonongiin Am in Erdene soum, Govi-Altai aimag. (Fig. 10) The site is situated in front of a mountain at the southern edge of the Mongolian Altai Range. The desert area of Zarmangiin Govi begins to the south of the site.

At the site, there are many boulders which have been engraved with a number of depictions such as humans, camels, ibexes, wild asses, gazelles, foxes, etc. by ancient people. (Figs. 11-16) All the depictions, styles, and scenes of these petroglyphs strongly suggest that the entire site can be dated back to the Late Bronze and Early Iron Ages. [Batbold 2014: 109-110] Hunting scenes and game which still exist among the local fauna have been dominantly portrayed at the Toonongiin Am site. (Figs. 11-15)

Toonongiin Am is the only complex petroglyph site in the Zarmangiin Govi area. However, like many other recently-found cultural heritages, the site has not received any protection from the state and even from the local administration.

The Khulsana Am inscription and petroglyph. Also on July 7, 2017, after our field documentation at the Toonongiin Am site, we worked at the site Khulsana Am where a Runic inscription was found on July 5, 2015. Although it was discovered two years ago, no epigraphic documentation had been carried out there. [Munkhtulga 2015; Munkhtulga 2016; Mönhtulga / Ariyajav 2016]

The inscription is engraved on the southern side of an almost cubic boulder measuring 124x108 cm. (Fig. 17) Its height is 76 cm. Five Runic characters are written in a single line on the right-upper part of the front flat surface, which is 72 cm wide and 56 cm high. The line measures approximately 40.5 cm in length. Character ‘a’, the biggest one, is 11.4 cm high and 9 cm wide.

At 11 cm below the line there is a typical Uighur period tamga, which has not been identified by the former research. (Fig. 17) The tamga is approximately 11x11 cm in size. This tamga may be evidence that the inscription is related not to the Turkic or Early Uighur period but to the second half of the 8th to early 9th centuries.

While we were working at the site, we discovered a petroglyph which is located about 50 m to the west of the inscription. (Fig. 19) An ibex, two foxes and a baby fox are depicted on the south west side of a brown-colored rock measuring 102x40x19 cm. The depiction of the biggest fox is 11.8x4.2 cm.

The Khulsana Am monuments are endangered too. The site is very close to the main road from Erdene soum to Bayan Tooroi. (Fig. 18) Recently, someone has dug below

some boulders at this site including the inscription and a boulder near the petrogllyph.

Ceramic kilns on the bank of the river Tarnyn Gol. In June 2001, when the author was a student at the National University of Mongolia, he discovered some pieces of ceramic potteries in a gully on the north bank of the west tributary of the river Tarnyn Gol in Burd soum, Uvurkhangai aimag. (Fig. 22) In 2006 and 2007, he introduced the gully to both Japanese and Mongolian researchers.

On July 15, 2017 he carried out a survey at the site, which includes the above gully, and gathered some fragments of ceramic potteries.

The north bank of the river in this area has directly become an almost 20 m high terrace. (Figs. 20 and 24) On the slope of the terrace, there are black spots like vertical lines that have flowed down from the upper side of the terrace through rain, snowmelt and sand. (Fig. 21) These comprise burnt earth and fired clay, undoubtedly traces of ancient ceramic kilns. On and near the black spots, there have been spread many pieces of ceramic pottery (Figs. 22 and 23) It can be said that on the basis of the spread of the black spots and pottery fragments, there might have been at least five kilns at the site on the terrace. (Fig. 20)

The collected fragments show that there were only a few (at least eight) types of ceramic potteries produced at this site. (Figs. 29-31 and 37) The form, size, patterns and other features of potteries of each of the kilns of the site are similar to those of the others. (Figs. 32-36) This means that although the kilns were separate, the potteries were generally of the same type. The kilns seem to have been used not only for a certain purpose but also for only a short time. The types of potteries, including a steamer and large potteries with special patterns, indicate that the Tarnyn Gol kilns most probably belong to the Xiongnu period, particularly to the 1st century BC. (Figs. 29, 34-36 and 38)

No remains of any kiln, which must be made of clay, were found—only the above-mentioned black spots of burnt soil. During the last 2,000 years, the kilns might have been eroded by rain and snowmelt flowing down to the south, to the river Tarnyn Gol. (Figs. 21, 23 and 24) Obviously, the erosion at the site could also have been caused by livestock. Small cattle of the local people often go through the terrace to the grazing field on the other side of the river. (Fig. 39) By such erosion, the bottom of the river (but only the part that is below the kiln site, at the foot of the terrace) has been fully covered with clay, which is surely from the kilns. (Figs. 24 and 25) There are also fragments of pottery on the bottom of the river. (Fig. 25) The part covered with clay is 1.8-6.7 m wide. Other parts of the river bottom are covered with stone. (Fig. 26)

I also found traces of two holes which is evidence that suggests the artisans of these kilns mined near the site and used the local clay for their ceramic production. The slipper-shaped bigger hole is located to the south east of the site, on the south bank of the river. (Fig. 27) It is oriented east-west and is 27.5x6.9 m in size. Its depth is

roughly 90 cm. Another one is located 7.2 m to the north of the bigger hole. (Fig. 28) It is oval-shaped and oriented south-east to north-west. It measures 4.5x2.7 m. The depth is approximately 65 cm.

The Tarnyn Gol Xiongnu period kilns, which were used for a certain purpose, might have served local Xiongnu aristocrats. In size and style, most of the potteries from this site are very similar to those of the potteries of the Xiongnu archaeological sites, particularly a settlement on the bank of the Boroo Gol and an aristocratic cemetery of Noyon Uul Mountain. Moreover, some scholars have suggested that the artisans of the Boroo settlement specially made the large stylistic ceramic potteries for the gigantic aristocratic terrace tombs in Noyon Uul. [Tseveendorj / Batsaikhan 1994; Turbat et al. 2005: 17-18] Therefore, it can also be hypothesized that along the river Tarnyn Gol, there must be a settlement of the artisans of the above kilns, although the kilns might have been used for only a short time.

Ceramic fragments from the Khuvsgul Lake shore. Between July 29 and August 2, 2017, the author found fragments of ancient ceramic pottery from a terrace named Tsagaan Guvee, the northernmost shore of Lake Khuvsgul in Khankh soum, Khuvsgul aimag. (Fig. 41) In June, 2017, a hole for sauna water was dug in the south east corner of the yard of the tourist camp “Doloon Uul”, which is situated on the terrace. (Fig. 40) The mound, from which the above fragments of potteries were revealed, was piled with earth from that hole. (Fig. 42) The hole is rectangular and measures 200x160 cm in size. (Fig. 44) Its depth is 160 cm. The walls of the holes contain four main layers and the pottery fragments were most likely in two upper darkbrown layers, which are roughly 18 cm in depth. There were found 70 fragments of two different potteries, 31 small pieces of burnt bones of small cattle, and wood charcoal. (Figs. 43 and 45-50) The pottery fragments are ancient artifacts ever found on the northern shore of Lake Khuvsgul.

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Fig. 1: Lower part of the Ivdein Gol deer stone, from the south
 Fig. 2: Upper part of the deer stone, front side
 Fig. 3: Upper part, right side
 Fig. 4: Back side
 Fig. 5: Left
 Fig. 6: Documenting the inscription



Fig. 7: The Uvur Khadan Khushuu petroglyph site



Fig. 8: Cliff on which the petroglyph was drawn



Fig. 9: Images drawn with red ochre



Fig. 10: The Toonongiin Am site and a boulder with petroglyph



Fig. 11: The boulder with petroglyph, from the south west



Fig. 12: Top of the boulder, from the south east



Fig. 13: Top of the boulder, from above



Fig. 14: A boulder with petroglyph



Fig. 15: Images of ibex and gazelle

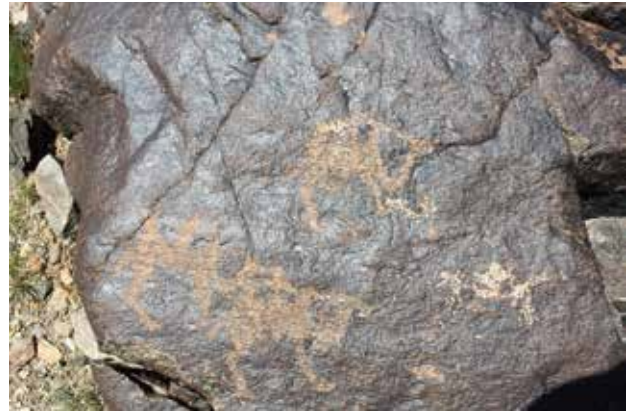


Fig. 16: A camel racing?



Fig. 17: The Khulsana Am inscription, from the south



Fig. 18: Documenting the inscription, from the east



Fig. 19: Petroglyph at the Khulsana Am site, from the west



Fig. 20: Ceramic kiln site on the bank of the Tarnyn Gol, from the south



Fig. 21: Traces of the kilns and the river



Fig. 22. Gully with pottery pieces, from below



Fig. 23: Terrace slope and the river, from above



Fig. 24: The river and the foot of the terrace



Fig. 25: Clay-covered river bottom



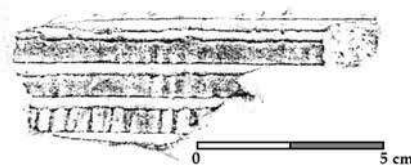
Fig. 26: Stone-covered river bottom



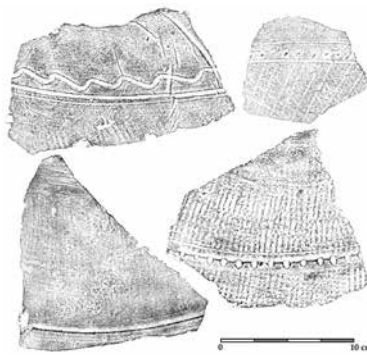
Fig. 27: Slipper-shaped bigger hole for clay mining, from the south east



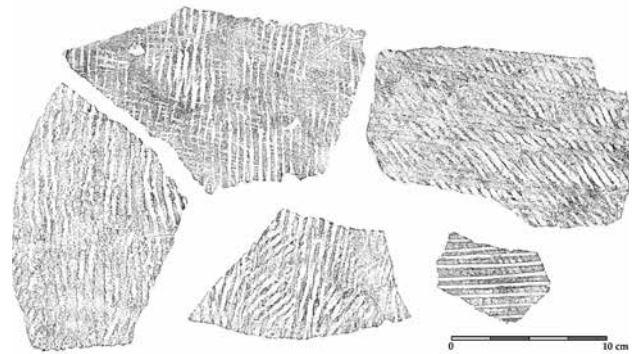
Fig. 28: Smaller hole from the south east



Figs. 29-31: Rim fragments of potteries



Figs. 32-34: Upper wall fragments of potteries



Figs. 35 and 36: Lower wall fragments



Fig. 37: Fragments with bottoms



Fig. 38: Fragment of a steamer



Fig. 39: Local small cattle at the site



Fig. 40: The terrace named Tsagaan Guvee, from the south



Fig. 41: Lake Khuvsgul from the terrace



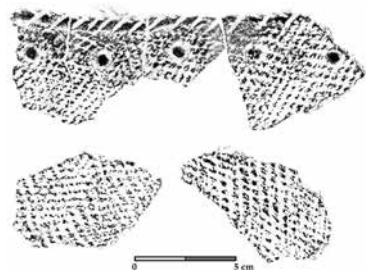
Fig. 42: The earthen mound from which pottery fragments were revealed, from the east



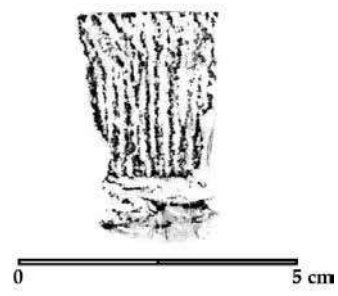
Fig. 43: Ceramic pottery fragments from the mound



Fig. 44: Hole for sauna water, from the west



Figs. 45 and 46: Fragments of a pottery



Figs. 47 and 48: Fragments of a pottery



Fig. 49: Pieces of burnt bones of small cattle



Fig. 50: Wood charcoal



Post Earthquake Conservation, Reconstruction and Rehabilitation of Cultural Heritage in Nepal

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1. Introduction

A disaster never comes with an alarm or an alert to anyone; a disaster is a natural calamity which may be caused by an imbalance or sudden activity of the earth. There was a great earthquake of magnitude 7.6 on the Richter scale on 25th April 2015 in Nepal, which affected not only physical structures or settlements and human beings, but also the cultural heritage of Nepal. Beyond the human casualties and collapse of buildings, around 753 monuments of Nepal were also affected, among which 140 significant monuments were damaged inside the Kathmandu Valley World Heritage Property; which, however, was only 17% of the total number of monuments. Since the disaster, the relevant authorities have been making every effort to implement post earthquake conservation, reconstruction and rehabilitation of cultural heritage.

2. Response to the Earthquake and Emergency Rescue

The 2015 earthquake in Nepal was really dreadful and different to others, with the aftershocks being felt more than a year and half afterwards. However, the Government of Nepal, Department of Archaeology (DoA) worked to rescue all affected cultural heritage in coordination with all other stakeholders, authorities, experts and agencies, and that was the only way to respond in the emergency period. The maximum number of artifacts and elements of affected cultural properties were salvaged and documented in the initial phase and stored as far as possible in secure places.

During this phase, several activities were carried out at the sites for the temporary protection of damaged monuments and also for their long term protection. During this phase, the DoA formed and deployed a number of Emergency Heritage Rescue Teams, consisting of an Archaeological Officer, Engineer/Architect and Photographer in each team. The Rescue Teams focused specially on the documentation of sites, arranging the evacuation and salvage of artifacts and storing them in a secure place.

In the meantime, the DoA started to have a series of discussions and interactions with experts, contractors and related authorities as well as with the stakeholders as much as possible, and also formed the Experts Committees, which could act as an advisor to the government/Department of Archaeology during further processes and activities.

The activities for stabilization and temporary protection of the monuments and sites were carried out as per the recommendations by the initial assessments and by the expert teams as well.

From right after the earthquake, the DoA started to assess

the site and collect information on cultural heritage affected by the earthquake. The department carried out the preliminary assessment and data collection as well as the assessment through International Volunteer Experts, National Experts and National Volunteer Experts. Similarly, previous reports, old photographs, drawings and sketches were utilized as a result of an appeal to the public, due to lack of drawings and photographs of some of the collapsed and damaged monuments.

In the same time, the DoA prepared the drawings and cost estimates for further planning to reconstruct or conserve the damaged monuments as per the adopted six-year recovery master plan (RMP). Similarly, post-earthquake conservation guidelines and a manual were prepared and implemented for post earthquake conservation, reconstruction and rehabilitation.

Due to the lack of original detail drawings and designs of some of the monuments, however, all the monuments must be renovated and reconstructed within an adequate time interval. Therefore, the DoA prepared detail drawings and designs depending on the detail assessment in the six-year plan adopted by the government. Discussion and interaction programs have been conducted internally and externally involving the participation of all related experts, including structural engineers, architects, legal experts, archaeologists, conservators, earthquake engineers, disaster risk management experts, local communities, traditional craftsmen, masons, contractors, NGOs/INGOs and many other stakeholders.

3. Current Status of Post-Earthquake Conservation, Reconstruction and Rehabilitation of Cultural Heritage

The earthquake very badly damaged significant monuments within the Kathmandu Valley World Heritage Property and other heritage sites as well. Altogether, 753 monuments in Nepal were affected by the earthquake, of which 140 (17%) were within the Kathmandu Valley World Heritage Property; but the monuments within the World Heritage Property are much more significant. When the Government of Nepal started to implement the third phase of the recovery master plan—that is, the conservation, reconstruction and rehabilitation of the damaged cultural heritage—several national and international institutions, individuals, governments, intra-governmental institutions and non-governmental organizations came to provide support, either financial or technical. The Government of Nepal started many of the conservation, reconstruction and rehabilitation activities, funding them from its own budget, as well as receiving support from other sources. First of all, the Government of Nepal signed an MoU with the Government of Sri Lanka; then with the governments of China, Germany, and Switzerland in succession; they also received financial and technical support from the Government of

Japan. Similarly, the Department of Archaeology, and the Government of Nepal signed an MoU with UNESCO, Kathmandu Valley Preservation Trust, Heritage and Environmental Foundation Nepal, Miyamoto Relief and many others, through which several conservation and reconstruction projects have been carried out.

Since the implementation of the conservation, reconstruction and rehabilitation activities as per the master plan, several interaction programs, photo exhibitions and many other awareness programs have been carried out. The training program, i.e., training for traditional carpentry, masonry, stonework, wood and stone carvings, has also been carried out for different categories and levels of support in the reconstruction and rehabilitation process.

Among the 140 monuments within Kathmandu Valley World Heritage Properties, 26 monuments have already completely recovered, either through conservation or reconstruction, thanks to the efforts of the Government of Nepal and other supporters—individuals and institutions both within Nepal and outside the country. These 26 completed monuments include Kileshwor temple in Changunarayan Protected Monument Zone (PMZ); Bouddha Stupa in Bouddha PMZ; Shiva temple, Kagewori temple, Nagara Ghar and Sinha Sattal in Hanumandhoka Durbar PMZ; City Entrance Gate, Narayan temple, Harihar Narayan temple, Kedarnath temple, Shankar Narayan temple, Shri Yantra Vatsala temple, Rameshwor temple and Duimaju temple in Bhaktapur Durbar PMZ; Taleju temple, East wing of Sundari Chowk, Yog Narendra Malla Pillar Statue, Sinha Stone Pillar in front of Bhimsen temple in Patan Durbar PMZ; Vasu Bandhu Chaitya, Purano Swayambhu Chaitya, Tashi Gomang Stupa, Pati close to Shantipur temple, Mayur Stone Pillar west of the Swayambhu Mahachaitya, Manjushri Sattal, Bayupur, ... Dyo Chhen and the big bell in front of Anantapur. In the same way, several projects have been running as multiple year projects that take more than a year, which are also going very smoothly. Some of them are: Pratappur temple, Anantapur temple and Shantipur temple in Swayambhu PMZ; Gaddi Baithak, Nautale Durbar, Vamsha Gopal temple, Shiva temple, Gopinath temple, Jagannath temple, Agam Chhen, Trailokya Mohan temple and Dashavatar temple in Hanumandhoka Durbar PMZ;

Mani Mandap, Krishna mandir, Char Narayan temple and Bhai Degah in Patan PMZ; Silu Mahadev temple, Vatsala temple, Siddhi Laxmi temple, Tava Sattal, National Art Museum building and Puzari math in Bhaktapur PMZ; Changu Narayan temple, Amatya Sattal and Laxmi Narayan temple in Changu Narayan PMZ; Panch Deval, Pandra Shivalaya, Sattal, Viswa rupa temple, and Ram mandir in Pashupati PMZ.

Beyond the abovementioned project works, the Government of Nepal/DoA and other stakeholders (institutional and individual) have been launching other conservation and reconstruction projects in this fiscal year, comprising both multiple year and one-year projects. Therefore, the post-earthquake conservation, reconstruction and rehabilitation activities are going very smoothly; which seems to be a very positive indicator that the government can complete this work declaration by the government and recovery master plan.

4. Conclusion

A significant amount of cultural heritage was affected and damaged by the 2015 earthquake in Nepal, especially in the Kathmandu Valley World Heritage Property. The Government of Nepal has carefully and seriously taken action to address the situation. With the government budget allocated for post-earthquake conservation, reconstruction and rehabilitation, it is possible to carry out the activities smoothly with the support of Nepalese society and the international community, including individuals, institutions and governments as well. Therefore, the post-earthquake rehabilitation activities have been going very smoothly, and it seems that the Government of Nepal will be able to complete this conservation, reconstruction and rehabilitation work within its targeted time frame. Most importantly, as it was very difficult to find detailed documentation of some of the monuments which had either collapsed or were partially damaged by the earthquake, the Department of Archaeology of the Government of Nepal has started initial activities for adoption of the Cultural Heritage Information Management System (CHIMS) with the support of the UNESCO Office in Kathmandu. It is one of the positive developments in the field of cultural heritage in Nepal.



1.1.3 Bansa Gopal, Hanumandhoka, Kathmandu
— Current status: reconstruction



1.2.1. Degu Taleju, Hanumandhoka before earthquake



1.2.2 Degu Taleju after earthquake



1.2.3 Degu Taleju after conservation



1.3.3 Nagara Ghar after conservation (source: DoA)



1.4.3 Taleju Temple – ongoing conservation



1.5.3 Singh Sattal after conservation



2.1.1 City Entrance Gate, BKT before earthquake



2.1.2 City Entrance Gate, BKT after earthquake



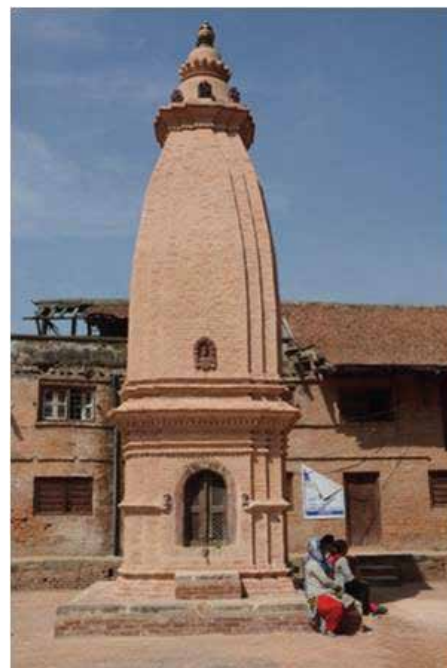
2.1.3 City Entrance Gate, BKT after reconstruction



2.2.1 Narayan Temple, BKT before earthquake (source: DoA)



2.2.2 Narayan Temple, BKT after earthquake



2.2.3 Narayan Temple, BKT after reconstruction



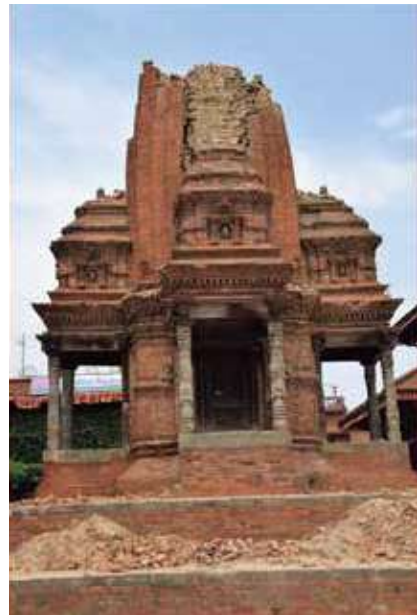
2.3.3 Dumaju Temple, BKT after reconstruction



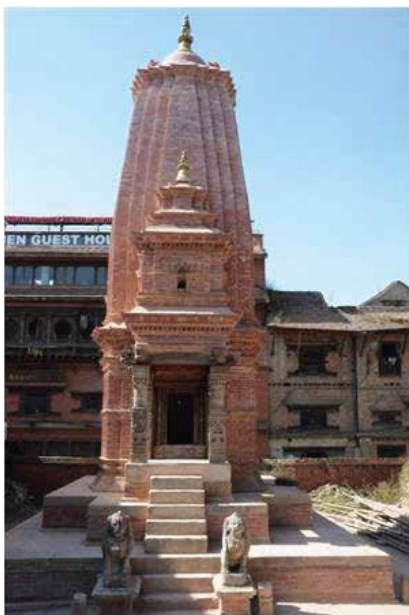
2.4.3 Harihararayan Temple, BKT after reconstruction



2.5.1 Kedarnath Temple, BKT before earthquake (source: DoA)



2.5.2 Kedarnath Temple, BKT after earthquake



2.5.3 Kedarnath Temple, BKT after conservation



2.6.3 Rameshwor Temple, BKT after conservation



2.7.3 Shankar Narayan Temple, BKT after reconstruction



2.8.3 Sriyantra Vatsala Temple, BKT after conservation



3.1.1 Kileshwor Temple, Changu before earthquake



3.1.2 Kileshwor Temple, Changu after earthquake



3.1.3 Kileshwor Temple, Changu after conservation



4.1.3 Bouddha Stupa, Bouddha after renovation



5.1.3. Vasubandhu Chaitya, Swayambhu after conservation



5.2.3 Tashi Gomang Stupa, Swayambhu after reconstruction



6.1.3 Yognarendra Stone Pillar Statue, Patan after conservation



6.2.3 Talezu Temple, Patan after conservation



6.3.3 Sundari Chowk-East Wing, Patan after conservation

ACCU Note:
Numbers in the captions are
author's reference numbers.



The Kyeburn Diggings: Restoration of Two 19th Century Gold Mining Sites.

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Introduction

In the mid to late 19th century the riches of the Otago goldfields provided a massive income for the Government of New Zealand and a living for the thousands of migrants who came to the New Zealand gold fields to make their fortune (Figure 1). This aspect of Otago and New Zealand's history is significant as the goldfields were vital in the formation and establishment of the 'colony' of New Zealand when Pakeha (Europeans) arrived in large numbers from the 1840s onwards. Tangible evidence of the Otago's gold mining history use to be found almost everywhere where gold was discovered particularly along major rivers and feeder streams. However, much of this heritage has been lost or damaged in the last 30 years due to changes in land use such as from hydroelectric power schemes, pastoralism and viticulture and more recently population pressure as once isolated areas of Otago become desirable for holiday retreats and tourism.

This article describes a project to preserve two goldfields heritage sites damaged by past earthworks at a location known as the *Kyeburn Diggings* (Figure 2). This large goldfields landscape has been little affected by the various factors noted above mostly due to its isolation. It contains an array of gold mining sites and features where whole gold mining systems and occupation areas can still be seen set against a stunning landscape of mountains and high country farmland. All these sites are protected by law under the Heritage New Zealand Pouhere Taonga Act 2014. In 2017, Heritage New Zealand worked with Transpower, a Government State Owned Enterprise responsible for the country's National Power Grid, to manage two gold mining sites at the Kyeburn Diggings (Figure 3). Some of Transpower's power towers were built in these sites decades ago causing damage and since this time vegetation had encroached on the towers and therefore the sites. Together, Heritage New Zealand and Transpower cleared the vegetation to reveal stone structures built by gold miners in the 19th century and never seen by the public for many years.

The Kyeburn Diggings in the 19th and early 20th centuries

Historic records such as seen through old newspapers, government reports, photographs and surveyors maps, provide some insight into the history of gold mining at Kyeburn. Gold was recorded in 1861 on a branch of the Kyeburn River by a Government surveyor when he visited a miner named Leggatt, but his initial findings were reported as not good even though there were miners there (Daily Southern Cross, 1 November 1861, Vol. XVII, Issue 1448, page 4). However, by 1862 there were hundreds of European miners in Kyeburn and by 1863 it is estimated 2000 people were living there with local newspapers often recounting the facilities available such as hotels, butcheries, a bakery etc. As with many locations 'rushed' for gold in Central Otago between 1861 and 1863, the easily panned

gold was quickly exhausted and hundreds of miners moved onto the next rush, many to the West Coast of the South Island. However, gold mining continued at Kyeburn up until the early 20th century and the community still numbered in the hundreds when a new school was built in 1889. The first Chinese miners came to New Zealand in 1865 and by 1869 were mining at most goldfields in Otago. Most were from the Canton region. Chinese miners arrived at Kyeburn probably by *ca.* 1867, going on historic newspaper reports, and profited not only from mining new areas but by re-mining abandoned workings. They were hard working and although were shunned by many Europeans, they contributed to the local economy and community such as by donating financially to local hospitals, supplying fresh fruit and vegetables from their gardens to the local market and in some towns celebrating Chinese New Year alongside Europeans.

There is only one known extant photo of the Kyeburn Diggings which is believed to have been taken around 1877 by travelling photographer William Hart (Figure 4) (Source: 'Danzi's Pass, Kyeburn Diggings, Otago, NZ', William Hart, Museum of New Zealand Te Papa Tongarewa Registration No. C.014912). The photograph was taken on a glass plate using the wet collodion process and so produced a very detailed and clear picture that has picked up numerous features in the landscape at some distance (features identified have been notarised by the author). This photo beautifully shows the mining landscape at Kyeburn against a Wintery mountainous backdrop and is, by chance, overlooking the two locations where site restoration works were undertaken for this project (Figure 4). The photo shows remnants of large and small scale mining activities from different periods of mining at the diggings. Water races (such as a large one running along the mountainside on the left of the photo), reservoirs, sluice faces and mining tailings can be seen. Also, on the left side of the photograph a butchery and most likely the edge of a shop and hotel built of timber and corrugated iron can be seen. This is where Danseys Pass Coach Inn is located today built in the 19th century. The photo also shows the location of houses and enclosures, many built of sod turf, as well as the bridge across the true right branch of the Kyeburn.

Only one nineteenth century photograph of miners at Kyeburn has been sourced at present and this is of Chinese miners. This photo may date to around 1900 when Reverend Don, a Presbyterian Minister, was visiting Chinese around Otago with the aim of converting them to Christianity (Figure 5) (source: Chinese gold miners and Reverend Alexander Don at the Kyeburn diggings, Otago. Ref: 1/2-019156-F. Alexander Turnbull Library, Wellington, New Zealand. records/22883508). He was not very successful in this endeavour irrespective of what the photo imbues. Although it appears the Chinese are dressed in

their best clothes for the staged photo, the photo provides a face to the Chinese who were mining at Kyeburn. Chinese miners continued to mine at Kyeburn until at least the 1920s.

Historic survey maps provide an indication of the mining, occupation and business activities being undertaken at Kyeburn and sometimes by whom. For example, in Figure 6 can be seen survey map SO 4799 dating from 1883. This survey lists European miners and a Chinese mining company with mining permits within the surveyed permit areas. In Figure 7 is shown a close view of the surveyed mining permit areas. Here can be seen the dams, water races and old gold workings owned by the miners with the Chinese mining company's 'Gee Wee's race' noted as well as the European miners race called 'Meikle's race'. In the cropped survey map SO 785 in Figure 8, a number of buildings and structures are shown such as the bridges, houses, huts, gold workings and the layout of the Danseys Pass Coach Inn buildings. When this survey map is referenced against Hart's *ca.* 1877 photo, it appears that many of the buildings and structures from the 19th century were still being used until this time (see Figures 4 & 8).

The importance of survey maps SO 4799 and SO 785 is that these surveys are in the location of where restoration works were undertaken at Sites 1 & 2. In addition, SO 4799 also shows the names of the persons who probably created the mining remnants at Site 1.

The Kyeburn Diggings today

This large gold field has had very little formal archaeological surveying probably due to it being located on a large pastoral lease (farm) away from the risks of hydroelectric power, viticulture and private development, and due to its isolation. The most detailed survey of this goldfield was undertaken in 2007 by the author and archaeologist Shar Briden when the lease of the property was being reviewed by the Crown. This survey showed that archaeological sites were present all along for the 8km surveyed on either side of the Kyeburn River and up to 3km inland of its river banks (Figure 9). This survey only scraped the surface of what is present in the wider landscape, but confirmed the high intactness of the numerous sites and their extent from water races starting at high altitude in the mountains many kilometres from the mining itself right down to the workings on the Kyeburn (see Figures 10 to 22).

All the types of sites and features associated with this goldfield as shown in the *ca.* 1877 photograph and 1918 survey could be seen plus many more mined areas not recorded on old survey plans or in any other historic records. In addition, a number of the historic sites seen in the *ca.* 1877 Hart photo and the 1918 survey map SO 785 could still be found today (see Figures 23 to 28). Whether the archaeological remains of mining at the Kyeburn Diggings are the result of European or Chinese miner's activities cannot be determined by the way sites look as both groups mined in a similar manner. This is a characteristic of many of the 19th century Otago gold mining sites. Even when European or Chinese artefacts are found at 19th century miners hut ruins, items such as food bowls and drink bottles were often recycled by both

groups due to the isolated nature of their way of life, and so this too is not always an indicator of which ethnic group lived there. Fortunately for this project, as noted above, we can associate named European and Chinese miners with one of the sites, Site 1.

Overall, the Kyeburn Diggings are unusual and special for their high state of preservation and even though many of the sites which make up this mining and occupation archaeological complex cannot currently be seen by the public, those that can be seen today illustrate the important contribution they make to Otago's gold mining history.

Given the significance of the Kyeburn Diggings, damage to its gold mining heritage goes back many years and has been the result of both human and natural processes (see Figures 29 to 38). Earthworks for various Government and private company projects, vegetation encroachment, farming activities, flood events and natural changes in the path of the river have all contributed to the loss of sites. Most of the damage by human processes appears to be in particular locations as a result of initial earthworks for a project and then additional damage being done when the same locations have been revisited over the years for more project earthworks or vegetation clearance. This has contributed to the destruction or large scale damage to sites in the vicinity of the Danseys Pass Coach Inn, along the alignment of Towers carrying the power lines from the Roxburgh Dam (opened in 1956) and where smaller power companies have installed power poles. Day-to-day farming activities over the decades have damaged sites but not to the same extent due to the relatively light impact that sheep farming has on historic mining sites. Common reasons for damage by human activities on Otago goldfields sites are a lack of understanding of the importance of heritage sites and landscapes to local and regional history, changes in attitudes to what heritage is important to people, and an unfamiliarity of the law with regard to the legal protection of archaeological sites.

Damage by exotic vegetation growth on sites would be the next major impact on the archaeology at Kyeburn after earthworks. The exotic pine, broom and gorse has completely enveloped many sites and as the trees and plants growing on the sites and features get bigger, the roots 'blow out' the stone and earth features. For large trees the additional risk comes from wind throw when trees are toppled by high winds ripping up the roots with the tree then falling on top of the site. The heavy vegetation growth also affects the amenity value of the archaeology. In areas where the archaeology can be viewed from a public place, vegetation encroachment gradually hides the archaeology and lessens its value to the public.

Restoration of gold mining sites at the Kyeburn Diggings

One area from where the public can readily see the Kyeburn Diggings is from the public road which runs up the Kyeburn River called Danseys Pass Road. This road originates in the Maniototo, Central Otago and takes people north over the Kakanui Range at 935masl and down into the Waitaki District. The gold workings come right up to the road at places and can also be seen on the other side of the river from the road (see Figure 9).

However, many of the quality workings are obscured by vegetation with the damaged parts of the sites being more obvious.

Some sites on either side of the river were damaged initially back in the 1950s during the building of towers for power lines from the Roxburgh hydroelectric power scheme. The huge towers are part of the country's 12,000km National Grid network which takes power from various power generations schemes around the country to suppliers (go to www.transpower.co.nz for a history of New Zealand's national power grid). Since the initial tower building, more damage has occurred from maintenance works around the towers but also from some farming activity and vegetation encroachment. The State Owned Enterprise called Transpower has been responsible for the National Grid since 1994 and as such any towers that run through Kyeburn. Because of this, Transpower partnered up with Heritage New Zealand to undertake vegetation clearance and restoration works along part of their tower alignment which runs through sites at Kyeburn so as to manage past damage and uncover and promote the well preserved areas of the sites. This would help in the management of the sites in the long term and show the public heritage which had been hidden along the Danseys Pass Road for many years.

In Figures 25, 29 to 35 can be seen the two sites (Sites 1 & 2) which were focused on for the restoration works and their equivalent locations are marked on the *ca.* 1877 photograph and 1918 survey map (see Figure 4 & 8). One site lies on the true right of the Kyeburn River by the Danseys Pass Road (Site 1) and the other on the true left of the river on a terrace (Site 2) (see Figures 2 & 3). These photographs show how past earthworks have damaged these sites and how vegetation has encroached on the intact features. At Site 1, earth and vegetation had been dumped into a stone-lined miners' tail race (Figure 38). The aim of the works was therefore to clear vegetation from the intact archaeological features to make them visible to the public so as to detract from the past impacts on the sites. The work required the vegetation to be cut and cleared by hand as machinery would damage the features. A large digger was used to help with the clearance by placing it in a location where it could lift vegetation away but not damage the archaeology. It was also used to dig out the miners' tail race to reveal the remains of the original stone lined walls.

The results of the restoration works can be seen in Figures 39 to 46. Not only do the sites look more visually interesting for the public, but now the remnants of the gold mining activities can be better understood and interpreted for the sites. Of particular interest is the beautifully built dry stone wall at Site 1 built as part of a large tail race to take water and sediment away from the sluicing's (Figures 43 to 44). This race would have had gold saving apparatus in it at some stage and at its base today there will be a layer of sediment which still has uncaptured gold in it. The craftsmanship of this tailrace is of high quality and so the miners who built it were experienced. Looking at the *ca.* 1877 photograph, it appears this tail race was built through the older tailings after this time possibly by the miners noted in the 1883 survey map. At Site 2, the gold tailings are more extensive than in the *ca.* 1877 photograph and as such also show a continuation of mining at this location for some years since the photograph was taken.

Conclusions

This small project to uncover gold mining heritage sites at the Kyeburn Diggings is a good example of co-operation between two parties with a vested interest in managing heritage in a location where important infrastructure assets are located. Now these gold mining sites are more exposed, in the future Transpower will be able to direct contractors undertaking works on the power network on how to avoid these sites and manage them. In addition, Transpower and Heritage New Zealand have provided the public with an opportunity to see what heritage lies along this stretch of isolate road which will be soon supplemented by interpretations panels.

Acknowledgements

My thanks to Dougall Campbell of Transpower for recognising the importance of this mining site as part of the management of its power network assets. Also, thanks to Electrix for undertaking the vegetation clearance works required during the restoration.

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New Zealand Archaeological Assn online site recording scheme 'ArchSite'.

Land Information New Zealand "LINZ" landonline service.



Figure 1. Location of Otago goldfields, South Island, New Zealand.



Figure 2. Location of the Kyburn Diggings, Maniototo, Central Otago.

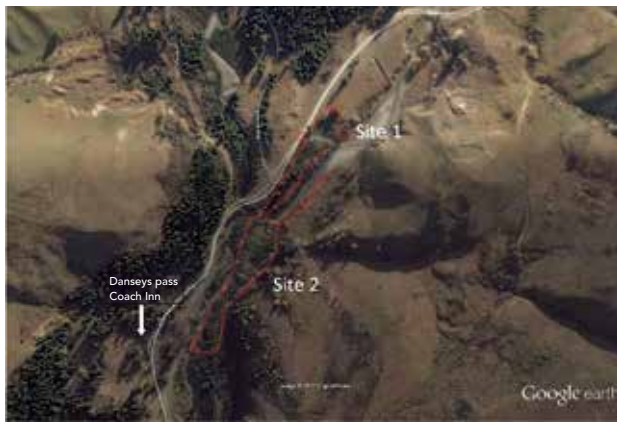


Figure 3. Google earth photo of above some of the Kyburn Diggings with Sites 1 and 2 indicated where the restoration works were undertaken.



Figure 4. The *Kyburn Diggings* taken by William Hart possibly around 1877. Structures have been identified in the photo by the author such as 'bridge' and 'House 1'. Sites 1 & 2 as they looked in ca. 1877 are highlighted (source: 'Danseys Pass, Kyburn Diggings, Otago, NZ', William Hart, Museum of New Zealand Te Papa Tongarewa Registration No. C.014912).



Figure 5. Reverend Don giving a bible lesson to Chinese miner's ca. 1900 AD. Note the Cantonese text on the Christian poster of Jesus. (source: Chinese gold miners and Reverend Alexander Don at the Kyburn diggings, Otago. Ref: 1/2-019156-F. Alexander Turnbull Library, Wellington, New Zealand. records/22883508)

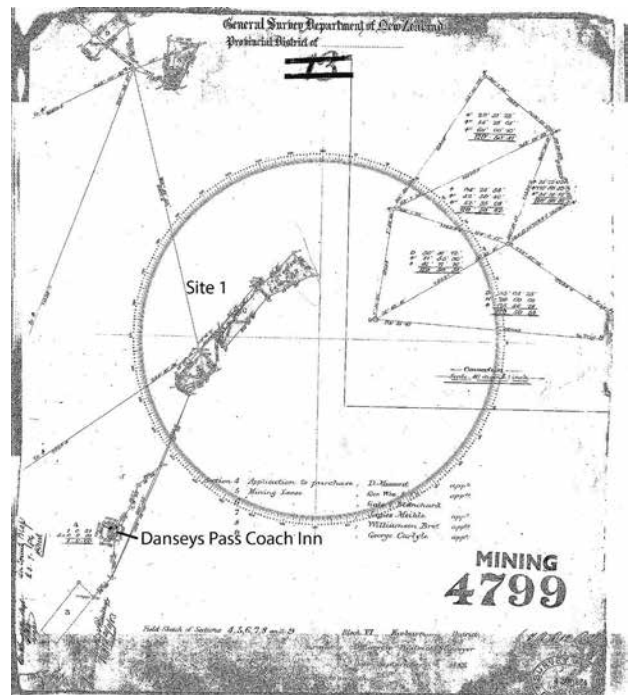


Figure 6. Survey map SO 4799 from 1883 which lists the Europeans and the company of Chinese who were mining where Site 1 is today (Map source: LINZ).

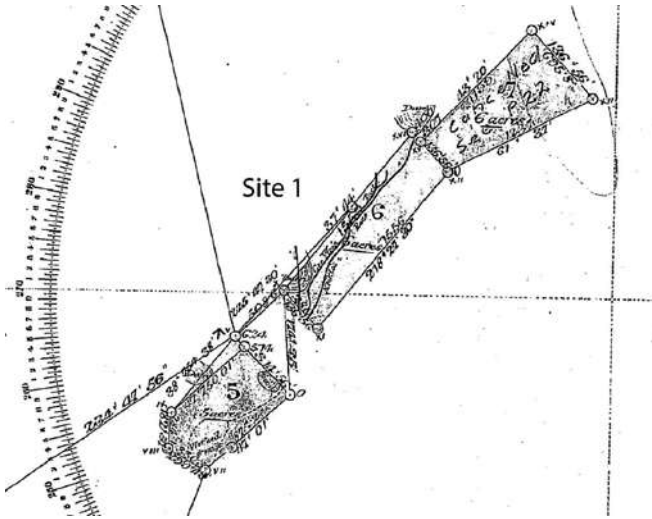


Figure 7. Cropped area of survey map SO 4799 showing Site 1. This map shows the names of who owned the water races on this terrace: 'Gee Wee's race' and 'Meikle's race' (Map source: LINZ).



Figure 8. Survey map SO 785 from 1918. Buildings and structures from the Hart ca. 1877 photograph appear to be still present (Map source: LINZ). In addition, this map confirms that some of the gold workings in the location of the restoration works at Site 1 can be associated with named European and Chinese miners.



Figure 9. Archaeological sites identified on the Shortlands Pastoral Lease during Briden and Schmidt's survey in 2007.



Figure 10. Gold mining sluice faces and tailings from the 19th century (Photo: Briden & Schmidt 2007).



Figure 11. Herring bone patterned gold mining sluice faces and tailings from the 19th century (Photo: Briden & Schmidt 2007). Thousands of stones have been moved and stacked during the mining of the ancient alluvial terrace.



Figure 12. Gold mining artefacts are still present on the gold tailings (Photo: Briden & Schmidt 2007).



Figure 13. One of the large earth reservoirs sitting high on the hills above the gold workings nearer the Kyeburn River (Photo: Briden & Schmidt 2007).



Figure 14. The remnants of an old stone house near the Kyeburn and gold workings. This could be 'House 5' as indicated in Figure 4 (Photo: Briden & Schmidt 2007).



Figure 15. A 19th century surveyor's trig marker (probably 1870s) high up in the mountain tussock. From these elevated points, land boundaries and mining claims were surveyed from and referenced (Photo: Briden & Schmidt 2007).



Figure 16. A high altitude mining reservoir made of earth. Four mining water races can be seen skirting the mountainside behind the reservoir with one of these races feeding water to the reservoir (Photo: Briden & Schmidt 2007).



Figure 17. A surviving sod walled hut. A mud brick hut was also located near this structure. These could have been used by miners (Photo: Briden & Schmidt 2007).



Figure 18. One of the huge earth walled gold mining water reservoirs. The pipework to control the flow of water out of the reservoir and into a 'header' race to the mining area is intact (Photo: Briden & Schmidt 2007).



Figure 19. A water 'header' race which took water away from the reservoirs to the gold mining area to be used for sluicing (Photo: Briden & Schmidt 2007).



Figure 20. Sluice faces and extensive gold tailings resulting from the mining of an ancient river terrace using water under pressure sourced from reservoirs (Photo: Briden & Schmidt 2007).



Figure 21. A cobbled entranceway to a building once located near the old Kyeburn mining town. The poplar trees mark the area of an extensive enclosure perhaps used to keep animals or for gardens (Photo: Briden & Schmidt 2007).



Figure 22. An aerial photograph of the gold workings further down the Kyeburn River from the Danseys Pass Coach Inn. Mining on the left and right of the river can be seen with the mining of the left side of the photograph most affected by vegetation encroachment. This can indicate an older mining area. Note the distinctive group of 'herring bone' gold tailings (Photo: Kevin Jones).



Figure 23. 19th century schist bridge abutments. These are from the bridge that can be seen in Hart's ca. 1877 photograph of the Kyeburn Diggings in Figure 4 (Photo: Matthew Schmidt).



Figure 24. The ruins of the schist 'Hut' seen in Hart's ca. 1877 photograph of the Kyeburn Diggings in Figure 4 (Photo: Matthew Schmidt).



Figure 25. Gold tailings at Site 1. These can be seen in Hart's ca. 1877 photograph of the Kyeburn Diggings in Figure 4 (Photo: Matthew Schmidt).



Figure 26. The 'Schist House' at Site 2 as indicated on Survey Map SO 785 from 1918 in Figure 8 (Photo: Matthew Schmidt).



Figure 27. View over where 'House 1' used to be present which can be seen in Hart's ca. 1877 photograph of the Kyeburn Diggings in Figure 4 (Photo: Dougal Transpower).



Figure 28. Artefacts exposed in an access way cutting related to the occupation of 'House 1' (Photo: Matthew Schmidt).



Figure 29. 19th century gold tailings damaged through the bulldozing of an access way at Site 1 (Photo: Matthew Schmidt).



Figure 30. Damage to 19th century gold tailings through using earthworks machinery to clear vegetation at Site 1 (Photo: Matthew Schmidt).



Figure 31. Exposed 19th century rubbish pit from access way earthworks near 'House 1' (Photo: Matthew Schmidt).



Figure 32. Damage to gold mining tailings and sluicings through past works on a power network tower and vegetation clearance at Site 2 (Photo: Matthew Schmidt).



Figure 33. Exotic vegetation encroachment on gold mining workings at Site 2. This site used to be able to be viewed easily from the Danseys Pass Road seen in the background (Photo: Matthew Schmidt).



Figure 34. Exotic vegetation encroachment on gold mining workings at Site 2. This site used to be able to be viewed easily from the Danseys Pass Road and the 1877 bridge seen in the background (Photo: Matthew Schmidt).



Figure 35. Exotic vegetation encroachment on the gold mining stone tail race at Site 1 (see Figures 43 & 44 below). This tail race also would have been able to be seen from the road in the background (Photo: Matthew Schmidt).



Figure 36. A water race from one of the Kyeburn Diggings large earth water reservoirs which has been cut through by a farm access road (Photo: Briden & Schmidt 2007).



Figure 37. This area of gold workings is falling into the Kyeburn River from erosion of the steep river bank (Photo: Briden & Schmidt 2007).



Figure 38. The stone-lined tail race at Site 1 full of vegetation debris dumped in the feature over the years. The race may have originally been ca. 2m deep with stonework along both sides (Photo: Matthew Schmidt).



Figure 39. Vegetation being removed from the stone-lined tail race at Site 1 during restoration works by Heritage New Zealand & Transpower. Note the stone revetting (Photo: Matthew Schmidt).



Figure 40. Vegetation clearance work being undertaken by Electric contractors at Site 1 (Photo: Matthew Schmidt).



Figure 41. The exposed 19th century gold mining tailings and possibly a hut site (centre of the picture) after vegetation has been cleared at Site 1 from the area shown in Figure 30. These features can now be seen from Danseys Pass Road (Photo: Dougall Campbell, Transpower).



Figure 42. Site 1 viewed from the other side of the Kyeburn River near 'House 1'. The historic mining remnants can be clearly seen as can Danseys pass Road unobstructed by vegetation (Photo: Dougall Campbell, Transpower).



Figure 43. The beautiful dry schist stone walling of the roadside tailrace at Site 1 after vegetation clearance. This is the same tailrace obscured by vegetation in Figure 35. The stone has originated from the piles of gold tailings which used to fill the space next to it. Skilful experienced miners would have built this wall (Photo: Dougall Campbell, Transpower).



Figure 44. A close view of the dry schist stone wall stonework seen in Figure 43 (Photo: Dougall Campbell, Transpower).



Figure 45. The exposed gold tailings of Site 2 as seen from Danseys Pass Road after vegetation clearance. These are the tailings seen in Figures 33 & 34 (Photo: Dougall Campbell, Transpower).



Figure 46. More exposed gold tailings of Site 2 as seen from standing on the site with the road in the background. These are the tailings seen in Figures 33 & 34 (Photo: Dougall Campbell, Transpower).



History of the Architectural Conservation Division of the Department of Archaeology in Sri Lanka

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Among the divisions of the Department of Archaeology, one important division is the Architectural Conservation Division.

The main duties and activities of this division are:

- i. Conservation of all protected monuments as well as protection of ancient city centers and maintenance of environs
- ii. Preparation of conservation plans, layout of city centers
- iii. Control and supervision of conservation/construction work.
- iv. Documentation and Recording of monuments and sites
- v. Remedial measures for monuments

In order to fulfill these duties there are three Chartered Architects, one Civil Engineer, forty Architectural Conservationists and twenty Draughtsman working in this division. These officers are responsible for conservation of monuments in all nine provinces in Sri Lanka; they are also involved in implementation projects, and preparation of condition assessments and documentation.

The history of the Architectural Division dates back to the years before 1890.

Years Before 1890

During the period of British governance under Governor Sir Hercules Robinson (1871), Mr. Joseph Lawton photographed the archaeological legacy found throughout the island, particularly at the ancient capital cities of Anuradhapura and Polonnaruwa with financial and other assistance provided by the government of the island. This event marked the start of documentation of historical monuments in Sri Lanka.

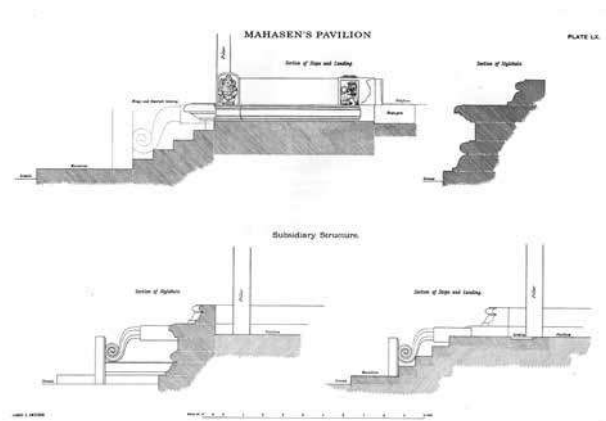


Photographs taken by Lawton

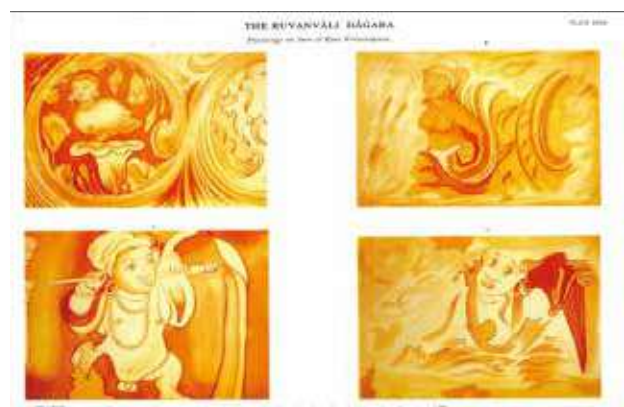
In 1873, under instructions given by the Governor, Sir William Gregory, a survey of Ancient Anuradhapura was carried out by Mr. Casher, and it contained even the measurements of dagabas. Mr. J.G. Smither prepared scaled drawings of ruin structures of Anuradhapura under the direction of Sir J. Ferguson in 1877 and it was released under the title of "Architectural Remains of Anuradhapura" in 1894.



Drawing prepared by Smither



Drawing prepared by Smither



Drawing prepared by Smither

During the years 1884-1886, Mr. Burrows (of the Ceylon Civil Service) was assigned the responsibility of supervising archaeological matters related to the monuments and other antiquities of Anuradhapura and Polonnaruwa. He took further steps to promote architectural conservation such as the clearing of thick jungles. Old roads were restored and new roads were constructed.

Years 1890 – 1910

In order to carry out archaeological works, a permanent

fund was allocated in 1890. As a result of explanations to the State Council by Sir Arthur Gordon, the Governor of Ceylon, on 29th November 1889, Mr. H.C.P. Bell (of the Ceylon Civil Service) was appointed as the first Commissioner of Archaeology in February 1890. **Mr. H.C.P. Bell, who was the Government Agent of Kegalle and prepared the Kegalle Report, assumed his position and commenced archaeological operations in North Central Province on 7th July 1890. This event marked the official birthday of scientific archaeology on the island.**

The area was divided into nine portions in Anuradhapura, to facilitate the archaeological activities more efficiently. However, Bell's main duties dealt with exploration. As a result, exploration and site clearing were carried out, with few preventive measures being implemented.

The archaeological survey that had been limited to North Central Province was extended to Central and Sabaragamuwa Provinces in 1894, which means the rehabilitation of Barandi Kovila at Seethawaka and exploration of Sigiriya were the main activities. After the clearance of thick jungle in Sigiriya, land surveying commenced using a theodolite, with the lower gradients surveyed by traverse methods in 1896.

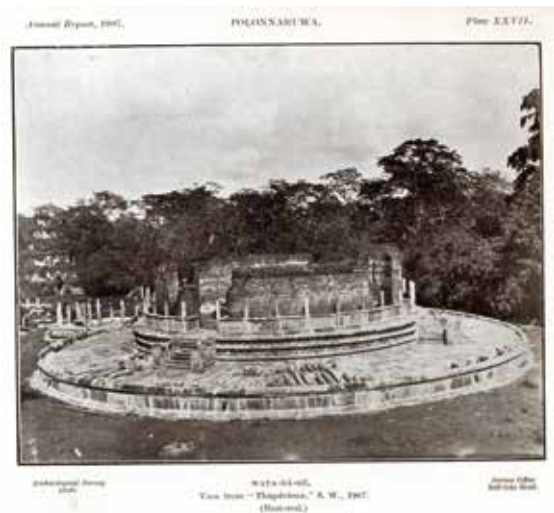
In May 1900, archaeological activities commenced in Polonnaruwa following the same systematic conservation methods as in Anuradhapura. During this period, surveys in Anuradhapura, Polonnaruwa and Sigiriya were completed satisfactorily. Erecting iron platforms and conserving walls in Sigiriya were also done accordingly. Similarly, conservation activities were effected in North Western and Central Provinces and the Kegalle District.



Documentation of Sigiriya and erecting iron platforms

Years 1910-1930

During this period, the main aim of the Department of Archaeology was the declaration of monuments and sites and maintaining them. Accordingly, Anuradhapura, Polonnaruwa and Sigiriya were well maintained. In addition, Mihintale, Kushtarajagala, Arankele, Yapahuwa, Nalanda and Berendi Kovil were also preserved and maintained. Special attention was paid towards preservation of the environment and landscaping.



Maintenance work at Vatadage, Polonnaruwa

It is stated that the principles and theories of architectural conservation grew during this period. At that time, the Department of Archaeology did not take a clear position as to whether a particular monument should be conserved, or restored to use for devotees. Although standing orders had been prepared there were no clear conservation principles to be seen. Though Mr. Bell showed interest in conservation, he did not pay attention to the principles. The first person concerned about the principles of architectural conservation was Mr. R. Ayerton, but after his sudden death, the debate did not continue. Therefore, a number of monuments that had already been excavated before 1914 were destroyed without being conserved. Mr. A.M. Horcart (1922-1924) who paid special attention to the situation, attempted to introduce the following fundamentals, i.e., "Excavation must be carried out if only possible for conservation and maintenance."

During the governorship of A.M. Horcart, the relationship between the Department and public expanded even further. There were frequent requests from the public for the conservation, rehabilitation or maintenance of heritage places. Permission was issued under certain conditions for selected cases and the applicant had to pay the cost of conservation. Similarly, separate workers were appointed for preventive conservation and regular maintenance of the conserved monuments.



Tomb of Mr. R. Ayerton in Hambantota

Years 1930 – 1950

An important event that took place during this period was Mr. C.F. Winzer's retirement from government service and Mr. Senarath Paranawithana's assuming his duties as Acting Head of the Department. Mr. A.M. Longhurst, who was the Archaeological Superintendent of India, had been appointed as the Archaeological Commissioner since 8th October 1935, but with his retirement in 1st October 1940 Mr. Paranawithana was assigned as Commissioner of Archaeology.

With this appointment, the main office, which was situated in Anuradhapura, was shifted to an allotment at Colombo Museum and later shifted to the present premises.

During this period, the social and economic background of the country badly affected the architectural conservation process. The world economic depression of 1931 and the malaria epidemic of 1934 had an adverse effect on archaeological investigations, and Mr. Paranawithana and others became victims of the epidemic. Similarly, the Second World War (1939 – 1945) had an indirect impact on Sri Lanka, and archaeological activities were badly affected as a result.

When there was an indication that Sri Lanka may gain independence, especially in 1946 when the independence movement was developing in earnest, a change appeared in the minds of the people, coupled with a rise in national pride and a tendency towards disapproval of the activities of foreign archaeological officers. Religious sentiments also began to rise.

It became apparent that archaeological conservation was regarded as a religious activity. But if the responsibility of the archaeologist was to preserve ruined monuments without changing their form, it was allowed for religious activities as well.

The Antiquities Ordinance No 9 of 1940 was enacted on 15th July, 1940 to form part of the Sri Lankan legal code, and this can be regarded as a special event; the ordinance was amended by Gazette notification No 6940 on 13th December, 1946. In 1941, an Advisory Committee was appointed to obtain approval for plans to protect monuments.



Well maintained property

During this period, special interest was taken in maintaining the ancient city centers, such as constructing roads, planting trees along the roads, and creating a pleasant environment. The Architectural Conservation activities were carried out in Anuradhapura, Polonnaruwa, Sigiriya, Mihintale, Panduwasnuwara, Dedigama, Thirukeshwaram, Aukana and Embekka Devala by Mr. P.H. Wilson, who was the Assistant Commissioner (Architectural Conservation) at that time.

Years 1957 – 1970

Towards the end of 1957, the great flood caused the eastern and south eastern sides of the Jetavana Dagaba dome to slide down, with something similar occurring to the Hatares Kotuva of Abhagiri Dagaba. This flood caused serious damage to Polonnaruwa too, and Rankoth Vehera was also damaged. It was understood that the monuments and city centers needed to be well maintained because visits by foreign tourists and local pilgrims in the festival seasons increased.

In 1963, when new bricks were used for old monuments, it was necessary to insert the mark **pu vi de** (*Sinbala*) on the bricks. This practice was started by Dr. Godakumbura.

pu vi de

Mark inserted on new bricks

Years 1970 – 1990

A clear development appeared in the functions of the Department of Archaeology during this period and it can be regarded as a miracle considering the challenges it had to face. In 1971, as a result of the JVP revolt a senior Field Officer of the Department of Archaeology died and the materials in his workshop were lost. On 14th May, 1985 in the LTTE terrorist attack on Sri Maha Bodhi in Anuradhapura, a large number of pilgrims were killed and an employee of the Circuit Bungalow of the Department of Archaeology, which is near the Sri Maha Bodhi, was fatally shot. At the same time, in 1980, with the participation of the Prime Minister, the Central Cultural Fund was established, which was administered by an Executive Committee. The Director General of this institution was the Archaeological Commissioner.





Conservation of monuments

In 1970, four regional offices were set up in Anuradhapura, Kandy, Tissamaharama and Colombo to establish a proper management structure. In the early period conservation activities were limited to Anuradhapura, Polonnaruwa and Sigiriya, but these were extended to the southern area of the country. The shelter for the famous Buddha statue at Aukana was erected in 1974, and the Dutch Fort at Katuvana, Ambalama at Mangalagama, and Soragune Devala were the other main conservation projects.

However, these restoration activities spread all over the country, and thousands of monuments were conserved during the period of Dr. Roland Silva.

The heritage value and significance of the Galle Fort and its fortifications have been recognized by UNESCO and this property was inscribed as a cultural UNESCO World Heritage Site in 1988 under criteria iv, for its unique exposition of "an urban ensemble which illustrates the interaction of European architecture and South Asian traditions from the 16th to the 19th centuries." The Central Cultural Fund carried out its restoration activities with the formulation of a special project.

It is miraculous that the Yatala Dagoba, which is 340 feet in circumference and 124 feet in height, was restored with its ancient elephant wall in a limited time of five years under the leadership of Dr. Roland Silva with the help of his architectural conservators. "With the completion of the pinnacle, it was ceremonially opened by His Excellency the President R. Premadasa on 15th June 1987.



Restoration of Yatala Dagoba in 5 years

Nalanda Gedige is an ancient Hindu temple constructed sometime between the 8th and 10th centuries with stones in the Pallava style. It was threatened with inundation by the newly created Bowatenne Tank. Hence in 1980, the Department decided to dismantle this monument and re-erect it in an elevated position in the same place, after filling in the ground. The decision was taken to erect the Maligawila crystalline Limestone Buddha Statue which was falling down on earth by Ministry of Cultural Affairs in 1974. Although this task was assigned to the State Engineering Corporation, it had to be stopped because of the scaffolding which was used to support to statue was slided and damaged to the statue in 1976. The Dutch Hospital, which had been built for the use of Dutch sailors, was restored under the supervision of the Department of Archaeology by a private organization in 1985.

Years 1990 to 2017

From 1990 to the present, six Directors General have served the Department. The expansion of the Architectural Conservation branch began in 1990, with the appointment of three chartered architects (one Director and two Assistant Directors) and nine regional architectural conservators; construction of a new building for the Department commenced in 1990 and was completed in 1999.

Natural Disasters

In the tsunami disaster which occurred in Indian Ocean on 26th December 2004, the southern coastal area was completely destroyed and a great number of lives were lost, with the displacement of about 1.7 million people. Thalalla and Dickwella Ambalama were completely washed out to sea and Welipatanvila Gangarama Vihara, which had a pirith mandapa from the Kandyan period, was destroyed. Similarly, part of the rampart of Galle Fort and the servant's room were damaged, and the marine museum, which belonged to the Central Cultural Fund, was completely destroyed.



Disaster caused by the tsunami

Nevertheless, it is of some satisfaction that the archaeological monuments escaped with less damage, and this can be considered as a gift of fate.

Disasters Caused by People

The Temple of the Tooth Relic of Kandy, considered with deep veneration and inscribed on the World Heritage List,

was bombed by LTTE terrorists on 25th January, and several parts of the building complex suffered damage.



After the bomb blast at the Temple of Tooth Relic, Kandy

As a result of the hand of fate, the chief and most important building of the complex containing the sacred tooth relic, the Tampita Vihara, was not damaged, and only some of the paintings suffered damage. The main entrance, the Wahalkada; and the octagon, the lower floor of the Dig Ge; as well as the Hewisi Mandapaya were damaged.

During the conservation and preservation of this World Heritage monument, special attention was given to structural stability, the materials used, future usage and aestheticism and authenticity.

The responsibility for conservation was mainly assigned to the architectural conservation section of the Department of Archaeology and the supervision was done entirely by Dr. Gamini Wijesuriya, a former Director (architectural conservation). He documented all the data, utilizing eight groups of architectural conservators.

Thus all conservation activities were completed by August 1999 and the customary Dalada procession was held on that month.

Particulars of Conservation Activities Fulfilled During This Period

The re-conservation activities at Mirisawatiya Dageba in 1979 failed. However, conservation activities were restarted in March 1991 and the completed work was declared open by the Prime Minister of Sri Lanka on 4th June 1993.

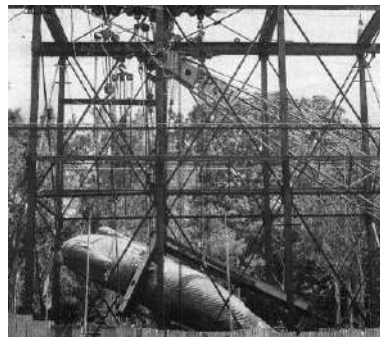


Restoration of Mirisawetiya Dagaba in 1993

After conservation, the height of the Dageba was 192 ft. and the diameter was 145 ft. In this conservation, reinforced concrete rings were used and 1 million bricks were consumed. Similarly, the temple complex was also conserved. This project was completed by employing all the technical staff of the department, who worked day and night.

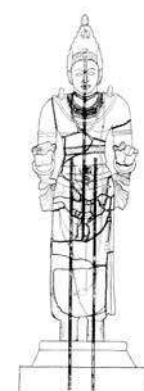
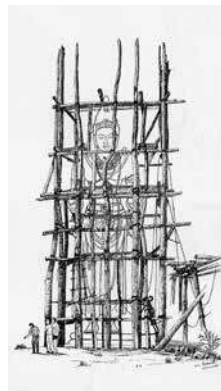
The Dematamal Vihara complex was also under conservation during this period. Similarly, Dageba, the monk residence, Chapter House, Bodighara and the shrine room were conserved and the completed complex was declared open by the President of Sri Lanka.

Maligawila Buddha statue in Monaragala District, which was made with crystalline limestone and was laying on the ground, was conserved and re-erected on 1st September 1991. It is 77 ft. 10 inches in height. This statue had been captured by treasure hunters for a long period and was handed over to the state engineering corporation by the Department of Archaeology. Their first conservation attempt resulted in failure, but the second attempt was successful.



Maligawila Buddha Statue

Simultaneously, another Bodhisattva image called Dambegda situated ¼ km from Maligawila Statue was blasted by treasure hunters after its collapse on the ground, when it was found by the Department of Archaeology. When attempts to erect it in 1970 failed, the German Federal Government agreed to fund the conservation process in 1988. This crystalline limestone image had been broken into more than a hundred pieces. This Bodhisathva statue, the height of which is 33 feet, was assembled by using three 85 mm stainless steel rods inserted into the stone parts. The Department restored this image to its pristine state without any sophisticated equipment. A



Erecting Bodhisattva statue of Dambegoda



Primary Mechanism used at Ruwanwella Conservation



Ruwanwella Fort Entrance, before Conservation



After Conservation



Former residence of Dutch Naval Commissioner at Trincomalee



After Restoration



Training Programme



Deegawapi Dagaba



Neelagiri Dagaba

sketch prepared when it was surrounded by wooden scaffolding is used as a logo, the symbol for the 10th General Assembly of ICCOMOS 1993, Sri Lanka.

The pulpit of the Dutch church in Galle Fort was conserved in 1994. For this process, technical advice were given by Nederland Wood Conservation Specialists and training was given to carpenters of the Archaeological Department.

The Entrance of British fort in Ruwanwella was in a state of disrepair and had almost toppled, and using limited resources it was restored to its correct position and preserved.

The Maritime and Naval History Museum was established in 2009 at Trincomalee which once had been the official residence of the Dutch Naval Commissioner which had decayed and been abandoned during the LTTE war situation before 2009.

Conservation of the Dutch fort in Jaffna started in 2010, after the end of the war in 2009.

A training programme on documentation of timber buildings was held 21-26 October in 2013 in ancient Embekka Dewalaya. This workshop was funded by the Asia-Pacific Cultural Centre for UNESCO (ACCU) in Japan with the participation of 15 officers from the Department of Archaeology, Museum Department, and Central Cultural Fund.

The ancient pond in the Kingdom of Raigama was conserved with the involvement of the Lions Club of Horana and was funded by the Central Cultural Fund. The special feature of this pond is that the walls of this pond are made with Kabook stones. The famous architect Ashley De Vos consulted on this project.

The conservation of Neelagiri Dagaba and Deegawapi Dagaba and the restoration of Mihintale Dagaba are considered the main projects at present.

When considering the above facts, the process of architectural conservation in Sri Lanka, which was started in 1871, is currently at a higher level of development. This

section is under a separate Director and staff assigned all around the country, and more than 100 monuments are being conserved yearly.

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New Discoveries at Dalvarzintepa in 2015-2016

Akmal Ulmasov, *Leader specialist*

Fine Arts Institute, Academy of Sciences of the Republic of Uzbekistan

Introduction

The archaeological expedition of the Fine Arts Institute under the Academy of Sciences of Uzbekistan together with the famous Japanese professor Kyuzo Kato conducted archaeological research in Dalvarzintepa. The ancient settlement of Dalvarzintepa – the ruins of one of the large ancient cities of Bactria – is located in the Surkhandarya region. The city was first erected on the southern side of a shallow hill in the 3rd to 2nd centuries BC. In the Kushan era, the houses of ordinary citizens and nobles were erected here; at the crossroads of the central streets was a large Buddhist temple; on the northern side was the sanctuary of the local goddess. On the south-western side of the city there was a quarter of potters. Outside the city there was a Buddhist sanctuary (older than the city temple) and a Zoroastrian “*naus*” – a funerary building or tomb. In the second half of the 3rd century AD the city was ravaged by the Sassanids, and in the 6th to 7th centuries AD the protected part of the citadel was temporarily inhabited by the population. During excavations it was established that the defensive wall of the city was constructed out of large bricks of various sizes and had about 30 towers. The total length of the defensive wall of the city was 2500 m; its width was 10-15 m. In the eastern part of the city, a sauna was accidentally discovered. The floor of the sauna was made from burnt bricks, with ceramic terracotta pipes, and there was a pit for water drainage.

Archeological excavations in DT-32 and DT-37

Archeological excavations were conducted in 2015-2016. In the center of the settlement were discovered the ruins of a residential building (DT-37) of the Kushan era, which had about twenty rooms.

On the south-western side of the monument there was a complex (DT-32) of several rooms that had possibly belonged to a wealthy man. In the central hall (9.35 x 5.15 m) of the complex a large stone base of the eastern-type column widely distributed in Bactria was found, as well as fragments of the capitals of the column. Similar samples of this type of column base have been found at many monuments of ancient Termez and Khalchayan.

The architectural elements of the structure can be determined from fragments of terracotta antefixes. Antefixes and a decor of palmettos and acanthus were used to frame the edges of the roof. A large number of similar analogues have been identified in Khalchayan; they were less often found in the Bactrian structures of Ai-Khanum, Surkh-Kotal, Kul-tepa and other monuments.

Archeological objects

The main objects discovered during the archaeological excavations were elegant ceramic articles of the Kushan era and their fragments. For example, there were ornamented jugs made from gray clay in the form of

amphoras with two handles, as well as boilers, vases, large bowls, vials, glasses, plates and other kitchen utensils. In one of the premises revealed by the excavation were several “*bum*” – big jar(s), located in one row. Hums, large vessels distributed in Central Asia, were intended for the storage of grain, rice, wine, water, etc.

A large number of ceramic products found were jugs and their numerous fragments. Judging by their surviving parts, they were both one-handed and two-handed. On some fragments of the surface of the jugs, various stamps or seals have been preserved. On one of them, there are traces of two overlaid seals of an even, oval shape with the image of identical signs resembling a “*tamga*”¹ – a stamp or seal.

On another fragment of the jug, there is a seal with the image of a man in a boat and holding in his hands (most likely) a shield and a sword. The image along the perimeter is framed by a lattice pattern. It seems that the master potter was trying to show a guard floating in a boat on the river and a water-filled ditch surrounding the city. This was the first time for this image of a boat to be found in Dalvarzintepa, but similar samples have been found on other monuments in this region. For example, there was a clay bull brought from the Buddhist complex Karatepa in Old Termez. On it was an imprint of the oval form with the image of the ship. The location of the bull on the bank of the Amu Darya allowed the researchers to assume that “it depicts a specific Amu Darya military transport vessel floating down the river”.

Among the finds, special attention has been paid to terracotta figurines. Among the samples of these small sculptures female characters predominate. Women are depicted in full growth, or sitting in long robes, strange headdresses, with beautiful hairstyles, and with the fingers of their hands closed; others have different objects in their hands.

Terracotta in Dalvarzintepa was created in the tradition of local art, but there is also the influence of Hellenistic culture. These figurines are related to different religions and reflect the spiritual worldview of the local population. Among the terracotta figurines there are also stylized images of the figures of horses in the form of burnt handmade figures covered with red paint (*angobe*). Skillfully executed details of clothes on the figurines and their decoration testify to the skill and experience of masters.

During the excavations, oil lamps, hundreds of woven spindles, bronze mirrors, small glass vessels, animal bone products, coins and other various products were also discovered. A large number of Kushan coins made of bronze and copper, minted at the behest of the rulers of

Kushan, testifies to the commodity-money relations that existed in the territory and the developed economy as a whole.

Among the metal products, a unique sign – a seal representing a bronze coin with a soldered round ring – is of great interest. This find is interesting because the coin belonged to Vima Kadphises, one of the Kushan emperors, who ruled from 90 to 100 CE.

Of particular importance among archaeological items is a brazier (or candlestick) with a zoomorphic metal handle in the form of a horned deer. Presumably, this highly artistic product was intended to kindle an aromatic plant, for example, the medicinal herb “*isirik*” – *peganum harmala* (or Syrian rue) – used for magical purposes, and used during special ceremonies. A candlestick with a similar handle was found in Dalverzintepa for the first time and has no Bactrian analogues as yet. Other similar Bactrian monuments are also unknown. But this pattern resembles a brazier from Iran, dating back to the time of the Arsacids dynasties of Parthia (2nd century BC to 2nd century AD). The only difference is that the handle on the Iranian sample shows a griffin instead of a deer.

Among other items, elegant small glass vessels were found, which were supposedly used for medicinal or perfume products. This indicates the demand for such products by the city's residents, which in turn indicates their high culture and developed tastes.

Another discovered object is, in the scientific literature, called a toilet tray or powder box. This product, skillfully carved from black steatite, is a round disk, in the center of which is depicted a fabulous polymorphic creature. His body is made in the form of a winged snake with a scaly fish tail, and the head, neck and front legs are like a horse's. In bas-relief, the front right leg and the upper part of the wing are broken.

In Dalverzintepa and earlier, stone palettes had the image of a hippocampus – a sea horse with a fish tail. The upper part of the disc is hand-crafted, carved in the form of a bas-relief marble-like calcareous stone, and the hippocampus is depicted with a man sitting on it. According to the researchers, this toilet tray is comparable to samples from the neighboring historical and cultural areas of Gandhara, which was in close contact with Bactria. In Greek mythology, the hippocampus was considered a sea horse with a fish tail, a king of fish, and was equated with whales. The image of the hippocampus is inherent in the art of Central Asia of the Kushan era; it was displayed in the form of a horse-snake or a horse-dragon.

Stone toilet trays were also found on several Kushan monuments in the territory of Tajikistan, and their numerous and diverse samples are known from the excavations of Sirkap (Taxila) of the 1st century BC to 1st century AD. In Gandhara, stone palettes expressed Hellenistic influences, and the stories do not repeat each other. For example, in one of them, Triton is settled on the throne decorated with a lotus, and on the other Ketos is depicted sitting on a winged horse. But, here you can find discs featuring feasting scenes, fantastic creatures (mostly hippocampus), Nereids over a horse or a sea monster, etc.

Conclusion

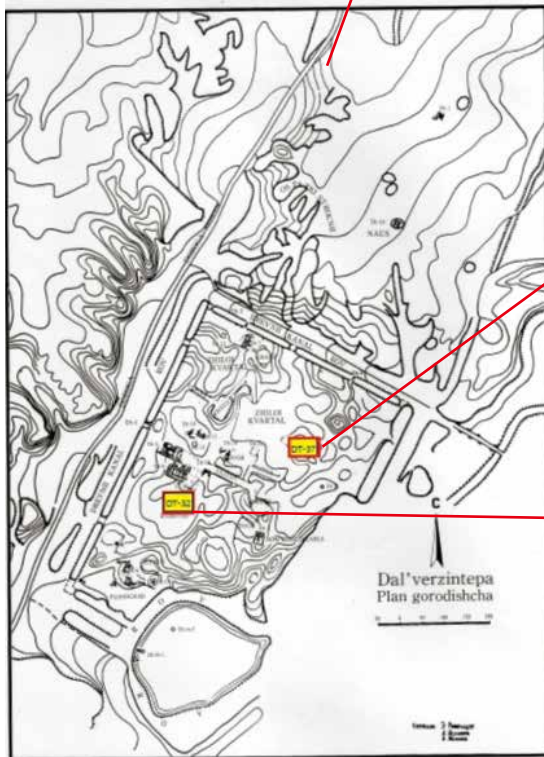
Unique artifacts discovered in Dalverzintepa indicate that in ancient times in this territory a culture of town planning, applied art, handicraft, international trade and cultural ties were developed. This proves that in ancient times Dalverzintepa was one of the major socio-political and culturally enlightened urban centers of Bactria.

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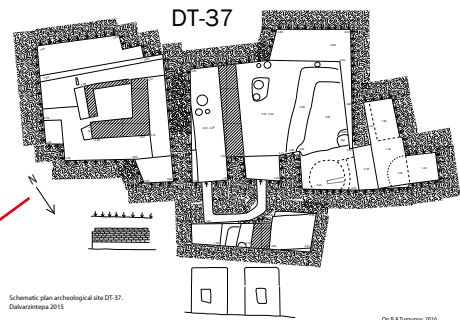
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1. a) Map of Bactria

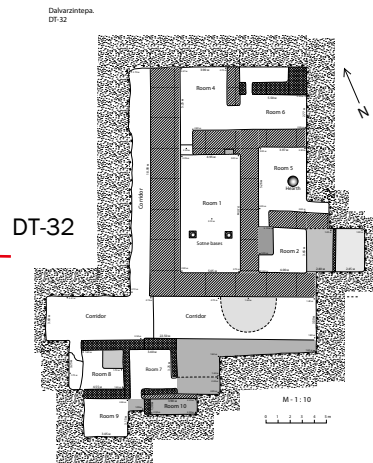


b) Location of Dalvarzintepa archeological site



Schematic plan archaeological site DT-37. Dalvarzintepa 2010

On B.A. Tsagarev, 2016. Drawing and Tracing by A. Chibrikov



DT-32

On B.A. Tsagarev, 2016. Drawing and Tracing by A. Chibrikov

c) Plan of excavation sites DT-32 and DT-37



2. Room No. 1 with two stone bases

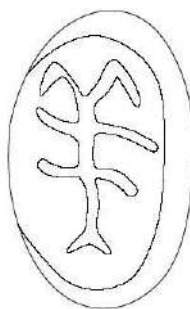
3. Potteries with stamps and seals:



a) Tamga(s) - stamps



b) Imprint of seal with floating boat image



4. Terracotta figurines and objects



5. Seal with the bronze coin of Vima Kadphises



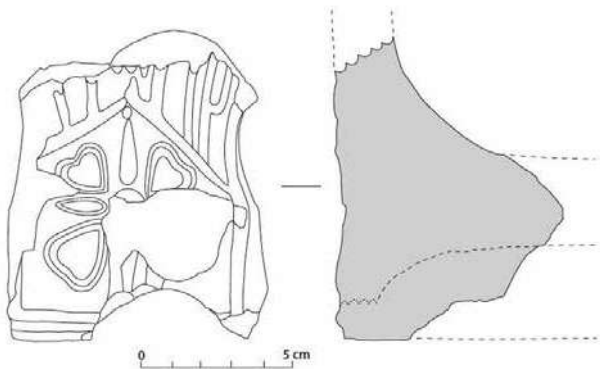
6. A brazier (or candlestick) with horned deer metal handle



7. a) Glass flask



b) Spindle whorls



c) Fragment of Antefix



8. Toilet tray with image of a hippocampus

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