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The Fifteenth 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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The Archaeological Site 'Mather Chala' Excavation and Its Remains

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The Gazipur district is situated in the middle of the Dhaka division of Bangladesh. It is known for its history, and the reddish earth and dense forest of Vawal Pargana. Gazipur has had a heroic role in several movements and antagonisms in the Mughal (15th to 18th century), British (18th to 20th century) and Pakistan (middle of the 20th century) periods.



Location of the site: The archaeological site Dhol Shamudra, Mather Chala is situated 14 km to the northeast towards Upazilla (Thana) Kaliakair. A long time ago the historic Turagh River flowed in the vicinity of this archaeological site. Nowadays, the Turagh River has moved away and marshlands have been created. The marshlands are surrounded on four sides known as Makash, Gajaria and Alua etc.



The Gazipur district



Excavated site: marked in red



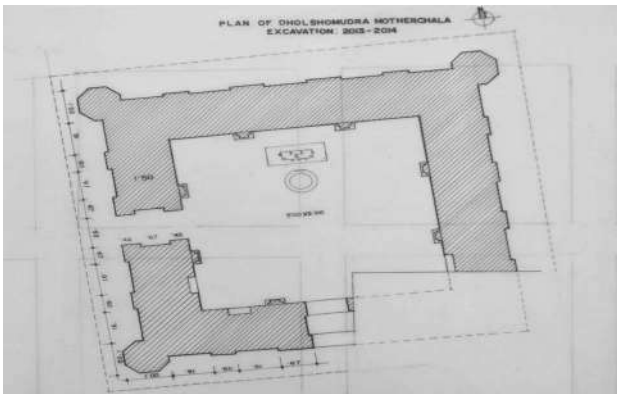
Before clearing



After clearing

Some characteristics are slightly found in the formation of the soil of this region. The soil of this area is formed by hills and moats. At some places the soil is situated 0.8 m above the plains. And just below the soil, there lies some moats like lowlands. The highlands of this region are called 'Challab' or 'Chala' and the moat-like lands are called 'Baith'. The archaeological site of 'Dhol Shamudra Mather Chala' is situated above these 'Challab' or 'Chala' and this is why the place is called 'Mather Chala'.

The selected mound for excavation is 1.5 m from all around the highland. It has a gradual slope and is surrounded by plains to the east, west, north and south. This mound was covered with jungle and a very large silk cotton tree. Consequently, the excavation was conducted very carefully and therefore took more time.



Ground plan of the exposed structure

A short description of the excavation: The excavation was conducted in 12 trenches and the remains of a square ancient building was discovered. The measurement of the exterior side of the ancient structural remains is 8.5 m x 8.5 m and interior side is 5.5 m x 5.3 m, which means that the shape of the architectural remains is square. Every wall is 1.4 m thick. The surviving walls are 35 cm up to 1.3 m. Mostly square-shaped bricks were used in the walls and mostly complete bricks were used in the core filling in the thick walls. Mud mortar was used as a cementing material.

The structural remains had four octagonal turrets in the four corners, but these have almost disappeared, and only a little evidence has survived. Two gateways were found in the middle of the eastern and southern walls. The exterior walls of the building were highly decorated with various shapes and sized ornamental bricks, and the interior walls were decorated with ornamented pilasters. Two stones were found in the floor of the exposed structure.

Eastern wall and gateway: The eastern wall has been exposed horizontally for 5.5 m because of a very big tree standing in the northeast corner of the mound. For this reason the northeast corner has not been excavated. Indeed, a gateway, that is to say the main entrance, has been found in the middle of the eastern wall. The door jamb was made of a black stone which still survives in situ today. Very beautiful ornamentation was on the exterior wall of the eastern wall and turret. But this wall and turret are extensively deteriorated. The corner turret of the southeast corner is octagonal-shaped and its diameter is 1 m.

The eastern door is 94 cm wide but only 90 cm has been revealed. It faces east, and the measurement of the black stone is 90 cm long and 20 cm wide. The middle of the stone is broken with a small hole there for the purpose of closing the door. The main characteristic of these walls is that up to 1 m they are slightly projected and decorated. After that 60 to 68 cm is simply constructed but with two full bloom lotuses engraved on this portion. These features are visible all around the exposed structure.

Southern wall and door: The southern wall (8.5 m) has been exposed very carefully. This wall is also 1.4 m thick and the gateway has been installed in the middle. Two sides of the door are highly decorated and covered by ornamental bricks. This wall lasts only 40 cm to 80 cm from floor level. An octagonal turret in the southwest corner was found mostly damaged and destroyed.

On the inner side of this wall two decorated pilasters are visible 36 cm from the door. A water outlet (10 cm long x 5 cm wide) has also been exposed.



Eastern wall



Close up view



Southern wall: general view

Western wall: The unveiled western wall of the structure is decorated with the same techniques and characteristics as that of the southern wall. The wall is also mostly damaged. Only 24 cm to 42 cm of the wall has survived from floor level. Horizontally, 8 m of the wall has been revealed, running north to south. Two water outlets have been exposed. One is in the southwest corner and another is in the northwest corner. On the inner face of this wall there are two pilasters installed at the same distance from the door as per the southern wall and both are highly decorated with ornamental bricks. An octagonal corner turret has been exposed in the northwest corner.

Northern wall: The northern wall has been exposed to a length of 7 m, running from the northwest corner turret to the east. A very large silk cotton tree stands in the northeast corner of the mound. Consequently, this corner has not yet been excavated. The condition of the northern wall



Southern wall: close up view



Western wall



Northern wall: general view

was found to be comparatively better than the others. This wall has been exposed 68 cm to 1.2 m from the floor level of the platform and it is also highly decorated with ornamental bricks.

Platform: Beyond the exposed structure, a 1 m wide platform has been built all around the structure. Again, a brick paved floor has been excavated 30 cm below the platform, which stretches an equal distance all around the exposed structure.

Pilasters: It is known that there are two pilasters installed on the inner portion of every wall of the square structure. Every pilaster is situated an equal distance from one another. All pilasters have been created from the floor of the structure, and the foundations of these pilasters are 44 cm wide and 19 cm projected outwards. They probably used to go up to the top of wall, and every pilaster is beautifully decorated with floral and geometrical designs.

Preparation of the floor of the exposed structure: The floor of the exposed structure is made of concrete, and the middle of this floor slopes slightly from the four sides of the walls. There are two stones that have been installed more or less in the middle of this square floor. Another concrete floor has been found 68 cm away from the middle of the western wall at an equal distance from north and south (1.77 m). The measurement of this platform is N-S 1.46 m and E-W 1.04 m with a height of 13 m. This platform is made of large-sized bricks and it has been covered with concrete lime plaster.

There is a black stone on the small platform, which is engraved with a leaf design on three sides, with a hole in



Northern wall: close up view



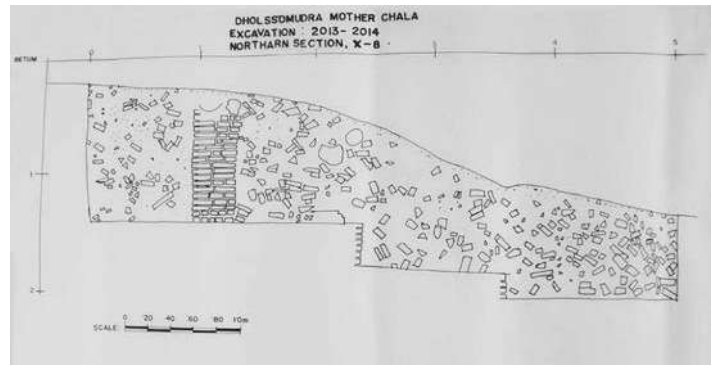
General view of the exposed floor



Pilasters



Two stones installed in the floor



Stratification

the middle. The hole is 10 cm deep and another two shallow holes are found in the two sides of the large hole. The stone is 61 cm long, 61 cm wide and 21 cm high.

Another round shaped stone has been exposed 24 cm away, to the east of the floor. The stone is reddish in colour and most probably is made of granite. There are two small and shallow holes and a square hole on the top. The diameter of this stone is 78 cm. The outside edge of the stone is deeply engraved. Accordingly, the stone actually looks like two stones. The top of the stone is very smooth and is infixed 20 cm deep in the floor of the structure. Most probably the stone was used as the base of a pillar of a gigantic ancient building. Initially it seems to be the same kind of stone as was later used in the exposed structure for another purpose.

Stratification: In the excavated mound only one layer has been found which was full of complete bricks, pieces of bricks, concrete and lime mortar mixed with brick dust. It

was basically the materials of the roof of this ruined building. The exposed mound was a heap of abandoned materials from this ruined ancient building. The mound has been depreciated by the local people and they have collected a large number of bricks and artefacts from this mound.

Objects: From the beginning of the excavation of the Dhol Shamudra, Mather Chala archaeological site, a large number of complete and broken ornamental bricks have been collected in a short time. Beyond these, a number of potsherds and Muslim glassed pottery have also been discovered. The excavation is in its initial stage, and bricks are of different shapes and sizes with designs consisting of floral motifs, various kinds of fruits, leafs, geometrical designs and petal motifs. No human or animal figures have been found at this excavated site.

Conclusion: The Dhol Shamudra Mather Chala archaeological site is situated on 20 acres of land. An ancient ruined structure has been exposed in a very limited

time and range. The construction style of the excavated structure includes the use of thick and necked walls, mud mortar, and square shaped bricks, and is reminiscent of the architectural style of the Sultanat period (13th to 16th

centuries AD). The structure has no Mihrab, so it is not a mosque. It is very difficult to identify the purpose for which this structure was used.



Potsherds



Muslim glazed pottery



Ornamental bricks



Visual Reconstruction of Chubjakha Dzong Ruin

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1. Background

The *Chubjakha Dzong* ruin is located on a ridge overlooking the Paro valley, and the site covers approximately 10 acres. According to Dargey (2013), *Chubjakha* was originally the religious seat of Kuenkhen Longchen Rab Jampa in the 15th century. Later, Drung Drung Gyalchogs Rinpoche, a descendent of Phajo Drugom Zhipo (1222-1250), took over from the disciples of Kuenkhen Rab Jampa. However, it is said that the temple was rased to the ground by fire and later expanded and converted to a *dzong* by Drung Drung Rinpoche as the country was going under several wars.

The layout of the *dzong*, which was built in a strategic location, clearly indicates that the *dzong* was built solely for defensive purposes, as protection from invasion by enemies. The overall fortress complex is surrounded by two defensive ditches—outer and inner ditches. The fortress complex consists of a five-story main central tower (*Utse*) surrounded by structures attached to the main central tower in the north, east and south. There are six watchtowers surrounding the *Utse*—the northeast and southeast watchtowers were expanded with the addition of one tower each, thus making it six. The watchtowers probably must have served the purpose of keeping an eye on enemies in all four directions. However, huge trees and vegetation have now grown on top of the watchtowers, which are all covered with debris from the collapsed wall

and vegetation.

The fortress complex is connected by a well-protected, fortified passage sloping gently downward in a westerly direction to a sequence of three watchtower structures. The passage has defensive stone walls on either side with arrow slits. The three structures between the fortress complex and lowermost tower, or *Chudzong*, are also probably watchtowers overlooking the Paro valley. However, as already mentioned, only the main fortress complex is being considered for visual reconstruction in this article. The whole fortress complex is mostly of stone masonry construction, with some inner parts built of rammed earth. The quality of both the stone masonry and rammed earth construction are exceptional.

The article is a summarized version of the Certificate of Continuing Education Program report submitted by the author to the Bhutan-Swiss Archaeology Project. The paper attempts to analyze and visually reconstruct the *Chubjakha Dzong* ruin to its former grandeur based on the findings of the survey and documentation of the present condition of the ruin, as well as through drawing comparisons with other old fortresses in the country. The detailed survey and documentation of the *Chubjakha Dzong* ruin was carried out as an educational training program under the Bhutan-Swiss Archaeology Project organized by the Division for Conservation of Heritages under the Department of

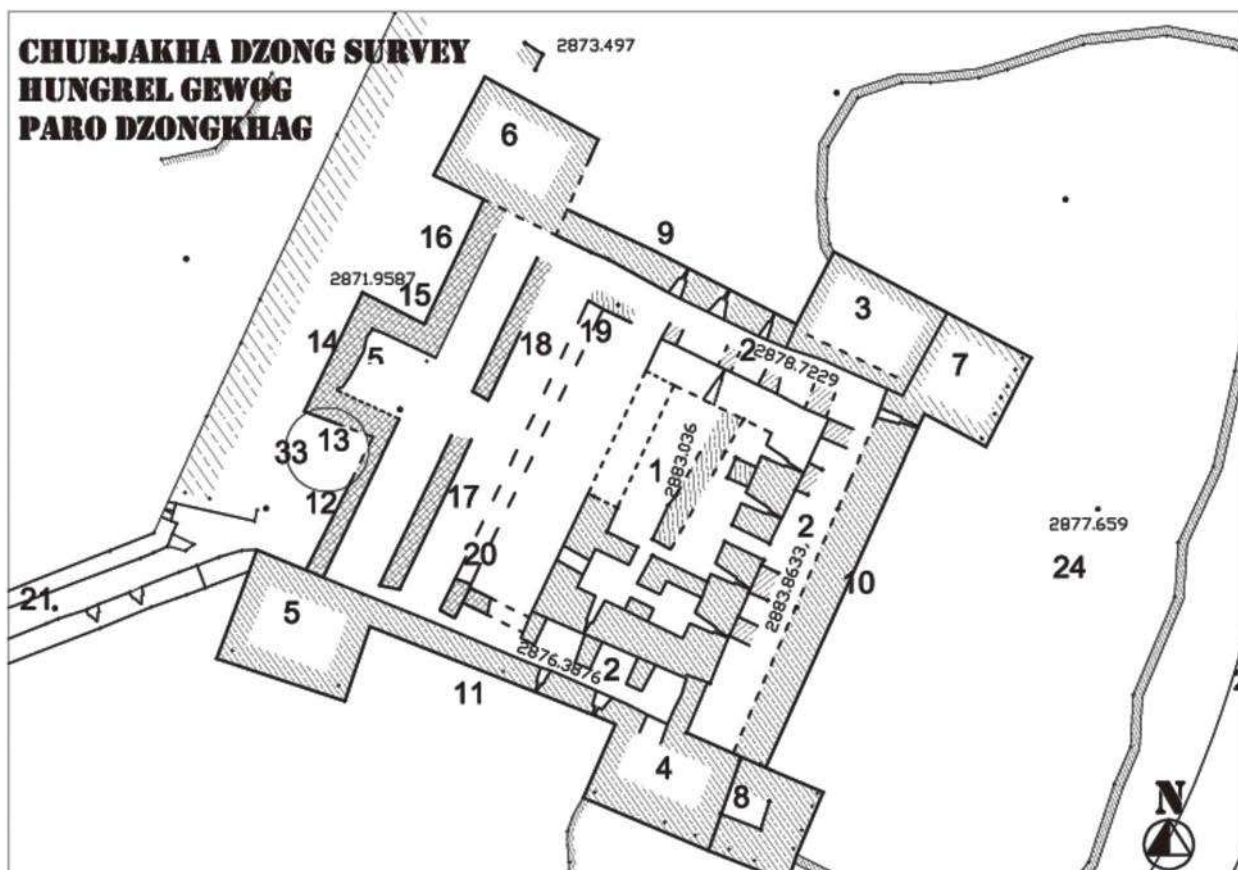




Fig. 2 Front facade of *Utse*: eastern view



Fig. 3 Rear facade of *Utse*: western view

Culture, Ministry of Home and Cultural Affairs, Royal Government of Bhutan in cooperation with HELVETAS Swiss Intercooperation, Bhutan, and the Swiss Liechtenstein Foundation of Archaeological Research Abroad (SLSA), Switzerland, during which a detailed plan of the existing structure, photographic documentation and description of all the positions and special features of the ruins were recorded and well documented. It is based on this information that the visual reconstruction of the ruin to its former state is studied by analyzing the findings of the present state of the ruin and also through drawing comparisons. This paper covers visual reconstruction of only the main *dzong* complex due to lack of detailed survey and documentation of the periphery structures.

2. Visual Reconstruction of the main fortress complex

2.1 Layout of the ruin of the main fortress complex

The main central tower (*Utse*, sector 1) in the middle is surrounded by structures (sector 2) attached to the main central tower in the north, east and south. There are six watchtowers (sectors 4, 5, 6, 7 and 8) surrounding the *Utse*, in the northeast and the southeast. The watchtowers probably must have served the purpose of keeping an eye on enemies in all four directions. Huge trees and vegetation have grown on top of the watchtowers, which are all covered with debris from the collapsed wall and vegetation. Fig. 1 shows the overall layout of the main fortress complex with the respective sector numbers.

2.2 *Utse* (Sector 1)

Utse (Sector 1) - The main central tower in the middle of the complex measuring 23 m x 14.6 m is built of stone masonry with mud mortar. The middle portion of the wall of the front facade (eastern facade) (see Fig. 2) of the *Utse* has collapsed to ground level. The wall of the rear facade



Fig. 4 Drukgyel Dzong. (Photo: Kasumi)

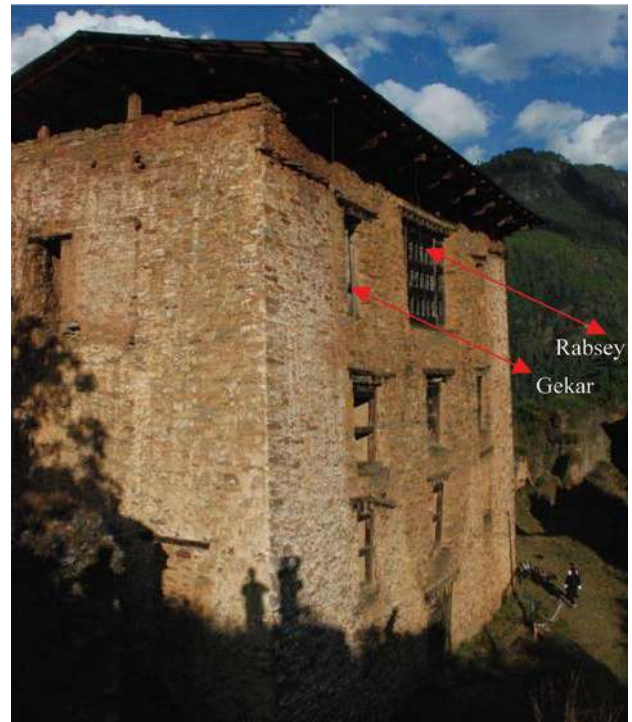


Fig. 5 Drukgyel Dzong. (Photo: Kasumi)

(southern facade) of the *Utse* is still standing until the lower '*kemar*' band. The wooden lintels of the openings are still intact. Most of the openings such as doors and windows are in the eastern facade, while there are many triangular slit openings (arrow slits) in the other facades, mainly for defensive purposes.

3.2 a) Visual Reconstruction of *Utse*

In the *Utse*'s present state, the internal layout of the rooms for every floor is impossible to determine since it is inaccessible due to collapsed walls and debris from the upper structure. A scientific excavation is necessary to find out the layout of the rooms at every floor. However, a physical view of the *Utse* with openings can be judged from its present state. Therefore, based on the measurement, observation and analysis of its current state, the following analysis was considered for the virtual reconstruction of the *Utse*.

i) Building height/number of floors

One can clearly determine that the *Utse* is a five-story building from its present state. This can be calculated from the window openings at each floor level and a *kemar* band level (see Fig. 3) at the top of the structure. Normally, the *kemar* band is traditionally at the top of the structure just

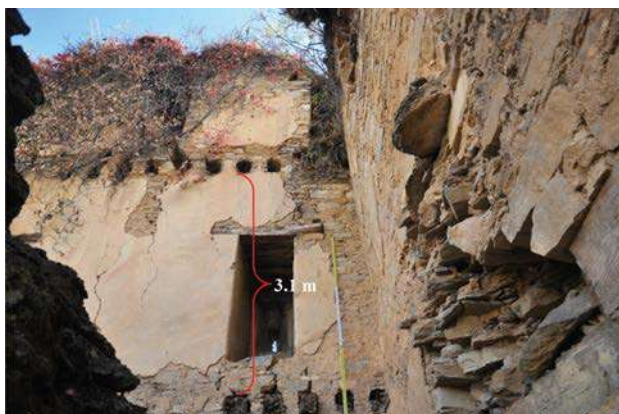


Fig. 6 Remains of flooring joists inside the *Utse*

below the roof (see *Drukgyel Dzong* in Fig. 4). The room height can be calculated from the remains of the flooring joist (see Fig. 6), and is approximately 3.1 m.

ii) Entrance door

Although at present, the main entrance door to the *Utse* is not seen or known, it is certain that the entrance to the *Utse* is from the west, as there is no possibility of the entrance being from the east, south or north. Moreover, the middle portion of the wall of the eastern facade had collapsed (see Fig. 2), which further supports the assumption that there were openings, causing most of the wall to collapse.

iii) Window openings

Most of the window openings and the triangular slit openings can still be seen from the outside, although they are inaccessible in most of the rooms. However, no wooden components of the openings are intact except for the wooden lintel. Therefore, a simple *gekar* window design has been considered for the visual reconstruction, since this kind of *gekar* window is the most common one found in old historic monuments and fortresses (see the *gekar* window in *Drukgyel Dzong* in Fig. 5).

Simple *rabsey* window openings are proposed in the middle of the front facade (entrance side) on the fifth and fourth floors, mainly in consideration of the fact that this portion of the wall has totally collapsed due to the presence of several large openings, which could have been *rabsey* openings. Moreover, in most old structures the entrance side elevation is usually more grand with *rabsey* openings. (See Fig. 5 for an example of a *rabsey* window)

iv) Roof design

The gable and lean-to *shinglep* roofing style is the traditional form of roofing in Bhutan. Therefore a double-tiered gable *shinglep* roofing design has been adopted here for the reconstruction of the *Utse*. Double-tiered gable roofing is considered in this case because it is the practice in Bhutanese architecture to highlight the most important and significant structures or buildings with a double-tiered roofing design.

2.3) Defense rooms around the *Utse* - Sector 2

Sector 2 includes all the rooms around the central tower (*Utse*, sector 1) to the north, east and south, which served mainly as defense rooms, since the outer walls have several small triangular slit openings (arrow slits) for

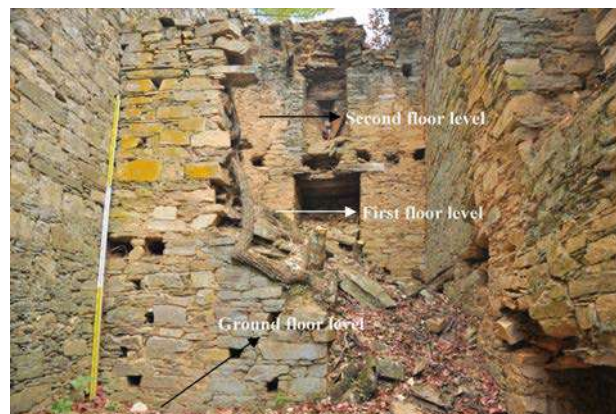


Fig. 7 Sector 2: southern defense room

shooting as well as for ventilation. After studying the layout of the structure of sector 2 and construction techniques, we understand that the northern and southern rooms were built/expanded later after the construction of the *Utse*, and at the same time watchtowers sectors 3 and 4 were built for defensive purposes by adding outer defense walls sectors 9 and 11. Later, the eastern rooms of sector 2 were expanded when watchtowers sectors 7 and 8 were added next to watchtowers sectors 3 and 4 by adding defense wall sector 10. The chronology of the construction of these structures can be clearly understood from the construction techniques.

2.3 a) Visual reconstruction of defense rooms around the *Utse*

At present, the northern and eastern defense rooms (sector 2) are at various levels above the ground floor filled with debris from collapsed walls and vegetation; however, one can access the ground floor of the southern defense room.

i) Height/number of floors of defense rooms

One can clearly determine that the defense rooms around the *Utse* are three-story buildings from the triangular slit openings in the defense wall (sector 10) of the eastern defense rooms. Since a small portion of the lower band of the *kemar* is still intact towards the top of the defense wall (sector 10), it indicates that there was no additional floor on top; therefore, one can assume from the openings that it is a three-story building. This can be further confirmed from the southern defense room (see Fig. 7), since even today one can access the ground floor of the room and clearly see the remains of the flooring joists and openings of the upper floors.

ii) Openings

There are numerous triangular slit openings at various floor levels that are clearly visible in the walls from the outside.

iii) Roof design

Since these structures are attached to the *Utse*, the only possible roofing is the lean-to style; however, between the northeast and southeast watchtowers and the *Utse*, gable roofing is considered due to the nature of the layout of the structure.

2.4) Watchtowers (Sectors 3, 4, 5, 6, 7 and 8)

Sector 3 is the northeast watchtower adjoined by another watchtower (sector 7) to the east. The watchtower measures 7.3 x 9.7 m. Sector 4 is the southeast watchtower built at the

same time as watchtower sector 3. Sector 5 is the southwest watchtower of the *dzong* complex near the tunnel (sector 21). Sector 6 is the northwest watchtower facing the Paro valley. Sector 7 is the northeast watchtower that was later added to sector 3. Sector 8 is the southeast watchtower later added to sector 4.

2.4 a) Visual reconstruction of watchtowers 3, 4, 5, 6, 7 and 8

Analyzing the layout of the complex and construction techniques, one can conclude that watchtowers 3, 4, 5 and 6 were all built together at the same time for defensive purposes later, after the *Utse* was built, whereas watchtowers 7 and 8 were later expanded and added to watchtowers 3 and 4, respectively. An additional floor was added to watchtowers 3 and 4 when watchtowers 7 and 8 were built. At present, the internal layouts of every floor level are impossible to understand as the towers are filled up with fallen debris from collapsed walls and vegetation. Furthermore, scientific excavation is necessary in order to understand the internal layouts of the watchtowers. The following are the conclusions drawn for the reconstruction of watchtowers 3, 4, 5, 6, 7 and 8.

i) Height/number of floors of the watchtowers

Studying the number of triangular slit openings (arrow slits) in the watchtowers and the remains of the *kemar* band, one can conclude that watchtowers 3, 4, 5 and 6 were all three-story buildings, whereas watchtowers 7 and 8 were four-story buildings. However, analyzing the *kemar* level of watchtowers 3 and 4 and the remains of the wall above the *kemar* level on top of watchtower 4, it is understood that an additional floor was later added to watchtower 3 and 4 when watchtowers 7 and 8 were later constructed, thus making it a four-story structure.

ii) Window openings and arrow slits

Openings still remain at the top of watchtowers 4 and 5 on the western facade at *kemar* level. In this regard, a *gekar* window design has been considered like the one in the *Utse* for sectors 4 and 5, and for watchtowers 5 and 6, taking into account the symmetry of the design for most traditional constructions.

iii) Roof design

The roofing style being considered for the watchtowers is a gable design, since gable and lean-to are the most common traditional styles of roofing in Bhutan.

2.5) Main entrance building to the fortress complex (*Gorago*) - Sectors 13, 14 and 15

In order to confirm whether sectors 13, 14 and 15 made up the main entrance building to the fortress complex, a small excavation was carried out during survey and documentation field training. The results of the excavation later proved that the main entrance to the fortress complex is from sector 14 (see Fig. 8). The main entrance building, or sectors 13, 14 and 15 in the west and the *shakhor* (resident building surrounding the main central tower), or sectors 12, 16, 17 and 18, were built with rammed earth.

2.5 a) Visual reconstruction of the *gorago* (main entrance building to the fortress complex), sectors 13, 14 and 15

The internal layout of the *gorago*, or the main entrance



Fig. 8 Excavated area

building, is hard to determine since the whole structure is filled up with debris from collapsed walls and vegetation. As with most of the cases, scientific excavation is necessary in order to study the internal layout. However, the following conclusions were drawn for the reconstruction of the *gorago*.

i) Height of the building

The main entrance building, or *gorago*, (sectors 13, 14 and 15) are considered to be two-story from the triangular slit openings, since there are arrow slit openings at two levels. Although there is no *kemar* band seen in this case to consider the topmost level of the building, it is considered to be two-story since traditionally, *gorago* are two-story or one-story buildings.

ii) Entrance door of the *gorago*

The findings of the excavation prove that the entrance door is from the west, as there is a clear edge for an opening and flat stones for the steps (see Fig. 8). Further, the nature of the layout of the building (sectors 13, 14 and 15), which is in the middle of two watchtowers (sectors 5 and 6) leading to the main court of the fortress complex and to the *Utse*, proves that sectors 13, 14 and 15 make up the main entrance building

iii) Openings (arrow slits)

The triangular slit openings are still intact and can be seen from the outer walls at various levels.

iv) Roof design

Similar to the watchtowers and *Utse*, gable roofing is being considered as the roofing style for the *gorago*, however, an additional gable roof tier is hypothetically being considered since *gorago* in olden days had double tier roofing to highlight the main entrance.

2.6) *Shakhor* building - sectors 12, 16, 17, 18, 19 and 20

The *shakhor* building (sectors 12, 16, 17, 18, 19 and 20) was built with rammed earth. The internal layouts of the rooms are impossible to determine at present due to debris and vegetation. The following conditions were considered for the reconstruction.

i) Height of the *Shakhor* building

The *shakhor* building is considered to be two-story, as evidenced by the arrow slit openings, as well as considering the fact that the *shakhor* structure has to be lower in height than the watchtowers.

ii) Roof design

A gable roof design for the *shakhor* is being considered as in the case of the other structures.

2.7) Three dimensional views - visual reconstruction of Chubjakha Dzong

Based on the above analysis of the findings and study of the *Chubjakha Dzong* complex, the following are three dimensional views from different angles of the main fortress complex.

Glossary

- Chubjakha* – Site name
- Dzong* - Fortress
- Hungrel* – Block name
- Gewog* – Block (consisting of several villages)
- Dzongkhag* - District

- Zhabdrung* - Buddhist saint and historical figure who unified Bhutan in the 17th century
- Paro* – Place name
- Utse* - Main central tower
- Shakhor*- Surrounding buildings, usually used as residential quarters
- Gorago* - Main entrance building to a fortress complex
- Kemar* - An architectural feature consisting of a band commonly painted in red on top of a monastic structure below the roof
- Cham* - Wooden joist
- Gekar* - Narrow timber window
- Rabsey* - Large timber window

Bibliography

Chubjakha Dzong - Forgotten Edifice (provisional draft) by Yonten Dargye, National Library Archives, Thimphu

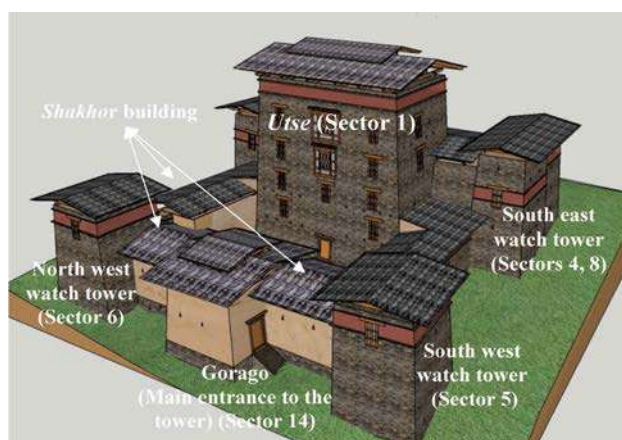


Fig. 9 View from the southwest: Entrance side view



Fig. 10 View from the northwest

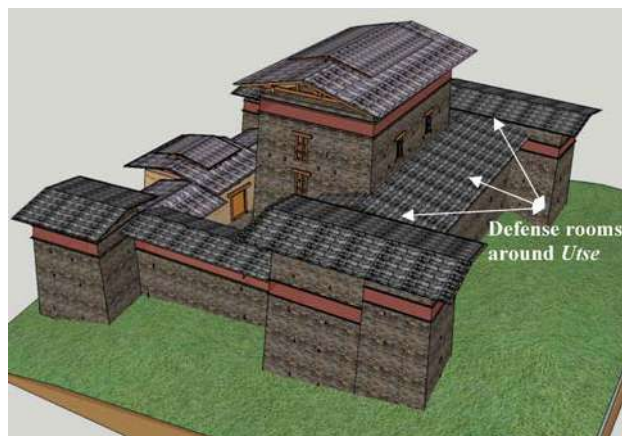


Fig. 11 View from the southeast



Fig. 12 View from the northeast



Return of Mahabharata's Sculptures, Prasat Chen in Koh Ker

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Introduction

Since 2011, heritage readers would know about the lengthy legal action in the U.S. courts for the return of a looted 10th century Khmer sculpture from Sotheby's auction house. As a result, the sculpture was taken off the market and returned home. Along with the return of that sculpture, it was voluntarily agreed that another four sculptures from the same group would also be returned, two from the Metropolitan Museum of Art in New York, and one from Christie's, with another one returned from Norton Simon Museum in California.

This case demonstrates the commitment of the Royal Government of Cambodia to fight the illicit trafficking of cultural heritage. It reflects the usefulness of international conventions that the government has ratified so far, such as the 1970 UNESCO Convention (ratified in 1972) and the 1995 UNIDROIT Convention (ratified in 1972). Furthermore, the government also signed a bilateral agreement with the United States in 1998 and Thailand in 2000. However, the legislative tools subsequently passed by Cambodia's national parliament are also very advantageous for the return of cultural heritage.

Origin of the Sculptures

In situ evidence of the two pedestals shows that the sculptures appeared in a pile of accumulated bricks and soil within the West *Gopura* of Prasat Chen in Koh Ker (Fig. 1)—capital of the Khmer Empire from 921 to 944, known as Chok Gargyar in the reign of Kings Jayavaraman IV and Harshavarman II, located about 80 kilometres northeast from Angkor (Fig. 2). After an archaeological survey, the original positions of the sculptures were confirmed as two standing fighters accompanied by another seven figures in a sitting posture. The sculptures form part of the narrative iconography of the great Hindu epic of Mahabharata, displayed as dramatic models or thespians in the narrow space of the building.

Pillage and Return of the Sculptures

The sculptures are believed to have been stolen from the site during Cambodia's years of unrest, from 1970 to 1990; this pillage appears to have been systematic.

Early confirmations were made by a member of the GACP team, Simon Warrack, as he matched the feet of an abandoned pedestal in situ (at Prasat Chen) (Fig. 3) with a work in a published catalogue (Bunker and Latchford 2004). That sculpture, which was purported to be of Bhima, had been on display at Norton Simon Museum.

In March 2011, a statue purported to be of Duryodhana was listed in the Asia Week catalogue of Sotheby's auction house. The Royal Government of Cambodia sent a letter to Sotheby's asking for its return, and the auction was then postponed, with the item being withdrawn from the list for

public sale. After the United States District Court sought evidence to determine its origin from Cambodian experts with the cooperation of experts from *Ecole Française d'Extrême-Orient* (Figs. 4 & 5), on 13 December 2013, Sotheby's, its client, and federal officials signed a deal to return the Duryodhana to Cambodia.

From the interior excavation at the West *Gopura* of Prasat Chen, several pedestals have coarse traces left by the looters' chisels, and would fit the two sculptures (twin Pandava brothers) from the Metropolitan Museum of Art and a sculpture (Balarama) from Christie's. These three sculptures were voluntarily returned by the Metropolitan Museum of Art in June 2013 and Christie's in May 2014. Additionally, the Norton Simon Museum also agreed to return the Bhima sculpture (Fig. 6).

After their return, Cambodian conservators carried out basic conservation treatment and attached each sculpture to their original pedestals (Fig. 7).

To welcome them home, since 1 October 2014, these pieces have been put on display at the National Museum of Cambodia, Phnom Penh. This special exhibition will last until the end of December 2014 (Fig. 8). The statues will then be moved to the stone workshop for intensive restoration and conservation before being put on display as part of the permanent exhibition of the museum.

Acknowledgements

For this report, I wish to acknowledge the cooperation of the staff of the Department of Museums, Ministry of Culture and Fine Arts: Mrs. Khun Sathal, Chief of the Office of Education and Exhibition and Mr. Chea Socheat, Vice-Chief of the Office of Conservation, and all experts in the Stone Conservation Workshop.



Fig. 1: Prasat Chen

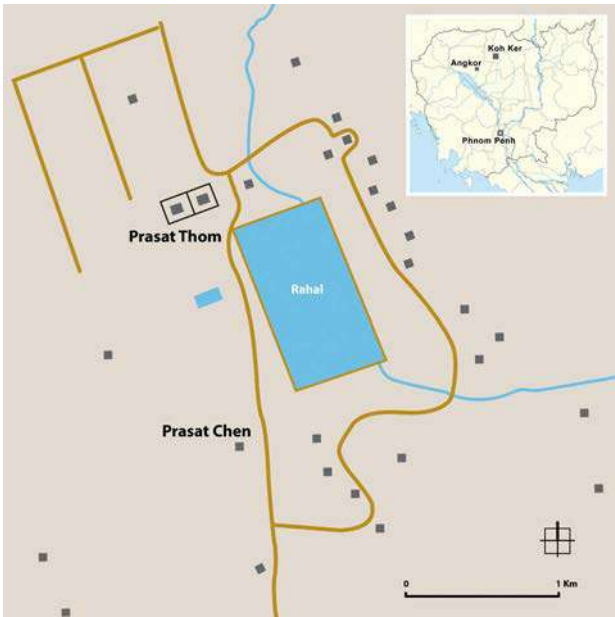


Fig. 2: Map of Koh Ker



Fig. 3: Sculptures' feet on pedestals in situ



Fig. 4: Another four pedestals found after excavation



Fig. 5: Reconstruction image of the sculptures (Photo: EFEO)



Fig. 6: Group of returned sculptures (Photo: NMC)



Fig. 7: Museum experts joining the Balarama's torso to its pedestal (Photo: NMC)



Fig. 8: Sculptures on display at the National Museum of Cambodia



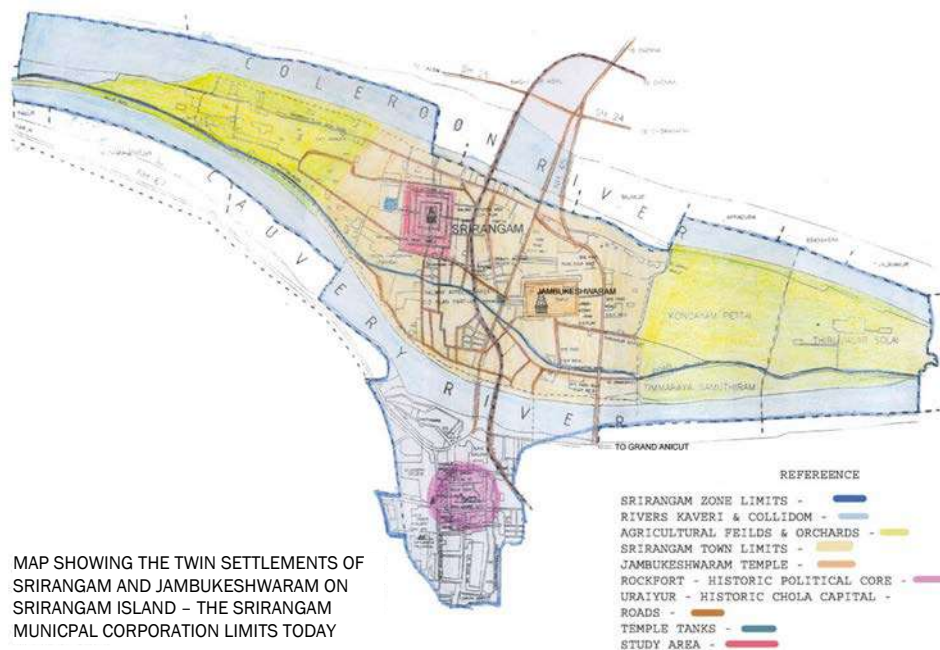
Historic Temple Towns of Tamilnadu – an insight into Srirangam, Tiruchirappally

(This article is the second 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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The temple town of Srirangam is a unique example of two settlements shaped entirely by the many facets of the Brahmanised Universal Religion of Hinduism, and two important temples: one dedicated to Lord Vishnu – Sri Ranganathaswamy (Tiruvarangam/Srirangam), and the other dedicated to Lord Shiva – Tiruvairanikkaaval (Jambukeshwaram), with continuing importance as a centre of pilgrimage for more than 1000 years, located on the banks of one of the most holy rivers of India – the Kaveri. Srirangam Island, with its picturesque landscape, is

the only sacred island formed by the River Kaveri along its entire course of 500 km in Tamilnadu, and stands at the mouth of the delta, where the Kaveri divides into the Southern Kaveri, Kollidam and other tributaries. Both these settlements evolved as two different and independent urban centres over the centuries, until Srirangam was declared a municipality by the British in 1887 AD, and from then on, the town of Srirangam has comprised two Historic Urban Centres and six villages.



MAP SHOWING THE TWIN SETTLEMENTS OF SRIRANGAM AND JAMBUKESHWARAM ON SRIRANGAM ISLAND - THE SRIRANGAM MUNICIPAL CORPORATION LIMITS TODAY

The town shaped by Sri Ranganathaswamy temple is the most sacred shrine for the Vaishnavaites of Tamilnadu and is more popular than the smaller settlement shaped by the temple of Jambukeshvara. It is the largest historic temple complex (encompassing an area of sixty hectares) and the only temple town in India with seven enclosure walls. The presence of two important temple-centric settlements widens the scope of the study to the Shaivite and Vaishnavite temple centres and the heritage values associated with them, the parallel evolution and growth of these towns, the influences on one another, etc. These communities have a wide range of varying intangible cultural heritage components associated with them.

Srirangam is located 337 km from the administrative capital of Tamilnadu, Chennai; 60 km from the cultural capital, Tanjore; and 140 km from the commercial capital, Madurai. The Walled Town encompasses an area of 63 hectares (0.66 km²), the outermost enclosure measuring 878 m by 754 m.

As per 2000 census:

TOTAL POPULATION – 36,140

TOTAL NO. OF HOUSES – 4260

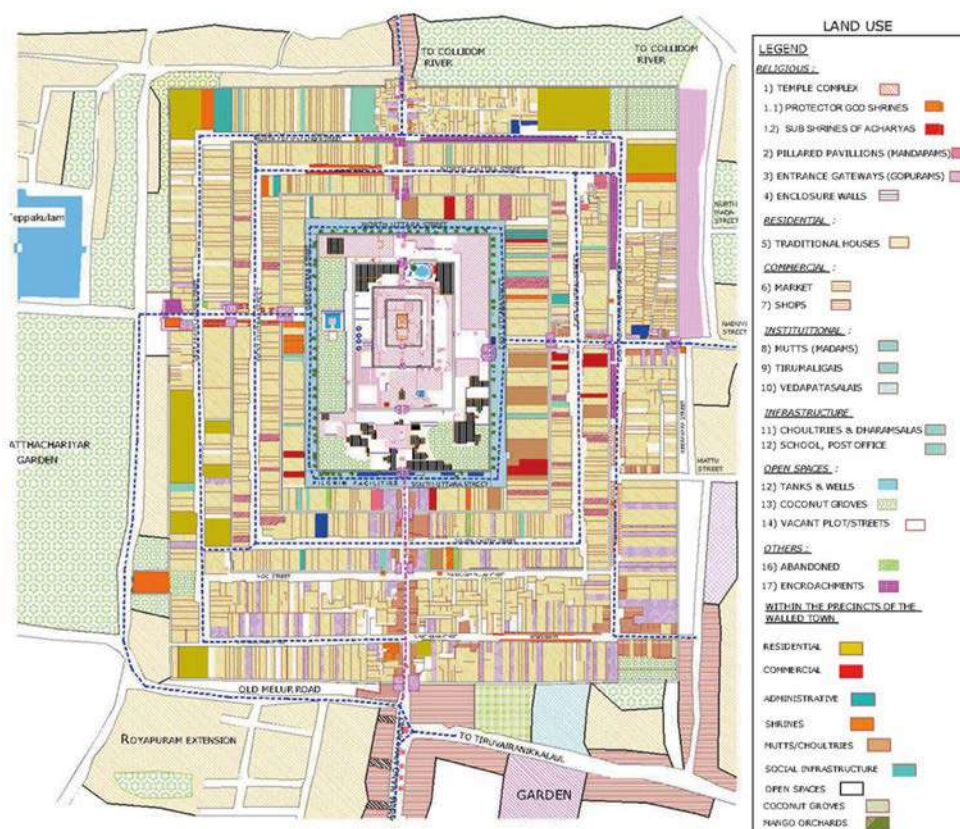
TOTAL NO. OF HOUSEHOLDS – 6863

AREA OF TEMPLE COMPLEX – 9.5 HECT (0.97 SQ KM)

DENSITY OF HOUSES – 32 HOUSES/ ACRE (7500 HOUSES/SQ KM)

The first four enclosures constitute the temple complex, and the outer three enclosures are occupied by the housing sector, and together, they constitute the historic temple town of Srirangam. This article covers the study of only the historic walled temple town of Srirangam. A 'Value Based Approach' was adopted to establish its immensely high historic and heritage importance and further guide the relevant planning and development authorities to take decisions that are both sensitive and appropriate to its heritage values and significance. To accomplish this objective Srirangam was first placed in the context of the historic temple towns of Tamilnadu by understanding the **historic developments that have shaped** the temple towns of Tamilnadu in general, understanding the **importance of Srirangam Island** in the context of the Kaveri Delta, the **geographic and physiographic context** of Srirangam and their **relationship with the Kaveri River and Kollidam River**. Rivers have played one of the most defining roles in the inception and development of civilizations and settlements from time immemorial.

The existing walled temple town of Srirangam was



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

understood in depth by tracing its **evolution and morphological growth**, studying its existing and past **land use and building use patterns, built and open space relationships, infrastructure facilities and services** and the **socio-economic characteristics** of the people. In order to understand the design principles and layout of the historic housing stock and the other built heritage components, a sample study was undertaken for a carefully delineated area. It was and is the most historic and sacred site among the three enclosures within the walled town. It had a good representation of listed heritage components. The structures in the delineated site were in a state of transition and hence retained their original character to a great extent.

The **physical structure, urban morphology and architectural character**, and the **customs, rituals and festivals of the town** were also analyzed in order to help identify the heritage values. Finally, these heritage values were assessed and a Statement of Significance was prepared.

The History of the Temple Town

The history of the shrine can be traced back to the Sangam age (300 BC - 300 AD) when it was patronized by the Chola Kings of Uraiyur across the river Kaveri. When the Cholas became feudatories to the Pallavas until 850 AD, the importance of the shrine kept growing and attracted the attention of the much acclaimed Alvars—who were impressed by the beauty of the Island and the reclining image of Vishnu. The shrine attracted ascetics and devotees from Kanchipuram, Madurai and other older sacred centres. Uraiyur continued to be an important political centre for the feudal Cholas. They continued to patronise the shrine and the Alvars worked towards its expansion. Enclosure walls and gateways of brick and stone were built with some pavilions as the importance of the temple grew and it attracted more devotees. The Cholas returned to power in

850 AD. The kings began integrating the Brahmin settlements with the non-Brahmin peasants, which was the base for the institutionalization of the temple and symbol of its legitimacy. Over the next 600 years endowments for festivals and rituals, and education and tax-free lands for the Brahmins, musicians, dancers and disciples continued to enrich the temple and the temple town. The temple had emerged as an important social centre, employer, community bank and educational centre, and to a large extent, dictated the kind of structures that evolved around it.

In 1225 Cholas became feudatories to the Pandyas; however, the temple continued to flourish, both under the Chola rulers and by 1251, under the Pandyas. The Pandyas allied with Hoysalas made immense contributions to the expansion of the temple. Jatavarman Sundara Pandya was the biggest Pandya patron of Sriranganatha Temple. In 1311 Malik Kafur invaded Srirangam under Allaudin Khilji, and the Statue of Sriranganatha carried off, but temple activities were not disturbed. In 1323 the sack of Srirangam by Ulugh Khan led to the theft of many statues and treasure of the temple, and the temple itself was converted into a fortified camp. The Pandyas were completely wiped out and the temple had lost its wealth. On the eve of the Muslim invasions in 1311, the temple was one of the richest in the delta in endowments, a centre for peaceful and progressive religious activity, and an important centre of pilgrimage with a huge concentration of Vaishnava Brahmins. Srirangam came under the control of Vijayanagara rulers in 1371, and in 1539 it came under the control of the Nayaks Of Madurai. Tiruchirapalli remained their capital for most of the next 200 years and massive restoration works were undertaken in Sri Ranganathaswamy Temple after the Muslim invasions. The Nayaks were Vaishnavites and grandly patronised the Sri Ranganathaswamy Temple, and expanded the temple and the temple town to a great extent. By 1736, the Nayaks had

lost their capital at Tiruchirapalli to the Nawabs of Arcot. From then on, with the wish to capture Tiruchirapalli, there were constant wars between the Marhattas, British, French, Tipu Sultan, etc., and the outer enclosures of Srirangam acted as a fortified camp on many occasions.

After the British took over and created the Madras Presidency, the temple was beginning to fall under the control of the East India Company, resisting any interference from the metropolitan government. Some of the temple lands were taken over by the company, and the revenue from the temple lands was now no longer a dependable income for the temple. In 1871 Srirangam, along with many other adjacent villages, became a second grade municipality and began to be governed under the Madras Municipality Act 1889. In 1861, the first Religious Endowments Act came into force with the establishment of a Management Commission. In 1927, the administration was handed over to the Hindu Religious and Charitable Endowment Board. The number of people involved in temple services decreased as the temple began to be governed by the company and the Crown. The Brahmins now started learning English and were employed in education and government services in Tiruchirapalli Municipality. It was a phase of rapid urbanisation that led to the formation of Srirangam Municipality by 1871.

Post independence Srirangam continued to be a second grade municipality under the newly-formed Government of Tamil Nadu and was upgraded to a first grade municipality in 1959 with 33 wards. In 1994, the Tiruchirapalli Municipal Council was upgraded to Municipal Corporation, and

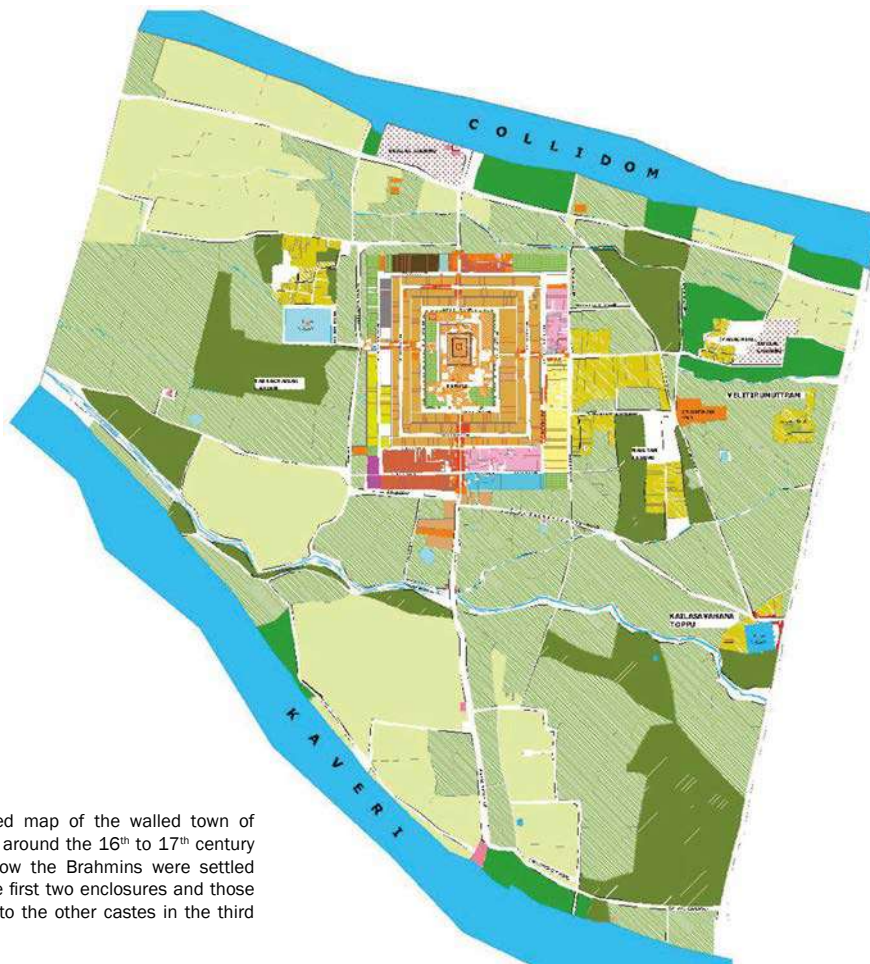
Srirangam Municipality was absorbed into it, governed by the Urban Local Bodies Act, 1998. For administrative convenience, the corporation is divided into four zones, of which Srirangam is one. The Act of 1959 empowers the temple to take complete charge of its own administration; however, Sri Ranganathaswamy Devasthanam constitutes a staff of 200 employees, most of whom are appointed by the government, barring a few hereditary positions.

The Historic Temple Town - a brief description

The principal organising elements of the town are

- The Sri Ranganathaswamy Temple
- The concentric streets enclosed by enclosure walls
- The main axes with gopurams (the elaborately adorned lofty stone entrance gateways)

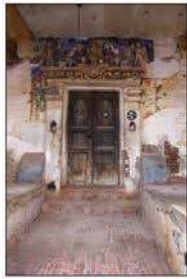
The southern entrance is the grandest and most important, followed by the eastern entrance. The houses, chariot-processional path, sub-shrines and pillared pavilions are aligned along the concentric streets while the axial streets connecting them house the shops, bazaars, gopurams and some residences. There is a big temple tank to the west outside the walled town, which is used during the float festival, and for community and irrigation purposes. There are orchards in the temple town that constitute an important open space that once belonged to the temple, and produce from here was either directly used in temple rituals or sold to enrich the temple treasury. The chariots and their storehouses are located at certain vantage points. The entire town has been laid out according to Hindu sacred texts like the Agamas, Manasara and Mayamatam.



A construed map of the walled town of Srirangam around the 16th to 17th century showing how the Brahmins were settled around the first two enclosures and those belonging to the other castes in the third enclosure



PLOT WIDTH



MAIN DOOR



REZHI



WOODEN COLUMN WITH STONE BASE



ROW HOUSES IN ELEVATION



FRONT ELEVATION



COLUMN WITH CLEAR STOREY



KITCHEN EXHAUST



BACKYARD

The fifth street in the entire plan and the first in the settlement—Uthirai Street—was traditionally occupied by Brahmins involved in special temple services such as performing rituals, offerings to the Lord, kitchen activities and *prasada* (sacred food after the rituals are performed) distribution, and as musicians and dancers. The sixth street in the entire plan and the second in the settlement—Chithirai Street—was also traditionally occupied by Brahmins involved in other temple services and performing rituals during social ceremonies. It was so renamed after the Chithirai chariot procession was introduced during the time of the Nayak rulers. The last street in the entire plan and settlement this street was traditionally occupied by non-Brahmins involved in all other services, in the temple, and those that the people are dependent on in any town. The tutelary shrines of the non-Brahmins are also located here, namely the Kali Subshrines, along the sixth enclosure wall, and the Protector God for Sri Ranganathaswamy, Munneshwaran Shrine, along the seventh enclosure wall.

All houses have a well in the backyard. Some had wells at the front also, although most of these have now been closed off due to safety and expansion reasons. The water from the wells is used for all sacred and domestic purposes and hence is guarded well from impurities. 70% of the households have toilets, all of them attached to the service lane at the rear, which is accessed by a gate in the backyard wall.

The plots are narrow with a very linear shape, leading to the accommodation of as many built structures as possible. In this way the maximum number of Brahmins could be accommodated in the immediate vicinity of the temple, thus offering them a view of their Lord's entrance gateways and other holy sights. The built structures were also linear. The bath was attached to the main building but the toilet was always on the outside connected to a conservancy lane, and there was ample space in the backyard for ventilation, washing and drying clothes. About 36% of the town is open to the sky and 62% is totally built-up, and this includes the temple complex as well.

The construction materials were predominantly brick and lime mortar, mud and lime, terracotta tiles, and timber for the wooden columns, doors, windows and the Madras terrace, as well as sloped roofs.

A detailed study of the festivals and rituals of the Srirangam walled town was undertaken and their influence on settlement and spatial planning was analyzed in great detail. The same has already been covered in one of the earlier reports.

The lists of **Built and Natural Heritage Components of Srirangam** were identified under the following categories:

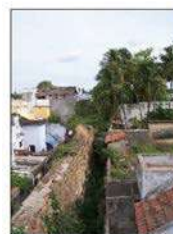
1. Sri Ranganathaswamy Temple Complex
2. Enclosure walls
3. *Gopurams*/Entrance archways
4. Water bodies
5. *Mandapams*/Pillared pavilions
6. Sub-shrines
7. *Tirumaligais*/houses that once belonged to the religious teachers and spiritual leaders
8. *Mutts*
9. *Choultries*
10. Traditional Brahmin houses
11. Traditional Houses of other communities
12. Other important buildings
13. Shops in the south-axial street that were traditionally pillared pavilions and still largely retain their original character
14. Coconut groves within the walled town in the Adavalanjan enclosure



STONE WELLS IN THE BACKYARD



SERVICE LANE - CHITHIRAI STREET



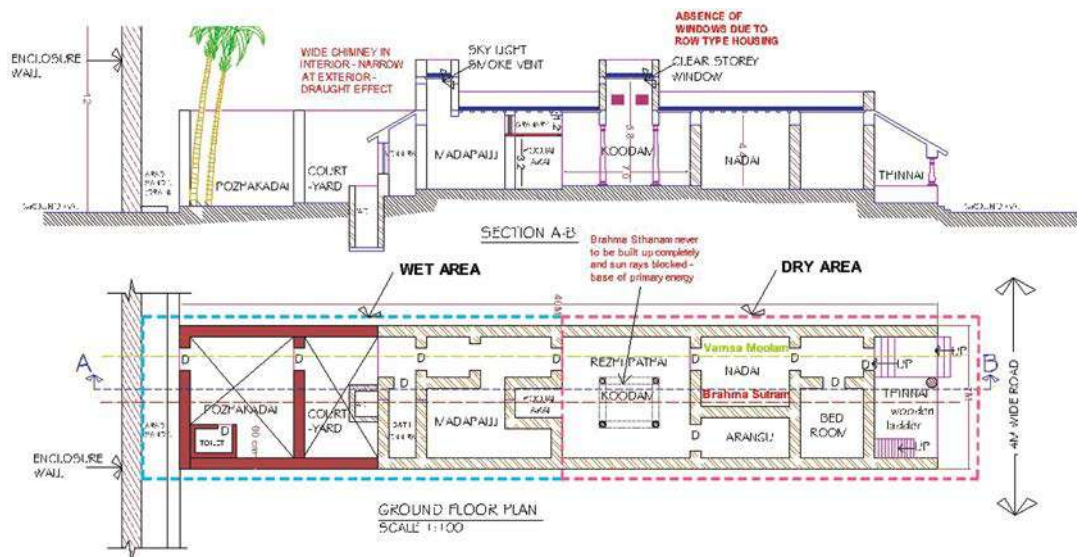
SERVICE LANE- UTHIRAI STREET



4'-6" SERVICE LANE

Drainage Lane - 1.2 mt wide - sewer line from the kitchen and from the toilets attached to the drain.

Access from the gate on the wall between backyard & drainage lane



A typical house plan and section in the walled town of Srirangam

15. Processional routes

16. The Kaveri and Kollidam Rivers and their dry river beds

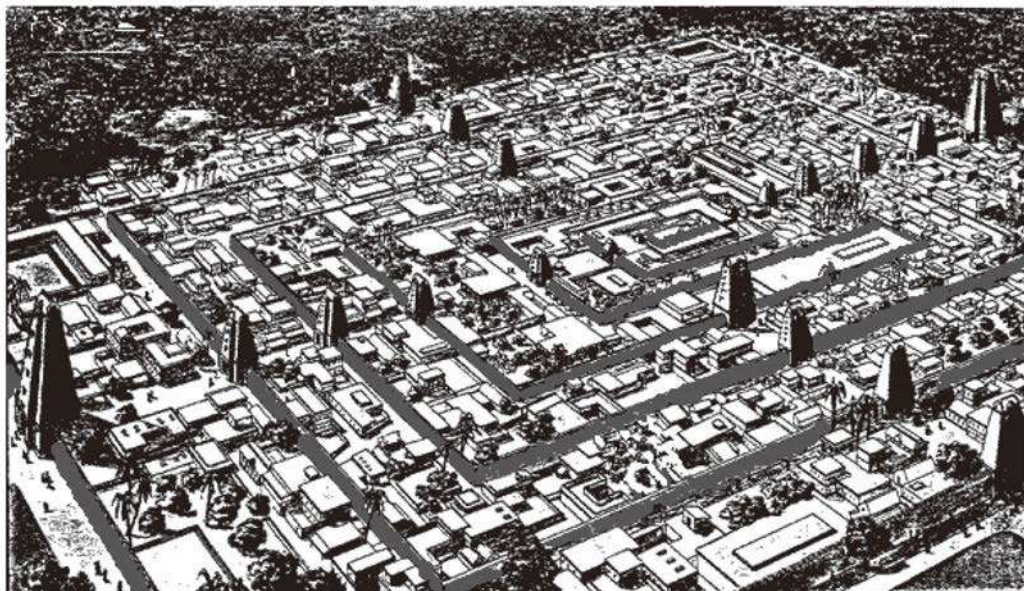
The **Values of the Cultural Heritage Components** were categorized as:

1. **Ecological**
2. **Historical** - associational (age of the aspect, personality, clan or community, event, deity, myth), educational/archival, most important/uniqueness/one of its kind
3. **Social** – ethnic, political, arts and crafts work, strengthening group identity, spiritual/religious, place attachment
4. **Architectural**
5. **Aesthetic**
6. **Artistic**
7. **Economic**
8. **Use Value/Market Value**
9. **Non Market Values** – existence, bequest

The values are assessed to categorise graded properties according to the priority and nature of conservation interventions, preparing estimates for them as well as

deciding on stakeholder participation and nature of incentives. It is also done to help grade them based on their assessed values, age of the component, structural stability and deterioration condition, threats of encroachment, etc. It is beyond the scope of this article to show the grading and significance listed against each of the heritage components.

Srirangam is but one of the 38 Historic Towns designated as “Heritage Towns” in 1998. The process of designation was neither preceded by identification of what had to be preserved nor followed by a management and implementation strategy. Srirangam’s growing popularity as a centre of pilgrimage, the abundant land available for new housing developments, and the modern trend of urbanisation, post independence, has emerged as major threats to its cultural values and rich heritage. The town is losing its most significant and ancient planning principles and all the heritage components are becoming transformed at a rapid pace. Urbanisation has always been a continuous process—a way of life even in the past, as every town has after all scaled the ladder of urbanisation from its origin as a small settlement—however, today it has to be a lot more sensitive towards the existing layers of the past.



A conceptual perspective of the walled temple town of Srirangam



The Mapping of Anyer Lighthouse Tower, Banten Province, Indonesia

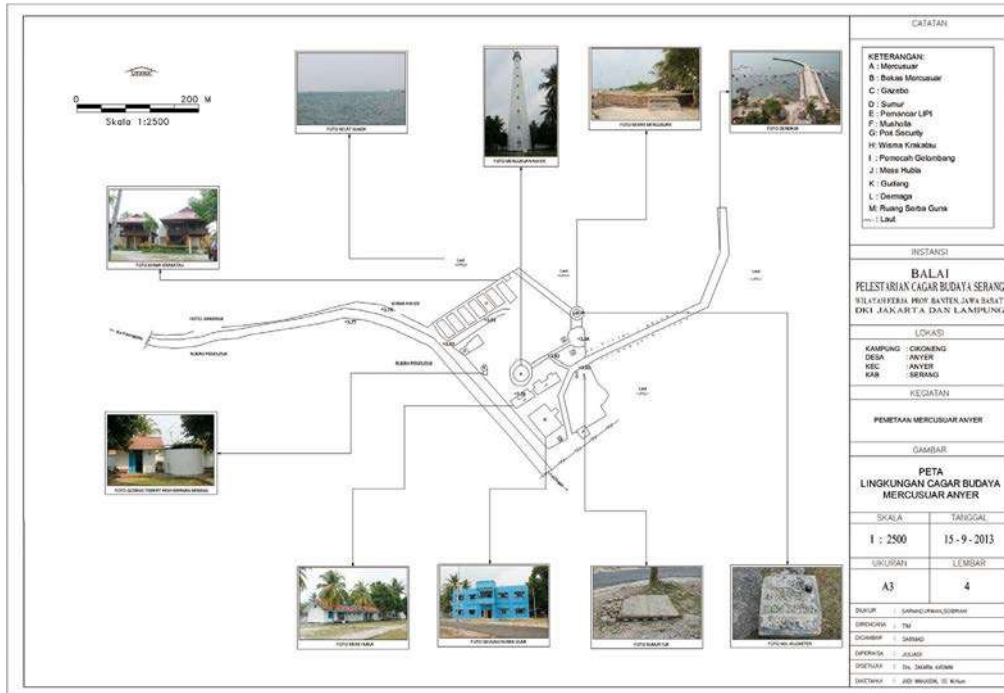
Dewi Puspito Rini, Archaeologist

Heritage Conservation Office of Serang, Ministry of Education and Culture

Location and Historical Background

Anyer Lighthouse is located in Cikoneng village, Anyer district, Banten province, Indonesia. This lighthouse is

about 40 km from the city of Serang, the capital of Banten province. Why is the lighthouse so important and why should it be mapped? Let's take a look at this question.



Anyer Lighthouse Environmental Map (Documentation: BPCB Serang)

The aim of constructing the Daendels Highway from Anyer (Banten province) to Panarukan (East Java province) for as far as 1000 miles from 1809 to 1810 was to accelerate the arrival of mail sent between Anyer and Panarukan. So it was not surprising that this path was referred to as the post highway. But the post highway has also been greatly influenced by the life of the communities that surround it, and now it has been transformed into an economic or public road.

There are several historic versions of the establishment of this highway. One source says that Daendels created the Anyer-Panarukan highway to defend Java from British attack. Thus, a road needed to be built in Java to connect one region to another in order to speed up the arrival of news and the transportation flow. Herman Willem Daendels came to Banten, Indonesia in 1808 from the Netherlands. Daendels had been appointed by the French Government as Governor General of the Dutch East Indies, for at that time the Dutch were under French rule, and Napoleon Bonaparte's brother, Louis, was the King of Holland.

In the first phase of the road construction work from Batavia (Jakarta) to Banten in the years 1808 to 1809, people still had the strength to carry out Daendels's commands. However, after the outbreak of malaria that killed many people, the administration cut funding for the Daendels's project. The number of casualties from the

road construction from Batavia to Banten is still unclear. According to some Indonesian historians, about 15,000 people died in the construction of the road, and without proper burial. However, Daendels confronted the people with an even harder commands. He did not hesitate to instruct his troops to shoot the people who neglected or refused to work on the road construction project, for whatever reason.

The starting point of the Anyer-Panarukan highway is now believed to be near a lighthouse that is located in Anyer Kidul, Cikoneng village, Anyer district, Banten province. The lighthouse building was constructed in 1885, as a replacement for the old lighthouse (built in 1806) that had been destroyed by the tsunami from the Krakatoa eruption in 1883. Krakatoa volcano lies in the Sunda Strait, located between Java island and Sumatra island. In the past, the Sunda Strait was a strategic area of military and trade routes.



Anyer Lighthouse (Documentation: BPCB Serang)

To secure the vital economic and military shipping lanes in Sunda Strait, the Dutch East Indies colonial government built a lighthouse at Cape Cikoneng. The eruption of Mount Krakatoa destroyed most of the life around the Anyer coast, which was then abandoned by its inhabitants. The Dutch colonial government tried to restore life in the area by undertaking development of Anyer Beach, especially redevelopment of the lighthouse, whose presence was essential for the security of shipping lanes of the Sunda Strait.

Implementation of the mapping

The Anyer-Panarukan highway and the lighthouse are part of the dynamic development of infrastructure and transportation in Indonesia—the highway relating to land transportation, with the lighthouse associated with marine transportation. Both were very important in the past, and the Anyer Lighthouse has finally been designated as a cultural heritage that is protected by law. In the interests of conservation of the building and data completeness, it is necessary to conduct data recording of Anyer lighthouse, including environmental mapping. This mapping activity was conducted to record data of the cultural heritage of the colonial era in Indonesia.

The aim of mapping is to record physical data in the field, which is visualized in the form of images with certain measurements. Through this activity, the layout and spacious of sites can be known accurately. In accordance with the intent of this mapping activity, it results in a map that describes the lighthouse building layout and environmental situation. Plotting for other objects in the map are also performed, especially for other buildings, roads and others that could help to clarify the position of Anyer Lighthouse on the map.

Anyer Lighthouse is located on the edge of the Anyer-Labuan highway, which juts into the Sunda Strait. If measured from the shoreline, Anyer Lighthouse is about 75 m to the south. The lighthouse building is at latitude $06^{\circ} 04'14.4''$ South and longitude $105^{\circ} 53' 06.8''$ East. The height of Anyer Lighthouse tower is 52.30 m, which stands on a foundation, with the diameter of the base tower is 9.6 m. The distance of the base tower wall to the base foundation is 2.3 m. The base tower which coincides with the foundation, has a profile that surrounds the base tower, with a thickness of the profile is 35 cm.



Measuring activity (Documentation: BPCB Serang)

Anyer Lighthouse is shaped like a cone that narrows upward, with a tilt angle of 88° . From the bottom to the top of the lighthouse there are 16 floors, each with a height of 3 m. Anyer Lighthouse tower was built using steel construction without a frame. The tower wall was built with a cast steel plate mounting system. The steel plates are linked to each other by using bolts and screws. The connection between plates substitutes for a wall frame structure. Each plate connection was designed with a certain thickness and measurement, so the plates were able to bind strongly.



Stairs that connect the floors (Documentation: BPCB Serang)

Besides the bond between the plates, the building construction was strengthened by the foundation and spire, which is connected in the center of the building inside the tower. Each floor in the Anyer Lighthouse tower has similar pattern: each floor is made of 12 mm thick steel plate with a pattern of horizontal stripes on the surface. There are stairs on each floor in order to climb to the next floor. On each floor there are windows in the four compass directions. The top floor of the tower is equipped with a balcony. In the center of the top floor there is a steel structure. The upper end of steel structure is open like a flower. This section is base of the lighthouse lamp holder that is surrounded by glass walls.



Anyer Lighthouse lamp (Documentation: BPCB Serang)

Mapping and measuring are always done simultaneously. Before taking measurements, we have to make a sketch of the location based on the results of observations. The first step is to determine the starting point or datum point. This datum point must be interconnected with other measurement points, then back again to the starting point. The aim of this mapping is to plot the Anyer Lighthouse buildings and other old buildings on a digital map. Such a map is very useful for many activities, for example for archaeological surveys, research, excavation, or restoration planning. The map can also be used as a reference in the utilization and development of the site.



Some Results of the Work Carried out in 2014 in Kazakhstan

Gulnaz Kulmaganbetova, *Research associate*
Kazarchaeology LLP

During 2014 scientific research was conducted on three monuments of history and culture. All these monuments date from different chronological periods and are located in different regions of Kazakhstan.

1 - Mausoleum of the Bronze Age Aksu-Ayuly II. (15th to 13th centuries BC)

The mausoleum is known for its architectural features, unparalleled among the monuments of the Eurasian continent. Unfortunately, many unique monuments of history and culture today have been completely lost or are in ruins. In order to prevent such a situation, as well as ensuring the protection and preservation of the monument, it was decided to restore the mausoleum.

Work on unique, ancient monuments today limited to carrying out conservation measures. For specific type of conservation—i.e., conservation of ruins—there are remnants of structures that are already in a ruined state, and as such are perceived as monuments. Of the restoration techniques approved by all schools of restoration, with *anastilos*—installation on a former site—authentic fragments change their position as a result of destruction of the monument.

Analysis of the current state of the monument

Study designs for the restoration work. Visual inspection revealed that the mausoleum is in satisfactory condition and has suffered the following losses:

- The area around the mausoleum is littered with waste, grass, fragments of stones piled plates, rubbish from the archaeological site;
- The foundation - these components are absent, fence No. 3 boards No. 1 by an edge dug into the earth, fence No. 2 is built of stone blocks ranging in size from 40 x 5 x 8 cm to 50 x 8 x 10; fence No. 3 is also composed of processed stone blocks of various sizes, and is adjacent to the box from the eastern side.
- Roof - is absent, however, the existing roof structures indicate the description given in the monograph "The Ancient Culture of Central Kazakhstan."
- Fence No. 1 - granite plates used in the construction of the fence of No. 3 mausoleum have collapsed, are covered with moss, and have moved, dropped, or been transferred to other places;
- Fence No. 2 - masonry walls of fence No. 3 and No. 2 have been lost
- Double fence No. 3 - 60% of the stones in the upper ranks of wall fence No. 3 have been destroyed, displaced and lost in some places, the joints in the masonry of western wall fence No. 3 of weathered fence No. 3 and slept;
- Burial box - one plate is used to cover the stone box, moved beyond the box, the second plate-overlap is inside the box; overlap stone box, located in the central part of the mound collapsed inward; on the overlap is

cracked and chipped, which progressed strongly compared to 1952;

- Ditch - excavated ditch fence between 1 and 2, the depth of 1.2 m.
- The entire construction of the mausoleum is becoming soaked;
- Progressive delamination of stone plates.

Materials

- The foundation structures are absent;
- Stone plates are made of local stone and limestone, obviously far from the construction site;
- The size of the plates used in the construction of the outer fence varies, from 40 x 35 x 5 cm to 120 x 80 x 7 cm;
- The size of the stones used in the laying of rails varies, from 40 x 5 x 8 cm to 50 x 8 x 10;
- Average thickness of horizontal joints is 1 cm, and varies from 0.8 to 3.5 cm;
- The solution stacks are made of clay, and dry stacks are sometimes present;
- Local clay is used;
- Gravel, and sand and gravel have been used.
- The pavement of gravel, crushed stone and clay has been filled, as has the floor of the burial chamber. Mountain gravel was used as backfill. The surface consists of rough gravel grains as a result of natural weathering, which provided satisfactory adhesion with a binder solution.
- Crushed stone was used when floor consisted of a solid granite rock granular structure, with a particle size of more than 5 mm. The good properties of granite rubble made it a popular building material as far back as the Bronze Age.

Details of the decision

As already noted, the work is focused mainly on conservation, and aimed at strengthening the security structures of the monument as well as genuine parts and elements with partial recovery of land that cannot be questioned, and to play a role in the preservation of the original.

The mausoleum is one of the earliest buildings, so its appearance must be saved as an archaeological monument. The main objective is to preserve the appearance of the mausoleum. To do this, the surviving parts of structures must be preserved, and the destroyed portions must be restored.

During the preparatory phase we collected and analyzed data on the Bronze Age. We then consulted with experts, restorers and architects, and shared details of restoration work on similar monuments in the past.

We investigated materials on the project in the archives of

Saryarka Archaeological Institute at Karaganda State University, named after E.A. Buketov (Karagandy); the Institute of Archaeology, named after the academician A.H. Margulan (Almaty); "Kazarchaeology" LLP (Almaty); and the National Academic Library of the Republic of Kazakhstan (Astana). The study of historical data has provided the most comprehensive data on the monument. We created a complete database of the complex Aksu-Ayuly II, and topographical and processed image data from previous research. We conducted a thorough analysis of the scientific reports of Central Kazakhstan Archaeological Expedition (CKAE), the expedition reports of Saryarka Archaeological Institute at Saryarka Archaeological Institute at Karaganda State University, named after E.A. Buketov, and reports of "Kazarchaeology" LLP. During the works we designed and analyzed a large amount of archaeological literature on this subject.

The monument had been studied repeatedly over the years:

- 1952 - the Central Kazakhstan Archaeological Expedition led by the academician A.H. Margulan. The expedition included A.H. Margulan, MK Kadyrbaev, KA Akishev, and GI Patsevich.
- 2002 – a detachment from Saryarka Archaeological Institute at Saryarka Archaeological Institute at Karaganda State University, named after E.A. Buketov. The expedition included Zh.E. Smailov, V.G. Lohman, and I.A. Kukushkin.
- 2009 - The LLP "Kazarchaeology" under the direction of Zh.E. Smailov. The expedition included E.Kazizov, A. Abildin, and G.Kulmaganbetova.

Removing measurements and measurement of objects.

These works included:

- Architectural survey of the monument with visual inspection and measurement of stylistic characteristics;
- Schematic measurements;
- Determination of loss of the original image;
- Circular surveying, allowing identification of corners fathom corners and details of facades;
- Execution of preparatory drafts and sketches;
- Removal of natural size by drawing them in a sketch;
- Implementation of a desk measuring drawings and finalization of the work performed.
- Photographing details before the start of work.

We carried out major restoration, resurfacing and remediation of the mausoleum Aksu Ayuly II.

Work was done on the preparation of similar boards. As a result of these investigations, eight plates of different sizes were obtained. These plates were made of similar rock and stone, i.e., limestone, which corresponds to the requirements of the Venice Charter.

Ditch fence between 1 and 2

For the convenience of further work, reclamation ditch work started immediately after clearing debris from the monument. In order to improve the strength of the soil, remediation work was carried out with the use of compactors, which was used after each layer was filled up to 30 cm.

The burial box.

The box at the center of fence No. 3 is built of six processed stone slabs. It was in a 2.5 x 1.45 m dirt pit at a depth of 1.6 m. The box is located at a certain distance from the inner walls of fence No. 3: 1-1.2 m from the first wall, and 3.5-4 m from the second wall. Inside the box there is a stone plate with dimensions of 1.46 x 1.36 x 0.2 m recorded at the north wall of the box. Northeast of the box was another plate used to cover the camera with dimensions of 1.85 x 1.2 x 0.14 m, which apparently covered the eastern half of the box. During the restoration work the bottom of the burial chamber was filled with a mixture of clay and gravel, leveled and compacted. Stone slabs had been laid around the box.

Double fence No. 3.

Fence 3 is a room surrounded by stone walls and a double interior space which is backfilled with stones and clay. Masonry fence No. 3 is in satisfactory condition. The roundabout corridor (space) between the two walls is 1.8 m wide. The main activities undertaken were analysis of rocks and cleaning the base of the wall. The rise of the walls of the surviving stones on a new solution No. 1. The wall was raised to a level of 0.9 m. The eastern, north-northwestern and western parts of the outer wall of the charge of three stone fence No. 3 panels of small size. In total there are 23 plates. After the removal of these panels, it became clear that the wall under the slabs had survived much better than in the open areas. The solution in the joints had weathered in the open areas pour in. After grouting the joints with a solution the stone plates were again set in their original place. It should also be noted that two stone plates with a subrectangular shape and dimensions of 175 x 65 x 13 cm and 157 x 44 x 9 cm were set on the eastern and western sides of the inside of the walls. The space between fences 2 and 3 was also rehabilitated. The work was done with the use of compactors, at an angle of 300 to the inner side of the fence.

Fence No. 2.

Fence No. 2 had lost part of the masonry walls. The better preserved portions of the fence were reinforced with horizontally placed flat plates. Work started with the clearing of vegetation, debris, later accretions, and destroyed fragments of stones. After this, the authentic stone blocks of the masonry wall were cleaned with a solution. The laid-wall height was 0.7 m, with a width of 0.2 m. The inner part of the wall was covered with soil, then rammed. The southern part of the fence had become unstable: broken stones had fallen out of the masonry, and some had been lost. We finished clearing the site and restored the masonry, with replacement of the lost gems from the fence. Restoration was also carried out in the northern corner, where similar damage was seen.

Fence No. 1.

After clearing stones from the dirt and dust, work began to restore fence No. 1. The diameter of the fence No. 1 was 24 m. Work was carried out to mark the plate panels installed on the edge. Marking was done with photo fixing these works.

The height of the big board is 1.75 cm, and the smallest plate is 47 cm. It was also decided to install a plate with the appropriate parameters. During the works, seven fallen stone plates panels were installed in-situ. Similarly, undisturbed flagstones data plate planted 2-3 stone props, only then was compacted sand with a mixture of crushed stone used. Before the start of restoration work on the mausoleum, this outer fence consisted of 28 plates. Subsequently, eight were treated as set stone plates with different sizes. These plates are mainly installed on the eastern side of the mausoleum and also have supporting stone-bars. As a result of this work there were 43 stone slabs panels.

Work on the mausoleum Aksu Ayuly II was conducted in compliance with all standards of the Venice Charter adopted at the Second International Congress of Architects and Technicians of Historical Monuments in Venice in 1964, especially Article 15.

2 - The objects of research on the remains of the necropolis and settlement-horde on the spot rate Shibani.

The aim of the research was the study of archaeological sites in the southern Kostanai region (Amankeld areas), including identification of monuments of the Middle Ages around the Zhylanshyk River (Dulygaly, Shygyrly) and Sarytorgay River (Tamdy, Sarysay, Hanshabylgan). A list of

identified sites was drawn up, and archaeological research on the monument Ekidyn was carried out. The studies were conducted at the complex; the resulting material was systematized and processed.

For more complete information about the monument ethnographic research was conducted. The goal of ethnographic research was to collect information on the history of the region directly at the investigated monument.

In preparation for the field work on the monument, medieval Persian sources and archival materials were studied, and scientific works on the archaeological study of the Kostanai region were analyzed. The success of the archaeological research was assisted by examining satellite images of the region.

In the course of archaeological research, remains of medieval mausoleums were unearthed, and the materials collected was characteristic of the culture of the Ulus Shibani population.

Materials obtained during archaeological excavations are of great importance for the study of unexplored and virtually unexplored regions of our country, which is the territory of the Kostanai region.

Mausoleum of the Bronze Age Aksu Ayuly II



General view of the top of the excavated mound: excavations 2009



Top view: excavations 2011



View from the northwestern side before opening ditches: excavations 2011



Masonry double fence No 3



Eastern wall of the burial box



Eastern wall of the burial box



Burial box



Working time



Masonry double fence No 3



Fence No 2



Fence No 2



Appearance after reconstruction of the moat, masonry fences No 2 and No 3



Marking on stone slabs, fence No 1



Installation of in-situ slabs of fallen fence No 1



Installing panels for fence No 1



View after installation of boards for fence No 1



Fixing stone props



Installation of in-situ slabs of fallen fence No 1



View after finish of work



View after finish of work



View after finish of work



View after finish of work



View after finish of work



View after finish of work

Political center Shaybanids Akkol



Monument Ekidyn: Melon I



Monument Dyn I: view from the back



Monument Dyn I: view from the south



Monument Dyn I: façade



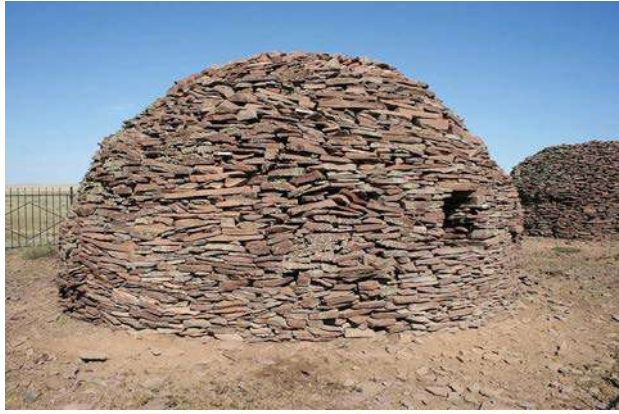
Monument Dyn II



Monument Kosuytas



Monument Kosuytas I



Monument Kosuytas: view from the southeast



Necropolis Kosuytas



Installation of Stone Slate Roof Tiles at the City Hall Building, George Town, Penang, Malaysia

Professor Dr. A Ghafar Bin Ahmad, *Professor*

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Introduction

The City Hall Building of the Penang Municipal Council, or *Bangunan Dewan Bandaraya Majlis Perbandaran Pulau Pinang*, is one of the magnificent British colonial buildings of the UNESCO World Heritage Site of George Town. Situated along *Jalan Padang Kota Lama* at The Esplanade or *Padang*, the City Hall Building currently houses the Council Chamber, councillors' offices; and council support offices, namely the Licensing and Urban Services Departments. This two-storey building has undergone two phases of restoration work: Phase 1 in 2004-2005; and Phase 2 in 2013-2014. Both phases were financed by the State Government of Penang through the Penang Municipal Council. The restoration works of Phase 1 involved half of the ground floor area including the refurbishment of the Council Chamber, main lobby, councillors' offices, mezzanine floor, dining hall and toilets; as well as salt desalination and termite treatment, at a cost of RM 3.58 million (USD 1.02 million). Whilst Phase 2 works involved the restoration of the entire building including demolition of temporary partitions, doors and windows, and staircases; re-plastering, façade treatment, re-painting, mechanical and electrical works; salt desalination, termite treatment; and installation of stone slate roof tiles, amounting to a cost of RM 6.67 million (USD 1.91 million). The Phase 2 works took place over a period of twenty two (22) months from 1st March 2013 until 31st December 2014. This report highlights the restoration of the City Hall Building, mainly the installation of stone slate tiles on its pitched roofs.

Historical Background

Built in 1903 at a cost of \$100,000, the City Hall Building was originally part of the Municipal Office of Penang Island. It was built adjacent to the Town Hall Building (which was built in 1879) in response to increased demand for office space. The building was renamed the City Hall when George Town was given city status on 1st January, 1957 by a royal charter granted by Her Majesty Queen Elizabeth II. George Town was the first town in the Federation of Malaya (later Malaysia) to become a city, and was the only city in the country until Kuala Lumpur was granted city status in 1972. However, when the local government was revamped in 1976, which provided for non-elected local councils; the local council areas in Penang were permanently divided into two municipal councils, which are Penang Island, known as the Municipal Council of Penang Island or *Majlis Perbandaran Pulau Pinang* (MPPP); and Province Wellesley, known as the Municipal Council of Seberang Perai or *Majlis Perbandaran Seberang Perai* (MPSP). Despite the changes in city status and administration, the City Hall Building in George Town has continued to be known as the City Hall among locals. Today, the building is a venue for the Council Chamber's monthly meetings, state government functions and other official gatherings.

Architectural Background

The two-storey City Hall Building in George Town was built in the Edwardian Baroque architectural style. This architectural style is commonly found in many public buildings built throughout the British Empire including in India, Sri Lanka and Australia during the Edwardian era from 1901 to 1910. Some of the typical details of the Edwardian Baroque architectural style found at the City Hall Building are symmetrical floor plans, pitched roofs, high ceilings with high windows and doors, a central domed tower above the rooftop, colonnades of columns (some in pairs) in Ionic and Corinthian orders on building facades, keystones above arched windows, ornate parapets on roofs, Dutch gables at both ends and in the centre; as well as exaggerated balustrades. Timber was widely used for the ceilings, upper floorboards, windows, doors and staircases. Steel I-beams were used to support the first floor. Some walls were clad with panels using brickwork, gypsum board, and composite materials to create new walls. Some of the arches were enclosed by brickwork or plywood, in order to create additional rooms. The original roof tiles were stone slate tiles but were replaced by asbestos sheets. In the restoration of Phase 2, stone slate roof tiles were reinstated to retain the authenticity and integrity of the building. The design of the City Hall Building is similar to the nearby Town Hall Building, which features a front balcony above the porch as a major element overlooking The Esplanade. Due to its immense historical, social and architectural significance, on the 29th of July, 1982 the City Hall Building was listed as a National Monument or *Monumen Kebangsaan* under the now defunct Antiquities Act 1976 (gazette no. PU(A)221). The building is now recognised as a Heritage Building or *Bangunan Warisan* under the current National Heritage Act 2005 (Act 645).

Building Defects

Based on measured drawings prepared in 2002 and Phase 1 conservation reports, a thorough survey of the building was conducted by a consultant architect in 2012 to identify the extent of the building defects and the scope of conservation works required. Located very close to the sea, the City Hall Building is exposed to gusty winds and heavy rainfall all year round. Accordingly, findings from the dilapidation survey revealed that most parts of the building, but mainly the upper floor, roof, ceiling and half of the ground floor, were in poor condition including signs of roof leakage, termite infestation, rising damp, salt contamination, harmful growth and water seepage. Peeling-off paint and fungus stains were commonly seen on building facades. Small light bulbs previously drilled and fixed onto external building facades, mainly on parapets, window frames, arches, the balcony and cornices had caused damage to the building fabric and lime plaster. The light bulbs were carefully removed. The aging corrugated asbestos sheets on the roofs were replaced

with new stone slate tiles, which are the original roofing materials.

Stone Slate Roof Tile

Stone slate tile is made of natural stone manufactured into thin tiles of uniform thickness. It has been a common roofing material found in many heritage buildings in Europe, particularly in Britain, since Roman times. Stone slate tile has extremely low water absorption capacity, making it water-resistant and suitable as a roofing material. It is exceptionally heavy-duty and can last for several decades with low maintenance. In Malaysia, stone slate roof tiles are rarely seen in heritage buildings including the British colonial buildings. This is due to the non-availability of the materials manufactured locally and its high cost of installation. Many heritage buildings in Malaysia use various types of roofing materials such as thatch, roof clay tile (Indian V-shaped or Chinese U-shaped), *Singgora* clay slate, Marseilles tile, timber slate; and corrugated zinc or asbestos sheet. Corrugated asbestos sheet is not recommended for roofing material as it is hazardous to one's health. The original roofing material of the City Hall Building was stone slate tile. However, it was replaced by corrugated asbestos sheet which was a common roofing material during the 1960s and 1970s. Such replacement was partly due to roof leakage that had caused problems to the building interior and materials, leading to falling damp and termite infestation. During Phase 2 of the restoration of the City Hall Building, the corrugated asbestos sheets were carefully removed and replaced with stone slate roof tiles. Reinstatement of the stone slate roof tiles was decided based on material availability, method of installation, future maintenance and cost. Stone slate roof tiles were reinstated at the City Hall Building based on several advantages as shown in Table 1.

Table 1: Advantages of Stone Slate Roof Tiles

Water permeability	Impermeable. Less than 0.3%.
Sunlight	Unfaded and unaffected by U.V. light.
Heat	Unaffected by normal heating.
Chemical resistance	Unaffected by normal atmospheric pollution, sea air and salt spray.
Biological resistance	Unaffected by vegetable growth, rot or insect attack.
Compatibility	Compatible with all building materials.
Fire resistance	Stone slate is non-combustible and does not support combustion.
Durability	Stone slate has a lifespan of 80-100 years.

Temporary Roofing

Throughout the restoration of the City Hall Building, temporary roofing using steel frames and corrugated metal decking was constructed above the existing pitched roofs. This was to ensure that the roof structures were well protected from heavy rainfall, particularly when the corrugated asbestos sheets were removed and brought down to the ground; and during the installation of stone slate tiles. For purposes of security and stability, the design and construction of the temporary roofing were endorsed and certified by a qualified structural engineer.

Inspection of Roof Structures

After temporary roofing was constructed above the existing pitched roof, the corrugated asbestos sheets were carefully dismantled and removed. Existing timber roof structures including timber planks, battens and plywood boards

were inspected and recorded for any defects, particularly termite infestation. Once the corrugated asbestos sheets were removed, broken pieces of the original stone slate tiles were found scattered on the timber planks between timber battens underneath the corrugated asbestos sheets. These broken pieces of stone slate tiles were collected for reference, laboratory tests and analysis.

Compressive Strength Tests

Since no stone slate tiles are manufactured in Malaysia, new stone slate tiles had to be imported from Xian, China. A total of four samples of the original and new stone slate tiles were sent to a structure laboratory at the School of Housing Building and Planning, Universiti Sains Malaysia, Penang for compressive strength tests. Both original and new stone slate tiles shared the same width (600 mm) and length (250 mm). However, the thickness of the tiles varied: 50 mm for the originals; and 70 mm for the new ones. For the compressive strength tests, the sample tiles were cut into small pieces of 250 mm (length) x 60 mm (width) x 50 mm (thickness). The results of the compressive strength tests have shown that the new stone slate tiles are more durable compared to the original tiles, as shown in Table 2.

Table 2: Compressive Strength Tests of Original and New Stone Slate Roof Tiles

Stone Slate Tile (Thickness)	Sample No.	Area (mm ²) (Length x Width)	Breaking Load (N)	Average Breaking Load (N)	Strength (Breaking Load/Area) N/mm ²
Original (50 mm)	1	15,000 mm ² (250x60)	405.2	374.45	0.0250 N/mm ²
	2	15,000 mm ² (250x60)	343.7		
New (70 mm)	3	15,000 mm ² (250x60)	600.4	612.00	0.0408 N/mm ²
	4	15,000 mm ² (250x60)	623.6		

Preparation of Mock-up Roofing

In heritage building restoration, a full-size mock-up is important to demonstrate, highlight and evaluate a particular section of a building system or design. As such, a mock-up of a roofing system using timber structures and stone slate tiles was set up at the City Hall Building prior to any installation. This was important in order to acquire feedback from the consultant architect, building conservators, contractors and the client. The roof mock-up was also used as a reference and guide for the roof slaters, roof tilers and other workers on site. The mock-up demonstrated various layers of insulation system including wire mesh, double-sided aluminium sheet and rockwool, which were placed underneath the plywood boards, roofing felt (bitumen), battens and slate stone tiles.

Installation of Stone Slate Roof Tiles

One of the most important aspects to consider before installing the stone slate roof tiles is to have excellent roofing underlay. This is to prevent any roof leakage during heavy rainfalls. The installation of stone slate roof tiles at the City Hall Building was carried out carefully in four stages: insulation system, roofing felt, new battens and new stone slate tiles.

Insulation system

The restoration of the roofs began with an inspection of

existing timber planks, rafters, battens and plywood boards once the existing corrugated asbestos sheets were dismantled and removed. Any defects or termite infestations found in the timber structures were recorded and removed, with the old timber replaced with new timber of the same species or group strength. The insulation system began with the laying of wire mesh on rafters followed by double-sided aluminium foil and rockwool or mineral fibre. This creates a good thermal insulation that allows energy saving where restricted heat is transferred from outside to the inside of the building. The application of rockwool also acts as filtration from any water seepage; and as a soundproofing medium.

Roofing Felt

Once the insulation system was installed, plywood boards measuring 122 cm x 244 cm were laid on the rockwool. This was to ensure that the installed rockwool was secured and any unevenness cushioned before the roofing felt was laid over the plywood boards. Roofing felt, formerly known as tar paper, is a sheet material impregnated with bitumen or asphalt that acts as a base material underneath roofing materials. The installation of roofing felt separates the plywood boards from battens and stone slate tiles, creating secondary weather protection, and thus preventing any roof leakage from wind-driven rain.

New Battens

Based on the stone slate tile manufacturer, new timber battens of 2.5 cm x 5.0 cm were fixed over the roofing felt. The new timber battens were tannalised prior to roof fixing for a longer-lasting protective result against fungal decay and insect attack. Stainless steel nails were used to fix the battens to the roofing felt and plywood boards underneath. The battens were positioned at 17.5 cm intervals, starting from the lowest end of the roof. A string was used to make a straight line to ensure that the distance between the battens was consistent and accurate. The position of the lowest batten is important so that the stone slate tiles will overhang the fascia board.

New Stone Slate Roof Tiles

Through its two small nail holes located at the top, each stone slate tile is firmly fixed at the centreline of the roof batten. The nail heads were left to protrude slightly above the surface of the slate roof tiles. Nails were not driven too deeply into the timber battens, because exerting too much pressure on the roof tile could cause it to break if someone steps on the roof. The installation of stone slate tiles began at the lowest end of the roof (first course) and continued upwards in an interlocking manner with 28 cm of overlap. Powder-coated galvanised iron, in a grey colour similar to the colour of the stone slate tiles, is used for the roof ridge cap and valley gutter. Each stone slate tile occupies three rows of roof battens when lying on the roof. One square metre of roof requires 18 stone slate tiles. As each stone slate tile weighs 1.8 kilograms, the total weight for one square metre of roof is 32.4 kilograms. A total of 46,853 stone slate roof tiles were installed by experienced roof slaters and roof tilers at the City Hall Building. Some extra stone slate roof tiles were stored and left within the roof structures for future maintenance and rescue work. Once the installation of stone slate roof tiles was complete, the

temporary roof was carefully dismantled and removed using a telescopic hydraulic crane.

Conclusions

The installation of stone slate roof tiles at the City Hall Building, George Town, Penang has posed great challenges to those involved in this project including the consultant architect, conservator, building contractor and quantity surveyor. One of the challenges was to outsource the procurement of new stone slate roof tiles to replace the existing corrugated asbestos sheets since there were no stone slate tiles available on the local market. The new stone slate roof tiles had to be imported from Xian, China, and that required a longer time to be delivered on site. Since 46,853 stone slate roof tiles were needed for the roofs, the tiles were delivered in four shipments. This had caused a slight delay in the progress of the project, mainly in the restoration of the upper floor ceilings, installation of rainwater gutters and painting work, both internal and external. Hiring skilled and experienced roof slaters and roof tilers was another challenge in the project because stone slate roof tiles are rarely used in heritage buildings in Malaysia; and it was difficult to obtain the right skilled workers. Roof slating and tiling are skilled jobs that require specific training, as working at heights can be dangerous.

The installation of the stone slate roof tiles at the City Hall Building at George Town World Heritage Site required in-depth knowledge and experience in roof slating and tiling including constructing temporary roofing, removing existing corrugated asbestos sheets, inspecting roof structures, timber work, roofing felt and battening and interlocking of tiles. A work method statement on the installation of the stone slate roof tiles had to be prepared by the contractor's building conservator and approved by the consultant architect and consultant building conservator prior to any roofing work. Despite these challenges, the installation of stone slate roof tiles was considered successful in reinstating the original roofing material of the building, hence maintaining the building's authenticity and integrity.

Acknowledgements

The author wishes to thank the Penang State Government, particularly the Penang Municipal Council, School of Housing Building and Planning, Universiti Sains Malaysia, Arkitek Urbanisma Sdn. Bhd., Nas Engineering Sdn. Bhd., Shahrudin Shabri of Built Heritage Sdn. Bhd.; and USM LRGS Local Knowledge Project 3 Team (LRGS/TD/2012/USM-UKM/KT/03) for making this project and article possible.

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Shahrudin Shabri, “Kaedah Pemasangan Slate Tile”, *Tatacara Kerja: Cadangan Membaikpulih Bangunan Dewan Bandaraya, Di Atas Lot 69, Jalan Padang Kota*

Lama, Seksyen 19, George Town, Daerah Timur Laut, Pulau Pinang (Fasa 2), Reference No.: DB/NAS/TK13/Slate Tile Rev. 1, 21st September 2014.



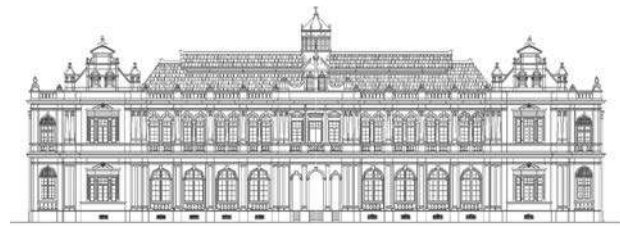
The City Hall Building portrays the Edwardian Baroque architectural style with symmetrical floor plans, pitched roofs, high ceiling with high windows and doors, central domed tower, colonnades of columns, keystones, ornate parapet on roofs, Dutch gables at both ends and in the centre, as well as exaggerated balustrades.



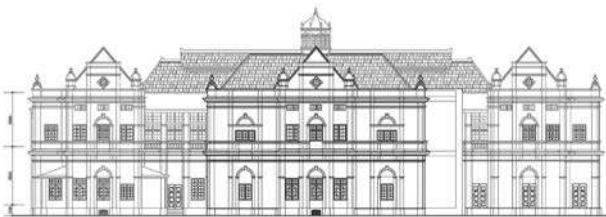
Corrugated asbestos sheets, commonly seen as roofing materials in many buildings in the 1960s and 1970s, were used to replace the original stone slate tiles of the City Hall Building.



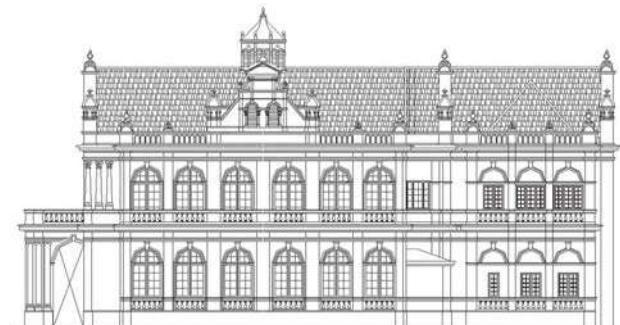
Throughout the restoration of the City Hall Building, temporary roofing using steel frames and corrugated metal decking was constructed above the existing pitched roofs.



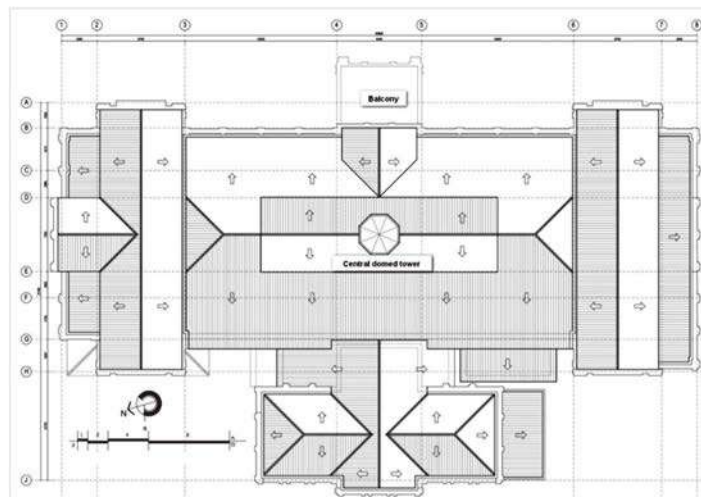
Front elevation of the City Hall Building.



Back elevation of the City Hall Building.



Side elevation of the City Hall Building.



Roof plan of the City Hall Building showing its pitched roofs, central domed tower and front balcony.



Once the corrugated asbestos sheets were removed, broken pieces of the original stone slate tiles were found scattered on the timber planks.



A full-size mock-up of a roofing system using timber structures and stone slate tiles was set up at the City Hall Building prior to any installation.



The restoration of the roofs began with an inspection of existing timber planks, rafters, battens and plywood boards once the existing corrugated asbestos sheets were dismantled and removed.



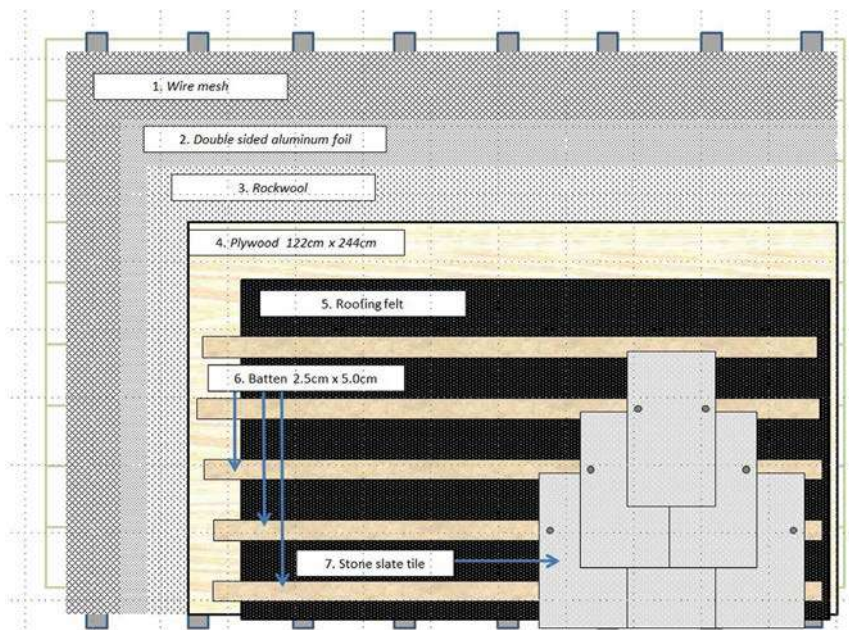
New 2.5 cm x 5.0 cm battens were fixed at 17.5 cm intervals, starting from the lowest end of the roof, over the new roofing felt (bitumen).



Powder-coated galvanised iron, in a grey colour similar to the colour of the stone slate tiles, was used for the roof ridge cap.



View of the City Hall Building showing its temporary roofing during restoration.



The various layers of the insulation system including wire mesh, double-sided aluminium sheet and rockwool, which were placed underneath the plywood boards, roofing felt (bitumen), battens and slate stone tiles.



View of the pitched roof of the City Hall Building after the installation of the stone slate tiles.



Interior view of the City Hall Building after restoration.



Once the installation of the stone slate roof tiles was completed, the temporary roofing was carefully dismantled and removed using a telescopic hydraulic crane.



Close-up view of the newly installed stone slate roof tiles at the City Hall Building.



Aerial view of the City Hall Building showing the newly installed stone slate roof tiles and back elevation after restoration.



Front view of the City Hall Building after restoration.



Aerial view of the City Hall Building after installation of the stone slate roof tiles.



Excavation of a Bathing Tank at Kandhuvalu Mosque in Ha. Utheemu

Shiura Jaufar, *Archaeologist*
Department of Heritage, Republic of Maldives

Utheemu, an inhabited island of Haa Alif atoll in the north of the Maldives, is one of the most important islands in the country, and renowned as the birthplace of Sultan Mohamed Thakurufaanu, who with his brothers and companions, fought an eight-year-long battle to drive out the Portuguese invaders who occupied Maldives from 1558 to 1573. The island and the whole of the atoll consists of several historical features relating to the Sultan including *Utheemu Ganduvaru*, the wooden palace in which Sultan Mohamed Thakurufaanu resided, and Kandhuvalu Mosque in Utheemu, which is believed to be where the Sultan prayed for victory before setting out for war.

From ancient times, it has been said that a bathing tank used to be located in the northeastern part of the mosque, which was buried during the reign of the first president of Maldives, Mohammed Ameen, to prevent the spread of malaria around the islands. On the occasion of the National Day of Maldives, Maldives National Defence Force (MNDF) excavated this tank to some extent upon the request of the island council of Utheemu. Since this was done without the permission of the Department of Heritage (DOH) and also since the council wanted it to be dug further to let the water beneath flow from the tank, the department sent a team to complete this task.

The team from the department included an archaeologist and two research officers—one to document the site and the other to prepare a conservation plan for the tank and to clean the tank. The team spent a week working on the site. The work of MNDF had left the tank in a rather harsh condition due to the excavators used to remove the spoil heap, hence the team was unable to reconstruct the tank during this visit. Many of the stones of the tank were badly damaged—some were broken and others had serious cracks in them.

The bathing tank

When the MNDF left the site, the tank was exposed for about a quarter of a meter below the water level (See Fig. 1). The tank was square with two entrance stairways—one at the eastern side of the tank and the other at the southern side. The tank measures two-and-a-half meters in height. Inside the tank is a series of elongated steps, some of them going below the water line. The stonework of the tank consists of sandstone and below the stonework is a series of tree trunks which lay completely under the water. The sandstone is lime washed and also lime plastered on the surface.

Excavation and cleaning of the tank

The team's main task was to remove the spoil heap below the water. It was an arduous task that took a few tries to successfully complete, which resulted in the team working until late at night. Before excavation, the tank was fully documented, drawn and photographed, by taking

measurements, recording the damage and so on. After documentation, plans were drawn up on how to remove the soil. At first the team decided to use a water pump to remove the water and then use spades and shovels to remove the soil. However, since this would require a large amount of labor and a considerable amount of time, which the team did not have, it was decided that this method would be unsuccessful. A second method was to manually use the water pump, to remove the soil instead of water. However, the pipe used for the machine was too long, and despite a number of tries after the pipe was shortened, this method did not work. On the third day at the site, the team decided to try the first method, and thus work started in the early morning and by the afternoon, when the pump was able to remove considerable amount of water from the tank, a team of two people started digging the soil out from inside the tank using spades. This soil was then taken out from the tank and sieved for any small finds. When the team reached the soil layer near the tree trunks it was even harder to remove the soil since water was gushing at a rapid pressure from below the ground and the pump was unable to remove it at this speed. Thus, when it got dark more people went inside the tank to work and after about eight hours of digging, the team decided to stop since it was unable to drain the water anymore. At this time, the team was able to remove the soil for about a meter, and the tree trunks below the water were now visible. While the team was digging soil, some members worked on cleaning the sandstone since there were many tree roots and a lot of fungus on and between the stones. Thus, a Karcher pressure washer was used to remove the fungus and the tree roots were cut as well. Over the following days, the water inside the tank was cleaned and small fish were placed in the water to make it cleaner still. At the end of the excavation and cleaning, a condition report was created along with a conservation plan, which was given to the department for further funding.



Figure 1: Condition of the bathing tank after MNDF's excavation



Figure 2: Condition of the bathing tank after DOH's excavation and cleaning



Figure 3: Preparation and placing of water pump to drain the water out



Figure 4: Removal of the spoil heap with spades after water has been drained out



Figure 5: Increased labor force who worked at night



Figure 6: Section of the stones showing the cleaned and unclean stones



Figure 7: Cleaning the stones with a Karcher pressure washer



Figure 8: Spoil heap at the center of the tank ready to be taken out of the site for sieving



Figure 9: Stones and water after cleaning.



An Ancient Turkic Memorial Complex in North Central Mongolia

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Boroo River, which is about 100 km long, flows out of the Jargalant Mountains into the river Kharaa, to the north, traversing a plain between the mountains of the western end of the Khentei Range, in the territory of Bornuur *soum*, Tuv *aimag*. /Mongolyn 2000: 169/ The Boroo River valley is about 900 m above sea level, and this relatively low land in the Mongolian plateau has dark brown, meadow brown and alluvial meadow soils. /Gusjenkov et al. 1962/ It receives 265 mm² rainfall annually. The mean annual air temperature ranges from -20°C to +20°C. /Mongolyn 2000: 168/ Such suitable climate conditions and higher soil fertility caused agriculture to thrive in the Boroo River valley. /Simukov 2007: 474/ There are roe deer (*Capreolus capreolus Linnaeus*), wolves, foxes (*Vulpes corsac Linnaeus*), hares (*Lepus tolai Linnaeus*), etc. in this area. /Mongolyn 2000: 168/ “The river Boro abounds in fish, particularly the salmo lenoc. In the meadows there are great numbers of quails”. /Timkowski 1827, II: 432-433/ There is also gold ore on the banks of the Boroo River and in the mountains near the river valley.

In 1892, V. A. Obruchev, who was a Russian mining engineer, saw an ancient tomb when he gave a geomorphological description of the Boroo River valley. /Obruchev 1900: 15/

In 1966, an ancient site on the west bank of the Boroo River was discovered and correctly defined as a Xiongnu settlement by Mongolian archaeologist Ts. Dorjsuren. /Dorjsuren 1966/

In 1987, a team led by Mongolian archaeologist Tseveendorj cleaned two damaged structures at the settlement and discovered some finds through a survey. /Tseveendorj 1991/

D. Tseveendorj and Hungarian archaeologist I. Erdely carried out the first small-scale excavation at the site in 1990. /Tseveendorj 1991a; Erdely 1994; Turbat et al. 2008: 334/

In 2002, archaeologist Ts. Turbat surveyed the site and found some artifacts including pieces of ceramic pottery and a tool made of a shoulder blade of small cattle for shaping pottery rims. /Turbat et al. 2005: 6/

Between 2005 and 2007, the Mongolian-Swiss Joint Expedition carried out large-scale excavations at the Boroo settlement. /Turbat et al. 2005: 6; Turbat 2011: 86/ 56 five-meter square areas, for a total of over 1175 square meters, were excavated. /Turbat 2011: 86-87/

In early March 2009, E. Urtnasan, a student of Ulaanbaatar University, informed us that he had found remains of an Ancient Turkic stone enclosure at a place called *Tamkbiny Döröv* when he was undertaking archaeological survey

practice in the territory of Bornuur *soum*. /Urtnasan 2009: 10/

On 16 May 2009, we went to the above place and worked at the site. /Munkhtulga 2009/

An aristocratic offering complex at *Tamkbiny Döröv*

There are two holes in a N-S-oriented oval earthen mound measuring approximately 10 m long, 6.8 m wide and 0.3 m high. (Fig. 1) The holes are located along the long axis of the mound.

The symmetrical placement of the holes indicates that two parallel enclosures were originally on the mound. There are small stones at the center of the north hole, which is smaller than the other one. There are also big and small stones around the mound.

It is possible that five stones in a line oriented 75-80° to the east from the bigger hole, the location of the southern enclosure, may be defined as a row of the *balbals*, an important element of typical Ancient Turkic memorial complexes.

However, it seems difficult to believe that a 1200-year-old *balbal* row has been preserved in the field, even in such local soil, as it would have been eroded by modern technical-based cultivation over several decades in the latter half of the 20th century. /Orlomjav 1987: 25-27; Altansukh et al. 2008: 13-14/

We also found a field canal located to the southeast, east and northeast from the monument when we surveyed around the site. A large number of stones were used for covering the inner walls of the canal.

When we took rubbings from a slab, a local person came and told us: “The hole was deeper when it was dug two years ago by some people. I think that these patterned stones are the remains of a building of a Chinese company that had worked here a long time ago.” We revealed some traces of this Chinese company after surveying around the complex site. (Figs. 12-15)

There was a variety of rubbish (sheep’s wool, iron wire, pieces of torn clothes, etc.) in the southern part of the hole. (Fig. 10) During the last 20 or more years many people and companies had both legally and illegally engaged in gold mining along the Boroo Valley and in the Noyon Uul mountain, the most beautiful place in this area and aristocratic cemetery of the Xiongnu Empire.

Stone slabs

There are stones for enclosing the outside bottoms of the slabs in the left and right walls of the southern quadrangular hole where the enclosure was erected. (Fig. 11) Looters

had dug inside the enclosure and removed the slabs from their original placement. (Figs. 10 and 11) Another two slabs are missing. They might have been removed for the building of the above-mentioned canal. The western wall of the hole contains a number of layers, including ash.

Slab 1. Slab 1 has been laid in front of the southern hole with its top facing the south. (Fig. 2) The upper edge of its exterior surface has been engraved with a 20 cm wide pattern. (Fig. 3) A most interesting image, a very realistic representation of a galloping antlered deer measuring 30 x 16.5 cm, looking to the right-hand side of the surface, has been depicted in the middle of the pattern line. (Figs. 4 and 6) The space below the upper edge pattern is decorated with a rhombic pattern. (Fig. 5) The dimensions of the slab are 166 x 106 x 26 cm.

Slab 2. This has also been removed from the southern hole, its original placement. Now it is located between the southern hole and the slab 1, and at the southern edge of the hole, looking same direction as of the slab 1. (Fig. 7)

The upper edge of the slab 2 is also patterned like slab 1. (Fig. 9) It is 23.5 cm wide. (Fig. 8) The pattern which was below the upper edge pattern has unfortunately been eroded so much that it has become invisible over time because the slab is made of softer rock. The slab measures 174 x 112 x 15 cm.

The iconic representation of this offering complex may belong to the following legend on white deer with golden horns, a totemic ancestor of the ruling clan of the Turkic Empire:

The ancestor of the Türks was called Shê-mo-shê-li, a lake spirit who lived to the west of the A-shih-tê cavern. A miraculous thing happened to Shê-mo. Every evening the daughter of the lake spirit sent a white deer to fetch him and take him into the lake. At dawn she sent him back. After several decades the tribe [of Shê-mo] set out for a great hunt. In the middle of the night the [daughter of the] lake spirit said to Shê-mo: 'Tomorrow during the hunt a white deer with golden horns will come out from the cavern where your ancestors were born. If your arrow hits the deer we will keep in touch as long as you live, but if you miss it our relationship will end.'

When day came [Shê-mo] joined the battue and, indeed, a white deer with golden horns came out from the birth-cavern. Shê-mo ordered his followers to tighten the battue. As the deer was about to escape, it was killed. Shê-mo, angry, with his own hand decapitated the leader A-erh and swore saying: 'Following this killing [of the deer], forever, there will have to be a human sacrifice offered to Heaven. A man of A-erh's tribe will be selected and beheaded in sacrifice.' To this day as a sacrifice to the flag the Türks take a man from A-erh's tribe. When Shê-mo had decapitated A-erh and in the evening had returned to the daughter of the lake spirit, she told him 'Your hand decapitated a man, the air stinks with the smell of blood. Because of this everything is over between us.' /Sinor 1982: 230-231/

The depiction of deer, a totemic ancestor of the Ancient Turkic ruling clan, shows that the enclosure belongs to a nobleman of the Latter Ancient Turkic Empire (690s-745 AD). (Figs. 16-18) It should be mentioned that a wolf depiction on a slab of an Ancient Turkic offering complex was found in the Khangai region. Like other Inner Asian imperial houses, Ancient Turkic noblemen often tried to expand an ideology that they had been originated from a common totemic ancestor—the wolf, and particularly deer. The location of the monument shows that the Boroo River valley was still very important politically for Ancient Turkic noblemen even after the decline of the Xiongnu Empire of Ancient Inner Asia. The later Inner Asian "empire-builders" inherited the ideology on the origin of imperial house.

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Fig. 1. Offering complex at Tamkhiny Döröv. From the south



Fig. 2. Stone slabs of the complex



Fig. 3. Slab 1



Fig. 4. Deer image of slab 1



Fig. 5. Rubbing of slab 1



Fig. 6. Rubbing of the deer image



Fig. 7. Slab 2



Fig. 8. Upper edge pattern of slab 2



Fig. 9. Rubbing of the upper edge pattern of slab 2



Fig. 10. Looters' hole



Fig. 11. Enclosure stones in situ in the eastern wall of the hole



Fig. 12. Early 20th century millstone near the complex site



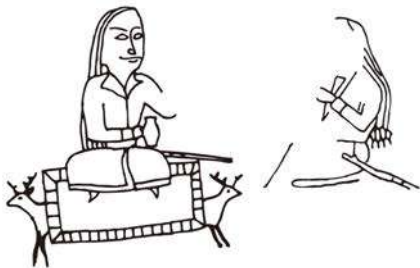
Fig. 13. The millstone



Fig. 14. Ruins of a building of a Chinese company from the early 20th century



Fig. 15. Column base of the building



0 10 cm

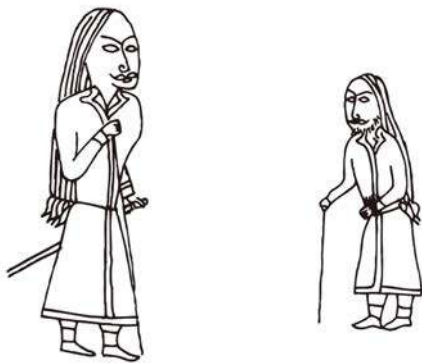


Fig. 17. Images of two deers engraved on an Ancient Turkic stele at Mōngōt Khyasaa (Bayar 2006 (2014): 67 (266))

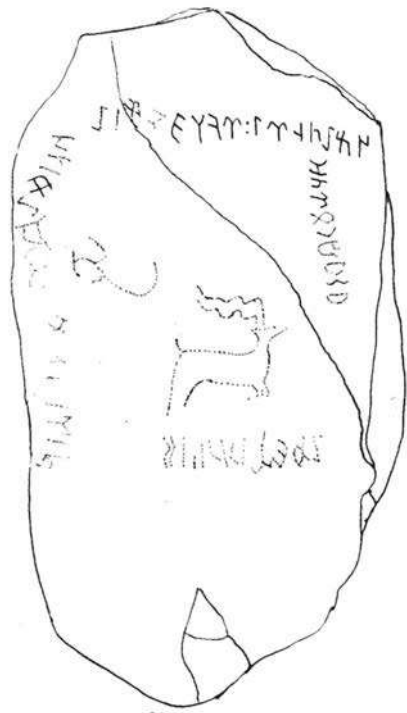


Fig. 16. Engraved deer image from an Ancient Turkic aristocratic complex at Khöl Asgat (Bazykhan 2005)



Fig. 18. Gilded silver deer from Bilge Khagan's memorial complex (Bayar 2004 (2014): 80 (194))



Conservation of Sundari Chowk: A Major Component of the Medieval Royal Palace at Patan

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Introduction

In medieval Nepal, there were three separate kingdoms within Kathmandu Valley: Kantipur (Kathmandu), Lalitpur (Patan) and Bhaktapur. All three kingdoms were ruled by Malla kings; however, the rulers who made their capital city built their own separate palaces and surrounding ornamentations too, which is the most significant feature of the three cities these days.

The medieval royal palace of Patan is located at the center of Lalitpur city, facing a large temple-filled square. However, while the other palaces at Kathmandu and Bhaktapur introduced foreign design elements and plastered surfaces, the Patan durbar maintains a completely traditional appearance with brick walls, carved doors, windows, struts and cornices, and tiled tiered roofs that have best preserved the character of the Malla period (www.nec.edu.np). Sundari Chowk is the earliest surviving royal quadrangle of the Patan Royal Palace Complex and is regarded by many scholars as the most important example of Malla-period palace architecture for the richness of its largely intact façade carvings and for its pleasing proportions (KVPT, 2014). Patan was annexed in 1597 AD by the Kathmandu king Sivasimhamalla and came to be ruled by the Malla kings (www.nec.edu.np). The chronicles confirm that Sivasimha built a temple to Degutale (www.spinybabblers.org). He also adopted the buildings of the Mahapatras and constructed other buildings. The Caukot or the four-cornered fort was already in existence at the northern end of the current complex near the Manidhara. However, although the whole palace was constructed in different periods by different kings and other royal family members, the palace was already built before Patan came under the control of Sivasimha Malla of Kathmandu (DoA, 1998; DoA/GoN, 2007). The current palace structures are credited mainly to the father-son pair of Siddhinarasimha and Srinivasa, who together reigned during the period 1619–1684 (www.nec.edu.np). Recent research suggests that the Patan king Siddhinarasimha Malla constructed Sundari Chowk during the year of the birth of his son and successor Srinivasa Malla in 1627, and that the masterfully carved step well Tusha Hiti was installed in its court in 1647 during renovations (KVPT, 2014).

There were several chowks (courtyards) within this palace; there are still four chowks: Keshav Narayan Chowk, Bhitri (Inner) Chowk, Mul Chowk and Sundari Chowk. Sundari Chowk was closed for several years and it has just opened to the public after the renovation and extension of Patan Museum to Mul Chowk.

This exceptional three-storey courtyard marks the southern edge of the Darbar at the main crossroads of Patan. The courtyard building was originally constructed as a two-storey structure in 1628 (www.patanmuseum.gov.np), and contains special cornice wood carvings, beautiful temple-

miniatures of the gods and goddesses of the Kathmandu valley, the Tusha Hiti and the meditation—Stone Bed, etc.

The Sundari Chowk was the main living quarters of the king. Entrance to the courtyard is gained through a gate on the central axis of the building. The gate is guarded by statues of Ganesh and Narasimha. A one metre-wide walkway runs around the courtyard, which is at a lower level than the street. The floor of the courtyard is paved with square stone slabs. The courtyard has a bathing tap (*biti*) at the centre, Tusa Hiti. The water fountain is gilded and the walls are adorned with exquisite stone carvings of deities. Most of the doors and windows face the courtyard for privacy. The 550 engraved wooden Shiva Lingas around the cornices of the surrounding building of the palace is another significant feature of Sundari Chowk (KVPT, 2014).

The second floor was probably added later. The plan of the building appears to resemble the design of viharas and could very well have been influenced by them.

The Conservation Work

The renovation work was initiated by Kathmandu Valley Preservation Trust (KVPT), a non-governmental organization based in the USA. However, the Government of Nepal (GoN) was planning to renovate and reopen this part of the palace, and KVPT applied for permission from the Department of Archaeology (DoA) to undertake conservation work. The government granted permission for the project (DoA, 2008) and formulated a Steering Committee in which the Director General of DoA is the Coordinator, with a secretary from KVPT and other related representatives of stakeholders and government organizations.

The conservation project started in 2008 and is still ongoing; however, almost all of the conservation of Sundari Chowk has been completed and project work has extended to the Mul Chowk and other parts of the palace.

Within the Sundari Chowk, the project worked on finding the source of water and the original system of Tusha Hiti. It was successfully restored that the beautiful water spout similar to what must have originally been there as well as its water channelling system.

All the temple-miniatures were also cleaned and repaired as required. Similarly, necessary repairs were made to the courtyard and the three storey building. The beautiful wood carvings (of the cornices, struts and other parts of the building) were conserved in their original condition as much as possible.

The DoA has deployed its staff; however, the Director General himself is the coordinator of the project, to assist and monitor the conservation work at a micro-level. So, during the project, representatives of the DoA (Monument

Preservation and Durbar Maintenance Office, Lalitpur) have been monitoring the conservation work, for which an Archaeological Officer and an Architect/Engineer have been deployed. The project office has been documenting all project activities, and reporting these to the Steering Committee and the DoA. The project office prepared documentation on the entire palace before conservation, including photographs, sketches, maps, designs, as well as archaeological notes in text form and other required documentation. Similarly, the project office has prepared full documentation during and after the conservation work as per the Venice Charter and other national and international conservation norms, procedures, conventions and systems as well.

In special cases, beyond the Steering Committee, national and international experts (as and when necessary) were also invited to discuss the application of correct techniques at the different levels of archaeological conservation.

Conclusion

In most less developed countries like Nepal, the government always gives priority to development works other than those related to culture or heritage conservation. This is always conceptualised as an unproductive field in which no one is interested in investing. In this situation, a non-governmental agency like KVPT is a significant institution that can do a lot for heritage conservation and management with close collaboration. The Sundari Chowk Conservation Project is an example of an NGO-initiated heritage conservation project in Nepal, for which KVPT is a single donor completely responsible for providing financial support to the project. It is a very positive sign that the Government of Nepal granted permission and support for the execution of the project, and being part of the Steering Committee and monitoring mission. So, it is the most successful example of NGO initiation and funding for cultural heritage conservation in Nepal.

The Sundari Chowk had been closed for several decades for security reasons (www.patanmuseum.com), but after completion of the project work, it has now been revived and reopened to the public as one of the significant historical cultural heritages of Nepal. The conservation of Sundari Chowk (Patan Durbar) is a significant project supported by an NGO in the conservation of cultural heritage in Nepal that invites heritage lovers to support the preservation of the precious cultural heritage of Nepal.

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Scaffolding During Conservation



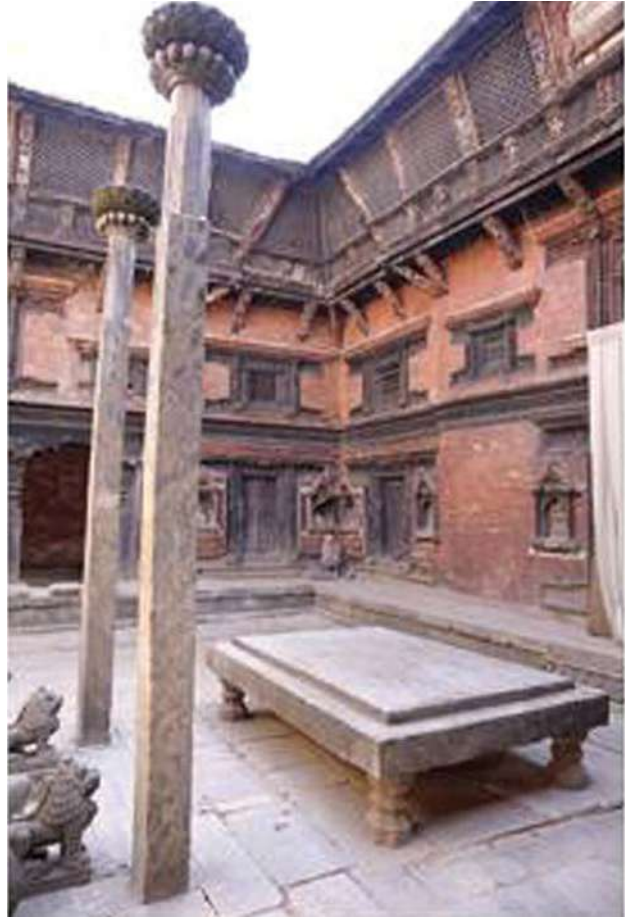
Ceiling of the Building



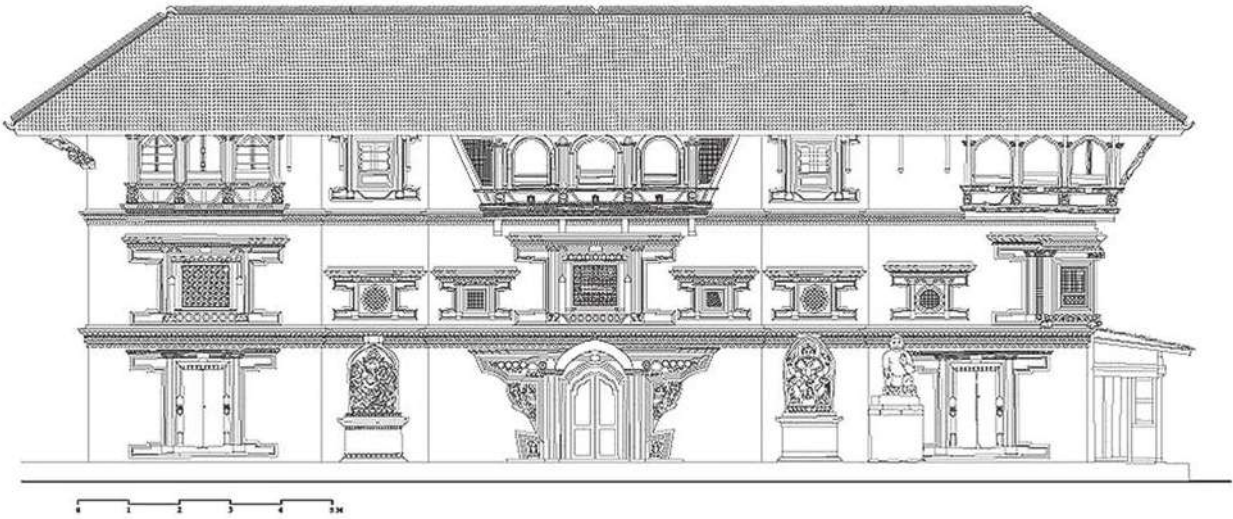
Carved 550 Shivlingas



Tusha Hiti



Northwestern Elevation



West Elevation



New Heritage Legislation for New Zealand: The Heritage New Zealand Pouhere Taonga Act 2014

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

Introduction

Archaeological sites in New Zealand were first protected by law 40 years ago under the Historic Places Trust Amendment Act 1975. In 2010, the Government of the day announced that the Historic Places Act 1993, under which New Zealand's cultural heritage was recently managed, would be reviewed and in May 2014 a new Act to replace the Historic Places Act 1993 called the *Heritage New Zealand Pouhere Taonga Act 2014* came into being. This report looks briefly at this new Act focusing on changes to the archaeological provisions and how this will affect the protection of archaeological sites in New Zealand and my role as a Regional Archaeologist for Heritage New Zealand.

Brief History of the Legal Protection of Archaeological Sites in New Zealand

Recognition of New Zealand's cultural heritage in law began when the Historic Places Act ("HPA") 1954 which established the National Historic Places Trust. This organisation was initially run by a nine appointed members and one elected member whose committee first met in 1955. Although this early legislation did not protect 'archaeological sites' directly, the function of the organisation was to preserve, mark, and record "such places and objects and things as are of national or local historic interest or of archaeological, scientific, educational, architectural, literary, or other special national or local interest" (see www.TeAra.govt.nz/en/historic-places/page-3). The name of National Historic Places Trust changed to the New Zealand Historic Places Trust ("NZHPT") in 1963.

In 1975 archaeological sites were directly protected for the first time under the Historic Places Trust Amendment Act 1975. This Amendment defined an archaeological site as:

" 'Archaeological site' means any place in New Zealand or within the territorial waters of New Zealand"-

"(a) Which was associated with human activity more than 100 years ago; or

"(b) Which is the site of a wreck of any ship, boat, or aircraft where that wreck occurred more than 100 years ago,-

and which is or may be able, through investigation by archaeological techniques, to provide evidence as to the exploration, occupation, settlement, or development of New Zealand, being evidence which could not otherwise be made available for scientific, cultural, or historical studies"

It was illegal to modify or destroy such as a site (Section 9F:1), permission to do so had to be granted by the New Zealand Historic Places Trust (Section 9F:2), and the costs of any archaeological investigation required was, in most cases, the responsibility of the person wanting to damage, modify or destroy the site (Section 9F:3). Given this protection and these requirements, in 1975 the NZHPT had

only 13 staff and only one contact with regard to archaeology.

By 1993, the definition of an archaeological site had changed (see below) and the NZHPT Archaeological Authority Application process to allow a person to modify damage or destroy an archaeological site became more formalised with this Act noting specifically the required information for an Application (An Authority from the NZHPT was also necessary under the Historic Places Act 1980 but the process was not so specific). By 2006, six Regional Archaeologists and a Senior Archaeologist were responsible for the archaeological provisions of the 1993 Act and the management of the Archaeological Authority process for New Zealand. Until 2006 most of the South Island was managed by one Regional Archaeologist until my position covering the Otago/Southland regions (ca. the lower half of the South Island to the Sub-Antarctic) was created increasing the number of Regional Archaeologists for New Zealand to seven (with three archaeologists in assistance), the level at which it is today.

The Heritage New Zealand Pouhere Taonga Act 2014 ("HNZPT") was introduced to Parliament as Bill 327-1 on 4 October 2011 and received its Royal assent on 19 May 2014.

Definition of an "Archaeological Site" in New Zealand Law: 1993 & 2014

The legal definition of an archaeological site in New Zealand law governs whether Heritage New Zealand will play any statutory role in the management of a heritage site. Prior to May 2014, the Historic Places Act 1993 Section 2 defined an archaeological site 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."

This was quite different from the Act in 1975 and 1980 where, as noted above, an archaeological site was considered any place over 100 years ago. One of the prime reasons it was changed to a specified date of pre-1900AD in 1993 was that landowners wanted certainty on whether they could modify or destroy a heritage site from one year to the next.

In the new HNZPT Act 2014 Section 6, an archaeological site is now defined as:

In this Act, unless the context otherwise requires, archaeological site means, subject to section 42(3),—

- (a) any place in New Zealand, including any building or structure (or part of a building or structure), that—
 - (i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and
 - (ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and
- (b) includes a site for which a declaration is made under section 43(1)

Structures and buildings of pre-1900 age were always considered archaeological sites under the HPA 1993, but the new Act now makes that clear in the definition to avoid any confusion or ambiguity. Section 6(b) regarding declaration refers to a heritage site which post-dates 1900 being able to be declared an archaeological site by the Board of Heritage New Zealand. This is unchanged from the HPA 1993 Act where Section 9(2) gave this ability to legally protect post-1900 heritage sites.

Protection of Archaeological Sites and Buildings Archaeology

The HNZPT Act 2014 gives legal protection to all archaeological sites on land or in the water within New Zealand's statutory borders under Section 42(1) & (2). This makes it unlawful to modify or destroy a site without an Archaeological Authority from Heritage New Zealand. The Act states:

- (1) Unless an authority is granted under section 48, 56(1)(b), or 62 in respect of an archaeological site, no person may modify or destroy, or cause to be modified or destroyed, the whole or any part of that site if that person knows, or ought reasonably to have suspected, that the site is an archaeological site.
- (2) Subsection (1) applies whether or not an archaeological site is a recorded archaeological site or is entered on—
 - (a) the New Zealand Heritage List/Rārangi Kōrero under subpart 1 of Part 4; or
 - (b) the Landmarks list made under subpart 2 of Part 4.

This protection is essentially the same as under the HPA 1993 Section 10, and has been a very effective in preserving this aspect of New Zealand's cultural heritage. However, one additional subsection to this section was added to the HNZPT Act 2014 which states:

- (3) Despite subsection (1), an authority is not required to permit work on a building that is an archaeological site unless the work will result in the demolition of the whole of the building.

Under the HPA 1993, an Authority was required in some instances where comprehensive changes were being made to a historically significant pre-1900 heritage building such as demolition of half the structure or the gutting of significant portions of the interior. The Authority process would ensure these changes were recorded according to best practice buildings archaeology and often such projects

were also guided by a Heritage Conservation Plan. However, due to concerns by some submitters during public consultation on the new Act that an Archaeological Authority would be required to make simple changes to any pre-1900 building such as replacing a chimney, removing an internal wall or undertaking renovation or maintenance works, this subsection was added.

In addition, an Archaeological Authority is now also not required to move a pre-1900 building, though one is needed if the ground on which it lies is disturbed.

Considering New Zealand's early built heritage only dates as far back as the 19th century, Section 42(3) of the HNZPT Act 2014 presents challenges for Heritage New Zealand when it comes to historically significant pre-1900 buildings. There is the potential for important archaeological information about these buildings to be lost due to their being no legal requirement to archaeologically record them before they are partially demolished or relocated.

The Archaeological Authority Process

The Archaeological Authority Application process under the HPA 1993 required a person(s) wanting to affect either one site or a number of sites to apply under separate sections of the Act. To affect one site, a person would apply under Section 11. To affect more than one site, an Application under Section 12 was required. For the scientific investigation of a site by a University, for example, or for an exploratory investigation of a site, typically used to confirm the nature and extent of a site, a person would apply under Section 18 (with sometimes a scientific investigation falling under Section 11 or 12).

All Applications under the HPA 1993 required an independent Archaeological Assessment, landowner consent and, if a site was of Māori origin, Iwi (Tribal) consultation, as some of the key pieces of information which had to be provided. Once an Application was received, there was no time restriction under which the Historic Places Trust had to respond to the Applicant noting whether the Application had all the required information or not for lodgement (acceptance). Once accepted, a decision had to be made within three months but this could be extended up to six months if additional information was deemed necessary. For each of these Applications, the NZHPT would set conditions on how the site(s) would be managed and these conditions had to be met by law. A process was available if the holder of the Authority wanted to Appeal a decision or to change the conditions of an Authority.

The aim of the Government in reviewing the HPA 1993 was to streamline the Archaeological Authority Application process to give applicants more certainty over when an Application would be accepted and when a decision would be made. This would bring the timeline for the Archaeological Authority process more in line with other legislation particularly the Resource Management Act (1991) which Regional, District and City Councils use to manage natural and historic resources for developments etc.

The HNZPT Act 2014 now has one section under which all

activities which will modify or destroy a site can be made, this being Section 44. This has simplified the process in applying for what is termed a General Archaeological Authority where no matter whether one site or multiple sites are being affected by an activity then one section of the Act applies. An Exploratory Authority is still dealt with separately under Section 56. Perhaps the most significant change with Application process is that they must be reviewed within five working days of receipt by the Heritage New Zealand Regional Archaeologist and either accepted or returned to the Applicant. A 'determination' (decision) must also be made within twenty working days of accepting an Authority Application, with thirty days allowed if the Application needs a Māori values assessment and to a maximum of forty days if it is a complicated Application. This has greatly reduced the timeframe for decision making.

Section 46 of the HNZPT Act 2014 clearly states what is required to be provided with an Authority Application, as it did previously under the HPA 1993, but landowner consent does not now have to be provided to apply or to have a 'determination' (decision) made on an Application. But, if an Authority is granted without landowner consent, no activity that affects a site can commence until consent is received by Heritage New Zealand. This provides flexibility for Applicants as sometimes development projects were only being held up by landowner agreements which, under the HPA 1993, an Authority could not be applied for at all without this in place. Now, the Authority can be in hand while negotiations are completed. In addition, if the effects on a site are going to be no more than minor, HNZPT can waive the need for an Applicant to provide a full Archaeological Assessment for the activity when applying for an Authority (Sections 44(b) & 47(5)).

The HPA 1993 required that an Authority was particular to the Applicant only when granted. Now the Authority lies with the land and not specifically the Applicant (Section 55). This means, for example, that a new landowner who wants to undertake a similar project as a previous landowner which was going to affect an archaeological site in the same or similar way, does not have to reapply for an Authority but can use the one in place. If the activity was different and the effects on a site were different, a new Authority may have to be applied for. The advantage of this for the management of the archaeological site is that the effects on the site for a specific activity can be controlled no matter who owns the land. For a new landowner, it means an Authority is already in place for a particular activity providing certainly for a project or development.

Emergency Archaeological Authorities

A new type of Archaeological Authority was introduced in the HNZPT Act 2014 (see Sections 60 to 64) specifically to deal with national or local emergencies declared for an area or district under the Civil Defence Emergency Management Act 2002. The introduction of an Emergency Archaeological Authority was a result of the 2010-2011 Canterbury earthquakes, which devastated Christchurch City and surrounding towns. The Canterbury earthquake of 22 February 2011 was calculated by international insurer Swiss RE in 2012 as the third most expensive insured natural catastrophe in history. The first most expensive was Japan's

2011 Tsunami and second the Thailand floods also in 2011.

The Canterbury earthquakes highlighted that there was no legislation to deal with managing archaeological sites in times of emergency. Because of this, the Order in Council Canterbury Earthquake (Historic Places Act) Order 2010 was introduced on 23 September 2010 after the first major quake on 4 September 2010 to manage the archaeological process quickly. This Order had specific geographical boundaries and the processing timeframes saw decisions on Archaeological Authority Applications having to be made within three working days for sites of Pakeha/European or Chinese origin and five days for Māori sites, as consultation with local Iwi was required. This Order in Council was updated on 27 June 2011 and is still in force today.

With the HNZPT Act 2014, a person may apply under Section 61 for an emergency authority after a national or local emergency has been declared if it appears it may be necessary to undertake an activity that will or may modify or destroy a site or sites. In an earthquake situation, for example, this may be for the demolition of a 19th century building that is quake damaged or to disturb a site underneath a modern quake damaged building. This was the most common situation experienced after the Canterbury earthquakes. An Applicant must provide the same information as required for a General Authority Application, but flexibility is given to Heritage New Zealand to accept and process Applications which do not have all the required information as the circumstances of the emergency situation may limit what can be provided.

Factors relevant to making an Authority determination ("decision"):

When making a decision on whether an Authority Application should be granted, declined, part granted/declined or what conditions the Authority should contain, what factors had to be considered by the NZHPT were not as specific under the HPA 1993 as they are under the HNZPT Act 2014. The HNZPT Act 2014 specifies that Heritage New Zealand must have regard to the following factors when making a determination ("decision") (see Sections 49 & 59(1)(a)):

- (i) the historical and cultural heritage value of the archaeological site and any other factors justifying the protection of the site;
- (ii) the purpose and principles of this Act;
- (iii) the extent to which protection of the archaeological site prevents or restricts the existing or reasonable future use of the site for any lawful purpose;
- (iv) the interests of any person directly affected by the decision of Heritage New Zealand Pouhere Taonga;
- (v) a statutory acknowledgement that relates to the archaeological site or sites concerned;
- (vi) the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tāpuna, wāhi tapu, and other taonga;

With these factors specially noted in the new Act, all parties involved in the Authority Application process, from the Applicant, persons affected, to Heritage New Zealand staff, now understand more clearly what is being considered by

Heritage New Zealand, and as such the Regional Archaeologist, when an Application is being assessed. Possibly the most important factor is 59(a)(iii) as not all persons have the finances or controls to be able to be flexible in changing an activity that affects a site or to completely avoid a site. For example, an individual wanting to build a home on his/her property may not have the same resources to manage the archaeology as a large company undertaking a development.

Approval of an Archaeologist to undertake archaeological work

Applicants or holders of an Archaeological Authority must apply to Heritage New Zealand to approve a person to undertake the archaeological work required by an Authority (Section 45). There was also a similar process under the HPA 1993 (Section 17). When approving a person, the HNZPT Act 2014 additionally must now also be satisfied that, in regards to sites of interest to Māori, the person “has the requisite competencies for recognising and respecting Māori values” and “has access to appropriate cultural support” (Section 45(2)(b)). In addition, all applications to Heritage New Zealand to approve a person to undertake the archaeological work must be processed within 10 working days, the HPA 1993 had no set time to make this decision.

The competencies and cultural support a person must have to be approved to work on Māori sites recognises that many Māori archaeological sites have sensitive cultural values associated with them and as such respect must be shown by the archaeologist to these values during any archaeological work. This is an important change to the Heritage New Zealand approval process as it increases the role Māori have in this process and emphasises that these sites have both tangible and intangible values which can be affected.

Time to Take Action Against an Alleged Offender and Penalties for Modifying or Destroying Sites

The HPA 1993 gave the ability for the NZHPT to take court action against a person(s) either modifying, damaging or destroying an archaeological site without an Authority (Section 99), where an Authority holder breached the conditions of their Authority (Section 100), where an investigation was undertaken of a site without approval from the NZHPT under Section 18 or where conditions for the Section 18 investigation were breached. The penalties on conviction included fines of up to \$40,000 for modifying or damaging a site or breaching a condition of an Authority, and up to \$100,000 for destroying a site.

However, one difficulty with these powers to prosecute and fine was that the NZHPT could only lay papers at a District Court to initiate Court proceedings “*within 12 months from the time offence was committed*” (Section 108). Hence, damage to a site could have occurred, for example, eleven months before it was reported to the Regional Archaeologist leaving only one month for the NZHPT to investigate a report of damage, determine if there was a case to answer for and lay Court papers. Alternatively, using this example, this also meant little time was left to establish discussions with the alleged offender to resolve the incident perhaps through mitigation so as to avoid Court.

The HNZPT Act 2014 has given Heritage New Zealand more flexibility to investigate offences and the penalties associated with offences have been increased. On conviction of an offence, a distinction is made between a ‘natural person’ being fined and ‘a person other than a natural person’, eg. a company. A natural person modifying a site or breaching conditions of an Authority can be fined up to \$60,000 with a person other than a natural person fined up to \$120,000. For destruction of a site, the fines were increased to \$150,000 and \$300,000 respectively.

The most important change is in the time at which papers can be laid at Court. Under Section 96(2), HNZPT can lay papers to the court for an alleged offence up to five years from the date when the offence was committed, essentially giving Heritage New Zealand an additional four years to investigate and make decisions about an alleged offence. This now provides HNZPT with more time to determine whether there is a case to be answered for or to undertake discussions with an alleged offender to hopefully resolve an incident.

Conclusions

The archaeological provisions of the Heritage New Zealand Pouhere Taonga Act 2014 are in my opinion a positive outcome for the protection of New Zealand’s archaeological sites and are an improvement to those in the Historic Places Act 1993. Alongside this new Act, Heritage New Zealand has already developed Guidelines for persons wanting to apply for an Archaeological Authority and currently Policy documents on the Archaeological Authority process are being developed which will go to public consultation this year. Together the new Act, Guidelines and Policies will mean better public awareness about the protection of sites and a more efficient Archaeological Authority process. The new offence and penalty provisions in the Heritage New Zealand Pouhere Taonga Act 2014 provide a better deterrent to people who may be considering modifying or destroying sites without an Authority and it also provides more time to investigate offences and discuss with alleged offenders how to resolve site damage incidents rather than going to Court.

The biggest challenge facing Heritage New Zealand Regional Archaeologists is how to encourage owners of historically significant pre-1900 buildings to undertake buildings archaeology before partial demolitions or building relocation occurs in an environment where there is no legal obligation to do so. This will most likely come through open discussions and education of pre-1900 building owners on the significance and uniqueness of New Zealand’s cultural heritage.

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The Augustinians in the Philippines: Sharing 450 Years of Love, Faith, Fraternity, History, Heritage, Culture and Art (1565-2015)

Louella Solemerano Revilla, *Conservator and Head/Supervisor-San Agustin Museum Conservation Laboratory San Agustin Museum, San Agustin Church, Intramuros, Manila*

The first five pioneers of the Christian faith in the Philippines arrived in Cebu together with Adelantado Miguel Lopez de Legazpi on April 27, 1565, a mission given to them by Philip II of Spain. The religious were Fray Andrés de Urdaneta, Fray Martin de Rada, Fray Andrés de Aguirre, Fray Diego de Herrera, and Fray Pedro Gamboa. On June 24, 1571, Legazpi founded Manila. The Augustinian convent was built in the same year. The first three church buildings were made of nipa palm leaves, bamboo, and wooden posts, which were easily destroyed. In 1587, a structure made entirely of stone was built to withstand the natural elements and minister to the needs of the growing community. The church was placed under the titular patronage of St. Paul. It was popularly known as San Agustin after Augustine, Bishop of Hippo and spiritual father of the Augustinian Order. The Augustinians wrote books, grammars, and built churches from Luzon to Visayas.

The present church and convent, made of stone, was designed by Juan Macias and built from 1587 to 1604. The strength of this construction made it possible to survive the various wars, typhoons, and earthquakes of the years 1645, 1754, 1852, 1863, 1880, 1911, 1937, and 1990. Saints, poets, missionaries, scientists and social writers who contributed to the greatness of the country and monastery lived here. More than 3,000 Augustinians lived, prayed, and studied here, and spread the Good News of the Gospel to the various islands of the Philippines, and to China, Japan, India, America, and Africa. The place was looted during the British invasion in 1762. Terms of surrender for Manila between Spain and the United States (America) were discussed in the vestry in 1898. The San Agustin Church was the lone survivor during the Second World War.

In 1973, the San Agustin Church was declared as a National Cultural Treasure. The San Agustin Monastery, which served as living quarters, infirmary, refectory, and classrooms of the Augustinians, was eventually converted into a museum that now houses a rich ecclesiastical collection. The church was given distinctive recognition for its Outstanding Universal Value when it was included in the World Heritage List by UNESCO in 1993 together with the other three Baroque Churches in the Philippines, by serial inscription.

Four hundred and fifty years after the founding of the church, April 27, 2015, the Augustinian Legacy continues. This is shown and explained as you walk along the halls and cloisters of San Agustin Monastery (Museum). In my paper as International Correspondent included in the Twelfth Regular Report (Vol. 12, 2013), I indicated the plans of the Augustinian Order in Intramuros, Manila to refurbish and restore the whole of the San Agustin Church Complex, including the Monastery or the San Agustin Museum. The strong dedication of the Augustinians to their profession, love for the mission, culture and art is evident in the San Agustin Church and Museum today. Their focus in the museum is to impart to visitors the contribution of the Order to the history of the Catholic faith, the significant value of the church and the arts, and more so, the values of the Augustinian Order—how the Augustinians lived their monastic life in the past and up to this day.

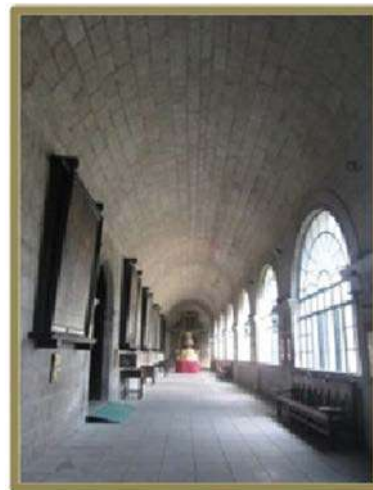
Below is a glimpse of the refurbishment, restoration, and conservation works at the San Agustin Complex. Universal standards in terms of conservation principles have been observed during the process. Authenticity and integrity of the structure and the collection are valued. Any improvement is based primarily on historical records.

Ground Floor (Lower Cloister)

The cloisters represent the Augustinians' "Love for Pilgrimage": The cloister of processions remind the Augustinian Friars that life is a journey; sometimes short, sometimes long. They are invited not to look back, but to always look ahead to the final destiny: happiness, the fullness of love.



Before



After

Antigua Sacristia

The word "sacristy," from the Latin "sacristia," indicates the place where the priests prepared themselves for the Mass. Here also were kept the liturgical vestments, liturgical vessels, liturgical books, candles, incense, and all the items necessary to enhance the splendour of the Catholic liturgy for the glory of God.



Before



After

Second Floor (Upper Cloister)

The cloisters represent the Augustinians' "Love for the Mission." From 1565 until the 20th century more than 3,000 Augustinian Friars arrived in the Philippines with the main purpose of preaching the Kingdom of God among the people of the Philippine Islands and other countries of the Far East, to spread the Good News that "God is love."



Before



After

San Agustin Hall

This hall represents the Augustinians' "Love for Art: The Filipino Santos." In the early days of their arrival in the Philippines, the Augustinian Friars carried with them from Mexico and Spain, carved or painted religious images. The Christian faith that they preached promoted the creation of art in architecture, carving and painting. The paintings and sculptures exhibited were conserved and restored under the supervision of the author.



Before



After

Biblioteca

This old library represents the Augustinians' "Love for Wisdom." In the book "The Confessions of Saint Augustine," it mentions that during his whole life he searched for truth, for wisdom, and for God. In the Augustinian convents, the Library or "Biblioteca" was always a prominent place where the friars could grow in wisdom.



Before



After

Reference materials:

Conquistas de las Islas Filipinas (1565-1615 by Gaspar de San Agustin. First Bilingual edition 1998.

San Agustin Art and History by Pedro G. Galende, OSA and Regalado Trota Jose.

Museum text captions by Fr. Blas Sierra de la Calle, OSA

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Architecture in Ancient Sri Lanka (2nd Part)

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(The 1st part of this article was published in the 14th regular report)

(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.

Toilets/Urinals

Toilets and urinals of the shroud (Panshukulika) monks (bhikkus) were richly decorated but hygienic. This reflects the rejection of mundane gratification. The waste from these buildings was refined and made safe before being released into the soil. (Fig 63)

The waste discharged from the urinals are directed to a pit consisting of clay pots arranged one on top of the other. The waste is retained in the pots while the water containing the pollutants is refined by charcoal, sand and lime deposited in the pots, and the water effluent is then released into the environment. (Fig 64) (Fig 65) (Fig 66) (Fig 67)

Ponds and Wells

In Buddha's time it is said that the monks (bhikkus) fulfilled their water needs from rivers. Folklore mentions that Kuweni was picking flowers from a pond. Ponds existed on the island when Arahat Mihindu set foot on Sri Lanka. Ponds were constructed for bathing and for beautification of the environment. Wells were built for the extraction of potable water. At times, when the water levels were at lower depths, steps were constructed to reach the water. (Fig 68) (Fig 69)

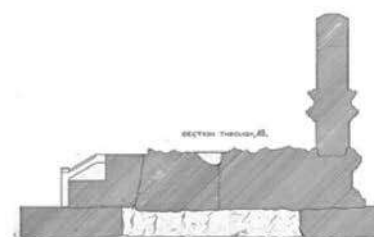
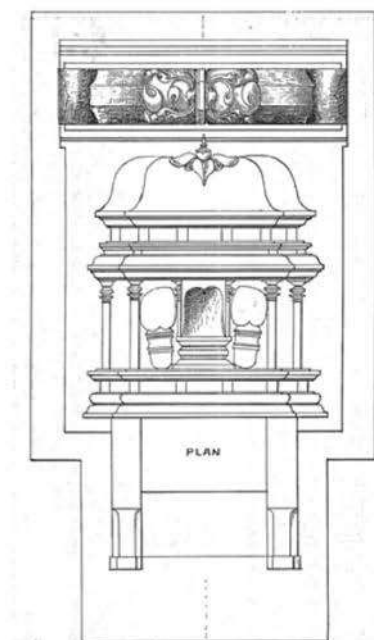
The ponds for bathing in Polonnaruwa do not include the same aesthetic and attractive features found in ponds in Anuradhapura. (Fig 70) (Fig 71)

The ponds are filled with water supplied from underground canals and pipes. Catch pits are provided to trap mud. (Fig 72) (Fig 73)

Hospitals

Hospitals used by large monasteries are still extant. Often these buildings have a central courtyard from which wards extend in four directions. The presence of medicinal troughs on the premises of ancient hospitals is a distinctive sight. Surgical instruments and medicine containers were discovered at the Aalahana Pirivena of Polonnaruwa. (Fig 74) (Fig 75) (Fig 76) (Fig 77)

A hospital constructed during the Dutch period is present at the Colombo Fort. This building expresses various architectural features. (Fig 78)



(Fig 63) Plan of toilet



(Fig 64) Tholuwila urinals, Anuradhapura period



(Fig 65) Toilet, western Monastery, Anuradhapura, Anuradhapura period



(Fig 66) Kaludiya Pokuna, Mihintale, Anuradhapura period



(Fig 67) Medirigiriya



(Fig 68) Twin Ponds, Anuradhapura, Anuradhapura period



(Fig 69) Cross shaped pond, Galabedha



(Fig 70) Stepped pyramidal pond near Alahana Pirivena



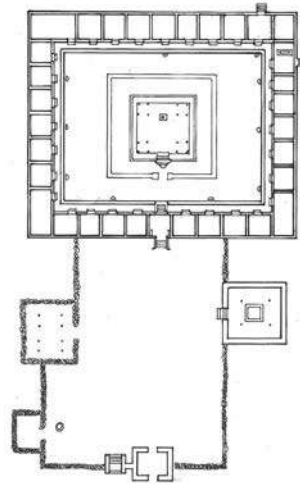
(Fig 71) Lotus pond, Polonnaruwa



(Fig 72) Well near the Maha Pali Alms Hall, Anuradhapura



(Fig 73) Well, Polonnaruwa



(Fig 74) Hospital, Mihintale, 8th century AD



(Fig 75) Hospital, Mihintale, 8th century AD



(Fig 76) Hospital, Medirigiriya, Anuradhapura period



(Fig 77) Medicinal bath, Medirigiriya, Anuradhapura period



(Fig 78) Dutch Hospital, Colombo, 17th century AD

Hindu Religious Buildings

Temples for the Hindu gods emerged in Polonnaruwa during the Chola occupation of Sri Lanka. (Fig 79)

A temple (devala) for the goddess Kali, seven temples for the god Shiva and five temples for the god Vishnu are amongst the Hindu temples of Polonnaruwa. Often, the temples were made completely with rock, including the dome. The walls and dome of the temple “Nai Pena Vihara” are made of brick. (Fig 80)

The Shiva linga (genital organ of Śiva) is a representation of the Hindu deity Shiva used for worship in their temples. In traditional society, the linga is seen as a symbol of the energy and potential of God. (Fig 81)

Churches

During the Portuguese occupation of the 16th century AD, churches were built for their religion. The Dutch and the English who followed suit also built churches to spread their religion. (Fig 82) (Fig 83)

The ground plan of a Christian chapel often takes the shape of a cross. The roofs of these churches are rather steep. The churches of different denominations of the Christian faith had minor differences in terms of the

architectural features symbolizing the denomination.

Architectural features signifying Protestantism, including Baptistism and other denominations, are apparent in churches that were established during the British period and the period thereafter. (Fig 84)

Mosque

The Arabs who came to Sri Lanka in the past to trade began building mosques. These mosques reveal Arabian architecture, with the semicircular painted dome taking a prominent place. A pond was usually in front of the place of prayer. (Fig 85) (Fig 86)

Devala

The devala has been a place for worshipping gods since ancient times. Although the worship of gods is a Hindu tradition, the spread of devala throughout the island reveals the significant interact of the Sinhala people had over god worship. While the gods Skanda, Saman, Vibushana and Upulvan had been venerated by the Buddhists in a manner peculiar to them, the concept of god worship in Hinduism was later gradually infused into Buddhist culture to the extent that they, too, began to follow the Hindu tradition of worshipping their own gods. (Fig 87)



(Fig 79) Shiva Devala No. 1, Polonnaruwa, 13th century AD



(Fig 80) Shiva Devala No. 2, Polonnaruwa, 13th century AD



(Fig 81)



(Fig 82) Wolfendhal Church, Colombo, 17th-18th centuries AD



(Fig 83) Church in the Galle Fort, 17th-18th centuries AD



(Fig 84) Baptist church, Pahathgama



(Fig 85) Mosque, Hambantota



(Fig 86) Red Mosque, Colombo



(Fig 87) Embekke Devala, Kandy, 14th century AD

Often, a devala consists of a sacred chamber known as the “Pe Vena Maduwa” with the statue of the god. Directly in front of this is the “hanudun kudama”, and finally, in front of it, is an open pavilion called a “dig ge”. A Buddha shrine and a kitchen are placed away from the devala, and a parapet wall with a vestibule demarcates the devala premises. (Fig 88) (Fig 89) (Fig 90)

Royal Palaces

A royal palace was the living quarters of the King, his consorts, and other members of the royal family. Royal palaces belonging to the Anuradhapura period are seen near the Maha Pali Alms Hall at Anuradhapura and on top of Sigiriya rock fortress. The palaces of the Polonnaru period were similar in design, and the palace of King Parakramabahu, the palace of Vijayaba of Anuradhapura, and the palace of Panduvasnuwara are existing examples. (Fig 91) (Fig 92) (Fig 93)

Palaces of the medieval period are seen in Dambadeniya, Yapahuwa, and palaces belonging to the Kandyan period can be found at Kandy, Hanuranketha, and Madha Mahanuwara. Palaces are situated in the inner city. A palace complex often comprises the Palace, the King’s council chamber, royal garden and other ancillary buildings, all as separate blocks.

Defence Fortresses

Ancient fortresses are seen in Anuradhapura, Polonnaruwa, Yapahuwa, and Dambadeniya. Of these, the forts of Yapahuwa, Sigiriya, Dambadeniya and Kurunegala are rock fortresses. (Fig 94) (Fig 95)

Among the forts of the Colonial period, the Dutch forts stand out as they are attractive. A fort has a wide perimeter mound supported by thick stone masonry and consists of a residential building, service buildings and religious structures. At the corners of the fort are shaped guard posts known as Bastians. (Fig 96) (Fig 97)

A drawbridge which is operated by levers with a door can presently be seen in the Star Fort in Matara. (Fig 98)

Library buildings (Fig 99)

The library of the Padeniya temple is a building of architectural importance. It exemplifies genuine Kandyan architectural characteristics. The Padeniya library (pothgula) was built on a rock with the intention of protecting the library from the threat of termites and pests. This building, which is constructed on an elevated foundation, has a “veli pillā” incorporated with the cast plinth. (Fig 100)

A veli pillā is a sand tray on which one learns to write letters with a finger in sand. (Fig 101)

Houses

The abodes of prehistoric man were rock caves, which was where they preferred to live. From the historic period, ordinary village houses were built of impermanent materials such as wattle and daub, mud walls and clay, with roofs thatched with grasses and reeds. (Fig 102)

"There houses are small, low, thatched cottages, built with sticks, daubed with clay, the walls made very smooth. For they are not permitted to build their houses above one story high, neither may they cover with tiles, nor whiten their walls with lime, but there is a Clay which is as white, and that they use sometimes. They employ no Carpenters, or house-builders, unless some few noble-men, but each one buildeth his own dwelling."

—Robert Knox (Fig 103) (Fig 104) (Fig 105) (Fig 106) (Fig 107)

According to the design, it was just one rectangular unit with one chamber. Nails were not used in these houses. The wood in the roof was secured by using cane or other wild creepers. Houses of noblemen differed from those of the villagers, and had more rooms and an inner courtyard. Sometimes their roofs were tiled.

Manor Houses

Officers bearing higher governmental posts in the Kandyan period built larger and much more luxurious and facilitated houses as their residences. These were always representative of their status and showed much grandeur. These manor houses had a number of inner courtyards, with verandahs built on tall pillars to add dignity. (Fig 108) (Fig 109) (Fig 110) (Fig 111)

Many manor houses in the city of Kandy are presently used for other activities.

- Ehalepola Manor house - Former prison
- Dunuwila Manor house - Municipal council
- Dullaawa Manor house - Queens Hotel

Granary/Atuwa

The granary or “atuwa” or “wee bissa” was constructed on wooden logs fixed on short pillars to protect the stored grains from storm water and pests. (Fig 112) (Fig 113)

The granary was a wattle and daub structure and plastered with lime. The roof was thatched with straw. When the house belonged to a nobleman, temple or king, the granary was a separate building. (Fig 114)

Wayside Resting Place - Ambalama

A wayside resting place—an ambalama—is a small building used for resting. These buildings were constructed beside the roads used by people who travelled on foot or by cart. Initially the ambalama was simply the shade of a tree without a shelter. Subsequently a tree trunk was placed on two stones under the tree for people to sit on. Later, four timber beams were placed on four similar stones to which four timber columns were attached and a roof constructed. The ambalama is a basic product of indigenous architecture. Some were constructed on stones surfaces with tall pillars to ward off threats from pests. (Fig 115) (Fig 116)

Panavitiya Ambalama is the most attractive ambalama found in Sri Lanka. Large timber sections are used in the structure to give stability to the roof. (Fig 117)



(Fig 88) Natha Devala, Kandy



(Fig 89) Saman Devalaya, Ratnapura, Kandyan period



(Fig 90) Vishnu Devalaya, Kandy



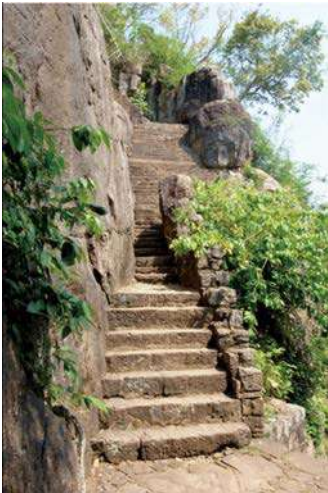
(Fig 91) Vijayaba Palace, Anuradhapura, 11th-12th century AD



(Fig 92) Palace, Yapahuva, 13th century AD



(Fig 93) Palace, Panduwasnuwara, 11th century AD



(Fig 94) Dambadeniya Fort, 13th century AD



(Fig 95) Sigiriya Fortress, 5th century AD



(Fig 96) Galle Fort, 18th century AD



(Fig 97) Jaffna Fort, 17th century AD



(Fig 98) Timber Draw Bridge, Matara Star Fort, 18th century AD



(Fig 99) Pothgul Vihara (library), Polonnaruwa, 12th century AD



(Fig 100) Library building, Padeniya, Kandyan period



(Fig 101) Veli pilla, Matale Alu Vihara, 18th century AD



(Fig 102) Pahiyan Cave



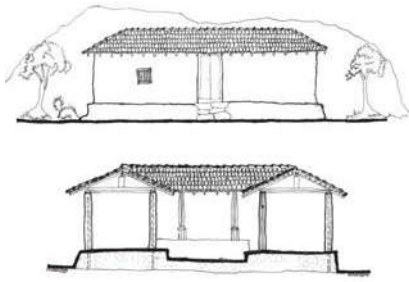
(Fig 103) Galathara Veda Nivasa



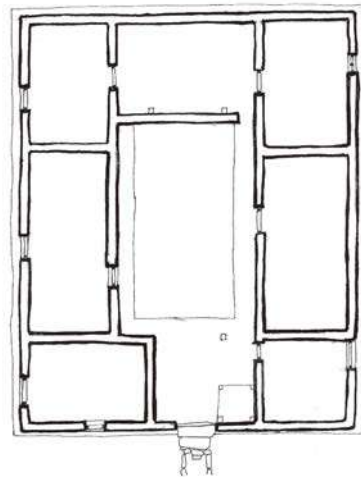
(Fig 104) A house, Meemure, 19th century AD



(Fig 105) Interior of a house, Meemure, 19th century AD



(Fig 106)



(Fig 107)



(Fig 108) Maduwawala Manor House, 19th century AD.



(Fig 109) Ambagahalanda Manor House, Divulapitiya



(Fig 110) Dunuwila Manor House, 19th-20th century AD



(Fig 111) Ratwatte Manor House, 19th-20th centuries AD



(Fig 112) Granary, Lankathilaka Vihara, Kandy



(Fig 113) Granary, Pusulpitiya, Kandyan period



(Fig 114) Granary, Thotupale Manor House, Kegalle



(Fig 115) Wayside resting place, Karagagedara, Kandyan period



(Fig 116) Wayside resting place, Panavitiya, Kandyan period



(Fig 117) Wayside resting place, Pandivita, Kandyan period

Some had sleeping facilities. Ambalama built on high plinths could be seen too.

Other buildings

There are many structures built for particular purposes that cannot be commonly categorized as main buildings. Most of these were built in the colonial era and incorporate architectural characteristics of that period. (Fig 118) (Fig 119) (Fig 120)

Bridges

The plank bridge is the basic type of bridge for crossing rivers. A tree trunk or plank put across a waterway connecting its banks is called an “edanda” or plank bridge. If it is not possible to cross with one trunk, a pillar is fixed in the middle of the waterway, and by connecting a trunk from each bank to the centre pillar, the plank bridge is constructed to connect the two banks.

Plank bridges were replaced by more robustly built bridges for safety and ease of use. There are many examples of bridges built with various materials applicable to various periods.

The British rulers used brick arches and steel frames in building bridges. (Fig 121) (Fig 122) (Fig 123) (Fig 124) (Fig 125)

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(Fig 118) Old railway station, Peradeniya, 1867 AD



(Fig 119) Gunpowder store, Palathota, 18th-19th centuries AD



(Fig 120) Lighthouse, Devundara, 18th-19th centuries AD



(Fig 121) Stone bridge, Malwathu Oya, Anuradhapura period



(Fig 122) Timber bridge, Bogoda, Kandyan period



(Fig 123) Brick arched Bridge, Mawanella, 19th century AD



(Fig 124) Steel bridge, Yatiyantota, 19th-20th centuries AD



(Fig 125) Suspension bridge, Deraniyagala, 19th-20th centuries AD



Recent Finds of Hellenistic Architectural Elements from Old Termez (South Uzbekistan)

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Introduction

The influence of Hellenistic traditions was manifested not only in art and culture, but also in the architecture of Ancient Bactria. This has been confirmed by numerous treasures found during archaeological excavations. In particular, many architectural treasures have been found in recent years in different parts of the settlement of Old Termez¹. They can be divided into several groups according to type and function.

Pillar fragments

This group includes stone trunks, which were found on the Chingiz-tepa, one of the hills of the settlement, in 2012. They consist of five drums that are fully intact, but of different sizes: length from 78.5 to 112.5 cm, bottom diameter 43 to 48 cm, and the top 40 to 43 cm (fig. 1 a, b). The drums were carved out of monolithic cylinder-shaped stone. Their surfaces are carefully polished. There are deep square- and round-shaped recesses on the top and round surfaces of the drums. All the barrels, except for one provided with rectangular auxiliary recesses, feature shallows. These probably served to connect the drums to one another, by fastening the stems with the bases on the bottom and capitals on the top. Some drum grooves are filled with lime mortar. They were apparently used to maintain the stability of the drums while being connected. It's possible that the pillars were based on large and solid foundations and supported by stone capitals. The large blocks sizes indicate that the columns, which were built with help of blocks, were probably were decorations of a monumental building. It should be recalled that in ancient times such ceremonial buildings were palaces or temples.

Similar blocks that are closer in size to the diameter of the trunk have previously been recorded at this site. At one of the archaeological complexes in Karatepa settlement, next to the Main Stupa, part of a huge circular column with a length of about 100 cm and a diameter of 50-60 cm was found. Here the trunk strongly narrowed upwards (Pidaev & Kato, 2007). At another Buddhist monument, Ayrтам, the trunks are two times smaller (diameter: 26-28 cm, length: 83 cm) than those on the Termez columns. But researchers of that settlement should be able to reconstruct the whole column owing to the strong foundation formed by the base and capital. (Turgunov, 1987, 1989).

Fragments of pillars were also found at Takhti-Sangin, Ay-Khanum, Sacksonokhur, Dilberjin and at other Bactrian monuments. At different times several trunks were also found in different parts of Takhti-Sangin stone settlement. Among them were columns (diameter: 62 cm) of the central hall and *quinces-pranaos*². Generally, the Takhti-Sangin columns are similar to Ay-Khanum columns, with each column consisting of 8-9 units (diameter: 68-84 cm) and with grooves at the both extremities. The use of blocks gave us an opportunity to safely recreate their actual size,

a height of 7.8 to 8 m. the overall proportions of the columns (the ratio of the diameter to the height of the column – 1:11) is very slim (Bernard, 1973). In the large architectural complex of Sacksonokhur four pillars were identified with a drum diameter from 40.5 to 44 m and a length of 58-80 cm (Litvinskiy & Mukhitdinov, 1969). There are deep grooves on both extremities of the trunks, on which appear traces of potting with alabaster. The alabaster apparently strengthened the bonding of shafts to each other. Subsequently, the Dilberjin samples served as the basis for wooden columns. But researchers assume, that these small columns (diameter: 31 cm) from the diameter of the barrel reached about 3 meters (Pugachenkova, 1976).

Regarding the Termez blocks, the question is whether they belonged to the same column or a different one. One of the researchers, K. Abdullaev, referring to one of the authors' (Leriche, 2011) data findings, supposed that they could belong to the *stambba*³ column, which was standing at the corner of the Main Stupa, or somewhere in a prominent place of the city. But he notes that this hypothesis requires a thorough examination and a lot of evidence (Абдуллаев, 2010). Given their size (of almost the same height, i.e., about 1 meter and diameter of reels with a maximum of about 0.5 m and a minimum of 0.40 m), they were probably part of the same column. If so, with various calculations we can reconstruct the barrel, which was about 5 m high, and the columns with the base and capital likely reaching a height of about 6 m (fig. 2).

Until this time the paucity of stone columns was a factor indicating their rare use in the architectural order system of architecture in Bactria. This is due to different reasons: on the one hand was the complexity of the transportation of heavy stone blocks from faraway places and time-consuming processing. On the other hand, seismic conditions of the territory did not allow the use of columns in the local architecture. Another reason was that they may have been reused in subsequent constructions or used for other purposes.

Of course, wood was the dominant material in column construction, because of its affordability and easy processing. But almost all architectural elements made of wood eventually decayed or burned during enemy attacks and accidental fires, and sometimes in the excavations we find only charred fragments of these elements partially retaining their shape, such as a piece of the carved beams of the house of the noble citizen Dalvarzintepa (Dalvarzintepa..., 1978) and a great ionic capital of a temple from the 2nd century BC, Ay-Khanum (Schlumberger, Bernard, 1965).

In 2012, during agricultural works at the citadel settlement Old Termez, among the detected fragments of stone

architectural details, was also found one fragment of a trunk (height: 29.5 cm, diameter: 39 cm). A square socket was inserted at one extremity of the drum (9.5 x 10 cm, depth: 10 cm). There are two remarkable major capitals of round columns that belong to the following groups⁴.

2. Capitals of columns

These capitals were fixed in the scientific literature as Corinthian, however, their shape is not exactly the same as the Greco-Roman classic designs. These two capitals were found at the above settlement of Old Termez. Their dimensions are: (1) total height: 35 cm, abacus: 47 x 43 x 3 cm, diameter echinus: 32-34 cm; (2) total height: 27.5 cm, abacus: 40.5 x 41.5 x 2.5 cm, diameter echinus: 28.5 cm. The center of the upper bed has a square slot, 8 x 7 cm, with a depth of 5 cm (but in the second it's round: diameter: 6 cm, depth: 4 cm). Such grooves are on the surfaces of the echinus. They were used for mounting capitals by the beams at the top, and the barrel of the column at the bottom (fig. 3 a, b).

Capitals consist of the following from the bottom upwards: from the round echinus concentrically are eight acanthus leaves, and between them rises a second line of eight acanthus leaves. The third line features four large leaves, and the four corners have four large volutes. All corners of the abacus, limbs and volutes were almost repulsed, and some parts are heavily worn.

There is an insignificant number of such capitals in the southern territory of Uzbekistan. For instance, one of the known capitals is on exhibition at the State Museum of History of Uzbekistan another one is in a private collection. Both of the capitals were discovered some time ago, but there is no related information in the scientific literature. The capital (height: 25 cm, D.E.: 25 cm) from that museum is also decorated with three rows of acanthus leaves: the first two rows of small acanthus leaves are the same size, and the top (and third) row of four large acanthus leaves alternates with four corner volutes. Based on the trail, there is a dark red brownish slip (paint) which means the large capital was painted or gilded. It is known that such red paints served as a tack for coating with gold leaf (fig. 4).

The other capital in the private collection is slightly different from the others in terms of design (fig. 5). There are also sixteen leaves in the front row that abuts the echinus, and on the second row there are eight leaves. But they are larger than those in the first row and all the acanthus leaves abut the small leaves that are below them. They are also short and horizontally extend outward. The third row of acanthus leaves is two times larger than the middle row and extends upward, curving slightly outward. The abacuses of both capitals are under the square shape, and very huge. On the first capital, it forms a protrusion which is less than half of the total thickness. On the second capital, the abacus is equipped with a half scotia. The volutes of both capitals are huge as in the previous capitals of Old Termez.

The proportions and large sizes of the Termez capitals and their similarities with Sacksonokhur and Ay-Khanum

samples enables us to date them supposedly to the Greco-Bactrian period, i.e., 3rd to 2nd centuries BC. Apparently, the size of the capitals decreased over time, and we can assume that the smaller capitals (e.g., the capital from SMHU Museum) can be attributed to between the Greco-Bactrian and early Kushan intermediate period, that is 2nd to 1st centuries BC.

For manufacturing these architectural details, like the previous findings, it is quite possible that limestone which was brought from Khuja-Gulsuar was used (Logophet, 1909; Masson, 1938). This archaeological site is located on the bank of the Amudarya (Oxus) River, 30 km upstream from Termez. According to research, it was confirmed that the limestone was quarried and processed there. It also provided stone for the whole of Termez and its surrounding area for the manufacture of architectural details and sculptures (Staviski, 2001). Petrography analysis and research of the mineralogical components of the limestone from this and other monuments of Termez (Karatepa, Fayaztepa) have shown that this type of mineral composition is homogeneous and belongs to the organogenesis group (Ageeva, Belozeroва, 1982).

Conclusion

From the above, it can be concluded that the recent findings once again confirm the high impact of Hellenistic traditions in ancient Bactrian architecture. At the same time, however, local features have been preserved, which are visible in the planning structure, construction techniques and individual architectural decorations. These architectural details were used in the reconstruction of some individual architectural buildings and the urban culture of ancient Bactria.

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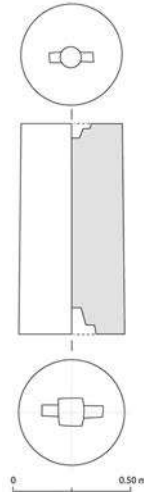
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2. Pronaos (from Greek) – half open part of an ancient temple between the entrance and naos.
3. Stambha (from Sanskrit) – memorial pillar with figure capital and many layer towers, covered with sculptures and ornamental caves.
4. Present time these fragments exhibiting in the Museum of “Meros” (Heritage) in the “At-Termeziy Complex Site” in Termez.



1 a-b. Fragments of Column from Chingiz-tepa.

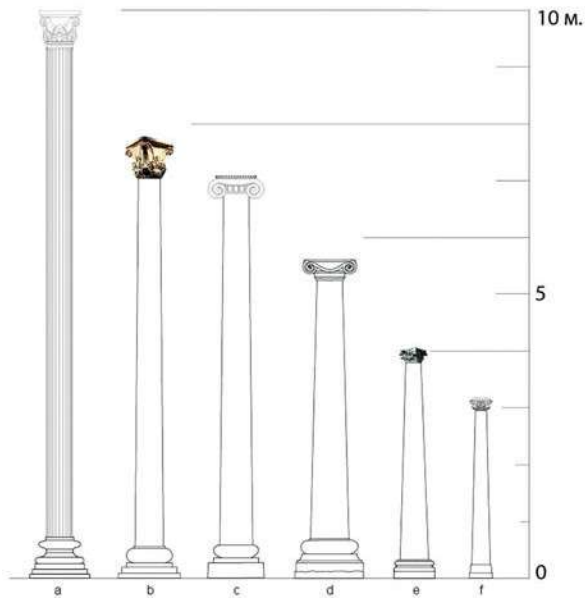
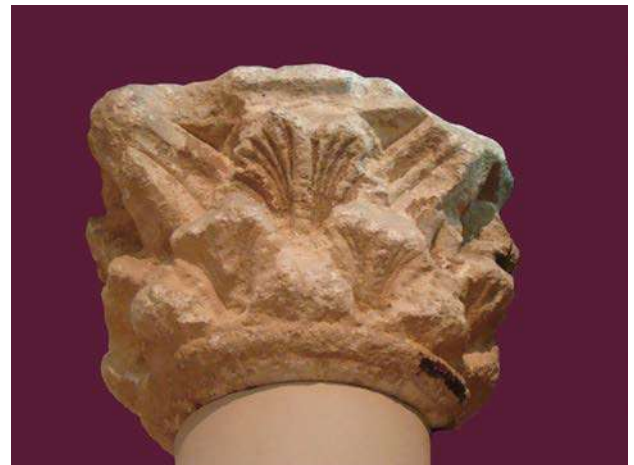


Fig. 2. Bactrian Columns: a) Sacksonokhur (South Tadjikistan), b) Ay-Khanum (North Afghanistan), III-II centuries BC. c) Takhti-sangin, end of IV century - beginning of III century BC; d) Khalchayan, I century BC - I century AD, e) Karatepa, f) Ayrta, II-II centuries AD.

2. Reconstruction of Columns of Ancient Bactria.



4. Capital from State Museum of History of Uzbekistan.



3 a-b. Capitals of pillars from Old Termez.



5. Capital from private collection.

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