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The Fourteenth Regular Report



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Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO (ACCU)

ACCU Nara International Correspondent

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

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Contents

Bangladesh	1
Mst. Naheed Sultana The Extraordinary Beauty of Khalaram Datar Temple and Its Conservation	
Bhutan	7
Karma Tenzin Archaeological Investigation of Wangditse Lhakhang under Thimphu Dzongkhag	
Cambodia	10
Chan Vitharong Antiquity Documentation in Stung Treng	
India	12
Kunkuma Devi Kishore Historic Temple Towns of Tamilnadu – an Insight into Srirangam, Tiruchirapally (1 st)	
Indonesia	17
Dewi Puspito Rini Conservation of Metal Artifacts with Natural Citric Acid	
Kazakhstan	19
Gulnaz Kulmaganbetova Archaeological Research in the Territory of Shakhristan "The ancient city of Taraz" (1 st to 19 th centuries)	
Malaysia	23
A Ghafar Bin Ahmad Acoustic Treatment at St. Mary's Cathedral, Kuala Lumpur, Malaysia	

Maldives	28
Shiura Jaufar Detailed Survey of R. Meedhoo Ancient Mosque and Its Boundary for “Coral Stone Mosques of Maldives towards World Heritage List” Project	
Mongolia	30
Munkhtulga Rinchinkhorol Some Results of an Archaeological Excavation at the “Ikh Burkhan” Complex in Eastern Mongolia in June 2012	
Nepal	38
Suresh Suras Shrestha Nepal and The Silk Roads Serial World Heritage Nomination	
New Zealand	41
Matthew Schmidt Project Njord: Declaration of the 1926-1932 Norwegian Whalers’ Base, Price’s Inlet, Rakiura/Stewart Island as an Archaeological Site A Southland Coastal Heritage Inventory Project (“SCHIP”) Cultural Heritage Project	
Philippines	46
Louella Solmerano Revilla Preserving the Historic Pipe Organs in the Philippines: A Cultural Necessity	
Sri Lanka	53
Rasika Dissanayaka Architecture in Ancient Sri Lanka (1 st Part)	
Uzbekistan	61
Akmal Ulmasov Documentation of Architectural Monuments of Uzbekistan	



The Extraordinary Beauty of Khalaram Datar Temple and Its Conservation

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In the middle of Bangladesh there is a district by the name of Dhaka, which is an important administrative region. Dhaka was treated as a centre of ancient human habitation from the pre-Mughal period. "In the pre-Muslim period the present Dacca district was included in the administrative unit of Vanga, which at times used to be identical with Samatata and Harikela. After the fall of the Mauryas, a king named Chandravarman ruled this region (Faridpur-Dacca) in about the 4th century A.D." (Gazetteers Dacca 1969:43) Indeed, this city acquired a good reputation in the Mughal period. In 1660, during the reign of Emperor Jahangir, Islam Khan, the viceroy of Bengal, shifted the capital from Rajmahal to Dhaka. He named it Jahangirnagar instead of Dhaka, after Emperor Jahangir.

Geographical location: The Dhaka district shares borders with Gagipur and Tangail to the north, Munsiganj and Rajbari to the south, the district of Narayanganj to the east and Manikganj to the west. The main rivers flowing through this district are Padma, Kaliganga, Dhaleswari, Issamoti, Shitalakkha and Buriganga. Numerous smaller rivers including Banshi, Turagh, Balu, Elamjani, Elishamari, Tulshikhali and many major lakes including Belay, Shaldhar, Labandhar, Churain, Damsharan and Kiranjir Beel also exist within the region.

Upazila Nawabganj:

From very ancient times, the southern region of the Dhaka district enjoyed great prosperity. Mr. Manrique wrote: "Many strange nations resort to this city on account of its vast trade and commerce in great variety of commodities, which are produced in profusion in the rich and fertile lands of this region." (Gazetteers Dacca 1969:448) 'Ganj' means market place. From the beginning of the Mughal period, Dhaka, Narayanganj, Munshiganj and Nawabganj became an extensive business centre, with both domestic and foreign merchants. Innumerable splendid architectural buildings were built in this area in the Mughal and British periods. These buildings were

built by the local Zaminders and business magnates of this country, who were pompous and lived very luxuriously. Nawabganj Upazila (Thana) in the Dhaka district was a very prosperous zone from ancient times. 'Nawab' means ruler of a territory or governor of a district, and 'Ganj' means market place. So this area was extremely rich and famous from very ancient times. For this reason, countless ancient gigantic buildings and building complex were built in this area and some of them still survive, retaining their extraordinary beauty and air of prosperity. Khalaram Datar temple is one of them.

Khalaram Datar temple:

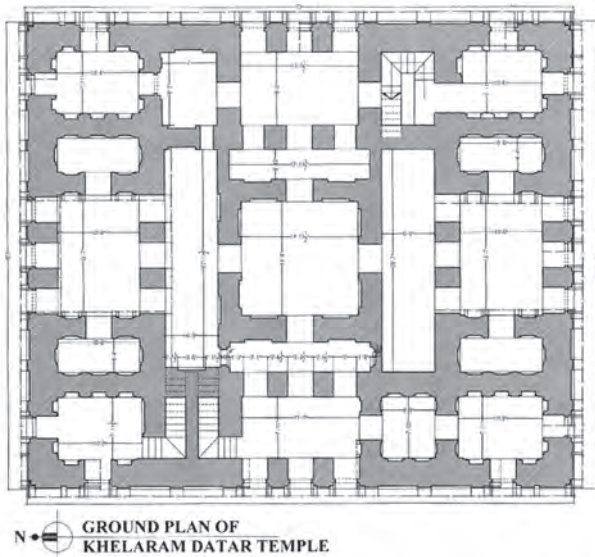
The mighty river Padma flows nearby this temple towards the south, with the river Isamoti also flowing very near the temple towards the north. Water was the main means of travel and business in ancient times. Consequently, ports, business centers and architectural monuments were established on the banks of rivers or around the rivers, although all the rivers have recently either deflected their course or silted up. Khalaram Datar temple is situated in the village of Kalakopa of Upozila (Thana) Nawabganj in the district of Dhaka. It was built in the early British period. Locally its name is 'Khalaram Datar temple'. Khalaram is a man's name and 'Datar' means 'kind and benevolent'. Local myths say that one rich and powerful Zaminder named Khalaram Datar built this temple. He had a good reputation for his work in the area of public welfare and is therefore known as a 'bountiful person'.

Khalaram Datar temple is a Hindu temple. The temple was in an extremely dilapidated condition. The temple complex was overrun by jungle because of heavy rainfall and damp weather of this country. The local people did not come to this area because of its dark, ugly and fearful appearance.

Architectural features of the temple:

Ground floor: This temple is built according to an almost square ground plan and it is 21.36 m in length from north





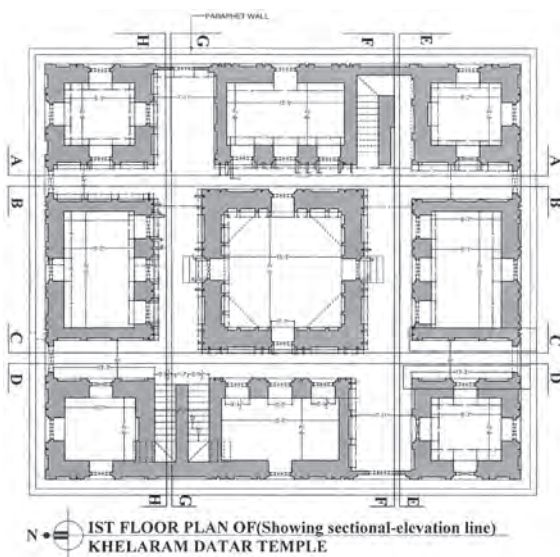
to south and 18.28 m in breadth from east to west. Its height is 4.57 m from ground level to the parapet. The wall thickness of the ground floor is 1 m to 1.52 m. There are 15 rooms including a central chamber in the middle of the ground floor. The central chamber is 4.30 m x 4.51 m. There are four corridors around this chamber. Of these, the east and west corridors are long and the other two are comparatively smaller. The central chamber has four entrances and the other 15 rooms encircle this chamber.

Every outer wall of this temple has five entrances to the main chamber. Of these, three entrances are very close and are situated in the middle of the wall, and the other two are situated near the end of the wall. The roofs of the rooms are built in flat vaulted style.

There is a single staircase in the south-east corner and two staircases side by side in the north-east corner of the temple to go to the first floor.

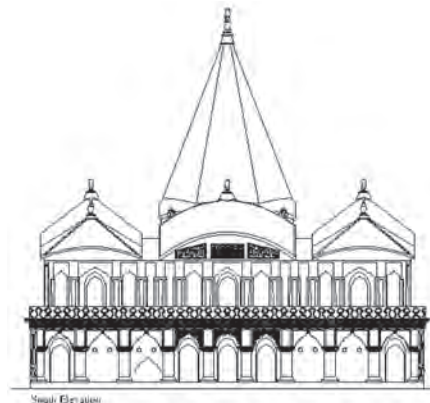
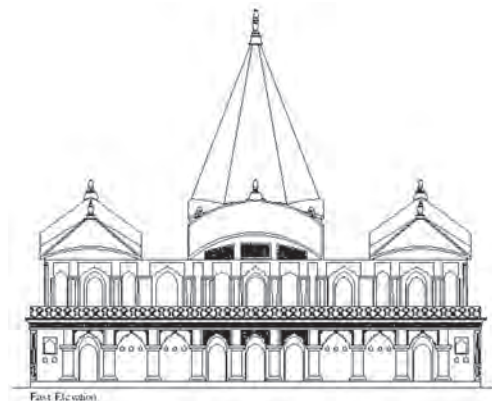
First floor:

The ground plan of the first floor is completely different from the ground floor. Every room is separated from one another. The central chamber was used as the main prayer chamber. It is situated in the middle of the 1st floor



and encircled by the other eight rooms. Around the main prayer chamber there is a circumambulatory passage. The prayer chamber is square in shape (measuring 4.67 m x 4.67 m) and it has four entrances on four sides. The north and south entrances have two staircases to enter and the other two have no staircases. This chamber has been built on a high platform quite different from the other rooms.

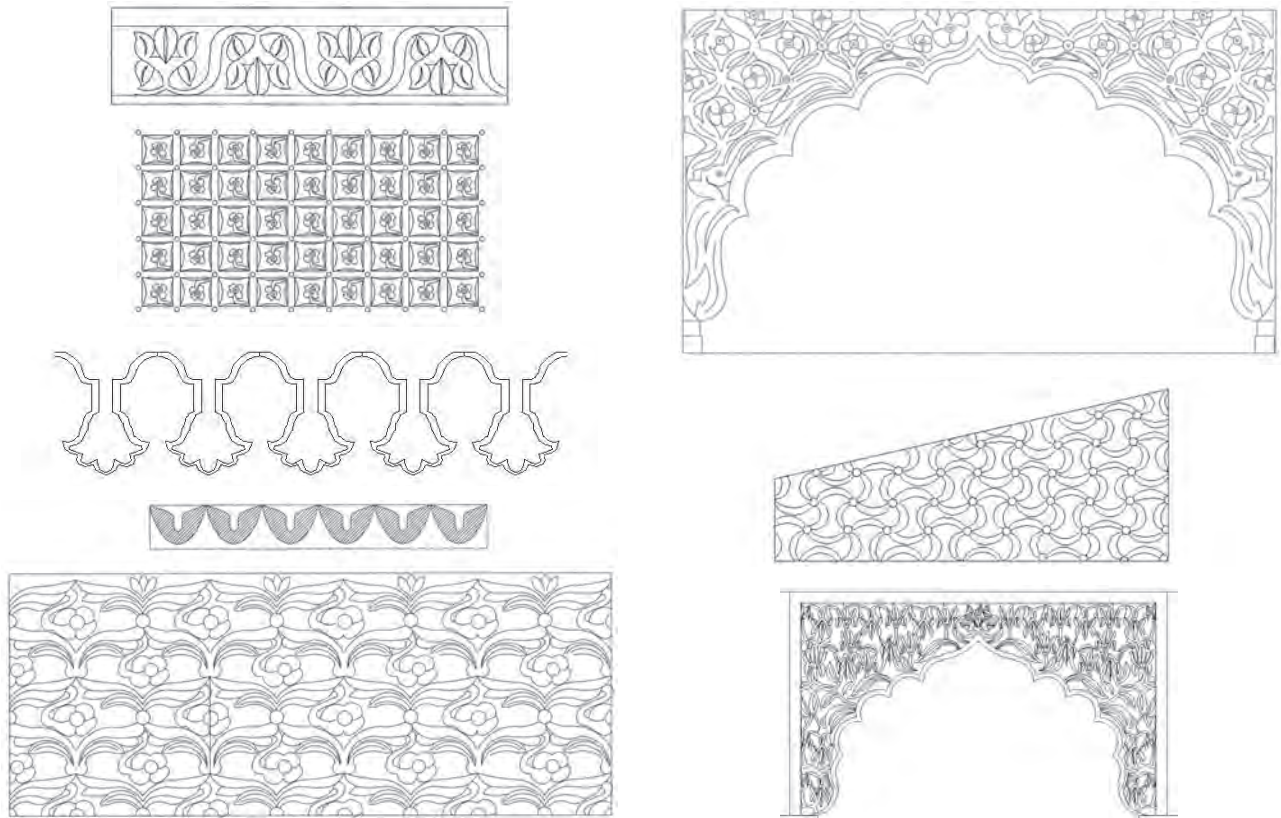
A dome has been built in this high chamber which is called a Shikhara (pinnacle) type dome. The dome was founded on four squinches. The Shikhara of this temple is 10.68 m high from foundation level. A lotus appears on top of the pinnacle and a pitcher is found at the top of the lotus.



Outside the main prayer chamber there are four rectangular rooms (4.72 m x 2.83 m) in the middle and four square rooms (2.83 m x 2.52 m) in the four corners. The roofs of these rooms are dochala (two segmented) and chau-chala (four segmented), and the roofs have been built in the ancient Bengal hut shape.

There are many stories and fables about this temple found among the local people. Yet the extraordinary architectural design and dynamic ornamentation attracts numerous visitors and tourists to this temple every day.

Ornamentations: The artistic workmanship of this temple is of such excellence that the temple bears testimony to the wonderful artistic skills of that time. The outer walls of the ground floor and inner walls of the first floor are highly ornamented with various kinds of floral motifs, geometrical designs, leaf designs, and with its parapet full of stucco art.



Conservation method:

Since the establishment of the temple nobody has taken responsibility for its repair or preservation. After a long time, the Department of Archaeology undertook a survey and submitted a report with a strong recommendation for protecting the monument to the ministry concerned. The Ministry of Cultural Affairs then declared it as a 'protected monument' in accordance with the Antiquity Act of 1968 (as amended in 1976). At that time it was in a very dilapidated condition. After the declaration as protected monument, first the Department of Archaeology completed the proper documentation, and after that a project has been undertaken regarding the preservation and conservation of this temple.

Many Banyan trees and weeds had grown up around the ground floor, the parapet wall, the top of the roof and the pinnacle of the first floor. In short, the temple was severely damaged. All the trees and weeds have now been removed by chemical treatment.

The original size of the bricks of this temple is 8 cm x 8 cm x 1.5 cm. However, modern bricks are not of the same shape and size. So modern bricks have been used after cutting and dressing. Lime, shurki (brick dust) and molasses have been used as binding material, and lime, shurki, molasses and catechu have been used as plaster. Departmental chemists carried out a chemical test on both the binding and plaster materials. After the examination, they submitted a report ascertaining the proportions to be used for both the plaster and binding materials. The conservators used all materials according to their report. First the lime, shurki, molasses and catechu were mixed thoroughly in a reservoir with water according to the recommended proportion. The mixture was kept in the reservoir for about seven days and mixed manually a

minimum of twice a day. After seven days this prepared mixture became ready to use on the plaster of both the inner and outer walls of the temple. The same method was used for the binding material. Very experienced and skilled craftsman and masons were appointed to execute this work. They completed the stucco and ornamentation work very successfully.

Ziaul Haidar, Senior Draftsman, drafted all drawings of the temple under the supervision of Junior Architect Mahfuj Alam. Abdur Razzaque, the conservator (Sub-Assistant Engineer) of this project is very experienced and efficient, and carried out the conservation work very successfully. During the conservation the author supervised the work as an archaeologist.

Before conservation:





During conservation:





After conservation:





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Archaeological Investigation of *Wangditse Lhakhang* under *Thimphu Dzongkhag*

Karma Tenzin, *Architect*

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1. Background

Wangditse Lhakhang is said to have been built by the 9th *Desi*, Druk Rabgye (1707-1719). The book “Views of Medieval Bhutan” by Michael Aris, based on the diary and drawings of Samuel Davis (1783), describes the *lhakhang* as a villa of the then 18th *Desi* Jigme Sengye (1776-1788). A sketch of the front view of the *lhakhang* shows a three-storied structure which has a *jamtbog roof* with *jabzhi* and *sertog* over it. The *rabseys* and windows depicted are apparently different from how it is now.

There is no record of any natural or man-made disaster claiming the structure, but it is said that the *lhakhang* was partly renovated at the time when a new *tashichodzong* was built in the 1960s. According to the present caretaker, the *rabseys* on the front were changed to the present design during that time, converting the greater northern part of the structure to two stories to house the height of the Buddha statue installed there. The roofing was further renovated in 2003 and restored to its present design with a three-tiered *jabzhi roof*.

Since the structure suffered substantial damage due to the September 2011 earthquake, the *Wangditse Lhakhang* is currently under renovation. However, while the renovation work was proceeding at the site, archaeological stone foundation wall remains were discovered as anticipated from the Samuel Davis sketch and the nature of the layout of the structure. Therefore, a team from the Archaeology Section under the Division for Conservation of Heritage Sites, Department of Culture was deputed to carry out a thorough investigation and documentation of the archaeological findings.

2. *Lhakhang* before renovation works

The *lhakhang* is a square three-storied building built with stone masonry and mud mortar. The thickness of the walls varies from 1.5 to 2.4 m. The main entrance to the *lhakhang* is from the east. The main shrine room, marked with red dotted lines (see Figs. 1 and 2), is a double height room. The process of age, decay, weathering and almost absolute lack of maintenance have gradually weakened the structure and steadily worsened the condition of various parts and elements of the *lhakhang*, such as masonry walls, timber *kachens* and joists, and flooring timber, as well as *zbali*, wall paintings and so on. The September 2011 earthquake caused further substantial damage to the structure. Fig. 3a is the view of the *lhakhang* before renovation.

3. Archaeology investigation and discoveries

As mentioned earlier, while the renovation works were proceeding at the site, some remains of the stone foundation were discovered in a southwest and northwest direction (see Figs. 4, 8, 9, 10, 11) surrounding the main inner sanctum. Fig. 4 is a plan showing the part of the

existing walls saved during the renovation, the part of the walls dismantled for the renovation and the old remains of the stone foundation discovered during the excavation. The nature of the layout of the old stone foundation that was discovered, which perfectly connects with the exterior wall (highlighted in yellow) surrounding the inner sanctum or the main shrine room (highlighted in blue), clearly shows that there existed a circumambulation room surrounding the main shrine room. Further, the remains of the *cham* holes on the outer facing of northern and western walls and the remains of the *zbali* flooring (see Fig. 5) between the inner sanctum and the old remains of the foundation justifies the existence of the room surrounding the shrine room. Moreover, one can also draw the conclusion from the Samuel Davis Sketch (1783) (see Fig. 6), especially from the window openings, that the *lhakhang* was bigger and more symmetrical than the present one.

In addition, one can also more or less conclude from the sketch that there existed one more story on top of the present one from the position and height of the openings and the *kemar* band level. However, one can finally conclude that there existed one more story, according to the onsite evidence, as one can even now see the *zbali* flooring and traces of *kadens* (see Fig. 7) on the roof floor. Further the thickness of the wall at roof level is also large.

Conclusion

Wangditse Lhakhang under *Thimphu Dzongkhag*, which dates back to the 18th century, and said to have been built by the 9th *Desi*, Druk Rabgye, is one of the most important heritage sites in the country. The *lhakhang* suffered substantial damage due to the September 2011 earthquake and is currently under renovation. The proposal of the renovation works includes rebuilding the exterior southern and western walls, and to build similar, additional walls in the north and east in line with the archaeological findings and discoveries. The renovation works are being executed by *Thimphu Dzongkhag* facilitated by the Division for Conservation of Heritage Sites under the Department of Culture, Ministry of Home and Cultural Affairs.

Glossary

Wangditse = Name of the present site

Dzongkhag = District

Lhakhang = Temple

Thimphu = Name of place

Jamtbog roof = Style of roofing

Jabzhi roof = Style of roofing

Sertog = Pinnacle placed on top of the roof of dzongs, monasteries and royal buildings.

Rabseys = Large window opening

Kachen = Large timber pillar

Zbali = Traditional flooring with rammed earth and pebbles

Kemar = Red band on top of dzongs and religious structures.

Kaden = Base of a *kachen*

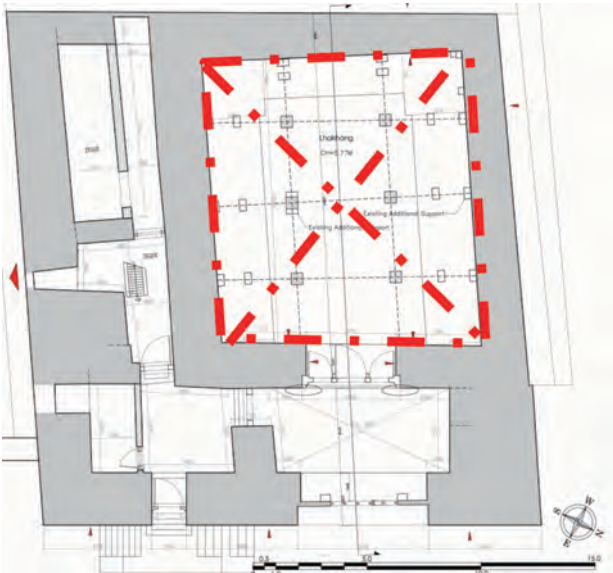


Fig. 1 Ground floor plan



Fig. 2 First floor plan



Fig. 3 Second floor plan



Fig. 3a North west view of lhakhang

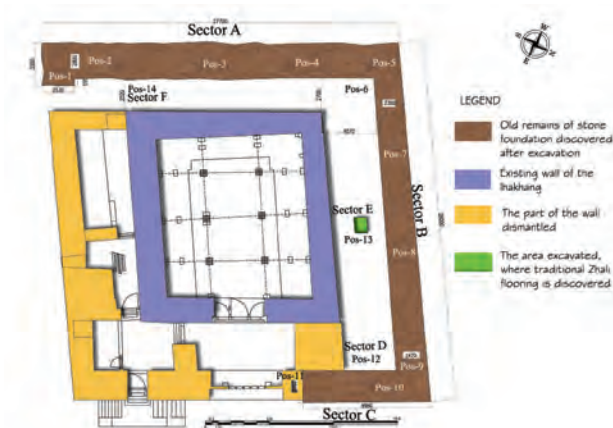


Fig. 4 Plan showing existing walls, walls dismantled and old remains of stone foundation

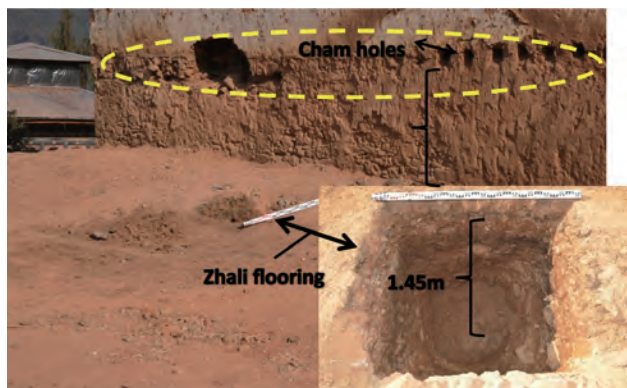


Fig. 5 -Shows the remains of Cham holes on the outer facing of northern wall and the Zhali flooring at 1.45m below the present ground level (sector E)

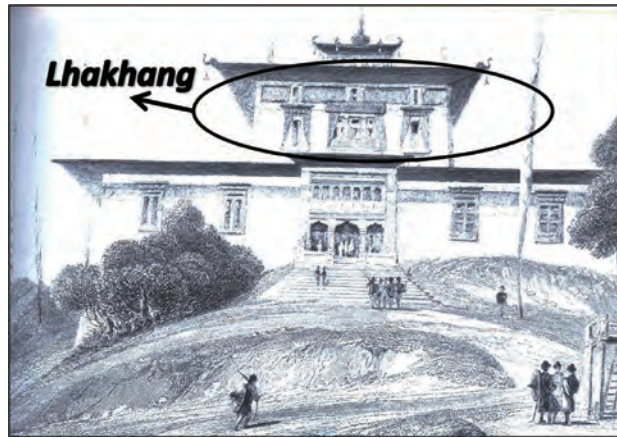


Fig. 6 - Sameul Davis Sketch (1783)



Fig. 7 Zhali flooring and shape of kaden on top of roof floor



Fig. 8 Old remains of stone foundation discovered on the western side (2.8m thick wall)



Fig. 9 Corner old remains of stone foundation discovered (at junction of west and north wall)



Fig. 10 Corner old remains of stone foundation discovered (at junction of east and north wall)



Antiquity Documentation in Stung Treng

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Department of Antiquities, General Department of Cultural Heritage, Ministry of Culture and Fine Arts

Introduction

Stung Treng is located in the northern part of Cambodia. The geography of Stung Treng is characterised by the confluence of three rivers: Mekong, Se Kong and Se San (Sre Pok). Due to this rich geographical feature, Khmer

ancestors had built a number of religious monumental structures nearby the banks of those rivers (Figs. 1 & 2). We could find many archaeological sites in that area. Scholars believe those major sites related to the early pre-Angkor period around the 6th and 7th centuries CE.



Fig. 1: Map of Stung Treng and archaeological sites.



Fig. 2: View from Se Kong to Stung Treng City.

Documentation work

The Ministry of Culture and Fine Arts issued a declaration to local people who have kept cultural items to inform the officials in order to have the items inscribed in the national inventory list. As part of the digitized documentation of Khmer antiquities, Stung Treng is one of the major provinces in the project. This work has been accomplished through cooperation between the Department of Antiquities and the Stung Treng Provincial Department of Culture and Fine Arts. The work is being carried out *in situ* in four major areas: Ba Deum, Kantuy Ko, Ba Chong (including Phnom Theat) and Thala Borivat.

With the *in situ* investigation, a numbers of movable objects can be listed and inventoried under various categories such as decorative lintels (Fig. 3), pedestals (in sets), sacred drainage outlets (Figs. 4 & 5), statues and stone inscriptions. Identification of each object

is important to prove its authenticity. Therefore, identification is included in the digital photography, including the dimensions and provenance of each object (Fig. 6). For inscriptions, ink rubbings have also been done as part of this documentation (Figs. 7 & 8). Those artefacts can be dated back to the Bronze and Iron ages towards the Angkor period (802-1432 CE). However, the most decorative lintels can be classified in the Sambor Prei Kuk style (early 7th century CE).

As a result of this work, declaration of the objects' authentication and the form of national documentation required have been done. This documentation will be very useful for academicians and conservators in the future, and will be able to answer questions on the monuments and history of Cambodia.

However, another goal of this project is to protect all Khmer antiquities from illicit trafficking. To accomplish

those objectives, there are many prerequisites that need to be achieved, such as making a general digitized record of Khmer antiquities throughout Cambodia, and moving those valuable objects to safe and secure places. Additionally, the various departments should urge local people to participate in the action being taken to fight against illegal digging and the movement of items. Furthermore, in this project, educating people who live close to the heritage is the most important thing that can

be done to prevent illicit trafficking and protect Khmer heritages. Khmer heritage can not be protected without their cooperation.

Acknowledgements

This report would not have been possible without the cooperation of Mr Khan Mony, an expert from the Department of Antiquities, and the staff of Stung Treng Provincial Department of Culture and Fine Arts.



Fig. 3: Decorative lintels from sites in Thala Borivat.



Fig. 4: Drainage outlet with Makara head, Ba Deum.



Fig. 5: Part of a drainage channel, Thala Borivat.



Fig. 6: In situ work.



Fig. 7: Inscription rubbing at a local residence.



Fig. 8: Inscription rubbing in situ.



Historic Temple Towns of Tamilnadu – an insight into Srirangam, Tiruchirapally

(This article is the first in a series where I intend to present excerpts from my research and study of the temple town of Srirangam in the State of Tamilnadu)

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Good Earth Office, Hyderabad, India

Historic urban areas, including cities, towns and historic centres, are a product of centuries of evolving urbanization. They embody the values of traditional urban cultures and are an expression of the diversity of societies through the passage of time. These valuable cultural resources are threatened, physically degraded and damaged by the impact of urban development – WASHINGTON CHARTER 1987

This first in a series is a brief introduction to the historic towns of India and the temple towns of Tamil Nadu, and the threats they face to their future existence. The negative impact of urban development on historic cities was an important subject of discussion in the international arena in the 1980s. As early as 1987, the growing need to conserve them from urban decay and inner blight was recognized by ICOMOS, which deemed it necessary to draw up an International Charter for Historic Towns and Urban Areas.

With a history of more than five thousand years, the historic settlements in India have today also come into the limelight for similar reasons. India is a country of diverse cultures. The regional variations in language, religion, God forms, food habits, dress, festivals and fairs, dance forms and music are so pronounced that they have had a profound influence on the religious structures, housing and settlement patterns. An amalgamation of several diverse factors in varying proportions has given rise to many typologies of historic towns. They are the products of a continuously evolving culture, influenced largely by political developments, religious ideologies and geographical features. A union of foreign influences and native practices has rendered a unique identity to all these urban areas. These urban settlements have traditionally been the focal points of creative developments in society, the places where people have met and where new ideas and activities have been stimulated and sustained. They have been heavily overlaid with centuries of varying cultures, nonetheless imbibing all of them with

an existing cultural pattern, and continuously enriching it. Apart from the above factors that have enriched the culture of an urban settlement, what renders it a unique identity is the existence of different neighborhoods within the same town, based on ethnic, occupational and caste differentiations. Another defining character of these settlements is the quality of life rendered to the people in the past—housing design, hygiene and sanitation conditions, traffic regulations and circulation, open spaces for environmental quality and social interaction and the care with which expansion of towns was undertaken. What has evolved is a complex cultural matrix, amidst the network of which lies an amalgamation of beauty and quality—a legacy of time.

There is a whole genre of them, in the form of living cities, towns, and villages that are spread all over the country. We have king's cities (Delhi, Jodhpur, Tanjore), God's cities or temple towns (Ujjain, Puri, Kumbakonam), myth cities (Ayodya, Benaras, Mathura), trade centres (Agra, Pondicherry, Mattancheri), port towns (Kolkatta, Kandla, Muziris), hill stations (Simla, Mussoorie, Ooty) and a separate category of composite cities, which is a judicial synthesis of many of these. The list of historic urban settlements in India is too large to be enumerated here, and those mentioned above are only a piecemeal example of the countless ones that have evolved over five thousand years. These historic cities are an invaluable living cultural resource. As an impact of the ongoing urban development that has been around for more than one hundred years now, these cities are being forced to gradually shed all their cultural values, heritage components and enhanced quality of life, and eventually perish through urban decay and degradation of all their facets, thus losing their respective identities. The historic towns are undergoing tremendous transformation at both the macro and micro levels—the settlement and the building levels. The traditional customs, beliefs and practices are all changing, and a change in the whole system has triggered the steady loss of identity.



One of the biggest threats to historic towns is demolition of historic housing stock and construction of apartments



Slum developments along the historic fabric is another major threat

Most historic cores are overcrowded and congested today. The rich and influential have moved out into better locales, leaving behind their cultural assets to rot away. Those who remain try to create an atmosphere within—which their rich counterparts have created elsewhere—with the limited resources they have. As a result, an urban core is transforming into a warehouse of commercial enterprises that try to accommodate themselves into spaces that were never designed for those purposes. This has brought in lots of traffic, congestion and pressure on infrastructure. These structures have adapted themselves meticulously to pressures in the past; however the impact of ever-changing modern developments has taken its toll.

The hygiene and sanitation conditions cannot get any worse, and there is overall degradation in the quality of life.

The rich cultural resource now remains a mere physical entity that has lost its potential to resist any alien element that brings with it destruction of its values and merits. The tangible and intangible cultural resources associated with any historic city are being irreversibly destroyed with every fresh phase of new developments. The very sensitive temple towns are no exception to this destructive pressure.



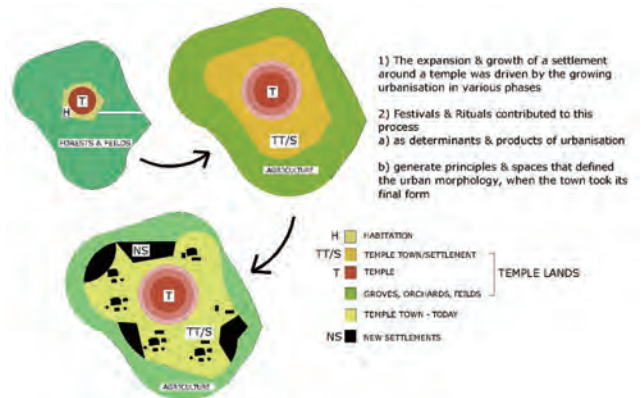
Houses and other public/private buildings encroach the historic monuments



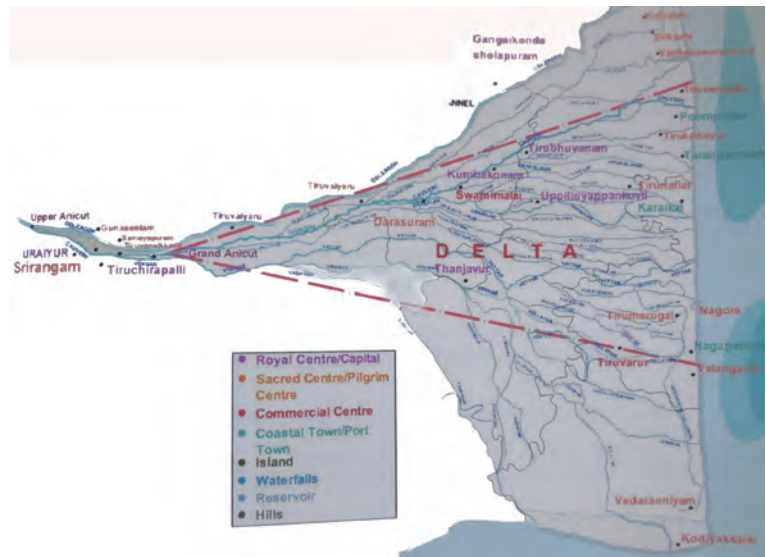
The historic monuments are lost amidst the new developments on either side



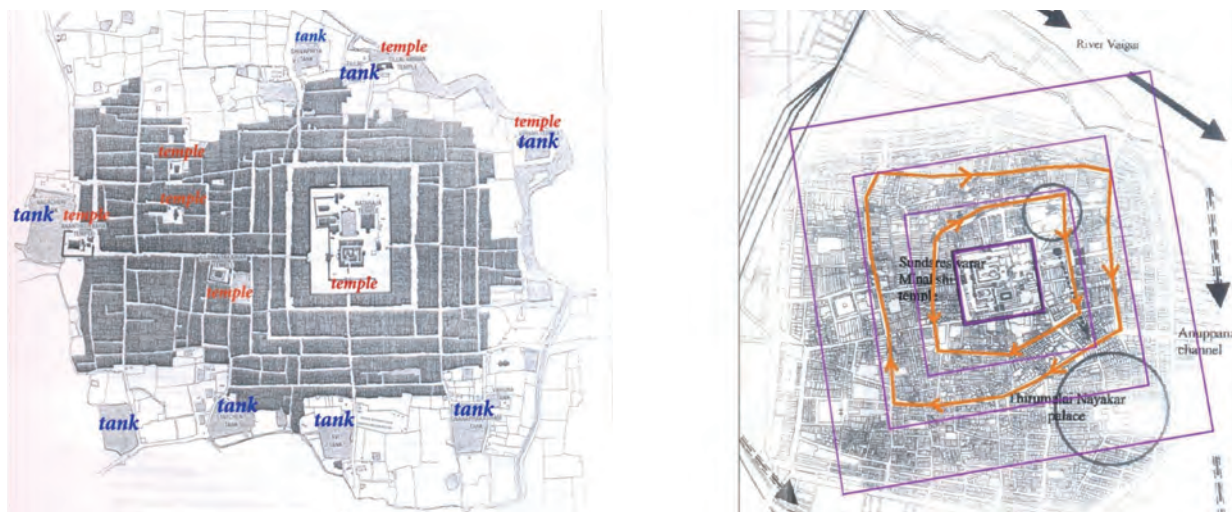
Map of Tamilnadu showing the important rivers along which important historic towns are seen disbursed



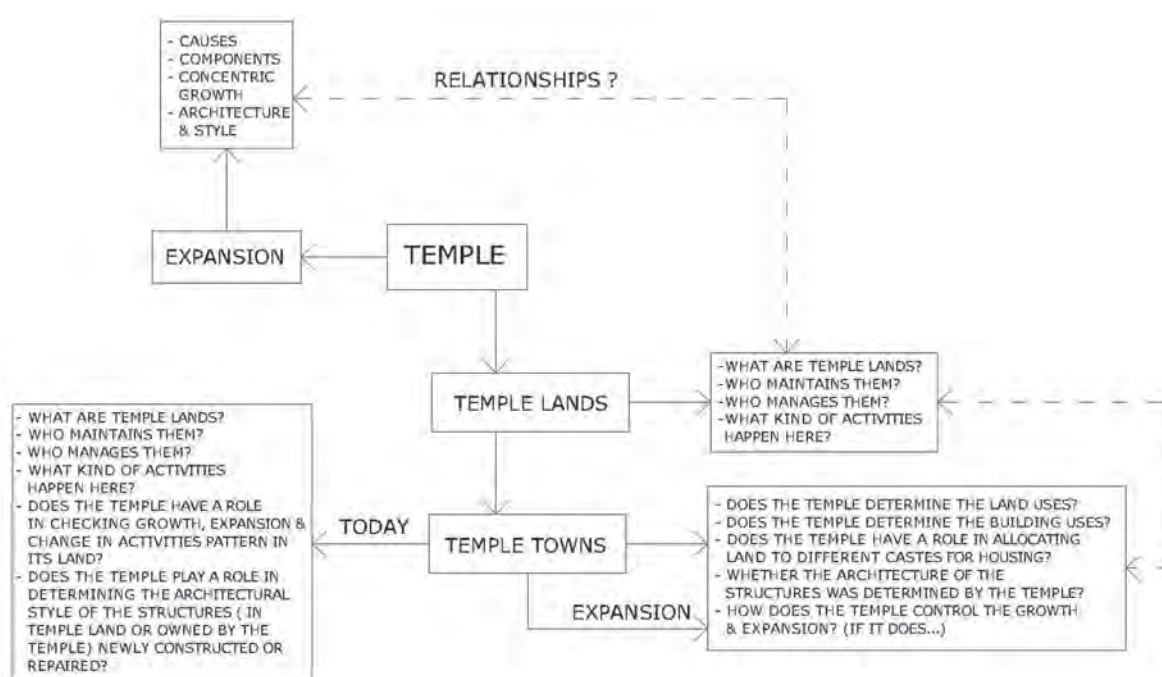
A conceptual sketch showing how temple towns evolve concentrically around a temple



A map of the Kaveri river delta that has the maximum concentration of historic temple towns and other historic towns in Tamilnadu



A conceptual plan of the temple towns of Kanchipuram (multiple temples centric) and Madurai (mono temple centric)



The state of Tamilnadu is popularly known as the 'Land of Temples' in India. This geographical region has some of the oldest living historic settlements in the country. They are very complex in nature and have been uniquely influenced by a single nucleus—the temple—whether they were royal, pilgrim or commercial centres. Some of them owed their inception and existence to the temples built by the kings and their nobles of the Pallava, Chola, Pandya, Vijayanagara and Nayak dynasties. Some of these cities were conceived as comprehensive wholes—a singular grand design—while many others have evolved as a special settlement typology, and a unique historic town/city over a period of one thousand five hundred years under the varying influences of religion, myth, politics, trade and commerce.

A study of these temple towns reveals much about the relationship between the physiographical features of the region and the nature of the cities evolved. Tamilnadu is bound by the Eastern Ghats to the west and the Bay of Bengal to the east, drained by four major rivers—**Palar (N), Kaveri (Centre), Vaigai and Tamarabarani (S).** The Kaveri delta, along with its many tributaries and

tributaries in the heart of Tamil country, has the largest concentration of temple-centric settlements, which have been patronized widely by rulers of all dynasties over a thousand years.

According to urban geographer Jan Pieper, a religious town is composed of three architectural levels of increasing perceptual complexity—the basic urban elements, their arrangement according to rituals and activities to achieve a spatial configuration, and their refinement through visual and perceptual systems of spatial mediation. The previous article published in the ACCU NARA International Correspondent Reports booklet covered the '**Role of Festivals in Shaping the Urban Spaces of the Temple Towns of Tamilnadu**'—an essential study for understanding any religious town in India.

The plan of any temple town in Tamil Nadu corresponds to the plan of its nucleus—the temple. In answer to the gateways of the temple are the gate towers of the town; the spacious paths and corridors encompassing the temple constitute the counterparts of the streets around the royal castle; the fine alleys that lead to the temple

form the prototypes of the main crossways of the town; while the girdle of the wall and the Pradakshina pada (circumambulatory pathway) is the boulevard going around the city where the presiding deity in its chariot circumambulates and offers darshan (auspicious sight) to all devotees.

The pilgrims congregate in the mandapa (pillared pavilion) of the temple that answers to the council house of the city. Every temple is provided with reservoirs, wells, tanks, drains, rest rooms, pillared halls, kitchen, and small supplementary temples at the corners of the compound, which is well provisioned with granaries, stalls and even markets. Here and there stands a mango or banyan tree, even within the compound, but the trees of the city are mainly represented by the imposing and magnificent stone colonnades of the houses of the surrounding settlement. Even as the royal castle is erected on the bank of a large tank around which the city grows, so in front of the temple is a small tank, the water of which is held sacred.

These qualities render a complex nature and a unique identity to the temple towns of Tamilnadu—one that has to be understood fully before the introduction of any contemporary element into it. The symbiotic relationship shared between the temple and the settlement around it, along with the dynamics of the whole system, is quite well researched; however, what is lacking is the weaving of this knowledge and the traditional environment with the larger growth patterns of the city.

It is important to understand the factors that contribute to

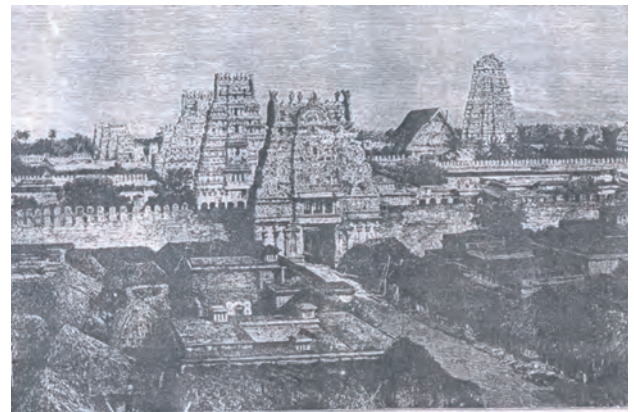


There are rules to be followed while constructing them that determines their sizes, type of carving, shape and colours chosen to paint

the significance and values of these rich cultural centres, because their vulnerability is leading to the loss of heritage. A study of the factors that weaken the symbiotic relationship between the temple and the town, their pattern of action and the resulting conditions should be analyzed before undertaking conservation measures.

The insensitiveness of the planners and development authorities have led to lack of integration of new proposals with the existing historic fabric. In the past hundred years, there has not been a single attempt to frame coherent policies that would incorporate the new into the old, without any negative impacts on either. A lack of understanding of the evolution, functioning and transformation of these settlements over a period of time by the development and planning authorities has led to considerable damage and, in many cases, loss of heritage. Today, many parts of the world have awakened to this thought, and conservation, future development and use decisions in their historic cities are carried out with regard to their cultural significance and values. The 'Value-based approach is much talked about internationally and India is also on the path to assessing its historic buildings and precincts' values and significance that guide conservation and development interventions.

The temple town of Srirangam in Tamilnadu located in the Kaveri delta, with its grand Sri Ranganathaswamy temple complex (often referred to as the largest functioning temple in the world) as the nucleus, is a perfect representative of the typology of temple towns in Tamilnadu, and the next article will briefly cover what makes it so unique and the methodology followed for its study.



The entrance gateways of the temple complex and the surrounding settlement succeeding one another



Row houses as historic housing stock in temple towns



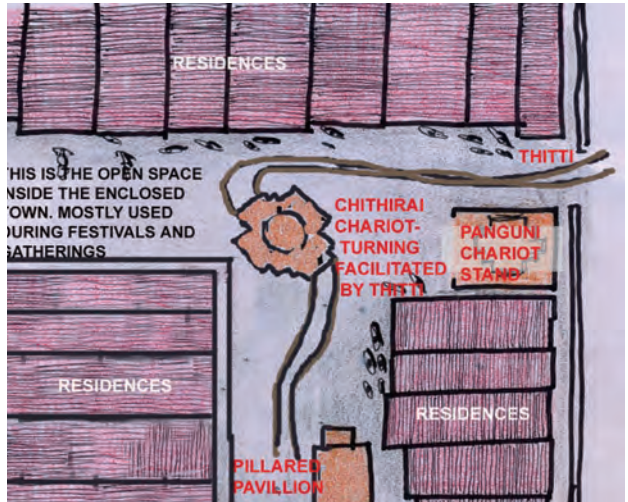
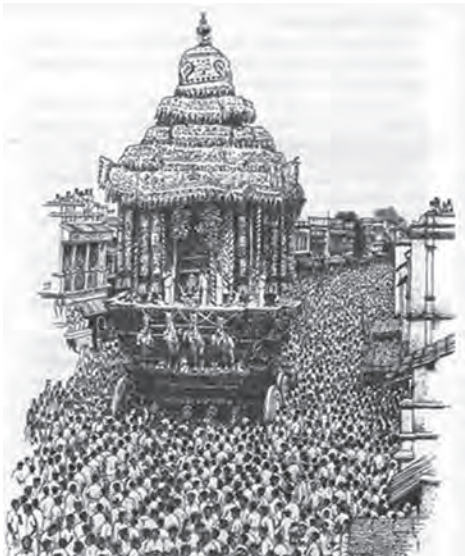
Pillared pavilions as congregational spaces for rituals and festivals



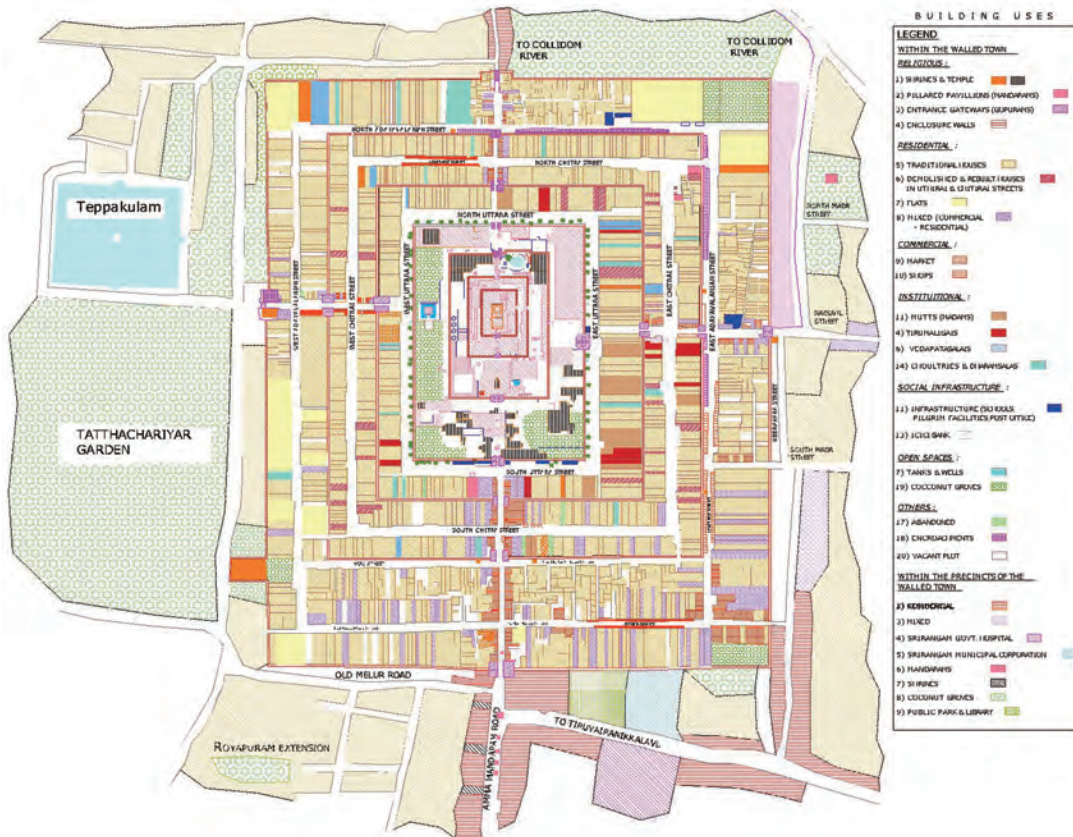
Temple tanks and community tanks are common features in temple towns and bear high religious and social significance



Row houses as historic housing stock in temple towns



The chariot procession is a major urban space/spatial disposition determinant in any temple town



A building use plan of the temple town of Srirangam with the Sri Ranganathaswamy temple complex in the core



Conservation of Metal Artifacts With Natural Citric Acid

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After the discovery of metals in prehistoric times, the work of humans became easier than before. The tools for hunting and farming that originally used stone and wood were replaced with metal tools. The earliest type of metal found in material artifacts was a kind of natural copper (native copper). This type of copper was not obtained through mining copper ore. The technique was a very simple process that involved only forging to obtain the desired shape (Smith, 1957). At that time the annealing technique was not yet known. It was a process of heating or burning objects in order to make them more malleable, so that the objects could be easily forged. This is possible due to the soft nature of native copper. However, through long experience, humans finally discovered the technique of melting so that copper could be cast (Wheeler et al., 1978).

With the development of their intelligence, humans in the past successfully combined copper with other metals to produce bronze and brass. The discovery of a type of metal alloy produced better quality than copper. At that time, metal technology developed in stages, from simple technology to more advanced technology. The next stage was the discovery of ferrous metals.

Besides the metal artifacts mentioned above, gold (Au) is also widely found in artifacts and decorations. Gold is a type of soft metal, which is easy to handle. It can be pounded into very thin plates without having to be heated. For artifact jewelry, gold is usually mixed with other metals to form alloys. The metals that are mixed with gold include copper, silver (Ag), or both of them. Gold mixed with copper creates a reddish gold color, while a mixture of silver and copper makes a whitish gold color. Not every area in the world had the same metallurgical development as mentioned above. Moreover, the timing of the presence of metal in each region has not been the same.

The damage that most often occurs to metal artifacts is corrosion. The factors that influence and accelerate the corrosion of metals are water, air, and soil. Metal directly in contact with oxygen (in the air) will be more susceptible to corrosion. The more humid the environment, meaning the more oxygen in it, the more likely metal corrosion will occur.

There are several ways metal artifacts can be conserved, and of course we have to choose the safest way for each artifact. Citric acid is known as a powerful conservation material for cleaning metal cultural heritage objects. In this case, citric acid works as a chelating (towing) Fe³⁺ ions in the rust, so that rust can be dissolved in citric acid. However, citric acid which is produced in a factory, even in small quantities, will adversely affect objects, environments, or even the conservator. Besides the safety

reasons, the use of natural materials to conserve metal artifacts is recommended because the cost is relatively low, and they are easy to obtain.

Citric acid, which is a kind of weak organic acid, can be found in the natural environment around us, especially in the leaves and fruits of plants of the genus *Citrus* (citrus family) such as lemons, limes, oranges, and other members of the citrus family. Citric acid is also present in fruit juices such as pineapple, passionfruit, coconut water, tomato, and cherry. In pineapple, especially, the acid content of citric acid is about 87%, which is higher than the others.



Lime and pineapple, some natural citric acid sources

The conservation team of the Archaeological Site Museum in Old Banten, which is one of several divisions under the Heritage Conservation Office of Serang Indonesia, has been trying to conserve the keris (dagger) using natural ingredients that contain citric acid. Indonesia's keris has been inscribed on the UNESCO Representative List of the Intangible Cultural Heritage of Humanity since 2008 (originally proclaimed in 2005). There are two kinds of metal that are used in making the keris, which are iron and steel. To make it lighter, the empu (keris expert) always combines these basic ingredients with other metals.



Rusty daggers were soaked in coconut water

The materials used to conserve the daggers at Old Banten Site Museum were coconut water and lime juice. The



The daggers were rubbed with lime

rusty daggers were soaked in coconut water for 24 hours. After being soaked, the daggers were rubbed with lime , and brushed gently using a toothbrush.

After the rust on the daggers had been cleaned off, the

daggers were then rinsed with running water until they were completely clear of the lime juice and coconut water. Then the daggers were dried. The results were quite satisfactory. The rust that had originally been attached to the daggers had disappeared.

Due to their value, it is important to be careful when conserving cultural heritage objects. Therefore, the local wisdom that has been left by our ancestors should be explored and assessed for cultural heritage preservation efforts.

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The daggers, before and after conservation

Kazakhstan



Archaeological Research in the Territory of Shakhristan "The ancient city of Taraz" (1st to 19th centuries)

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The process of studying the cultural property sites of the Kazakh people has continued in Kazakhstan. Remarkably, this process is not limited to archaeological excavations. Scientific archaeological research is more often carried out with the aim of preserving and presenting the cultural heritage of the Kazakh people through preservation and restoration. In the future, these monuments will be used as objects for the development of tourism. Thus, there has been a radical revision of attitudes towards ancient monuments. Earlier archaeologists performed excavations of archaeological sites which led to the total or partial destruction of the monument in order to obtain historical information. Now project administrators are required to perform archaeological excavations for further preservation measures and presentation of the cultural heritage of our nation.

A good example is the large-scale research work begun in the territory of the city of Taraz. Taraz city has a centuries-long history, and cultural layers starting from the first century BC lie under the modern buildings of the city.

A program developed by the current regional administration aims at improvement of the central part of the modern city. To achieve this, the dilapidated bazaar buildings of the Soviet period were demolished. Ancient cultural layers of the city were located under the bazaar buildings. According to the approved project, it is planned to build here an archaeological park illustrating all stages of life of the ancient city.

Ancient Taraz stands on the banks of the Talas River in the central part of the modern city of Taraz in the Zhambyl region, Kazakhstan.

Historically, the Talas Valley, with a favorable climate and various natural resources, has represented a convenient area for development by humans. Monuments of Talas Valley cover a large chronological range, from Neolithic sites to the monuments of the 20th century.

The first ancient mentions of the city are found in the records of the Chinese traveler, Zhang Qian, traveling through Central Asia along the Great Silk Road.

Mentions of the Battle of Talas—the battle involving



Location of Taraz

northern Huns led by Chzhichzhi-shanyu together with Kangyui cavalry against the combined forces of Han China and Usuns—are widespread in the literature.

Greek sources note that the city of Talas had economic and political relations with major states—Byzantium, Persia, India, and China—in an effort to control the Great Silk Road.

The struggle between Persia and Byzantium for control over the trade routes led to war and extra manpower requirements. Byzantium was looking for allies to help achieve victory over the Persians, and therefore sent messengers to the Western Turkic Dizabulu Kagan, Zemarh Cilicia. Simultaneously, Persia sent an embassy to the Turks. But Dizabul sided with Byzantium.

The migration of significant numbers of the Sogdian aristocracy to Taraz in the year 580, as well as suppression of the rebellion in Bukhara described by Nershani in his "History of Bukhara," indicates the serious role played by Taraz in the political life of these regions.

The records of the philosopher Xuanzang, traveler of the Tang Dynasty, who visited the land of the Western Turkic Khanate, also contain information about the city of Taraz. He characterizes Taraz, as a significant trading center "where merchants from different countries lived".

Tribes and peoples of the Western Turkic Khanate in the history of the Talas Valley played a significant role in the defeat of the Persians, both on the side of Byzantium in the west and the Arabs in the east, and in the processes of statehood formation and establishment of feudal relations within the country.

The stele erected in memory of Kyultegin has an inscription mentioning that the representatives of the military aristocracy from the Talas Valley were invited to the funeral of Kyultegin.

In 766, the Talas Valley was occupied by Karluks. It then came under the control of the Karakhanids during the reign of which Taraz became a major economic center and capital city of the entire Karaganid state.

Further political developments in the Talas Valley were successively associated with the Karakitais, Naimans, and Mongols, which had a detrimental impact on the economy and local cultural development.

William de Rubruk in his "Journey to the Eastern Parts" mentioned the Mongol conquest of the Talas Valley and in particular the city of Taraz. Robbery and destruction of cities undermined the urban life of the Talas Valley. Urban culture was in decline, and some city-settlements ceased to exist.

Today, the traces of the ancient city of Taraz are fully built-up, and only according to the information the 1930s can one can imagine how the ruins of the ancient city would have looked like.

Excavations of Taraz city were initiated in 1938 by the Professor A.N. Bernshtam, who was in charge of the Semirechensk archaeological expedition. Archaeologists such as E.I. Ageev, T.N. Senigova, and M.S. Merschiev have worked here in the past 60 years.

The eventful life of the ancient city of Taraz is still of interest to scientists. In this regard, archaeological research on the territory of Shakhristan and the ancient city of Taraz was renewed.

Shakhristan covers the most extensive area of the settlement of 420 m x 420 m. The walls of Shakhristan are connected to the citadel on the northern side, and the remaining three sides of the western, eastern, southern parts of the Shakhristan have gates.

The aim of the Shakhristan excavations was to obtain information about cultural and chronological belonging, stratigraphy, planigraphy and other features of the monument.

The overburden excavation works were solid. Cultural deposits were cleared using round-pointed shovels with cross edges and brushes, knives and other stripping tools. Accumulation of ceramics, debris of vessels, tools, jewelry and other indicative artifacts were numbered, marked on the plan and recorded in an inventory indicating the depth of occurrence and other features. The main mass of materials was packed with an indication of the condition and place of occurrence. After being photographed, the finds were removed, and another layer of soil was removed.

A few fragments of ceramics, wood embers and animal bones were found during cleaning, sometimes mixed with modern waste such as fragments of glass, debris of metal products and other materials.

Since the ancient city lies beneath asphalt, at the beginning of the excavation the asphalt pavement was dismantled using a front loader, and the ballast bed was removed.

The long side of the excavation was focused on an east-west line. The total area of the excavation was 875 sq. m. When the ballast and construction layers were removed, debris of dishes was found, most of which was similar to the ceramics from the cultural layer, fragments of metal products, animal bones and other surface material.

A rounded spot with diameter of 1 m was revealed near the eastern edge in the course of clearing the site. Fragments of pottery, animal bones, and wood embers were recorded in the pit filling.

Continuing the clearing at a distance of 4.3 m from the eastern edge, we found the contours of a building of stone and baked bricks, which were found to be the remains of the complex construction. The long side of the construction's walls is arranged in a north-south direction and extends beyond the excavation area to the south. Looking ahead, it should be noted that perhaps we are

dealing with a U-shaped or closed type complex. The approximate area of the complex is 436.6 sq. m.

The outer wall is composed of 3-4 rows of granite stones and has a width of 1.3-1.9 m. The height of the stone wall is 0.4 m. The stone wall consists of large flat processed flagstones. Based on the thickness, it can be assumed that the wall also performed a defensive function. The internal longitudinal wall of the construction is located at a distance of 2.5 m to the west from the first wall. The wall is built of burnt, laid flat bricks with sizes of 26 x 15 x 3 cm to 30 x 15 x 5 cm. These two longitudinal walls are divided with clutches of stones and form a long structure with four cell-type rooms. Room number 1 - 3.1 x 3 m, has a subsquare shape. The northern edge is clean. In the southwestern part of the room there is no brickwork. Room number 2 - 2.1 x 2.5 m has a subrectangular shape, the long side being oriented east-west. Room number 3 - 2 x 2.5 m has a subrectangular shape, the long side being oriented east-west. Room number 4 - 2.07 x 2.5 m is similar to the previous ones. These rooms are possibly part of a larger complex. In total, these rooms occupy half of the two main 9.2 m longitudinal walls and are located in the northern part of the structure. The remaining southern part of the structure is free from settlements.

At a distance of 9.5 m to the west, there is a similar structure with five rooms. The outer wall of this structure is also built of worked stones, and the width of the walls range from 1.4 m to 1.6 m. The inner longitudinal wall is built of burnt bricks, the dimensions of which are 30 x 15 x 4 m. The rooms are separated by one layer of masonry work and numbered from the northern edge. Room number 1 - 3.1 x 3.1 m, has a subsquare shape; room number 2 - 2.4 x 3 m, has a subrectangular shape, the long side being oriented east to west; room number 3 - 4 x 3 m, is of subrectangular shape, the long axis being oriented north-south; room number 4 - 2.6x2.8m, has a subrectangular shape and is oriented east-west. Closer to the eastern part of this room (possibly near the exit) in the middle, there is a fireplace built of vertically embedded bricks extending 5 cm above

the floor, with dimensions of 40 x 48 cm; room number 5 - 2.6 x 2.8 m, has a subrectangular shape, and is oriented east to west.

Burnt remains of a wooden ceiling (possibly the roof) were found along the entire perimeter of the central square of the structure.

Thus, we assume that possibly part of a madrassah fell into the excavation grid and in the future we plan to expand the excavation to outline the boundaries of the whole structure.

Characteristics of Artifacts

Ceramics: In the course of research on Shakhristan, we found a collection of archaeological fragments and intact vessels which were divided into two main groups according to the method of manufacture: molded and easel.

Easel ceramics are represented by the fragments of small handled kettles, jars, lids fragments, khoum, etc. Easel ceramics are lightly ornamented.

Molded tableware is represented by the debris of khoum, braziers, jugs, lamps, bowls, and lids.

Tools: Pebble tools of a spherical shape with a through hole.

Numismatic finds are represented by coins. The cultural and chronological belonging of this category of finds has not yet been determined.

Metal products are represented by:

- strongly corroded bronzeware of amorphous form with uncertain functional purposes.
- copper handle depicting a stylized deer or similar animal) formed on the casting mold.

Further researches on Shakhristan and other objects of settlement will clarify the existing data and new information about the historical and cultural processes in the Talas Valley. This, in turn, will help to open other unknown pages of history and ethnogenesis of the Kazakhs and other Turkic ethnic groups.



Territory of Shakhristan, the ancient city of Taraz. Possible Madrassah: view from the north



Territory of Shakhristan, the ancient city of Taraz. Possible Madrassah: view from the east



Territory of Shakhristan, the ancient city of Taraz. Possible Madrassah: view from the west



Territory of Shakhristan, the ancient city of Taraz. Possible Madrassah: stone wall



Territory of Shakhristan, the ancient city of Taraz. Possible Madrassah: fireplace



Acoustic Treatment at St. Mary's Cathedral, Kuala Lumpur, Malaysia

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Introduction

Located strategically in the heart of Kuala Lumpur in proximity to prominent landmarks such as the Royal Selangor Club, former High Court and the Sultan Abdul Samad Building; St. Mary's Cathedral is a place of worship for Anglicans as well as a famous attraction for local and foreign tourists. In January 1990, the historic green field of the Royal Selangor Club located south of the church was renamed Dataran Merdeka (Independence Square). The field is a hotspot for the 31st of August Independence Day Parade as well as a prime venue for celebrations all year round. The intense level of activity in the vicinity has affected the serenity of the church congregation. Services held at St. Mary's Cathedral were often interrupted by the sound of heavy traffic and loud music coming from the nearby Dataran Merdeka festivities, and as the church building had glass doors and windows and the acoustical lining and roof ceiling were not insulated appropriately against noise pollution, in 2011 the church committee hired a building contractor to carry out conservation works, including acoustic treatment, at St. Mary's Cathedral. The cost of acoustic conservation works, amounting to RM500,000 (USD142,857), was fully financed by the federal government under the auspices of the Department of National Heritage. This report highlights the conservation of St. Mary's Cathedral, mainly its acoustic treatment.

Historical Background

The original building of St. Mary's Cathedral dates back in 1887, when it was situated on Jalan Bluff (Bluff Road) at Bukit Aman hill, Kuala Lumpur. The wooden church had a capacity of 95 people, mostly Anglicans. Due to a growing congregation, a new church building was erected next to the green field of the Royal Selangor Club (The Padang or Parade Ground). The foundation stone for the new St. Mary's Cathedral was laid by the British Resident of Selangor, Sir WH Treacher, in 1894. A year later in 1895, the church installed a pipe organ made by Henry Willis, who was also the famous organ maker for St. Paul's Cathedral and the Royal Albert Hall in London, England.

Architectural Background

Built in 1894, St. Mary's Cathedral was designed by British architect Arthur Charles Alfred Norman at a cost of \$11,500. A year before in 1893, Norman's design, which featured Early English Gothic architecture, was selected by the church committee as the new church design. Early English Gothic architecture has significant design characteristics such as pointed arches, vaulted roofs, buttresses and stained glass lancet windows. The pointed arches at St. Mary's Cathedral are found on the nave arcade, doorways and windows. The church building has a nave for 180 people sitting (87 feet by 28 feet in dimension); and a pulpit with an octagonal end (29 feet

by 22 feet in dimension). The church also has a vestry and an organ chamber that can accommodate a twenty-person choir.

St. Mary's Cathedral has undergone several renovations over the years. In 1958, its main hall was expanded and named Jubilee Hall. In 1968, a two-storey annex building was erected, comprising the administrator's rooms, priest's office, utility room, kitchen and living quarters. During 2006-2007, more additions were built at the church including a multipurpose hall, an office, a library and an apartment unit. Due to its immense historical, architectural and social significance, St. Mary's Cathedral was listed as a National Heritage of Malaysia in 2011 under the National Heritage Act 2005 (Act 645).

Building Defects

An experienced building conservator was appointed to monitor and document the building conditions before, during and after conservation works. A dilapidation survey of the building was carried out by the building conservator prior to conservation works; and all building defects and their probable causes were determined through the help of local experts such as structural and acoustic engineers and the Department of National Heritage. All building defects were recorded through various media such as digital photography, measured drawings, and technical reports. Such detailed documentation not only presents critical baseline information on the affected building for future repair works, but also provide a strong basis to assess the most appropriate and effective remedy for conservation works.

From the dilapidation survey report, factors that had caused damage to St. Mary's Cathedral were classified as natural factors and human-induced factors. Damage to the roof structure was a result of natural climatic factors. Almost all of the timber battens on the roof were rotten and needed to be replaced. On the other hand, noise pollution occurring in the neighbourhood was considered to be human-induced damage. Since the church's roof, doors and windows did not have appropriate sound insulation, the noise of heavy traffic, daily activities and festivities taking place at nearby Dataran Merdeka has affected the serenity of the church congregation.

Conservation Works

The church conservation project adopted only proven and effective remedial methods and techniques. It is very important to ensure that all conservation methods and techniques employed on-site including the acoustic treatment did not further aggravate the problems to the building structure and fabric. In accordance with building conservation best practices of minimum disturbance and of retaining authenticity and integrity, only the damaged and affected parts of the building were removed and

replaced with the same or similar building materials. The rest of the building was preserved and kept intact in its original form.

The acoustic treatment of St. Mary's Cathedral was carried out in two phases over a period of five months from January until May 2012. Phase I focused on the main hall, whilst Phase II concentrated on the Jubilee Hall. The acoustic treatment involved four major works, namely installation of temporary scaffolding; restoration of roof structures; installation of a linear metal strip ceiling; and acoustic treatment of the glass doors and windows. All conservation works were carried out based on work method statements prepared by the building conservator and approved by the Department of National Heritage.

Installation of Temporary Scaffolding

The acoustic treatment of St. Mary's Cathedral began with the construction of temporary scaffolding. Mobile temporary scaffolding was set up inside the building to provide a strong working platform for installing a layer of acoustic treatment on the ceiling and for changing the rotten timber battens on the roof. The selected scaffolding was a mobile frame known as the Upright Lightweight Mobile Aluminium Tower Skybridge. Green Tag Certified scaffolding was installed in the church in compliance with the needs of all users concerned, as well as to ensure the workers' safety. A clear work method statement was deliberated pertaining to the installation, safety operation and maintenance of the scaffolding throughout the duration of the project.

Restoration of Roof Structures

St. Mary's Cathedral has A-frame timber roof structures for both its main and Jubilee halls, with Marseille roof tiles. Prior to restoration of the roof structures, all furniture and electrical fixtures in the halls including wooden benches, cabinets, chairs, ceiling fans and chandeliers were removed, whilst the organ and pulpit were covered with plastic sheets. Plywood sheets were fixed onto the interior floors to prevent any damage during construction. Waterproof plastic sheet covers were used to protect the exposed roof structures during rainy days. In view of the possibility of termite infestation and for future maintenance of the roof structures, the church committee had requested that all decayed timber battens be replaced with steel members, whilst good timber rafters and roof trusses were to be kept intact. The existing Marseilles roof tiles were carefully removed in batches, brought down and cleaned on-site before they were re-installed on the roofs. For energy efficiency and noise reduction, the roof structures were insulated with wire netting, rock wool and aluminium foil. A roof mockup was set up on-site for technical reference.

Installation of Linear Metal Strip Ceiling

Several noise level experiments were carried out by experts at St. Mary's Cathedral in order to determine the noise level caused by the activities at the nearby Dataran Merdeka, and to gauge the effectiveness of the acoustic treatment. The noise level experiments were conducted in the car park outside the church, at the main hall and at Jubilee Hall. The results of the noise level experiments

showed that the acoustic treatment was successful in lowering unwanted noise levels by approximately one-third. In accordance with the conservation basic principles, acoustic treatment started from the top of the building (the roof) and worked its way down to the ground floor. The church committee, the consultant and the Department of National Heritage agreed to install an acoustic control layer and a linear metal strip ceiling painted in a shade of brown, which was in harmony with the original timber frame of the church building.

Acoustic Treatment of the Glass Doors and Windows

St. Mary's Cathedral required acoustic control to avoid or minimise noise disturbances from nearby heavy traffic and other unwanted sounds. Acoustic control works included fixing additional new glass panels onto the outside of all original doors and windows of the church. New additional glass was fitted onto the door glass on both sides of the nave; folding glass doors that separate Jubilee Hall from the multipurpose hall; folding glass doors at the back of Jubilee Hall; and the door glass of Jubilee Hall facing the Dataran Merdeka. All stained glass lancet windows were also fitted with an additional glass panel. Adding an acoustic control glass piece on the outside of the doors and windows was carried out carefully to protect the aesthetic and historical value of the original beautiful doors and stained glass lancet windows.

Conclusions

St. Mary's Cathedral is a historical building 118 years old in 2014. It is not only a place of worship for Anglicans but also a famous tourist location. St. Mary's Cathedral has significant historical, architectural and social value as it bears testimony to the chronicles of early Kuala Lumpur and the Anglican churches in Malaysia. The conservation works including the acoustic treatment at St. Mary's Cathedral were carried out according to the guidelines and procedures approved by the Department of National Heritage and building conservator. All new discoveries and work method statements were recorded systematically for future reference. The reduction of noise levels by approximately one-third proves that the acoustic treatment proposed at St. Mary's Cathedral has been a success.

In conclusion, mutual co-operation and understanding among the Department of National Heritage, the building conservator, the St. Mary's Cathedral church committee and the contractor can be considered as a key success factor in the conservation works at St. Mary's Cathedral. One lesson from this project is that works of heritage building conservation require a concerted effort by all parties concerned through co-operation and joint responsibility to ensure that all conservation works at the site are carried out perfectly and smoothly as scheduled.

Acknowledgements:

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Designed by British architect Arthur Charles Alfred Norman in 1894, St. Mary's Cathedral features Early English Gothic architecture with pointed arches, vaulted roofs, buttresses and stained glass lancet windows



Aerial view showing the historic green field of Dataran Merdeka (Independence Square) surrounded by St. Mary's Cathedral (bottom right), the Royal Selangor Club (right) and the Sultan Abdul Samad Building (left)



Services held at St. Mary's Cathedral were often interrupted by the sound of heavy traffic and loud music coming from the nearby Dataran Merdeka festivities



The interior of the main hall before conservation, with Marseille roof tiles and timber battens able to be seen from inside



The interior of Jubilee Hall before conservation



The interior of Jubilee Hall after conservation



Mobile temporary scaffolding was set up inside the main hall to provide a strong working platform for installing a layer of acoustic treatment on the ceiling and for changing the rotten timber batten on the roof



Existing Marseille roof tiles were carefully removed in batches, brought down and cleaned at site before they were re-installed on the roofs



For energy efficiency and noise reduction, the roof structures were insulated with wire netting, rock wool and aluminum foil



Waterproof plastic sheet covers were used to protect the exposed roof structures during rainy days



Prior to the conservation works, all furniture and electrical fixtures in the main hall were removed, the organ and pulpit were covered with plastic sheets and the interior floors were protected with plywood sheets to prevent any damage during construction



The installation of an acoustic control layer and metal strips linear ceiling at the main hall during construction



All stained glass lancet windows were fitted with an additional glass panel in order to minimise noise disturbances



Several noise level experiments were carried out by experts at St. Mary's Cathedral in order to determine the noise level caused by the activities at the nearby Dataran Merdeka, and to gauge the effectiveness of the acoustic treatment



A roof mockup insulated with wire netting, rock wool and aluminum foil was set up at site for technical references



Mutual cooperation and understanding among the Department of National Heritage, building conservator, the St. Mary's Cathedral church committee and the contractor are the key success factor in the conservation works at St. Mary's Cathedral



The interior of the main hall after conservation with the new acoustic control layer and metal strips linear ceiling



Detailed Survey of R. Meedhoo Ancient Mosque and Its Boundary for “Coral Stone Mosques of Maldives towards World Heritage List” Project

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Upon ratification of the UNESCO World Heritage Convention in 1986, the government of Maldives has been carrying out a vast amount of work in order to nominate a Maldivian site to the UNESCO World Heritage List. Today, Maldives is due to accomplish this task. We are now on the verge of submitting a series of Coral Stone Mosques (Five mosques) to the World Heritage Centre. This report will thus look at the detailed survey (major component of the second and final phase) carried out for this project. Detailed surveys of each of the five mosques are to be undertaken and this report will look at the survey of R. Meedhoo Ancient Mosque and its boundary.

The mosque is situated on R. Meedhoo, an inhabited island in Raa Atoll, about 154.30 km (95.88 mi) northwest from the capital of Maldives, Malé. The site consists of four main components: the mosque complex, an ancient cemetery, a well and a buffer area. A total of two trips were made to the island between July and October 2013. The first trip was made in July and a team of eight members (four from the Department of Heritage, two from the survey department of the Maldives National Defense Force and two from a private architectural company) visited the site and worked there for two weeks. The second trip was made in October and a team of three members from the Department of Heritage visited the site and worked there for one week.



General view of the mosque complex

The majority of the work was completed during the first visit, which included:

1. Archaeological test excavations

Test excavations of one of the corners of the mosque were carried out by an archaeologist to determine the foundation of the mosque. The result was that it had a similar type of foundation as the other four mosques surveyed for the project, where layers of both sand and coral stone were placed on top of each other in 3-4 levels below the plinth of the mosque. No artifacts were found during this excavation and the work took two days to complete. After the excavations, the excavated corner was

photographed and archaeological drawings (plan and section) were made and the corner reburied afterwards.

2. Architectural drawings

Two architects were hired from a private company to complete this part of the project. Drawings (plans, sections and cross sections) were made of both the exterior and interior of the mosque including every detail of the lacquer work, carvings and calligraphy.



Interior of the Mosque showing the lacquer work

3. Surveying and locating the site

Two staff from the Maldives National Defense Force joined the project to survey and locate the site using a total station machine. The site was marked on a digitalized island map, and each component of the site (including all the tombstones) was also accurately marked on the map. They also helped the rest of the team by drawing a site plan which was used by the architects and for the conservation assessment.

Due to circumstances beyond the survey team's control work had to be halted, which was why a second visit was made to complete the unfinished work. Thus, during the second visit the rest of the work was completed, which included:

4. Studying the buffer zone

The buffer area for the site was determined with the help of the international expert for this project (a conservation architect from India). For this site, a buffer of about three blocks of land around each side of the boundary wall was accorded to the site. Surveying for the buffer area was carried out by two members of the Department of Heritage, by which they recorded architectural and constructional features and made relevant drawings and plans. They also conducted interviews with locals to obtain oral histories of the mosque and the island.

5. Photography

A photographer of the Department of Heritage was responsible for taking pictures of the whole site, including detailed and scaled photos of both the exterior

and interior of the mosque along with any designs and carvings, or damage/defects found in the mosque. The same technique was similarly applied to the cemetery, where all the tombstones were photographed as well. Photographs of the excavated corner and the buffer area were also taken. The images taken by the photographer were used by the Research Officer to develop a conservation plan for the site. The images were also used by the architects to complete the drawings of carvings and designs.

6. Documentation of the cemetery

Since the cemetery covered a large part of the site, it was divided into six parts from the site plan. Documentation of every tombstone was carried out, which included measuring and drawing the tombstones (including the carved designs), scaled photography of the tombstones, and recording any damage caused to them as well as any inscribed death records.



Interior of the mosque showing lacquer work with geometrical designs and Arabic calligraphy

7. Preparation of a condition assessment and a conservation plan for the site

In order to prepare a condition assessment, each coral stone block and all of the wooden structures of the mosque were studied, and defects/damage for each of the blocks/wooden plaques were marked on the architectural drawings. The same technique was applied to record the condition of the tombstones too. Most common damage included cracks, moss growth, and termite action. In the meantime they were also photographed and measured. After preparing the condition assessment, a conservation plan was drawn up on how to deal with the damage and how to conserve the site for future generations.

The Department of Heritage has now been able to complete detailed surveys of three of the five mosques and is also working on preparation of the dossier which will be submitted at the beginning of next year.



General view of the cemetery



Shrine of an important local



Some Results of an Archaeological Excavation at the “Ikh Burkhan” Complex in Eastern Mongolia in June 2012

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There is a gigantic statue of a Buddhist deity very skillfully made of stone in easternmost Mongolia, on the southeast side of a terrace on the west bank of Khalkh Gol River, territory of Khalkh gol Soum, Dornod Aimag. The deity is the eight-handed Avalokiteshvara measuring 29.2 x 21.7 m. It is also named ‘Ikh Burkhan’ or ‘Great Deity’ in Mongolian. There are many other smaller stone sculptures of deities, stone walls and remains of other structures around it (Fig. 1).

V. A. Kazakjevich, a Soviet researcher who worked at the Mongolian Committee of Sciences reached the Ikh Burkhan complex in 1925. In his report, he wrote some notes on the monument (Kazakjevich 1925: 35/).

In 1942, the famous Mongolian historian and archaeologist Kh. Perlee clarified some problems with Qing Dynasty period archival documents that this great complex was built with the intention and conduct of Togtokhtur (1797-1868), a reformer, enlightener and head of a banner of Setsen Khan Aimag in Khalkh Mongolia, in 1859-1864 (Perlee 1942: 4, 5, 8, 46; Perlee 1963: 64-65).

In 1949, a Soviet historic-archaeological expedition discovered some Stone Age settlement ruins and monuments of the Khitan period (10th-11th centuries) along the Khalkh Gol river basin with the help of B. Zhargalsaikhan, a representative of the Mongolian Committee of Sciences (Okladnikov 1958: 214). Zhargalsaikhan also guided the team and its head A. P. Okladnikov, a later Soviet academician, to the Ikh Burkhan complex because he was a native of the Khalkh Gol region (Okladnikov 1958: 214). The team briefly described and photographed the monument. Okladnikov suggested that Ikh Burkhan may be a monument of the Khitans or Jurchens of the 10th-11th centuries. (Okladnikov 1958: 216).

In his book on Togtokhtur, the Mongolian academician Sh. Natsagdorzh wrote about how Ikh Burkhan was erected (Natsagdorzh 1968).

In 1995-1996, Kh. Enkhtuvshin, who was a researcher at the Institute of History, MAS, directed large-scale excavations at the Ikh Burkhan complex. Under his direction, many local people worked to uncover the whole of the Ikh Burkhan statue, excavated some structures and revealed statues of deities which had been covered by soil. They also reconstructed the main great stone wall of the complex. Based on these facts, Enkhtuvshin proposed that the Ikh Burkhan complex was lost and had been looted and damaged from the early 20th century until recent times (Enkhtuvshin 1995).

In 1997, the local government and a foundation which aimed to restore the complex tried to restore the Ikh

Burkhan statue and some other smaller sculptures (Tsogtbaatar 1999: 259).

In 2012, an expedition of the Mongolian Cultural Heritage Center began to restore the great statue scientifically first, using the latest conservation methods and standards.

Before this work, the greatest ever restoration project of Mongolian cultural heritage, archaeological researches by professional organizations were required at the complex. Accordingly, we excavated at several sites of the complex from June 10 to 24, 2012. In this article I would like to present briefly the excavation of the site IB.VIII or the four structures with Maharaja sculptures.

Site IB.VIII (four structures with Maharaja sculptures)

There were four cement sculptures erected at the entrance of the complex in 1997 (Figs. 2 and 3). They are in two pairs, with the members of each pair looking at one another (Fig. 3). The sculptures represent The Four Maharajas on a flat background (Figs. 3-7).

The sculptures of The Four Maharajas are often built near the gates of traditional Buddhist architectural heritages of Mongolia. ‘Mahārāja’ means ‘great chief’ in Sanskrit. The modern Mongolian word ‘Makhranz’ (Tsevel 2013: 469) and its written Mongolian version ‘Maqaranča’ (Buddhist Dictionary 1995: 228; Rybatzki 2006: 597-599) derive from the 10th century Early Uighur versions ‘Maqaranč’ and ‘Maqaranča’ (Kaya 1994: 586) or perhaps the 8th century title ‘Maqarač’ in Ancient Turkic script (Drjevnjetjurkskij 1969: 337). The Maharajas’ function is door-keeper of a temple, shrine, wall or other Buddhist building. They also symbolize powerful protectors of Buddhism from enemies of the religion.

The goals of our excavation at the site were as follows:
-to determine whether the Maharaja sculptures were really there before the 1997 restoration;
-to understand what structures were there;
-to describe the structures for preparation of future reconstruction at the site.

Situation before excavation

There was a rectangular fence made of small and medium-sized stones at each of the four sites before excavation. The fences are parallel to each other and their orientation seems to be generally the same as the complex. There were some stones from the fence sides spread around the fences. Some sides and corners of the fences and most stones of some sides were missing (Figs. 4-7).

The Maharaja sculptures which were erected in 1997 were different from each other in terms of position and orientation of the face (Fig. 3).

Table 1. Situation before excavation

No	Structures	Spread of stones (E-W x S-N) (cm)	Max height of stones above ground surface (cm)	Location of sculptures	Orientation of faces of the sculptures	Dimensions of stone pedestals (cm)
1	IB.VIIIA	450 x 446	15	Center of the stone fence	SW	90 x 63 x 16
2	IB.VIIIB	450 x 400	15	SW part of the stone fence	W	91 x 64 x 18
3	IB.VIIIC	300 x 400	~15	Center of the stone fence	SE	-
4	IB.VIIID	244 x 340	16	E part of the stone fence	SE	95 x 63 x 16

Table 2. Excavation

No	Excavation site	Location	Dimensions of the sites (E-W x S-N) (cm)	Depth of excavation (cm)
1	IB.VIIIA	NE	600 x 400	10-25
2	IB.VIIIB	SE, 350 cm to the E from IB.VIIIC	450 x 450	5-30
3	IB.VIIIC	SW, 1150 cm to the S from IB.VIIID	450 x 500	10-30
4	IB.VIIID	NW, 300 cm to the W from IB.VIIIA	500 x 600	20

Table 3. Structures and their elements

No	Structures	Dimensions of the stone fences E-W x S-N (cm)	Distances between the bases of the columns (cm)				Dimensions of the entrance stones (cm)	Location of sculptures & stone pedestals
			NE-SE	SE-SW	SW-NW	NW-NE		
1	IB.VIIIA	300 x 250	171	176	167	165	59 x 34 x 7	S part of the structure
2	IB.VIIIB	260 x 250	170	181	163	167	-	SW part of the structure
3	IB.VIIIC	300 x 260	170	176	188	175	-	N part of the structure
4	IB.VIIID	270 x 300	168	170	166	168	73 x 32 x 17	E part of the structure

There was a flat stone pedestal for a deity in front of each of the Maharaja sculptures, at the uppermost level of the structures. The stone pedestal of site IB.VIIIA is oval and the others are semicircular. All of the pedestals have the same orientation as their sculptures and are of a similar size. Some engraved lines and traces of being hit with a metal tool are visible on the sides. Also, there are some remains of pink-painted white plaster on the narrow sides of the pedestals (Figs. 8-12 and 14).

Only the pedestal of site IB.VIIIA has been broken into three pieces (Fig. 8).

Excavation

The excavation sites were 450-600 cm x 300-600 cm in size, including the area spread with fence stones from each structure (Fig. 2). The depth was 5-30 cm below the ground surface. The colour of the local brown soil did not change during the excavation. This means that there were no clear layer differences at the excavated sites. The excavation below the level of the stone fence was not continued after revealing the bases of the columns of each structure. It was clear that each Maharaja sculpture had been erected in a hole deeper than the floor of the present excavation site. The flat stone pedestals in front of each Maharaja sculpture were on the present ground surface, at the uppermost level of the structures. Archaeological data in some places inside the fence where the Maharaja sculpture was erected might have been destroyed in the process of digging the above-mentioned holes. Also the places under the stone pedestals were not excavated. (Figs. 8-11)

Stone fence

Each of the structures had a rectangular stone fence. Its orientation was the same as that of the Ikh Burkhan complex. (Fig. 12) The fence stones were 10-20 cm above

the floor of the sites, generally extending out from the lines between the column bases. The average size of the fence is 300 x 250 cm and its southern and northern sides are longer than the others. On the eastern side of the fence of IB.VIIIB, from the northeast column base to the south, are placed four flat stones bigger than the others (Fig. 13). The right sides of those stones, facing the inner side of the structure, are in one line. An almost quadrangular stone at the northern point of the side is 32 X 29 cm in size. Some of the fence stones are in two rows. Only two sides of the fence of IB.VIIIB are completely uncovered because some stones from the other sides had been removed from their original position. (Figs. 9, 13 and 15) There were no remains of a rammed earth floor inside the stone fence or of a rammed earth foundation under the fence sides. Neither were there any traces of a burnt or sun-dried brick wall on the sides.

Table 4. State of preservation of the stone fences

No	Structures	Sides of the stone fences (complete + / incomplete +/- no stone -)			
		NE-SE	SE-SW	SW-NW	NW-NE
1	IB.VIIIA	+-	+-	+-	+-
2	IB.VIIIB	+	+-	+-	+
3	IB.VIIIC	+-	-	-	+-
4	IB.VIIID	+-	+-	-	+-

Entrance stone

A handmade stone slab which differs from the other fence stones was uncovered in each fence of the two northern Maharaja sculptures. It might have been part of the floor at the entrance of the structure because its sides have been specially flattened and it has been placed in the middle of the fence side. (Fig. 12)

The entrance stone of IB.VIIIA is at the center of the

western side of the fence, and at a level 10 cm above the floor of the excavation site. Its dimensions are 59 x 34 cm and 7 cm thick, and it is oriented to 300° azimuth (Fig. 8).

The IB.VIIID entrance stone, one of the fence stones on the eastern side, is located to the east of the stone pedestal. It was at a depth of 16 cm below the ground surface, 10 cm below the pedestal and 2 cm above the floor of the excavation site, the lowest level of the stones of the structure. Its surface is rectangular. Its dimensions are 73 X 32 cm and 17 cm thick. The distance between this stone and the eastern wall of the site is 100 cm (Figs. 11, 12 and 14).

The entrance stones of the other two structures seem to have been removed.

Remains of columns

Corner columns. Evidence indicating that four wooden columns were in the corners of each structure was revealed at a depth of 5-20 cm below the ground surface (Figs. 8, 12 and 15). The original position of the fence stone clearly indicates that the outer surface of the column, except for part of it facing the inner side of the structure, had been enclosed tightly by a corner stone (Figs. 12, 13, 15, 17 and 18). The distances between the column bases measured 163-188 cm, making an almost quadrangular site (Fig. 12). The cylinder-shaped column base was made of white and whitish-yellow plaster of chalk and clay. The base is 22-33 cm in diameter, 5-39 cm high and 2-7.5 cm thick. Its inner side or hole is 18-24 cm in diameter (Figs. 15, 17, 18 and 19). The southeastern column base of the site IB.VIIIB had an open bottom. It indicates that the other bases might have the same bottom. The state of preservation of the column remains can be divided into the following:

- Base and bottom of the wooden column (Fig. 15 and 16);
- Base and small fragments of the bottom of the column;
- Base (Figs. 17, 18 and 19);
- Bottom of the wooden column;
- Small fragments of the bottom of the column;
- Hole.

Remains of the wooden column erected on the base were revealed at a depth of 3-17 cm below the ground surface. They are 15-20 cm in diameter and 10-17 cm in height (Figs. 15 and 16). It is possible that the columns might have been painted in red because the bottom of the southeastern column of IB.VIIID had red paint.

Central column(s). We also found evidence indicating that these wooden columns was not only in the corners, but also at the center of the structure. Two oval-shaped bottoms of wooden columns were in a powdered earthen spot of 37 X 21 cm in IB.VIIID. The distance between the bottoms was 7 cm. The larger, northern bottom was 16 cm in diameter. The smaller one was 12-13 cm in diameter. (Figs. 12 and 20)

Other wooden remains were located to the east from the center of the inner rectangular site of the IB.VIIIA structure. It is possible that the remains were the same as those of the wooden column at the center of the IB.VIIID structure, although it was not clear whether these are remains of either a bottom of a column in situ or a fallen column.

Finds

The finds from the sites can be divided into five kinds: building materials, remains of stone sculptures, coins, domestic goods and animal bones.

Building materials Very few pieces of roof tile were found in three structures. The roof tile pieces were 1.7-2.3 cm thick and they had the same features as the roof tiles from other buildings in the complex. Perhaps they had been removed from the ruins of the other buildings, as all were located in the upper part of the site. If the structures had had tiled roofs, more pieces of roof tile would have been found. Although this is doubtful because some pieces of roof tile were revealed in IB.VIIIA, at a depth of 10-20 cm below the ground surface. (Fig. 21)

Pieces of brick were found in each of the three structures. But it was impossible to determine the dimensions of the whole brick because the pieces were very small. No bricks were in their original placement, which could have

Table 5. Remains of the columns

Structures	Columns	Walls of the bases					Wood		
		Level of upper side below ground surface (cm)	Height (cm)	Width (cm)	Diameter (cm)	Inner diameter (cm)	Level of upper side below ground surface (cm)	Height	Diameter
IB.VIIIA	NE	-	-	2,5	30	-	17	-	15
	SE	15	5	2,5-5,5	25-27	18-21	-	-	-
	SW	15	3	2,5-3,5	22-26	20	-	-	-
	NW	11	8	2-6	30	23	-	10	-
IB.VIIIB	NE	-	-	3-6	31-33	22-24	15	-	-
	SE	5	-	-	-	-	-	-	-
	SW	15	4	4	-	-	3	-	18
	NW	-	39	4-7,5	31	22	-	-	-
IB.VIIIC	NE	12	13	3-3,5	26	20	-	-	-
	SE	20	10	2,5-3,5	24-26	-	15	17	20
	SW	16	-	2-2,5	27	21	-	-	-
	NW	15	-	2-5	24	-	-	-	-
IB.VIIID	NE	12	13	3-3,5	26	20	-	-	-
	SE	20	10	2,5-3,5	24-26	-	15	17	20
	SW	16	-	2-2,5	27	21	-	-	-
	NW	15	-	2-5	24	-	-	-	-

indicated that a part of the walls or floor had been built with brick.

Four-sided handmade iron nails were uncovered in three structures. Some of them do not have heads. Also a head of a nail was found (Fig. 22). All of these nails were found during the excavation and some of them were at depth of 15-20 cm. The depth and number of nails indicate that these were used for some structural element made of wood originally in the structures. Such nails have also been revealed in the other architectural ruins of the complex.

Fragment of sculpture (?) A small stone fragment like a piece of a finger from a stone sculpture of a deity was found in the northwest corner of the fence of IB.VIII D, at a depth of 15-20 cm below the ground surface (Fig. 23). No other stone could be identified as a fragment of a stone sculpture found at the sites. On the other hand, this is only one piece of evidence that may indicate that a Maharaja sculpture was originally in the structure.

Modern coins were also found in limited numbers in three of the structures and almost all of them were on the ground surface (Fig. 24). These coins, Mongolian from 1970 and 1981, Russian from 1997, 1998 and 2003 and Chinese from 2000, are offerings of people who came to the complex and worshipped Ikh Burkhan.

Domestic goods The function of the domestic goods except the pieces of a cast iron cauldron has not been determined. The goods may belong to the time of the structures because all of them are handmade anyway (Fig. 22). Two 2-2.5 cm thick pieces of ceramic vessel were found near the site IB.VIII D. The inner and outer surfaces of the ceramic pieces were dark brownish-glazed. /Fig. 25/

Animal bones A few fragments of small cattle bones found by excavation are not traces of sacrifice but accidental remains (Fig. 26/).

Conclusion

It was clear before excavation that the position and orientation of the Maharaja sculptures and the stone pedestals do not coincide with those of the structures. The original position of the fence stones and column bases also confirmed it.

The total size of the excavation site was 90.75 m² and the maximum depth was 30 cm below the ground surface. Some places below the four Maharaja sculptures and the stone pedestals were not included in this excavation. Through the excavation we clarified the organization, structure and function of these four structures.

Here, the four structures, oriented in the same direction as the complex, have been symmetrically placed in a rectangular site. A rectangular fence made of stones was around each of the structures. Its longer axis coincides with that of the complex. In some parts of the fence, the stones were in two rows. There is a main road between the structures and it goes from the entrance area of the complex to Ikh Burkhan. Each of the structures had an entrance facing the main road, which had a stone slab. No remains of a special rammed-earth floor were found inside the structure. In the four corners of the stone fence, red-painted wooden columns had been erected on the cylinder-shaped plaster bases. There was also a wooden column (columns) at the center of the structure. Perhaps the structure had wooden walls and a tiled roof. The iron nails found at the site might have been used for such wooden structural elements as columns, walls and the framework of the roof.

The structure and organization of the structures and the finds from the site are leading us to the following conclusions:

- These four structures were simple-structured small houses.
- The function of such houses was to contain the Maharaja sculpture, a work of religious fine art.

Table 6. Finds

No	Finds	Number	Location		
1	Building materials	13 pieces	9	IB.VIIIA	
			3	IB.VIIIB	
			1	IB.VIIIC	
	Brick	3 pieces	1	In front of the SW column in IB.VIIIA	
			Small 1	IB.VIIIB	
			1	IB.VIIID	
	Iron nails	9	5	IB.VIIIA	
			3	IB.VIIIC	
				IB.VIIID	
2	Fragment of sculpture (?)	1	IB.VIIID		
3	Modern coins	9	3	IB.VIIIA	
			4	IB.VIIIB	
			2	IB.VIIID	
4	Domestic goods	3 pieces	2 (1 of them is a rim fragment)	IB.VIIIA	
			1	IB.VIIIC	
			1	IB.VIIIC	
			2 pieces	Near the site IB.VIIID	
			1	IB.VIIIA	
5	Ecofacts	1 piece		IB.VIIIB	
			4 pieces	1	SE of IB.VIIIA
				3	In front of the SW column in IB.VIIIA
				1 piece	IB.VIIIB

- It is an architectural complex which consists of the same style of houses built with the same materials in the same period.
- It was also built as part of the main construction project of the complex.
- Therefore, the most likely possibility is that these four houses were built around 1859-1864, when the Ikh Burkhan complex was built.
- Later, the houses were badly damaged and their building materials were extensively looted. The works of fine art that should have been in the houses were also removed somewhere.
- It is clear that Ikh Burkhan is not only an ensemble of stone statues of deities, but also a Buddhist architectural complex.
- After the damage to the complex, the structures were never rebuilt. But now the Maharaja structures require professional conservation and reconstruction.

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Fig. 1. The Ikh Burkhan complex and the site IB.VIII

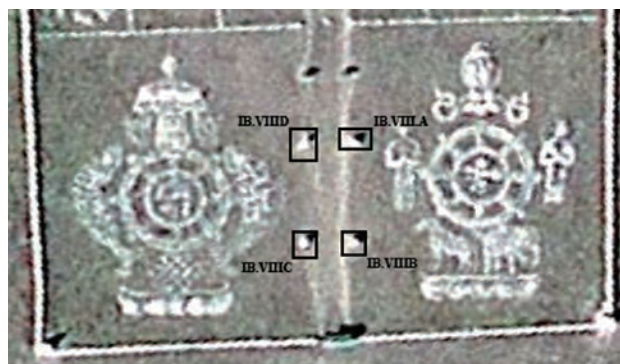


Fig. 2. Excavated sites

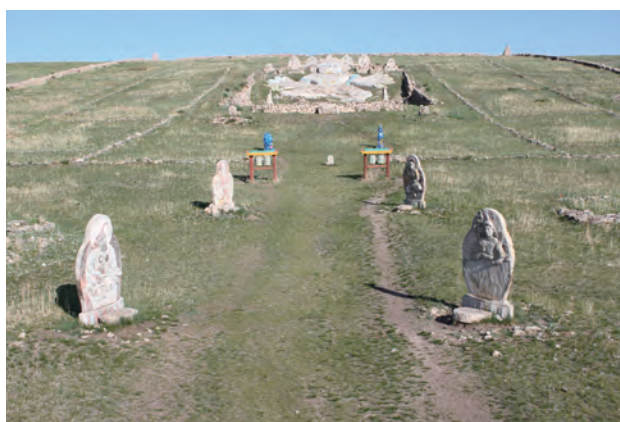


Fig. 3. The Ikh Burkhan statue and the sculptures of The Four Maharajas. From the gate of the complex



Fig. 4. The site IB.VIIIA before excavation. From the east



Fig. 5. The site IB.VIIIB before excavation. From the west



Fig. 6. The site IB.VIIIC before excavation. From the east



Fig. 7. The site IB.VIIID before excavation. From the east



Fig. 8. The site IB.VIIIA. From the south



Fig. 9. The site IB.VIIIB. From the south



Fig. 10. The site IB.VIIIC. From the south



Fig. 11. The site IB.VIIID. From the east

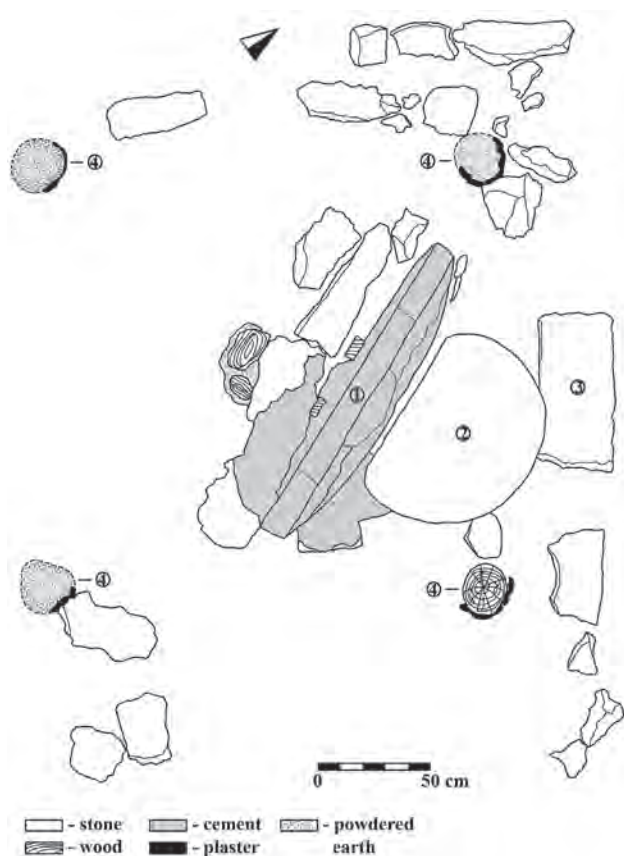


Fig. 12. Plan of the IB.VIII D structure: 1 - Maharaja sculpture; 2 - Stone pedestal; 3 - Entrance stone; 4 - Column remains



Fig. 14. Entrance stone of the IB.VIII D structure. From the east



Fig. 13. Stone fence of the IB.VIII B structure. From the southeast



Fig. 15. Column remains in the northeast corner of the IB.VIII B structure. From the east



Fig. 16. Column remains in the southeast corner of the IB.VIII B structure. From the south



Fig. 17. Column remains in the northwest corner of the IB.VIII B structure. From the south



Fig. 18. Column remains in the northeast corner of the IB.VIII D structure. From the west



Fig. 19. Column remains in the northwest corner of the IB.VIII D structure. From the south



Fig. 20. Column remains at the center of the IB.VIII D structure. From the west



Fig. 21. Pieces of roof tile from the IB.VIII A structure



Fig. 22. Iron nails and fragments of domestic metal goods



Fig. 23. Finger fragment of a stone sculpture (?) from IB.VIII D



Fig. 24. Modern coins from IB.VIII A

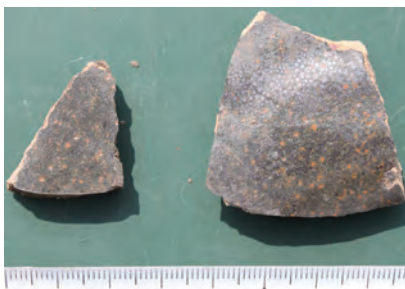


Fig. 25. Pieces of ceramic vessel found near the site IB.VIII D



Fig. 26. Small cattle mandible and its teeth from IB.VIII B



Nepal and The Silk Roads Serial World Heritage Nomination

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Background

Based on the World Heritage nomination Action Plan developed in Samarkand, Uzbekistan in October 2006, the Concept Document for the Serial Nomination of the Silk Roads in Central Asia and China was adopted in Dushanbe, Tajikistan in April 2007, by the Central Asian and Chinese States Parties, and amended in June 2008 during a further Silk Roads consultation workshop in Xi'an, China. In May 2009, at the Silk Roads consultation meeting in Almaty, Kazakhstan, the participating States Parties (China, India, Iran, Japan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) agreed to establish an intergovernmental Coordinating Committee on the Serial World Heritage Nomination of the Silk Roads. This workshop also decided to organize the first meeting of the committee in Xi'an, China from 3 to 6 November 2009; in which Nepal and Afghanistan were also welcomed to participate. After that Nepal has been continuously participating in different activities of the committee and executing decisions as well. This was the beginning of Nepal's involvement in the process of the Silk Roads World Heritage Nomination.

In November 2009, the first meeting of the Coordinating Committee took place in Xi'an, China, and at this meeting, the States Parties appointed the ICOMOS International Conservation Centre (IICC) Xi'an to be the Secretariat; they also decided to create an expert group for documentation, and requested UNESCO and ICOMOS to carry out a Thematic Study of the Silk Roads (Second Meeting of the Coordinating Committee on the Serial World Heritage Nomination of the Silk Roads, 3-6 May 2011, Ashgabat, Turkmenistan).

Some fifty potential *Silk Roads Heritage Corridors* have been identified, with twenty corridors being considered as a medium priority, while three corridors within the five Central Asian countries and China were recommended as a top priority for the first phase of the serial and trans-boundary World Heritage Nomination of the Silk Roads at the Second Meeting of the Coordinating Committee of the Serial World Heritage Nomination of the Silk Roads, which was successfully convened in Ashgabat, Turkmenistan, from 3 to 6 May 2011 (<http://whc.unesco.org/en/news/751/> extracted on 8th May 2014).

Silk Roads Serial World Heritage Nomination-related Activities in Nepal

When Nepal was invited to the first meeting of the Coordinating Committee in Xi'an, China, Nepal did not have a vision to further pursue the concept of Silk Roads and/or its corridors; however, Silk Roads-related activities have actually been conducted in different ways in Nepal for some decades: i.e. excavation of cave cities in the Muktinath Valley, archaeological research in the Kaligandaki region, studies on different aspects of Lo

Manthang, and so on. These activities also support this process. After participating in the Ashgabat meeting of the Coordinating Committee and receiving the formal decision from the committee, Nepal has nominated a National Coordinator as well as a Focal Point for the formalization of the process and dissemination of all processes at the national level, as well as international coordination.

Similarly, Nepal has begun to prioritize the process of allocating funds in the national government budget; however, this was nominal initially; we also started to identify corridors, linkages to settlements, heritage and other aspects. The Department of Archaeology, the sole government authority for the conservation and management of cultural heritage in Nepal, conducted a preliminary identification of silk roads and corridors in a workshop of national experts called the Nepal National Workshop on the "Serial World Heritage Nomination of the Silk Roads" on 19th – 20th April 2011. International experts were also invited from UNESCO's World Heritage Center at that time, who joined the national experts in initially identifying three corridors existing within the territory of Nepal and it was suggested that these be studied in detail later.

After the first workshop in April 2011, in the same year, July 25-27, another National Workshop on "Nepal and the Silk Roads" was conducted jointly by the Department of Archaeology and the UNESCO Office in Kathmandu. The participation of the UNESCO Advisory Mission from the World Heritage Center was invaluable for this workshop; the experts from the mission also suggested that continuous research or study be carried out on Silk Road Corridors within the territory of Nepal that would be extended towards China to the north and India to the south.

The national experts agreed to establish three initial identified routes as corridors which were connectors to Nepal within the main Silk Roads either via China or India. These three corridor routes are:

1. [Benaras-] Kapilavastu – Lumbini – Butwal – Ridi – Beni – Kakbeni – Lo Manthang - [Guge-Puhrang- Leh – Kasmir then to Khasgar].
2. [Bodhgaya-] Surkhet – Jumla – Simikot - [Taklakot and Mt. Kailash] (marked by Kirtistambhas (stone steles) has already been proposed by Tim William in his paper on Askabad).
3. [Patna (Ancient Pataliputra)-Vaisali-] Simraungarh – Sindhuli – Kathmandu – Nesti – Kodari - [Xigatse-Lhasa-Tharchindo-Thindafu to Peking].

However, the three routes existed to connect with the major Silk Road from Nepal, a point on which the national experts were in agreement, but there is still

a need to study all three routes in detail including all possible diverse aspects.

In the same year, in September 2011, the Department of Archaeology, Government of Nepal organized another National Consultation Workshop on “Nepal and the Silk Roads” in close coordination with the UNESCO Office in Kathmandu. In this workshop, the national experts tried to focus on some of the specific aspects and on a single corridor of the Silk Road. However, there was a robust discussion on the merits of all three possible corridors. Among them, the strongest candidate is [Benaras-] Kapilavastu – Lumbini – Butwal – Ridi – Beni – Kagbeni – Lo Manthang - [Guge-Puhrang- Leh –Kasmir then to Khasgar], on which most of the experts were agreed. They also agreed to prepare a detail inventory, identify the possible peripheral heritage clusters, including the mapping of all of these to establish a route of the Silk Road corridor in Nepal. A detailed inventory, full documentation, other related information and mapping of the specific corridor and its extension clusters were the major ideas to start initial work to prepare the nomination document, on which almost all of the experts, policy makers and other participants were agreed during the workshop.

After these three national workshops organized within the country, Nepal has been involved in the execution of decisions; the process is slow but gradually being implemented. Similarly, Nepal has been participating in the international workshops and meetings of the Coordinating Committee as well. Most of the portions of the route are being studied within the focus corridor route [Kapilvastu – Lumbini – Butwal – Ridi – Beni – Kagbeni – Lo Manthang] and the detailed inventory and mapping are being prepared as well.

As part of its involvement in the various activities for the establishment of a Silk Road Corridor in the territory, Nepal will organize a regional (South Asian) workshop this year, 2014, which should be beneficial to all of the South Asian States Parties in strengthening their capacity to prepare the World Heritage of Silk Roads.

Conclusion

The Silk Roads Serial World Heritage Nomination follows the concept of a transnational or trans-boundary

nomination for UNESCO’s World Heritage List, by which it will be possible to engage in the international exchange of culture, knowledge and other aspects as a trans-boundary situation. However, in the initial period, some stakeholder nations including China and Japan agreed to prepare for the nomination of their entire routes and started to work together to establish a Coordinating Committee, with the aim of gradually coordinating with the possible states parties; Nepal has also been involved in this process since 2009, and has been working together with other nations to establish at least the ancient corridors of the Silk Roads within its territory.

In this process, mapping, identification of corridors, possible extension of peripheral clusters or settlements, and preparation of a detailed inventory are some examples of the initial preparatory documentation work required for preparation of the Silk Roads Serial World Heritage Nomination in the future as per the International Coordinating Committee. Currently, Nepal is in the process of formulating a National Coordinating Committee to coordinate all national experts, institutions and other related matters within the country, as well as to international committees and institutions regarding this process.

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Lo Manthang, 13th Century Mud Walled City, settlement within the Nepal Silk Road Corridor



Stupa in the Cave Settlements, Muktinath Valley.
Photo: Sukra Sagar Shrestha



Stupa in the Cave Monastery, Cave Settlement in Muktinath Valley
Photo: Sukra Sagar Shrestha



Caves from a primitive settlement near Chaile village above Kaligandaki village



Gateway into and out of the village and chorten with mane wall



Samar village - a unique settlement



Project Njord: Declaration of the 1926-1932 Norwegian Whalers' Base, Price's Inlet, Rakiura/Stewart Island as an Archaeological Site A Southland Coastal Heritage Inventory Project ("SCHIP") Cultural Heritage Project

Dr Matthew Schmidt, Regional Archaeologist Otago/Southland Heritage New Zealand

Introduction

My two previous International Correspondent Reports (Volume 11, 2012 & Volume 12, 2013) described Project Njord, a cultural heritage project which had three aims: 1) to undertake a marine archaeological survey of the water in front of the Norwegian Whalers' Base ('The Base') to determine the nature and extent of any marine heritage structure/features/items, 2) to gather additional terrestrial heritage data to supplement that already recorded previously at The Base, and 3) 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 archaeological site under Section 9(2) of the Historic Places Act (1993). Protection of the site as an archaeological site would deter fossicking, which the site has been at increased risk from in recent years, particularly the removal of whale catcher/chaser boat propellers. More importantly, such protection would also help in preserving The Base for future generations of New Zealanders and Norwegians wanting to visit and enjoy the site, particularly relatives of the whalers.

This final report describes the successful final stage of the project, where legal protection of this cultural heritage site as an archaeological site has been achieved.

Brief History of the Norwegian Whalers' Base

For those not familiar with this cultural heritage site from previous reports, a brief history of The Base is provided here.

Between 1926 and 1932 the Ross Sea Whaling Company of Sandefjord, Norway established its repair base for whale catcher vessels in Price's Inlet, Rakiura (Figures 1 to 8). The Ross Sea Whaling Company named their shipyard 'Kaipipi Shipyard' but it is also known as 'The Base', 'Price's' or 'The Whalers' Base' (Watt 2006:3). Watt (2006:3) 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 a 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 1853 whaler the Othello (the hulk was fixed, not floating). The buildings were weatherboard and built on concrete foundations (pads, footings or piles) with the manager's house and bunkhouse being kitset 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.

Why was it important to protect The Base?

As noted above, The Base was at increased risk of fossicking, particularly the whale chaser boat propellers. In addition, The Base has high cultural heritage significance to Rakiura, New Zealand and Norway because:

- * 'The Base' is part of the story of Rakiura/Stewart Island.
- * The site is unique in NZ in terms of the history of Norwegian whaling.
- * The site is directly related to the creation of the Ross Dependency in Antarctica in 1923.
- * There are tangible heritage remains which can still be seen and interpreted, some of which, such as the hulk of the 1853 American whaler the Othello, are internationally rare.
- * There are persons living today who are either related to the Norwegians from The Base or persons who worked on the ships.
- * People today still live in buildings in Oban (Rakiura's main town) which were recovered from The Base.

Protecting The Base through 'Declaration' under the Historic Places Act (1993)

An archaeological site is defined under the Historic Places Act (1993) as any place in New Zealand that:

- (a) either-
- (i) was associated with human activity that occurred before 1900; or
 - (ii) is the site of the wreck of any vessel where that wreck occurred before 1900; and
- (b) is or may be able through investigation by archaeological methods to provide evidence relating to the history of New Zealand.

In June 2014, the Historic Places Act (1993) was superseded by the Heritage New Zealand Pouhere Taonga Act (2014), and this definition of an archaeological site was changed to include any pre-1900 building or structure or part of a building or structure (these structures were always considered sites but this was made clearer in the new Act to avoid any confusion). Hence, any post-1900 heritage site does not have any direct legal protection in New Zealand.

The most effective way of legally protecting a significant cultural heritage site which postdates 1900 AD is to have

that site declared an archaeological site by the Board of Heritage New Zealand (prior to June 2014 known as the New Zealand Historic Places Trust) under Section 43 of the Heritage New Zealand Pouhere Taonga Act (2014). This gives that site the same legal protection as a pre-1900 site where the site cannot be modified or destroyed without an Archaeological Authority from Heritage New Zealand. This declaration is notified in the New Zealand Gazette, hence this protection mechanism is often termed ‘Gazettal’.

Heritage New Zealand has declared five post-1900 heritage sites as archaeological sites since 1993. These five sites were protected 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.

In February 2014, a proposal was presented to the Board of the New Zealand Historic Places Trust to have the 1926-1932 Norwegian Whalers’ Base declared an archaeological site. This proposal contained a detailed archaeological assessment of The Base (Figures 9 & 10), the proposed extent of the protection to include all the known terrestrial and marine heritage related to The Base (Figure 11), and support from the landowner and the councils that manage the land and marine area on which the site lies.

On 27 February 2014, the Board of the New Zealand Historic Places Trust declared the 1926-1932 Norwegian Whalers’ Base, Price’s Inlet, Rakiura/Stewart Island an archaeological site, and in doing so also created New Zealand’s first legally protected post-1900 marine heritage site. The declaration was notified in the New Zealand Gazette on 20 March 2014.

A Norsk Feiring: A Norwegian Celebration – 4 to 6 April 2014 and Recognition of the Project

The overarching goal of Project Njord was to ensure that this important part of New Zealand and Norwegian history was preserved for future generations of New Zealanders and Norwegians to enjoy, particularly those relatives of the Norwegians and New Zealanders who worked at The Base and who undertook whaling in the Ross Sea.

In April 2014, the Rakiura Museum and Stewart Island community celebrated the first arrival of Norwegians on Stewart Island 90 years ago when the ship the James Clark Ross (Captained by C.A. Larsen) first entered Paterson Inlet. This arrival saw the bringing together of cultures from opposite ends of the globe, and although the Norwegian Whalers had returned home by 1932, close ties were formed with the Stewart Island community with some Norwegians marrying locals and staying on. The April 2014 event saw 180 people celebrate the Norwegian arrival, with many of these people being relatives of the original Norwegians, as well as some of the New Zealanders who had worked with the whalers. The event drew out a number of artefacts related to the site retained by relatives and locals, one important item being a cabin door from the Othello (Figure 12).

On 5 April, 160 people travelled by boat to the site and as part of this day’s celebrations, a plaque announcing the protection of The Base as an archaeological site was unveiled by the Royal Norwegian Consulate General of New Zealand, Graeme Mitchell (Figure 13). Afterwards, a group photo was taken of all who attended, with many being relatives of the Norwegian Whalers or New Zealanders who had worked with the Norwegians (Figure 14).

The fieldwork which resulted in the protection of The Base has also been recognised. At the New Zealand Archaeological Association’s 60th Anniversary Conference in June 2014, the fieldwork for Project Njord received the Groube Fieldwork Award. The award is made every second year “to the archaeologist who has made the most outstanding contribution to field work in New Zealand archaeology in the immediate past.”

Future management of The Base

Since the completion of Project Njord, proactive management of the site is being undertaken to aid in its preservation and to educate visitors. Permission has been gained from the local Harbour Master to have buoys placed around the hulk of the Othello to prevent this shallow lying wreck from being accidentally damaged by visiting vessels, and interpretation panels for visitors are being designed for installation at the site. Rock armouring of the front of the site is also being proposed to slow down or stop coastal erosion.

Acknowledgements

This project involved many people and could not have been achieved without them. I would like to thank: Rowley Moffett, the Environment Management Committee of Environment Southland, the Otago/Southland Area Office of the New Zealand Historic Places Trust, Subsurface Ltd (Andy Dodd & Matthew Carter), the Southland Coastal Heritage Inventory Project (“SCHIP”) partners, the Southland Museum & Art Gallery (David Dudfield), the Southland Branch of the New Zealand Historic Places Trust, the Rakiura Office of the Department of Conservation (Steve Meads, Sue Pasco), Phil Latham of the University of Otago Anthropology Department, Richard Hemi of the University of Otago Surveying School, and the Marine Archaeological Association of New Zealand (MAANZ).

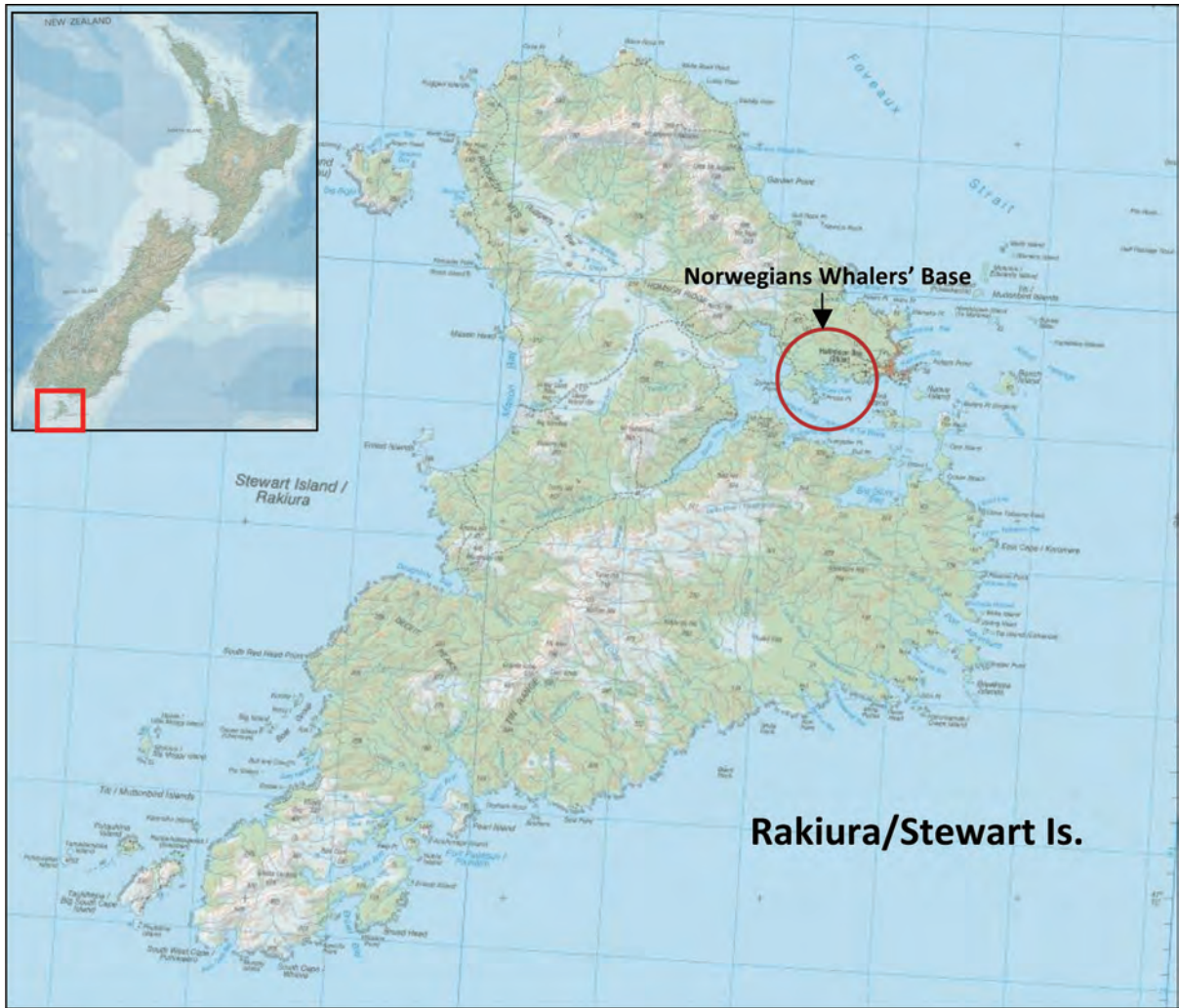


Figure 1. Location of the Norwegian Whalers' Base in Price's Inlet, Kaipipi Bay, Rakiura/Stewart Island. The sunken hulk of the 1853 ship the *Othello*, used as a dry jetty by the Norwegians from 1926-1932, is noted.



Figure 2. The Base ca. 1926-1932 showing a whale catcher at the start of the slipway at medium tide (Photo: Southland Museum & Art Gallery).



Figure 3. The Base ca. 1926-1932 showing the whale catcher repair slipway (centre) and the Othello Wharf (far left) (Photo: Southland Museum & Art Gallery).



Figure 4. Five Star whale catcher boats moored at the Othello wharf with another in the background (Photo: Southland Museum & Art Gallery).



Figure 5. The location of The Base and the Ross Sea, where whaling was undertaken.



Figure 6. The Star whaler catchers/chasers making their way through sea ice in the Ross Sea (Photo: Southland Museum & Art Gallery).



Figure 7. Factory ship Sir James Clark Ross and a whale catcher (Photo: Southland Museum & Art Gallery).



Figure 8. Whale catchers with their catch of whales waiting for the factory ship (Photo: Southland Museum & Art Gallery).



Figure 9. Extent of the Norwegian Whalers' Base as mapped for the declaration
(Graphic: Dr Matthew Schmidt).

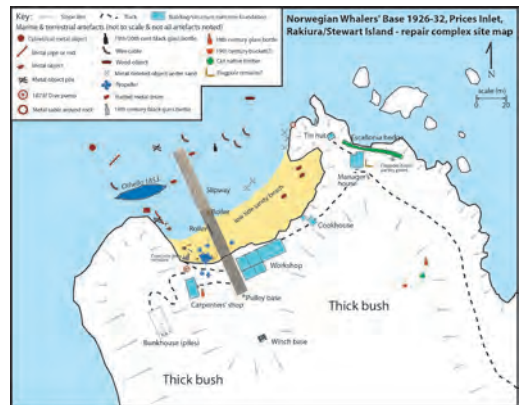


Figure 10. Detailed site plan of the active working area of the Norwegian Whalers' Base
(Graphic: Dr Matthew Schmidt).



Figure 11. The extent of the declaration area showing the terrestrial and marine boundaries. All terrestrial and marine aspects of the site are now protected as an archaeological site
(Graphic: Dr Matthew Schmidt).



Figure 12. The author with a cabin door from the 1853 American whaler the *Othello*
(Photo: Heritage New Zealand).



Figure 13. The Royal Norwegian Consul General for New Zealand, Graeme Mitchell (far left) with Heritage New Zealand staff, (left to right) Geraldine Bauman, Dr Matthew Schmidt & Jonathan Howard, after the unveiling of the plaque notifying the declaration of The 1926-32 Norwegian Whalers' Base as an archaeological site
(Photo: Heritage New Zealand).



Figure 14. Visitors to The Base during the Norsk Feiring (4 to 6 April 2014). Many of the people in the photograph are either related to the Norwegians from The Base or New Zealanders who worked with the Norwegian whalers. The two small boats in the background are original Norwegian Oselvar from The Base still used today by locals
(Photo: Heritage New Zealand).



Preserving the Historic Pipe Organs in the Philippines: A Cultural Necessity

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From 1998 until 2010, I was able to witness the San Agustin Church in Intramuros, Manila filled with people listening to various repertoires of classical music performed by International and local artists during a series of international music festivals, ecumenical concerts and liturgical masses. The San Music Festivals started after the restoration of the 18th century pipe organ located at the magnificent choirloft of San Agustin Church. The early presence of an organ in San Agustin Church can be traced back to 1762 when two small realejos were destroyed during the British invasion. Another one was installed shortly after and enlarged, incorporating the usable parts of the old one, from 1810 to 1813. Through the centuries, the San Agustin Church played a significant role in the development of choral music in the Philippines. The 18th Century Pipe Organ was installed for use during the citation of daily prayers. The organ was the perfect instrument to fill the needs of the liturgical celebrations. The 18th Century Pipe Organ of San Agustin Church reached its peak during the time of the Pakil-born Marcelo Adonay, a title of the church who later became a composer, conductor and organist. For centuries, the Pipe Organ of San Agustin Church has endured many natural human calamities. Its restoration in 1997 greatly contributed a musical tradition whose echoes have been silent for some time. The restoration was carried out with the joint cooperation of Diego Cera Organbuilders of Las Pinas and Mr. Federico Acitores of Organeria Torquemada from Palencia, Spain, the patronage of Agencia Española de Cooperación Internacional, and many Filipino philanthropists. Since then, beautiful music can be heard resounding at San Agustin Church. A document found in Valladolid, Spain states that the materials used for the construction were basically of native origin so that we can proudly say that this pipe organ is Spanish-Filipino made with Filipino materials by Filipino artisans. To quote from Sr. Acitores: "It is the only one in Manila of this style and antiquity. I sincerely believe that we behold a jewel which in addition to being valuable, is rare. It is a jewel because it deals with an instrument of quality, and rare because of its antiquity and style in a place in the world like the Philippines where an authentic baroque Spanish organ, constructed locally, should be specially valued."

There is an article by Prof. Dr. Guido Dedene from the University of Amsterdam entitled "A Tentative Exploration of the Historical Organ Patrimony of the South of the Philippines in the 19th Century" wherein he mentions that in general, most of the current historical patrimony goes back to the 19th century. Fr. Diego Cera, and in general the Augustinians and the Recollects, developed the patrimony in the South up to Manila, and exceptionally into the North. Historically, the pipe organ was the earliest keyboard instrument. Parishes and their priests were often proud to decorate their churches with honor for God, the Virgin Mary, saints, and so on. The organ

cases from the 17th to 19th centuries show very impressive caseworks, decorated as much as possible, and designed to make the people chant/sing the liturgy. The church organs are intimately connected with their churches, and form a unity of style. Fr. Diego Cera, Brother Otel, Brothers Roques and Amuezas were among the church builders of that period. The end of the 19th century marked an "invasion" of European organ builders.

The restoration of the other pipe organs present in the Philippines were carried out by Diego Cera Organbuilders as more and more of the religious custodians felt the need to restore and preserve the pipe organ in their respective churches. On November 17, 2011, the Swiss organist Guy Bovet, an expert on historic organs, came to the Philippines to record on CD the amazing sound of six historical pipe organs built during the colonial period: Loay, Loboc, and Baclayon in Bohol; Bacong in Negros Oriental; San Agustin Church, Intramuros, Manila; and Bamboo organ in Las Pinas City. The CD was launched on November 17, 2011 at San Agustin Church, Intramuros, Manila with a pipe organ performance. The proceeds were intended to help train young individuals about the use, value, and maintenance of a pipe organ.

Prior to the devastating October 2013 earthquake that occurred in Bohol and Cebu, a request was submitted by the Society for the Conservation of the Historical Organ in the Philippines (SCHOP) Incorporated, headed by Mr. Leo Renier (also founder of the International Bamboo Organ Festival), to have the 18 remaining historical pipe organs built during the Spanish colonial era and pre-war period (1600-1940) declared as NATIONAL CULTURAL TREASURES, including the 18th Century Pipe Organ of San Agustin Church, to prevent further extinction and to acknowledge the unique organ patrimony the country possesses.

In my paper last year, I indicated the condition of the churches in the Visayas region that were damaged during the devastating October 2013 earthquake. Some historic organs present in these churches were saved and some completely damaged, especially in the Bohol churches of Loboc, Loon, and Maribojoc, which totally collapsed. Due to the unfortunate state of the structure of these churches and the unrecovered pipe organs, the process of declaration of the 18 pipe organs in the Philippines as National Cultural Treasures may not be feasible.




There are detailed engineering studies, assessments, documentation, clearing, dismantling of delicate structures, and inventory of important exhibit items continuously being done in the affected churches in Bohol. The government agencies mentioned in my paper will commission Diego Cera Organbuilders and other experts in the field. These specialists can help determine

the real condition, identify the recovered parts of the pipe organs and make recommendations in cases where there

is a need to restore or dismantle them for safety reasons.

Inventory of the 18 Historical Organs in the Philippines

METRO MANILA

<p>1</p> 	<p>Location: San Agustin Church, Intramuros, Manila (Immaculate Conception Parish) Order of St. Augustine World Heritage Site (1993) National Cultural Treasure (1973)</p> <hr/> <p>The oldest pipe organ in the Philippines. Its lower manual division was constructed in the 18th century. The organ was damaged during the British occupation of Intramuros in 1762. It was repaired and expanded by a "maestro organero," Padre Diego Cera with the construction of the upper manual division together with the present casework which was completed in 1810.</p> <p>In 1997, its restoration was completed by the Diego Cera Organ Builders together with Sr. Federico Acitores of Torquemada, Spain.</p>
<p>2</p> 	<p>Location: San Sebastian, Manila Order of the Augustinian Recollects</p> <hr/> <p>The organ was imported from Ludwigsburg, Germany, built by EF Walcker in 1914. It was completed in 1919.</p>
<p>3</p> 	<p>Location: Parish of St. Joseph, Las Piñas City Diocese of Paranaque</p> <hr/> <p>The Las Piñas Bamboo Organ, a church component, was declared as NCT on November 24, 2003 built by Padre Diego Cera, Augustinian Recollect Priest from Graus, Spain. He started constructing the organ in 1816 and completed it in 1824 with the installation of the Horizontal Trumpets. Restored in 1973 by Johannes Klais Orgelbau in Bonn, Germany. Major overhaul and re-leathering in 2004 by the Diego Cera Organbuilders. The organ was restored in 1775 and 2004.</p>



4

Location: Tayabas - Quezon
Basilica of St. Michael the Archangel
Diocese of Lucena
Declared NCT on July 31, 2001

Organ was built by Loinaz in 1930.



5

Location: Parish Church of San Gregorio Magno
Diocese of San Pablo
Declared National Cultural Treasure
on July 31, 2001

Of the entire organ, only the "swallow nest" on which the organ was erected, has survived.

CEBU



6

Location: Argao
Archdiocesan Shrine of St. Michael
Archdiocese of Cebu

The organ has a complete technical description done by Hans Gerd Klais, in 1978, a study published in "Acta Organologica" (1979) Band 13, when the organ was still playable. It was built when Diego Cera was appointed prior in Baclayon (1815), and has remarkable similarities with the organs in Baclayon, Loboc, Loay



7

Location: Boljoon
Parish of Patrocinio de Maria
Archdiocese of Cebu
Declared National Cultural Treasure
on July 31 2001

Recent studies reveal that the organ was built by students of the Otores family, which was based in Palencia. Don Doroteo Otores, the third son of José Otores, was exclusively active in the Philippines, assembling the organs already constructed in Spain.



8

Location: Dalaguete
San Guillermo
Archdiocese of Cebu

This organ adds evidence to the presence of Otores in the Philippines. The organ has two look-alikes in Spain. (Ermita del Cristo Torremarte de Astudillo, and Monzoncillo, Segovia).

NEGROS ORIENTAL



9

Location: Bacong
Parish Church of San Agustin
Diocese of Dumaguete
Declared NCT on July 31, 2001

The organ was built (imported) by the famous Casa Roques Hermanos of Zaragoza, in 1894. It is similar to Jimenez and Bacong. It is different from organs built earlier since the keyboard is NOT divided. Stylistically, it is a modest-size Spanish Romantic organ. (a movement against old-fashioned style was going on, also in music). Restored in 2009.



10



Location: Baclayon
Inmaculada Conception Parish Church
Diocese of Tagbilaran
Declared NCT on December 7, 2010

Fr. Diego Cera was prior vocal in this place in 1815 and 1821. It is without any doubt built under his guidance. Unusual is that the organ has two manuals (the other exception is San Agustin in Intramuros). This manual was removed in 1930, and rediscovered by organ builder Cealwyn Tagle while the restoration was going on in 2008.



11

Location: Dimiao
San Nicolas de Tolentino Parish Church Complex
Diocese of Tagbilaran
Building declared NCT on June 28, 2011

This organ belongs to the "Diego Cera School", which includes Baclayon, Loay, Loboc, Loon and Argao.



12

Location: Garcia Hernandez
St. John the Baptist Church C.A. 1898
Diocese of Tagbilaran
Declared ICP Category III on September 27, 2013

This organ is built (imported) by the Casa Roques Hermanos, like Bacong and Jimenez. Lost are the organs in Miagao (Jaro), Hinigaran (Bacolod), Duero (Tagbilaran) and Dumaguete, built by the same company.



13



Location: Loay
Parish of the Holy Trinity
Diocese of Tagbilaran
Declared NCT on October 22, 2013

The organ was installed in 1841, according to an inscription on the note desk. It is built in the style of the "Diego Cera School". The restorers in 1999 could only recover 60% of the mechanical parts. All the pipe had disappeared. They had been used to make weights for fishing nets. The organ "survived" the earthquake of October 2013, but needs to be protected from the elements while waiting general overhaul.



14



Location: Loboc
Parish of San Pedro and San Pablo
Diocese of Tagbilaran
Declared NCT on July 31, 2001

The organ has been built during the first half of the 19th century. It is very similar to the organs of Dimiao and Loay. The town has a very active musical life. The organ can collapse any time, since it is hanging on the wall which has several cracks. The organ will have to be removed temporarily whatever the future plans will be. Restored in 2003.



15



Location: Loon
Nuestra Sra de la Luz Parish Church Complex
Legal owner: Diocese of Tagbilaran
Declared NCT on December 6, 2010

This was the most important organ in Bohol, based on the number of "trumpets", the same number as San Agustin in Intramuros. Loon had a choir school (the building was removed to widen the patio) and was in continuous competition with Loboc. It belongs to the "Diego Cera School." The organ was buried under the rubble of the church which collapsed completely. Wooden parts can still be recovered.



16



Location: Maribojoc
Parish Church of the Holy Cross
Diocese of Tagbilaran
Declared NCT on May 5, 2010

The organ is a product of the Otorel family, and probably built in 1890. Typical are the "Ave Maria chamades". The organ has several twins in Spain (in Pinel, Palencia and Vegafria, Segovia)

ZAMBOANGA DEL NORTE



17

Location: Dapitan – Zamboanga del Norte
St. James

Diocese of Dipolog

The old town of of Dapitan, Zamboanga del Norte was declared HZ on May 27, 2011

Rizal travelled around in Europe and learned that Philippine culture could not be narrowed down to Spanish culture. The organ style of the Otores's was openly declared as "old fashioned" by Amezua (who became the teacher of Loinaz). Other countries started importing organs: Walcker from Germany, Cavaillé-Coll/Mutin from France (Manila Cathedral) and Walker from England.

This organ was built by Walcker in 1892 (as mentioned in his opus-list under that year as "a 4-stop organ exported to the Philippines," ordered while Rizal was living in exile).

MISAMIS ORIENTAL



18

Location: Jimenez

Parish Church of San Juan Bautista

Archdiocese of Ozamiz

Declared NCT on July 31, 2001

This organ was erected (imported) together with the ones of Bacong (Negros Oriental) and Garcia Hernandez (Bohol) by the Roques Hermanos Constructores of Zaragoza (Spain). Restored in 2011.

Legend: ▲ Organs hit by the earthquake of October 2013

WHS- World Heritage Site / NCT- National Cultural Treasure/ ICP-Important Cultural Property/ HZ=Heritage Zone

Recent efforts are being made to save and recover what is left of the pipe organs in Bohol with the help of the limited number of experts in the country. Knowledge about the preservation, historic value, design and installation of these pipe organs is confined to a few Filipinos who had the privilege to study in a foreign country or those who were trained locally by these experts. Also, not much is written about these pipe organs. The Philippines is faced with future challenges and problems. Our government institutions can hopefully subsidize the training of more Filipinos in this field. The preservation and restoration of the Historic Pipe Organs in the Philippines is a must; it is a cultural necessity.

ACKNOWLEDGEMENTS:

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Architecture in Ancient Sri Lanka (1st Part)

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Department of Archaeology, Sri Lanka

(This paper depicts a pictorial overview of the ancient architectural edifices remaining in the present and details of some of their characteristics.)

The skill displayed by the architects of ancient Sri Lanka is due mainly to the discipline invoked by Buddhism. This architecture exemplified the changes that took place in the religious environment as well.

Classification of Architectural Edifices

- i. Religious - shrines/residences/service buildings/temples
- ii. Royal - palaces/forts/royal gardens
- iii. Habitats - rock caves/dwellings/mansions
- iv. Public - wayside resting places/bridges/granaries

This includes buildings and other appurtenances with foreign architectural features, which appeared in the aftermath of foreign invasions.

Brick Technology

The development of bricks, irrespective of how they evolved, has been beneficial to humankind, and this is likely to be a permanently invaluable invention. Bricks appeared for the first time as early as the 2nd century BC.

It is believed that wattle and daube walls were used before the advent of bricks. (Fig 1) (Fig 2)

The hard clay layer situated about 10 ft. below the surface is excavated and brought to the surface to be beaten with a mallet into small pieces. These pieces of clay are heaped and treated with water until the required consistency is reached. The mixed clay is made into smaller lumps and put aside for about a week to season. The lumps are then pressed into wooden moulds. The moulds are turned upside down to eject the lumps, now in the shape of bricks. They are then sun dried for about a week. The bricks are placed in a kiln and fired for two days. To avoid cracks appearing in the fired bricks, a small quantity of sand is added to the clay mix. Early man made stronger bricks by increasing the proportion of sand to be added to the clay.

Composition of a brick

Mineral	8 ¾"x4 ¼"x2 ¾" Modern brick	18"x9"x2" Old brick
Sand (Quartz)	30-40%	50-60%
Clay	55-65%	35-45%
Voids	1-5%	3-8%
Load bearing capacity	230 lbs/sq. inch	621 lbs/sq. inch

Protection of Bricks

The author of the Mahavamsa (*The mahavamsa*, "The Great Chronicle", is the most important chronicle record written in the Pali language. It describes the society and people who lived and build our nation from the coming of Vijaya in 543 BC to the reign of King Mahasena (334 – 361) (6th century BC to 4th century AD).) mentions the production of bricks for the Mahathupa as follows: "Ulu waduwek kiyanne vanehi kullen wadu kalbi ema daagalehi ambarawa mati amunak (ek dawasak gewannemi) mebi chaiythyebi thrunadibu da nowannabu ya". (Then an experienced and shrewd master builder said to the King: "I shall pound (the sand) in the mortar, and then, when it is sifted, have it crushed in the mill and (thus will use) one ammanna (only) of sand".) (Fig 4)

Bricks were produced in different shapes and sizes to suit various needs. The bricks had indentation marks on them for the purpose of identification to facilitate their selection for the type of structure that they were to be used for.

Artistic bricks were also produced. It is believed that the designs on them were symbols depicting religious-related architectural features and mythical beliefs.

Brahmi script markings were indented in bricks to identify the craftsman or to indicate the grade of his skill (Fig 5) (Fig 6)

The brick wall is strengthened by the thin layer of mortar to bond the bricks. The thick plaster makes the brick wall waterproof. The exterior view of the wall shows the bricks placed one against the other such that the surface is flush while the inner view shows that the bricks are laid with plaster-filled masonry joints. (Fig 7)



(Fig 1) Wattle and daub building, 19th century AD



(Fig 2) Ancient brick kiln, 12th century AD



(Fig 4)



(Fig 5) Artistic bricks



(Fig 6) Artistic bricks

(Fig 7) King's Palace, Polonnaruwa, 12th century AD

Patterns of various brick structures

Corbelled

Spanning the space between vertical brick walls using courses of bricks to form an arch. (Fig 8)

Circular

Spanning the space between two vertical brick walls using semi circular shaped bricks. (Fig 9)

Corbelled and circular

Leaving several corbels inside the two vertical brick walls and spanning the space by placing bricks on it in a circular manner. (Fig 10)

Timber Crafting Technology

In the early periods of Sri Lanka, buildings were constructed with clay, mud walls and wattle and daub. By the 7th – 8th centuries AD, timber was the predominant material used in constructing the ancient buildings of Sri Lanka. Thereafter the timber design tradition of buildings changed to the rock design tradition. Even so, the roofs of all the buildings continued to be designed in timber. The old timber structures and their ruins still remaining mainly belong to the medieval era.

In the fabrication of timber components for the construction of the ancient buildings prominence was given to strength rather than to aesthetics. This strength and an impressive appearance were given prominence in the old buildings. Mee (*Madhuca longifolia*), Na (*Mesna ferrea*), Gammalu (*Pterocarpus marsupium*), and Palu (*Manickara hexandra*) were the woods commonly used. (Fig 11)

In ancient times, the technology of timber in Sri Lanka remained highly developed. The timber pillar was the best known creation. The pillar head is the most striking feature of medieval buildings. These are able to support the weight of the huge timber beams placed horizontally upon them with ease. The pillar head helps to extend the eaves of a building. (Fig 12)

Wall plates were jointed by using scarf joints. While the rafters of the buildings generally had carvings of motifs, where curved rafters were used the deflections of the rafters were avoided by use of wooden pieces called “idda”. (Fig 13)

Roofs of buildings not requiring a ridge plate were constructed using a circular apex of roof rafters, thereby avoiding the use of a central column. (Fig 14)

Ancient doors were without hinges. A door sash was fixed

to the upper and the lower horizontal door frames by two tenons. (Fig 15)

Tile production Technology

Man used tree shades, tree burrows and rock caves before the use of houses with tiled roofs.

Roofing materials have an important place in architecture. Tiles made of materials such as clay and copper have been found, and coloured roof tiles with a glossy finish have been found near the Maha Pali alms hall of Anuradhapura.

A hitch was fixed under each tile to prevent the tiles from sliding down. Some tiles had holes for nails to fit in. The cut creases on the top surfaces of the tiles helped the water to drain. (Fig 16) (Fig 17)

During the Anuradhapura period, roof tiles were trapezoidal shaped and had creases from top to bottom etched by fingers. Later, in the Polonnaruwa period, the tiles became rectangular shaped.

Several layers of tiles kept one layer atop the other on the roof, and reduced the temperature within the building. (Fig 18)

Stone Technology

The stone industry was in a more advanced stage of development during the Anuradhapura and Polonnaruwa periods than in the medieval era. It is evident that the stonemasons were mainly of South Indian origin.

Huge rocks were separated from the parent rock by drilling wedges into 100-200 mm wide cleaves made with chisels. They were subsequently put to use in various creations such as pillars, arches, doors, tiles, bridges, foundations and sluices. The smallest chisels were used to make the surface of these rocks smooth. (Fig 19)

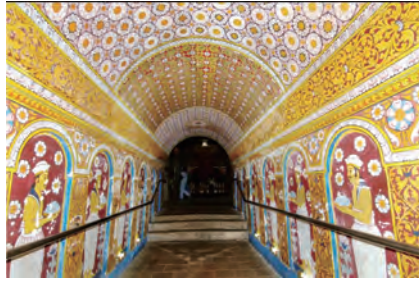
Stones not harmed with tools were used in the construction of the megalithic tombs of Ibbankatuwa. (Fig 20)

Even the Padavi Gampola cromlech is a creation made of stone. (Fig 21)

The Pali commentaries mention that the Bhikkus, who lived in rock caves, took steps to enlarge the caves by lighting bonfires, causing the rock to scale and disintegrate. Drip edges were constructed on top of the cave openings to prevent rainwater entering the cave. (Fig 22)



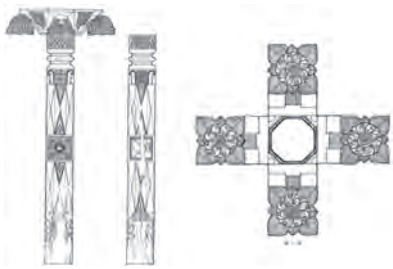
(Fig 8) Image House, Galmaduwa, 17th-18th centuries AD



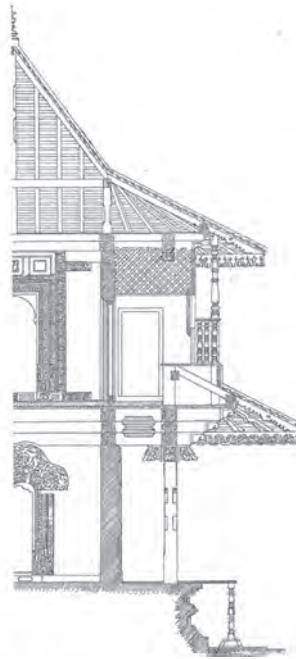
(Fig 9) Temple of Tooth Relic, Kandy, 17th-18th centuries AD



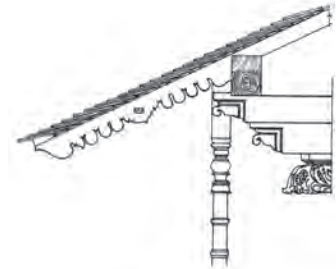
(Fig 10) Lankatilaka Image House, Polonnaruwa, 12th century AD



(Fig 12) Pillar head of the Panavitiya Resting Place (Ambalama)



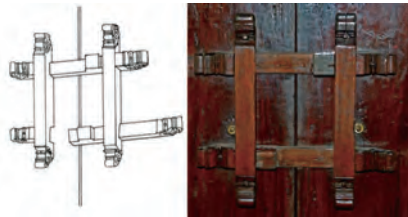
(Fig 11) Cross section of the Temple of Tooth, Kandy, 17th-18th centuries AD



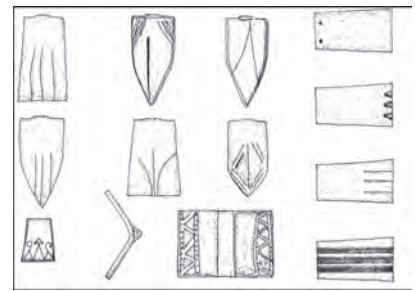
(Fig 13)



(Fig 14)



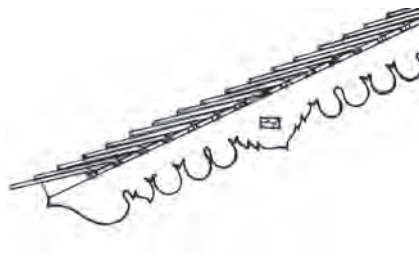
(Fig 15) Timber lock at the Malwatte Monastery, Kandyan period



(Fig 16) Tiles of different shapes and sizes were designed to suit particular locations on the roof



(Fig 17) Tiles in different shapes and sizes



(Fig 18) Several layers of tiles were laid



(Fig 19)

To transfer the weight of the structure evenly on the ground, the columns were supported on rock slabs or on brick foundations. To maintain the equilibrium of the columns the centre of gravity was located as low as

possible. (Fig 23)

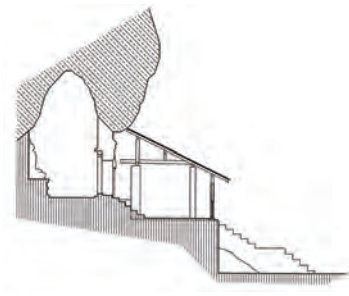
Wedges were used to keep the structure stable and to prevent it shifting horizontally. The rock blocks of the



(Fig 20) Megalithic tombs at Ibbankatuwa



(Fig 21) Cromlech at Padavi Gampola



(Fig 22)

twin ponds (Kuttam Pokuna) were held together for stability by the use of stone pegs. (Fig 24) (Fig 25)

Stupa

The history of Sri Lanka dates back to the 3rd century BC, when Buddhist traditions were established on its soil. In India prior to the 6th century, the relics of nobility were entombed and stupas were built over them. The earliest stupas in this country were built according to the tradition of the North Indian stupa tradition of Sanchi and others, and underwent extension over time by the appropriation of new accompaniments.

According to the Theravada tradition, Lord Buddha's corporeal relics were entombed and stupas were built over them. The stupa Indikatu Saya of Anuradhapura, erected after depositing Doctrine Relics, is considered to be an act of Mahayana tradition. (Fig 26)

Professor Paranavithana identifies the Sathmahal Prasadha of Polonnaruwa as a stupa from the 12th century AD. (Fig 27)

Some stupas were erected to commemorate special incidents. (Fig 28)

Construction of Stupas

The foundation of a stupa generally extends up to the rock on which it is situated. It is mentioned that in some instances, the foundation of the stupa is prepared by laying huge boulders on soil moist with water and letting elephants tread on it to compact the soil. The stupa is built on a platform raised above ground level. Around the platform boundary walls, entrances and decorative steps are constructed. The dome of the stupa is made solely out of brick and plastered lime. Relic chambers are built within the dome for the deposition of relics. (Fig 29)

Before the stupa is constructed, a sketch drawing of it is prepared. The sketch of a stupa found on a stone slab in the Salapathala Maluwa (Stone Paved Terrace) of Mirisawetiya stupa reveals that a sketch drawing had been prepared before the stupa was constructed. Stupas with a single "chathra" (umbrella) and a yupa stone (axis) were constructed before the appearance of stupas with pinnacles. The addition of more chatras placed on top of the other led to the design of a pinnacle to crown the stupa. (Fig 30)

This model of a stupa belonging to the earliest period of stupa construction has been discovered in Deliwala stupa. (Fig 31)

Stupas can be categorized according to the shape and architectural characteristics into six basic types. No records exist of some of these types of stupa in Sri Lanka.

01. Ghantakara (Bell shape)
02. Ghatakara (Pot shape)
03. Bubbulakara (Bubble shape)
04. Dhanyakara (Paddy heap shape)
05. Padmakara (Lotus shape)
06. Amlakara (Shape of the Nelli fruit (*Phyllanthus Emblica*), Indian gooseberry or myrobalan type of fruit)

(Fig 32) (Fig 33) (Fig 34) (Fig 35) (Fig 36) (Fig 37)

Some types of stupa were built with a canopy called a "watadage". (Fig 38)

A special type of stupa with a shelter above its dome is found in Sri Lanka. This type is termed "kuludage or thupagara". (Fig 39)

Image House

In the early period, instead of worshipping images of the Buddha, objects which represented the Buddha, such as the Bo tree and the sacred footprint, were worshipped as symbolical representations of Lord Buddha. The oldest type of image house design, famously known as the Gandhakuti, had a single door. A staircase was subsequently added to one side of the image house. (Fig 40)

When image worship increased, image houses with inner verandahs of greater magnitude were constructed. (Fig 41)

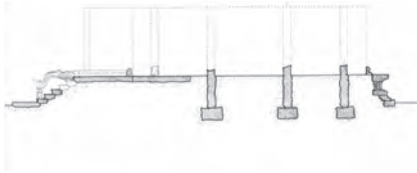
During the Polonnaruwa period, image houses of enormous size were built. (Fig 42)

In the medieval era with the population shift towards the Kandyan Kingdom (Central Part of the country) the Image houses which are smaller than the aforesaid, known as Tampita Vihara (Temple on Stone, Temple on pillars) were constructed. Wood was the main material used in its construction. (Fig 43) (Fig 44a) (Fig 44b)

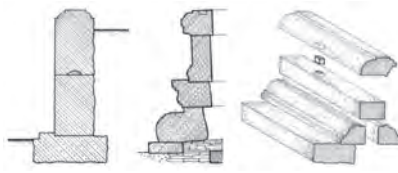
Image houses associated with caves were created as well. A lean-to roof was often constructed on the front of the cave with a drip ledge on top of the cave opening to prevent the rainwater dripping inside.

Bodhighara

In India an image of a Bodhigara is seen on the stone carvings of Sanchi, belonging to the 3rd century BC. The



(Fig 23) Foundation of stone building



(Fig 24)



(Fig 25) Rambakan Oya, Anuradhpura period



(Fig 26) Thuparamaya, 3rd century BC



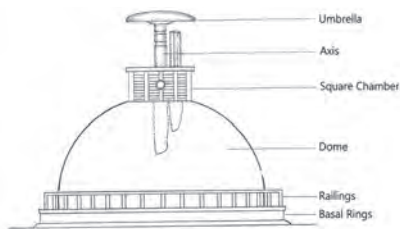
(Fig 27) Sathmahal Prasada, 12th century AD



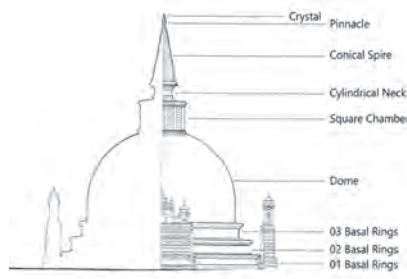
(Fig 28) The place where the remains of King Parakramabahu's mother were cremated is in Udagananava stupa from the 12th century AD



(Fig 31) Model of a stupa found in Deliwala



(Fig 29)



(Fig 30)



(Fig 34) Bubble shape



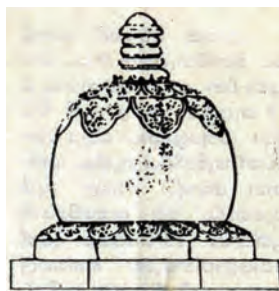
(Fig 32) Bell shape



(Fig 33) Pot shape



(Fig 36) Lotus shape - No records exist of this type of stupa in Sri Lanka



(Fig 37) Amlakara - No records exist of this type of stupa in Sri Lanka



(Fig 35) Paddy heap shape



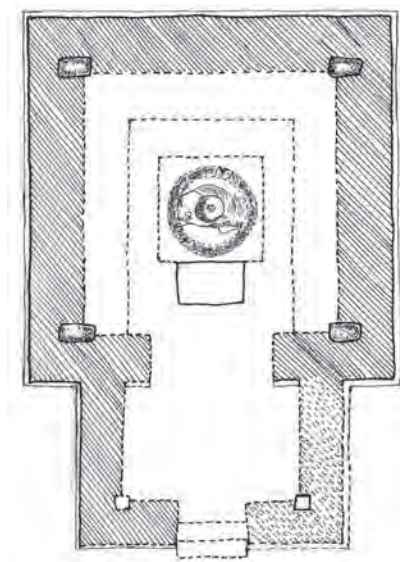
(Fig 38)



(Fig 39)



(Fig 41) Near Thuparama, Anuradhapura period



(Fig 40) Preliminary design of the Gandhakuti



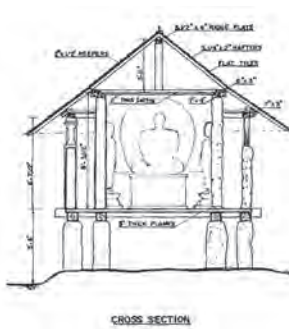
(Fig 42) Lankatilaka image house, Polonnaruwa



(Fig 43) Tampita Vihara at Kolambagama

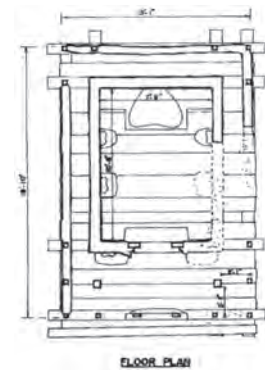


FRONT ELEVATION



CROSS SECTION

(Fig 44a)



FLOOR PLAN

(Fig 44b)



(Fig 45) Bodhigara in Nillakkagama, 9th century AD



(Fig 46) Saseruwa, latter Anuradhapura period



(Fig 47) Arankele, Anuradhapura period

practice of worshipping the Bo tree (*Ficus religiosa*) in Sri Lanka as a Buddhist tradition commenced from when Buddhism was introduced to Sri Lanka. It is clear that the historicity of the Sri Maha Bodhiya and its importance would have influenced the construction of a Bodhigara, a prominent religious building in Buddhist temples in Sri Lanka.

A Bodhigara is a structure with a roof constructed surrounding a Bo tree. It has perambulation paths, flower altars and seated Buddha statues, as well as a drainage system for draining the rainwater out of the structure.

As the Bo tree requires sunshine for its growth, the Bodhigara was erected to cover the area surrounding the

tree, leaving space in the middle portion. (Fig 45)

Later, parapet walls, or “*prakara bemi*”, were used instead of the Bodhighara with a roof. (Fig 46)

Promenades were used by Bhikkus to practice their perambulatory medication. These meditation promenades were prepared by spreading sand between two walls built of cobblestones. (Fig 47) (Fig 48)

Jhanthagara (Bathing House)

Jhanthagara (Bathing House) is another essential item in a temple complex. In this special building, steam was used to augment sweating to induce invigoration and the protection of one’s health. (Fig 49)

In the middle of a Jhanthagara a rock strewn shallow area for bathing, a place to heat water, a place to prepare medicine or anointing liquids and a sewerage system were usually provided. (Fig 50)

Alms Halls (Refectory)

The alms hall, or “*danasala*”, is a single storied building with pillars. The building consists of a compound with a number of doors, rice and gruel bowls, and storage containers. Usually this building is void of decorative finishes. (Fig 51) (Fig 52)

After the Anuradhapura and Polonnaruwa periods, the construction of alms halls ceased to such an extent that they are hardly ever seen today. The alms hall of Dodandoowa Shailabimbaarama and Palmadulla temples, which were built during the medieval period, stand out as two examples of alms halls which continue to serve priests to the present day. (Fig 53)

Uposathagara (Chapter House)

An important activity is performed in the Uposathagara or Sabbath house of a temple complex. It is a place set aside for Bhikkhus to redeem the violation of a Vinaya act. Mahavamsa mentions that Venerable Mahinda Thera advised King Devanampiyatissa to build the Uposathagara in the “*Velimaluva*” (Sand Terrace). Sabbath houses were usually built with one or more upper floors.

Latterly, the Sabbath houses of the Ramanna and Amarapura Nikayas (different chapters of priests) were built above water.

Initially, the Lovamahapaya with nine storeys was the Sabbath house of the Maha Viharaya.

(Fig 54) (Fig 55) (Fig 56) (Fig 57)

Avasage (Residential Buildings of Priests)

Chullavagga mentions that Bhikkus of ancient times lived in haystacks and under huge trees. Later, they moved into buildings. Buddha subsequently permitted Bhikkus to reside in monasteries (*avasage*). An avasage is a rectangular structure with a center courtyard and a verandah around it.

Bhikkus living in forest hermitages absorbed in meditation used natural caves as their retreats. (Fig 58)

According to the Mahayana tradition, Vihara of Pabbatha (*Piyangal Vibara*) has been a residence for the Bhikkus. (Fig 59) (Fig 60)

Panchavasa was a special building in a monastic complex of the Anuradhapura period. It was actually a group of buildings comprising four square cubicles built symmetrically around a bigger multistorey structure. (Fig 61)

An avasage was like an ordinary house in the medieval era. They were rectangular buildings with doors facing the inner verandah and comprising central inner courtyards. (Fig 62)

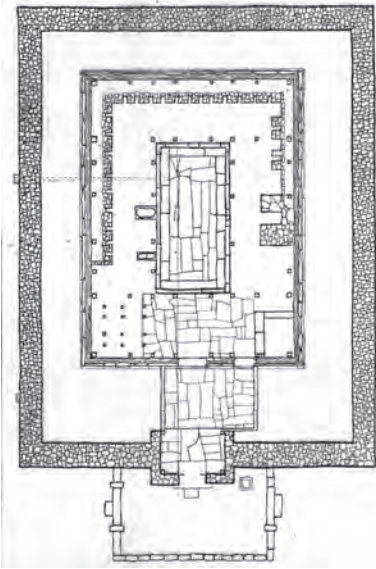
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(The rest of the article will be published in the 15th regular report)



(Fig 48) Maligatenna, Anuradhapura period



(Fig 49 Arankele, 9th century AD)



(Fig 50) Kiralagala, Anuradhapura period



(Fig 51) Alms hall in Mihintale, Anuradhapura period



(Fig 52) Rice storage container at Mahapali Alms Hall in Anuradhapura (Constructed by King Devanampiyatissa in the 3rd century AD)



(Fig 53) Alms hall in Pelmadulla, Kandyan period



(Fig 54) Lovamahapaya, 3rd century BC



(Fig 55) Baddha Sima Prasada, Polonnaruwa, 12th century AD



(Fig 56) Malwatta Pohoyage, Kandy (Sabbath house) 18th century AD



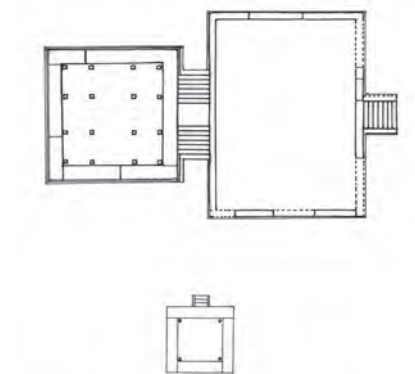
(Fig 57) Dodanduwa Shailabimbaramaya, 19th century AD



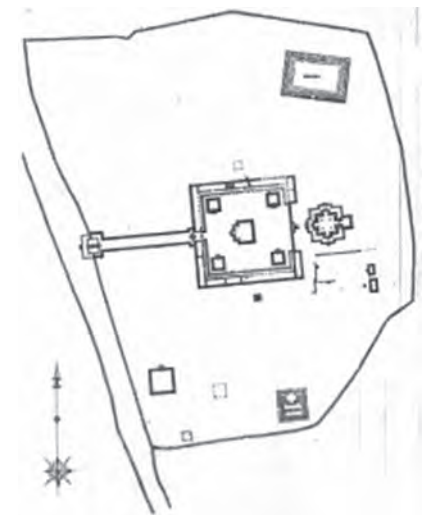
(Fig 58) Dimbulagala Cave



(Fig 59) Double platform building, Arankele, latter Anuradhapura period



(Fig 60) Plan of double platform building



(Fig 61)



(Fig 62) Lankatilaka Vihara, Kandy, 19th century AD



Documentation of Architectural Monuments of Uzbekistan

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Introduction

At the beginning of this year, a three-day national training course was held in Bukhara on documentation of architectural monuments of Uzbekistan in the framework of the UNESCO / Japanese Funds-in-Trust project "Support for documentation standards and procedures of the Silk Roads World Heritage Serial and Transnational Nomination in Central Asia". Afterwards, training was carried out based on documentation of three objects in the category "Silk Road corridor Pandjikent – Samarqand – Poykent":

- Mir Sayid Bakhrom Mausoleum
- Raboti-Malik Sardoba
- Portal of Caravanserai Raboti-Malik.

Workshop participants were young professionals and students from different regions and organizations working in the field of cultural heritage preservation.

Plan of realization work:

- Familiarize participants with archival materials relating to the selected objects and the surrounding areas;
- Photographing objects, their interiors and construction details, as well as the surrounding landscape from all sides. Measuring objects and their structural parts using both the laser and manual methods;
- Study of the technical condition of objects (damage, cracks, humidity, salinity, etc.);
- Definition of building materials (brick, stucco, stone, wood, etc.);
- Treatment of photographs made with the help of the computer programs Perspective Rectifier, Panorama Editor and Auto CAD;
- Preparation of a final presentation and demonstration.

1. Mir Sayid Bakhrom Mausoleum.

Description

The Mir Sayid Bakhrom is located in Navoi province and was established in the 10th to 11th centuries. The building is a square domed structure of brick, with a decorated portal on the southern side. The history of the construction of the mausoleum is not well known. The name of Mir Said is mentioned in the work of Abu Takhirudja Samarqandy "Samaria," which, along with the absence of external damage to the mausoleum, points to the importance of this person (Fig. 1).

The study of the history of this landmark at different times has engaged researchers such as A. Pisarchik, V. Nilsen, I. Borodin, E. Ekrasov and others. In 1972, research was conducted, and in 1973 the development of business and residential premises began in the south including the preservation and restoration of the mosque with an ayvan (terrace). At the end of 1973 metal strands were attached to the mausoleum in order to protect against possible collapse of the walls in winter. In 1974, restoration was

carried out to strengthen the constructed part and most likely, the loss of part of the terracotta decorations (Fig. 2). Condition of conservation of the property: satisfactory state of the object today.

2. Threats and possible destruction

Environment

The greatest threat to the object is dampness in the soil in the area where the object is located, while the side street which runs alongside it is insignificant.

The main building: Mausoleum

The general condition of the main building is satisfactory; however, on the facades there are definite saline-damaged areas. On both sides of the doorway between the arches with epigraphic inscriptions at a height of 1.9 m, there are regions with high humidity. On the left side of the arch with epigraphic inscriptions, and next to them on the corrugated semipedestal, some bricks are missing. Loss of the brick lining was detected on other portions of the building facade as well (Fig. 3).

On the surface of the facade of the foundation under the left edge of the arch waterproofing material (bitumen) was used. The same solution was used for the Whaler (at a height of 1.85 m) – a Π -shaped space with brick décor, as well as part of the corrugated pilasters. It is not clear why different parts of the void between the whaler brick geometric decor are filled with clay and sand mortar. The same solution was smeared in a small section of the right corner of the tympanum. On the surface of this cement occasional scratches and indentations had been made with a sharp instrument, which suggests their connection with the application of a superimposed finish, for example, colored mosaics or majolica. However, in the absence of relevant written information and factual evidence, it can be only assumed that if the décor and color are present on this surface, it was performed at a later time. To clarify these issues, further studies are required.

Some of the portal of the eastern facade of the mausoleum at 2m from the top of the intermediate brickwork is absent. Apparently, these voids from a bunch of not surviving to the boundary wall. On the western facade at 1.50 m from the right edge there is significant deformation of the wall.

The interior of the mausoleum

Moisture went inside of the premises, affecting the entire surface of the structural parts. In particular, the perimeter of the premises at various levels (from 0.50 m to 1.50 m) shows traces of salt and moisture. This is visible on the upper brickwork dome (7th row of the dome heel). On the dome of the interior there are significant cracks and sometimes traces of salinity. The western arched niche is completely covered with bitumen. This solution was

smearred on the upper adjacent walls and partially on the southern wall (on the doorway beams). In a small area on the western side of the layer of bitumen residue, there is cement plaster with a layer of stucco plaster. Clay plaster with straw is visible here, including in the arched recess on the northern side of the room décor framed with stucco. In the central and eastern arched niche similar decor has not been preserved.

Ayvan (terrace) of mosques

An ayvan was built separately from the mausoleum a few years ago. The damage to the object was determined. The blind area, the foundation and mid ayvan showed traces of high salinity and humidity in the upper 5-6 layers of the masonry. This was pronounced on top of the right wall of the ayvan. Here the bottom of the beam has a vertical crack about 30 cm long, which most likely arose due to the weight of the roof above the beam. Also, there were partially rotten wooden beams on the ceiling of the ayvan due to humidity (Fig. 4).

On the eastern facade on the surface of the brick dandana (masonry roof edge) at different places there is visible leakage around the bitumen. The western façade drain is properly organized. As a result, accumulation of moisture was observed in the areas around the drains. And as a result of rain runoff, the bottom part of the foundation wall also showed traces of moisture (Fig. 5).

3. Portal of Caravanserai Raboti-Malik

Description

Raboti-Malik (or Royal Rabot) was built on the ancient desert caravan route between Karmana and Kiziltepa as khan rates – strengthening, and served as a caravanserai, as a rabot, and may have performed the function of a khonako (a similar barrack-type building in the pre-Mongol period, with rooms around a courtyard). Direct historical information about the time of completion is known through a postscript in the margins of the 16th century work "Kitabi Mulla-zoda" ("Mulla-zade's book") on the construction of the "Royal Rabot" Abul Hasan Karakhanids Nasr ibn Ibrahim in 471 AH (1078-1079 AD.), attributed by V. Bartold and I. Umnyakov to Raboti-Malik in the Karmana desert. The object was reconstructed in the first quarter of the 12th century during the reign of Karakhanids Arslankhan Muhammad ibn Sulayman (Fig. 6).

Through archaeological works carried out during the second half of the 20th century to the beginning of the 21st century, it was possible to identify the complex layout of this unique building. It occupied an area of 100 x 100 m, surrounded by strong walls and divided into two halves. According to the latest archaeological research (N. Nemtseva) on numismatics and household ceramics, Raboti-Malik was built in the first quarter of the 11th century. The northern part underwent major reconstruction in the third quarter of the 11th century. Possibly by Shams-ul-Mulk Nasr, the son of Ibrahim Tashgach Khan, who ruled Samarqand in 1068-1080 AD.

The only part of the majestic "Royal Rabot" that is now preserved are the ruins of the portal with the remnants

of the magnificent monochrome decor in the form of intertwining lines on brick framing the eight-pointed star chain entrance arch, a loop which bypasses the stucco carved inscription: "The building was built by the Sultan of the world and with the help of God was like paradise." The most complete historical record of this lost monument are the descriptions and illustrations published in 1841 by A. Lehman. They fix the facade of the monument inside the outer fortifications. Actually strengthen, as it is called Caravanserai Raboti-Malik by A. Lehman and formed a huge square with a south-facing facade from his description. At its center is a portal on the wall that exceeds 1/3 of the wall's height. In the corners were "towers" that were twice the height of the wall: the wall on either side of the portal, as evidenced by the photographs of the 1920s, was designed as a complex rhythm of powerful semi-columns connected at the top and extending deep into the lancet arcs – as in ancient fortress walls with corrugated motifs, it performed a purely figurative function¹.

Threats and possible destruction

Environment

The facility is situated along a highway and is therefore affected by vibration, noise, exhaust fumes and dust from passing vehicles. An airport is also nearby, which is a source of vibration and noise. The site on which the facility is located is heavily influenced by closely spaced groundwater (Fig. 7).

Portal object

The general state of the object is satisfactory, but in some areas destruction and infiltration of groundwater into the masonry can be identified. In particular, on the left pole of the portal on the southern side, a large area exposed to moisture has vertical crack at the base. On the right pylon, vertical cracks and a small area of moisture was also found. On both sides of the arch at a height of 2.45 m to 7 m and about 1 m wide, there is original clay plaster. In the tympanum an inscription can be traced along the contours of the arch. However, part of the epigraphy has been lost. Terracotta inscriptions throughout the facility have been retraced new masonry. Also at the level of 10.4 m on the facade on the southern side there is a break in the masonry of the epigraphy. There are traces of vandalism. In the inner part of the arch from the south, starting at the level of 7 m to the end of the arch, there is modern stucco plaster. In some areas clay inlay is visible under the original plaster. On the western side of the portal at the bottom of the new masonry area, some parts of about 3 m² have collapsed (Fig. 8).

Conclusion

After careful examination new data were collected concerning the studied objects defined by their current status and the following recommendations were proposed:

- Plant trees around the objects to absorb groundwater (e.g., mulberry or Central Asian sycamore);
- Create a drainage system to drain groundwater;
- Increase the slope of the blind area around the perimeter (this applies to Mir-Said Bahram);

- Generate an audit and completely replace the existing pavement with traditional material (middle ages break or limestone) around the object (for Mir Said Bahram);
- Revise the organization of drainage throughout the facility (for the Mir Said Bahram);
- Modernize the interpretation of objects, including replacing signs and installing bulletin boards;
- Develop a management plan to monitor the technical conditions of regular maintenance and routine repairs.

Thus, this workshop brought together a large amount of material on the current status of objects that can be used to further their study and conservation. In addition, during the exchange of individual experiences, participants gained new knowledge and skills in the field of cultural heritage preservation.

Note: Materials were prepared by participants in the seminar: the author of the project, Ona Vileaks; and project coordinator, Culture Officer at the UNESCO Office in Uzbekistan, Sanjar Allayarov. The author of this report participated in the seminar as a specialist to determine the possible threat of destruction of objects. Photos were taken by the participants. Drawings are by the author.

Archive materials:

1. Passport of Historical and Cultural Heritage of USSR (Tangible). Caravanserai Raboti-Malik. ИА (М). М 23. №1256/5. Fine Arts Institute (in Russian lang.).
2. R. Kadir. Pamphlet about Caravanserai Raboti-Malik (in Uzbek lang.). Tashkent, 1998.
3. Training materials from the UNESCO Office in Uzbekistan on documentation of serial objects.

¹ From materials of archive documents.



1. General view of the object Mausoleum Mir Said Bakhrom.



3. Drawing of the object with descriptions (mausoleum).



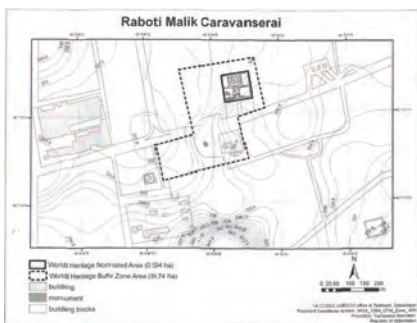
2. Part of the object. Entrance to mausoleum.



4. Part of the object. Ayvan (terrace).



5. Drawing of the object with descriptions (mausoleum).



6. Plan of the Caravanserai Raboti-Malik.



7. General view of the object Caravanserai Raboti-Malik.



8. Part of the object. Portal.

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