

ACCU Nara
International Correspondent

The Fourth Regular Report with Special Reports



(財)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 Correspondents

ACCU Nara Correspondents periodically send reports on cultural heritage protection in their country. This is a collection of the fourth regular reports submitted by sixteen International Correspondents in the Asia/Pacific region supplemented with two special reports.

The Fourth Regular Report

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The Fourth Regular Report





The ancient city, "Pundranagara" is now lying underneath the Mahasthan Garh. It was known from the archaeological accounts that this city prospered as a very rich and resourceful habitation from 4th century B.C. to 15th century A.D. A thrilling account of the ruins of this hidden city was at first written by Buchanan Hamilton. But the credit and glory of identifying "Mahasthan garh" as the ancient "Pundranagara" of pre-Muslim period undoubtedly goes to Sir Alexander Cunningham. He (Cunningham) formed this most acceptable conclusion by having gone through the elaborate reports of the famous Chinese traveler, Huen-Tsang. Besides, there are enormous descriptions in different ancient literatures. Mahasthan Garh was not only a distinguished centre of administration of ancient period but also it gained world wide reputation as one of the resourceful centers of religion, industry, culture and inter provincial trades.

The Mahasthan Garh represents the ancient city of Pundranagara, the Provincial capital of Pundrabardhanvukti. The extensive ruins of Mahasthan Garh, situated on the western bank of river Karotoa in the district of Bogra, have been identified as the earliest urban site in Bengal, 12 Km north of Bogra town and on the north of Dhaka -Rangpur highway. Spreading beyond a fortified area, other ancient ruins covering an extensive area of 12 Km radius are deemed to be the suburbs of the ancient city of Pundranagar, familiar in Mauryan, Gupta, Pala and Sen literary and other epigraphic records. The ancient urban provincial capital city extends 1500 m from north to south and 1400 m east to west. These ancient settlements are found as cultural mounds in an

area of about 9.65 km north-south and 8.64 km east-west. These ancient remains are temples, mosques, monasteries, houses, roads, embankment, water bodies and all settlements are dating from 4th century B.C. to 16th century A.D.

Around this city, many other important structural remains have been discovered by both Bangladesh and foreign archaeologists through numerous excavations from 1902 until the present day. These sites are: Mahasthan, Khodar Pathar Bhita, Mankalir Kunda, Jiyat Kunda or the well of life, Bairagir Vita, Parasuram's Palace, Nishanghata, Yoginir Dhap, Sur Dighir Dhap, Bihar Dhap, Dolmancha, Dhaniker Dhap, Khulnar Dhap, Yogir Dhap, Padmar bari, Madarir Than, Dinga Duba, Chander Dhap, Netai Dhapanir Dhap, Skandar dhap, Bismaran, Govinda Bhita, Salban Rajar bari, Pir Borhan alir Mazar, Godai bari Dhap, Mongalkot etc. Huge number of antiquities was collected from these excavations such as various kinds of stone sculptures (both Hindu and Buddhist), terracotta images, terracotta plaques, precious beads, ornamental bricks, NBPW (Northern Black Polished Ware), ancient coins, Brahmi inscriptions, terracotta seals and sealing and huge potsherds and other miscellaneous objects.

Description of the current management system:

The department of Archaeology, Ministry of Cultural Affairs, the Government of Bangladesh, manages the sites at Mahasthan and its environments through the offices of the custodian of Mahasthan Museum and the Regional Director of Rajshahi Division located at Mahasthan and Bogra respectively.



Excavation of Mahasthan Garh area and near Mahasthan



"Gokul Madh" ruins of an ancient temple, near Mahasthan



Ancient Buddhist monastery at Bashu Bihara, near Mahasthan



1. Changing the Head of Demon and God at Southern Gate of Angkor Thom

The Angkor Thom that we see today is the result of at least five centuries of occupation and urban development, including frequent remodeling. It is a succession of cities, which took more or less final form around the end of the 12th century under the reign of Jayavarman VII, though some construction within the city walls post-date this monarch's reign. (*Angkor Thom, a short historical guide*: APSARA Authority, 2001, p. 3.)

In 1777, the Angkor capital was sacked by the Chams and occupied for five years. It was Dharanindravarman's son who liberated the city to proclaim himself "King Jayavarman VII". Adopting Mahayana Buddhism, the savior monarch undertook a vast rehabilitation, which he continued to call Yashodhara, within a 12-kilometer-long wall. It is this nearly perfect square which today we call Angkor Thom (or literary term Maha Nokor, both meaning "Great Angkor"). (*Angkor Thom, a short historical guide*: APSARA Authority, 2001, p. 16.)

Symbolically, Angkor Thom is a microcosm of the universe, divided into four parts by the main axes. The temple of the Bayon is situated at the exact centre of the axes and stands as the

symbolical link between heaven and earth. The wall enclosing the city of Angkor Thom represents the stone wall around the universe and the mountain ranges around Meru. The surrounding moat symbolizes the cosmic ocean. (*Angkor, an introduction to the temple*: Dawn Rooney, 1994, p. 82.)

These walls are pierced by four gates at the cardinal points, and the roads that pass through them converge on the State Temple of Jayavarman VII (Bayon temple), but on the East has one more Gate with its road leads directly to the Royal Palace (by tradition, the palace was always sited North of the State Temple). (*Ancient Angkor*, Michael Freeman & Claude Jacques, 1999, p. 74.)

The wall, called Jayagiri in period inscriptions, is itself surrounded by a wide moat called Jayasindhu. One inscription explicitly compares this ensemble to the mountain range and the Sea of Milk which encircles the universe in Indian cosmological conceptions adopted in ancient Cambodia. Thus Angkor Thom was in its entirety the world created or recreated after the city sacking by the Chams, emerging as ambrosia after the Churning of the Sea of Milk. This explains why the churning episode was represented at each of the five gates giving entry to the city. (*Angkor Thom, a short historical guide*: APSARA Authority, 2001, p. 17.)



The Southern Gate of Angkor Thom (Tonle Om Gate)



The cement head of Demon was removed



The sandstone head of Demon was replaced



The sandstone head of God was replaced

A long causeway leading to each entry tower is flanked by a row of 54 stone figures on each side (Demons on the right and Gods on the left) holding a serpent which extends at the length of the causeway. It also symbolizes the Churning of the Sea of Milk.

Through the long civil war in Cambodia, some of the heads on these figures have been stolen; some are copies while the original ones have been removed to be kept at the Angkor Conservation Office in Siem Reap and the National Museum in Phnom Penh for security purposes. In cooperation with Artisans d'Angkor, APSARA Authority recently replaced the cement heads of Demons and Gods at the Tonle Om Gate (Southern Gate of Angkor Thom) with the new sandstone heads of original style. At first as a trial, we replaced only two heads, one of Demon and the other of God and received favourable support and high praise from both national and international tourists. In the next stage, we will continue to replace other ten heads: five those of Demons and five Gods.

2. Propping Work of Phnom Krom Temple

Phnom Krom is approximately 12 kilometers south-west of Siem Reap near the north end of the Tonle Sap Lake. It is located on a mountain, 137 meters high. Phnom Krom temple consists of the three principle towers in a row (dedicated to the Hindu Trinity: Siva, Visnu and Brahma) and other secondary towers. This temple was built in the reign of the King Yasovarman I, late 9th to early 10th century.

In that time, he built a temple on each of three hills dominating the plain of Angkor: Phnom Bakheng, Phnom Krom and Phnom Bok. (Phnom means mountain in Khmer). From the summit of Phnom Krom, we can see the Tonle Sap Lake and West Baray.

Phnom Krom is one of the most endangered temples. For instance, the temple itself became decayed and had many gaps or holes between the joining of stone blocks. Many parts of the towers turned fragile and it was verge on collapse. Therefore, in order to rescue the temple, APSARA Authority took stringent measures to make the Phnom Krom-Management Agent (being formed by a group of archaeologist, architects and conservators) support the three towers and immediately conserve the complex.

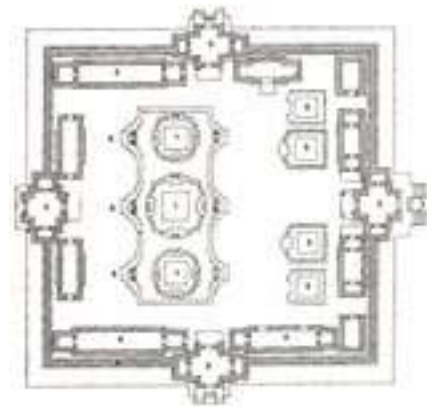
The propping work is scheduled to last for one year, commencing from June 2008 and 95% of its work has been achieved.

Listed below are the conservation works by the Agent:

- Propping the riskiest parts, mainly at the eastern entrances of the three towers and other towers as well.
- Setting up scaffolds to tightly tie the three towers with cables so as not to make bigger holes /gaps and to prevent the smaller temples from falling off. Pieces of insecticide-treated wood and pieces of rubber were placed where cables were directly attached to the sandstones of the temples to avoid them from being worn.
- Clearing weeds on the temples by injecting poison at their roots to stop growing.



Plan of Angkor area



Plan of Phnom Krom temple



In progress of shoring up of the three principle towers



Other towers after shoring up



Red Fort, Delhi, popularly known as Lal Qila, was constructed between A.D. 1639 and 1648 by Mughal emperor Shahjahan and showcases the very high level of art form and ornamental work. The art work in the Fort is a synthesis of Persian, European and Indian art. Red Fort, Delhi is one of the important building complexes of India which encapsulates a long period of Indian history and its arts and is relevant as a symbol of architectural brilliance and power. The fort, located on the west bank of the river Yamuna, is octagonal on plan, with two longer sides on east and west and is provided with four gates viz. Lahori, Delhi, Yamuna and Salimgarh gate. The ramparts, covering a perimeter of 2.41 km have a moat all along on the outside, which originally was connected with the river Yamuna. On the north, the Red fort is connected with the Salimgarh Fort by a bridge. Lahori gate, a magnificent three-storied structure, later screened by a barbican by Aurangzeb, served as the main entrance. Palaces, lying on the eastern side of the Fort, are approached from the

Lahori gate through a roofed passage, flanked by double-storied arcaded apartments called Chhatta-Chowk and being used as shops. The Delhi gate is flanked on the outside by two elephants, commissioned in 1903 by Lord Curzon in place of the original ones demolished by Aurangzeb.

A study of some of the old site plans, paintings and photographs, available at different places, shows that within the fort, a large number of the old enchanting buildings and other structures were demolished and replaced with military barracks and other modern constructions by the British after 1857. The British Army had occupied the Red Fort in 1857 and converted it into an army's stronghold. The planning and aesthetics of the Red Fort represent the zenith of Mughal creativity which prevailed during the region of the emperor Shahjahan and was an important focal point of the medieval city of the Shahjahanabad.



Red Fort – 1850



Red Fort – Present



GPR survey was carried out before the excavation.

The Archaeological Survey of India is doing its best efforts to restore the originality of the historical character of the Red Fort by undertaking necessary archaeological investigations, structural conservation, improvement of the historical ambience, scientific preservation, historical landscaping, etc. of various buildings and gardens located within the Red Fort and get a Comprehensive Conservation Management Plan prepared to protect the outstanding universal value of the site and to guide development in the setting.

The Red Fort Complex is also significant for the country since it was from the ramparts of the Red Fort that the country's Independence was declared. The Independence Day Celebrations, every year, is organized at the ramparts of the Red Fort and the Prime Minister unfurls the National Flag. The World Heritage Committee has accepted the nomination of the Red Fort Complex, Delhi for inscription in the World Heritage List in 2007.

The stupendous task of investigation to expose the original layout, followed by restoration of Hayyat Baksh garden and marble fountain (in front of Rang Mahal etc), had been carried out by late Sir Jhon Marshall, the then director general of the archaeological survey of India in early twentieth century. In 1970's efforts were made to expose the remains of the tank, fountains and ancillary structural remains in the area between diwan-i-Am and Rang-Mahal. The underground chamber having traces of water channels were exposed along the fortification wall in the area between Asad Burj and Rang Mahal.

The Recent Excavation

To take up conservation of built heritage and the open spaces, it is necessary to archaeologically investigate the select areas to ascertain authenticity of the map prepared in 1850. The idea behind such exercise was to know the original layout and subsequent changes. The main objective of the excavation was to expose the remains of water ways, channels and terracotta pipe lines which were part the irrigation system of the garden in front of Rang Mahal and Mehtab bagh and to expose the remains of

pathways of the garden as depicted in the drawing of 1850.

The trenches were laid and excavated 30 cm to 1.50 m deep in the garden in front of Rang Mahal, but any evidence of pathways as depicted in the drawing of 1850 was not disclosed. However, trenches laid out towards Khas Mahal (depth of 35 to 40 cm) exposed edging line of the ancient pathway. The lakhuri brick masonry in lime mortar was exposed almost in all the trenches, which originally formed the foundation of the cloistered gallery. Width of the original pathway was probably 5.50 m laid in lime concrete. In two trenches, impression of stone slabs over lime plaster was traced, being suggestive of robbing of stone slabs. Excavation also revealed a buttress-like feature provided to the fortification wall from inside.

In the year 2006-07 Ground Penetrating Radar (GPR) survey has been carried at select locations to detect the existence of buried structures vis-à-vis the 1850 map. With the objective to expose the remains of pathways, water channels, fountains and remains of enclosures of Mughal period, scientific excavations have been undertaken. Based on archaeological exploration and observations made through Ground Penetrating Radar survey, 25 trenches (10mx10m) have been laid out in Mehtab Bagh area. The maximum depth up to which excavation has been conducted is 1.13 m below the ground level.

Remains of north-south water channel with lime concrete floor and coping of red sand stone have been exposed up to 40 m lengths. Width of the water channel is about 10.25 m. It also has the provision of fountains at regular intervals of 1.50 m. on the retaining walls. There is clear evidence of robbing of stone slabs as suggested by the impressions on the lime concrete. This is also a prominent feature in the water ways of Hayyat Baksh garden which is already exposed and available as reference. Remains of east-west aligned water channel have also been exposed up to some length. At places, the channel has been found lined with red sandstone slabs.





Prambanan is the largest Hindu Temple compound in Indonesia, located in Yogyakarta Province. The temple was built in 9th century and was inscribed on UNESCO World Heritage List, number 642 in 1992. Prambanan Temple Compound has outstanding universal values as seen from its unique architecture, relief, iconography, and setting. Prambanan temple compound consist of three zones: the first zone consists of sixteen temples with three main temples (Brahma, Shiva, and Vishnu); three vahana temples (Garuda, Nandi, Angsa); four kelir temples; two apit temples; and four patok temples. The second zone consists of 224 small (pervara) temples. The third zone has no building (picture no. 1).

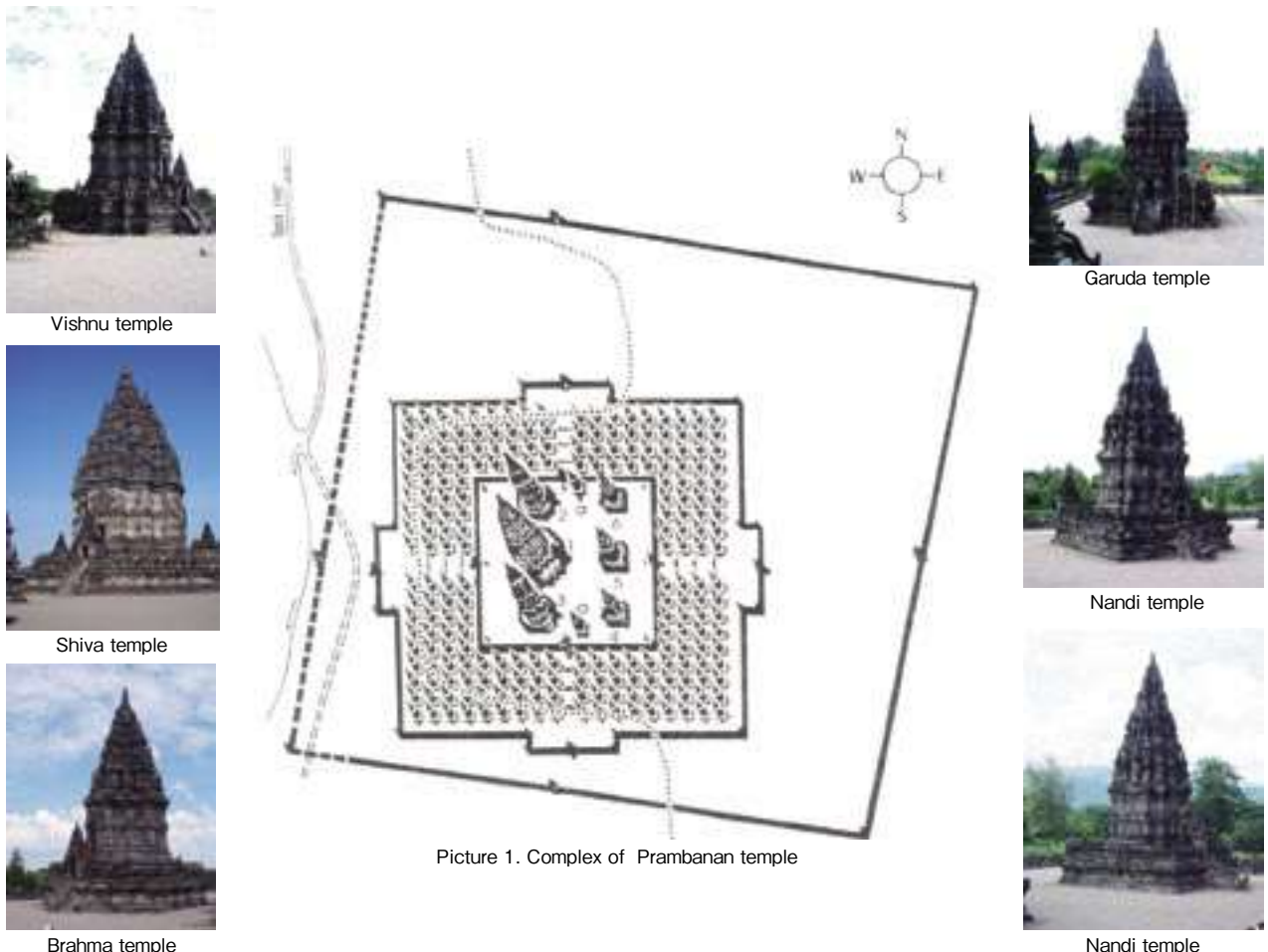
The earthquake struck Yogyakarta on 27 May 2006, measuring 5.7 on the Richter scale. It caused serious destruction and damage to Prambanan, especially to the main temples and vahana temples. The damage was identified as follows: collapsed building components such as balustrade, gapura (temple gateway), and ratna (diamond ornament); and cracked or broken temple stones, etc. (picture no. 2).

Indonesian government policies in managing the earthquake divided the period in two phases: the emergency response and the recovery phase. The rescue activities continued for three months after the earthquake. The activities involved documentation, damage observation, preliminary research, and

temporary rescue operations. The aim of recovery phase was the restoration of damaged buildings. The restoration of the temples was implemented in several stages. The restoration of Prambanan temple was implemented through research by national and international experts from multidiscipline expertise.

In the recovery phase, they completed the restoration of two vahana temples: Garuda temple (2007) and Nandi temple (2008). The high priority for restoration was given to the Garuda temple, because many of its ratna (diamond ornament) collapsed or almost collapsed and endangered the safety of other building components. After the completion of Garuda restoration, the Nandi temple was restored.

In the year 2009, the restoration work continues at two main temples: Brahma Temple and Vishnu temple. The restoration officially began on 28 May 2009, when the Director General of History and Archaeology, Ministry of Culture and Tourism, symbolically raised the stone from the temple. The aims of restoration in Vishnu Temple are the reparation of the first terrace, balustrade, terrace floors, broken temple stones, ratna (diamond ornament) and structures. Restoration works on Vishnu temple in May and June have finished installing the scaffolding (50%); dismantling the first terrace, balustrade, and terrace floor (25 %); transportation of stones; and documentation (picture no. 3).



Picture 1. Complex of Prambanan temple



Picture 2. Vishnu temple after earthquake, May 2006

Picture 3. Restoration work on Vishnu temple, May and June 2009



The restoration officially began on 28 May 2009, by Director General of History and Archaeology

Dismantling ratna, June 2009

Before dismantling, June 2009



Marking stones before dismantling, June 2009

Marking stones, June 2009

Relief stones before dismantled, June 2009



After dismantling, June 2009

Dismantling filler stones, June 2009

Moving stone after dismantled, June 2009

Moving stone after dismantled, June 2009



Introduction

Built in 1900s, Kedai Mulong Old Mosque was originally a royal hall, constructed as part of the palace main hall complex in Kota Bharu, Kelantan. Known as Balairong Seri Istana Raja Dewa Tuan Zainal Abidin, the building was left abandoned after the World War II. In 1958, the building was bought by the local villagers at a cost of RM1,000 (USD285). The building was dismantled and relocated to the present site at Kedai Mulong which is 7 miles away from the royal palace. Due to its size and difficulties in transporting the building parts, its main structures such as roofs and floors were cut into halves. The building was rebuilt with some additions and extensions including the front verandah, stairs and toilets. The roof clay slates were replaced with asbestos sheets. The building was then used as a mosque until today. Due to its defects and in the state of disrepair, the building received an amount of RM843,000 (USD240,857) from the Federal Government through the Department of National Heritage for the repair and restoration works. The restoration works were carried out in 8 months from October 2008 until June 2009.

Architectural Significance

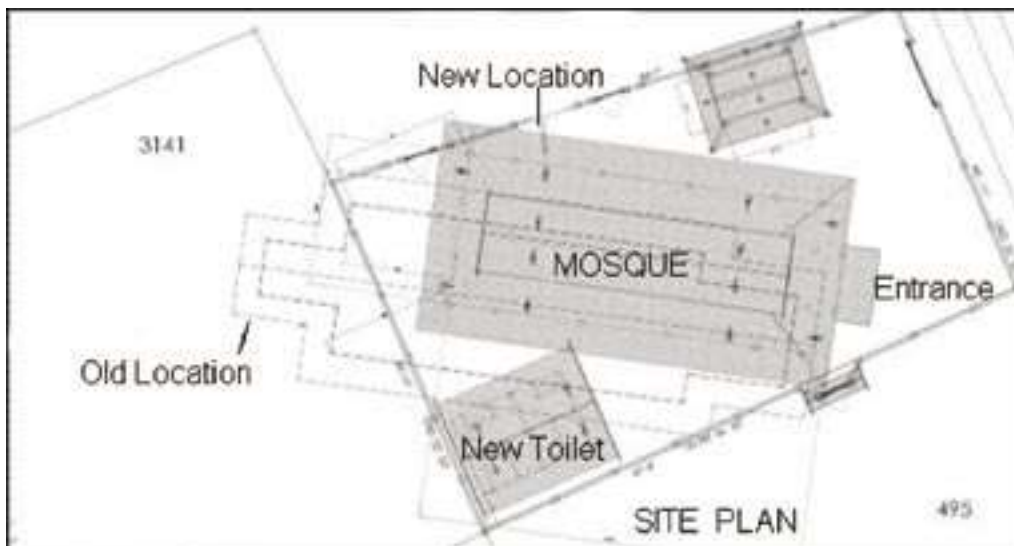
The Kedai Mulong Old Mosque was built with hardwood, locally known as Chengal (*Neobalanocarpus Heimii*). Raised on timber stumps with 2-tier roofs, it reflects the traditional Malay

architectural styles of Kelantan. The building features high quality of carpentry work. This can be seen from its wood carvings, mainly on lattice panels, columns, walls and ceiling. There are original wall panels that feature symmetrical pattern with black and gold-colour paints. The building was designed to allow cross and stacked ventilation that provides comfort to the users. The original roofs were of 2-tier with curved fascia boards at both sides, similar to the traditional Thai architecture. The existing asbestos sheets were not original and needed to be replaced with clay slates or locally known as *Singgora*.

Restoration Works

Restoration works began in October 2008. The works included repositioning of the building, replacing asbestos roofs to clay slates, demolishing old toilet, re-wiring and providing new verandah at the main entrance. Restoration works were carried to the existing timber structures and elements including roof trusses, columns, walls, lattice panel, doors, windows and floorboards.

One of the challenges in this project was to adjust, lift and move the building to a new location within the site. This is because a small portion of the building was located outside its boundaries and that it needed to be repositioned. The building was lifted using 20-tonne jack before temporary timber beams and GI pipes



Site plan showing the old and new location of the Kedai Mulong Old Mosque



The Kedai Mulong Old Mosque before restoration, showing its new front porch and toilet facilities



During restoration work, all new extensions were demolished including the front porch and toilet.

were placed underneath the timber stumps. Using 3 units of chain lock and enough man power, the building was carefully pushed and shifted to a new location of approximately 25 feet away. Once it was placed to a new location, concrete blocks were fixed at base of the timber stumps for additional support and stability of the building.

The existing asbestos sheets were replaced with clay slates supplied from a tile supplier in Bachok, Kelantan. The roof was reinstated to its original design which reflects the traditional architectural styles with curved fascia boards and duck-tail shape at the lower edge of the roof ridges. Such styles are common to the traditional Malay architecture in the East Coast of Peninsular Malaysia. To accommodate the clay slates, new battens were fixed to the roof trusses. A mock-up was set up at site to demonstrate the fixing of new clay slates. This was done prior to fixing the clay slates onto the roof structures.

All new timber structures and elements were of the same hardwood species which is Chengal. This is to ensure that the building maintains its authenticity as well as its original design. All new timber structures and elements were tagged and labeled using metal plates for identification and future references.

One of the main features of the building is its decorative timber lattice panels located above the walls. The panels portray simple patterns similar to that of traditional Chinese houses in the nearby areas. These lattice panels were then repaired and restored. Local

communities were invited to repair and clean the lattice panels. The involvement of local communities in the project had created greater awareness on preservation and conservation of heritage properties.

All restoration works were supervised and monitored by the Department of National Heritage with the assistance of local consultants. The building was documented before, during and after restoration in the forms of photographs, drawings and videos. A final report has been prepared and submitted to the Department and various agencies for future references and archival purposes.

Conclusion

Restoration of Kedai Mulong Old Mosque was fully funded by the Federal Government. It reflects the concerted effort undertaken by both the Federal Government and the local communities to save heritage properties. The restoration works posed many challenges among those involved in the project. This includes outsourcing sufficient building materials mainly the hardwood Chengal and Singgora clay slates. The restoration works also required experienced labourers and skilled carpenters who could understand and appreciate heritage conservation. On the 5th of July 2009, the building was handed over to the mosque committee by the Minister of Information, Communications and Culture, Malaysia. A brass plaque was then placed by the Minister at the main entrance to commemorate the completion of the restoration project. The building has been successfully restored to its original design and now becomes a local pride.



The Kedai Mulong Old Mosque after restoration featuring its new roof styles based on the original design



Decorative timber walls, lattice panels and wood carvings at the base of the columns are some examples of high quality of carpentry work found in the building.



Timber walls, lattice panels and columns after restoration. The original black and gold-colour panels on the wall were revealed after scraping off the existing paint.



Timber decorative (*Buah Butong*) found on the ceiling before (left) and after (right) restoration



During restoration work, the building was re-surveyed to determine its actual boundaries. A small portion of the building was found to be located inside its neighbouring lot. The building was then adjusted and shifted within its own lot.

Using chain lock, GI pipes and enough man power, the building was carefully pushed and shifted to a new location of approximately 25 feet away from its existing location.



Local villagers were invited to be involved in the restoration of timber lattice panels. Such community involvement creates greater awareness on preservation and conservation of heritage properties.

ACCU
REPORT

Raising Local Heritage Consciousness through Archaeology Field Schools



Edwin Winston A. Valientes

Cultural heritage conservation in the Philippines is still limited to the efforts being done by national cultural agencies such as the National Historical Institute and the National Museum of the Philippines. For the nation's archaeological heritage, the National Museum is taking the lead in rescuing and conserving archaeological sites under threat and to secure the proper undertaking of archaeological excavation all over the country. While there are now several non-government organizations that are committed specifically to advancing the preservation and the promotion of heritage in the Philippines, most of their efforts so far are national in scale, academic, and top-down in approach. The scope of their vision and their efforts to achieve it are commendable, however, they have yet to show an impact on raising heritage consciousness at the local level, where ownership of these heritage places reside and community participation to conserve them is critical.

As the only institution in the Philippines that trains and grants academic degree in archaeology, the University of the Philippines Archaeological Studies Program (UP-ASP) has designed its curriculum to integrate heritage discourses and concerns to its practice of archaeology. No longer a purely academic endeavor

whose primary aim is to generate explanation on past cultural processes, archaeology here is now seen as a crucial avenue to engage the public's interest to their past, as well as to raise awareness to the importance of conserving heritage especially at this time when destruction of archaeological sites is almost an everyday reality. While conscious of the fact that work like this cannot be achieved overnight and without connecting to key institutions such as the National Museum, the National Historical Institute, and the various Local Government Units (LGUs) concern, the UP-ASP is taking steps to bridge the gap between academic archaeology and the interest of local heritage stakeholders through its Archaeology Field School.

Archaeology Field School is an annual activity of the UP-ASP aimed to expose its graduate students to the basic field methods of archaeology such as reconnaissance survey, mapping, excavation, recording, and curation of archaeological materials. Since its inception, most excavations were held on historical sites, where abandoned ruins of Spanish structures such as churches and fortifications are located. The choice of site lies on the fact that historical archaeology is still an unpopular practice in the Philippines and this effort will open-up the potential of studying



Opening of exhibit at the Baluarte site, San Teodoro, Mindoro



UP-ASP graduate students who attended the Field School in San Teodoro



The locals waiting for the start of the opening of the exhibit



Excavation at the Baluarte Site, San Teodoro, Mindoro

historical sites through archaeology to supplement what is so far has been known in historical documents. Another reason is more pedagogical in nature, meaning the method of field archaeology is seen to be better taught to young students on sites with positive features or standing structures, rather than open sites where one has to guess what materials might be recovered in the area. Most importantly, since the sites are usually located within or near major towns, the field school is designed to expose students early on how to engage the public in the practice of archaeology.

For four straight years, starting in 2004, the Archaeology Field School of UP-ASP was held in the Island of Mindoro, in the mid-western part of the Philippine archipelago. The four-year project, 'Mindoro Island Archaeology and Heritage Project', was held in four municipalities of Oriental Mindoro. The first field excavation one was conducted in the Municipality of Naujan, in a site that consists of a large 18th century Spanish Colonial Church ruin. In 2005, the field school was held in the Municipality of Bongabong where the team excavated several human burials below a ruin of another 18th century Spanish structure. In 2006, excavation was undertaken in Bulalacao. This site, which was located on top of a forested hill, has yielded stone structures, earthenware potteries and Chinese ceramics of late 15th century. The fourth field school season in Mindoro was held in San Teodoro, in the northeastern part of the island. The team excavated a ruin of large rectangular wall enclosure called Baluarte located in the middle of the town's Lumang Bayan (old town). Archival research points the structure as one of the several fortifications built by the Spanish militia in Mindoro during the 18th century to protect the villages under their jurisdiction from invading pirates from the southern part of

the Philippines. The site yielded several plain earthenware sherds, glass beads, metals, and wooden materials.

Consciously designed to engage the public in the conduct of archeological research, these excavations are undertaken in such a way that the locals living near the sites are well-informed through various means, such as seeking audience with their local officials and the private owners of the site to explain the purpose of the research, posting information materials about archaeology and the excavation project such as tarpaulin signages and billboards at the most conspicuous areas of the sites, distributing information leaflets to the locals, and giving constant updates to curious individuals who frequent the site as the excavations are on-going. Traditionally, in the Philippines, people are not allowed to go near the excavation site to avoid any untoward disturbances while the research is on-going. This has its own advantage, but it discourages the interested public from witnessing the unraveling of their own heritage, thereby leaving them to speculate on the progress turning up within the site. Worse, there have been cases where they accuse the archeologists of robbing them of treasures that they believe are buried in the site. The UP-ASP Field School is currently trying to reverse this practice by giving the public access to the site, allowing them to watch and sometimes, even to participate, in the excavation. Local people are also hired to help the team in clearing and excavating the site. Their own views and knowledge of the site are also taken seriously, and this information is incorporated in the final report of the excavation.

It is also now a practice for the field school to set up an exhibit right in the site towards the end of each excavation season. The



The locals helping in the excavation at San Teodoro



Vegetation growth in some parts of the Baluarte thick walls



Baluarte Site, San Teodoro

exhibit aims to present the results of the excavation, such as the artifacts and pictures of important archaeological features recovered so that the locals will know what objects were found and the kind of materials that archaeologists are interested in (not treasures, but any materials that can give clues to the history of the site). Copies of archival documents related to the sites are also presented to the public and the local government so they will know that such early documents exist and may be used to write a local history of their own. Since most of the areas excavated through the field schools are historical sites usually with Spanish colonial structures, it has also been a practice to present in the exhibit, however very preliminary, a miniature reconstruction of the site so that the locals can have a better visual appreciation of what has been understood (i.e. how the structure might have looked like in its original form) in the excavation regarding the structure.

All the exhibits were well-attended by the people and the local officials of the town where the excavation was held (from the mayor down to barangay officials). Mindoro is also predominantly Catholic, and it is a local tradition to start every important community activity through a thanksgiving mass. A Catholic mass is usually held at the opening of the exhibit. The officiating priests, most of whom are also heritage advocates, and would use the mass to explain the value of preserving heritage to the people. After the mass, a short program is held where the purpose of the Field School and the results of the excavation are presented again, and where the value of preserving the site is explained. To encourage more interaction between the locals and the research team, snacks and drinks are also commonly served during the exhibit. After the field school, all the materials set up for the exhibit were left to the care of the local community for their own use.

In the four years the field school was conducted in Mindoro Island, there is an observed qualitative change of views among the locals, particularly community officials, towards their local heritage. From a rather limited concern about their history and sense of heritage, the locals gradually gained a richer and broader understanding and appreciation of the importance of their cultural

heritage, not only in promoting tourism in their town, but also in the construction of their identity as a strong and progressive community. A classic story from the field school experience that perfectly illustrates this is the one that happened in Naujan. When the team revisited the site after a year it was excavated, they were surprised to see a new structure build up in front of the church ruin. The structure turned out to be a small museum set up by the locals to house all the exhibit materials that the excavation team left to them a year ago. According to the caretaker, the construction of the museum was funded from the generous contribution of the whole community, and initiated by the local officials. The team did not expect that the impact to the locals of the field school exhibit would come as fast as that.

Aside from raising the awareness of the local stakeholders to the importance of their archaeological heritage, the field school also contributed a lot in dispelling the deeply ingrained negative notion and skepticism of people towards archaeology. In the Philippines, like in most other places around the world, people don't know much about archaeology as an serious academic endeavor, and for some who have had a chance to know little about it, they usually associate it with scrupulous hunting of treasures hidden in the so-called 'enchanted spaces' of towns such as old church ruins. That is why, whenever we start an excavation in a new place, we are always met with doubt and cynicism; some even accused us of hunting for the elusive 'Yamashita treasure', hidden according to a popular folklore, somewhere in the Philippines, with the exact place no one knows it yet.

The local practice of archaeology in the Philippines is still in its infancy period. Most of the early archaeological researches conducted in the country were done by foreign archaeologists. While they did contribute a great deal of information about the pre-colonial heritage of the Philippines, they did little on how people can connect to it and appreciate its value to their cultural history. With the initiative of UP-ASP through its field school, we hope to advance a particular archaeological practice that is keen on the standard ways of archaeological education, but at the same time, is sensitive to the interests of the local communities towards archaeology and towards their local heritage.



Local cultural performers at the opening of the exhibit



Answering queries on the excavation from the curious public

ACCU REPORT	Conservation of Kalhuvakaru Miskiiy in Malé, Republic of Maldives	 Aishath Moosa Fikree
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This beautifully crafted mosque, build in the year 1789, is an exemplar of local craftsmanship in Maldives. It was built at Malé (capital), and then it was auctioned and taken to a resort on October 1978. The concerned party presented it back to the government, realizing its historical importance on February 1979. The mosque was made like a puzzle; it was dismantled and reassembled over and over again according to the frequent relocation. It was moved to its current location in 1979. The mosque was built of wood and coral stone. Wood was used extensively for the frame work and other parts and most of them were painted or lacquered.

WOOD

The main factor of deterioration of wood was insect attack. Although appearing to be in sound condition on the surface, most of the wooden members were badly eaten by insects from inside and a beam was also noted to have only a thin outer layer remaining. The painted and lacquered areas were also faded. Insecticide solution mixed with 2% Pentachlorophenol in ethanol was used to disinfect and eradicate insects and fungal activities on wood.

The painted areas were cleaned by using cotton swabs moistened with a mixture of ethanol and turpentine, while securing the loosely held paint with a tissue paper. The cracks and lacunae in the wood were first cleaned of excreta of insects and debris using a vacuum cleaner. Then they were filled with putty made from saw dust, white PVA emulsion with a fungicide (1% solution

of pentachlorophenol in ethanol). Consolidation was needed at a few places which were done with injection of diluted PVA emulsion under gravitational force. Treated lacunae were re-integrated with suitable earth colours to give a harmonious appearance.

To prevent further growth of fungus on wood, 1% pentachlorophenol in ethanol solution was sprayed on bare wood members. As a final touch, an application of picture varnish diluted with turpentine was applied to the painted wooden surface and the bare wooden members were treated with clear varnish mixed with turpentine as a thinner.

CORAL STONE

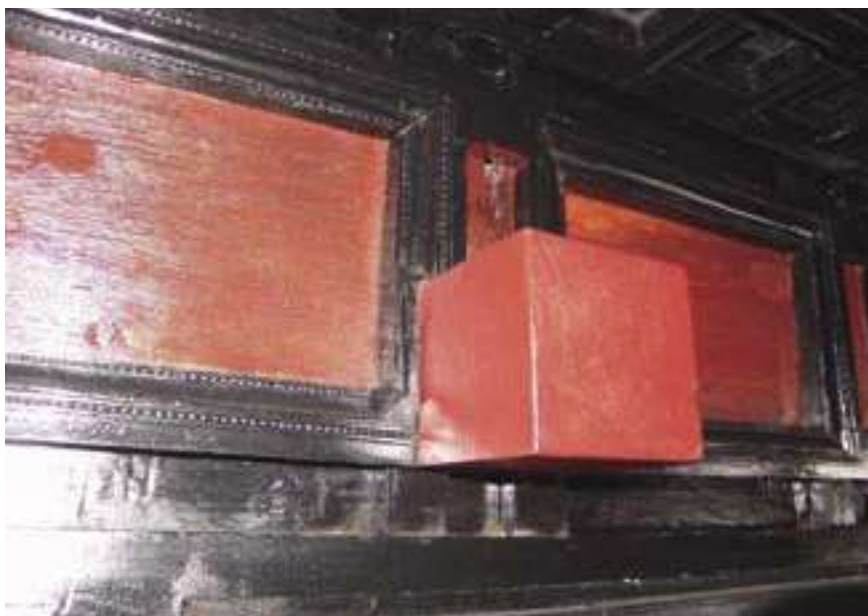
The coral stone were sprayed with 2% benzalkoniumchloride aqueous solution to disinfect and eradicate algal growth on coral stone. The algal growth on the surface was easy to remove, but the algae that had penetrated inside the pores required a water pressure of 4 kg/cm² to be cleaned. The cracks and lacunae in the coral stone were filled with putty made from lime, coral powder and PVA emulsion with an algaecide (0.1% of solution of ziram). To prevent further algal growth on coral, 1-2 ppm ziram aqueous solution were sprayed on the coral stones.

CONCLUSION

The conservation of this mosque was originally planned to take three months and twenty days. It started on 10 May 2008, but due to lack of human resources the work finished on 1 February 2009.



Kalhuvakaru Miskiiy, after conservation



The ceiling of the mosque after conservation



The ceiling of the mosque: conservation treatment was done on half, and the other half shows the state before conservation.



The coral stone of the mosque, showing the condition before and after pressure-water cleaning



The Orkhon Valley Cultural Landscape (OVCL) is the second World Heritage Site and the first cultural property in Mongolia inscribed on the World Heritage List. It is located in the basin of the Orkhon River, a real hearth of the unique nomadic civilization, where people took a good care of their virgin nature and animals and respected humans from the ancient times. The way of cattle breeding has been traditionally developed and handed down from generation to generation. The ancient historical Orkhon valley is the place where the great Central Asian states and empires of herding nomads founded and developed the major centers for governing, trade, commerce, culture and religion. It is demonstrated by the unique properties which were left by successive nomadic empires, in particular by the Mongol Empire established by Chinggis Khaan and its famous capital city of Kharakhorum.

There is also a variety of historic sites and ruins within this cultural landscape, including monasteries, temples and other monuments having outstanding universal value. These include important Turkish memorial sites, Khar Balgas-capital city of Uighur Empire as well as the Kharakhorum city of Mongol Empire which was the largest empire in the world history. Erdene Zuu, the earliest surviving Mongolian Buddhist monastery and the Tuvkhun monastery, evidence of the widespread religious meditative tradition and custom, as well as a number of other sites were also preserved. Also, many cultural and archaeological vestiges dated from Paleolithic period through the Bronze and Iron Ages, including the Stone Age archaeological sites of Moiltyn Am and "Orkhon-7" were revealed here. These remains certify that nomadic tribes lived, moved and pastured here over the several thousands years.

The inscription of OVCL into the World Heritage List in 2004 by the World Heritage Committee has encouraged the protection and transmission of its outstanding universal values for the benefits of human beings worldwide. Indeed, OVCL has fulfilled the following criteria as a World Heritage site:

- Firstly, OVCL demonstrates interchange and influence of human values, unique civilization and cultural triumphs from both east and west, in accordance with Criteria II of the World Heritage Convention.
- Secondly, OVCL reflects unique revelation of pastoral nomadic, nomadic civilization and traditional cultures of Mongols which are still practiced under threats of disappearing by exogenous factors, in compliance with Criteria III.
- Thirdly, Orkhon Valley is an outstanding example of valuable historical sites to illustrate several significant stages in human history of Central Asia.

Therefore, efforts of protecting and conserving World Heritage-OVCL have become Mongolia's honor and commitments to mankind.

A number of measures has been taken in order to strengthen research, protection and restoration of historical, cultural and archeological properties of World Heritage-OVCL. For instance, the Mongolian government has been expanding its cooperation with UNESCO and other international partners from Japan, Germany and Turkey in regards to protecting significant and valuable properties within the World Heritage landscape. During 1995-1998, the joint project of the UNESCO, the government of Japan and Mongolia, "On the preservation and conservation of the ruins of ancient Kharakhorum city" was implemented for the investigation of the ruins and the nearby areas: mapping and specification of the site scope. The partial excavation at sites of Kharakhorum, capital city of Mongolian Empire was implemented under the joint cooperation with German counterparts and resulted many new discoveries from unearthed artefacts. These excavated findings are expected to be exhibited at the open museum of Kharakhorum on site.

Under the support of Turkish government, the extensive excavation, restoration and protection work has been carried out at Turkic Monumental site at Khushuu Tsaidam to ensure its conservation. In doing so, the indoor museum has been built to exhibit original monuments and subsequent replicas at original



Erdene Zuu Monastery



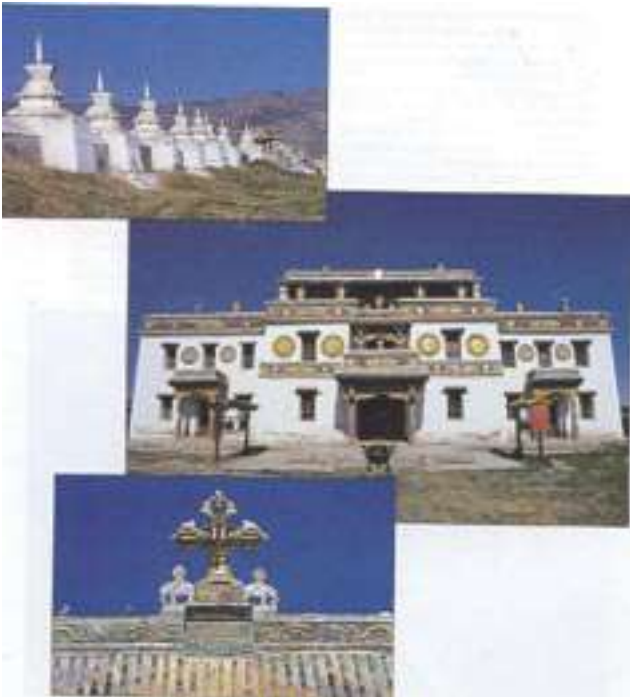
Excavation work

spots, being fenced with wall enclosures and with installation of security devices. There are ongoing wide-ranging activities implemented in cooperation with UNESCO Office Beijing, in terms of enhancing protection and conservation of Erdene Zuu Monastery-museum. In addition, serial restoration work is currently carried out under the budget of the Mongolian government. Tuvkhun Monastery and Shankh Monastery have been restored upon State Budget funding as well as donation from religious believers. From Erdene Zuu Museum, Tuvkhun and Shankh monasteries, a total of 30 immovable properties and Buddhist religious artworks have been categorized as outstanding artworks and subjects of appropriate protection schemes.

Archeological excavation work has been performed at sites of Ayush, Maidar and Avid temples, built in 1730 inside the Erdene Zuu Monastery. It revealed the foundations and the wall construction of the temples for research purposes. Furthermore, the Dambadarjaalin Foundation is demonstrating proactive

initiatives and efforts to rebuild the Main Tsogchin Temple of Erdenezuu Monastery. Under the support of the Japanese government, a joint project is currently being implemented for establishing 'Kharkhorum Museum' with preparation work to open the museum. The overall power and telecommunications supply has been substantially improved at Kharkhorin region, such as building asphalt roads to connect Kharkhorin town and Turkic monuments at Khushuu Tsaidam.

In 2008, "The UNESCO Workshop on the integrated values-based management for Orkhon Valley Cultural Landscape World Heritage Site" was organized by Mongolian National Commission for UNESCO and UNESCO Office Beijing in Kharakhorin province, Mongolia. This workshop aimed to develop the integrated sustainable management approaches of the World Heritage-OVCL including efforts necessary for environmental sustainability, and a management structure and requirements for establishing the OVCL Management Office.



Turtle monument



Tuvkhun Monastery



Introduction

The Otago Goldfields of the mid to the late 19th century provided significant wealth not only for the region of Otago but New Zealand. Millions of dollars of gold were mined from the goldfields through alluvial and hard rock mining with thousands of European and Chinese miners coming to New Zealand during the 1860s to 1890s to seek their fortune.

Archaeological evidence of the miner's activities can be seen throughout the Central Otago landscape with the most noticeable evidence being the numerous water races and sluiced terraces and hillsides. Associated with these mining sites are the remains of the townships that supported the miners and which were places of accommodation, supplies and communication to the outside world. These townships were crucial to the miners in the sparsely populated Otago region of the 19th century and without these centres of dependency the goldfields could not function.

Although some of the goldfields towns still exist today as thriving communities, many of the towns associated with historically significant 19th century goldfields have disappeared. Often the only evidence of these towns is building ruins made of sod, mud brick or stone. These ruins illustrate the isolation and hardship experienced by the new settlers to New Zealand who sought their fortune in gold and tried to establish themselves in the new colony. The ruins also illustrate the importance of the Otago Goldfields to the history of New Zealand, and even though the 19th century architecture of these towns was small and diminutive in nature, what survives is as important to the history of New Zealand as the larger more complex structural sites found in other Asia/Pacific countries.

One goldfields town which was associated with possibly the most profitable and successful 19th century hard rock gold mining operation in Otago, was Bendigo located in Central Otago (Figure 1 & 2). Today, however, little of this historically important 19th century town can be seen, with the only substantial building

surviving now being the focus of a stabilisation project. This report on Stage 1 of the Bendigo Bakery stabilisation project first provides a background to the historically important Bendigo goldfield. It then explains the significance of the Bendigo Bakery to the heritage of the Otago Goldfields and why it was selected for preservation. How the site has been protected is then described and finally details of Stage 1 of the project are presented and the aims of Stage 2.

Bendigo Township and its Goldfield

Alluvial gold was discovered at Bendigo in 1862 and by 1863 ca. 150 miners had staked claims along Bendigo Creek (Figure 2). One of these miners was Thomas Logan who discovered a gold bearing quartz reef in the hills above the creek where the alluvial mining was active, but at this time miners were more interested in winning the easier alluvial gold than invest in the more expensive quartz reef mining. By 1866 the easier won alluvial gold had been exhausted and many of these miners left the area to mine in other goldfields. Alluvial mining continued, but this required larger operations to bring water to the sluicing areas by water races and so only large companies which could afford to do this stayed on. There was therefore new interest in the quartz reef gold and by 1869 Logan and his business partners began to use a stamper battery to crush gold bearing quartz rock and extract gold. Logan & Co's Cromwell Company gold battery operation became very successful and profitable early on, leading other companies to quickly set up their own mines and gold batteries in the hills around Bendigo.

The large alluvial operations and the gold mining batteries required the dozens of miners to live permanently at the isolated goldfield. This saw three towns spring up, these being Logantown, Welshtown and Bendigo. Bendigo was located at the 'entranceway' to this goldfield, based around the successful Cromwell Company battery, and Logantown and Welshtown were located further away on the hills above Bendigo closer to the reefs being mined (Figure 2). Each town had hotels, stores for supplies, huts and miners tents, butchers shops and bakeries and it has been estimated that



Figure 1. Location of Bendigo, Central Otago in the South Island of New Zealand (Sourced from InfoMap 266. Crown Copyright Reserved).



Figure 2. Location of Bendigo (and Logantown) near Lake Dunstan, Central Otago, New Zealand (Sourced from 260-G41 - Cromwell. Crown Copyright Reserved).

these towns served up to 500 miners from this goldfield during its busiest period in the late 1860s to mid-1870s. Logantown and Welshtown peaked in their population and commercial use by ca. 1871-75 and then declined as towns by the 1880s with only a few residents after this time. Bendigo, however, became the main commercial hub as the other towns declined and continued to be occupied at least into the 1930s.

Much of the Bendigo Goldfield is now a Historic Reserve administered by the Department of Conservation ('DoC') and so the towns and their associated mines, pack tracks, sluicings etc. are all protected by this reserve status and, as they are also archaeological sites, by the Historic Places Act (1993). Some of the stone ruins of Logantown and Welshtown can still be seen today and were stabilised in 2004 by re-mortaring of the surviving stonework (Figures 3 & 4). For a brief history of the goldfield go to www.doc.govt.nz, search: bendigo history.

Significance of the Bakery to Bendigo and the Otago Goldfields

Little archaeological evidence of the Bendigo township is visible today with the only other remains besides the bakery being a corner of the stone Solway Hotel (built in 1870) with its garden wall, and a stone and mud cottage. The 1872 Bendigo bakery therefore provides context to the history of the Bendigo Township and goldfield (Figures 5 to 9). In addition, the Bakery is the only tangible evidence of a bakery on this goldfield and is the only surviving commercially sized 19th century bakery remaining on a Clutha basin goldfields archaeological site. The builder of the oven is also known, this being James Lawrence, who built commercial ovens at three other 19th century goldfields, but none of these ovens have survived.



Figure 3. Logantown ruin which was re-mortared in 2004 to preserve the structure (photograph: Matthew Sole).

Protection of the Bakery: Determining Ownership

Ownership of the bakery and the land upon which it sits is an interesting aspect of the history of the site in terms of the legal protection of the building and its heritage management. Because of the early success of gold mining at Bendigo, land was surveyed for the establishment of the Bendigo township in 1869 (Figures 10 & 11). The land surveyed belonged to the Crown (Crown referring to Her Majesty the Queen of the British Empire) and was part of a pastoral farming lease. In the late 19th century in New Zealand, it was common for town plans to be developed for areas where gold mining had become successful, even if the actual town itself was never established. Often these towns were surveyed onto land where working farms were already operating and which were leased by the farmer from the Crown. At Bendigo Township, only ca. 12 permanent buildings are recorded as being actually built at the settlement during the 19th century and so most of the lots on the town plan were never occupied.

When the town of Bendigo was abandoned in the late 1930s, the following years saw the few buildings which were present progressively stripped of their stone, iron and timber, therefore leaving little trace of the town (Figure 12). The area of the township again became part of the working farm. Beginning in the early 1980s, the farmer who held the pastoral lease from the Crown to farm the land where the Bendigo Township was located, began a process to acquire this land from the Crown for private ownership. In 2005 when concerns were raised about the survival



Figure 4. Welshtown miner's hut which was re-mortared in 2004 to preserve the ruin (photograph: Matthew Sole).



Figure 5. Bendigo Bakery ruins. The vineyards in the background lie over the old township. The footprint of the building is the new DoC Historic Reserve, the surrounding land being in private ownership (photograph: Matthew Schmidt).

of the Bakery, initial investigations found that ownership of the land upon which the ruins were located was unclear ie. it was not known whether the bakery was now located on private land or Crown land. Ownership would therefore determine whether the bakery could be easily protected or not as if it was in private ownership, preservation of the building would depend on the private owner.

An analysis in 2006 of surveyor's maps of the Bendigo Township from the 19th century through to the present, found that many of the surveyed sections from 1869 remained in ownership of the Crown up until at least the 1990s, and that few people in the 19th century purchased sections for private ownership (Figures 13 & 14). It was confirmed from this investigation that the small parcel of land that the bakery is located on was still owned by the Crown, even though by 2006 the surrounding township sections were now in private ownership. This therefore meant any member of the public could request that this land be transferred to the Department of Conservation for management. In 2008, the Department of Conservation gazetted the Bendigo Bakery as a Historic Reserve, meaning that funds could be contributed by the public to stabilise the building.

Stabilisation of the Bendigo Bakery: Stage 1

The stabilisation of the Bendigo bakery is being led by the Otago



Figure 6. Bendigo Bakery ruins. More vineyards lie behind the building (photograph: Matthew Schmidt).



Figure 7. Bendigo Bakery viewed from the back of the structure looking towards Oxford Street and the goldfield in the distance. The collapsed structure at the back of the bakery is believed to be where the oven was located. This mound is also made up of debris bulldozed onto the site over the years. The mound will be investigated during the stabilisation works.

Goldfields Heritage Trust (OGHT) (www.goldfieldstrust.org.nz). This long standing organisation aims "...to develop, represent and promote the historical sites, trails and events of Otago" and it has been involved in a number of successful projects to preserve Otago's Goldfields heritage such as the restoration of the Come-In-Time gold mining battery also located at Bendigo. The project is being supported by the New Zealand Historic Places Trust (my role being to provide archaeological support and advice on stabilisation of the structure and excavation of the oven), the Department of Conservation (DoC), the Otago Polytechnic Stone Masonry course and expert stone mason Keith Hinds who specialises in goldfields historic stonework restoration.

Stage 1 is currently underway. This first involved the project team meeting on site in February 2009 to discuss the project with Bruce McMillian and Martin Anderson of the OGHT who are funding the stabilisation. At present the legal paperwork required so the stonework and archaeological work can be undertaken is being prepared Amanda Ware of the Department of Conservation which will then be processed by me at the New Zealand Historic Places Trust. The OGHT has now approved funding for the project and is working with the Otago Polytechnic Stone Masonry course lecturer Steve Holmes and Keith Hinds to determine start dates for the project. I and the DoC archaeologist Shar Briden will soon discuss how much of the site will be disturbed for the proposed works, how the oven structure at the back of the building will be excavated, recorded and then managed, what parts of the building will be stabilised and other issues with the site such as drainage.

Stage 2 of the project, the actual stabilisation of the structure and the archaeological work, should commence in September 2009 and will be the subject of the next ACCU International Correspondent report from New Zealand.



Figure 8. Collapsing chimney on the back wall of the bakery viewed from the interior. On the right of the photograph was where the entrance to the oven used to be.



Figure 9. Window of bakery viewed from inside the structure looking out onto Oxford Street. In the 19th century, the schist stonework was set using a mud/lime mortar.

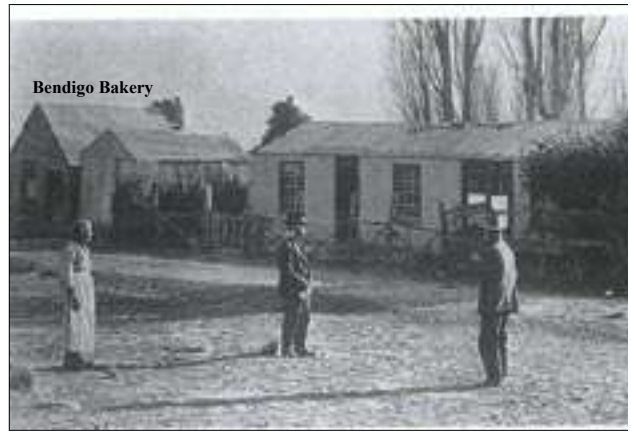


Figure 12. Bendigo 1936. The only known picture of Bendigo main street, "Oxford Street". The bakery is located on the far left of this picture and has a corrugated iron roof (Photograph courtesy of Ron Murray). All these buildings were stripped of their corrugated iron etc. during the Second World War leaving only the schist stone shell of the bakery.



Figure 10. Cropped section of survey plan SO 14113 of Bendigo Township and outlying features from November 1869. No buildings were located at this stage on the town plan. Note "Quartz Crushing Machine" on the bottom right of the map, this is the very successful Logan & Co Cromwell Company battery where the main township of Bendigo actually became established. Note also the two stores on the south side of Bendigo Gully road near the battery. The bakery would be built in 1872 across the road from these stores and is marked by the red rectangle.



Figure 13. Survey plan SO 1652 of Bendigo from 1909 showing sections possibly being leased from the Crown shaded blue and the remaining unoccupied sections also belonging to the Crown. The bakery section has been shaded red.



Figure 11. Extended survey plan SO 14115 of Bendigo Township from 1871. The bakery would be built one year later on the section shaded red.



Figure 14. Survey map SO 23856 of Bendigo Township from 1993 showing the entire township as belonging to the Crown. The location of the bakery has been shaded in red. Today, the whole area north of the main access roads Loop Road and Oxford Street is planted in vineyards and privately owned, except for the bakery section (as of 2008) and section 25. South of Oxford Street is Department of Conservation land.

Papua New Guinea

ACCU
REPORT

Festival for Safeguarding Mask Cultural in Papua New Guinea



Naomi Faik Simet

Introduction

Mask cultures of Papua New Guinea (PNG) are akin to the mask cultures of West Africa, South America and the Melanesian sub-region of the Pacific. In this respect some of them are associated with secret societies and are sacred. They are associated with initiation processes and ceremonies. In the country there are at least sixty different kinds of masks which come from about 30 different mask culture groups.

In PNG, mask cultures were found in mainly three regions: the New Guinea Islands, Momase, and the Gulf Province of the Southern Region. While the mask culture in the New Guinea Islands and Momase regions have been preserved reasonably well and continuously maintained, the mask culture in the Gulf Province was not so good preserved and went into a decline.

The National Mask Festival is an initiative of the National Cultural Commission of PNG, to combat any further erosion of mask cultures in PNG and to safeguard their survival into the future. It was started in 1995 and its staging at Kokopo in East New Britain on 15th to 18th July 2009 saw its fifteenth year.

The State of Mask Cultures in PNG

The first outsiders arrived on PNG soil in the mid-1870s, in mainly the coastal areas and quickly spread to other areas of the country. The first arrivals were Christian Missionaries and traders. While the traders mostly left peoples' cultures alone, the Missionaries on the other hand tried their best to destroy them, as they believed it stood in the way of the evangelization process. As a result, some cultures, such as the very colorful mask culture of the Gulf

Province, were completely destroyed by the 1910s. One of the well-known mask cultures was the *bevebe* which was associated with the *bevebe* ceremony and the long house known as the *eravo* of the Western Elema people. Only recently attempts are now being made to revive these elaborate mask cultures through the Gulf Mask festival, an initiative of the National Cultural Commission and supported by the Gulf Provincial Government.

In the New Guinea Islands and Momase regions, the picture is a lot better than that of the Gulf Province. Much of the mask cultures of these two regions have remained intact. The mask cultures of these two regions are associated with fraternities which are secret in nature and are associated with sanctuaries and men's houses known as *baus tambaran* (spirit-house). The masks of these two regions were known by different names in local terms, but now they are commonly referred to as *tumbuan* in Tok-Pisin (national lingua-franca). While it can be said that the mask cultures of these two regions are reasonably intact, it is recognized however that we cannot be too complacent and that measures have to be taken to ensure their continued survival into the future. This was then the commencement of the National Mask Festival.

The National Mask Festival

The first National Mask Festival was staged in Port Moresby in 1995 and which was followed by the second to the fourth festival. During the fourth festival it was realized that it was expensive to bring masks and people to Port Moresby and that Port Moresby was a long way from the mask culture areas. So the fifth and sixth festivals were taken out of Port Moresby and were held in Madang, a town on the Momase region and which was in the



mask culture area. After the sixth festival, it was moved to Kokopo in East New Britain where it has since remained until 2009.

The National Mask Festival is an annual event and which held over a four day period, around about the second week of July. Every year a number of different types of masks from the many Provinces of the country come to participate. These masks are highly varied in appearance and in performance. Some of them perform specifically only during the day, some perform specifically only during the night and others can perform both day and night. Some of these masks are the representations of spirits of the environment or ancestors of the past and this sense man of them are sacred. They are associated with fraternities in which only males can be members. The different mask groups that participate at this festival come by air, sea and some come by road; some taking many days to travel. The festival is funded jointly by the National Cultural Commission, the East New Britain Provincial Government and a number of corporate organizations; some contributing in kind.

The 2009 National Mask Festival

The 15th National Mask Festival once again attracted participating masks from many parts of the country with heavy participation from the host Province and the nearby New Ireland Province. A total of 24 masks from East New Britain appeared and eight

masks from New Ireland participated. From the other Provinces a minimum of two masks and maximum of four masks participated.

From East New Britain and New Ireland Provinces, it was mainly the *tubuan* masks which participated. In East New Britain the *tubuan* masks belong to the Tolai people. On New Ireland, the *tubuan* masks belong to the Namatanai people of the South Coast of that Province. Also from East New Britain another group of people known as the Sulka, came with the *bemlaut* mask, which is markedly different from the *tubuan* mask.

Apart from the East New Britain and New Ireland masks, the other Provinces which came with masks to perform were West New Britain, Morobe and Eastern Highlands Provinces. Unfortunately the groups from Madang and East Sepik Provinces were not able to make it to the festival due to transportation problems although some of them had actually made it part of the way. The festival opened on the morning of the 15th of July with the usual *kinavai* dance (canoe dance) by the *tubuan* of East New Britain and which was followed by mask performances for the next three days.

On the whole, the 15th National Mask Festival of 2009 was a big success, with which the Mask Festival Committee, the participants and the general public were very satisfied.



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- 1 East Sepik mask of 2007
- 2 East Sepik mask of 2008
- 3 Gulf mask 1
- 4 Gulf mask 2
- 5 New Ireland wanis mask
- 6 Pomio mask of East New Britain
- 7 Tolai *tubuan* of kinavai (canoe dance)
- 8 *Tubuan* after the canoe dance
- 9 Wanis mask of New Ireland

**ACCU
REPORT**

Heritage Conservation Centre: A Custom-built Storage and Conservation Facility for Cultural Properties and Works of Art in Singapore



Faith Teh Eng Eng

Heritage Conservation Centre (HCC), an institution of the National Heritage Board (NHB)(Singapore) is tasked with custodianship responsibilities to document, manage and conserve the collections of four National Museums, namely National Museum of Singapore, Asian Civilisations Museum, Singapore Art Museum and The Peranakan Museum. The Centre has a purpose-built facility with 14 climate-controlled repositories and 5 conservation laboratories to cater to the needs of over 155,000 artefacts and works of art acquired by the national museums of Singapore. The gross floor area of this facility is about 13,600 sqm, with a total storage area of 8,100 sqm. All repositories are also fitted with a good air-filtration system and fitted with custom-made powder-coated storage equipment. Ample space for movement is also worked in but without compromising good and efficient use of space. The compactor systems are thus widely used in HCC. All laboratories are fully fitted to suit the needs of conservators carrying out treatments for the collection.

To ensure optimum storage and preservation for the future generations, all artefacts are categorised and stored according to their material composition in different climate-controlled repository rooms that provide optimal storage conditions, suitable for the material. The relative humidity levels in these repositories are set between 55% and 65% and the temperature is set at 23 °C. These set points are decided based on cost effectiveness and also with consideration that majority of the collections acquired by the museums are from around Asia. Subjecting such

collections to the lower set points may therefore be detrimental. The storage environment in each repository is monitored by the Building Automated System on a daily basis. This helps to ensure a consistent storage environment for the collection so that any fluctuation in the repositories can be detected. The tolerance level in environmental fluctuation within each repository is set between $\pm 3\%$ in RH and $\pm 1^\circ\text{C}$. Any fluctuation beyond this range calls for investigation and rectification.

In addition to having a good facility to house the collection, HCC also looks into other preservation strategies to complement our collections management work processes. HCC has obtained SS (Singapore Standard) ISO9001:2000 certification in Collections Management and is committed to be abreast of the latest development in conservation and collections care issues. All artefacts and works of art are accessioned for easy identification, accountability and inventory purposes. Good housekeeping and stringent Integrated Pest Management (IPM) measures are in place. These IPM measures are important because pests and mould growth are two major problems for museums in tropical climate. All new acquisitions or collections returned from exhibitions are quarantined and checked for signs of mould growth or possible pest infestations. To avoid risks to other collections in storage, fumigation is carried out for identified cases. There are two types of fumigation processes. The first is called the "Controlled Atmosphere Treatment (CAT) and the other is the freezing method. The CAT involves bagging the collections in a big foil



Heritage Conservation Centre



Corridor Leading to Repositories for Permanent Storage



Textiles Collection Storage - Compactor System to Maximise Storage Capacity



Paintings Collection Store



Oversize and Sculpture Collection Store

bubble, removing the oxygen in the bubble to a low level of 0.2% and in its place, the use of either nitrogen or argon gas for a period of 30 days. The freezing method involves freezing the collection for 24 hours at a low between minus 20°C to minus 30°C and 24 hours acclimatisation. Artefacts are cleaned before they are brought into the permanent storage repositories. HCC observes this process flow stringently.

HCC is also equipped to meet the conservation treatment needs of the collection. The conservators play an active role in assessing the condition of artefacts and identifying suitable conservation treatments to stabilise the condition of artefacts or to prevent further deterioration. The general conservation approach adopted is to ensure that the integrity of the artefacts is retained. All conservation treatments applied are reversible. Conservators in HCC also actively advise on the preventive aspects of conservation. This includes recommending suitable storage methods for sensitive or fragile collections. Advice on display, mounting and lighting in exhibitions is also provided. Conservators also carry out Oddy test on materials used for constructing showcases to make sure that these materials do not emit gases or particles that may cause harm to artefacts in showcases.

The government of Singapore plays a major role in the protection of the cultural properties of Singapore. Since the 1970s, four historic districts, 84 heritage sites, two heritage districts trails and recently five community trails had been marked by the different government agencies for example, Preservation of Monuments

Board, Urban Redevelopment Authority and NHB. Dedicated resources to adequately fund most if not all activities needed for the protection and advancement of movable or immovable cultural properties in Singapore are well-supported. Budget to meet daily operating and staffing cost is well-provided for on an annual basis. Where necessary, additional funding for special projects is also provided for. An example of such project is the building alteration and addition construction work of HCC's facility. With an expanded gross floor area of 58%, HCC will be more equipped to meet the preservation needs of the growing museum collections. The expected date of completion is December 2009. In terms of meeting the cost of caring and conserving artefacts, NHB has also strategised to address the conservation and storage cost of these collections. In anticipation of the growing collections, NHB has also since 2008 allocated and set aside a fixed percentage of museum's acquisition budget for conservation and storage so that care and preservation is not compromised by volume.

NHB promotes the awareness and appreciation of the heritage of the people of Singapore. Her role in nation-building is prominent. Through active collection; identification and marking of heritage sites and trails; research and interpretation; conservation; access; display; and a robust preservation strategy, we are assured that the cultural properties in Singapore are well preserved. This is a privilege for without the commitment and heavy investment by the government, these artefacts may not be present for the enjoyment of this and the future



Artefacts Conservation Laboratories



In-House Photographic Studio for Visual Documentation

**ACCU
REPORT**

Restoration of Old Building Facades in the City of Kandy, Sri Lanka



Sujeeva Kaushalyani Peiris Deraniyagala

Kandy is the last kingdom of Sri Lanka, situated amidst high mountain range in the central region. Its access was difficult due to sudden steep rise of mountains and rocks. During the 15th and 16th century, there were no permanent roads linking the low country plains and the Kandyan Kingdom. So the Europeans found it very difficult to get access and could not drive a large army through the hostile terrain. In the late 18th century, the British managed to build a road to Kandy by making a tunnel at the Kadugannawa Pass. This was a major turning point of the Island's history that enabled the British to enter the hill country and occupy it with other coastal regions.

The British made Kandy as the administrative capital of Central region and built infrastructure necessary for a smooth functioning of a 19th century commercial hub. They were sensitive enough to keep away from the Sacred Area, where the Temple of the Tooth Relic - the most hallowed possession of the Buddhists is located. Kandy was essentially a spiritual city of the Buddhists and apart from the Sacred Area where the Temple, King's Place and four Hindu shrines located, other significant buildings were those of Kandyan chieftains. These are called Manor Houses and definitely influenced the British to pick up the architecture most suitable for the hill climate.

The British mainly concentrated on the lower areas of the city and built number of public buildings, the railway station, police barracks, club houses, bungalows and most of all roads to link the city with other areas. The British might also have studied the Dutch architecture on coastal areas and they amalgamated the styles to obtain pleasing built environment for the new administrative capital. Two distinct architectural styles can be

distinguished in Kandy today; the native Buddhist/Hindu style and colonial style. While the first is confined to the Sacred Area the Colonial type can be identified along the major streets and in the city centre. The most important feature of British architecture is that it had strong form and detailing but diminutive humane scale. They never rose beyond the ridge line of the mountains or an established height along the streets. This architectural form had been powerful enough to absorb the unsympathetic late 20th and 21st century new constructions.

Ancient buildings in the Kandy regions were mostly built using timber and wattle and daub. That may be a reason for their fast disappearance without any trace. Only a few temple buildings and manor houses in and around the Kandy City are remaining for us to present an idea about what they were like. Even these buildings were renovated with additions/alterations and thus their architectural authenticity is doubtful.

In order to fulfill a long felt need, the Central Cultural Fund, Sri Lanka is preparing a database on architecturally significant buildings in Kandy and suburbs. Although most of the temples and buildings within the historic city are documented and conserved, the CCF had no resources to expand its activities to the commercial area. But these buildings were documented and graded according to their architectural and historical values. A Master Plan was prepared to provide guide lines to future development and conserve the architectural character of the City. This work was carried out by the World Heritage Committee headed by the Mayor of Kandy and the Municipal Council with other relevant government offices.



Map of Sri Lanka with Kandy in the Centre



Police Barracks - dating from early British Period [19th Century]



British period buildings along Colombo Street, Kandy [19th Century]



One of the earliest Manor Houses that exists today — Giragama Walawwa, Yatinuwara Vidiya [Topmost parts of the house is totally made out of timber]



Typical Street House of British Period — House along Trincomalee Street, Kandy

The essential feature of these buildings is that the extensive use of timber. Most buildings have carved timber columns, timber panels for doors and windows; timber framed roofs, timber floors, balustrades and beautifully carved balustrades. But most of these older timber members are now deteriorated while some others are completely replaced by other materials like concrete, glass, aluminum or stainless steel.

One reason for this unacceptable situation is the cost of timber, which has risen to very high level during recent past, which is not affordable for average people. Unlike in Japan where trees are grown essentially for conservation work, Sri Lankan natural forest reserves are fast diminishing due to new development projects and illegal deforestation activities. Total forest cover, which was over 50% at the turn of the 20th century, is below 20% at present. As a result, heritage buildings that need timber for the restoration are in vulnerable situation. When people could not afford to use timber they simply replace the old ones with other materials. Worse still they never consider the historic/architectural values, age of the structure or its compatibility when replacing. Another way of losing original architectural form is that when a part of an ancient building deteriorates - especially in temples, people tend to replace it immediately because they feel it awkward to worship in ruined or incomplete building.

The Central Cultural Fund through the World Heritage Committee has been able to build awareness among the people regarding these heritage buildings and now the situation is not that bad. Yet there is long way to go to achieve totally acceptable built form for all that concerned. Modern appearance with simple cubic forms, which can be built with less cost and time, is another threatening factor to the preservation cause. People like to have modern type because these can easily adapted to any purpose and be easily fitted with air conditioning, electricity, water supply etc. With diminishing land areas people opt for maximum usage from a building and most old buildings have thick walls, many niches, plaster moldings and heavy roofs laden with half round clay tiles. Thus prominent buildings along major streets within the city are undergoing rapid, haphazard changes destroying the original facades.

The Central Cultural Fund provides free architectural and restoration proposals for the city dwellers and shop owners within the City, whose buildings have been undergone arbitrary changes during the recent past, in order to arrest the rapid degradation of built form. In addition, the Municipality has exempted the owners who are willing to retain old facades from paying taxes and provide financial assistance to those who want renovations. Together these two institutions have been successful in turning the tide towards a favourable position and hope to proceed further to ensure legal status to new Kandy City Development Proposal.

Beautiful detailing of ancient buildings in the City of Kandy;



Carved Valance Board



Deteriorated timber window and Valance Board



Masonry moldings of the Queen's Hotel



Temple building being conserved by the Central Cultural Fund – Katudeniya Vihara



Accepted built scale of the City—maximum of two storey



Lack of sensitivity! – Recently painted window of a historic building



New Constructions breaking the two storey height



After 2005 Tsunami, Thai Government realized the impact and effects of natural disaster on livelihood and properties. Several government agencies have been involved in developing the national alarm system. The Fine Arts Department, on the other hand, focuses on the deterioration and damage of cultural heritage and archeological sites as a result of natural disasters.

With high demands in archaeological data usage, to quickly obtain the data from Thailand's databases was nearly impossible. Thailand's Office of Archaeology introduced the implementation of computer technology to store and manages cultural heritage data and information. Such innovations like Geographical Information Systems (GIS) and Cultural Mapping have led Thailand to a new world of information management systems. These advanced technologies have significantly supported and assisted Thai archaeologists to deal with a large quantity and complexity of information, which an old-fashioned, basic record keeping and administration cannot do.

GIS integrates data from diverse fields of archaeology, geology, hydrology, climatology, environmental science and demography to develop plans for agriculture, irrigation, road construction and tourism. Compiled data is stored in an integrated database. This also encourages planners and developers to work on the same plan, and to ensure that the archaeological remains at all world heritage sites are not endangered by poorly conceived or uncoordinated actions.

The Fine Arts Department developed the GIS Project related to destruction prevention of cultural heritage as a result of natural disaster in 2003, which was prior to tsunami, but there was a lack of clear policies and direction for the GIS implementation and using the geo-spatial data effectively. Many staff in the Fine Arts Department did not also understand the actual content of GIS.

Consequently, the Fine Arts Department conducted a research study to draft the GIS Master Plan for Arts, Culture and Heritage. This Master Plan is an important tool in supporting troubleshooting of responsibilities of the Fine Arts Department to develop and sustainably manage cultural heritages. The 4-year Master Plan was finalized in February 2009. The purpose of this Master Plan is to develop the geospatial data sets for arts, culture and heritage as a specific group of information with organizationally-specific layers. This information will be a tool used for managing spatial information and presenting in a layer in a map. The layered data will show dimensional relationships and information of arts, culture and heritage. The data will also be a key to enhance understanding of issues and resources to support planning and decision making for the arts, cultural heritage and environmental-oriented spaces. Moreover, the data will also be useful in planning, problem solving in conservation, monitoring and foreseeing situations to prevent the destruction or loss of cultural heritages.

The analyzed result of data sets developed from the GIS Master Plan can describe spatial relationships with layers relating to the environment or relevant sources, which provide a bigger picture in wider areas. In addition, the spatial data and attributed data from GIS analysis can be applied and used for different purpose, such as location search; setting up conditions, patterns and trends; and, creating models. The data can also show the relationships between different layers and geographical areas as well as the relationships between sites in a large area. Furthermore, the data from location survey can be used to explain, for example the distribution of ancient communities, prehistoric resources, certain types of antiques, modern architecture models, and to identify types of antiques found in the relationships-oriented areas such as the main boundary marker of a temple stone, graves or antiques. The GIS Master Plan of the Thailand's Fine Arts Department was developed aiming at, as follows:

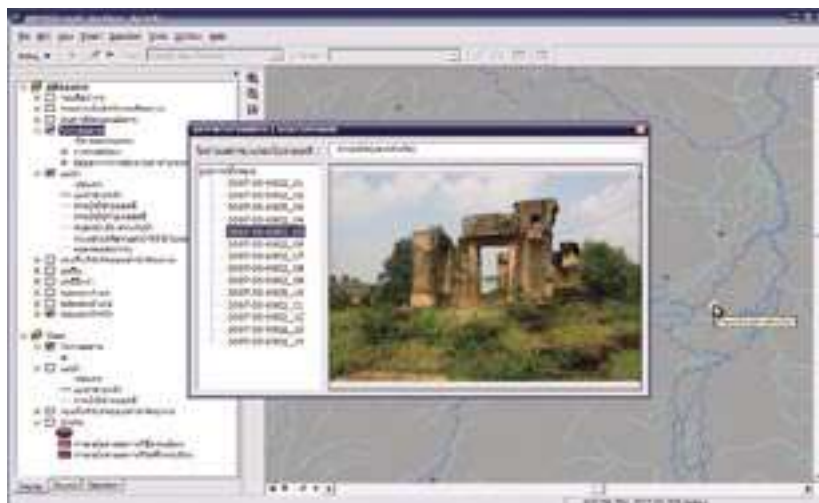


Figure 1: Thailand's Ancient Monument Database on GIS Application

- Planning to prevent, and troubleshooting the damage by natural disasters, for example risk areas analysis, flood and landslide prevention programs and rescuing historic districts from floods;
- Planning and troubleshooting in high-density historic and urban areas such as community expanded in the ancient city and historic areas using aerial photograph and GIS in planning for surveillance and protection of heritage resources and national cultural heritage. Due to economic factors and town development plans, there is a high risk that community expansion can destroy historical sites;
- Studying the impact on ancient monuments, historical sites, ancient cities and communities, as a result of infrastructure development, by using survey maps developed during planning, designing, construction and maintenance process; and,
- Surveillance and monitoring the country's natural resources to inspect effects on historical sites, ancient city and community

areas by using current satellite images superimposing and overlaying the old data maps.

Thailand's Cultural Properties and GIS Database Development

The Office of Archaeology developed and implemented a GIS database for cultural properties in 2003. System users were also involved in the design process. The database of cultural heritage sites was created to build GIS layer. Its structure relationally links with archaeological sites. It contains data collected from, for example cultural heritages, national museums, national archives, traditional architectures and other sources defined by Thailand's Fine Arts Department. The Fine Arts Department later developed another database to collect data from ancient monument evaluation and priority. The ancient monuments database has clearly stated values, qualities or cultural significance of the properties and management plans for each property that also explicitly address issues on preservation of those values.

To be continued in Thailand's Cultural Heritage Protection Using GIS: Part II, Prediction the impact of disaster on ancient monuments by GIS.



Figure 2 – 3 : GIS Website of Thailand's Fine Arts Department



1. Exhibition “Antique and Medieval Art of Uzbekistan”

For the first time, the unique archeological collection of the Fine Arts Institute was presented in Tashkent, the capital of Uzbekistan. The exhibition took place in the International Caravanserai of Culture by Ikuo Hirayama, the place used for international scientific-theoretical conferences, seminars and trainings on the protection and the restorations of cultural heritage.

At the exhibition, there were many artefacts displayed, which were obtained as a result of the archeological excavation, “Art Expedition of Uzbekistan” on the south territory of the country. Exhibits were unique ceramic molds and rock objects from the Bronze Age, dated to the second-half of the second millennium B.C.; unique art objects of the antiquity (clay and gypsum of sculpture, the objects of adornment from the ivory, precious stones and others); medieval glazed ceramic parts and terracotta ossuary of Sogd; and also the different archeological objects of the early and late Middle Ages.

2. The Conservation Science Laboratory of the Museum of Timur's Dynasty History

The preservation of cultural heritage is one of the most important tasks of each society. In Uzbekistan, practical works of preservation and restoration are also conducted. One of such organisations performing restoration work is the conservation science laboratory in the state museum of Timur's dynasty history in Tashkent. The laboratory occupies two small premises. It is equipped with modern equipment and the necessary environments for restoration and conservation treatment of different artefacts. Since beginning of 2009, young specialists have started working at the laboratory. In this short time they made the following works:

- For the first time, the new kind of polymer, PBMA (poly-butylmeta-acrylate) as fixing and gluing agents to join the fragments, was applied in practice. This type of chemical agent was

developed by an employee of the laboratory of the Institute of Chemical Polymers by Vakhidova Nayira. It differs from other kinds in terms of heavier molecular weight;

- Glazed ceramics and “hum fragments” were restored. Also, one whole hum was completely restored, which was excavated from monuments of the Tashkent oasis in Kavardan.¹

Hum – one of the most widespread kinds of ceramic vessels in Central Asia. It served for storage of grain, rice, wine, water, etc. and it was characterized by a smooth surface and a thick rim.

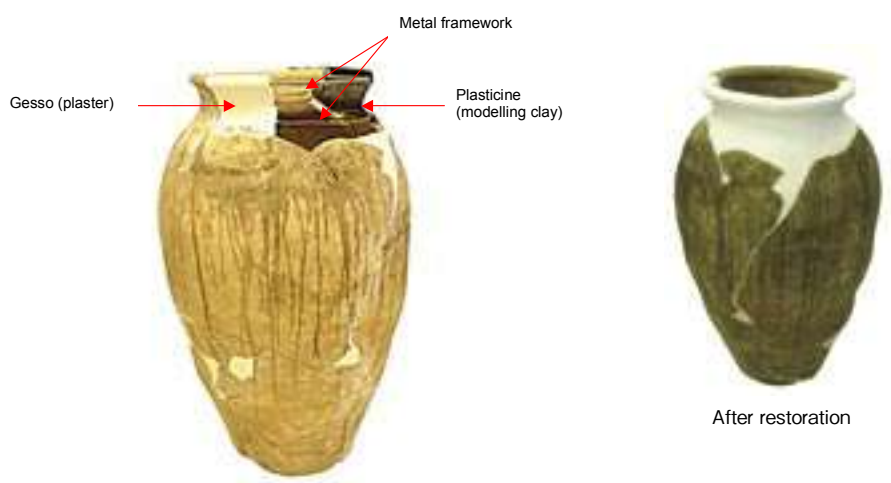
The excavated hum consisted of a set of fragments. Some of them have been pasted (gum up) on site during excavation. Judging by the vertical welds, it can be assumed that it was broken by being dropped on the ground from the height. Before joining the shards of hum, each has been cleaned of former glue layers. Through conservation treatment, hum has been almost completely restored. Only its missing parts (the most part of a rim with a neck and some places on the wall of hum) have been filled by plaster. Because large parts of the neck were missing, traditional methods were not enough in its restoration. At first, the framework of metallic wire was made, and then moulding clay was taken from the broken edge.

In conservation and restoration treatment, the different types of the glue were used: above-mentioned polymer PBMA, PVA and Trilon-B72 (obtained from Japan). This new polymer PBMA completely met the requirements of works of pasting and strengthening of various objects, made of damp clay, glass, wood and metal. This new polymer as well as previous kinds is colorless with high-viscosity and quick hardening. Acetone was used as a solvent of acrylic polymers. Restoration was executed by the author of this report. It is possible that this restored earthenware will soon be displayed among the exhibits of the museum.



Conservation Science Laboratory

¹ *Kavardan* - A fortification, with total area 70 hectares, is located in the country side of Kavardan, on the left bank of Karasu river, in 25 km to the east from Tashkent. According to written sources, the city in the early time was called Kabarna. On scientific research, human habitation in Kavardan supposed to start from the second to first century B.C. and ended in the thirteenth century A.D., when the Mongols invaded and completely demolished the sites. Kabarna consisted of two parts: “Shakhristan”, fortification itself and “Kush- Ark”, two citadels in the west. A distance between the citadels was 250 m. The local people used to call two citadels as Khontepa and Khonimtepa respectively (Khon means King, Khonim means Queen and tepe means hill). According to the local legends, the city was ruled by the King and the Queen and each citadel was connected with the underground tunnel.



Description of restoring process of *hum*





Clay and laterite were widely known as the construction materials in old times, and using of clay plaster was not strange to Vietnamese people. However, according to the rapid development of industries, the practice of using traditional materials in local areas has nearly disappeared. In this article, I would like to introduce the basic information of using clay and laterite in traditional construction as building materials and to make some remarks.

What is remarkable with those materials is its sustainability; they are eco-friendly building materials and can be easily and locally available. Using those kinds of materials will save the energy production; reduce the industrial pollution; minimize the transportation expenses and these factors will contribute the sustainable development in the future. However, the traditional local materials usually have some negative properties, being hard to handle. It is the researchers' responsibility to improve this negative feature and to enhance the positive aspects of these materials with scientific knowledge.

These pictures show the extensive application of the local material from the private house to the royal building.

Picture 1 and 2 are photographs of the private house constructed by using clay. The clay of this area is highly durable for the building. There are some 200 years old houses which have still been so stable now. Picture 3 and 4 are photographs of the private house which was constructed of laterite stone, mined from their own garden.

It is especially worth noting that laterite is very useful for consolidation. When laterite is powdered and pressed, it easily consolidates with high compression strength. When you mine laterite from the ground, it will quickly harden by being exposed to the air; the clay mine close to laterite had the related properties. Most of basic foundations of royal buildings in Hue were consolidated by the mixture of laterite, lime, clay and brickbat, which demonstrates that construction experts of the past well understood the properties of laterite and clay.



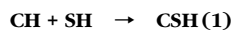
Picture 1, 2: Clay used for private house construction, Duong Lam village - Hanoi



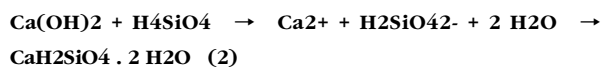
Picture 3: Laterite used for private house construction
Duong Lam village - Hanoi

Picture 4: Exploitation of laterite at their own garden
Duong Lam village - Hanoi

Basically, using lime and laterite or brickbat is the application the pozzolan method based on the creation CSH mineral, summarized in abbreviated notation as follows:



The basic pozzolanic reaction:



On the experiments with reaction process of laterite with lime mortar, we have recently got satisfactory results. The experimental composition contained clay, laterite, lime powder and buffalo animal glue with different ratios. The chemical reaction followed based on pozzolan mechanism at the room temperature and made the new material that was insoluble and strong enough.

However, we sometimes had bad results when we used hydrated lime with laterite, brickbat or clay, because moisture-absorption properties and shrinkage of these materials were so high that crystal structures of calcite were easily broken. Usually, it is better to use the lime powder for this purpose. If the exposure time of the lime powder in water was too short and had not enough time for hydration process, it could not form the chemical linking water of laterite or clay to develop a new structure. We hope we will get a successful result of this experiment in the near future and will further report in the next article.

During surveying these traditional materials in the laboratory, we simultaneously found out the conservation treatments and conserved the construction techniques of private folk houses. Besides, the research in the local materials will be beneficial for suitable development in traditional materials which is cost-saving as well as friendly with nature.



Picture 5, 6: The consolidation of foundation by laterite, clay, sand, lime, and brickbat
Can Chanh Palace – Imperial City – Hue Citadel



Introduction

The site known as Duong Long tower is the three-tower complex in Tay Son district, Binh Dinh province, Central Vietnam. The three towers were built in straight line from north to south, facing to the east direction. They were on the top of a high laterite hill. The Center tower is the biggest among three towers. They were the most famous of Champa architectural vestiges dated from the late 12th to the early 13th century. The Duong Long tower complex was brick-made with the stone-carved decorations, four-level roof with the height of about 43 meters, and located in an area approximately of 100m x 200m. The antechamber, the lotus-shaped roof, and some corners had fallen down on the stone base of these towers. Many excavations were conducted since 2006 to study pre-restoration for finding ways to stabilize the deteriorating ruins and in order to safeguard it to the general public to enjoy.

Excavations

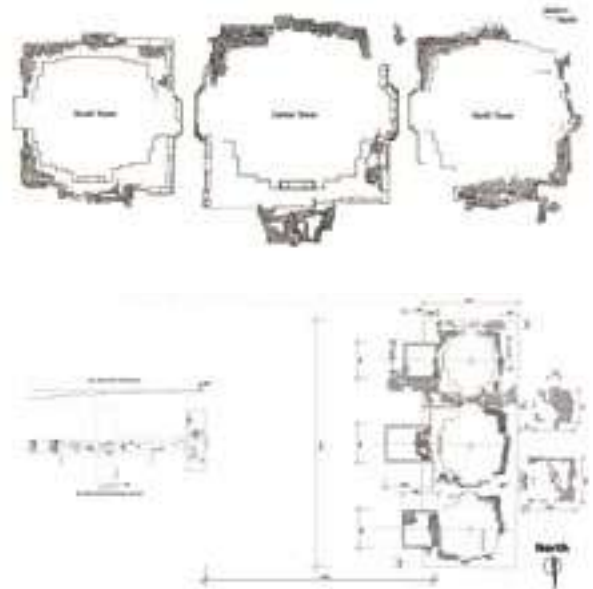
The archaeologists conducted three excavations from 2006 to 2008, and exposed the tower's stoned base and other underground foundations. First excavation in 2006 explored the stone base with decorations and the brick platform around the towers. The second fieldwork in 2007 excavated the extended area in front of the Center tower. We unearthed several annex architectures that may be built in later period and many valuable artifacts. In addition, the third excavation in 2008 exposed two brick-made, open-air temples at the west area. We also unearthed the entrance from east area to the Center tower. Archaeological artifacts made of terra cotta and stone were so many, over two thousands items. Most of them are sculptures and decorative reliefs at the tower's roof corners with Hinduism God: Naga, Garuda, Makara...

Restoration

Restoration work of Duong Long tower complex can be divided in two periods. The first one was conducted at the same time of the 2006 excavation. The main project was aiming to repair and restore the deteriorating ruins especially in the upper parts of towers, including the top to the stone perrons. Restorers fixed the broken stones, trying to replace the lost parts with new ones of same material. They made the decorative sculptures in comparisons with the existing parts. Fortunately, they had almost complete documentation, with highly detailed information of Duong Long tower complex performed from 1908 by Mr Henry Parmentier, a French scholar. Restorers can study from these references to restore the towers. The second period of restoration will be conducted when complete information is documented after the fieldworks. The base of tower and decoration door will be restored by the time.

Conclusion

The Duong Long tower complex in Binh Dinh – Vietnam is the most famous, big and high tower of ancient Cham's architectural structures in the golden period of Champa's art history. After the restoration work, Duong Long complex will be the good archaeological site both for researchers and the general public to enjoy the on-site artifacts exhibitions and the wonderful scene of three towers on the high hill.



Top view of Duong Long tower



Duong Long tower (before excavation) Photo by Tran Ky Phuong



Duong Long tower (after excavations)



Stone base of Duong Long tower (after excavations)



Lotus flower on the top of the tower



Restoration of the relief on the roof of Duong Long tower



Makara: Aquatic creatures in mythology



The temple site (in the west)



Naga: A semi-divine race associated with water, serpent, dragon etc. in mythology



Ling: Agni (a god of fire) symbol



Naga

Note: Photographs of artefacts from Duong Long Tower Complex were provided by the courtesy of the Center for Archaeological Studies.

Special Reports



ACCU
REPORT

Ceremonial Opening of the Sigiriya Museum and Information Centre

Sujeewa Kaushalyani
Peiris Deraniyagala

Sigiriya is the 5th century rock fortress of the patricide King Kasyapa I, who reigned from A.D. 477 to 495. He escaped from his enemies at Anuradhapura and made abode at this giant rock rising about 600 feet from the surrounding plain. He turned this early Buddhist monastery into a magnificent palace complex and resided like *kuvera* - the god of Wealth. As a result of his endeavours Sigiriya today is considered as a fine example of human achievements in the Asian region. Sigiriya is one entity where one can experience engineering, architecture, landscaping, ancient city planning, hydraulic engineering, art, sculpture and graffiti all at one place. Even today it is difficult to perceive the magnitude of the feats achieved when considered the resources that were available during that period as far as the 5th century.

When the Cultural Triangle was formed, Sigiriya was placed at the central position of a triangular area formed connecting the ancient capitals of Anuradhapura, Polonnaruwa and Kandy. Under this UNESCO assisted project, Sigiriya archaeological reserve

was explored, excavated and conserved and the whole area was landscaped to suit the ancient setting. Ancient walls, Palace on the summit, Water Garden, structures at Boulder Garden and Terrace Garden, the famous Lion's Paw etc. were all conserved and visitor facilities were improved. But until now the "dream" of setting a museum at the site could not get realized mostly because it required huge sum of finances.

The Government of Japan came to the assistance by shouldering the financial aspect and expertise where necessary. JICA experts handled the project from the inception and due to their untiring efforts Sigiriya World Heritage Site will get a new lease with the opening of the new Museum and Information Centre in June 2009, which was a long felt need at Sigiriya, the most visited site of the famous "Cultural Triangle" of Sri Lanka. This project will be a unique symbol of friendship and cooperation between two countries.



Sigiriya rock from the lake end



An interior view of the new museum



Gallery depicting Ibbankatuwa Megalithic burial site

Archeological collection of Fine Arts Institute is one of the unique collections, which stored the unearthed artefacts found by the researchers of the Institute in the archeological expeditions on the territory of South Uzbekistan. These collections consist of the articles of daily life, craft, fine and applied art of Central Asia from the period of Bronze to the Middle Ages. During the earthquake in Tashkent on 22 August 2008, some exhibits of the archeological collections were significantly damaged and required urgent restoration work.

Most damaged exhibits were clay sculptures from the outstanding monuments of *Khalchayan* and *Dalvarzin-tepa*. These sculptures were made from unburned clay and were painted with mineral polychrome paints. The sculptures of Khalchayana were dated to between 100 B.C. to 100 A.D., while the sculpture of Dalvarzintepa dated back to a period of the early third century A.D.

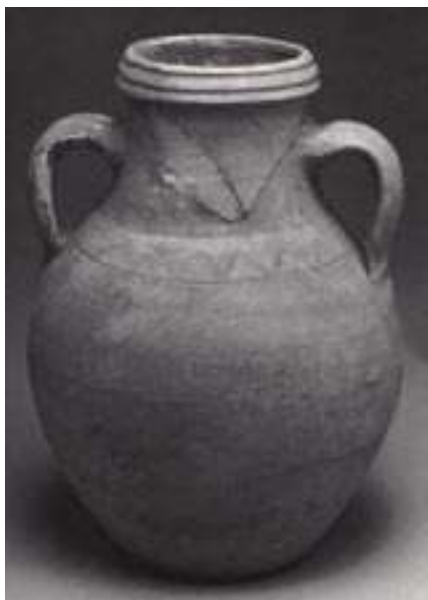
Among the damaged exhibits were the ceramic jugs of antique period and the ceramic vessel of the sixth to fourth century B.C. Due to the Institute's capacity as a conservation laboratory, we

only succeeded in restoring a ceramic jug of antique period from Dalvarzintepa. This jug was egg-shaped body with two handles, the narrow neck and the flat bottom. On the upper part of the neck, there was the ornament in the form of wavy lines. It was made from the fired clay on the potter's wheel, with the size of 25 cm in height and 7.7 cm in diameter, covered with bright angob (paint).

The restoration was carried out on the usual method:

- broken crocks were assembled and glued by PVA (polyvinyl acetate);
- missing parts were filled with gypsum;
- the surface was painted with natural color.

Restoration work was made in the conservation science laboratory of the Fine Arts Institute by the students of the National Institute of Art and Design Named after K. Begzad, under the guidance of the author of this report. Restoration of other damaged artefacts will be also made by them when necessary equipment and materials are available.



Before earthquake



After earthquake



After restoration

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