

ACCU Nara  
International Correspondent

# The Eleventh Regular Report



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



# The Eleventh Regular Report



## ACCU Nara International Correspondent

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

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## The Stone Image of Gautama Buddha Discovered at Boro Tangra Dhap and our Updated Research

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Pundranagor, the most ancient capital of Bangal is situated in the northern region of Bangladesh. Though Pundranagor is now known as Mahasthan at the Bogra district, it was historically the capital city of ancient Pundrabardhan Vukti. At that time, mighty river Karotoa was flowing in the east and the city covered an area about 15 km towards south, west and north in the outside area of this city. In out-skirts of the city, Buddhist monasteries, *stupas* and temples have been found from archaeological excavations. Such numerable and valuable treasures of artifacts are still lying scattered and hidden under the mounds of this vast area. Archaeological excavations were carried out only in a few mounds, but a large number of invariable artifacts have been discovered, which have played a very important role in finding out the ancient history in this region of 2,500 years ago.

Many valuable artifacts were found not only through archaeological excavations, but also by either ploughing land, excavating tanks and some are from erosion of soil during the rainy seasons. Such precious sand stone images of standing Buddha were discovered from the cultural mound of Boro Tangra Dhap lying 10 km away from the Mahasthangarh. The village of Boro Tangra is situated close to an ancient mound where no archaeological excavation has yet been carried out. In the year 1994, the land owner of Boro Tangra found the stone image of Buddha while cutting earth for tilling or cultivation, and he reported it to the Department of Archaeology. The then custodian of Mahasthan archaeological museum collected this image for preservation. The image was made of sand stone and measures in 1.10 m in length, 58 cm in breadth and 20 cm in thickness. The most important characteristic of this image was that Lord Gautama Buddha was engraved on the both sides of the sand stone plate in a standing position, which was justly a unique and rare in the image so far collected in Bangladesh.

Here designated in the two names for easy understanding:

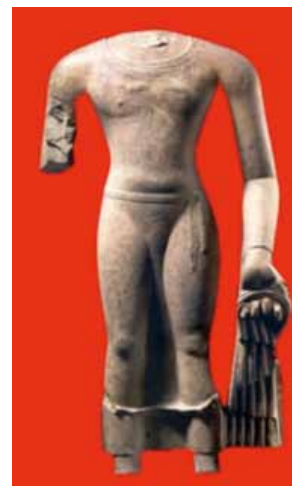
- (1) Buddha image No.1
- (2) Buddha image No.2

In the 3rd century B.C., Mauria Emperor Asoka the Great built 84,000 monasteries, temples and stupas in the Indian subcontinents after he became a follower of the Buddhist religion. At the same time, Buddhist religion experienced a period of instability in the Indian subcontinent, because the Gupta Emperors (3rd century A.D. - 6th century A.D.) were followers of the Hindu religion. In spite of that they were very tolerant to all religions. According to the history, the Gupta Emperors didn't interfere to other religions. As a result, Buddhist followers carried out their religious practices very peacefully and Buddha image No. 1 was probably made in the Gupta era. After the reign of Gupta, Raja (King) Shasanka ascended the throne of

Bengal in 606 A.D. He was the very conservative Hindu king and he died in 637 A.D. From that time, unregulated disorder scattered in the entire Bengal, which continued to the end of 750 A.D. It is most probable that Buddha image No. 1 was attacked by the followers of other religions at the time of the disorderliness and it lost his head, a right hand and feet. At the same time Buddhist people were derived away from Bengal.

The Buddhist religion underwent again extensive swing-over in Bengal when Pala Raja (King) Gopala ascended the throne in 750 A.D. Pala Dynasty ruled over the area to the end of 12th century A.D. and they were followers of the Buddhist religion. Consequently, the Buddhist followers returned back to Bengal and started their religious practices where the monasteries, temples and stupas were established long ago (4th-5th century A.D.). In this situation, most probably the Buddhist monks rescued the lord Buddha image No. 1 and opposite side of this image, again they engraved a standing Buddha image comparatively smaller from before one in 9th-10th century A.D.

Bihar Dhap and Bhasu Bihar Buddhist archaeological sites are situated very near to the archaeological site of Boro Tangra Dhap. Through the archaeological excavations of Bihar Dhap and Bhasu Bihar, gigantic monasteries, temples and huge datable precious artifacts of the Gupta and Pala period have been discovered. It is proved that long after the destruction of the architectural signs and symbols of the Gupta age, culture of Buddhism again became prominent in the Pala age. Therefore, the Buddha image No.1 might have been worshipped during the Gupta age (3rd century A.D.- 6th century A.D.) while No.2 was worshipped during the Pala age (8th century A.D.- 12th century A.D.).



Standing Buddha (5th century A.D.), Buddha image No.1



Standing Buddha (9th-10th century A.D.), Buddha image No.2



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

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### Introduction

The Hyderabad Residency was the house of British Residents from the year 1808 to 1948 AD, built on the banks of river Musi, on the land acquired from the Princely State of the Nizams of Hyderabad signed in the year 1800 AD and strategically located on the route connecting British Cantonment & the walled city of Hyderabad. The construction of this building led to a major growth of the city with busy markets, trading & banking center. The Residencies of British India were political offices, each managed by a Resident, which dealt with the relations between British India and a large number of princely states.

The building was built on the lines of Palladian villa starting from 1803 AD, and over time transformed itself from the beautiful villa that housed James Kirkpatrick, a Resident who married a native Muslim woman Khairu Nissa, to a full fledged Residency that was the seat of all major decisions and their implementations relating to the state of Hyderabad. The entire campus of about 42 acres has several heritage buildings associated with the Resident's functions mostly conceived and built at one go. In the year 1963, the building began to be used as an educational campus for Women's College of Osmania University. Change in function caused a major revamp in usage of different spaces and lack of maintenance in a channelized direction has caused varying degrees of decay and deterioration. The building was included in the 100 most endangered buildings of the World by the WMF Watch list in the year 2001 and ever since an integrated initiative & sustained efforts towards its restoration has been on although on a very slow pace.

The total area of the campus is about 48 acres with about 18 acres of built up area constituting the Durbar Hall block, Wings, Ancillary Blocks, Barracks, Bastions, Compound wall, Gateways, Gardens, Model, Cemetery and remnants of the Zenana (female quarters). About 42 residents have occupied this Residency till 1947 AD, making additions & alterations to it.

The sheer size of the heritage property and the volume of study undertaken over the years make it difficult to present even a summary of the same here. Therefore this report specifically deals with the existing condition analysis of one of the most widely used traditional roof systems in South India and in the British Residency complex and proposed viable solutions for its repair and restoration - a study undertaken by the author and her team in association with Ravi Gundu Rao & Associates, Mysore.

### What is Madras Terrace Roof?

Madras Terrace Roof is one of the earliest forms of traditional flat roof system used widely in Southern India

especially Tamilnadu, Karnataka and Andhra Pradesh. It constitutes of large wooden primary beams running along the shorter span of the room and wooden joists of an approximate size of 15 cm × 10 cm size (or 15 cm × 7.5 cm) placed at a c/c distance of 30 cm perpendicular to these beams and spanning them, together supporting the entire flat roof above. Where primary beams are not required due to short spans, these timber joists are inserted within the wall with a gap left all around the timber section edges to facilitate its expansion and contraction and permit evaporation of trapped moisture and humidity. Such edges prevent an easy infestation of termites. A layer of 'terrace bricks' measuring 15 cm × 7.5 cm × 2 cm approximately (may vary slightly with regions but essentially thin bricks) are laid on edge in lime mortar along diagonal rows supported closely by the wooden joists below. In some cases flat brick tiles are laid above this layer to accommodate the lime concrete roof which predominantly acts as the water proofing layer for the entire system. It is very important to drain the terrace rainwater by providing sufficient slopes and this is achieved by laying brick bats and lime in the ratio 3:1 to required thickness and consolidated using a wooden rammer. This layer is allowed to solidify and dry well carefully taking precautions to avoid cracks under intense summer heat by covering it up with hay and sprinkling water. For additional precaution flat square tiles measuring 10 cm × 10 cm × 1 cm are laid in two layers in lime mortar and the whole is finished off in course lime mortar as the final finish for the entire roof system. The soffit of the ceiling is also finished off in course and fine lime mortar to hide the diagonal bricks and give a clean appearance.

### Condition of Madras Terrace Roof in the British Residency Complex

The oval room is the only major space in the entire Durbar - Hall block where Madras Terrace roof still exists, apart from the semi-circular east & west balconies. The ancillary buildings however still witness an extensive usage of Madras Terrace roof system. It is conjectured from historic records and physical evidences that the Madras Terrace roof in the rest of the rooms were converted to Jack arch roof in the late 19th century perhaps.

The Madras terrace roof in the oval room is in a severely deteriorated condition. Due to the deterioration in the water proofing courses the bricks in the Madras Terrace roof absorb water and retain within themselves for prolonged periods thus weakening the lime mortar bonds, causing cracks, & even detachment from one another threatening to collapse. The seepage causes supporting timber beams & joists to decay, warp, deflect, and discolor etc thus weakening it & causing a structural failure. This failure shows itself evidently along the ceiling

on western and eastern portions of the oval room, where the ornamented thin sections of iron sheets have rusted and detached themselves from the wooden rafters due to falling of loose bricks/chunks of lime mortar etc on it. During the monsoons and occasional summer showers, these portions of the roof leak heavily and the wooden floor below in turn gets damp, resulting in seepage of water through the same which has further caused the dilapidation of the ceiling and flooring of the lower ground floor also. The tar felt on the terrace level roofs has never been a sensitive solution to arrest seepage of water. Uneven slopes, cracks and trapping of moisture between layers add to the deterioration.

In the ancillary buildings like Physics and Chemistry blocks addition of tar felt, deterioration of the waterproofing layers, improper terrace slopes and choked rainwater down take pipes have caused damage to the wooden joists and beams below and thus weakening the entire roof system. A secondary cause for deterioration of the Madras Terrace roof is the extensive termite infestation which begins within the inner sections of the wood. The timber beams and joists weaken at the wall-end sections and either start detaching from the wall surfaces or lead to collapse of entire roof. A portion of the roof has collapsed due to the above reasons in one of the rooms, raising a major warning bell for the caretakers. Though wooden joists/rafters and beams are in fairly good condition externally, peeling off of soffit lime plaster leaving the terrace bricks exposed, discoloration on the ceiling and walls due to rainwater seepage, vegetation growth and root penetration, dislocation of wooden joists along the wall edges etc are warnings for an impending collapse or at least serious damage. Most of these rooms have been evacuated and are awaiting restoration works.

It has also been noticed that another major reason for the deterioration in the Madras Terrace roof is the variation in the c/c distance between the timber joists. In the most authentic Madras Terrace roof the distance is maintained as 30 cm. In the Old Physics block the distances vary from 30 cm c/c to 45 cm c/c. The size of the timber joists also varies at the flange from a mere 5 cm to 15 cm. The 5 to 10 cm flanges cannot bear the entire load for long and perhaps have started giving away. 15 cm × 10 cm joists perform better than thinner sections. Deflections and horizontal cracks are seen on the primary beams in some rooms which are also major causes for failure of the roof.

### **Recommendations for Repair of Madras Terrace roof in the British Residency Complex**

All the tar felt and bitumen sheets in both the main block and ancillary buildings should be removed to permit all the water to evaporate before undertaking any waterproofing or restoration works. The waterproofing should be re-laid in brick bat *coba*\* and lime mortar as per original with corrected slopes, *vata*\*, coping for parapet wall, cleaned drain mouths and good quality CI /handmade down take pipes, to prevent any kind of water logging. The same can be achieved for an area of 278 sq. m over the Durbar Hall roof, in a period of 1-1.5 and the same should be allowed to harden well under

the summer sun. Redoing the waterproofing would be sufficient to arrest seepage of water through the Madras Terrace Roof and damage of the wooden beams and joists.

The Madras Terrace roof can be restored in parts if the deterioration is found to be in parts instead of redoing the entire roof section. In the oval room of the main block the pressed metal sheets have to be removed (which are entirely in a dilapidated condition due to constant leakage of the roof and salvaging of any for reuse may not be possible) and every single wooden joist and the two primary beams have to be inspected by an experienced carpenter so as to chart out sequential and holistic methodology for reconstruction of the dilapidated sections of the Madras Terrace roof. After the removal of the pressed metal sheets, the wall edges along the entire oval room have to be examined thoroughly. Where wall plate may be found to be missing, stringer course of bricks bound well in good quality lime mortar may be constructed all around the oval room wall edge. A similar detail exists above the first floor cantilevered walkway, along the corbelled art plaster cornice where lime plaster has delaminated itself, in the Durbar Hall. A simple test constituting raising a bamboo pole and striking against the base of each of the wooden beam and joist should be undertaken to check for any hollowness, crumbling, delamination or powdering etc. of the wooden members. The members to be replaced and/or repaired by recycling should be well documented. Samples of timber from different components are to be sent for testing to Dehradun lab to check for the species, origin, quality and oil content. An extensive anti-termite treatment has to be undertaken immediately and all those timber joists that sound hollow should be replaced to arrest the failure of entire roof.

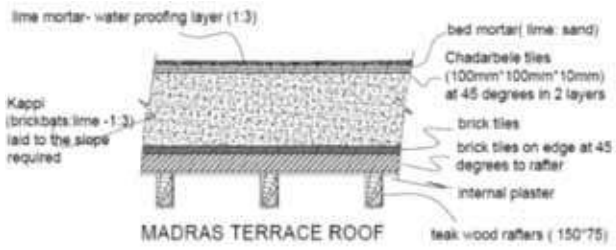
For horizontal cracks on the wooden beams repairs can be done by metal dumbbells of thickness up to 3" and a length of about 70% of the full depth of the beam can be introduced at a calculated distance to arrest further cracking. I-sections may be introduced between the wide spacing of the secondary joists in the Madras Terrace roof. Where the joists are deteriorated they should certainly be replaced. Most of the wood based deterioration especially along the ceiling level can be repaired by experienced carpenters in the field of conservation who know recycling of wood and the art of creating joineries and through basic structural interventions.

### **Notes**

\*brick bat *coba*: well burnt and good quality bricks broken into small pieces of required sizes

\**vata*: given at 45 degrees angle along the junction of the flat terrace and the vertical parapet wall to prevent stagnation of rainwater along this junction. This is a weak point in historic buildings and water seepage is common.





A typical cross section of Madras Terrace Roof



View of a Madras Terrace Roof ceiling



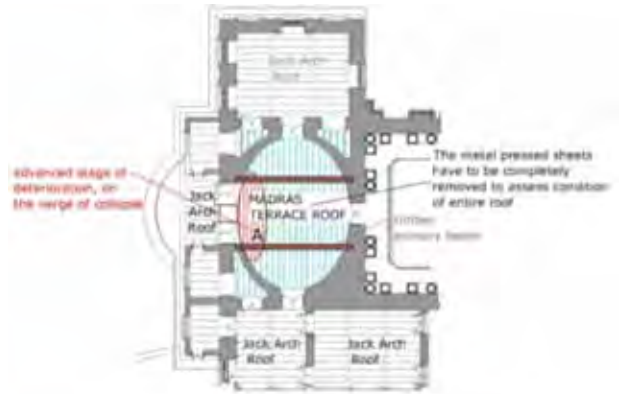
Laying of terrace bricks diagonally and along the edge



Waterproofing using brick bat and lime to required slopes



The front Palladian facade of the British Residency



Plan showing the oval room ceiling in the main Durbar Hall block



Delamination of ceiling plaster and exposure of terrace bricks, debonded joists and moisture laden primary wooden beam



A typical Madras Terrace Ceiling with primary beams and secondary joists deteriorated due to water seepage and vegetation growth



Deflection of primary beams and secondary joists as well as shear cracks can cause structural failures



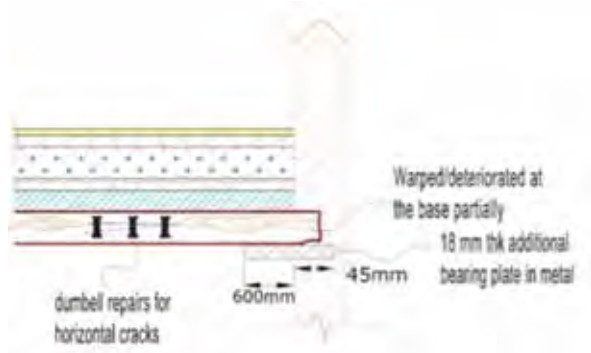
Vegetation growth and penetration of its roots allows seepage of water and debonds the joists from the ceiling



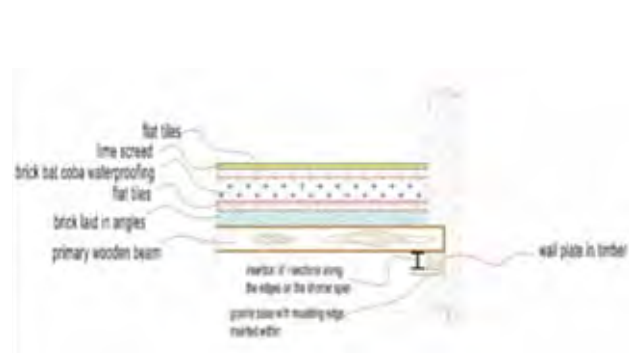
Where the primary timber beams have deteriorated beyond repair, I - beams of calculated dimensions can be inserted. Variation in interspacing causes eccentric loading



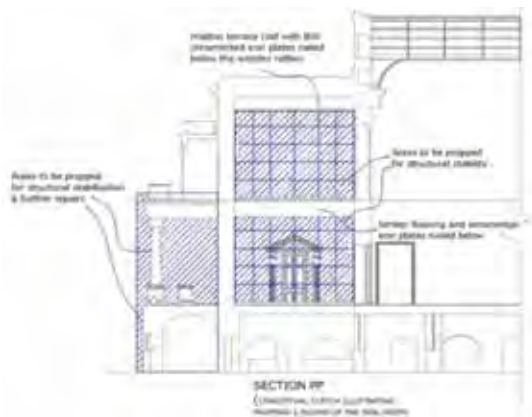
Extensive termite infestation led to deterioration in the wooden joists and eventual collapse of the roof



Where the edges of the wooden beams have deteriorated at the base where they rest on the wall plate/wall, a 1.8 cm thk. metal plate can be introduced below the wooden beam as an additional bearing. It can project out up to a length of 60 cm and go in up to a length of 45 cm.



Insertion of I-sections along the shorter span for additional support



A simple & effective propping of both the first & upper ground floors have to be undertaken using casuarina poles spliced suitably to achieve required height, supporting the secondary timber joists and primary beams, with neoprene padding on the top and gunny bags on the floor, before starting any repair works. Wooden ply shuttering to be undertaken between joists to relay the bricks at angles, where required and to facilitate curing etc. during part reconstruction & total water proofing. The dead and live loads of the MT roof and the scaffolding erected on the first floor (oval room) shall be well supported by the scaffolding erected on the upper ground floor oval room and the total arrangement shall be regarded safe, if executed carefully by an experienced team. An alternative to casuarina poles would be the cup lock scaffolding that will be supported on 'runners', running parallel and just below the madras terrace wooden rafters on the floor and shall transfer most of the vertical load to the walls laterally.



## A Survey of Underwater Archaeology

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Directorate of Heritage Preservation and Museums, Ministry of Education and Culture

### Introduction

Indonesia is one of the maritime countries, and 2/3 of its area is covered with waters, located between the Pacific and Indian oceans, and Asia and Australia continents. Indonesia is the largest archipelago in the world, consisting of more than 17,000 islands. With such a location, Indonesia is abundant with various underwater relics.

Based on historical records, there was Kingdom of Sriwijaya in Palembang, South Sumatra in the 7th century. The great empire of Sriwijaya, with its maritime fleets, had conducted diplomatic activities, exchanged religion and culture and traded with the outside world. In the 14th century, Majapahit Kingdom expanded to a very wide territory. The Europeans arrived Indonesia in the 16th century and left in the mid of 20th century as the Asian-Pacific war ended. Thus many historical events happened around the sea of Indonesia, so there should be numerous sunken warships, airplanes and other ships.

In accordance with the legislation of the Republic of Indonesia number 11 of 2010 on cultural heritage, which states that cultural heritage consists of tangible heritage and land or water which has important value for history, science, education, religion, and/or culture through the process of enactment.

Survey and mapping of underwater cultural heritage is an activity in accordance with the mandate of the legislation of the Republic of Indonesia No. 11 of 2010 on cultural heritage, stating the Government is obliged to search for cultural heritage, and including the underwater cultural heritage.

To date, number of points of sunken ships has not been entirely documented. Therefore, Directorate of Cultural Heritage Preservation and Museums has conducted every effort to uncover underwater ancient relics. This year,

underwater archaeological survey was conducted in three locations, namely, Morotai Island, Bintan in Riau Islands and Togian. The survey and mapping on Morotai Island are reported in this article.

### Survey and mapping in Morotai

#### Location

Morotai is located in the east of Indonesia, North Maluku Province, Pulau Morotai Regency, at 2°00' – 2°45' N and 128°15'-128°48' E. Survey was conducted in nine points in Morotai Island.

#### Site

Morotai was once a United States Army military base during the World War II. Many legacies were found such as the carcasses of tanks, war vehicles, and the submarine that sank at the bottom of the Morotai island.

#### Survey

Survey and mapping of the underwater cultural heritage is an activity that is intended to search, identify, and describe findings that are still intact, half intact or in the form of fragmentary. As for this activity aims to completely document the underwater heritage and its area.

Morotai is abundant with underwater heritage, especially the underwater archaeological remains such as the frame of sunken ships, aircrafts, the old port, and others.

Before conducting a survey, there should be a literature study, a historical source study, information collecting from local fishermen as well as interviews with relevant institutions, community leaders and local tourist guides.

The survey was joined by a team from Directorate of Cultural Heritage Preservation and Museum, Office of Archeology Department of Ternate, Local government of North Halmahera, as well as the scuba association and



Map and Picture of Morotai Island

dive masters, and also local people who know the points of sunken ships. The survey was conducted at the end of October 2012 for two weeks.

It was conducted with the sounder system method that is to identify the existence of an underwater object by using sensors. Next step was diving to map and document the findings by measuring, mapping, visualizing, capturing images through video. The depth varies between 4 m to 48 m. Underwater survey should be carried out based on diving procedures.

Underwater findings were in the form of ship's frame, jeeps, aircrafts, as well as fragments that were allegedly

part of the ships, while the findings found on the surface were traces of old ports.

The hardest constraints experienced during the activity were the weather conditions; an unexpected sea conditions such as rain, and strong winds.

### Conclusion

Underwater heritage is the important evidence for history, science and culture. The result of the survey not only gives information about the amount of underwater heritage sites in Indonesia, but it also serves as a reference for making policy concerning underwater heritage preservation.



Identification of the shipwreck



Measurement of the object



Documentation of the object



Objects such as airplanes



## Documentation on Reroofing Tradition in Kabuyutan Trusmi, Cirebon

Indah Sulistiana Kuncoro, *Architect*

Board of Conservation and Architecture Studies. Indonesian Institute of Architect (IAI)

### Introduction

This is a report from site observation by surveying the preparation, interviewing some locals, and following the whole celebration process of reroofing the traditional buildings inside of Kabuyutan Trusmi Complex in Cirebon, North West Java which was held in November 2012. The main purpose is to understand more about the reroofing method and chronology, labour mechanism, know-how, tradition and its value and also to explore traditional skills and local wisdom and how to hand down them in the local village and also how to bring them in broader context into such apprenticeship program of IAI (Indonesian Institute of Architect) for preserving the traditional skills. So, the documentation of the building itself has not yet being done because the focus is on the skill which is intangible rather than the physical aspect of the buildings.

### Kabuyutan Trusmi: location, history, and its cultural heritage in the present day

Kabuyutan Trusmi is located in Trusmi village about 6 or 7 km in the west of Cirebon, the North Coastal of Java Island. Kabuyutan Trusmi means original place where great-grandparents (*buyut*) of Trusmi inhabitants started to live. The great-grandparents of Trusmi mean Pangeran Cakra Buana, the prince who had child name Pangeran Walang Sungsang, the son of Prabu Siliwangi (Hinduism) and Princess Subang Krajang (Islamic) who were still part of Padjajaran Kingdom in the 14th century. Pangeran Cakra Buana had left Padjajaran Kingdom, had journeyed and had founded a place of Hutan Glaga Alang-alang (forest and thick grass) in this northern coastal area and then had cleaned and opened it into a wide area for living and started spreading Islamic philosophies. The place developed into a wider civilization with mixed culture by Sundanese, Javanese, Arabic and Chinese people. The assimilation of Hinduism and Islamic philosophies and doctrines makes Cirebon distinct in culture such as music, song, dance and also its architecture heritage.

Trusmi village itself is now known as the village of batik making for centuries. About 70 percent of inhabitants is involved in the batik industry. Trusmi batik as north coastal batik has been widely known as far more enterprising with more freedom of experimentation in pattern and colour than the batik from Central Java. And the Kabuyutan Trusmi Buildings Complex located in the middle of this district of culture and the batik making settlement.

Nowadays, the Kabuyutan Trusmi Buildings Complex is designated as cultural heritage from the great-grandparents of Trusmi, which consists of several types of traditional Javanese buildings surrounded by thick red brick walls. Some buildings adopt wooden structures system of pillars (*soko guru*) and tumpang sari, and other buildings have masonry walls. Buildings with thatched roofs are Pewadonan (woman house), Pekuncen (guardian house), and two Jinem, meanwhile buildings with wooden shingle roofs are Witana, Kramat Mosque, Penyekarab, Pesujudan, and Paseban (public meeting house).

Each day Kabuyutan Trusmi Complex is guarded by a set of a Kyai (spiritual leader) and a Kuncen (guardian service man). The total men are four sets consist of four *kyai* and four *kuncen* who have their turn each ten days to work in Kabuyutan Trusmi.

### Reroofing Tradition in Kabuyutan Trusmi, Cirebon: Memayu (Thatched Reroofing) and Ganti Sirap (Wooden Shingle Reroofing)

#### Memayu Tradition (Thatched Reroofing)

Memayu is an annual tradition to change the thatched roof of traditional buildings in the Kabuyutan Trusmi Complex which are made from *alang-alang* (grass) and held by the local inhabitants as a bhakti (voluntary service) by *gotong royong* (working together) as an offering to their ancestors together with ritual celebration. This annual reroofing is an independent activity from government, NGO, and formal institutions and has been sustained to the present since they were built.

The date of Memayu is decided by the local community, Kyai (spiritual leaders) and Juru Kunci (guard man) at the meeting in the date of 1 Muharram Islamic day each year. The agenda of this meeting is to decide the date and the time, the quantity of materials which are needed, which parts of buildings will need repair, including how much funds to be needed and who from the locals are willing to give funds or materials. So all funds, materials and labor are collected from the local themselves. The Memayu in the year of 2012 was decided to be held in 3, 4, and 5 November 2012.

For Memayu tradition, many people who are living



Building with thatched roof made from woven grass (*welit*)



Building with wooden shingle roof (*sirap*)

outside of Cirebon but still have ancestors from Kabuyutan Trusmi come to be involved in this annual celebration. People who live in Trusmi close their shops and have a day-off for this tradition. Masnedi, one of the local said, “*Anak putu buyut datang ke Mesjid sebagai bhakti ke buyutnya sebaik mungkin. Karena niat baik, maka terlaksana dengan lancar*”, means sons of greatgrandfather come to the mosque to do the best offering and goodwill so that the tradition proceeds smoothly. This is the reason why the whole procession has been held successfully even without any directors for years.

The Memayu is always initiated by the traditional celebration such as parades, dancing, *wayang* performing and cooking *kupat-lepet* two days before the reroofing.

#### Thatched materials for Memayu

The thatched roof was made from *alang-alang* (grass) which was woven into *welit* ordered from Singaraja and Indramayu which located outside of the Trusmi region. It was transported by a truck or a pick-up car into Trusmi three weeks before the reroofing. Only *welit* which would be used for Omah Gede building and made on the spot by the community needed five days for wooving. On the fourth day, the completed *welit* was dried under the sun and kept in the storage house.

*Welit* is the piece of woven *alang-alang* (grass) which is ready to be used for roof installation. To make *welit* needs one small bamboo slat of six meters in length which called *rambatan*, and one bigger bamboo slat about 2.5 cm in thickness with 1.8 meters in length which called *jalon*. *Alang-alang* is knitted together with *rambatan* and *jalon* using *lulup* (rope). *Lulup* is a rope made from bark of hibiscus tree (*pobon waru*) especially only for Memayu so that it is not sold. It is made by cutting the bark of the hibiscus tree, keeping it in the water for five days and then peeling off the inside part, drying it under the sun and then untwisting them little by little.



The wooven process of *alang-alang* using *rambatan* (small bamboo slat), *jalon* (bigger bamboo slat) and *lulup* (rope) done by the local inhabitants for five days on the spot near Omah Gede building which located outside Kabuyutan Trusmi Complex. The Omah Gede reroofing was held about one week after Memayu. The labour was all voluntary work.

*Lulup* (rope) made from bark of hibiscus tree

#### Memayu Procession 2012

The Memayu started in the second day after the ritual parade in Monday, 5 November 2012 at 6 am and finished at 11 am. It took about five hours for replacing the thatched roof by men. There was five buildings within the Kabuyutan Trusmi Complex whose roofs had been replaced. Only a part of the thatched roof on each building had been reroofed with the new one.

#### Ganti Sirap (wooden shingle reroofing)

Reroofing had been done for each eight years to all buildings with wooden shingle roofs in Kabuyutan Trusmi Complex, but then it was changed for each four years by dividing into two phases alternately. The wooden shingle was made from teak wood (*kayu jati*) on the spot in Kabuyutan Trusmi by inviting groups of carpenters both from inside and neighbouring villages. This carpenter group can reach about 20 up to 50 people once they come with their own tools and machines and they are coordinated by the Kyai of Kabuyutan Trusmi who also has carpentry skill. The teak wood material be obtained from the teak garden on the back and side of Kabuyutan Trusmi and other Trusmi community land area which are purposely planted for the reroofing need. Otherwise the shortage material can be bought from the domestic wood market.

The last wooden shingle reroofing was done in the year 2010, and the next one will be held in the year 2014. For the last reroofing, five trees were cut down from the teak garden. And the last teak wood planting was done in the year 2008. The dimension of wooden shingle (*sirap*) is 45x18x1.8 cm. Per cubic of wood can produce about 350 pieces of shingles. The production of shingles (*sirap*) takes about one month with the specialization on each carpentry work such as cutting, curving, smoothing both by hand or machines, and making pecks.



Dismantlement of the upper ridge (*bubungan*) and hip (*jurai*) before reroofing  
Only men who are descendants from Kyai were allowed to climb the roof.



Dismantlement of a part of thatched roof together with the wooden frame



The other men helped to move down the old *welit* and transport the new *welit*.



Some other men were releasing the old *welit* from the wooden frame and repairing it.



The installation of new *welit* to the old wooden frame



The installation of new *welit* to the old wooden frame



Knitting new *welit* to the wooden frame with rob made from young bamboo thin slat



Raising and installing a part of the new thatched roof

### Acknowledgement

This reroofing tradition in Kabuyutan Trusmi quite surprisingly brings a positive value in the context of modern building method in the year of 2012 such that the tradition of building maintenance still exists for sustaining the cultural heritage without written rules and independent from the formal protection law by the local authority or designation from legal registration institutions. This way of handing down the tradition can be considered as a rebirth model of protecting traditional architecture in Indonesia in other provinces which are endangered, abandoned and considered almost dying.

This model is much different from other types of cultural assets in the city or those built in the colonial era which need execution and monitoring by a professional consultant or a contractor for conservation under certain taskforce and legal authority body. The crucial difference is that the spirit of people is still alive and sustained for protection of traditional architecture. The *spirit* of the

people and unwritten law on tradition enable people to work based on participatory or community voluntary work service (*bhakti*) to keep their ancestor's positive message such as tree planting beside them, which means conservation of cultural heritage together with forest and environment conservation.

The next wooden shingle reroofing will become much worth moments for any architects who want to learn traditional skills both by apprenticeship to preserve the skills and making further documentation. So that it will become the next 2014 program of Residential on Indonesian Traditional Architecture by IAI (Indonesian Institute of Architect).

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A man were installing the *welit* directly on the horizontal rafter of one building which has no plugged wooden frame of the thatched roof.



The reinstallation of hip ridge for finishing reroofing



A young teakwood tree in the teak garden



A sample of wooden shingle (*sirap*)



Building with *sirap* roof



Existing *sirap*





## Restoration of the Alwi Mosque, Kangar, Perlis, Malaysia

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### Introduction

Built in 1931 at a cost of RM 64,684, the Alwi Mosque is the oldest mosque in the State of Perlis, the northern state in the Malay Peninsula. Located in the state capital of Kangar, the mosque was named after the 4th State Ruler, Raja Syed Alwi Ibni Al-Marhum Tuan Syed Safi Jamalillail, who officiated the mosque on the 10th of February 1933. The construction of the mosque was financed by various sources including individuals, Muslim communities, endowment fund and the State Government. The mosque was hit twice by major flooding in 2005 and 2010 which caused severe damage to its walls, columns, doors and floors at the ground level. Due to its historical, architectural and social significance, the Alwi Mosque was declared as a Heritage building in 2008 under the National Heritage Act 2005. In May 2011, the Federal Government allocated an amount of RM 481,110 (USD 155,197) through the Department of National Heritage for the restoration of the Alwi Mosque. The restoration works involved the application of waterproofing on the flat roofs; repairing of cracks on concrete-plastered ceiling; and repainting of the building façades.

### Architectural Background

Built in a rectangular floor plan layout, the Alwi Mosque was originally designed with high ceiling; a big dome above the main prayer hall; an octagonal minaret; and two main entrance porches with pinnacles and smaller domes. The mosque has a wide flat roof surrounded by decorative parapets. The original main prayer hall measures 18.5 meters in width and 15.5 meters in length. During the early 1970s, the main prayer hall of the mosque was extended approximately 20 meters to the east to accommodate an increased number of worshippers during the Friday prayer. The existing flat roof was also extended to retain the same roof level as the original building.

The architectural design of the Alwi Mosque reflects

the Mughal influence incorporating onion-shaped domes, an octagonal minaret with a turret, pointed arches, wide verandah walkways, classical columns, decorative parapets, and stained-glass rounded windows. The mosque was built with plastered brick walls and columns, marble floors, cement and concrete flat roofs. The most significant architectural feature of the mosque is its elevated copper dome which rests on an octagonal drum with stained-glass rounded windows. The original dome was painted in black, whilst its octagonal drum is cornered by pyramid-shaped copper roof structures. The elevated copper dome is complimented with other smaller domes built above the porches, minaret and the extended flat roof; all painted in black. These building elements enhance the Mughal influence of the mosque.

### Building Defects

Prior to the restoration of the Alwi Mosque, a dilapidation survey was conducted to determine the nature of the building problems and defects. Findings of the dilapidation survey revealed that the mosque was structurally sound. However, due to severe leakages found on its flat roof, the mosque faced two related building defects namely falling dampness; and cracks on concrete-plastered ceiling. These problems could be seen on the ceiling directly underneath the defective adjoining flat roof. Crumbling concrete plaster and peeling-off paint on ceiling; and corroded reinforced bars inside the ceiling were some examples of building defects resulting from the roof leakages.

### Restoration Works

The restoration of the Alwi Mosque involved three major works including the application of waterproofing system on the flat roofs; crack repairs on concrete-plastered ceiling; and repainting of building façades. All restoration works were documented into monthly and final reports for reference and archival purposes. Prior to carrying out any restoration work at site, the building contractor had



Before restoration, the Alwi Mosque has been painted in several layers of paint of different colours including blue, cream yellow, light orange, white and black.



After restoration, the Alwi Mosque has been painted in its original colour which is white, whilst the copper domes in black.

to prepare a work method statement for each restoration task involved. All work method statements are subject to change and approval by the Department of National Heritage. Technical and site meetings involving the Department of National Heritage, building contractor and the mosque committee members were conducted monthly at the site to keep track on the work progress. Due to close supervision and monitoring of work at site; and good cooperation given by the mosque committee members; the restoration works of the mosque were successfully completed two weeks ahead of schedule.

#### Application of Waterproofing System

The application of waterproofing system at the Alwi Mosque flat roofs involved two major stages, namely surface preparation and application of elastomeric polyurea coating. To ensure the quality of workmanship, these stages were carried out by trained and skilled workers using only proven methods and techniques.

The sequence of work involved in surface preparation stage is as follows:

- Remove temporary metal deck roof; and mechanical and electrical (M&E) obstructions on flat roofs.
- Clean the concrete substrate of flat roofs from dust and loose particles using high-pressure water jetting (5000 psi to 7000 psi). Air blower was used to clean dust trapped within fine cracks.
- Hack off any cracked or defective concrete substrate using grinder.
- Patch and infill cracks and screw holes using epoxy adhesive for bonding and reinforcement.
- Level any uneven surfaces using polymer modified mortar.
- Prepare angle fillet between flat roofs and the walls of the dome drums. Mark termination lines on the walls using grinder.

The work sequence in the application of elastomeric polyurea coating stage is as follows:

- Apply moisture barrier coating (Duraflor NWB21), a modified epoxy cementitious underlayment, onto clean concrete flat roof surfaces prior to the application of elastomeric polyurea. The moisture barrier is left to dry within 24 hours to ensure no trapped moisture and water leakages on roof surfaces.



Due to severe leakages found on its flat roof, the Alwi Mosque faced two related building defects namely falling dampness; and cracks on concrete-plastered ceiling.

- Apply epoxy primer (PolyVers PV 350) of elastomeric polyurea as waterproofing coating onto concrete flat roof surfaces. The concrete flat roofs are sprayed evenly under the controlled pressure of 2200+100 psi. Elastomeric polyurea is volatile-free, odourless and flexible (450% to 520% elongation) with excellent thermal stability.

#### Crack Repairs on Concrete-plastered Ceiling

Crack repairs on the concrete-plastered ceiling were carried out inside the mosque based on the following work sequence:

- Remove crumbling and defective concrete surfaces; and corroded reinforced bars.
- Apply anti-corrosion coating (Sika Monotop 610) to the exposed reinforced bars.
- Replace any defective reinforced bars in the concrete ceiling.
- Replaster the affected areas with polymer modified patching mortar.
- Repaint the ceiling to match the existing colour.

#### Repainting of Building Facades

Over the years, the Alwi Mosque has been painted in several layers of paint of different colours including blue, cream yellow, light orange, white and black. Some paints were peeling off and fading, particularly on the building facades. After several discussions with the mosque committee members and based on an old photograph depicting the original condition of the mosque, it was decided that the Alwi Mosque should be painted in its original colour which was white, whilst the copper domes in black.

Prior to repainting works, several mockups of different types of off-white paints were set up on the exterior walls of the mosque to determine the most suitable type of paint. Repainting of building facades involved several work stages including cleaning the wall surfaces from dust and loose particles; scrapping off existing layers of paints using mechanical disc and scrapper; filling hairline cracks with lime plaster and white scheme coat; applying sealer on cleaned walls; and repainting the building facades with one layer of primer or undercoat, and two layers of off-white paint as the finishing coats (Nippon Weatherbond Brilliant White-1001).



The Alwi Mosque showing its concrete flat roofs after the application of waterproofing system.

**Conclusions**

The successful restoration of the Alwi Mosque has marked another milestone in heritage building conservation in Malaysia. The mosque restoration project has underlined the important aspect of effective collaboration amongst the stakeholders of this project. All project team members including building contractor, building suppliers, the mosque committee members and the Department of National Heritage understood the nature of building structures and construction methods prior to restoration works. The team members equipped with technical knowledge background were able to handle the major building defects including roof leakages, falling dampness, corrosion of reinforced bars and cracks on concrete ceiling.

Determining the proven methods and techniques of building restoration involved elaborate discussions and detailed analyses among project team members. Experienced and skilled workers were engaged in the restoration of the Alwi Mosque to ensure quality workmanship and to achieve the standards of building restoration works. More importantly, reinstating the mosque to its original white colour has been a rewarding experience to the Department of National Heritage and the mosque committee members because it brings back the glory of the mosque as the oldest and biggest mosque in the State capital. The Department of National Heritage has played a prominent role in protecting the Alwi Mosque as one of the Heritage building of Malaysia. After its restoration works, the Alwi Mosque is presently in good condition to resume its religious activities and is frequented by both local and foreign visitors.

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Cracks were found on the concrete flat roofs of the Alwi Mosque.



Falling dampness could be seen on the concrete-plastered ceiling of the Alwi Mosque.



The application of moisture barrier coating (Duraflor NWB21) onto the concrete flat roofs of the Alwi Mosque.



Under the controlled pressure, the concrete flat roofs were sprayed evenly with the epoxy primer (PolyVers PV 350) of elastomeric polyurea.



Crack repairs on the concrete-plastered ceiling involved the application of anti-corrosion coating to the exposed reinforced bars.



Prior to repainting works, several mockups of different types of off-white paints were set up on the exterior walls of the Alwi Mosque to determine the most suitable type of paint.



## Coral Carvings of Maldives

**Aishath Moosa Fikree**, *Curator*

National Museum, Department of Heritage, Ministry of Tourism, Arts and Culture

Maldives is a tiny island nation surrounded by beautiful coral reefs. Thus it was easy to get different sized and shaped coral stones from our environment. This is the reason why our ancestors used coral stones to build the most important places in their communities, such as religious centers apart from making stone artifacts. Remains of carved coral stone structures and items are found in the heritage sites of almost every island along the length and breadth of Maldives. Also carved coral stone mosques dating back to hundreds of years are conserved up to today.

Since Maldives was a pre-Islamic nation at that time, the oldest stone carvings were of mostly related to Buddhism or Hinduism, which can be dated back to the 3rd century BCE. Carved coral stones were the main items used to build Buddhist monasteries and religious items. Remains of coral stone Buddhist monasteries, such as foundations, coral stone blocks with railings, ornamental motifs like monkeys or lions, steps, floral designs carved on them, apart from relic pots and caskets religious statues and figurines can be found in the heritage sites.

In 1153 CE, Maldives converted to Islam. Since Islam prohibits the carving of statues and figurines, Maldivians started to carve different floral and non floral patterns apart from carving out Islamic scripts on their coral stone

structures from then on. Beautifully carved old coral stone mosques and tomb stones are found in almost all islands of Maldives showing our Islamic faith.

It can be seen by the careful examination of the coral stone artifacts available in the Maldives that the art and craftsmanship of the people of various parts of the country was much different and diverse. The tomb stones from different parts of the Maldives are a good indicator to this.

Although coral carvings are seen in many parts of the world, Maldivian coral carvings are very significant because of their intricate and fine carvings. It can be said that coral stone carving and masonry of the Maldives is one of the most prominent and outstanding works globally.

Due to growth of population and development of the society, the local citizens started using coral stone to make their homes around a couple of centuries back. Because of high level of taking coral stones from the surrounding reefs, the government had to put a ban on extraction of coral stones. This led to the decline of coral structures and items. Nowadays coral is not taken from our reefs anymore. Thus coral carving has become a dying art with few craftsmen remaining.







## Some Newly Found Medieval Burials from Northern Mongolia

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The brick-yard company of “Uran Selenge” in the territory of Shaamar soum, Selenge aimag is located 3 km to the north from the 49th station of Ulaanbaatar railway, 1.2 km to the east from the river Orkhon and 2 km to the west from the hill named *Buuralyn Ovoo* which is 800.6 m high above the sea level (URAN SELENGE, 2010, pp. 4, 10, 44. Fig. 1). Since the first quarter of the last century, clay of *Buuralyn Ovoo* mine has been used for the production of such building materials as brick and roof tiles. Almost all of the burials and the findings were found in the north-western corner of the mining site of this brick-yard company

A terrace in the north and along the center of the site is a part of an old terrace of the *Orkhon* river and it is known as the place has earliest fauna of the Late Pliocene Epoch (3.5-1.8 million years ago) in the *Transbaikalia* region (Pozdnyj, 1989, p. 19).

In the late 1970s, Mongolian-Soviet Joint Paleontological Expedition discovered a bone of Presbytis Eohanuman *Borisoglebskaja*, a marmoset-like ape from the terrace located to the west of Buuralyn Ovoo. It was the first discovery of the Late Pliocene primate in the *Transbaikalia* region (Kalmykov). The discovery in the Northern Mongolia encouraged some archaeologists to find fossil remains of the human ancestor.

In August 2010, a team of Institute of Archaeology, Mongolian Academy of Sciences conducted by professor D. Tseveendorj carried out an archaeological survey along the terrace located to the west of the hill of Buuralyn Ovoo. No event of the fossil of human ancestor was detected by the survey, but two burials of unidentified shapes were discovered at the edge of the terrace or the north-western corner of the licensed site of the brickyard (Munkhtulga, 2010, p. 2).

Between the 2nd and 4th of October 2012, the author undertook an archaeological field-walking survey in the site. Nine burials and some remains of a burial were found by the survey besides the two burials found in 2010 (Munkhtulga, 2012, p. 1-16).

### 1. The burials

The monumental site at the terrace edge was relatively flat and it looked toward the sun-rising direction. Surrounding sights, especially the views of a famous sacred mountain named Dulaankhan in the south and the river Orkhon in the south-west were unusually beautiful from this side of the terrace and it would have been a certain circumstance of choice for early people to bury their descendants. The size of the area where located the burials was approximately 40 × 40 m (Fig. 2-4). There were at least eleven burials by the edge of the terrace, including some stones which may be the remnants of the burial

mound covered with sand. Some seven monuments were possible to be recognized as burials and all of them were preliminarily documented (Fig. 5-11).

There was no any nearby place that had stones same as the burials. It was clearly determined in the wall of the mining hole that the terrace was 40 m high and it only consisted of geological strata of sand, clay and pebbles. Therefore, the few big stones around the burials should have been placed by humans. Some rocks in the bottom of the terrace were located 120 m to the south-west from the burials. Having removed stones from the rocks, perhaps, builders of the burials used them for the burial mounds (Fig. 4).

The burials were strongly influenced by nature and humans. Most of them were covered with sand due to the sloping surface. Some burials were extremely damaged because stones of the burials nearby the edge were removed down the terrace by soil erosion. It was visible, however, that two types of burial mound structure occurred among the burials of the site. The first was the mound with big stones that have been used as a fence. Second, the flat mound was made with smaller stones. Size of the burials was not huge: 100-350 cm in length and 60-310 cm in width. The shape and orientation of all of the burials were undetermined besides burial 7. The burial 7 had an oval shape and it faced to the north (Fig. 11). Ancient ceramic fragments were spread around the burials in the southern area. It means that some of them have been looted (Fig. 12 and 13).

### 2. The remains of a burial found from a gully

A human mandible with tooth was accidentally found in a hole of a gully which was located about 60 m to the north-east from the burials (Fig. 16-18). The distance between the terrace edge and the gully hole was 24 m. A flowing rainwater eroded soil under a tree in the gully, oriented from the north-east to the south-west and it produced a hole of 2.7 m in depth from ground surface (Fig. 14 and 15). Also, there were a rib and phalanges of humans located about 3 m to the south-east from the mandible, in the runway of rainwater. There was a left femur of humans in the runway of rainwater along the gully. It was located about 6.4 m to the south from the rib and phalanges (Fig. 14).

An excavation began from the hole along the rainwater runway in the gully. The excavation trench was 10 m long, 0.4-1.4 m wide and 0.1-0.3 m deep (Fig. 22). During the excavation, an almost complete human skull and ribs were revealed from fallen soil of the left wall of the gully (Fig. 19 and 20). Then a leg bone of domestic animal was found (Fig. 29). Three fragments of a ceramic vessel were recovered 3.2-4.1 m to the south from the place where a mandible was found. One of them had an unusual

ornament which may belong to the Medieval Age (Fig. 27 and 28). A right femur, two human ribs and one fragment of a ceramic vessel were found 4.5 m to the south from the mandible (Fig. 21). No artifact was found after one human rib was revealed at the 7 m from the mandible. Ancient burial's important indications such as the pieces of burial goods and the domestic animal bones confirmed that there was a burial near the terrace edge and it had been damaged and removed by gully water.

### 3. The findings

#### 3.1. Ceramic fragments found near the burials

Twenty-six fragments of ceramic vessels were found at the front area of the burials (Fig. 12 and 13). It was known in process of laboratory documentation that those are the fragments of more than ten vessels which had been produced technically different. Thickness of the fragments was 3-12 mm. The burning quality of the fragments was relatively good (Fig. 23 and 24).

#### 3.2. A human skeleton found from a gully

Most parts of the skeleton were missing, however, the important parts for anthropological measurement of a skull and complete postcranial long bones were found (Fig. 25 and 26). Preservation condition of the bones was relatively good. The skull would have been deformed by soil pressure in the burial hole. Colour of the bones under the soil was brownish-red, but the bones exposed upon the ground surface was weathered to white colour and became shorter. The result of human bone measurements showed as follows: the individual was a male mongoloid; the age-at-death was 50±5; the height-at-death was 164±7. It should be mentioned that incompleteness of the skeletal remain limited the credibility of the result.

#### 3.3. Ceramic fragments found with a human skeleton

Four ceramic fragments of 6-9 mm in thickness were unearthed with the human skeletal remains, which might be the pieces of one ceramic vessel. One of them had exceptional ornaments which were the important signs to identify the date of the ceramic fragments and the burial (Fig. 27 and 28).

#### 3.4. Animal bones found with human skeleton

Also four leg bones of domestic animals were revealed with the human bones (Fig. 29). It confirmed that the findings would have been burial artifacts. From the Bronze Age to the early Modern Age, the inhabitants of Inner Asia had the funeral ritual that put flesh in a vessel or a pot made of ceramic, wood or metal and buried it with the deceased.

### 4. Conclusion

The number, shape, size and the external structure of the burials of the site were much similar to the medieval Mongol burials found from not only the territory of Mongolia but also the *Transbaikalia* region of Russia (Turbat & Batsaikhan, 1997, pp. 140-145). Particularly, the two types of burial mound of the site in much the same style as those in burials of the Mongol period (CE 11th to 16th century). For example, during the years between 1980 and 1984, the Mongolian archaeologists excavated twenty Mongol burials at the site of *Buural Uul*, located 100 km

to the south from the *Buuralyn Owoo*. The size of the most burials was 250×150 cm. Burial mounds have the above-mentioned two common types (Tseveendorj, 1999, 193). Mortuary goods of the burials of *Buural Uul* can be dated to the 11th to 13th century (Erdenebat, 2009, p. 102).

There was a peninsula of Tsagaan Aral that located 10-20 km to the north from the site of *Buuralyn Owoo*. It was formed by the confluence of the rivers of Orkhon and Selenge. According to "The Secret History of the Mongols", *Tsagaan Aral* was called as *Talqun Aral* during the 12th-13th century (Perlee, 2010, 50, 237). Perhaps, there was an encampment of *Dayir Usun* who was a chief of a wing of the *Merkit* tribe. Merkit tribe was a powerful enemy of *Temujin* or later *Chinggis Khan* and partially defeated by the *Temujin's* allied force in 1182 (Rachewiltz, 2004, 411). After the foundation of the Mongol Empire, this area was given to *Sorqan Sira* who was a veteran from *Suldus* tribe. The population dwelt by the confluence of the rivers *Orkhon* and *Selenge* in the Mongol period has not been studied yet. The archaeological evidence is one of the important sources for the studies on ethno-cultural process in the northern Mongolia, especially in the area of confluence of the rivers *Orkhon* and *Selenge*.

The toponym of *Buuralyn Owoo* which located 2 km to the east from the monumental site may stem from the rite of the medieval Mongols who gave a name to the special place for their descendants burials. *Buural* means 'white-headed person' or 'descendant', and *Owoo* is a typical Mongolian sacrificial mound built with stones.

We hope that the history of ceramic production with clay in *Buuralyn Owoo* can be dated back to much earlier than 600 years ago, if the laboratory analysis will identify the chemical composition of all found ceramic fragments with clay of the *Buuralyn Owoo* mine as the same.

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- URAN SELENGE, 2010 - "Уран Сэлэнгэ" ХХК-ийн эзэмшил Сэлэнгэ аймгийн Шаамар сумын нутаг дахь Буурлын Овоо нэртэй газарт байрлах 1258А лицензийн талбайн газрын төлөв байдал, чанарын хянан баталгааны ажлын тайлан. УБ., 2010.



Fig. 1. ○ - location of the *Buralyn Ovoo* site



Fig. 2: Licensed site of a brickyard of *Buralyn Ovoo* and monuments: 1 - burials; 2 - remains of a burial found from gully



Fig. 3: Monumental site. View from the south. - burials, ○ - remain s of a burial



Fig. 4: Monumental site. From the south-east. ○ - Burials, ○ - remains of a burial, □ - rocks



Fig. 8: Burial 4



Fig. 5: Burial 1

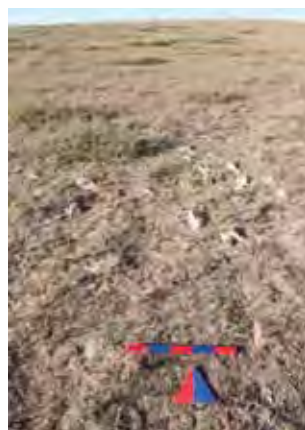


Fig. 6: Burial 2



Fig. 9: Burial 5. From the south.



Fig. 7: Burial 3



Fig. 10: Burial 6. From the east.





Fig. 11: Burial 7. From the south-east.



Fig. 12 and 13: Ceramic fragments found near the burials



Fig. 14: Gully where burial remains found and left femur of human. From the south-east;



Fig. 15: Gully from the north-east



Fig. 16: Gully hole where human mandible found. From the south-east;



Fig. 17 and 18: Human mandible

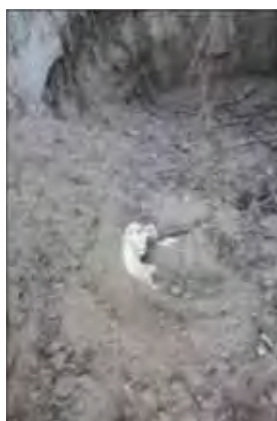


Fig. 19: Skull and ribs from the south-east



Fig. 20: Skull and ribs from the south-west



Fig. 21: Right femur of human and ceramic fragment. From the south-east;



Fig. 22: Excavation trench along the runway of rainwater in the gully

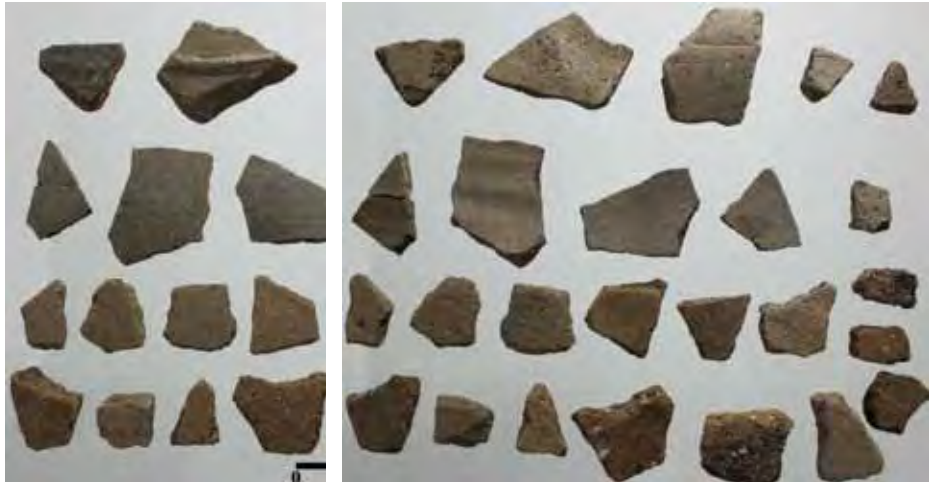


Fig. 23 and 24: Outer and inner sides of ceramic fragments found near the burials

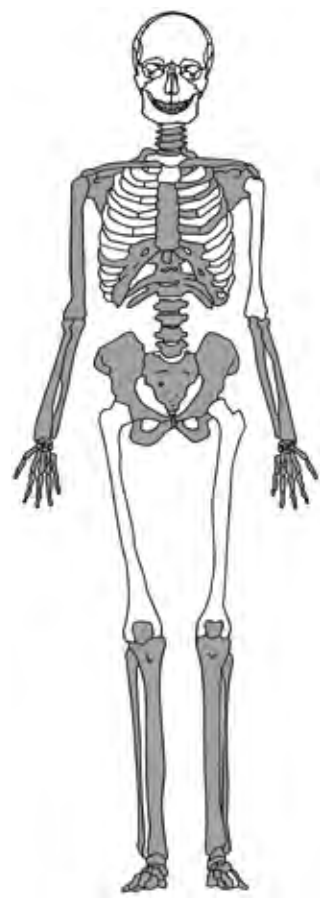



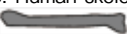
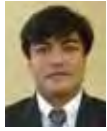
Fig. 25 and 26: Human skeleton found from gully.  - existing bones;  - missing bones



Fig. 27 and 28: Outer and inner sides of ceramic fragments found with human bones



Fig. 29: Leg bones of domestic animals found from gully with human skeleton



## Restoration of Pratappur Temple in Swayambhu Protected Monument Zone

**Suresh Suras Shrestha**, *Archaeological Officer*  
Department of Archaeology, Ministry of Culture, Tourism and Civil Aviation,

### Background

The temples in Nepal were constructed popularly in the Multi-Roofed, the Dome and the Shikhara (mountain/hill or peak) style architecture to build temples in the history. Shikhara style was also known as *NAGARA* and *GANDHAKUTA* style as well. However, there is lack of evidence on the history of Shikhara style temples construction in Nepal, but it was already developed in Northern India in around 6th Century AD. There are numerous examples on this style during 16th – 17th century AD in Nepal.

The Pratappur temple is built in *Shikhara style* and its height is 60 feet, which is located in the east of Swayambhu Mahachaitya (the great Swayambhu Stupa), just on the right side of Vajra after the eastern steep sloppy stairs on the hill top and Anantapura temple is on the left. Length of the temple is 19.9 feet and width is 17 feet as well. The temple is made up of brick wall with lime surkhi mortar and lime sukhi plaster that is built with the wooden skeleton inside it for the better protection during the earthquake.

Some stone pillars, stones paving and wooden doors, windows and some other parts were also used in the temple. Actually the bricks for wall, wood for doors and windows, internal skeleton of the temple, pillars, stones for pillars, paving and lime surkhi for mortar and plaster were used in the temple. These are the traditional construction materials in and around Kathmandu valley and Nepal as well especially in the medieval period and later.

The temple is physically very beautiful in Shikhara style having a projection above the main gate with beautifully carving in the window which is constructed on the stone pillars and those pillars are fixed on stone of steps, which followed towards the sanctum of the temple. The temple is dedicated to the Tantrism in Buddhism that no one is allowed to enter inside except the priests.



Damaged by the disaster

The temple was once collapsed in 2003, when it was caught by fire. It was reconstructed completely according to the traditional methods and norms of archaeological conservation at that time. Reconstruction of the temple took a year for its completion in 2003. After about seven years of its reconstruction, on 15th February 2011 there was a big thunderbolt somewhere within the core and/or around in the core area of Swayambhu Protected Monument Zone, a component of Kathmandu Valley World Heritage Property and damaged the significant temple in the area.

Everything, which was damaged by the lightening was documented by the officials (from Department of Archaeology - DoA) for rescue of the temple immediately; then rescued with the coordination of Federation Swayambhu Management and Conservation (FSMC), the community based non-governmental organization. As per the recommendation of the study by DoA and the FSMC after three months, it was concluded to renovate the temple by dismantling the whole parts except the foundation.

### Renovation of the Temple

After the conclusion and recommendation of the study by DoA and FSMC, DoA proceeded to renovate the temple immediately with close cooperation of FSMC. In the beginning, the whole temple structure was dismantled documenting all activities and physical status of the temple simultaneously. Because, the important parts were damaged rigorously by the disaster; i.e. main gate of the temple, the North West parts and it was very important to record all situation for renovation/reconstruction.

The Government of Nepal had allocated the sufficient budget for renovation of entire temple in two phases (actually in the two F/Y). In Nepal, especially in the conservation, renovation or reconstruction of the traditional temples, some rituals (*CHHEMA PUJA*) must be done before touching the temple for entire process and



Damaged by the disaster

after its completion at the time of reinstallation of images inside temple. So, the grand *CHHEMA PUJA* was held for Pratappur jointly with DoA and FSMC in March 2011, then started to dismantle and again the similar *CHHEMA PUJA* was organized for reconstruction of the temple in April. The Department of Archaeology was fully involved to reconstruct the temple technically and financially, however FSMC supported fully to execute all activities during the project. In the same way, the local people were also aware on the project that they themselves were volunteering in different ways to succeed the project.

Once the temple was reconstructed just within a decade and all the memories were around the locals and technicians of the Department of Archaeology that was the advantage for the project to be succeeded. That's how the project had achieved its goal within the targeted time and financial limitation.

Finally, the Pratappur temple has completed within around a year in the last June (2012). However the renovation project was over successfully, government should always be serious and allocate some adequate budget for this type of natural disaster/hazards. This was the second time reconstruction of a significant medieval temple – Pratappur. It must take as a lesson by all related stakeholders and heritage professionals.

### Conclusion

However, the natural disaster never comes with pre – information, but harm very badly to the human beings and its environment. So, we should be prepare for every possible natural calamities or disaster (during and post disaster) and preparedness should be done regarding such a disaster. There is no doubt that those cultural heritages are not only the property of the entire community or area, but the property of all human beings and its communities in the world and those are gifted to this generation by our ancestors.

That's why; all the locals and the visitors raised voice for immediate renovation of the temple during the post disaster study by DoA. Anyway, it was renovated by DoA/ Government of Nepal in close cooperation with FSMC. This large scale project was a good example for heritage conservation without any difficulties and within the government budgetary system executed by Government of Nepal as well as the fine technical solutions. It was renovated within a year after the disaster happened. But the government should learn from this project that related government authority (DoA for heritage) must allocate sufficient budget annually for such a disaster as emergency work that could be at least rescue the heritage at the moment.



On the process of dismantling the temple on the top (Pinnacle)



On the process of dismantling the temple



Preparing scaffolding for dismantling the temple



Prepared scaffolding for dismantling the temple



Severely damaged just above the foundation



Damaged northwest part



In the process of dismantling the temple



In the process of dismantling the temple



Pratappur after completion of reconstruction



The ruined part of foundations and the main gate of the temple after reconstruction



North east elevation after reconstruction of the temple



## **Project Njord: Investigation and Protection of the 1926-1932 Norwegian Whalers' Base, Price's Inlet, Rakiura/Stewart Island**

**Matthew Schmidt**, Regional Archaeologist, Otago/Southland  
The New Zealand Historic Places Trust

### **Introduction**

The 'Kaipipi Shipyard' or Norwegian Whalers' Base ('The Base') is located in Price's Inlet in Kaipipi Bay, Paterson Inlet, Rakiura/Stewart Island (Figure 1). It is an enigmatic and isolated coastal cultural heritage site of high significance due to the story it tells about early 20th century whaling by the Norwegians in the Southern Ocean, and the intactness of the tangible evidence of this operation still present today. The site is the best example of such a base remaining in New Zealand. The history of The Base has been well documented by the two historians Basil Howard (1932) and in particular Jim Watt (1989, 2006), and brief terrestrial archaeological surveys have been undertaken of The Base by archaeologists Chris Jacomb (2001) and the author (2007). Although remote, The Base is a tourist destination for water taxi operators on Rakiura and the Department of Conservation has interpretation panels about the shipyard located around the site.

Given its high cultural heritage significance to the history of Rakiura, however, the Norwegian Whalers' Base is not legally protected under any Government legislation, such as the Historic Places Act (1993), or any District

or Regional Plan. The only legal protection for the remains is a large part of the site lies on private property. In addition, although the extent and nature of the physical remains of the site on land are well understood (though these need further archaeological mapping), no professional marine archaeological surveys of the water in front of The Base have been undertaken where heritage structures and features, such as the hulk of the 1853 ship *Othello*, lie close to the shore. In recent times, the site has come under increased threat through natural and human factors causing concern for the SCHIP partners and the landowner who owns the property on which most of the terrestrial remains of the site lies.

This report describes *Project Njord* ("Njord" is the Norwegian god of the sea and fishing), a project with the objectives to better understand what remains of the Norwegian Whalers' Base and to bring about increased legal protection of the site. Important to the project are the SCHIP partners and so an explanation of this partnership is briefly presented first in this report. Next, the history of the Norwegian Whalers' Base is explained and what is known about the tangible cultural evidence today. How the site is currently legally protected, threats to the site and what legal process under the Historic Places Act (1993) can be undertaken to better protect the site is then illustrated. Finally, the aims of *Project Njord*, the method for the marine and terrestrial archaeological survey and the funding gained for the project is presented.

**The Southland Coastal Heritage Inventory Project ("SCHIP")**  
*Project Njord* is part of the *Southland Coastal Heritage Inventory Project ("SCHIP")* which is a partnership between the Southland Regional Council (also known as Environment Southland), the New Zealand Historic Places Trust ("NZHPT"), the Department of Conservation ("DoC"), Te Ao Marama Incorporated on behalf of Kaitiaki Runanga of Murihiku, the Southland District Council and the New Zealand Archaeological Association. Each of the partners have a responsibility, either as part of their statutory function or as part of their organisations objectives, to contribute to the investigation, protection

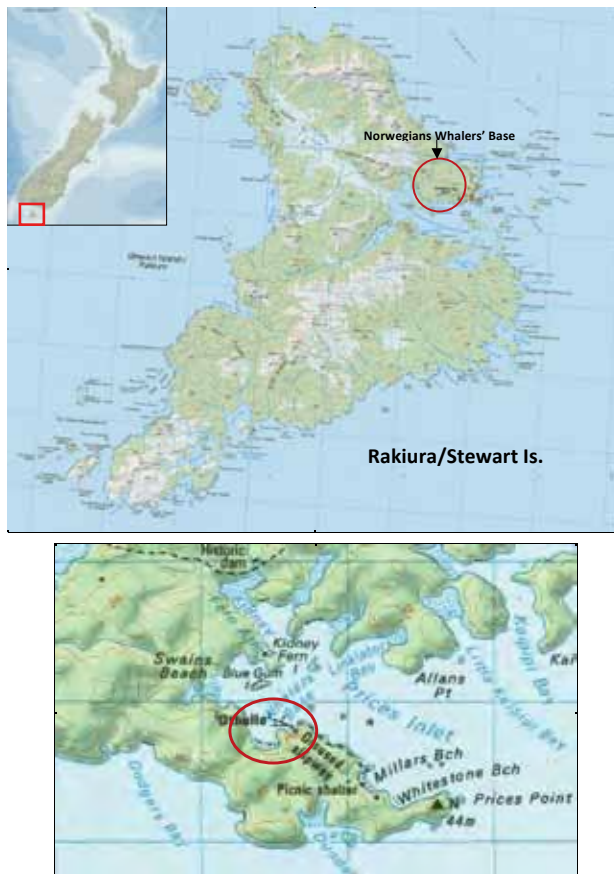


Figure 1. Location of the Norwegian Whalers' Base in Price's Inlet, Kaipipi Bay, Rakiura/Stewart Island. The sunken hulk of the 1853 ship *Othello* used as a dry wharf by the Norwegians from 1926-1932 is noted.



Figure 2. Cropped view of survey map SO 1522 from 1878 showing a house and trig point (circled) on Lot '31' implying occupation at this time in Price's Inlet (source: LINZ).

and management of New Zealand's/Aotearoa's cultural heritage. The project was established in 2003 out of a concern by the project partners about the loss of Murihiku's coastal cultural heritage sites through increased coastal erosion and human activities. The aims of the project are to understand the nature and extent of the coastal archaeological/heritage record on the Murihiku/Southland coast and, using data from field visits to sites, makes decisions on the protection and management of various sites. This project has now expanded to include Rakiura/Stewart Is. and its nearby islands. The partners meet regularly to manage SCHIP and make decisions on project fieldwork and site management, and each contribute financially on an annual basis to fund the project.

### Brief History of Occupation of the Norwegian Whalers' Base

Currently there is no direct archaeological evidence of Maori occupation and use of the small bay in which the Norwegian Whalers' Base lies prior to European/Pakeha arrival. However, given the extensive coastal occupation of Rakiura by Maori in pre and post Pakeha contact times, the sheltered nature of Price's Inlet and its access to resources, this location would certainly have been occupied by Rakiura Runaka prior to known Pakeha occupation.

According to Howard's original 1927-1931 Rakiura research notebook (1927-31:86), the first Pakeha occupation of Price's Inlet may have been by the Weller whaling company who operated a whaling base from this location. The Weller brothers had a whaling operation on the Otago Peninsula (Dunedin) called 'Otakou' from 1831 to 1841 and so may have also been operating a base further south here in the 1830s or 1840s. Howard (1927-31:86) does not reference where he sourced this information on the Weller company, but he does note that excavation of the site would be required to confirm if in fact a whaling station was present here prior to C.E. Price's shipbuilding business.

Historic records and archaeological evidence confirm the earliest known Pakeha occupation of Price's Inlet was by C.E. Price who established a shipbuilding operation in 1865. His shipbuilding business ceased operations in 1868 after the two sawmills which supplied his timber shut down (Howard 1927:86, 1974:199; also see Figure 3). Price was a retired naval man and well known ship builder of skill. According to Howard (1927-31:86; 1974:200), he built one ship for a Captain Proctor and began a second, but after a dispute with his client, this ship was never completed before Price's shipbuilding business closed. Howard believes that the wooden parts of the Norwegian slipway are the original shipbuilding skids from Prices' shipbuilding operation and that during his visit in 1927, Howard notes the Whalers' had not damaged or removed the skids (Howard 1927-31:86).

The next historic record of occupation of Price's Inlet is indicated on survey map SO 1522 from February 1878 (Figure 2). This map shows a 'house' located on the eastern headland of the inlet in the location of The Base managers' 1926-1932 house where the concrete foundations can still be seen today. The parcel of land is noted on the 1878 map as '31' (known today as Lot 31) but no ownership of the house or land parcel is given. The survey map also shows a trig point to the east of the headland and the 'house'.

Survey map SO 2848 from July 1893 shows Lot 31 but no buildings or ownership information (Figure 3). However, it notes the trig point as indicated on the 1878 survey map. It also shows two locations of bush near The Base where 'Old Sawmill Workings' are present. These old sawmill workings may relate to those depended on by Price from 1865 to 1868 as a timber supply for his ship building business.

Between 1926 and 1932 the Ross Sea Whaling Company of Sandefjord, Norway established its repair base for whale catcher vessels in Price's Inlet (Figures 4 to 16). The Ross Sea Whaling Company named their shipyard the 'Kaipipi Shipyard' but it is also known as 'The Base', 'Price's' or 'The Whalers' Base' (Watt 2006:3). Watt (2006:3)



Figure 3. Survey map SO 2848 from 1893 showing Lot 31. No features are noted, such as houses, but the trig point on the eastern side of the headland from the 1878 map is indicated. Note also 'Old Sawmill Workings' indicated by red 'underline' in the top figure (source: LINZ).

notes that the purpose of the facility was to maintain and repair whale catchers during the southern winter while the factory ships returned to Europe with the whale oil taken during the hunting season from November to February. The fifteen Star whale catchers were repaired at various times at the yard as well as other catchers such as the Karrakatta. The yard consisted of the slipway, workshop (including a forge), cookhouse, carpenters shop, bunkhouse, winch house, a tin hut and the Othello Wharf which was a wharf made from the hulk of the ship Othello (the hulk was fixed, not floating) (Figure 17). The buildings were weatherboard built on concrete foundations (pads, footings or piles) with the manager's house and bunkhouse being kit set buildings brought from Norway (these buildings still survive in Oban today). The Base was used for basic maintenance and repairs of the catcher boats as it did not have a foundry to undertake any larger repairs, this being carried out at Port Chalmers near Dunedin (Watt 2006:3). Up to 38 Norwegians operated The Base and during the weekends excursions were made to Oban, Rakiura's main town, for supplies and socialising. The base closed in 1932 due to a 'glut' in the whale oil market (Watt 2006:3). This led to whaling moving away from the Ross Sea and the Ross Sea Whaling Company moving its facilities to South Africa.

The Base (Lot 31) has not been occupied since 1932 and is currently privately owned. Lot 3 located next to The Base proper, and which may have part of the bunkhouse located on it, is also privately owned.

#### Terrestrial and Marine Heritage Remnants of 'The Base'

In Figure 17 is shown a basic plan of the Whalers' Base with figures 18 to 37 showing pictures of some of the historic features which could be seen in 2007 during a visit by the author. Considering first the terrestrial remains of The Base (Figures 18 to 29), evidence of almost all the buildings and structures described in historic records (eg. by Howard 1927-31, 1974; and Watt 1986, 2006) and which can be seen in historic photographs of the site can be seen today. As the Norwegians built their structures on concrete foundations, these tough elements have survived well although damage is occurring to the concrete features from vegetation encroachment and weathering. The site has numerous metal items and artefacts scattered around the ruins and in the vegetation. These consist mainly of unidentifiable pieces of worked metal but highly significant items are easy to locate such as whale catcher propellers, actuator springs, the cable from the slipway winch and a diving pump used to supply air to a 'standard diving dress' also known as a John Brown. The rotary dive pump was manufactured by 'John Formby & Co Makers Liverpool' (Figures 25 & 26). The London Gazette of 24 October 1873 notes that this company was dissolved on 30 June 1873 giving this piece of machinery not only a very early age of manufacture but an interesting history of use at The Base.

Known artefacts/structures in the marine environment (from the intertidal to deeper water, Figures 30 to 37) consist of the concrete and wooden slipway (the wooden elements possibly dating from Price's 1865 ship building skid), whale catcher propellers on the beach, actuator

springs, the Othello hulk and the workshop Swedish boiler which provided steam for working the workshop machinery (abandoned by Captain Hamilton at the end of the slipway in ca. 1840 (Watt 2006:6)). Other than these structures or artefacts, little is known about what other remains from The Base lie below the low tide mark. It is also unknown in regard to the Othello how much of the wreck remains and what state of preservation it is in (Figure 37).

#### Legal Protection of the Cultural Heritage Remains of the Norwegian Whalers' Base

The remains of The Base lie across four legal entities, two being private land owners and two being Councils. Most of the terrestrial remains lie on one owner's private property with only part of the Bunkhouse possibly lying on another private property. The front of the site has eroded back ca. 5m or more from its original alignment above the beach and so part of the beach items may lie on the original private land boundary (Lot 31). The beach area from the edge of Lot 31 to above the spring MHW ("Mean High Water") mark is road reserve administered by the Southland District Council and in this area the majority of the whale catcher propellers are located. Any remains of the site below the spring MHW mark are under the jurisdiction of Environment Southland and it is in this area that the Othello, for example, lies and any other marine remnants of The Base.

As noted above, the Norwegian Whalers' Base is not currently protected under any New Zealand legislation or Regional or District Plan. Portable or moveable artefacts from the site which lie on private land gain some protection from theft as they are owned by the landowners. However, the landowners themselves could dispose of artefacts from the site. In addition, the landowners could apply for consent to build on the site, for example, and destroy part of the site for this purpose, though one landowner is supportive of increased legal protection (see below).

For those significant components of the site that lie on Southland District Council and Environment Southland administered land and water, any person may seek permission from one of the relevant Councils to remove



Figure 4. The Base ca. 1926-1932 showing the cookhouse (far left), workshop (centre), carpenter's shop (far right) and bunkhouse (top, in the bush above the working area of the base) (Photo: Southland Museum & Art Gallery).



these items which, although various conditions from these Councils may have to be met for their removal, without any specific legal heritage protection, interested parties such as DoC and the NZHPT would find it difficult to successfully oppose their removal.

#### Threats to the Norwegian Whalers' Base

Threats to The Base are from coastal erosion, visitor impacts and fossicking of the site. The most immediate risk to the site at present is from salvaging or fossicking of the sites' remains, particularly the whale catcher propellers on the shore and on land, the John Formby rotary divers pump and any marine artefacts. In April 2012 the NZHPT was contacted by a marine heritage enthusiast who was seeking the NZHPT's support and permission to remove propellers from the site. Any easily moveable propellers were being sort so these items could be taken back to a town many miles away, sand blasted and then put on display outside a museum. It was claimed the propellers and any items below the water were a navigation risk, which they are not. The NZHPT contacted one of the private landowner's on whose property some of the items being sort were located.

The NZHPT advised the marine heritage collector that digging to remove any items would require an Archaeological Authority from the NZHPT but that the items themselves were not protected under the Historic Places Act (1993) or under the Regional or District Plan. The enquirer was advised that the NZHPT would oppose any removal of any items from The Base.

#### Protection of the Terrestrial and Marine Remains through 'Declaration' under the Historic Places Act (1993)

The most direct and effective way of legally protecting a significant heritage site from the early 20th century is to have that site declared an archaeological site by the Board of the New Zealand Historic Places Trust under Section 9(2) of the Historic Places Act (1993) ("HPA"). This declaration is notified in the New Zealand Gazette, hence why this protection mechanism is often termed 'Gazettal' or 'Declaration'. The NZHPT has undertaken five 'declarations' since 1993 these being: the 1904-1905 Napier Prison Wall; 20th century gold mining heritage in the Remarkables Conservation Area in the Upper Nevis, Otago; the Makatote Tramway, State



Figure 5. The Base ca. 1926-1932 showing a whale catcher at the start of the slipway at medium tide (Photo: Southland Museum & Art Gallery).

Highway 4, Erua; the Featherstone Military Camp; and Limeburner's Bay, Hobsonville. These five sites were 'declared' archaeological sites to protect them because of their significant cultural heritage value to early 20th century New Zealand history, their rarity value and their ability to educate visitors about an important aspect of New Zealand history. The Norwegian Whalers' Base is certainly an early 20th century heritage site which meets such criteria for 'declaration' or 'gazettal'.

A key aspect of the 'declaration' process is landowner support. Although this is not required under Section 9 (2) of the HPA (1993), the NZHPT believes that only through landowner support can true long term protection and management of a site be gained as both parties have an interest in achieving positive heritage outcomes for a heritage place. The private landowner who owns the land containing almost all of the terrestrial remnants of The Base (Lot 31), has provided his written agreement to support the 'declaration' of the remains of the Norwegian Whalers' Base. This agreement was spurred on by the recent enquiry into removal of propellers from his property.

*Project Njord* is currently seeking support from the Southland District Council ('SDC') and Environment Southland ('ES') for the 'declaration' of all of The Base remains on road reserve and in the marine environment. With the 'declaration' support from SDC, ES and the owner of Lot 31, a strong proposal for the protection of the marine and terrestrial remains of The Base can be presented to the Board of the NZHPT.

#### Aims of Project Njord

*Project Njord* has three aims to achieve a better understanding of the site and its long term protection:

- Undertake a marine archaeological survey of the water in front of The Base to determine the nature and extent of any marine heritage structure/features/items.
- Gather additional terrestrial heritage data to supplement that already recorded previously at The Base.
- Use the marine and terrestrial heritage survey data to prepare a proposal to the Board of the NZHPT to declare the Norwegian Whalers' Base an



Figure 6. The Base ca. 1926-1932 showing the slipway (centre), originally dating from 1865, and the Othello Wharf (far left) (Photo: Southland Museum & Art Gallery).

archaeological site under Section 9(2) of the Historic Places Act (1993).

### **Project Njord Team, Methodology & Funding**

Five persons make up the *Project Njord* team: marine archaeologists Matthew Carter and Andy Dodd, NZHPT Regional Archaeologist Dr Matthew Schmidt (Project Manager, terrestrial and some marine archaeology), Southland Museum of Art & Culture archaeologist David Dudfield (terrestrial archaeology) and historian Jim Watt. Fieldwork is planned from the 7th to the 12th of March 2013.

The marine archaeological survey will require the marine archaeologists to undertake swim line searches using the jackstay search method across what is believed to be the main marine area in front of The Base where cultural heritage remains may be found. This method will ensure the marine component of the site is systematically investigated. Finds will be marked with floats and descriptions/photographs/gps taken. An underwater metal detector will also be used. The hulk of the *Othello* will be surveyed in detail with the site being broken up into three 10x12m sections, and recording using baseline and offset measurements along the keel line over four consecutive dives. The marine survey will take a minimum of three days with one day as a weather backup. During this time, the terrestrial archaeology recording will be undertaken with the site being mapped using an Ushikata surveying compass and GPS to supplement previous survey data on The Base, and site structures and features will be drawn.

The project has full funding in large part due to a significant donation by Environment Southland (Southland Regional Council) for the marine archaeology component, and the New Zealand Historic Places Trust and Southland Museum & Art Gallery for the terrestrial archaeology work and declaration preparation. The Department of Conservation on Rakiura is also contributing significantly by providing boat transport and a skipper for the fieldwork. The Marine Archaeological Association of New Zealand is also donating recording equipment.



Figure 7. Another view of The Base looking from the *Othello* (Photo: Southland Museum & Art Gallery).

### **Conclusions**

*Project Njord* will be the first marine archaeological survey aimed at protecting a post-1900 marine heritage site in New Zealand. The project will therefore not only result in the long term protection of a highly significant cultural heritage site which has both terrestrial and marine heritage components, but may also provide a template for other projects of this type around New Zealand.

### **Acknowledgements**

Thank you to the SCHIP partners, Environment Southland, the New Zealand Historic Places Trust, the Marine Archaeological Association of New Zealand, the Southland Museum & Art Gallery and the Department of Conservation for their project support, funding and resources. Thank you also to the Rakiura office of the Department of Conservation for use of boat the 'Hananui', and its skipper Steve Meads.

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Figure 8. The five Star catcher boats moored at the *Othello* wharf with another in the background (Photo: Southland Museum & Art Gallery).



Figure 9. The whale catcher *Karrakatta* being stabilised on the slipway. The winch-house can be seen in the back right of the photograph (Photo: Southland Museum & Art Gallery).



Figure 10. The *Othello* moored in place using driven piles (Photo: Southland Museum & Art Gallery).



Figure 11. Top: Map from 1929 showing the location of the Norwegian Whalers' Base on Rakiura/Stewart Is. and the Ross Sea where the whaling took place. Bottom: The whale catchers (probably part of the *Star* fleet of catchers) making their way through the ice in the Ross Sea (Photo: Southland Museum & Art Gallery).

Figure 12. A *Star* whale catcher with its catch in the Ross Sea (Photo: Southland Museum & Art Gallery).



Figure 13. *Star* whale catchers with their catch in the Ross Sea (Photo: Southland Museum & Art Gallery).



Figure 14. Factory ship *C.A. Larsen* (Photo: Southland Museum & Art Gallery).



Figure 15. Factory ship *Sir James Clark Ross* with a *Star* whale catcher alongside (Photo: Southland Museum & Art Gallery).



Figure 16. A 'Flenser' processing a whale on an ice flow in the Ross Sea (Photo: Southland Museum & Art Gallery).



Figure 17. Plan of the Norwegian Whalers' Base from one of the DoC on-site interpretation panels.



Figure 18. Foundations of the Managers' house showing the entranceway (NZHPT 2007). See Figure 17.



Figure 19. Concrete pad indicating location of the Cookhouse (NZHPT 2007). See Figure 17.



Figure 20. Foundations of the workshop (NZHPT 2007). See Figure 17.



Figure 21. Standing inside the foundations of the workshop showing how close it is to the water's edge (NZHPT 2007). See Figure 17.



Figure 22. Another view of the foundations of the workshop (NZHPT 2007). See Figure 17.



Figure 23. View E over the foundations of the Carpenters Shop (NZHPT 2007). See Figure 17.



Figure 24. Whaler catcher propeller 18m SE of the Carpenters Shop (NZHPT 2007). See Figure 17.



Figure 25. John Formby & Co Makers Liverpool rotary dive pump located close to the NE wall of the Carpenters Shop (NZHPT 2007). See Figure 17.



Figure 26. Close view of the John Formby & Co Makers Liverpool rotary dive pump (NZHPT 2007). See Figure 17.



Figure 27. Foundations of the Winch House obscured by vegetation (NZHPT 2007). See Figure 17.



Figure 28. One of the iron pins in the Winch House Foundations used to secure the winch machinery (NZHPT 2007). See Figure 17.



Figure 29. The Bunkhouse Foundations (NZHPT 2007). See Figure 17.



Figure 30. View of the slipway looking SW towards the workshop (NZHPT 2007). See Figure 17.



Figure 31. View of the slipway looking N towards the abandoned workshop boiler (NZHPT 2007). See Figure 17.



Figure 32. Whale catcher propellers on the beach (NZHPT 2007).



Figure 33. Propellers and other metal items on the beach (NZHPT 2007).



Figure 34. Winch drum (?) on the beach (NZHPT 2007).



Figure 35. Mass of rusting metal including a box, actuator springs and cables (NZHPT 2007).



Figure 36. The Swedish boiler abandoned by Captain Hamilton in ca. 1840 (Watt 2006:6) (NZHPT 2007).



Figure 37. Google Earth (2012) view of the Whalers' Base showing the hulk of the *Othello* (circled) beneath the water. It is unknown what other marine heritage structures or items may be present.



## Conservation of Archaeological Remains at Harappa: Problems, Methods and Suggestions

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### Location, Discovery, Excavations

The site of Harappa is located about 27 kilometers south west of Sahiwal city. It is considered the second largest city of the ancient Indus Valley Civilization (Fig.1.A). Charles Masson, a British military deserter was the first who mentioned Harappa in his travel account, *Narrative of various journeys in Baluchistan, Afghanistan and the Punjab*. He visited the site of Harappa in late 1820s. Afterwards Alexander Cunningham, the famous archaeologist, visited the site of Harappa twice in 1853 and 1856.

Harappa was declared as protected site in 1920s, under AMP Act 1905, but unfortunately the mounds of Harappa had long been the source of brick blasts for about 160 kilometer of the railway track (*Labore – Multan*) as well as a ready means of a brick quarry for the local people of the modern town of Harappa. The laying of railway line and the activities of local brick robber destroyed the most of brick structures of remains. M.S Vats, an excavator of the site, remarked about the destruction of the site as follows:

*I made several excavations at Harappa, but the whole surface had been so cleared out by the railway contractors that I found very little worth preserving* (S.M. Vats, *Excavations at Harappa* Vol.1, Calcutta, 1940 p.3).

After the protection, archaeological excavations were started and many archaeologists excavated the site to understand the mysteries of the Indus Valley Civilization. The first archaeological excavation at Harappa was conducted by Daya Ram Sahni in 1921 and continued up to 1925. Modho Srup Vats excavated the site from 1926 to 1934, followed by the excavations of K.N Shastri in 1937. Sir R.E.M. Wheeler laid the trenches on the site from 1944 to 1946. The post independence excavations were carried out by Dr. Muhammad Rafique Mughal in 1966 adding useful information to that of the already known.

The American Archaeological Mission in coordination with the Department of Archaeology and Museums, Government of Pakistan, under the guidance of Dr. George F. Dales started archaeological research at Harappa in 1986. The other principal members of the team were Dr. Richard H. Meadow and Dr. J. M. Kenoyer. As a result of the excavations since 1986, a large area of Harappa site was unearthed and new chronology was established, which is as under:

1. Ravi aspect Hakra	3500-2800 B.C
2. Kot Diji Phase	2800-2600 B.C
3. Harappan Phase	2600-1900 B.C
4. Harappan/late Harappan transition	1900-1800 B.C
5. Late Harappan (Cemetery H) phase	1800-1500 B.C

### General Description of Ancient Site Of Harappa

The whole circuit of ruins at Harappa, is roughly 12,500

feet or near about 4 km in circuit with maximum height of 60 feet above the surrounding cultivated fields and lies on the left bank of dried bed of river Ravi (Fig. 1.B). It may be mentioned again that the brick diggers, made the whole site so disturbed that in 95% of case it is impossible to understand the plan of the actual houses not to speak of the layout of the street, drainage system etc. However, from the available features of the remains, the old city of Harappa may be divided into two parts; the lower and the upper. The lower part consists of the remains at Mound E towards the east and southeast where the southern gateway has also been recovered. To the south lie Cemetery R 37, Cemetery H, and Area G, and Mound F to the north. The workmen platforms and quarters and the granary, which appear to have functioned under the administrative control of the Citadel, stand to the northwest. The upper part includes the whole of the AB Mound, The citadel area, where the defense wall and the western gateway are situated.

### Architecture and Masonry

It has been observed by the researchers that the foundations of Harappa city were laid out in accordance with a pre-engineered scheme. But the brick diggers, as pointed out earlier, had disturbed the whole site to such an extent that the excavators could not possibly reproduce a complete layout of the houses. In this context, M.S. Vats said,

*The aspect of the ruins, so far brought to light, is in general so hopelessly mutilated that in 95 per cent of the cases it is impossible to draw even a tentative plan of what the houses once looked like, much less to reconstruct their facades, or the layout of their streets, drainage systems, and the like.*

However, we can conjecture from the study of a few better-preserved remains that most of the Harappans lived in houses made of burnt bricks from the earliest time onwards. The usual size of the brick is 11 × 5.5 to 3 inches. Both baked and mud bricks were used in the middle class houses in the intermediate period of the city life. In some cases sun dried bricks were used for raising solid terraces to ward off the flood dangers. Mud was used as a common mortar in the masonry work but in some cases gypsum was also used for pointing purposes to add solidity to the structure. In a few instances bricks with relief works were also used for decoration in the houses probably inhabited by the rich class.

The house floor was usually made either of mud or bricks lay in flat position and also partly executed on edge pattern. The bathrooms were paved with well-rubbed bricks, having very fine joints. Bricks laid on edge either on their longer or shorter sides, were used to border the pavements. The remains of houses are of very small height and as such no signs of window etc. have been traced. It is for this reason that not much of corbelling

work was found in the city of Harappa. It is interesting to mention that only three instances of stairways have been observed in the excavated buildings. Their risers are high and the steps are narrow.

Drains made of burnt bricks have been discovered. They are covered either with flat roof, gabled roof or round arch. In some cases, the drains have been kept completely open. These open drains were probably meant for the drainage of a particular area. There were dustbins alongside the drains sunk below the ground level. These were always paved and built at suitable places in the street. Also there were refuse water pits lined with jars which were used for storing the used up water from the baths or kitchens and were to be cleaned by the sweepers employed by the civic authorities especially for this purpose.

The number of wells was low at Harappa as compared to Mohenjo Daro, i.e., only six wells were recovered at Harappa. They are all public wells and their diameter ranges from 1 foot 10 inches to 7 feet. It is to be noted that the wells found in F- Mound are so small that two people at one time cannot draw water from them. However, the diameter of the wells situated away from the ancient bed of Ravi is much bigger. The reason is that the people living close to the river might have used well water only for cooking and drinking purpose while people occupying the area of the city away from the river, utilized the well water for all purposes and hence the construction of large size wells was reasonable necessity.

## **Conservation Hazards to the Archaeological Remains at Harappa**

### **1. Efflorescence**

Efflorescence is a very common problem here being faced by the entire site. When a structure or any object is unearthened, it becomes brittle under the effect of efflorescence interacting with the open atmosphere and the entire surface of the structure/ unearthened object is covered with accumulation of salts, thereby disintegrating into ashes. The entire site is badly under the attack of this menace and the removal of the salts from the entire site is almost impossible. However, the unearthened structure/object may be secured by treating them chemically after the process of desalination. It is worth mentioning that the desalination of the moveable objects both small and large is possible easily in the laboratory while the immovable intact large and massive structures at site are difficult to be desalinated completely. Mud plastering of excavated remains is common method in use to overcome this problem (Fig. 2.A).

### **2. Defacing of the sections of excavated remains**

The 1920s excavations had left deep sections and trenches open. There was no concept of re-burying of the archaeological sites at that time. With passage of time, the deep trenches defaced because there was no binding force between the salt affected and swollen particles of mud. The weathering effect, the sun and rain, along with toddling of a number of visitors on the site has compounded the disintegrating process. Consequently the structures in the old trenches have completely lost their identity.

The erection of retaining walls against the defaced

section have been experienced in the past, especially on the AB mound and F mound in order to keep the deep defaced sections of the excavated trench in a presentable condition. Before erecting the retaining walls against the defaced sections, the basic ethic of conservation was kept in mind that the measures being adopted should be reversible. The retaining walls were constructed with sun dried and burnt bricks, using mud mortar as a binding material. The burnt bricks were used on the faces of the walls for strengthening of the faces, while the sun dried bricks were used on hearting and backing of walls. The loose earth of the defaced section was removed carefully before construction of the retaining wall in required position. The presence of antiquities in the loose soil was also kept in mind while removing the loose earth. The foundation trench was also dug very carefully keeping in view the exact extent of excavated trench. The foundation bed was not laid in a uniform level rather it was kept low or high at various pieces of lengths depending upon the availability of comparatively hard soil to bear the dead load of the wall being erected over it. The second purpose of keeping uneven levels at various pieces of length was to avoid the maximum cutting of soil at site and thirdly to add the minimum retaining walls structure at site, and fourthly to minimize the thrust pressure of the back filled mud behind the retaining wall. Moreover abutment walls across the retaining walls behind the retaining wall in the shape of T or U were provided to avoid overturning of retaining walls under the thrust pressure of back filled earth.

The retaining wall was kept slightly tapering towards the top to bear the maximum thrust of the back filled earth. First the lower most portions of both the retaining and abutment walls are completed and after maintaining the uniform level of the uneven retaining and abutment walls, the remaining entire wall was completed up to the top level of the section. The depressions behind the retaining walls were refilled and compacted with filling of removed earth from the trench after its screening for sort it out the possible antiquities in the soil. The facade and the top backfilled areas were plastered with mud mortar, to avoid the penetration of rainwater in the newly built retaining wall and to provide a safe passage to rain water away from the trench (Fig. 2.B).

### **3. Conservation of existing structures at the site**

As a result of scientific excavations at site since 1920 till to date, both movable and immovable antiquities were recovered in large number. The movable antiquities were brought to the laboratory for their chemical treatment, while the immovable antiquities remained intact at site. At Harappa, mostly low level remains were unearthened as a result of theft of bricks as a ready means before carrying out the archaeological excavations and declaration of the remains as protected by the department. The structures also faced natural hazards because they remained open to atmospheric and climatic changes for a long period of time. The efflorescence was proved to be the worst enemy of the existing structures.

With the passage of time the bricks originally laid in mud mortar subjected to various weathering effects loose the bondage between the mud mortar and the bricks. Consequently, the structures become loose and disintegrated. To keep the structures intact, re-erection of



the loose portions of the structures is done either in the shape of underpinning by inserting the original bricks in the core apply fresh mud mortar in the effected portion or by inserting new bricks of original size with fresh mud mortar if the original bricks removed from the structure were so brittle and were unable for their reuse. However, every effort is made during the process of conservation that the original pattern for re-laying of bricks may be adopted (Fig. 3.A).

#### 4. Strengthening of the existing Archaeological structures at site

Various movable and immovable antiquities have been recovered during the archaeological excavations of past few decades at Harappa. Among the existing structures belonged to the lower most, the middle and upper levels, corresponding to different time periods. The middle and upper level structures are standing on the pedestal of original earth filling under their respective beds. As the earth was loose, swollen and badly affected by the efflorescence, hence, it was necessary to keep the original earth under the structure intact. For this purpose a technique called erecting "mud *pushta*" (retaining wall) was applied at the site. During the process of conservation a protective thick layer of mud mortar mixed with *bhusa* (wheat straw) was applied around the earth filled pedestal of the structure keeping the mud mortar tapering towards the top. Due to this retaining wall, the original earth filling under the structure was saved to get escaped under the pressure of dead load of brick structure over it (Fig. 3.B).

#### 5. Erosion of historical mounds under the weather effects

The archaeological mounds of Harappa are located at various levels and provenances. These mounds are constantly subjected to the various weathering effects and face the down slides and the wind storms. Harappa has a desert like environment, with extremely hot days starting from May and extending to the middle of October, every year. Dust storms are common features in this area, causing erosion and blowing of the archaeological mounds. It is an inescapable natural phenomenon of Harappa. It could not be escaped. However, a thick plantation around the site may help in making the soil compact and controlling the strong wind storms.

The temperature becomes cool in early morning and the nights, towards the end of August and about the middle of September. There arises a sharp contrast in hot day strong winds, and the cool breeze of the mornings and the nights. This difference in temperature causes cracks, leading to the natural erosion of the archaeological structures.

The second weathering factor is the heavy rainfall, which generally set in the month of July, but the heaviest average rain falls is recorded in the month of August. In November, there is no rain but there is rainfall in the month of December. As a result of heavy lashes of rains, the water begins to flow very rapidly towards the down streams sliding over the slopes of the mounds finding its natural ways. The rapidly descending rainwater from the slopes of the mounds, cause a lot of destruction to the pre-historic mound. The rain water erodes the slopes, making fissures, gaps and gullies taking away with it the unearthed moveable antiques and leaving behind the existing naked structures to face the hazards on the

hands of weather and other agents responsible for the destruction of the site. The rain water after descending from the mounds collects at various points and starts flowing very rapidly towards the low lying adjacent areas around the mounds, involving cutting and erosion of low lying areas under the rapid flow.

The natural solution to this problem is the sufficient vegetation all over the historical mounds to slow down the speed of the descending and flowing water to minimize the erosion at site during the hours of heavy rains.

The second possible man-made measure towards this problem is giving the safe passage to the rain water to minimize the erosion process during the rain hours. For this purpose measures can be taken like refilling back the fissures, gaps and gullies with mud and compaction properly. Moreover, surface dressing in a way to give a wider and safe passage to the rain water instead of a narrow one, which causes rapid erosion.

Many other reversible practical measures can also be adopted for minimizing the erosion of the site. One is among them to lay a thick layer of mud mortar mixed with *bhusa* (wheat straw), over the treated area mentioned above and then laying a jute mat sheet/polythene sheet or simply putting a layer of loose dry straws over the mud and then applying another mud mortar layer over it to provide a safer and wider passage to the rain water for checking the erosion due to the rain water (Fig. 4.A). The measure can be repeated if the earlier laid layers are eroded due to the flow of rainwater.

Another reversible measure which may also be adopted at the site is the rough dressing of descending passages of rain water and providing a layer of mud mortar mixed with *bhusa* (wheat straws) and then laying simply a dry layer of sun dried bricks may be laid on edge in a hair bone bond of the masonry. The top of the sun-dried bricks may be kept free of a layer of mud mortar or it can be provided with a layer of mud mortar keeping in view the position of the site. This measure will also provide a safe passage to the descending and flowing water without affecting the site. This is very simple process, which may be repeated if the sun dried bricks on the way of water are washed away due to erosion.

#### Conclusion

Conservation of archaeological remains at Harappa is a sensitive and difficult job. The whole site had been badly destroyed by the brick robbers before it was declared protection in 1920. Due to this destruction apparently site did not present the true picture of the architectural remains typical of the Indus Valley Civilization architecture, as one can see in Mohenjodaro.

One possible solution to this problem is reconstruction of missing portions of the structures so that visitors may observe the true picture of the Harappan architecture. This reconstruction should only be done after careful study of excavations at Harappa and study of preserved remains at Mohenjodaro that were contemporary to this site.

The Archeological remains at Harappa are in high danger of erosion and destruction due to the presence of high

level of efflorescence in soil and other weathering effects. The Federal Department of Archaeology of Pakistan, in spite of its limited resources, is trying its best to preserve the archaeological remains at Harappa, but still there is much to be done on the site. One possible solution to this is the reconstruction of the same over the original after reburying original ones. This is already done by the American Archaeological Mission on mound E, where they

have constructed city wall in same place after burying the original city wall.

At the end it is strongly suggested that further excavations at the site of Harappa should immediately be got stopped until and unless the Department properly preserves and conserves the already excavated remains.

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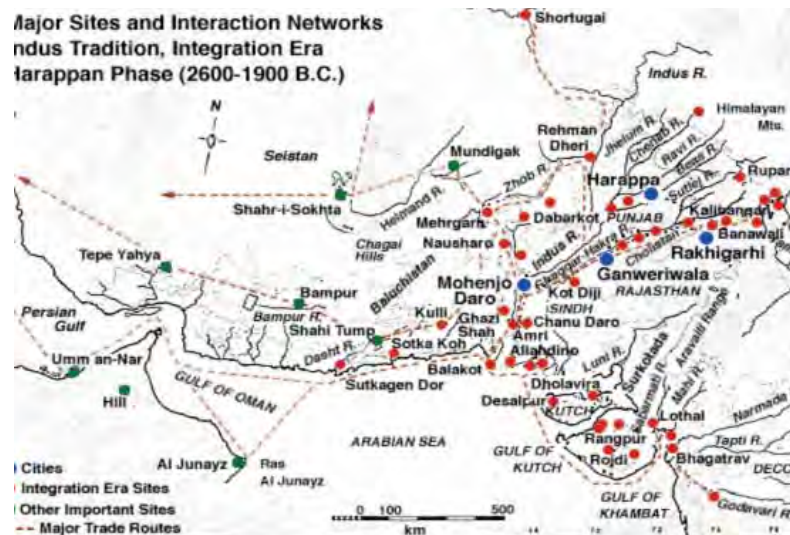


Figure 1. A.

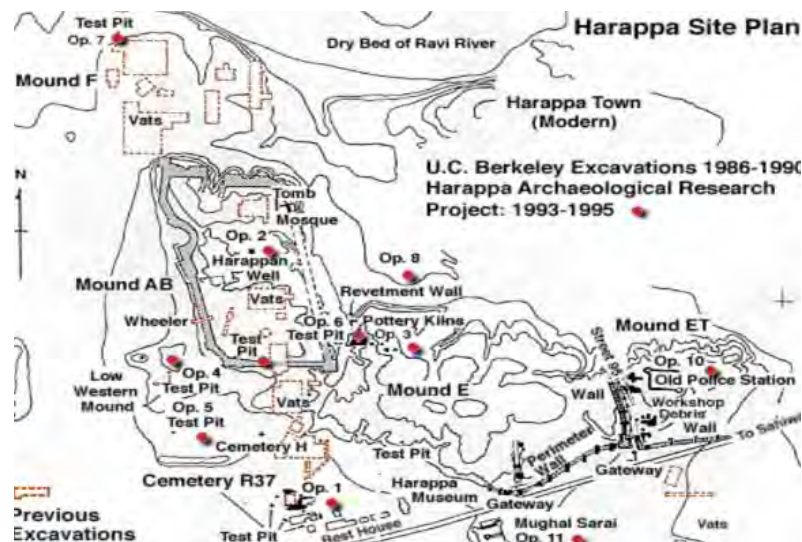


Figure 1. B.



Figure 2. A. Mud plaster applied on remains in great granary mound F to protect structure from efflorescence factor.



Figure 2. B. Construction of retaining walls in progress to protect sections of the trench. Mound F



Figure 3. A. Conservation of existing structure in progress on great granary Mound F



Figure. 3. B. Soil beneath a late Harappan wall strengthened by applying mud *pusha* Mound AB



Figure 4. A. The ground level of trench in Mound F stabilized by surface dressing and mud plastering



## The Artefact Storage Room at the Archaeological Studies Program, University of the Philippines

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The Archaeological Studies Program (ASP) at the University of the Philippines is the only institution in the Philippines offering archaeology as a formal degree course. Since the establishment of ASP in 1995, through its field schools and research projects, it has accumulated huge number of archaeological materials. The collection continues to grow every year. The main challenge ASP faced was the lack of storage space. ASP used to occupy a small room in the basement of Palma Hall where the office, faculty space, library, and storage were located. When cabinets became full of artefacts, these were then stored in any available space in the basement. The cultural materials were stored in the rooms or under the tables of project leaders who retrieved them. In 2010, ASP acquired Villadolid Hall, located four blocks away. The Villadolid Hall houses several laboratories and workstations where artefacts from later excavations were stored. In time, storage space again became a concern. The materials include but not limited to lithic tools, shell artefacts, pottery fragments, porcelain sherds, glass shards, bioarchaeological materials such as animal bones, plant remains, and human remains; geological materials i.e. sediments, rocks; metal artefacts, ornaments (beads, glass bracelets, shell ornaments), clay tiles, and charcoal samples. These archaeological materials are tangible manifestations of Philippine heritage. Through proper analyses, we derive information about the ancient and immediate past. It is important to preserve these materials because they are the only physical sources of Philippine history beyond written records. Due to lack of sturdy and proper storage containers and space, the materials are compressed inside drawers, placed in straw sacks, plastic bags, or opaque boxes. The condition does not facilitate easy retrieval for analyses. Some artefacts have remained in their field storages waiting to be processed. Organic reference samples like seeds have decayed because humidity and temperature are not regulated. The labels are faded and information is incomplete. Most of the time, only the site name, date of excavation, and type of material are indicated outside the container. One has to go through the whole box to look for a particular accessioned artefact. It would be easier if accession numbers are also written on the box.

In November 2012, the main ASP office transferred to Albert hall just beside Villadolid Hall. The solution to the storage problem is to create and reorganise a permanent and centralised storage space specially dedicated to archaeological materials. The plan is to reorganise the current storage system at ASP. The Human Osteology Laboratory and Plant and Sediments Laboratory have transferred to Albert Hall from Villadolid Hall creating more space for the human remains and plants and sediments specimens. As of this writing, the Lithic Laboratory and Zooarchaeology have not yet transferred. We believed that the first step to the protection and

conservation of archaeological materials is to store them in appropriate containers. As part of the preservation, the artefacts and eco-facts are now photo-documented and a centralised digital database is being proposed and created. Not all archaeological materials are durable, some are sensitive to light and air, and physical handling. The backbone of archaeological research is dependent on the conditions of artefacts. At the moment, we are assessing the current conditions of the artefacts and categorise them according to their preservation needs. The physical reorganisation, creation of a database, and photo-documentation will ensure that the archaeological materials are stored properly to prevent further deterioration. Artefacts are transferred to proper storage containers to help preserve them and prolong their life so future students of ASP, external collaborators, and other researchers will still have the opportunity to study them. The results will further enrich our knowledge and understanding of Philippine heritage. ASP is the only institution which to date is the only academic unit conducting archaeological research in the Philippines. We envision ASP to be the centre of excellence in the region producing high quality and high impact research. This can be attained if the source of data – archaeological materials – are preserved well and received preventative care. At the moment, we are reorganising the physical storage of the archaeological materials by storing them in appropriate containers that will preserve them longer and to facilitate easy retrieval. We are examining the conditions of the artefacts, and categorising them according to their preservation needs and to propose explicit methods for preservation. Artefacts are photo-documented as part of their analyses.

To date, the materials are categorised according to the nature of raw materials. Most of them have been cleaned and accessioned in the field. They are currently stored in boxes, plastics, and sacks. To enhance appearance, artefacts that require further cleaning are rinsed, dry-brushed, wiped with cloth depending on the material. Shells and bones are brushed, ceramics gently brushed or washed, fragile objects such as bones are dry-brushed. We have replaced deteriorating containers with more appropriate and durable ones such as hard plastic containers. Boxes are relabeled with permanent markers containing complete information of the contents such as site name and accession numbers. Agents of deterioration such as mildew, moulds, insect infestation, and corrosion are identified, initial preventative care shall be applied to the artefacts, and further preservation and conservation procedures shall be proposed. Multi-tiered steel and wooden shelves and cabinets were purchased to create more space for sturdy multi-level storage space and to avoid crowding. Silica gel is placed with organic objects to prevent moisture from collecting inside containers. We can also put organic items inside desiccating boxes which

we hope to purchase. Other organic materials are now placed in plastic containers and placed in dry cabinets that regulate humidity. In the reference collection of animal bones and plants and seeds, industrial grade camphor/menthol crystal counteracts the smell of the fish bone collection. In the future we hope to purchase TergAzyme, a detergent applied to bones before storage removing the remaining fat from bones. It also serves as insect repellent.



Figure 1a: Human bone specimens before the transfer. These are the human remains that were in unlabeled crates (Photo by Grace Barretto-Tesoro).



Figure 2a: Human bone specimens stored in properly labelled crates and containers placed in sturdy steel shelves in the new Human Osteology Laboratory at the Albert Hall (Photo by Myra Lara)



Figure 3: Plant remains stored in properly labelled containers placed in a dry box to regulate humidity at the new Plant and Sediments Laboratory at the Albert Hall (Photo by Jane Carlos).

The current storage conditions in the Human Osteology Laboratory and Plant and Sediments Laboratory have far improved since the transfer (Figure 1-3). Although the storage conditions are not close to the ideal, we at ASP constantly check the artefacts to arrest deterioration. We hope in the future that full-time conservators will be employed in ASP to solely work on preserving the archaeological materials.

#### Acknowledgments

Many thanks to Jane Carlos and Myra LaLa for the photos of the laboratories.



Figure 1b: Human bone specimens before the transfer. The human bones in plastic bags with fading labels (Photo by Grace Barretto-Tesoro)



Figure 2b: Human bones transferred to plastic boxes with labels (Photo by Myra Lara)



## The Eleventh South Pacific Arts Festival in the Solomon Islands

**Mainifo Viliamu**, Senior Museum Officer  
Ministry of Education, Sports and Culture

South Pacific Arts Festival is a way that Pacific Islanders share, maintain and promote culture activities in our region, and about twenty islands of the Pacific assembled to a selected country to commemorate such event. It took place every four years. Seventy six participants from Samoa attended the eleventh South Pacific Arts Festival in the Solomon Islands. The theme of this festival was “Culture in harmony with Nature”.

The hosts of the festival officially opened the ceremony with a traditional opening where canoes were received on shore the EA Oval in Honiara. Thousands of singing Pacific Islands spread along the sandy beach to welcome the fleet of va’a from their respective islands that included our Samoa’s canoe Gaulalofa. Our flag was hoisted high beside those of other Pacific islands. Breathtaking fireworks concluded the morning with Samoans stealing the show with their slap dance.

The tattooing and carving were some of the arts Samoa were displaying to commemorate the celebrations at Honiara. The renowned tattooist, Peter Petelo Suluape proudly laughed as he carried a relaxed conversation with Fa’amatala Ainu’u who was getting his tattoo done for the Festival. A son to Su’a Suluape who handed down the art to his children, the tattooist Peter Petelo highlighted the importance of keeping true to one’s heritage. Peter was of the opinion that when one did not realize his duty to his family then one’s culture was not important. Many people from around the Pacific spent hours outside the hut for the tattoo display while taking photos or merely watching Peter Suluape and his assistants at work. Other Samoan delegates including a liaison officer Mata’afa Autagavaia sang for hours and clapped the ava while Suluape’s skilful hands told a story about Samoa’s tattoo.

Pelenato Ioane and his colleague Ivo Galu of the Leulumoega Fine Arts School are two of Samoa’s inspired artists. Pelenato was teary eyed as he spoke about how

fascinated the Solomon islanders were of the carving they chose. The two carvers were working on a piece that depicted the navigation of Polynesians to Samoa. In between curbs of the tall wooden sculptures, the artisans included mystical legends of Samoa. Pelenato said that he felt blessed to be part of such a festival as he can see how he himself can contribute to the artists’ world with his own humble ideas. He shared the *elei* carving with the Solomon islanders who were surprised to learn of the commercial advantages of carving in making *elei* designs. Pelenato felt that giving these interested Solomon islanders the hope to design and make a living of it, was rewarding for him as an artist

Samoa’s dance group, Malofie, contributed to the showcase of performances with a devoted spirit to the Samoan *fa’ataupati*, *ma’ulu’ulu*, *sasa* and the renowned and popular *sivaafi*. Malofie draws many fans to each and every one of its performances. The group also modelled the fashion show designed and coordinated by the talented ladies of the Samoa Mamanu Association. Yesterday, the group was also admired by audiences as they cooked a Samoan *umu* in style. Honourable Associate Minister Tu’uuAnasi’iLeota graced the occasion with his supervisory presence and many compliments of *fa’amalo* to the boys and girls of the dance group. The Chief Executive Officer of the Ministry of Education Sports and Culture, GalumalemanaNu’ufouPetaia was on the other side of the field, encouraging the carvers, weavers and tattoo artists in their artistic endeavours.

The youngest and finely skilled weaver Delia Atkins modestly states that she has yet to learn all the art of weaving. She is blessed to be working beside and learning from skilled weavers and siapo makers such as AigaMalaulau, MauaiseasoLeota and SiasinaTolo. Similarly, young AnivaVa’alotu spoke enthusiastically of the Youth Workshop







## Conservation of Vernacular Buildings and its Impact on Cultural Tourism with Special Reference to Conservation of Dwelling House in Meemure Village, Kandy District, Sri Lanka

Sujeva Kaushalyani Peiris Deraniyagala, *Conservation Supervisor*  
Central Cultural Fund

Sri Lanka is a tropical island having a written history goes back to more than 2,600 years. Island's civilization and culture thrived with the introduction of Buddhism in 3rd Century B.C. Apart from providing a fresh theology to the natives it also had a great impact on society, art, architecture and culture of the people. Great kingdoms of Anuradhapura and Polonnaruwa flourished and sustained for many centuries even if they were located in the driest areas of the island mainly due to abilities and capacities of the rulers, and their enduring and supportive subjects. It is written in ancient chronicles that these early Kingdoms of Sri Lanka have been well planned with royal complexes, monasteries, houses of aristocrats, merchants and ordinary people connected through efficient infrastructural facilities. During the excavations carried out by the Department of Archaeology and the Central Cultural Fund, ample evidence to prove the fact was found. Usually a city wall protected the inner core with a moat around it and the dwellings of ordinary people were located outside. They treated the religious and royal complexes are the most important and build accordingly with durable materials and intrinsic architectural detailing. Most of these structures were built of stone or brick with minute details executed to the perfection. Many articles, research studies and documentations have been carried out on these grand and massive structures, but studies or research on vernacular buildings are minimal or never attempted in large scale.

It would be a difficult study even if it was attempted mainly because those early vernacular buildings have been erased without a trace long time ago. We could have some idea of them through ancient chronicles and mural paintings. But during deep excavations in the "Raja Rata" [area covered by the present north-central province] various evidences were unearthed to establish concrete ideas on the life style and architecture of the ordinary people. It is evident that the people built their houses with materials freely available in the surroundings such as mud, clay and wood with grasses and leaves as roofing materials. Even though these settlements were humble compared to those of the affluent they always responded to the nature that ideally suited to the climate and environment. Time to time standards of ordinary houses changed; mainly set by the rulers, not to offend grandeur or that of the religious or royal establishments. People were not allowed to build in permanent materials like stone or brick and white washing. They did not allow exceeding some set heights or should not entertain thoughts of having fine carvings or intricate architectural mouldings. In simple words the ordinary people should not try to overdo their house and should build it as plain as possible. These rules and regulations resulted the dwelling of the ordinary man get destroyed easily without being able to trace their form.

With the shift of kingdoms to the wet zone after middle ages, the lifestyles of people changed and great irrigation culture began to disappear since water was more freely available than in the dry zone. Settlement patterns of the people also changed according to the climate and occupation of the people. But still they are not allowed to surpass any features of the royal or religious establishments. Some villages were nominated for supplying specific requirements of the King and nobles; potters, weavers, silversmiths, rattan and lacquer workers, fishermen, farmers and vegetable growers etc. As a result, villagers performing the similar tasks are grouped together and built their houses in common form and followed a definite pattern to support their inter-relationships. Even today some of these assigned tasks are performed by the descendants to some extent. But with the in filtering "modern development" into these traditional set-ups their lifestyles, traditional architecture and industries have almost disappeared.

It is very difficult to convince the authorities or the people themselves in the importance of preserving such traditional set-ups because of the dynamic nature of the present "development pressure". On the other hand it is also unfair to trap these traditional people in their poor conditions without allowing them to enjoy modern comforts of life in the name of preserving vanishing cultures. So it is high time and priority to understand the requirements and sensitivity of the traditional set-ups and develop a methodology to amalgamate the tourism factor to ensure co-existence the two spheres.

Several such programmes were undertaken in the recent past to up-grade the living conditions of traditional people while maintaining their traditions. Good example is the actions taken to preserve "Veddah" – the indigenous people of the country. Presently they are pocketed in a small area near the foot hills of Uva Mountains and some in the Eastern Coast. These people lived in caves in the dense forests, surviving by hunting for food and gathering of wild honey, fruits and yams until early 20th century and also co-existed with the Sinahala or Tamil villages that surround their forests. Gradually they mixed with the villagers and almost entered into the civilized circle by through social interactions with the outside world. But the elders of "veddah" society still uphold their traditions and frequently fight with authorities to ensure their sustenance. Local and foreign tourists also frequent these forest villages and a cultural centre and museum is established to facilitate the visitors. As a result, the sensitive nature of the ancient environment is fading and it is a matter of time that these villages also enter into the modern society, which is not unreasonable.

Apart from undergraduate dissertations on traditional village systems done time to time, there was not a single



systematic attempt to document or preserve them. As a result, numbers of village traditions were vanished during the recent past. One such example is Maha Kirinda ancient settlement, in North Western Province, which had a unique house pattern and a village system, which has vanished during the past three decades.

In this context the Kandy Project of the Central Cultural Fund is attempting to conserve the only one traditional type house that remains in the village of Meemure in Kandy District. Meemure is a small village isolated from the “civilized world” until a decade ago. It is some 70 km east of Kandy and reached by very hazardous and difficult route through mountains and valleys. This difficulty kept the intruders at bay and helped to maintain the village’s identity.

Its traditional houses bordered with unique stone built boundary walls and dreamy environment was well preserved even if their lifestyle changed gradually into a modern one, which is inevitable and should be accepted. Most of the villagers are farmers and the people believed their existence in Meemure is continuous and goes beyond the Kandyan Period [15th to 19th century A.D.]. One documentary programme on National Television exposed the village to the world and then came the turning point and the unnecessary “development” seeped into the ancient set-ups and could not be stopped or curtailed.

Presently there is only one house without many changes apart from the roofing material. Its originality of form is still preserved with a central court yard, and a small front verandah. The house is built using mud and clay and the original roof had weaved coconut leaves and then it

was covered with clay tiles but at present it is corrugated sheets. All other houses have been changed and “modernized”. It is a timely move taken by the CCF to conserve the house and set an example for preservation of vernacular buildings as well.

These culturally and environmentally sensitive areas attract tourists, both local and foreign in large numbers. This trend developed in the recent past with more tourists opts for eco-tourism packages rather than traditional beaches or heritage sites. They prefer excursions that vex their muscles rather than going through guided tours. Traditional villages like Meemure pose very attractive for this growing need and authorities should take precautions to develop a comprehensive tourism management plan to minimize the adverse effects.

But the authorities should also gratify the sacrifice they are making towards continuing traditions. As members of the modern society they would prefer to dwell in house with all amenities that others are enjoying. It is also important to control impact of the tourism within the sensitive areas like this if tourism promotion is encouraged. In the Netherlands and some other developed countries we experience living museum type communities, where volunteers come and make the built up traditional environment living. But this would not be practical in a country like Sri Lanka and we at least should respect these village people who give us more than we deserve; because we have already broken up with the past and traditions long time ago while asking them to freeze theirs for our posterity.



A location map of Meemura



The village is located under foothills of a high mountain range



The high mountain range surrounding Meemure making it the remotest village in the island



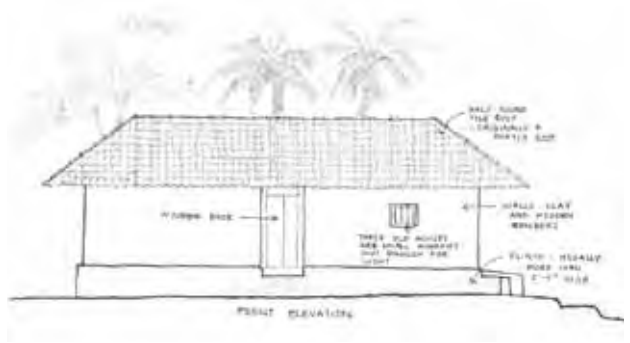
Paddy terraces of Meemure



Paddy terraces surrounded by mountains



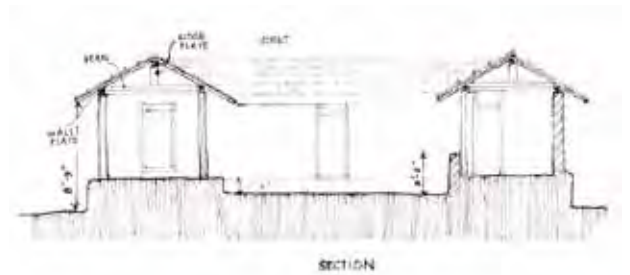
A view of the house



An elevation of the house



A plan of the house



A section of the house



A winding path between stone walls; a feature unique to Meemure



The main entrance of Meemure Ihala Walawwa



Unique stone boundary walls of Meemure



A traditional house and stone walls of Meemure



Deteriorated walls



Details of a side door



Traditional kitchen utensils in the house



## Essence and Interpretation of Historic Building Decorations: A Case Study of Shrine Area in Wat Borom Nivasana Raja Vora Vihara

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### Introduction

In addition to structures and architectural components of historic buildings, decorations are important parts fulfilling the buildings in aesthetics and contents. The decorations are, for example, colouring, colour glass mosaic decorating, gilding, and painting. The fundamental role of decorations is protecting architectural components surface. Furthermore, the decorations play a role in increasing attraction, and creating symbolic meaning (1). The latter two functions produce significance and distinction of individual historic building. Therefore, the decorations of a historic building can explain contents and characteristics of the building to people who see it.

The decorations of historic building are delicate and are easy to decay, damage, disappear, and modify. The destruction and the loss of the decorations cause the deficit in contents and characteristic of the historic building. In order to conserve it correctly, the remains have been used as fundamental information for a study and analysis. Its data will serve to conserve the remains, repair the damage, and reconstruct the lost items. All of the conditions should be restored in a proper conservation process to maintain and continue the value of physical appearance and essence of the historic building decorations.

The objective of the paper is to propose a point of view and understanding of decorations in shrine area at Wat Borom Nivasana Raja Vora Vihara. The whole picture of the temple was presented in the previous report (2).

### Restoration of the decorations in shrine area at Wat Borom Nivasana Raja Vora Vihara

Wat Borom Nivasana Raja Vora Vihara, a royal temple in Bangkok, was built in 1832. The temple was built under patronage of King Rama IV and was the evidence of Thai society adaptation to the western influence at that time. In 2009, Wat Borom Nivasana Raja Vora Vihara cooperated with Fine Art Department and Crown Property Bureau in restoring shrine area of the temple. The restoration project was divided into four phases. The first was the restoration of Ubosot, main hall of the temple, during 2009-2010. The second was the restoration of two small pavilions besides Ubosot in 2011. The third was the restoration of the entrance pavilion and main stupa in 2012, and the last will be the restoration of the gallery and surrounding of the shrine area starting in 2013.

During surveying deteriorated Ubosot decorations, the original evidence was unexpectedly found. It was overlaid with materials on several previous redecorations. The detection led to building a conceptual framework of restoration of the whole shrine area. The restoration of deteriorated Ubosot decorations started by examining and recording each layer of decorations. The examination and

recording were done until the original layer appeared. The data analysis was conducted on the original layer, and then a reconstruction plan was established. The plan was considered to be the most suitable way of restoration. The original layer was preserved under the new reconstruction layer. The new layer was applied by using original materials, patterns, and techniques. This process was also conducted in other phases of the restoration project.

For restoration of Ubosot (phase 1), main colour scheme of mural painting was found: the gilded principal Buddha image of the temple in the background of dark blue. The dark-blue colour emphasized the bright yellow of the gilded image vividly from the background and generated magnificent appearance. Moreover, the golden pattern on the light green ceiling produced brightness and spaciousness over the gilded principal Buddha image. Colour scheme of green-blue of Ubosot hall space was in a cool tone creating the calm atmosphere. At the same time, details on mural painting informed about Buddhism philosophy. The colour and the story influenced the mind of people who saw it and induced them to respect the place. This was an example of the results of the ceiling restoration so that we can restore the original atmosphere and made people understand the meaning of the main hall. Before launching the project, the colour of the ceiling was dark brown made from the previous repairing. The evidences of using green-blue color scheme and western design in patterns were unique that we found in using as the link of the each decoration together.

For the restoration of pavilions besides Ubosot (phase 2) and the entrance pavilion and the main stupa (phase 3), former knowledge and experience from restoration of Ubosot (phase 1) were applied. After finishing restoration in phase 2 and 3, the relationship in colour scheme and pattern characteristic among decorations of Ubosot, pavilions besides Ubosot, entrance pavilions and stupa evidently appeared. The green-blue colour scheme and the western design character in patterns were in harmony among three phases.

From the restoration of decorations in all three phases, we have learned that the original decorations of the shrine area at Wat Borom Nivasana Raja Vora Vihara were unique designs. It revealed significant changes in taste of art attraction that was influenced by the western countries. The change in decorations was an important tool to transmit a new idea of Buddhism reformation by King Rama IV during that period. In architectural decoration, using of colour scheme in each building of shrine area was the conceptual framework in connecting all buildings together that was not found before the early nineteenth century in Thailand.

**Summary**

From the case study, decorations of historic building were important components for explaining characteristic, essence, and chronicle of the building. It is necessary to understand the decorations and to use the proper restoration process in order that historic building is maintained magnificence, meaning and values accurately from the past to the future.

**Acknowledgement**

I would like to thank Mrs. Kiriya Chayakul Sittiwang, Fine Art Academic of Office of Archaeology for providing academic book for this article.

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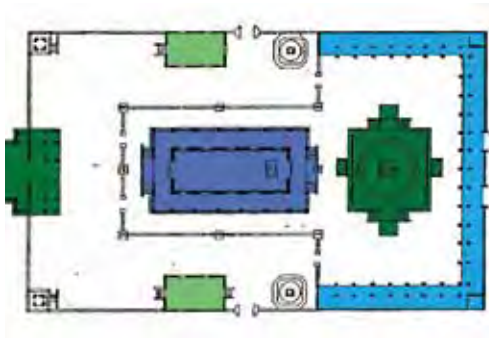


Fig. 1. Lay out of shrine area of Wat Borom Nivasana. Ubosot is in blue (phase 1); two pavilions beside Ubosot are in light green (phase 2); Entrance pavilion and main stupa are in dark green (phase 3), and Gallery is in light blue (phase 4).



Fig. 2. The exterior decorations of Ubosot before restoration in 2009 (phase 1); corridor ceiling and its wooden frames panel was red and green. Gable and portico of windows and doors were decorated with gilt stucco and colour glass mosaic.



Fig. 3. The decoration of corridor ceiling before restoration



Fig. 4. The evidence of the original decoration of Ubosot corridor ceiling was found under several previous redecoration materials.



Fig. 5. Processes of corridor ceiling restoration work; Examination and record of each layer of decorations



Fig. 6. The reconstruction model of the original decoration layer



Fig. 7. Decoration of the corridor ceiling after restoration



Fig. 8. The gable restoration work; The original materials in white and previous redecoration green glass mosaic were preserved under the new colour of white glass mosaic.



Fig. 9. Tracing for the light green layer original decoration of interior Ubosot ceiling.



Fig. 10. The mural painting of Ubosot in western style



Fig. 11. After redecoration of interior of Ubosot; the original atmosphere and meaning returned.



Fig. 12-12.1. A pavilion beside Ubosot before and after restoration in 2011 (phase 2)



Fig. 13. Evidence of the original decoration of interior ceiling of a pavilion beside Ubosot; It was found to be a light green colour under previous redecoration materials.



Fig. 14-14.1. The interior decoration of a pavilion beside Ubosot before and after restoration

Fig. 15-15.1. The entrance pavilion, outside and inside before restoration in 2012 (phase 3)



Fig. 16-16.1. Evidences of the original decoration of the entrance pavilion



Fig. 17. A drawing of original patterns of ceiling decoration



Fig. 18. Cachet of King Rama IV's Queen, designed in a western character by pearl inlay technique, was on the door of the main stupa.



Fig. 19. An example of the significance of historic building decorations. From the study of cachet of King Rama IV, the background colour of the cachet was orange that represented the day of his birthday, Thursday. From restoration process, the original background colour of the cachet was found in the red glass mosaic that was under the blue. The blue background did not inform the true meaning of the cachet. Therefore, the background colour of cachet of King Rama IV has been restored to the original.



## Field Conservation Experience in Buddhist Site of Karatepa in 2012

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### Introduction

Karatepa was the biggest monastery of the Buddhist period in Termez. The formation of monastery was at a place of Karatepa in the 2nd century AD. Karatepa was one of the sanctuaries, erected during the years of the Kanishka reign. The total area of Karatepa was almost three hectares built on a hill. Buildings were located on the earth, also there were underground premises. At the center of some yards, there were built small *mortars* (stupas). The sanctuary and its verandahs were decorated with colorful paintings, as well as images of Buddha and bodhisattvas. The walls of sanctuary were designed with the figures of men carrying presents, also with the local Buddhist legends. Meantime, Buddhist statues were made of stone, lime and clay, and capitals were with a head of an animal; many small artifacts as terracotta and ceramic wares were found and studied by scientists. The most important fact in Karatepa was the ancient inscription, which was written on the surface of dishes with in black ink with ancient Indian alphabets as "*kharoshthi*" and "*brabmi*". They are in religious contents: quotations from Buddhist relics, about presents for the monastery and the persons who made these presents. Karatepa functioned as a Buddhist sanctuary till the end of the 4th century, but in the beginning of the 5th century in the result of invasion Sassanid troops, it was destroyed to ruins (Fig. 1-2).

### Practice works

In the field season 2012, excavations focused on the complexes of "U" and "Ya" at the south hill of Karatepa. The archeological excavations have revealed numerous artifacts such as potteries, coins, fragments of sculptures and wall paintings. Fragments of wall paintings have been investigated and then underwent conservation. Fragments consist of three different pieces by size and content:

**Fragment A.** Dimensions: 25 × 24 cm and 10 cm in thickness. On the surface there was the image on a white background framed in red. In the upper corner of the right side of the fragment, there was a part of the ornament, painted in red color (ocher). In some parts of the fragment, the traces of some ornament were left on the surface. The structure of a paint (or drawing?) cannot be confirmed.

**Fragment B.** Dimensions: 14 × 11 cm and 5.0 cm in thickness. It depicted the circular whose frame was made with red ocher. In the upper part of it, there was a thin

line, traced in black. Inside, along the edge of a large circle, there were small circles painted by thin, black lines.

**Fragment C.** Dimensions: 0.7 × 0.8 cm and 2.0 cm in thickness. There was a part of the red tape (Fig. 3-4 A, B, and C).

The paintings were applied to the surface. The surface was made of a mixture of clay with addition of chopped straw without priming. Mineral-based pigments from the vegetable glue were used in painting. Before drawing was done, the surface was leveled and smoothed. Because of the fragmented silos on the described parts, it was very difficult to make out the image. Apparently, all three pieces were connected and form a single composition. The presence of a frame made it possible to assume that the story was devoted to Buddhist themes. On similar paintings of Karatepa and other Buddhist monuments, usually over the head of the Buddha circles were depicted. Setting to a description of images aside, let us move to the main issue, that is, the process of conservation.

In the first phase, photography and description of the fragments were held. Then fragments were cleaned from the dirt with distilled water and mechanically cleaned with a brush. After the cleaning, the surface was fixed for further safety and stability. For fixing, 5% solution of Paraloid B72 acrylic adhesive in acetone was used. The edges were rough and fragmented, so to strengthen, the so-called "paste", consisting of a solution of polymer glue and pulverized clay was used. After filling the damaged edges, surfaces were repeatedly reinforced by polymer mortar adhesive (Fig. 5).

As stated above, the fragments were very thick, and their base, which had been made of a mixture of clay and straw, was not strong enough. In order to increase their strength and to reduce the risk during transportation, it was necessary to remove the extra layer of a clay base. Before starting the work, the front surface of the fragments was covered with a layer of foil, and then the plaster solution was poured. Once the plaster hardened, and formed the shape, the fragment was placed the back side up. Then the excess clay layer on the back side was gradually removed, so that its thickness, comprising a layer of the paint, was 1.5 cm (Fig. 6-7).

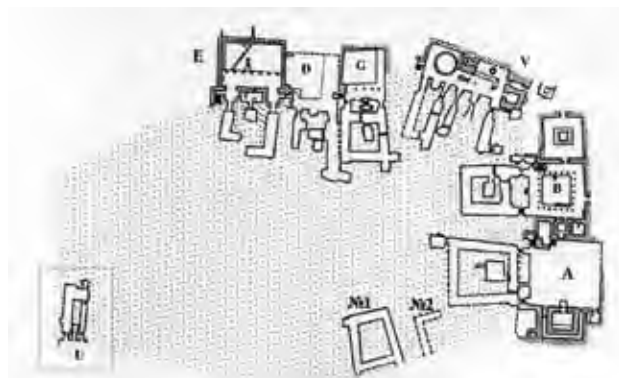


Fig.1. A schematic location of ground-cave complexes on the south hill of Karatepa.



Fig.2. A general view of the complex "U" on the south hill of Karatepa.



After removal of excess clay, the back side was fixed several times with 5% solution of the polymer adhesive Paraloid B72. After drying the adhesive, the back surface of the substrate fragments was glued with a special fabric as additional reinforcement. Thus, the fragments were treated with all conservation work possible in the field (Fig. 8-10).

During these operations, participants of the archaeological expedition found fragments of wall paintings, located on a large site. Visiting the site of the discovery, I found that the paintings were in a very bad condition. This is because, first of all: these paintings were applied in a wall niche, and it fell to the ground, apparently, in a face down. In consequence, the images were badly damaged. Secondly, archaeologists removed all the ground together with a layer of a foundation without noticing it, leaving only a layer of a paint. Despite this, all possible measures to save murals were taken. First, as a rule, the surface was cleaned of dirt with a soft brush. Then, the area where the paint layer was preserved, was fixed by some fluid of the polymer adhesive. But, despite of this effort, removal of all paintings was impossible, because the surface on which a layer of

paint was applied, was very tight and a binder between was lost by time (Fig. 11-13).

Even if archaeologists had more time, still it would not be possible to preserve all the paintings on site. But, in the hope of continuing the conservation work of these «variable» arts, we have left them underground to the next field season.

### Conclusion

I should add that when we were doing these works, we were limited to technical and chemical resources. We hope that in the near future we will be able not only to conduct the preliminary conservation work in the field and in the laboratory, but also to study objects at the professional level with the help of modern equipment. As for the fragments on which conservation work was not completed for any reasons, I think, specialists/restorers should be involved in work. They can manage to provide the first aid to archaeologists in case of "variable" findings, one type of which is the wall painting.

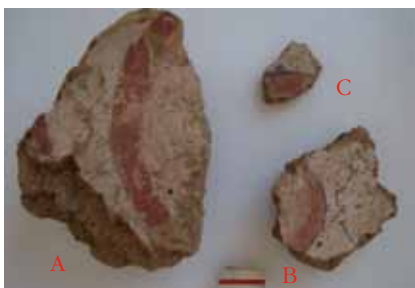


Fig.3. Fragment A, B, and C before conservation



Fig.4. Fragment A and B. Edge profile (layer).



Fig. 5-7. Processes of work: filling, forming, and cutting.



Fig. 8-10. Processes of work: fixing and sticking after conservation.



Fig. 11-13. A wall painting on the site: opening, cleaning and fixing.



## The 47th Archaeology Conference 2012 in Hanoi

**Nguyen Chi Cong, Staff**

Center for Preservation of the Co Loa Historical Site and Hanoi Citadel

The 47th Archaeology Conference 2012 was held on 27 September in Hanoi. At the conference in 2012, there were more than 480 new archaeological findings and studies reported about the Stone Age, the Metal Age and its history. New and valuable materials and documentation have been provided for archaeology, history and cultural studies making an effective contribution in building documentation, planning, preservation, improvement, promotion of the value of Vietnam's relics and heritage.

The most remarkable archaeological finding among them was the study of the cave system which has been continuously developed for 20,000 - 4,000 years ago in 'Trang An Scenic Landscape Complex' (Ninh Binh province). This finding has contributed to an important criterion for the international experts to make consideration and decision to submit Trang An Heritage documents for being inscribed on the World Heritage list to be held in 2013. This study not only clarifies how the Vietnamese primitive people lived in 'Ninh Binh' province

but it also make an effective and positive contribution for protection of natural environment; caves are potential resources for tourism development and valuable in respect of education and culture.

In addition to that, other valuable findings and studies have also been reported by other localities in the conference. One of them was a stele dating back to 601; the stone stele in the oldest date of Vietnam in 'Bac Ninh' province, which recommended to learn about a big center of the country - Long Bien center, famous in the history. On a small ceramic piece in Ly dynasty at 62 - 64 'Tran Phu' street (Hanoi), "Động Nhân cung", the name of a big palace of Thái Long was written and it showed a significant evidence that confirmed the place of the imperial citadel under 'Ly' dynasty in the center of Hanoi which had been reported by the scientists before. It verified the report and the production of the high quality pottery serving the imperial palace's activities under 'Ly' dynasty.



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