ACCU Nara
International Correspondent

Vol.30 2023

The Thirtieth Regular Report

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

ACCU Nara International Correspondent

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

The Thirtieth Regular Report

Contents

Bangladesh

Magnificent Mughal Architecture 'Tah Khana' Chapai Nawabganj, Bangladesh

Dr. Mst Naheed Sultana, *Regional Director*
Department of Archaeology, Ministry of Cultural Affairs, Government of the People's Republic of Bangladesh

Location

The Tah Khana archaeological site is located in Firojpur Union of Shibgonj Upazila in Chapai Nawabganj district in the north-western part of Bangladesh. It is located in the border area of Bangladesh and India and very close to Sonamasjid Land Port. This archaeological site is 336 km from the capital Dhaka and 34 km from Chapai Nawabganj district town (Fig. 1).

Fig. 1. Photo taken from Google

Short History

Muslim general Ikkhtiar Uddin Muhammad bin Bakhtiyar Khilji defeated Lakshman Sen, the last Hindu king of Bengal in 1204 CE at Nadia. Lakshman Sen fled and took refuge in Bikrampur. Following Bakhtiyar Khilji's victory, Tah Khana was chosen as the capital of the new conquerors of Bengal and hence marks a new epoch in the history and culture of Bengal.Later, this expansion of Muslim supremacy extended from West Bengal to the south and east, covering the entire Ganges-Brahmaputra Delta. This entire region is known as Sultanal-i-Bangla or Subah-i-Bangla (Fig. 2).

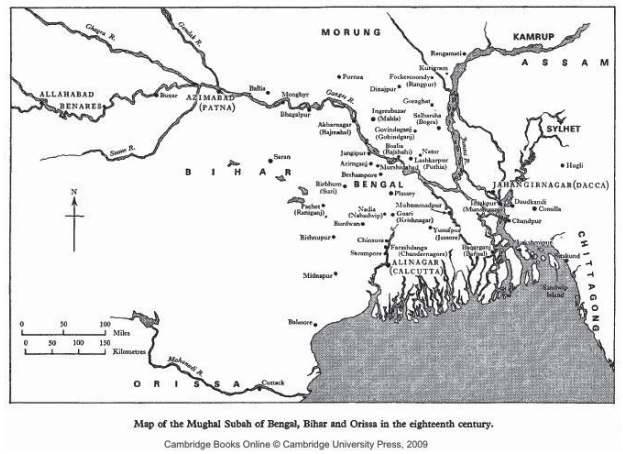


Fig. 2. Photo taken from Google

Lakshmanavati is located very close to Navadwip. Bakhtiyar Khilji established his administrative capital at Devkot or Bangarh in Gangarampur Thana of West Dinajpur soon after the conquest of Navadwip. After Bakhtiyar Khilji was killed by assassins, his general Giash Uddin Yuaj Khilji brought the capital back to Gaur (1208-10 CE and 1212-27 CE). However, the golden age of Gaur began during the reign of Sultan Nasir Uddin Mahmud Shah of the next Ilias Shahi dynasty (1435-69 CE). After a short break in the middle, Gaur became the capital of Bengal until 1608 CE. Most of the areas of North and West Bengal including Chapai Nawabganj became part of the Mughal Empire after the conquest of Bengal by the Mughal Emperor Akbar. In some areas of East and South Bengal, the Bhuiyan developed resistance against the Mughals. However, among the Mughal Subahdars, *Shahzada* (Prince) Shuja was given the responsibility of ruling this region (1631-59 CE). At that time, he completed several works in Chapai Nawabganj. During his time, Hazrat Shah Neymatullah (R.) came here to preach Islam in the eastern part of Gaur. *Shahzada* Shuja received him with the utmost respect. Later, Shah Neymatullah (R.) permanently settled in Firozpur on the outskirts of Gaur city.

The southern part of the ancient Gaur city developed huge hinterlands where human settlements, mosques, mausoleums, madrasas, roads, ponds, resting places, Mazar culverts, etc. were built. Today, these monuments are the ancient heritage of the government of Bangladesh. This area is so rich that numerous cultural objects can be seen everywhere (Figs. 3 & 4).

Tah Khana

In the ancient capital Gaur, many structures have been built in different eras since ancient times. Tah Khana is

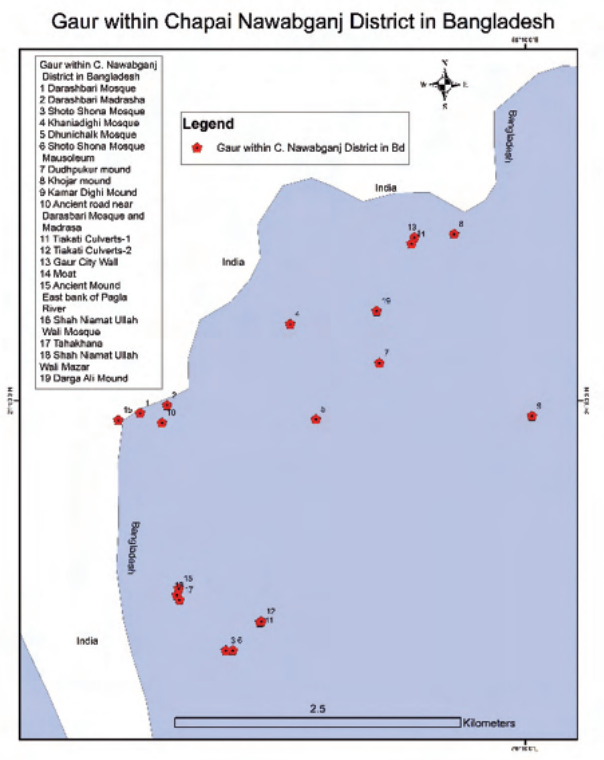


Fig. 3. Archaeological sites at Chapahi Nawabganj in Bangladesh

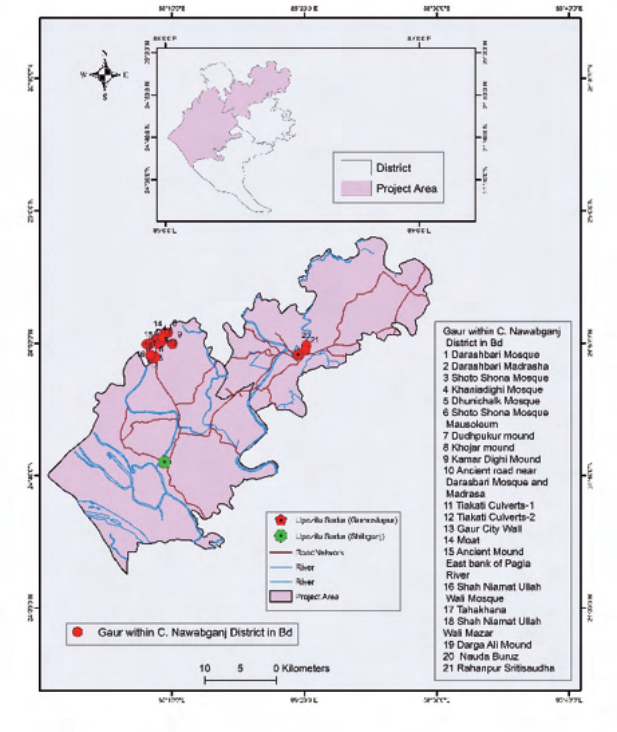


Fig. 4. Location of Tah Khana archaeological sites in Chapahi Nawabganj district

one of them and has special characteristics. 'Tah Khana' is a Persian word which literally means cold building or palace. *Shahzada* Shuja built this building as a heat-controlled building in Firojpur for the residence of his religious preceptor, Shah Neamatullah (R.). According to various historical texts, Shah Shuja, the son of Mughal Emperor Shahjahan, built the Tah Khana as a heat-controlled building in 1639-1658 or 1639-1660 CE to show his devotion to his religious preceptor, Shah Neamatullah (R.), during his tenure as the Subadar of Bengal (Fig. 5).

Fig. 5. Shah Shuja (Photo collected from Google photos)

Legend has it that when Shah Shuja visited Niamatullah (R.) in Firojpur, he used to stay in this palace. There are two more buildings on the north-western side of Tah Khana. The nearest of these is a three-domed mosque and the other is a single-domed mausoleum. The palace was once very splendid and aristocratic. Although it had deteriorated due to not being used for a long time. The Department of Archaeology later restored the palace to its original condition through a process of preservation and conservation.

Architecture

The two-storied building Tah Khana is mainly built of brick, but stone has been used extensively in the doorframe and floor. Wooden beams are used for the flat roof of the ground floor (Figs. 6, 7). The building appears to be single story from the western side. Again, the building can be seen as a two-storied structure from the eastern side. The ground floor rooms are extended to the east and all the rooms are designed in such a way that they reach close to the large pond. The roof of the ground floor was used as an open floor or courtyard on the eastern side of the first floor of Tah Khana palace (Figs. 8, 9, 10, 11).

Its length is 35.35 meters from north to south and 11.58 meters from east to west. There are 18 rooms in total. Of these, 5 rooms are on the ground floor and 13 rooms are on the upper floor.

The Tah Khana palace is surrounded by a boundary and there is an arched gateway in the middle of the wall to enter the building. The gateway is decorated with panel decorations. Entering the palace through the gate, there is a water fountain which represented the beauty and Mughal nobility of that time (Figs. 12, 13). However, the fountain is currently inoperable (Fig. 14).

The ground plan of this palace is very complex in nature but interesting. The palace can be divided into three parts or divisions by looking at the shape, nature, and characteristics. "The most characteristic feature of this structure is its apparent coolness and freshness attained by its existence at the bank of a tank and also its peculiar plan" (Hasan 1971:129).

Fig. 6. Flat roof of ground floor

Fig. 7. Arched doorways and niches of ground floor

Fig. 8. Tah Khana, photograph taken from the east

Fig. 9. Photograph taken from the south east

Fig. 10. Tah Khana, photo taken from the south east (back side of 1st floor)

Fig. 11. Photograph taken from the south west (entrance of 1st floor)

Fig. 12. Boundary wall and gate

Fig. 13. Close view of the main gate

Fig. 14. Water fountain in front of Tah Khana palace

Fig. 15. Facade of Tah Khana palace

Fig. 16. Octagonal room in the middle of Tah Khana

Fig. 17. Dome of octagonal room

Fig. 18. The dome is decorated with *muqarnus* art

Fig. 19. Bathtub inside the hammam

Entering the palace past the fountain, first is the hall room and this room leads to another room in the middle of the building Tah Khana. The hall room is covered with a long tunnel vault. The entrance to the hall room from the western side has three wide multi-cusped arched doorways (Fig. 15). Behind the hall room are three adjoining rooms for living. Among the three rooms, the middle one is special from the others. The shape of the room is octagonal and a dome is used as the roof. The dome is decorated with what is known as *muqarnas* art but the exterior is a plan roof (Figs. 16, 17, 18). All the rooms of Tah Khana palace can be accessed from this room: "... two octagonal towers towards the rear angles of the building consists of a number of rooms, arranged symmetrically in three divisions. The central division or block, forming the nucleus of the building, consists of a large oblong hall room and three other rooms on its rear" (Husain 1997:111).

On the southern side of the building is a royal Hammam with a well, water reservoir (bath tub), water heating furnace, bathing area, dressing room, and glass cover to let in light from the roof. Although it is currently closed. It was possible to collect water from the nearest pond. (Figs. 19, 20, 21)

In the northern part of the building an open space is found crossing two rooms. To the west of the open space there is a special arrangement for prayers. There are three Mihrabs on the western wall of this room, which is open to the east (Fig. 22). Also, adjacent to this room is an octagonal room with each arm measuring 2 m (Fig. 23). There are two narrow staircases in the north and south of the western wall of the building and through these staircases one can climb to the roof of the building, from where one can still enjoy the immense beauty of the surroundings (Fig. 24).

Ornamentation

The Tah Khana palace has panel decorations on the front wall, back wall, and inside each room. Also, the octagonal dome of the middle room shows the use of *muqarnas* art. Other rooms have several niches, panel decorations, and a multi-cusped arch design. Some of the niches are covered with designed plates for added beauty (Figs. 25, 26, 27).

Conclusion

Complexes divided into three parts or divisions within the same building—living, bathing and another with prayer room—are not seen anywhere else in Bangladesh. The Tah Khana building is unique and special in its layout, ornamentation, and architectural beauty. However, the Tah Khana complex is not only important for its Mughal

Fig. 20. Bathtub with a place of bath

Fig. 21. A well is located in the south-eastern corner (adjacent the hammam) of Tah Khana palace and is very close to the pond.

Fig. 22. Three Mihrabs on the western wall of the northern prayer hall

Fig. 23. A narrow staircase located in the middle of Tah Khana

Fig. 24. Octagonal room in the northern part of the palace

Fig. 25. Ornamentation inside the hall room

Fig. 26. The interiors of the rooms are beautifully decorated with niches and a multi-cusped arched design

Fig. 27. Niches are covered with designed plates

style architecture in the city of the Sultanate period, but also for its architectural quality. This architecture was the first of its kind in Bengal. Later, such Mughal buildings were built at Lalbagh Fort in Dhaka, Mirzanagar Hammam Khana in Jessore, and Ishwaripur Hammam in Satkhira district.

Bibliography

1.Dani, Ahmaed Hasan. *Muslim Architecture in Bengal*. Paramount Press, 9, Hatkhola Road, Dacca-3, 1961.

2.Hasan, Syed Mahmudul. *Muslim Monuments of Bangladesh*. Anjuman Printing Press, 32, Joginagar Lande, Wari, Dacca-3, 1971.

3.Husain, A. B. M (Editor). *Gawr-Lakhnawti*. Dana Printers, 16, Mohakhali C/A, Dhaka 1212, 1997.

4.Zakaria, Abul Kalam Mohammad. *Bangladesher Pratnosampad*. Moumita Printers, 25 Paridash Road, Dhaka, 2011.

Acknowledgements:

Md. Abusaid Inam Tanvirul, Custodian, Rabindra Kachari Bari Museum, Shahzadpur, Sirajganj.

Md. Abdus Salam, Upper Divisional Assistant, Department of Archaeology.

Md. Shahinuzzaman, Office Assistant cum Computer Operator, Department of Archaeology.

Md. Afzal Hossain Mondol, Former Chief Draftsman, Department of Archaeology.

Cambodia

Site Security Educational Program for Archaeological Site of Sambor Prei Kuk, Ishanapura

Chan Vitharong, *Director*
Department of Site, Archaeology and Conservation, National Authority for Sambor Prei Kuk, Ministry of Culture and Fine Arts

1.INTRODUCTION

The National Authority for Sambor Prei Kuk (NASPK) has completed the "Site Security Educational Program for Archaeological Site of Sambor Prei Kuk, Ishanapura" project. Legal enforcement along with awareness of the heritage's value is the foundational idea for implementing the project with close community cooperation.

It was proposed that this initiative would initiate an educational model for the preservation and protection of cultural heritage sites in Cambodia. With the participation of each stakeholder in Sambor Prei Kuk, the outcomes of this initiative will contribute to the safeguarding and protection of the site. Successfully completed activities include a workshop and public educational materials production. The project was conducted from September 2022 to June 2023, which it was funded by the Cultural Property Agreement Implementation Grant (CPAIG), U.S. Department of State.

2.WORK RESULT

2.1.Community Communication

The initiative started from the beginning of the project (in September 2022) through a collaborative approach with the local community, aimed at enhancing their comprehension of cultural heritage values and attributes. The stakeholders in this context encompass a range of individuals, including villagers, monument guardians,

The NASPK organized community communication activities with the locals prior to the workshop

conservationists, local tourism guides, and village/ community council members (as mentioned in the previous report). The main objective of conducting small group sessions with community people was to enhance comprehension and progress in relation to the two principal projects, namely workshops and public educational materials. The utilization of a draft design facilitates the community's understanding of illustration concepts at this particular level.

2.2.Workshops

The workshop titled "The Value and Legal Enforcement of Cultural Heritage in the Sambor Prei Kuk Archaeological Site" comprised two workshops focusing on the topics "The Value of Cultural Heritage" and "The Legal Enforcement of Cultural Heritage." The workshop, as proposed, was conducted successfully on June 19-22, 2023, in Kampong Thom town and at the Sambor Prei Kuk site. The workshops were consolidated into a unified four-day program.

According to the evaluation, the skeleton of the workshop was intended to be expanded by educational materials, panels, and a booklet. As mentioned above, since September 2022, the content of the workshops has been finalized through community communication, which







Activities of workshop on June 19-22, 2023, titled *"The Value and Legal Enforcement of Cultural Heritage in the Sambor Prei Kuk Archaeological Site."*

involved working closely with the local community to enhance their understanding of cultural heritage values and attributes, the selection of national and international resource persons with expertise in the value of cultural heritage and the legal enforcement of cultural heritage, and the participation of these individuals in the community engagement activities.

The NASPK organized community communication activities with the locals prior to the workshop.The workshop was held at the Kampong Thom Royal Hotel in the provincial center of Kampong Thom and included a visit to the Sambor Prei Kuk archaeological site. Eighty people attended the workshop, including 57 participants, and 23 speakers and resource persons. Professionals from various institutions—largely cultural heritage institutes—as well as community members from Sambor Prei Kuk and other heritage protection sites were invited as follows:

- Villagers of O Kru Ke, a village in the ancient moat city area, will organize a series of small group meetings in the evenings, when they are not engaged in agriculture, to share this information and knowledge with one another.
- Teachers from the villages of Chey Sampov O Kru Ke and Sambor will incorporate the workshop's content and educational materials into their lessons to expand the understanding of their students.

Interestingly, the other participants from different parts of the country, particularly the Provincial Culture and Fine Arts and national authorities' technical staff, were not only able to share their experience with community members, but also able to observe and learn from the positive examples of community engagement in Sambor Prei Kuk. On the other hand, this workshop is also a model of a technical discussion on the value of heritage (from local to universal), law enforcement, and the community's involvement, with several types of educational materials, speakers, and participants. It is practicable to develop the community's understanding of heritage in this manner.

2.3.Public Educational Materials

A billboard panel and handbook for public education have been created. This activity was initiated concurrently with community communication in an effort to improve design comprehension. Notably, the design includes an illustrated explanation, since some of the villagers are illiterate and the importance of integrating art and education in these activities. The installation of billboards within the protected zone village, and delivery of booklets to the villagers were carried out. Additionally, digital copies of the books will be published to the websites and social media platforms of the National Authority for Sambor Prei Kuk (NASPK) and the Ministry of Culture and Fine Arts (MCFA).

2.3.1.Billboard Panel

In order to enhance local awareness, it is proposed that illustrated posters accompanied by concise and easily comprehensible information be erected throughout each community situated in the protected zone.

Initially, our intention is to incorporate two images that would specifically highlight the remaining aspects of the archaeological site. According to the prevailing discourse among the community, a proposition has been made to integrate two more separate designs on the panels that pertain to their everyday activities, specifically cattle herding and housing construction—in total there are four designs for the panel. The objective is to distribute information to the residents of the nearby villages, as well as those living in close vicinity to the temple and the city's moated zones, with regard to cattle herding. Furthermore, there have been recommendations to integrate these concepts into the architectural development of residential buildings located in the rapidly expanding area that falls inside the protected zone.

2.3.2.Handbook

In the concept of a "Dos and Don'ts" booklet, a publication entitled "Sambor Prei Kuk: Monument and People: An Introduction to the Protection and Promotion of Archaeological Evidence in Sambor Prei Kuk" has been issued.

The booklet was designed in A5 and consists of 52 pages printed using a full color printing process. This manual offers an overview of the significance of integrating legally compliant paragraphs in relation to drawings and illustrations by artists. This booklet has been carefully designed to provide information in the following three separate parts: an introductory overview of the site, dos and don'ts, and the selection of related regulation. The "Dos and Don'ts" section is an overview of the value of heritage, regulations related to cultural heritage, and guidance for integrating mindfulness into everyday activities at the Sambor Prei Kuk site.

The first edition of "Sambor Prei Kuk: Monument and

Activities of sharing with the people in the communities in their free time from agricultural work after the workshop on June 19-22, 2023.




The selected activities for installation at ten villages in the protected area of Sambor Prei Kuk.





The final design of the handbook (top is the cover) and selected pages. The bottom row shows the distribution to the villagers and schoolteachers.

People" has been distributed to a variety of audiences, including the general public (each family in the protected area), schoolteachers, the Heritage Police Unit, and monument guardians. The initial print run for its first publication was 4,000 copies, and according to demographic data, approximately 2,500 families reside in the protected area. The NASPK is contemplating August 2023 as the official release date for distribution to the local community.

3.CONCLUSION

This project encompasses not only the achievement of two objectives, namely the initiation of a workshop and the production of public educational materials, but also the implementation of actions centered around the preservation and promotion of archaeological evidence in Sambor Prei Kuk, with a focus on community engagement, making it a "people center." The acquisition of knowledge from the workshop and the utilization of the handbook/panels will serve as a means of bolstering support and providing incentives for marginalized populations within the community residing in the designated protected area.

Concurrently, NASPK is engaged in the ongoing monitoring and evaluation of its initiatives to ensure the attainment of intended long-term results. In order to further enhance awareness for communities, NASPK will utilize and develop its existing annual workshop schedule, collaborating with relevant departments within the organization to implement additional educational programs or activities. The monitoring and assessment of the project are essential in order to track its development and ensure the achievement of sustainable outcomes.

Remark:

The photographs presented in this report were taken as part of the Security Educational Program for the Archaeological Site of Sambor Prei Kuk, Ishanapura Project, which was carried out by the project team members: CHAN Vitharong, CHHUM Vanchhan, EM Pherak, SEANG Sopheak, CHHUN Reaksmey, and CHIT Chanpheakdey.

Cambodia

Restoration and Renovation of the National Museum

Sokonthea Sort, *Officer*
Planning Office, The National Museum of Cambodia

Note: This report provides a comprehensive description of ongoing rehabilitation works at the National Museum of Cambodia. Please note that some information may be similar to last year's report and can be repeated elsewhere.

Introduction

After completion of the first phase restoration in early 2022, the museum roof restoration project continued to the second and third phases, as planned in the restoration master plan (2021-2024), and these projects were completed in mid-2023. The second phase was repair of the roof above the southern gallery, which began in early 2022 and ended in late 2022, while the third phase recondition was on the roof above the western gallery, which began in February 2023 and ended in July of the same year. Roof repair in the last four stages is to be done as the next step. Besides the roof restoration project, we are revamping other parts, such as refurbishment of the front porch, which was planned to be the next step but which had to be done immediately because of the actual condition of the building. Heavy rain this year had caused much more water drip across the front porch and into the warehouse, which affected the collections on the ground floor, and that is why we needed to complete it early. Also, reconditioning of part of the fence around the museum building (north part half of the continuation of the previous recondition). In addition, we also have other work in the plan of conservation, development, and protection of the museum building, as well as the collections in this building.

1. Second and Third Phase: Roof Repair

The second phase is the repair of the roof on the south gallery (Figure 1), where severe damage was observed after the first phase (the northern part), which we first restored in 2021. As observed, the condition of this damaged part is similar to the previous one, with cracks and decay on both large components such as beams

Figure 1-3: Damage to the timber structure inside and outside the roof

Figure 4(a,b): Mold on the timber of the roof

Figure 5(a,b): Dismantle the bricks of the column to remove rot of the timber and reinforce at the junction of components

Figure 6(a,b,c): Replacing parts and linking between new and old timber structure

and timbers, caused by insects, fungi, and weathering. Most of wood paneling in this part is a little better than the previous part. The third stage is in the western part of the building (Figure 2), and has the same problems. The roof trusses are also corroded, requiring repair and reinforcement.

A. Condition of damage

For the study of the condition of damage of these two parts, the observation indicated that there were similar problems. Rotting and mold were present on the components, such as the tie-beam common rafters, principal rafters, purlin collars, and girders. According to the experience of the first stage repairs, the mold problem does not cause damage to components, but is a sign that the roof is subject to high humidity, which causes termites and rotted timber. Furthermore, the weather could cause decomposition of the roof ornaments such as Neak Cheng, [(1)] Neak Dong Kda, [(2)] and Javea, [(3)] and hollow the wood paneling of the gable. The condition of the defects in the components is as follows:

Main components: those in the roof structure are the most damaged, some supporting components (tie-beams rafter and purlin) are very fragile and rotten, and we found that some of standing structure suffered dry rot, with some wet rot at the junction and on prop timber guttering. The cause for this portion is insect infestation and weathering, and moisture from flooding roof tiles (Figure 3), but these large components were not completely damaged. Small timber: almost completely rotten because it is next to the tiles, which are in direct contact with the rain.

In this section, besides the decayed or rotten elements, most of the elements were damp and moldy (Figure 4a,b). Tiles are a major challenge that can cause damage issues. Slanted gutters generated holes and trickled on prop timber during rain and flooded into the gallery, also causing damage. One other type of damage is gable wood paneling shrinkage due to climate change that created small holes that splash water into the roof. Moreover, split covers of roof ornaments, namely Neak Cheng, [(1)] Neak Dong Kda, [(2)] Javea, [(3)] and Chong Cheng[(4)] are the cause of petrification of support wooden poles (Figure 5a,b).

B. Repairs

Both stages of repair are the same, mending as per the actual situation and following the example of past repairs, with the previous observation used as a reference for the traces of repairs. The technique of repairing is to dismantle tiles and remove the rotten parts by replacing them with new tiles. Then clean the mold, drying the moisture in the roof cavity, and check the damage level of the components to make repairs in the actual situation, apply anti-fungal paint on the components and close the fissures of gable wooden panels. Then fix all damaged parts and strengthen all timber elements by removing the decayed parts and put back the new wooden structure that has already been soaked or sprayed with termite repellent. In the process of restoring major components, we try to keep the old components as much as possible but for other small pieces of timber, if severely damaged, we need to replace the old wood instead supplying new wood. In addition, the roof ornaments such as Neak Cheng, [(1)] Neak Dong Kda, [(2)] Javea, [(3)] and Chong Cheng [(4)] also need to be repaired and painted with protective pain to prevent destruction. This repair work is done in the following order:

General damage plan study: Inspect the condition of roof damage and prepare a risk plan showing the problem point or do a damage spot. At this stage, the expert team collects detailed data of the damage through recording, painting or sketching, photography, etc. The survey results will be an important research document for the basis of repair, conservation, and project planning or improvement of the next step.

Dismantling the damaged area: Start dismantling the damaged area to check the actual damage situation, make notes and take photos of the condition of damage before starting restoration work to keep as a document for reporting after completion of the restoration project. For disassembly to repair, be very patient and pay attention to each part, especially roof repair components, to ensure that this disassembly does not add further damage. This precaution is necessary to preserve timber as much as possible. All these components of the roof structure need to be reused to avoid complete replacement (Figure 5). On the other hand, these are the repair and dismantling steps to follow:

- Remove all damaged tiles, as they are convex and leaky.
- Remove unusable timber pieces that are seriously damaged.
- Repair the damaged parts of timber, such as principal rafters, purlins, common rafters, and battens
- Reinforce principal timber pieces that are damaged but cannot be dismantled by repairing them by adding new wood.
- Clean off mold and moisture on the roof structure by applying a moisture-proof coating on the timber and inspecting the damaged parts and testing how it affects the timber.
- Clear out insects and apply pesticide on structural timber.
- Put plate wood to fill in the cracking wooden pediment and mixing material to fill in cracking wooden timber.
- Repair, clean, and repaint decorative gables and fill the shrinking of the pediment with wooden plate and Nagas-finials. The decorative gables of the pediment comprise two parts, wooden structure and cover mortar which is print as an ornament. But structures of decorative gabled are decay need to be removed and replaced by new timber (Figure 6a,b,c).

Restoration Material

Of all the material used in this restoration some are local products and some are imported from neighboring countries. Wood that we use as rafters, principal rafters, purlin, and batten is taken from various provinces in Cambodia. New tiles are locally made. However, the paint for protecting timber structures such as Marak is imported from Vietnam instead of using natural local Marak. We

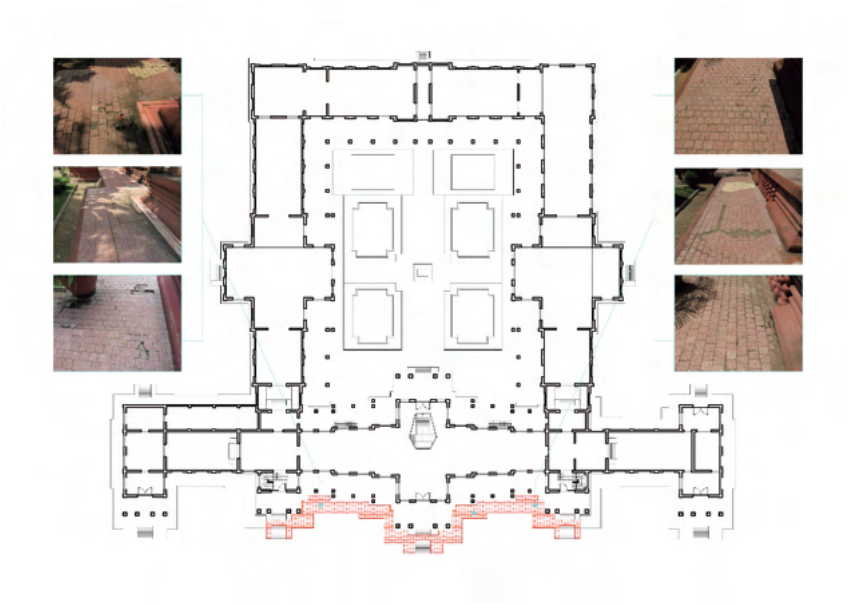


Figure 7: Porch renovation section

Figure 8(a,b,c,d): The damaged front porch and some of the renovation work

use Thai chemical pesticides for soaking wood to prevent termites from damaging the timber.

2. Front Porch Repair

Aside from the roof restoration project, we also repaired the front corridor to prevent water leaking into the basement. Due to climate change and the heat and humidity, the old floor tile burst out through the concrete layer. Currently, the infiltration of water from the front porch into the warehouse is increasing, which is worrying in that there will be a negative impact on all items stored in the warehouse. This problem has severely affected the building as well as the collections in the building, which needs to be repaired urgently to control the damage caused by the rain dripping inside. This renovation section was started only in the front porch of the museum building from the entrance of the office to the entrance of the library (Figure 7).

This corridor had already been renovated once in

the 1960s, along with the creation of the subsequent warehouse.

From that time snapped tiles had to be fixed frequently, but they are still damages from day to day till now. In this renovation work we disassembled all the old tiles to check the concrete floor below to find out the dribble point, removed old mortar (we did not remove the old concrete floor because it is still strong and can continue to be used) (Figure 8a,b,c,d), and pasted new mortar to touch up the concrete area to level waterproofing to eliminate water dripping into the basement warehouse. After finishing the above step, we started re-arranging the old tiles remaining from the dismantling, but we could not keep all the old tiles. The last work was peeling off the old color pained on the pedestal[5] and fixing it to make it better than before.

3. Repairing the Fence Around The Museum Building

Renovation of the fence is not a new project, but is

an annual project that continues after the fence has been partially repaired. We keep the old style, simply strengthening the damaged parts (peeling old mortar). Whether adding new pillars where they are broken, increasing the column height or removing old rotten columns and re-arranging them, the style and color are the same. We also removed the old wire and replace it with new wire. It should also be noted that the museum fence is half lined with steel bars and the other half is covered with wire. Trimming the plants near the fence makes it more aesthetically pleasing. We have also equipped it with hoses and an automatic water sprinkler system.

Conclusion

As mentioned earlier, in 2022 to mid-2023, we conducted three projects for the maintenance, preservation, and protection of the museum building: restoration of the museum roof in the second and third phase; two front porch renovations; and three fences and repair work of fences around the building. The roof renovation is focused on strengthening the structure from inside but also keeping the aesthetics of the building from the outside. As for the items to be repaired, we do not focus only on the original materials, but also add new material to replace the old material. We also re-layed some remaining old tiles that had not broken, and as a result of repairing the roof, we have received a lot of good points, for example, ending the rain leakage from the roof, which in the past was very leaky, affecting the integrity of the office. The components are stronger than before. We have strengthened and removed the rotten wood, and all the new wood components are soaked in termite-resistant pesticides and painted, adding new protection. The two further renovation results were acceptable because they have eliminated leaking water into the basement warehouse when it is raining. The aesthetics of the building are now much better, but the sad thing is we cannot completely preserve all old materials. However, for this work, there are still limitations in terms of repair techniques, data collection, and recording work that need to be improved in the next project.

Appendix

(1) It a part of ornament that is shaped same as the dragon head.
(2) It is the middle part of the gable of the pediment and shaped the same as a dragon body, which is covered with mortar on the timber.
(3) Top part of roof gable.
(4) It is one kind of ornament, which is used to decorate and press roofing.
(5) It is one kind of ornament, shaped to look like a small column, and used to ventilate and decorate windows or the door frame.

References

- National Museum of Cambodia (2020). National Museum Roof Survey Damage Report.
- National Museum of Cambodia (2020). Gallery Renovation Meeting Report.
- National Museum of Cambodia (2021). Concept of Restoration and Preservation of National Museum, 2021-2025
- National Museum of Cambodia (2022). Roof Restoration Project, Report

Grotto Temple National Archaeological Park - Exploring A New Model for the Conservation and Utilization of Grotto Temples in China

Bi Yi, *Project Manager*
Beijing Tsinghua Tongheng Urban Planning and Design Institute

I. Overview of Grotto Temples in China

A grotto temple is a special type of cultural heritage. It has its origin in Indian Chaitya and Vihara, which can be dated back to the 2nd century. After grotto temples were introduced to China, they were influenced by Buddhist-Taoist cave niches and their function and design also changed gradually. According to a national survey on grotto temples in 2022, there are nearly 6,000 grotto temples in China (grotto temples in this survey are defined as religious stone caves and cliff statues, not including prehistoric rock paintings and literati inscriptions), which are widely distributed across 28 provinces, mainly concentrated in Gansu, Shanxi, Chongqing, and Sichuan (Fig. 1). Grotto temples in China are large in scale and they represent a full spectrum of diverse forms and spatial distribution. They are particularly concentrated in the era from the Northern and Southern Dynasties (420 AD – 589 AD) to the Tang (618 AD – 907 AD) and Song Dynasties (960 AD – 1279 AD), which make them important witnesses to the early histories of China. In terms of the World Heritage List, China ranks first in the number of grotto temples listed, which include the Dunhuang Mogao Grottoes (Fig. 2), Yungang Grottoes (Fig. 3), Longmen Grottoes (Fig. 4), Leshan Giant Buddha (Fig. 5), and Dazu Rock Carvings (Figs. 6 & 7).

The development of grotto temples in China is closely linked to the development of the Silk Road. The excavation of grotto temples began in the 3rd century, peaked in the 5th to 8th centuries, and lasted until the 16th to 17th centuries. The Wei and Jin Dynasties (220 AD – 589 AD) were the initial period of development. Excavations gradually reached their peak during the Sui (581 AD – 618 AD) and Tang (618 AD – 907 AD) dynasties. From the late Tang to late Song dynasties, the excavation of grotto temples reached another peak in southern China before finally declining. Grotto temples in China were constructed mainly following the Silk Road and concentrated around regional political centers. The distribution of grotto temples is a winding route. They were first excavated from the west to the east and the south. Then they gradually formed clusters around Xi'an and Luoyang, and finally developed westward again along the Ho-si corridor.

Grotto temples in China were initially similar to those in India, but later developed their own artistic style with diverse themes and designs, and became distinctively Chinese. Compared to other types of cultural heritage, the grotto temple is a prominent example of the cultural exchange between the East and the West, as well as an embodiment of the inclusiveness of Chinese culture. The design and execution of grotto temples exhibit the outstanding craftsmanship of the Chinese people, as well as the unique aesthetics embedded in the landscape. Altogether, grotto temples in China tell a story of the spiritual pursuit, cultural exchange, and lifestyle of the Chinese civilization. Figs. 6 & 7. Part of Dazu Rock Carving showing scenes of people's daily lives and moral stories, with distinctive Chinese characteristics.

II. The Current Situation and Conservation Challenges of Grotto Temples

In recent years, the Chinese government has attached great importance to the conservation and utilization of grotto temples. In terms of management, China has registered grotto temples as a separate category of cultural heritage. A comprehensive survey to collect data on all grotto temples in the country has been carried out. A two-tiered system of "national and regional centers" of conservation and research is under construction. Important regional centers such as the Dunhuang Academy and other key institutions have been

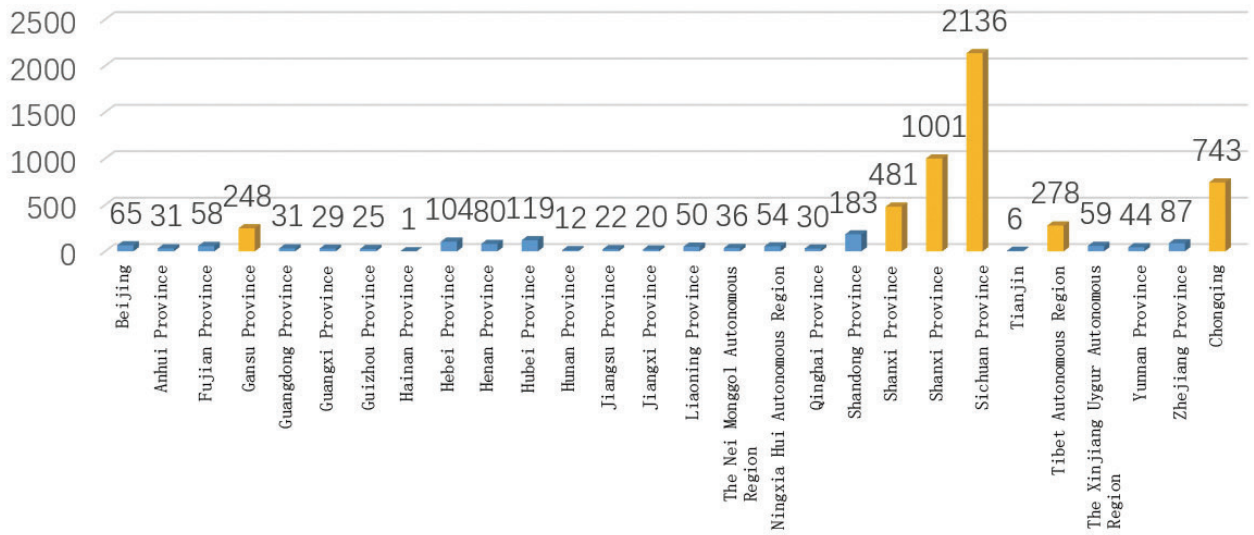


Fig. 1. Number of grotto temples in each province

Fig. 2. Mogao Grottoes in Dunhuang

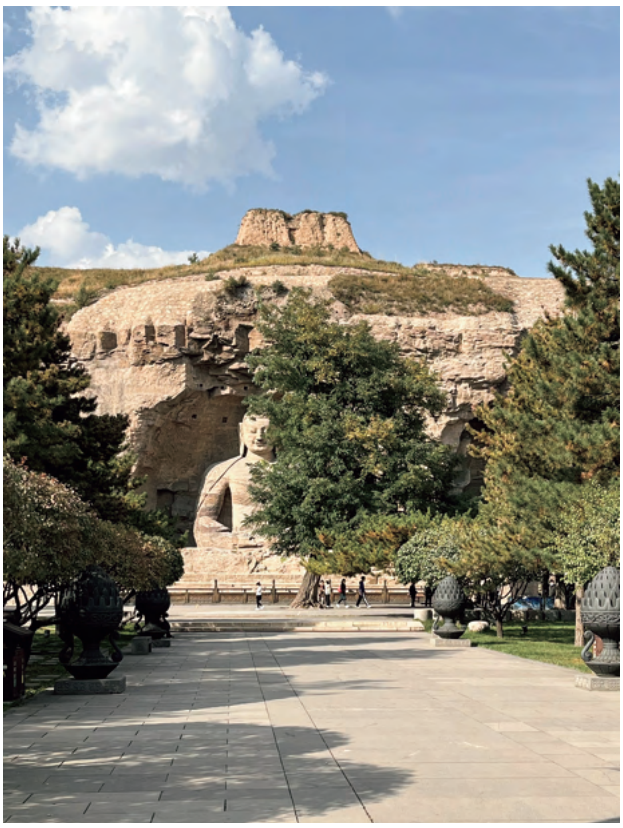


Fig. 3. Yungang Grottoes in Datong

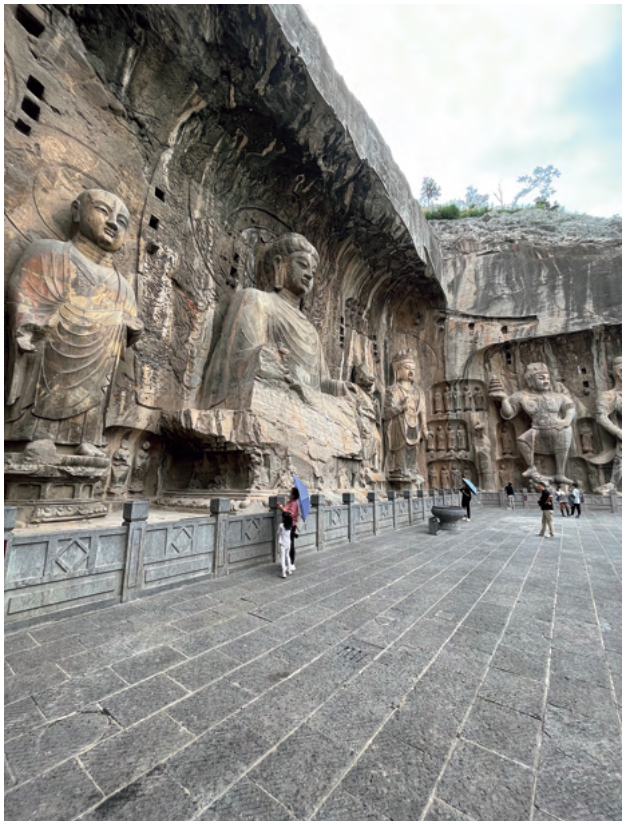


Fig. 4. Longmen Grottoes in Luoyang

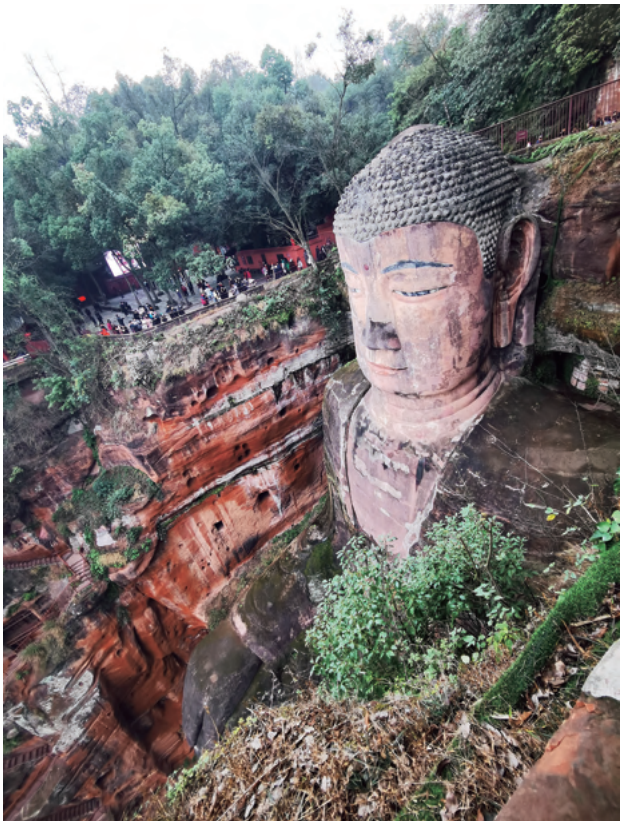


Fig. 5. Leshan Giant Buddha

continuously upgraded at the administrative level in recent years, and their technical capacity has been strengthened. These institutions are playing an increasingly important role in setting examples and leading the field. In terms of conservation, a series of major conservation and restoration projects have been carried out in an orderly manner. Joint projects with national research institutions on conservation techniques, as well as collaboration with foreign conservation institutions, have yielded rich results and accumulated practical experience in the conservation of grotto temples. These efforts have led to the development of conservation concepts and the promotion of key technologies (fissure grouting technique, anchor reinforcement technique, etc.). In terms of archaeological research, the academic research system of grotto temple archaeology is well established. The research

Figs. 6 & 7. Part of Dazu Rock Carving showing scenes of people's daily lives and moral stories, with distinctive Chinese characteristics.

on Dunhuang, Yungang, and Dazu Grottoes has been highly recognized both domestically and internationally. Many results have already been published and a team of archaeological professionals has been formed. In addition, the interpretation of heritage sites as well as the dissemination of research results has made great progress. In addition to the regular exhibitions of various kinds, major grottoes have been actively engaged in the field of cultural communication in recent years. Using digital technology, they are able to combine the exhibition of grotto temples with performing arts activities or online games. These activities are well received by the general public.

Generally speaking, the conservation of grotto temples in China is currently undergoing a transition, moving from rescuing sites in danger to developing preventive measures. There have been increasing efforts in research and comprehensive conservation measures, and conservation and utilization have made great progress. At the same time, the conservation policy of "protection first, strengthen management, assess values, effective use, and make cultural heritage alive" has been established. With the growing enthusiasm for cultural heritage among the general public, there has been increasing demand for improving the quality of exhibitions at grotto temples. Currently, there are a number of challenges that the traditional model cannot tackle effectively. It requires innovative measures and new models to accomplish the targeted tasks.

1. A comprehensive plan for the conservation and utilization of grotto temples on a national level is still lacking. Such a plan needs to be promoted holistically with clear branding. The advantages of holistic conservation and branding are being recognized. Countries around the world are exploring suitable models to build a more systematic and holistic system. However, grotto temples in China still lack a conservation and exhibition system on a national level. The conservation of grotto temples is polarized. Only a few well-known sites can reach out to the general public effectively. As a result, it is hard for visitors to have a comprehensive understanding of grotto temples. According to data on the attractiveness of tourist sites, the majority of domestic tourists would visit the four major grotto temples (Fig. 8), and the majority of foreign tourists would visit World Heritage Sites (Fig. 9). However, there is a huge gap between the popular sites and other less well-known sites. Many grotto temples of high value have not been recognized by the public and don't receive enough resources. Therefore, it is imperative to establish a comprehensive strategy to allocate resources and coordinate projects in a more systematic and focused way.

2. Most grottoes are small and scattered, making it difficult for them to become attractive destinations on their own. Therefore, effective measures to integrate resources and enrich exhibition content are needed. A large number of grotto

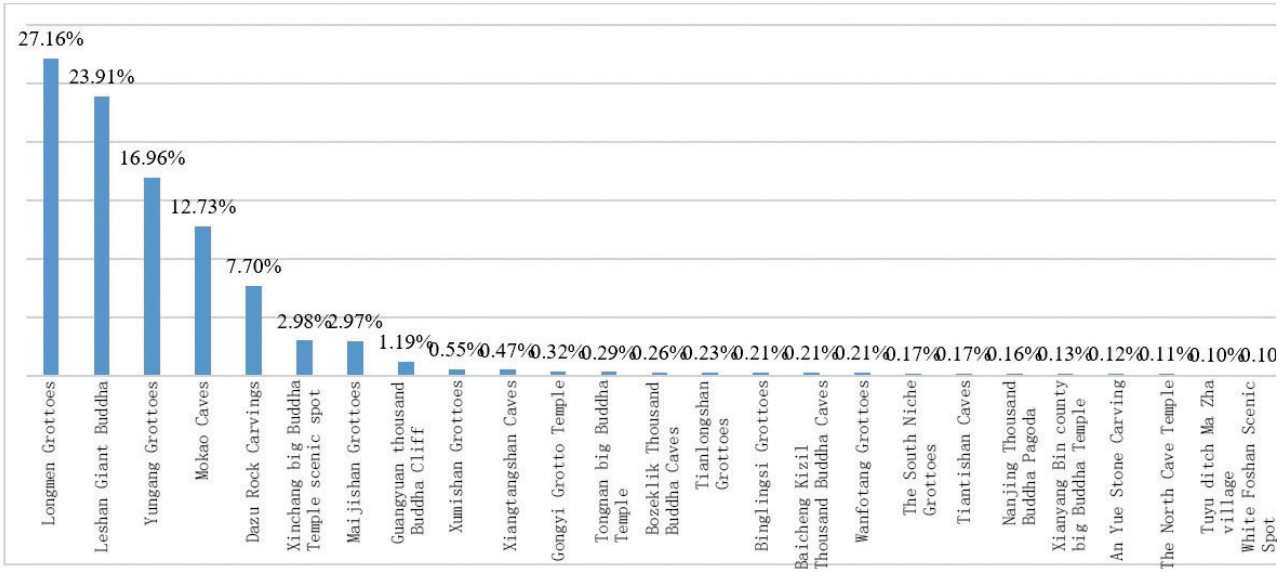


Fig. 8. Ranking of grotto temples according to data on the interest shown by domestic tourists

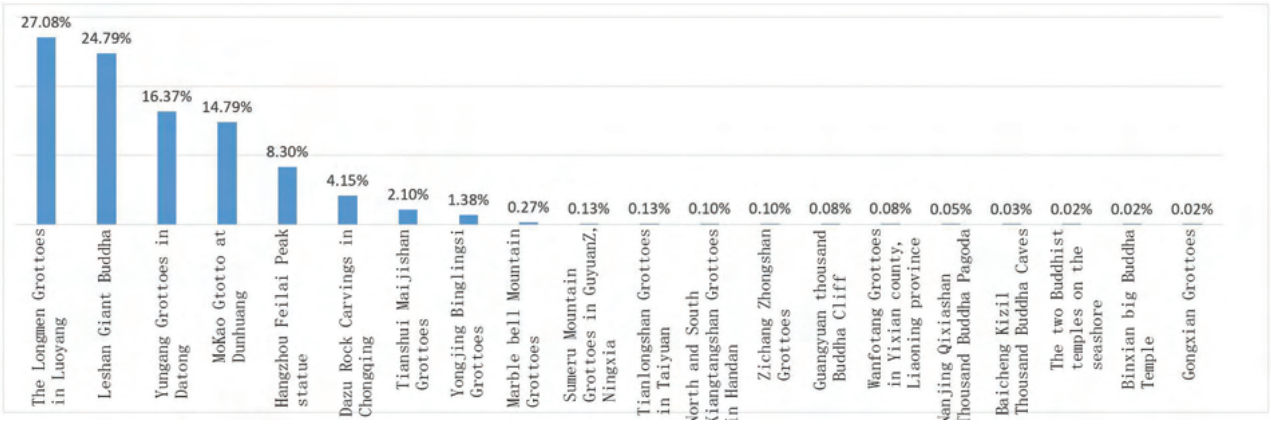


Fig. 8. Ranking of grotto temples according to data on the interest shown by foreign tourists

Figs. 10 & 11. Biludong and Yuanjuedong Grottoes in Sichuan, Anyue. Despite the exquisite statues, the grottoes are too small and scattered to effectively reach a wider audience.

temples are small or medium in size. Many grottoes are of high historical and artistic value, but too small and scattered to become attractive destinations on their own (Figs. 10 & 11). Visitors complain that the tour is too short, and they only walked around the site without actually spending a meaningful time there. Therefore, there is an urgent need to explore effective measures to integrate surrounding cultural resources, enrich the exhibition content, and enhance the tourist experience.

3. The quality of existing facilities and exhibition content is generally not up to standard, making it hard for the audience to have an in-depth understanding of the historical information of grotto temples and have a rewarding visiting experience. Currently, many grotto temples, even those with relatively developed facilities, still have problems including inadequate exhibition content and insufficient display of research results. Visitors usually find the information too scarce, and not prepared in a way that is easy to understand. Some grotto temples are guarded by fences that do not allow people to enter. Besides, there are few well-designed visiting routes and necessary tourist facilities, making it hard for visitors to have a good experience. Therefore, there is a need to improve the exhibition quality of existing grotto temples and set high standards. Especially for the important grotto temples, standardized interpretation and exhibition should be implemented to ensure quality.

III. Research and Exploration of the Grottoes National Archaeological Park

Given the existing problems mentioned above, the institution the author belongs to was commissioned by the State Administration of Cultural Heritage to explore new ways to exhibit and utilize grotto temples. We are proposing a new model called the "Grotto Temple National Archaeological Park" in order to systematically tackle the existing challenges of the exhibition and

Figs. 12 & 13. Qianfoyan and Dongfengyan grottoes. The grottoes are right beside an ancient road along the Qingyi River and close to Dongfengyan, a World Irrigation Heritage. All these elements constitute a comprehensive cultural landscape.

Fig. 14. Shifosi Grotto in Jiangjin. Foundations and tombs from the Song and Ming Dynasties have been excavated near the grotto in recent years.

utilization of grotto temples.

After learning extensively from international experiences such as the "National Park System" in the U.S., "Cultural Routes of the Council of Europe," and "Japan Heritage," the author and the project team believe that the following strategies should be adopted to design the Grotto Temple National Archaeological Park, and make it a cultural brand of national significance:

1. Exhibit "comprehensive elements" of grotto temples and enrich the exhibition content

Grotto temples in China are an integral part of their

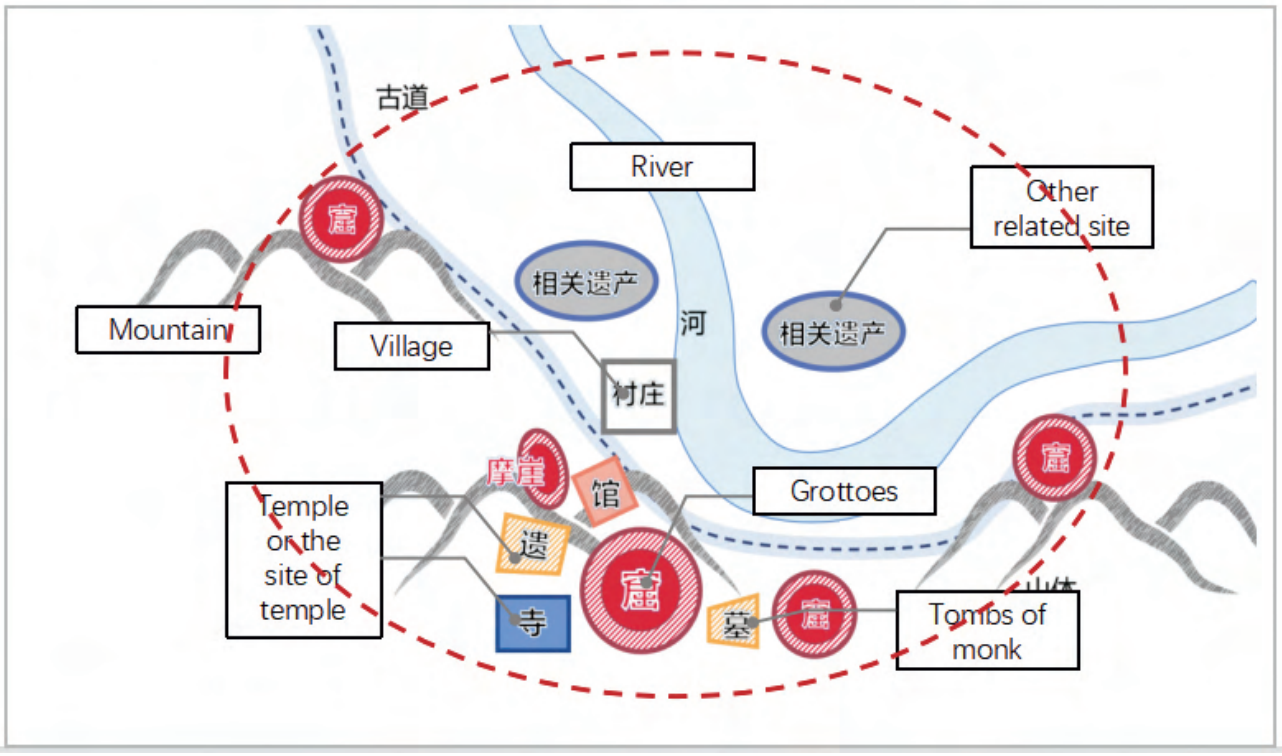


Fig. 15. Diagram of the comprehensive elements of the “core park area”

surrounding environment (Figs. 12 & 13). When ancient people built grotto temples, they considered the grottoes as part of the surrounding mountains, rivers, ancient roads, villages, and temple complexes. These elements are all closely interconnected in terms of function, and constitute the landscape as a whole. As Sun Hua, a renowned Chinese scholar on grottoes, puts it, "Grottoes should be viewed as a system, comprised of temples/ monasteries, grotto sculptures, structures in front of the grottoes, burial sites of monks or Taoist priests (Fig. 14), as well as roads and other related elements." However, for a long time, the research and exhibition of grotto temples focused mainly on their architectural forms, stylistic features, and thematic content, and to a large extent neglected other elements that are integral to them. Especially in terms of exhibition and interpretation, less emphasis was placed on guiding the audience to understand and experience the relationship between the grottoes and the surrounding environment. As a result, a lot of important historical information that could showcase the unique Chinese philosophy towards nature and culture has not yet been exhibited.

With recent advancements in grotto archaeology and research, the academic community has gained a deeper understanding of the relationship between grottoes and their historical environments. The concept of "comprehensive elements" conservation and exhibition has gradually become the consensus among professionals. Therefore, in the design of the Grotto Temple National Archaeological Park, we adopt this concept in the exhibition and utilization of grotto temples. Specifically, we aim to integrate important grottoes with surrounding smaller ones that are closely related to them, as well as interconnected elements such as landscapes, ancient roads, temple structures, settlements, and monk tombs. The goal is to create a holistic exhibition area, which is called the "core park area" (Fig. 15). This “core park area” will serve as a major component of the Grotto Temple National Archaeological Park. Expanding the scope of the objects and content of the exhibition allows visitors to have a more enriched experience and better access to the information.

2. Use "grotto temple heritage trails" to integrate related resources and enrich the tour experience.

Most of the grottoes are small and scattered, but they are relatively concentrated in a certain area. As a result, we adopt the concept used in the design of "Japan Heritage". We use the grotto temples as a theme for people to explore local history and culture. It will form a trail that integrates scattered grotto temples and other related natural and cultural sites, as well as intangible heritage and tourist facilities along the route. The trail also aims to promote a series of tourism products like study tours and similar activities, in order to attract tourists and provide an in-depth experience. In Sichuan and Chongqing, for example, the grotto temples are characterized by their close spatial relationship with the ancient roads, the Yangtze River landscape, and the ancient fortresses. Grotto temples in this area are also diverse in terms of their themes, including sculptures and carvings of not only Confucian, Buddhist and Taoist figures, but also of daily life and moral stories. As a result, we planned several thematic trails including: “Experiencing the Tang and Song Dynasties along the Chengdu-Chongqing ancient roads,” "Grottoes in a River Town," "Chinese Buddhist Philosophy in the Grottoes," "Learning about Everyday Life in Ancient China through the Grottoes," “Grottoes in the Ancient Fortresses," etc. We hope to integrate the grottoes with the natural and cultural heritage sites along the route, enhanced by a signage system to form a thematic cultural corridor.

3. Promote standardized exhibitions to enhance cultural tourism and cultural dissemination.

In response to the current problem of the varying quality of exhibitions, we propose that the Grotto Temple National Archaeological Park should standardize the exhibitions, setting criteria for design and service facilities with high standards, to promote high-quality interpretation and service. For example, it is proposed that all "core park areas" should have museums or digital exhibition centers dedicated to the interpretation of historical information to compensate for the lack of information available on site; at least one "grotto temple theme tour" should be planned to integrate different resources; there should be a unified visual identity system both online and offline; there should be adequate medical and safety facilities; interpretation material should be prepared by experts of diverse disciplines; there should be professional training for docents and guides; study trips should be organized regularly; there should be publications and lectures for the general public; and a mechanism of "application - creation - listing" should be established to facilitate local efforts to obtain the title of "Grotto Temple National Archaeological Park" and encourage them to improve the exhibition quality in order to enjoy corresponding policy benefits.

In addition to the strategies mentioned above, the planning of the Grotto Temple National Archaeological Park also includes a number of institutional reforms and innovations. For example, we hope that the establishment of the Park will promote the dissemination of knowledge from regional research institutions in terms of management experience and technological development. By managing all cultural resources holistically within the region, regional research institutions will be able to break the administrative boundaries and provide management and technological support to other smaller institutions within the area. The goal is that major regional institutions will help the development of smaller ones, and promote the development of the whole region, to improve the exhibition quality of grotto temples on the national level. In addition, in conjunction with China's ongoing "Territorial Spatial Planning," we intend to incorporate the "core park area" into the Spatial Planning as a special category—"densely distributed area of cultural relics." Within this area, various departments such as cultural heritage, tourism, natural resources, forestry, water conservancy, and so on should work together to manage the grotto temples in a concerted and integrated way, taking into account cultural heritage conservation, environmental protection, and tourism development.

The research chooses Chongqing and Sichuan provinces as pilot areas, where projects are currently being carried out. In the future, more projects will be implemented in other provinces across the nation, forming a new model that manages all grotto temples nationwide. With the Grotto Temple National Archaeological Parks at the core, the exhibition plan is comprehensive yet focused, concerted yet diversified. This will enable more grotto temples to be fully interpreted and reach a greater audience, allowing more domestic and international visitors to appreciate the beauty of grotto temples in China.

India

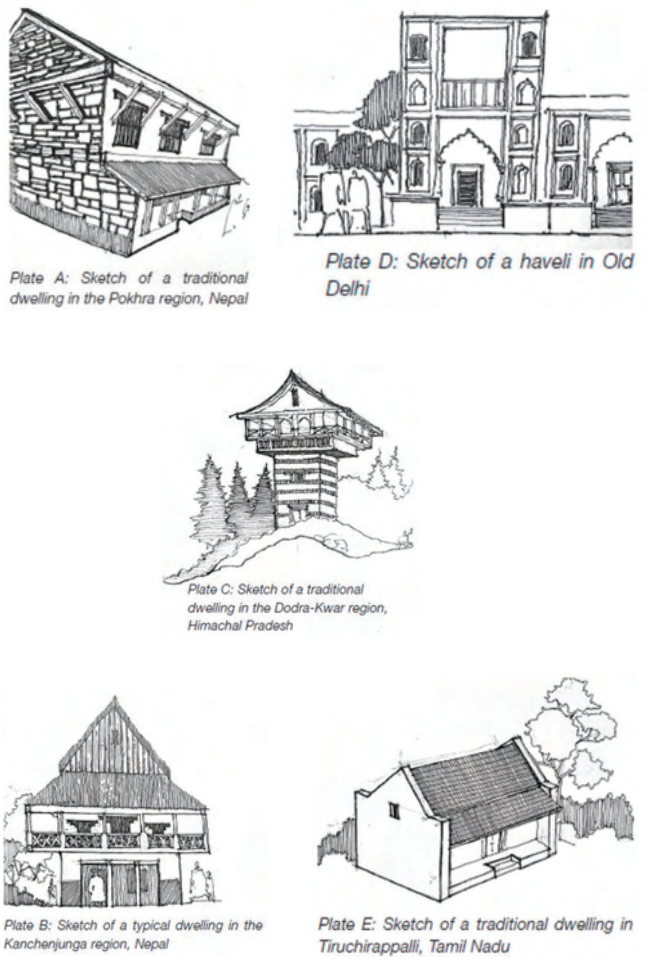
Restoration of a 17th to 18th Century Old Ruin for Adaptive Reuse While Reviving Traditional Methods of Vernacular Construction to Present an Example of Heritage Conservation to the Community and Create More Hope for Abandoned Heritage

Ar. Maulishree Mishra, *Principal Architect and Conservator*
Studio MANDALA, Artefacts and Habitats Sustainable Solutions LLP

Introduction

As we know, India in pre-colonial times was a collection of princely states where each state was unique and yet a part of the whole; an eco-system planned thoughtfully and with adherence to nature. The construction at that time was chiefly inspired and borrowed from a **deep understanding of nature,** the **natural materials available,** the **prevailing climate** and the **culture and traditions of the inhabitants of the particular region** (Fig. 1).

DEHRADOON: An illustrated Journey of a City



Traditional timber dwellings can still be found in the rural settlements along the Yamura Valley. The chief building materials comprise of river stone, slate stone, teak/deodar wood and adobe.

Fig 1. An illustration representing a few types of traditional buildings from different regions of India.
Source: Mishra, M. (2021) Dehradoon: An Illustrated Journey of a City (1st ed). Copal Publishing Group, India

However, over time, this system of building has been diluted and slowly disappeared, beginning with the colonial times, which brought its own influences, and buildings began to become more standardised in terms of spaces, use of materials, size of openings, height of spaces, etc. Following the departure of the British Raj from India in 1947, the sense of architecture and planning that remained behind was completely different from what had pre-existed, and this was adopted as the new architectural beginning of a nation rebuilding itself after 200 years of subjugation. The structures in the different regions built in the last century or two just before the beginning of the colonial era—i.e. until the end of 18th century or the beginning of the 19th century—reflect the sum total of the traditional building knowledge of India until that point in time and form an important heritage; however, due to lack of heritage knowledge and understanding, most of it has either been already lost or will be soon as a large part of it comes under no protection and belongs to private stakeholders who see little gain in it and often tear it down to build new structures.

This paper focuses on one such case (Fig. 2) which belongs to this timeline. The restoration of the building was not only undertaken to give it new life but also

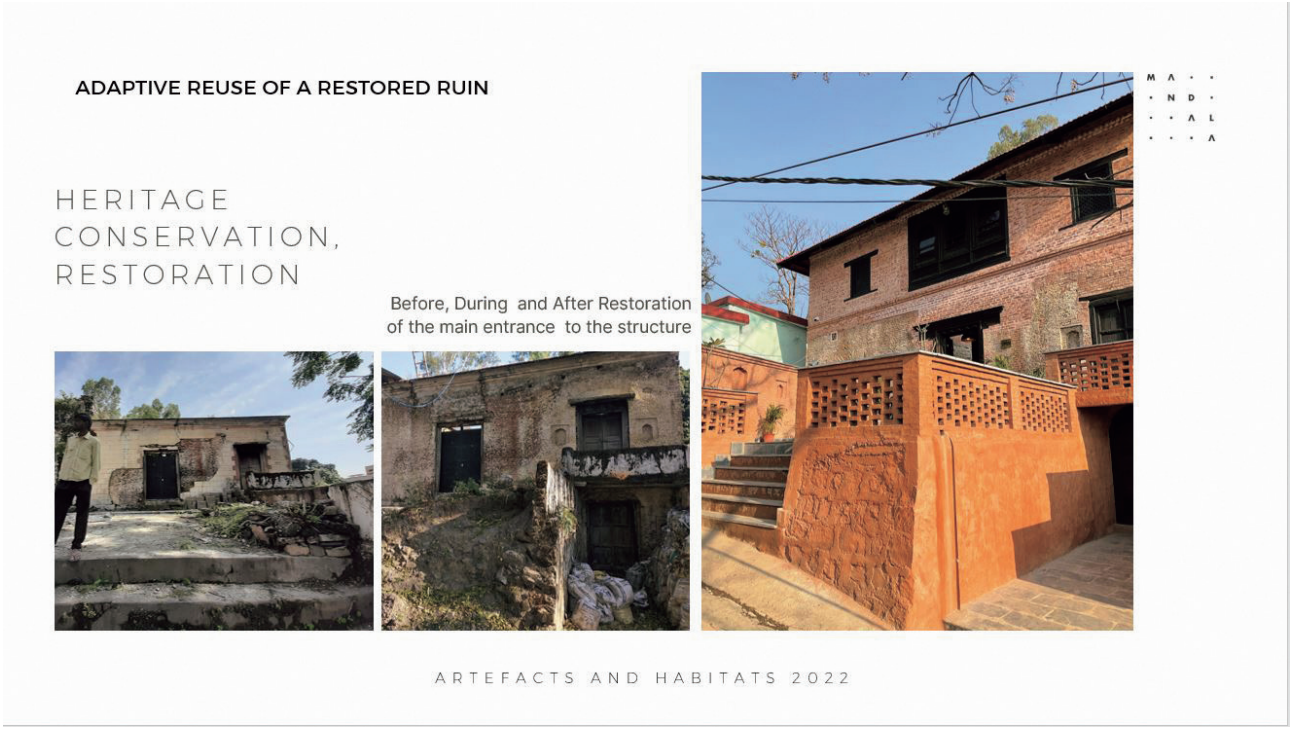


Fig 2. Images of the front elevation of the structure both before and after the architectural restoration was undertaken
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions

provided an opportunity to take a look at a few rare building practices being used at the time, providing insight into practices some 200 years back. Every Indian city that existed before the arrival of the British has thousands of such structures, mostly built before and some built during the colonial times, which need restoration and can become great parts of a particular city's identity. However, in a developing nation, heritage protection and restoration on a city scale often takes a backseat due to the lack of knowledge and interest of stakeholders, the challenges involved, and the rare availability of skillsets to deal with such projects.

Before Restoration

The case discussed is located in Dehradun in the hill state of Uttarakhand in the northern part of India (Fig. 3). The building comprises two levels as shown in Fig. 4: a raised ground floor (main living area) and a semi basement (mostly for keeping and sheltering livestock animals such as sheep and goats). On the terrace above the ground floor only a chamber above the staircase area remains. Architecturally, the building seems to have been planned around the courtyard with arched openings leading to the rooms. The decorative masonry columns and arches indicate that the original entrance to the structure would have been an elaborate one like a *'haveli'*[1] but was completely replaced at a certain point in time, of which no indications could be clearly seen owing to a number of alterations over time. The thickness of the walls varied from 345 mm to 450 mm as the structure accommodated a number of niches or *'aalas'* for keeping earthen lamps for light. The walls of the structure were mostly in brick masonry with a particular type of brick (*'lakhauri'*[2]) with certain portions showing the use of local stone. Initially, during assessment of the existing structure, every portion of the structure was covered with layers of moss and showed intense vegetation. Only in one portion were some original wooden beams found; in all other portions of the structure the roof had completely collapsed, probably because of overloading of the heavy roofing load owing to insensitive additions. Some portions of the fallen roof portions were also found on initial investigation (Fig. 3).

Developing a Restoration Plan

For every structure, restoration plans may vary, depending on the structure, material, and its condition. In our particular case, the structure was highly damaged and unstable, so particular steps were taken to stabilize it:

Step 1. Dry cleaning of the structure to get rid of as much debris and vegetation as possible
Step 2. Wet cleaning of each of the walls and drying
Step 3. Documentation (photographic and architectural)
Step 4. Condition Assessment
Step 5. Developing a Scaffolding Plan to support weaker sections of the structure
Step 6. Developing a Demolition Plan and dismantling any insensitive later additions
Step 7. Obtaining samples for testing the mortar for the composition
Step 8. **Training and Capacity Building onsite to train the craftsmen/workers as per the Restoration Strategy and Requirements. This was the most important and constant process as traditional master craftsman are almost impossible to be found as everyone works with modern materials nowadays, so the required skills and processes were needed to be understood by the architect, then tested, and then the craftsmen needed to be trained accordingly. Since most of the craftsmen were not very familiar with traditional**

[1] **A haveli** is a traditional mansion /bungalow centered at the chowk/courtyard around which all family activities revolve. Havelis usually have historical and architectural significance and served as status symbols for the various communities (majorly Marwaris, built mostly in the 17th and 18th centuries) as well as homes for their extended families, providing security and comfort in seclusion from the outside world. The courtyard serves as a lightwell and helps ventilate the house. Havelis were designed to be closed from all sides with only one large main gate for the purpose of security.

[2] A **lakhauri** brick is a flat thin red-coloured burnt clay brick originating from the Indian subcontinent measuring 7" x 3" x 1.5" in size; popularily used between the 16th and 19th centuries.

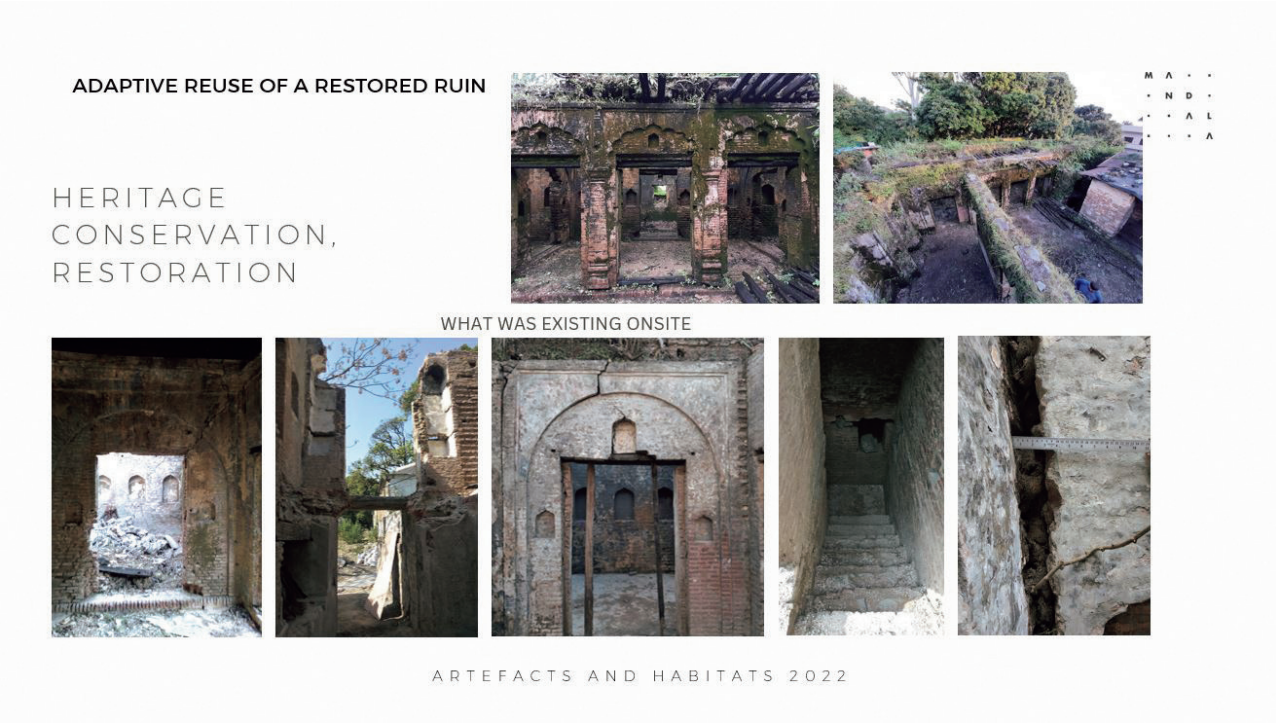


Fig. 3. Images of the structure before the architectural restoration was undertaken.
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions

Fig 4. Developing a Condition Assessment and Demolition Plan. The red highlighted area indicates the basement portion

materials, techniques, and other details, the only way to execute the plan was to make samples onsite which could be replicated by them.

Step 9. Getting the old bricks and wooden beams obtained from the demolished portions cleaned and stacked for use in repair works

Step10. Digging the foundation pits at various points to check the condition of the foundation

Step 11. Procurement and preparation of material: As it was a masonry structure, the major materials comprised brick, mortar (composed of sand, brick dust, and lime), wood for lintels and window frames, and stitching rods for major wall cracks where movement had stopped

Step 12. Design development as per the adaptive new use (Fig. 5).

Step 13. Repair of walls and openings

Step 14. Underpinning of foundations and addition of new structural support

Step 14. Addition of new flooring and ceiling

Step 15. Rebuilding the original staircase in the original style (Fig. 7a.)

Step 16. Addition of a lightweight new floor with the same traditional look and feel

Step 17. Addition of structural buttress on the long unsupported side

Step 18. Preparation of traditional plaster and finishing

Step 19. Addition of electrical and plumbing fittings

Step 20. Addition of a new plinth apron all around the structure to prevent water seepage from the surrounding area as heavy seepage and damp was a major issue with the existing structure.

Step 21. Preparation of an instruction manual for post-restoration maintenance of the structure.

Restoration

Undertaking the repair works part by part from the rear portion of the structure towards the front to completely stabilize the existing structure (Fig. 6). Repairs in each part included:

a. Underpinning of foundation/addition of foundation base to add structural support

b. Stitching of walls using FRP rods and brick stitching

c. Replacing heavily damaged bricks which showed signs of structural damage or spalling

d. Repointing with fresh mortar after cleaning the old damaged mortar

e. Adding new lintels and door/window frames

The walls had minimal openings to the outside and most of the rooms had a specific type of ventilator which admitted diffused light. Although there was an indication that the ventilators had brick jalis, most of these were missing or completely damaged and were required to be remade in the traditional style in brick.

Getting rid of vegetation was a major part of the works as

Fig 5. Proposed Groud Floor Plan[3] : Drawing No. RE/RA/03 by Mauli Mishra on 02/10/19
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions LLP.

3 Design-development as per proposed new adaptive reuse. This was the initial plan. However, many changes were made once the restoration part was completed. For example, an additional service stairway was never added as the old restored one was felt to be sufficient.

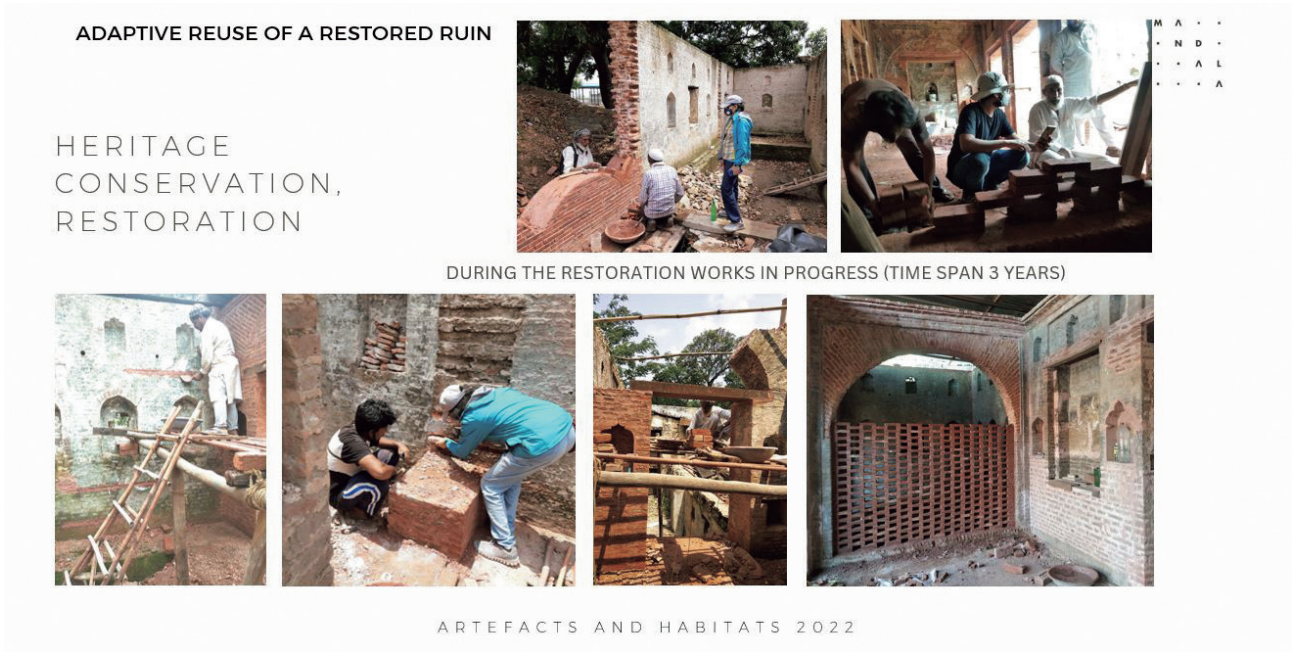


Fig. 6. Images of the structure while architectural restoration was being undertaken and was in progress.
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions

Fig. 7 a, b, c & d. Images of the structure while architectural restoration was undertaken and was in process.
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions

some wall junctions had dense and thick ingrown foliage which had grown to a floor height and were now a part of the walls. Forcibly removing them would have meant causing damage to the walls so they had to be dealt with slowly, with support and repairs simultaneously.

One of the major findings of Step 10, i.e. Digging the foundation pits at various points to check the condition of the foundation, was interesting to note as the foundation in the front portion was much deeper in comparison to the rear, and was probably done in order to use the natural gradient, as the original land sloped towards the front. In the rear portion on one side, the foundation was almost 2 m deep while on the other side it directly sat on bedrock, which caused major detachment and cracking in the walls due to uneven settlement over time. Also, in the rear portion, since the foundations were not very deep, a system of arches was used to keep the structure tied together and to uniformly distribute the load of the structure. Though the detail was good, the uneven settlement of ground over time and two major earthquakes (in 1991 and 1999) in the region probably damaged it. It was thus important to redo the foundation and wall in the rear part and add new foundations wherever necessary after detailed inspection.

Most of the arches of the arched openings had failed and were required to be redone by either stabilizing them and partially repairing or completely rebuilding them after being dismantled (Fig. 7b). The lintels of all openings were missing and were a major cause of damage to the structure. The old beams found onsite which were structurally good were cleaned, treated, and reused as lintels over some openings; in other places new lintels were placed (Fig. 7c and 7d).

Addition of Roof and Structural Buttresses

A lightweight steel frame was used as roofing for the entire ground floor with cement boards as flooring so as to keep the superstructure as light as possible (Fig 8a.). Exterior walls of 115 mm and 230 mm were erected, supported by the thick ground floor walls. Steel columns and beams (hollow sections) were used as bracing so as to tie together the entire first floor and make it earthquake resistant. The niches and openings of the lower floor were replicated on the first floor with traditional masonry to unify the entire structure. A light steel frame was further added to support the roofing in traditional clay tiles (Fig. 8b). Traditional clay tiles were a new addition to the structure but more authentic and lighter than the roofing that existed earlier. Also, the clay tiles could keep the structure cool in summer and warm in winter owing to its material properties.

Fig. 8 a, b & c. Images of the structure while roofing and buttressing works were in progress.
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions

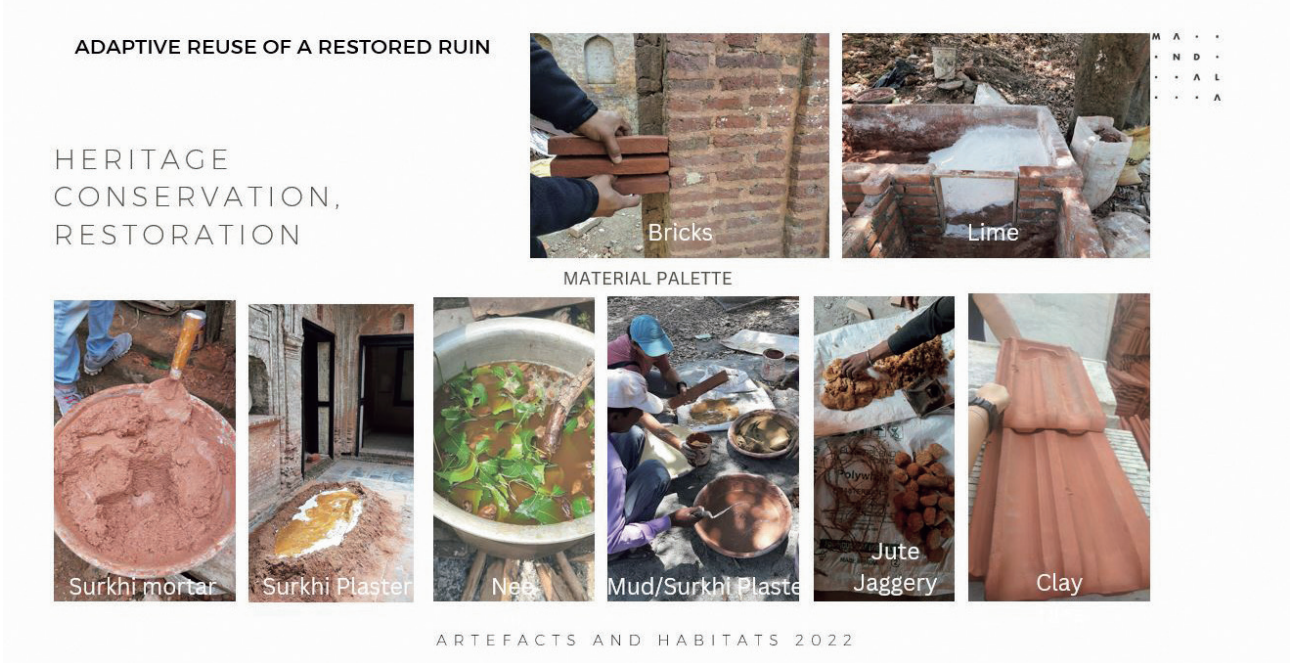


Fig. 9. Material Palette
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions

Fig. 10. Images of the structure from after the architectural restoration was completed; front elevation (left), inner courtyard (right)
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions

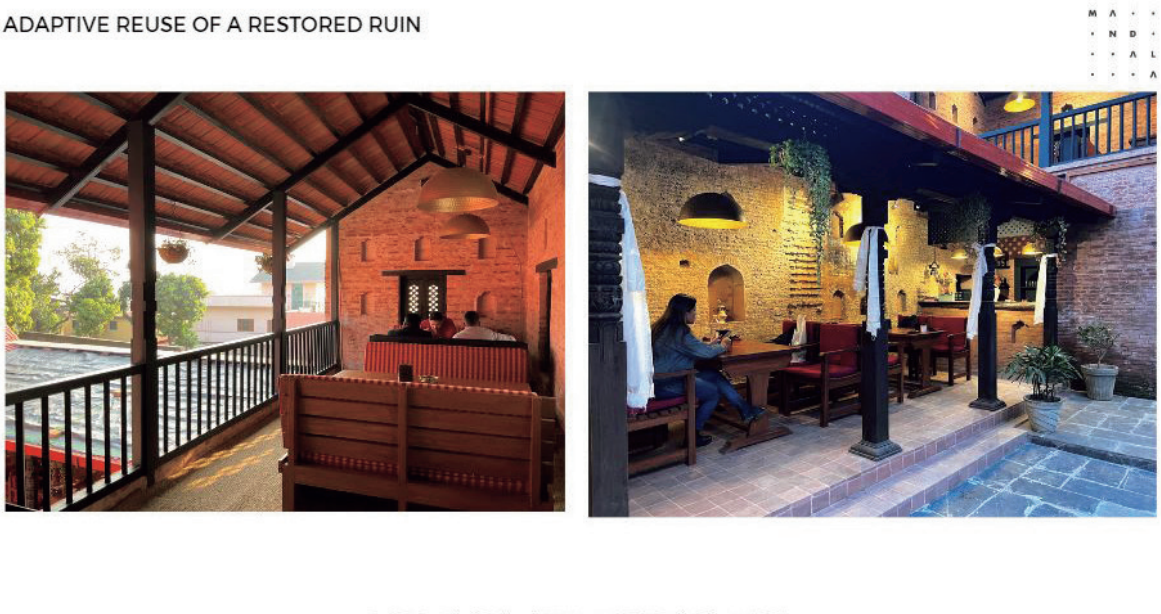


Fig. 11. Images of the structure from after the architectural restoration was completed; first floor (left), inner courtyard (right)
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions

Figs. 12 (top) & 13 (bottom) Images of the structure from after the architectural restoration was completed
Source: Studio MANDALA, Artefacts and Habitats Sustainable Solutions

The other major task was to add substantial support to one of the major exterior long walls as it spanned around 12 metres along the edge of the hillock without any external buttress supports and showed settlement damage at multiple points with critical diagonal and vertical cracking as well as bulging. This particular side was kept constantly supported for almost two years with scaffolding all along the exterior side while the repairs progressed on the inner side (Fig. 8c).

Project Finishing and Completion

Once the structural restoration was complete, the theme building and additions for the same were done, which included works like the addition of window panels, flooring, plumbing, electrical fittings, plaster, and painting. Since the structure was witnessing plumbing and electrical fittings for the first time, they had to be done in a way that was non-destructive and reversible in nature. For the plumbing, a 115 mm thick ledge wall was erected inside the enclosure within which all the laying and installation of pipes was carried out. For the electrical fittings, exposed wooden batten wiring was installed to keep it simple and easily accessible. As the new adaptive reuse of the structure was experiential traditional dining, the interiors were finished in colours of the rural mood board with raw textures to highlight the restored portions and keep the restoration as authentic and as visible as possible.

Elements like windows, door panels, courtyard pillars, decorative front window, floor mandalas, and water body spouts were made onsite/procured to add the final look and feel.

Traditional plasters were an important part of the overall scheme and the perfect ratios were derived after numerous trials with various compositions of traditional ingredients like jaggery, jute, Azadirachta indica, lime, sand, black lentil, and local soil (cleaned and sieved) (Fig. 9). The plasters thus derived gained strength slowly over time as compared to quick setting and strength gained by cementitious plasters, but once completely dry, were stronger and more compatible with the brick masonry structure.

Conclusion

The Restoration Project for Adaptive Reuse of Old Abandoned Heritage, while reviving traditional materials and practices of construction by capacity building (focusing on conscious and sustainable approaches), was completed over a period of three years (May 2019 – October 2022) and found a space amongst the top seven winning entries from across the country in the Best Practice Category of the Housing and Urban Development Corporation National Awards awarded by the Ministry of Housing and Urban Affairs, Govt. of India, under Theme VI – Urban Design & Regional Planning, Inner City Revitalization & Conservation in April 2023.

The restored structure (Figs. 10, 11 and 12) is a message to the city and community and to everyone who understands that as we face issue of climate change and depleting resources, we must try to bring back to life old abandoned heritage by leasing them a new life in the most sustainable way. Restoration/preservation should be adopted towards saving resources which would otherwise be spent in demolition of the old and rebuilding anew as well protecting the identity and heritage of the city. It is therefore very important for developing nations to first identify their heritage, frame heritage laws to protect it, then restore and modify it if required so that it is usable in line with the Sustainable Development Goals, so that various cultures and their identities are protected for future generations.

Reference:

Mishra, M. (2021) Dehradoon: An Illustrated Journey of a City (1st ed). Copal Publishing Group, India)

Acknowledgements:

Team Studio MANDALA, Ar. Mauli shree Mishra (Project lead; Conservation Architect); the owners of the property; Mr Vikrant Thapli, Mr Kalsang, Mr Tenzin Thardoe, Mr David, Mullahji and Rajesh Mistri for the brick masonry work and the civil work; Mr Ehsaan, Mr Joshua Hishey, and Mrs Richa Ghansiyal for the tailored wooden work; Bishnu for the plumbing work; Mr Rakesh for the electrical fitting and lighting; Mr Sandeep Tomar and Mr Roberto Bello from CTS Europe for supplying the FRP rods glues and admixtures used in the stitching process.

Special thanks to Mr Siddhartha Mukherjee, architect and Assistant Prof. School of Design, UPES, Dehradun for photography, documentation, research, and help in the stitching of the structural cracks.

Indonesia

Designation of Presidential Palaces as National Cultural Heritage Sites

Yosua Adrian Pasaribu, *Junior Heritage Expert*
Directorate General of Culture, Ministry of Education and Culture, Research, and Technology

State Palaces as National Heritages

Indonesia inherited many palaces from the Dutch when it declared its independence on 17 August 1945. The 18th-19th century palaces in Jakarta, Bogor, and Yogyakarta are the oldest palaces that the President of the Republic of Indonesia still uses today. The Bogor Palace (1750) and State Palace (1796) were built by the Dutch East Indies Company, while the Gedung Agung Yogyakarta Palace (1832) and Merdeka Palace (1873) were built by the Dutch East Indies State. These palaces are architectural heritages where layers of Indonesian and Netherlands shared history are embedded.

The preservation of these four palaces as a cultural heritage has become a national concern since independence. The designation of these four palaces as National Cultural Heritage Sites in accordance with the Law of Cultural Conservation has been implemented by the Indonesian Government since 2021. In 2021, I joined a team from the Directorate General of Culture, Ministry of Education, Culture, Research, and Technology, whose task it is to organise the designation project with the stakeholders, prepare documentation, and archive data. This article portrays the work in progress.

The Bogor Palace

The Bogor Palace is the oldest of the four and has been the President's House since 2015. This palace was listed as a Cultural Heritage Building by the Mayor of Bogor City on 7 March 2023. The designation of Indonesian National Heritage is being created gradually, starting from designation as City Heritage, Provincial Heritage, then National Heritage. We are still working with West Java Province to designate this palace as Provincial Heritage.

A comparison of recent Google Earth photographs and aerial photographs from 1920-40 shows that the palace and gardens have remained relatively unchanged for at

a) Aerial Picture from 1920-1940 b) Recent Google Earth image

Fig. 1. Aerial picture
source: Tropenmuseum Collection Number TM-10015394

Fig. 2. Back of the Bogor Palace before the 1834 earthquake
Source: Work of Willem Troost in the 1836 collection of the Rijksmuseum, Number SK-A-4024

least a hundred years. The main building and its wings have been left relatively unchanged since the beginning of the 20th century (Fig.1).

The Bogor Palace was built in 1745 by the Governor General of the Dutch East Indies Company. In 1834 the palace was destroyed by an earthquake and in 1839 it was renovated into its current form. Fig. 2 shows a painting depicting the palace, which was two storeys before the earthquake in 1834, and Fig. 3 is a depiction of the palace when it was damaged by the earthquake.

In 1890, a portico was built to shade guests arriving by horse-drawn carriage when it rained. The portico has four arches supported by small columns at the front and two arches on either side. The portico was changed to its present form in 1952. Fig. 4 consists of comparison photos showing the palace facades between 1899-1920 and the current appearance.

The main building of the Bogor Presidential Palace is symmetrical in shape and generally in good condition and well maintained. The east and west auxiliary buildings are also generally in good condition and well maintained. The east and west wings of the building are connected to the main building by corridors supported by columns. The plaster motif of stucco blocks at the corners of the building in an old photograph is in a different colour from the background colour of the building. Fig. 5 is a diagonal view of the main building from the north eastern side, which shows the main building including the accompanying buildings on either side.

The right (east) wing of the building is generally in good condition and well maintained. The building facade and stucco plaster motifs are painted white. As shown in the photo before 1890 (Fig. 6), when the portico had not yet been built, it is known that the stairs on the right (east) wing facade had not been built either. Based on this data, it is strongly suspected that the stairs on the facade of the right (east) wing of the building were built after the construction of the portico in 1890.

The shape of the main building is relatively well preserved in line with the shape of the mid-20th century building. The most visible change is the columned portico that was built in 1890 and changed in 1952. The change in the facade of the right wing (east) building with the addition of an entrance staircase is suspected to have been done before independence, probably in the early 20th century. Fig. 7 shows comparison photos of the building's facade in 1947 and 2021.

Fig. 3. Front of the Bogor Palace during the 1834 earthquake
Source: Work of Willem Troost in the 1836 collection of the Rijksmuseum, Number SK-A-4025

Fig. 4. Photos of the Bogor Palace facades 1899-1920 and 2021
Old photo source: Volkenkunde Museum collection, Number A113-1-1

In general, the main building of the Bogor Palace is in good condition and well maintained. Fig. 8 shows a rear view of the main building of the Bogor Presidential Palace.

The Merdeka and Negara Palaces

The Merdeka and Negara Palaces in Jakarta are the main Indonesian Presidential Palaces and have become a symbol of the State (Fig. 9). The Merdeka Palace and the Negara Palace are located in the centre of Jakarta City, on the northern side of the National Monument. Fig. 10 is an aerial photo showing the surroundings of the Merdeka Palace and the Negara Palace between 1925-1940. The surroundings of the Merdeka Palace and the Negara Palace are outlined in red. On the southern side, there is a field called Koningsplein where the National Monument was built later.

Fig. 5. The Bogor Palace from the northeastern side

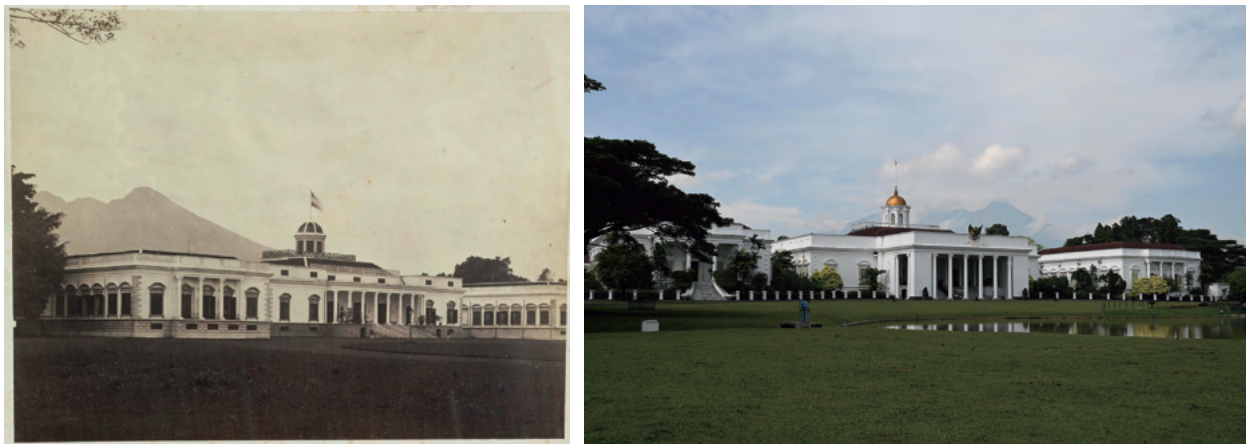


Fig. 6. Palace facades before 1890 and 2021 (The old photo shows that the coloured portico has not yet been built; the same applies to the entrance stairs in the right wing of the building)

Old photo source: Kerncollectie Fotografie, Volkenkunde Museum, photo code [A41-1-1]

Fig. 7. Comparison of building facades in 1947 and 2021.

Source: 6000908 (photo), Wiel van der Randen, Spaarnestad Photo

Fig. 8. The Bogor Palace rear view (south)

Fig. 9. The Merdeka Palace and the State Palace environment

Fig. 10. Aerial photograph of the Weltevreden area 1925-1940
Source: Tropenmuseum, Object Number TM-10017773

Fig. 11. The facade of the Merdeka Palace in 1900 and 2021
Old photo source: taken from geheugen.delpher.nl

Observation and documentation of the Presidential Palace in Jakarta started from the northern part of the Merdeka Palace and then moved around to the south from the western side to the eastern side. The following is the result of observations of the Merdeka Palace. The facade of the building, which was built at the end of the 19th century (1873), is still relatively intact and retains its original shape. The most visible additions to the facade are the Garuda emblem in the centre of the facade and the flagpoles in the centre. On the facades of the right and left wings of the building, there is an addition in the form of a pair of Dwarapala statues. In the southern courtyard of the Merdeka Palace building, there is the addition of a fountain pool. Figs. 11 and 12 show comparative photos of the facade of the Merdeka Palace building in 1900 and 2021, and 1947 and 2021 respectively.

In the southern courtyard of the Merdeka Palace there was a procession to transfer sovereignty from the Kingdom of the Netherlands to the Republic of Indonesia on 28 December 1949. The procession for transferring sovereignty was carried out symbolically with the changing of the flag, the departure of the Dutch leader, and President Soekarno's arrival at the palace. The event was attended by thousands of people who packed the south courtyard. Below (Figs.13 and 14) are photos of the event.

The Dwarapala statues to the left and right of the front building are Banaspati from Central Java, 9th century AD. Below are photos of the locations of the statues (Fig. 15).

Fig. 12. The facade of the Merdeka Palace in 1947 and 2021
Old photo source: Cas Oorthuys, taken from the Nederlands Fotomuseum

Fig. 13. The procession of the transfer of sovereignty from the Kingdom of the Netherlands to the Republic of Indonesia in 1949 and the appearance of the courtyard in 2021
Image source: Image taken from a film by Polygoon-Profilti on youtube.com

Fig. 14. Portrait of the Dutch Governor being moved out of the Merdeka Palace the day before the transfer of power in 1949.

Henri Cartier-Bresson, Magnum. The National Archives of the Netherlands

The Dwarapala statue on the western side is made of andesite stone and measures 1 m high. It is strongly thought that this statue originated from the Kalasan Temple (8th century) and was once placed in the yard of the Presidential Palace in Yogyakarta (Gedung Agung). The unique attribute of this Dwarapala statue is that his left knee rests on the ground, which is described as higher with a square block shape. Below are photos of the Dwarapala (Fig. 16).

On the western side of the Merdeka Palace there is Baiturrahim Mosque, which was built in 1961. This mosque was initiated by President Soekarno and designed by the architect R.M. Soedarsono. In 2010, the mosque was renovated especially to correct the direction of the Qibla and widen the mosque's area from 605 m² to 1105 m². The dome and several pillars in the mosque are still under maintenance in the renovation. Fig. 17 shows the mosque.

Fig. 15. The locations of the Dwarapala statues are the southwest and southeast of the Merdeka Palace (indicated by blue coloured circles)

Fig. 16. The Dwarapala statue is thought to be from Kalasan Temple (Photos at Gedung Agung around 1900 and at Merdeka Palace in 2021.
Old photo source: taken from KITLV, photo code 40219

Fig. 17. Baiturrahim Mosque

Fig. 18. The Merdeka Palace seen from the eastern side

Fig. 19. a) Rear (north) facade of the Merdeka Palace

Fig. 19. b) Rear (north) side of the Merdeka Palace

The centre of the palace is symmetrical in shape, connecting the facade of the building on the southern side, with the central courtyard connecting the Merdeka Palace and the Negara Palace on the northern side. Below is a photo of the palace building looking to the east (Fig. 18).

The rear (north) facade of the building facing the central courtyard, which connects with the Negara Palace, was added after independence. Fig. 19 shows photos of the front of the rear (north) facade of the Merdeka Palace.

In the northeast corner of the central courtyard, there is a gazebo which can also be seen in the 1928 aerial photo (Fig. 20). During the Dutch East Indies period, this gazebo was used as a place for musicians during garden parties. During the independence period, this gazebo was used for a Kindergarten class for the children of President Soekarno and the staff of the Presidential Palace.
The front building of the State Palace was built at the end of the 18th century (1796). Fig. 21 shows the rear (south) facade of the Negara Palace.

This building has companion buildings on its western and eastern sides, which have a symmetrical plan. The accompanying building, which now functions as offices, can be seen in an aerial photograph from 1928. The main building and the accompanying building on both sides are connected by a corridor, which at the front (north) is joined by a gate in the connecting wall. The following are photos showing the two halls on the western and eastern sides of the Negara Palace building (Fig. 22).

The north building of the Negara Palace was built at the end of the 18th century. Two Banyan trees are now planted in the courtyard of the Negara Palace. There is

Fig. 20. The gazebo is located northwest of the central courtyard

Fig. 21. Rear (south) facade of the Negara Palace

Fig. 22. Halls on the western and eastern sides of the State Palace

a statue of an archer in front of the building. Below is a comparison of an old photo of the building with a 2021 photo (Fig. 23 and Fig. 24).

The Yogyakarta Presidential Palace

The Yogyakarta Presidential Palace originates from the official residence of the Dutch East Indies Resident, built in May 1824. On June 10, 1867, in Yogyakarta, there were two earthquakes on the same day. As a result, the official residence of the Dutch Resident collapsed. A new building was erected and completed in 1869 (Fig. 25). This building became the main building of the Yogyakarta Presidential Palace Complex, which is now called the State Building.

The national history of the Yogyakarta Presidential Palace became very important when the government of the Republic of Indonesia moved from Jakarta to Yogyakarta. On January 6, 1946, Yogyakarta officially became the new capital of the Republic of Indonesia. The palace was turned into the Presidential Palace, the residence of President Soekarno and his family.

The Presidential Palace of Yogyakarta, also known as Gedung Agung, was the President's House at the time of the Indonesian Revolution in 1946-1949. In this palace, General Sudirman's inauguration as Commander-in-Chief of the Indonesian Armed Forces was held (28 June 1947, Fig. 26), as well as five cabinets of the Republic of Indonesia.

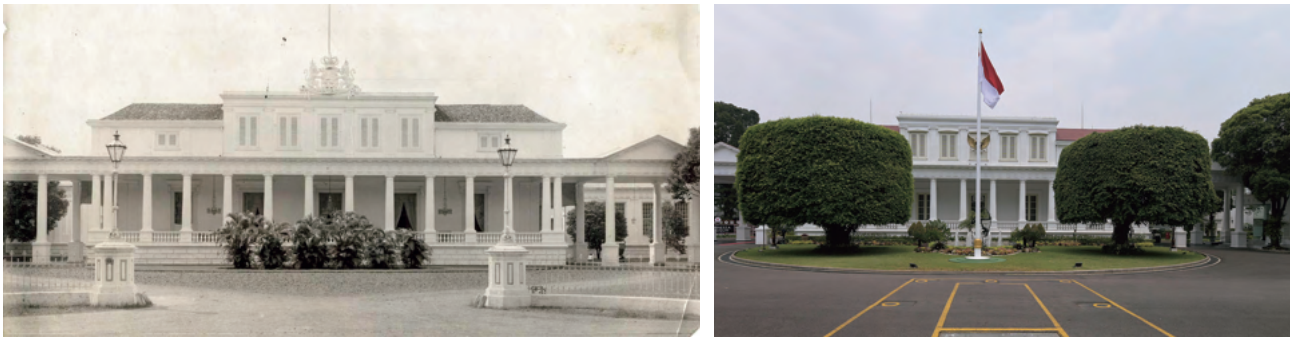


Fig. 23. Negara Palace facade in 1916 and 2021
Old photo source: geheugen.delpher.nl

Fig. 24. Diagonal view of the facade of the Negara Palace in 1947 and 2021
Old photo sources: © Cas Oorthuys, Netherlands Photomuseum

a) Façade b) Rear side

Fig. 25. Yogyakarta Presidential Palace: façade and rear side

Fig. 26. The inauguration of General Sudirman as Commander-in-Chief of the Indonesian Armed Forces on 28 June 1947
Source: https://www.goodnewsfromindonesia.id/2020/06/28/sejarah-hari-ini-28-juni-1947-pelantikan-jenderal-sudirman

On December 19, 1948, the Netherlands launched its Second Military Aggression. The Dutch succeeded in occupying the capital city of Yogyakarta. That morning, at the Gedung Agung Palace, a cabinet meeting chaired by President Soekarno was being held to determine what should be done.

At that time, General Sudirman specifically met the president at Gedung Agung. General Sudirman waited until the cabinet meeting was over and then met with President Sukarno. The purpose of this meeting was to beg the president to go on a guerrilla journey into the forest. However, President Soekarno refused and stated that he would remain at the Palace. Then General Sudirman excused himself to leave the city to lead a guerrilla war against the Dutch. The meeting between General Sudirman and President Soekarno took place in the drawing room in the right wing of the palace. At noon, the Dutch captured the palace, the president, vice president, and the cabinet, and sent the leaders into exile in Bangka and Berastagi. The conflict ended on 27 December 1949 with The Hague Agreement, and the president returned to Merdeka Palace in Jakarta the next day.

Gedung Agung was listed as a National Heritage Building on 27 February 2023, while the Merdeka and Negara Palaces in Jakarta and Bogor Palace are still in the designation process and are planned to be signed this year. The designation of presidential palaces is to strengthen their management according to the Law of Cultural Conservation.

Kazakhstan

On the Problems of Researching the Ancient City of Taraz

Gulnaz Kulmaganbetova, *Chief Researcher*
Kazarchaeology LLP

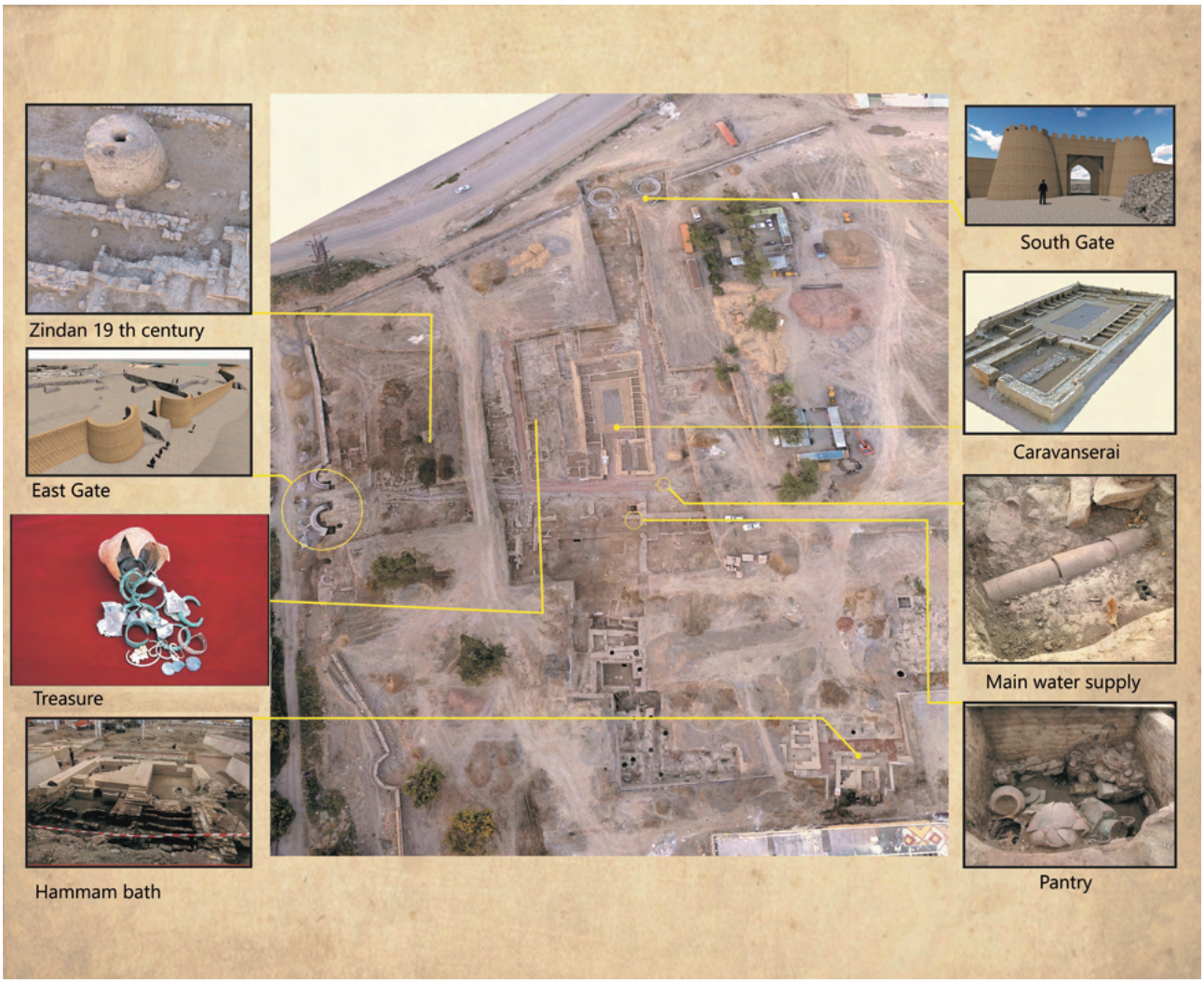
This year we have continued archaeological research into the most ancient city of our country—Taraz.

These works were carried out as part of the applied scientific research "Architecture of Medieval Taraz" under the targeted funding program of the Ministry of Culture and Sports of the Republic of Kazakhstan; individual application registration number BR10164298; source of funding: the Ministry of Culture and Sports of the Republic of Kazakhstan.

The archaeological excavations of this city carried out by us in 2014–2018 provided extensive material on the heyday of the city in the 11th to early 13th centuries. Excavations over an area of more than 20,000 m² made it possible to identify a significant part of the city of the so-called "Karakhanid" period. This year, the work is aimed at detailing certain elements of the city in order to write a monograph on the results of the archaeological excavations.

To write this article, we familiarized ourselves with all the works of our predecessors and data from written sources. A distinctive part of our historiographical and source research was the use of data from historical and epic tales of Turkic-speaking peoples, which have been passed down to us in folklore collections and recorded in the Middle Ages.

Our second task was to determine the historical zoning of the study area. The fact is that the region where the city of Taraz is located is defined in the scientific literature as South-Western Semirechye. This is a completely unacceptable historical and geographical definition that developed during the colonial period. The historian must adhere to historically established toponyms, reflecting geographical, climatic, and other features that determined the name of the toponyms. The most incorrect modern historically distorted oronym is the name of the Tien Shan Mountains, which came into geographical use during the colonial period. Russian geographer P.P. Semenov adopted the Chinese version of the name "Heavenly Mountains." While these mountains are called Tanir Tau—"Divine Mountains"—by the local Kyrgyz and Kazakhs,



Taraz Archaeological Site

the peak has retained its authentic name Khan Tengri.

Another example is Boyi (Talas River basin), used by both the Kazakhs and Kyrgyz. The Kazakhs call the basin of the Shu River Shu Boyi (literally along the Shu River). These two historical and geographical names were combined into the artificial South-Western Semirechye. The same thing happened with the historical mountains, known from the maps of Al-Idrisi as Khan Tag (Kazakh Khan Tau), which with the adjacent foothills were called primitively Shu-Ilei. In other words, the loss of historical toponyms does not allow the researcher to fully comprehend a certain territory.

The modern name of the city Taraz is a distorted hydronym. Nomads gave names to geographical objects based on their excellent knowledge of the characteristics of the area. Thus, the stormy mountain rivers were called Tentek (Violent) and Kuturgy (Mad). The Talas River, emerging from the mountain gorges in the Taraz region onto the plain, formed a wide alluvial cone. This was the reason for the frequent changes in its channels, which most likely gave it its name "like a river breaking into different channels." In ancient Chinese sources before the Tang era, this river is called "Do Luo." In our opinion, it is better for linguists to judge this. The city, like the river, was called Talas, and the name Taraz, in our opinion, is a distorted rendering of the name Talas by the authors of Arab-Persian sources. As an example, we can cite the name of the city of Merke, located east of Taraz, mentioned in the same sources as Mirki. Modern archaeologists have identified the name as Sogdian. We know that this oro-hydronym is found east of Almaty as Ush Merke. Merke in Kazakh means a narrow and deep gorge, which accurately characterizes the Merke gorge at the mouth where the Merke settlement is located.

We associate the nomadic essence of the genesis of the city of Taraz with its location on the fertile nomadic path. Up the Talas River from Taraz at an altitude of 2200 meters and surrounded by mountain peaks of up to 4500 meters are the most famous summer alpine pastures of Central Asia—the Susamyr Valley, an intermontane depression in the Tanir-Tau mountains in Kyrgyzstan, with an area of more than 4,000 km².

Down the river, at a distance of about 350 km, there are fertile winter pastures, the sandy Moyynkum desert with an area of 37,500 km², stretching to the lower reaches of the Shu River. The lower reaches of the Talas River are lost in these Moyynkum sands, forming a vast delta with rich vegetation, favorable for winter nomads.

These summer and winter pastures, convenient for breeding nomadic cattle, allowed the population to receive greater profits. The growth of the well-being of the nomadic population was also facilitated by the presence of silver mines near Taraz, which also brought significant profits to the treasury of the rulers.

All the above circumstances led to a flourishing society and the nobility began to build castles, the so-called tortkuli, in their wintering places. Dozens of them stretch along the beds of the Talas River from south to north.

The above conclusions about economic growth substantiate the reasons for the genesis of cities among nomads, supported by the military power of the nomadic khaganates. We substantiate this primarily on the basis of knowledge obtained from the works of experts in Kazakh history, information from historical legends and epic tales, coupled with data from written sources.

When studying the monuments of the steppe zone of the Eurasian steppes, among the scientists were individuals who knew the nomadic economy "from the inside," for whom it was the history of the people of which they were part, namely Ch.Ch.Valikhanov, A.N.Bukeikhan, Sh.Kudaiberdyuly, K.I.Satpayev, A.Kh. Margulan, and Kh.Argynbaev. With the exception of A.Kh.Margulan and Kh.Argynbaev, the first ones left few works, these are usually small notes and historical essays, but their scientific significance is very great. These were outstanding bearers of the cultural and historical heritage of their people.

In contrast to "steppe historiography," the study of the urban culture of the Kazakh steppes followed a different path. There were no experts on the historical past here; the cities had already ceased to exist. The discoverers and researchers of urban culture discovered a new world and were representatives of other historical and cultural traditions, i.e., Columbus, discoverers of Central Asia for Europe. Like the so-called researchers of the Bronze Age. In the Andronovo historical and cultural community, they were far from the subject of research and, accordingly, their theorizing was often distant from reality.

Hence the numerous creations of non-existent peoples, the names of peoples and cities, etc., distorted in Chinese and Arab Persian sources, and transmitted in their manner, began to be widely used without interpretation. This happened with Talas, which became Taraz, and the proud Talgar became incomprehensible to its descendant's population in the form of "Talkhir" or "Talkhiz." Archaeologists are still trying to identify the cities of Kulshuby, Kasribasy, and others based on data from written sources, by location, and distance from each other.

The most important scientific apostasy occurred when archaeologists divided into researchers of cities, burial grounds, petroglyphs, divided the entire centuries-old history of our people into eras and periods, began to "engage" in the study of a separate element of an entire culture, and most importantly, in dividing eras into separate peoples and cultures. Not in development, but in individual states. But the history of our people had periods of rise and decline; these periods were perceived by some researchers as a separate history of individual peoples. For later historians, it is clear that even the ethnonyms of supposedly peoples of individual eras are just the names of the dominant clan or tribe in that period. Hence the stable concept of "Dasht and Kipchak," which has no historical meaning. Since ancient times, this country was called Arka or Sary-Arka. This name has

reached modern times, but is found in ancient times, for example, in the written monuments of the Oguz epic. During the era of Ulus Zhoshy Khan, Uzbek Khan spent his last years in the country of Arka.

It is impossible to study separately the history of the Turgesh, Karluks, Oguzes, or Kipchaks; these are one people, and the names of the tribes of one people. Written sources record them during periods of power of these tribes over the rest. In another period, another tribe rises to power and then written sources record them under the name of this tribe.

Remarkable periods in the history of the Kazakh steppes are perfectly illustrated by archaeological monuments—they are not entirely sedentary people; their entire history is imprinted on the earth. In a sedentary agricultural culture, cities and settlements do not disappear; they are the main element of the existence of the people. They can only be abandoned due to natural and climatic reasons and transferred to another place, experience decline and turn into simple villages, but cannot disappear completely. It's a different matter in the steppes, where the dominant economy is nomadic cattle breeding. During periods of cataclysms and population decline, urban settlements are lost, with the people being content with winter roads, leading to centers of metallurgy and crafts, and irrigation structures falling into disrepair. Here, another extraneous and biased attitude towards the history of the people is that irrigated efficient agriculture is alien to Central Asia. It had existed in the dry steppes of Sary Arka already in the Late Bronze Age; however, the unique achievements of the Kazakh farmers of the Tokyrau River basin are much higher and more skillful than those of Central Asia.

Our analysis of the researchers' works led to the idea of dividing them into two types:

The first is "craft," i.e., a type of researcher seeking to systematize data, usually using data from written sources. Their work is distinguished by a detailed approach and painstaking construction of their thoughts. Their finely detailed approach does not allow them to see a holistic historical picture, which usually leads to artificial constructions. Not knowing the language, culture, or spirit of the people being studied and remaining adherents of written sources of foreign authors on the inhabitants of the Kazakh steppes who present information that is not entirely correct, they aggravate this gap and, from their point of view, strengthen this artificiality. Their artisanal approach is a consequence of an attempt to compensate for their ignorance, sometimes unwillingness, to know the language and culture of the people being studied. The research of the "artisan" consists of carefully executed work, systematization, fascination with contradictions, and "methodologically" verified ideas, creating an artificial scientific theory that is not capable of becoming an integral architectural structure.

The second is the "architectural" type of researcher who comprehends historical processes, widely uses all information on the subject of research, does not limit themselves only to highly specialized knowledge, studies and knows the language, culture, and ethnography of the people being studied. This type of researcher places the creations of the people themselves above other sources, uses such a complex and necessary source as mythical, epic information and, most importantly, for steppe history, knowledge of the Book of the Steppe—those who passed, saw the steppes, and the life of the steppe inhabitants. This makes even the information of explorers who left the first foreign information about the Kazakh steppes different from the works of scientists.

In past times, the individualistic approach dominated, that is, certain periods of history were studied by one scientist. This scientist, due to his knowledge and specialization, mainly used certain sources. When studying the ancient city of Taraz, we take into account precisely these features and try to consider the genesis, development, and decline of this city, taking into account the development of a nomadic economy, historical and geographical factors, and the development of metallurgy and crafts here. Of no small importance for the development of the city was its inclusion in world specialization, which led to the development of trade and cultural exchanges.

In general, our study of the city of Taraz revealed a lot of new things in the development of construction art and architecture. Nomadic elements occupy a special place in ceramics and its ornamentation, in the manufacture of metal products, etc.

Analysis of the urban structure of the Shu-Talas River basins allows us to attribute it to the structure of nomadic cities. Planigraphically, these cities have a striking difference from the urban oases of Otrar, Chach, and Bukhara. It should be noted that these cities experienced strong influences from the outside, especially from Central Asia, but also retained their predominant nomadic character, due to the fact that these cities formed a single organism with the nomadic environment and were an integral part of that environment.

Archaeological Park Ancient Taraz

Медресе

ВИД ПОСЛЕ АРХЕОЛОГИЧЕСКИХ РАСКОПОК

ПРОЦЕСС КОНСЕРВАЦИОННЫХ РАБОТ

Caravanserai

The Management of Archaeological Remains from Hua Phu Cave Site

Sommay Singthong, *Lecturer*
Department of History and Archaeology, Faculty of Social Sciences, National University of Laos

1.Introduction

Archaeological remains are a valuable cultural property to understand human evolution and culture. However, economic development effects rapid change to human life, occupation, and subsistence, which directly challenges cultural heritage protection.

Laos is a developing country, where numerous investment projects are being intensively investigated. The standardization of management is still insufficient, which is directly adding the risk to cultural property maintenance, and the future development might put the cultural property in danger of disappearing. Decrees and laws related to cultural heritage protection can be traced back to the Lao Civil Code during the Indochinese colonial era in 1929,[1] followed by the council of minister's resolution on the management of cultural products 1982.[2] Then, the decree of the President of Laos on the preservation of cultural, historical, and natural heritage No.03/SPP, issued on 20 June 1997 determines the principles, regulations, and measures on the protection and preservation of national heritage. The law aims to preserve the value of national cultural, historical, and natural heritage including movable and immovable properties. It also aims to encourage a conscious love of citizens for their nation and fine national traditions.[3] The Lao government enacted the Law on National Heritage No.08/NA on 9 November 2005, which provides terminology and makes a precise identification of national heritage. Socio-economic development shall proceed side by side with protection and conservation of the national heritage.[4] This law also has many measures such as the level of cultural and historical national heritage, and involving the administration, use, protection, conservation, restoration, and rehabilitation of national heritage. The law on heritage was improved and reinforced in 2014 to involve all types of properties.[5] Currently, cultural heritage protection and promotion are also taken into account in the country development policies of the Lao government as mentioned in the 9th Five-Year National Socio-Economic Development Plan.[6]

Meanwhile, there were four laws passed concerning the protection of archaeological sites, antiquities, and fossils: Decree No.158/PM dated 24 August 1996, on the promulgation of regulations on planning for Luang PraBang; Decree No.175/PM dated 6 November 2003, on the promulgation of the preservation and value of Luang Prabang as a World Heritage; Decree No.31/PM dated 1 February 2012, on the promulgation of the planning of Luang Prabang as a World Heritage Site (which determines World Heritage planning for 2012-2017); and Decree No.278/PM dated 29 September 2009, on the promulgation of the master plan on strengthening Viengxai preservation planning 2006-2026.[7]
However, there remained a large gap between regulation and enforcement in terms of practical implementation, which is urgently required to be minimized. Therefore, this report aims to briefly highlight information on a case study of cultural property management regarding the archaeological remains discovered at Hua Phu cave site in the mountainous region of Luang Prabang province.

2.Site location

Hua Phu cave is located on the right bank of the Mekong about 2 km west of Thin Hong Villgage, Chompet District, Luang Prabang Province between 102°12'24.17" E latitude and 20°00'38.87" N longitude. It can be reached in an hour and half by a local motorboat upstream from Luang Prabang. This cave is situated on the south-eastern slope of Phak Pheo Mountain, a detached hill lying at the foot of Luang mountain range, which has a maximum altitude of 921 m above sea level. Hua Phu cave is approximately 426.93 m above sea level and 100 m above the surrounding plain.

3.History of investigation and discovery

Hua Phu cave site was primarily surveyed by Prof. H. Watanabe and team in Dec. 1974, to explore limestone caves of prehistoric sites for systematic excavations. Some 28 stone implements of Hoabinhian type, numerous potsherds, and human bones and teeth were collected.[8] Tam Hua Phu, previously identified by Anzai (1976) as a promising stone age site based on surface artifacts, comprised a Hoabinhian deposit into which iron age burials were interred.[9] [10] In 1994, Sayavongkhamdy Th. and his team conducted an excavation with three trenches (2x3 m, 2×2 m and 2x1 m). The excavation found 71 stone implements, more than 3080 potsherds (weighing 35 kg), one complete pot, 14 bronze items, 47 iron items, 40 cowries, and 39 beads. The whole collection of finds has clearly shown that there were two phases of

[1] Code civil laotien. (1929). *de l'arrêté n0533 du 5 juin 1929 du Résident Supérieur du Laos règlementant les concessions domaniales au Laos*. Bull. Admn. Laos, 1929, p. 859.
[2] Resolution du conseil des ministers relative a la gestion des produits culturels (1982). *Cultural movable heritage-cultural property*. Dealer trade, protected area or good. Vientiane, pp. 1-3.
[3] Decree of president of the Lao PDR on *the preservation of cultural, historical and natural heritage*. Vientiane, June 20, 1997, pp. 1-7.
[4] National Assembly Law on National Heritage No. 08 / NA dated 9 November 2005, pp. 1-24.
[5] Lao National Assembly (2014). *Law on cultural heritage protection*.
[6] National assembly (2021). 9th Five-Year National Social-economic Development Plan (2021-2025). *Approved by the Inaugural Session of the Ninth National Assembly on 22-26 March 2021 in accordance with Resolution No. 20/NA, dated 26 March 2021, p.23*
[7] Khon Kaen University (2016). *The research of the legal system of Laos People's Democratic Republic and Legal Information Related to Social, Cultural, Political and Security of Laos People's Democratic Republic.* Sponsored by the Office of the Council of State of Thailand, pp. 245-246.
[8] Watanabe H., Shigematsu K., and Anzai M., (1975). *Archaeological Survey of Prehistoric Cave Sites in Laos*, pp. 8-10.
[9] Anzai K., (1976). *"Stone artifacts collected at prehistoric cave sites in Laos"* (English summary). Journal of the Archaeological Society of Nippon 61, pp. 81-82.
[10] White Jouce C. (2008). *Archaeology of the Middle Mekong: Introduction to the Luang Prabang Province Exploratory survey*. Recherches Nouvelles sur le Laos. Études thématiques n° 18. Vientiane - Paris: École française d'Extrême-Orient, 2008. ISBN: 978-2-85539-654-5.

usage of the cave: the first one was as a habitation site for a Hoabinhian society probably practicing a hunting and foraging lifestyle; the second phase was its use by agriculturalists who were probably living in small villages on the alluvial plains.[11]

In May 2023, Singthong S. and his team re-excavated this cave site by opening three trenches (2.5x2 m, 2.5x1.5 m, and 2x1 m). This investigation aimed to re-survey and re-excavate Hua Phu cave site in the near future to find more evidence of particularly archaeobotanical remains and apply the archaeobotanical approach (pottery replica method) to the pottery discovered from this prehistoric site to obtain specific and feasible data through scientific experiments using relics found in the Mekong River basin and its tributaries, in order to describe prehistoric agriculture and be able to understand the characteristics of prehistoric culture in relation to the origin of cereal farming and its distributed routes in the region compared to the rest of Asia. Remains found during this field investigation included human bone and teeth (weighing 28.8 kg), 2,723 potsherds (22.4 kg), 471 stone tools (9.8 kg), 154 beads, 3 stone bangles (incomplete), 31 metal objects (bronze and iron elements) (0.5 kg), river shell and seashell (Fig. 1), and charcoal.

4. Management (site and remains)

4.1 Site management

Hua Phu cave was initially documented by Watanabe et al., 1974[12] and Anzai et al., 1976.[13] The technical record that was taken into account include the map drawn, surface survey, artifact collection and identification; these were the starting point of the cultural property preservation and promotion for this prehistoric cave site. Then, Hua Phu cave was excavated by Sayavongkhamdy's team in 1994, and archaeological remains were discovered and recorded. It was highlighted as an outstanding prehistoric site of the region due to deposit layers yielding the two periods of usage that included hunter-gatherer (Stone Age) and agricultural societies (Iron Age) with abandoned remains. Alongside of the advantages, some issues were considered by the author such as the excavation trenches not being backfilled after the excavation, which facilitated the further disturbance by local treasure hunters; and the surrounding edges of the excavation trenches being extensively dug into larger pits (Figs. 2a and 2b). Moreover, the cave site is not safeguarded properly as it was observed during the field investigation that villagers could enter freely during the day and night for daily subsistence. Moreover, some waste was also found inside the cave and the surrounding area. Nevertheless, the awareness of local communities seemed to be an issue. For example, some villagers are still maintaining archaeological properties which have been privately taken from the cave site.

1=beads, 2=seashell, 3=human bones, 4=stone axe, 5=stone flake, 6= iron elements, 7=bowl, 8=potsherds, 9=stone bangles

Fig. 1. Some of the archaeological remains discovered at Hua Phu cave site

[11] Sayavongkhamdy Th. and Bellwood P. with an appendix by Bulbeck D. (2000). *Recent Archaeological Research in Laos*. Indo-Pacific Prehistory Association Bulletin 19, 2000 (Melaka papers, Volume 3), pp. 101-103.
[12] Watanabe H., Shigematsu K., and Anzai M., (1975). *Archaeological Survey of Prehistoric Cave Sites in Laos*, pp. 8-10.
[13] Anzai K., (1976). *"Stone artifacts collected at prehistoric cave sites in Laos"* (English summary). Journal of the Archaeological Society of Nippon 61, pp. 81-82.

Fig. 2a. Traces of disturbance (trench 1)

Fig. 2b. Traces of disturbance (trenches 2&3)

Fig. 3a. Remains with containers since 1994

Fig. 3b. Labels of remains since 1994

4.2 Management of archaeological remains

The storage location of the archaeological remains which were collected primarily from the survey in 1974 is still not known by the official staff currently working in related organizations, which might be due to mistakes in transmitting the information and records from previous public staff to the current staff. In addition, the storage place was not entirely stable, which required the remains to be moved and placed in restorage several times not in an unsystematic manner.

The remains collected from the excavation in 1994 stored at the Department of Heritage, Ministry of Information, Culture and Tourism (Figs. 3a & 3b) are still unidentified. Moreover, the stratigraphy of cultural layers correlated with the remains and its spatial distribution built up the prehistoric site before the excavation is lost, while the containers are slightly degrading over time. Some containers are required to be replaced. The labels are one of the most significant elements for further intensive analysis and interpretation, but they have become fragile and there is a risk of their disappearing.

Meanwhile, the archaeological remains collected during the excavation in May 2023 have been stored at the Department of Information, Culture and Tourism of Luang Prabang Province and await further intensive investigation.

5. Conclusion

Even though the regulation of cultural property protection in Laos is quite inclusive, a large gap between regulation and enforcement crucially remains due to several limitations relating to human resource and funding priorities.

The local community's awareness seemed to be a hot issue for prehistoric site maintenance. Therefore, to solve this issue, the regulation of cultural properties is required to be inclusively well announced to local communities.

Meanwhile, the archaeological remains require further management involving intensive survey, analysis, identification, and publishing. The storage place, containers, and labeling tapes are also required to be replaced for sustainable maintenance.

6. Acknowledgement

I would like to extend my gratitude to the Resona Foundation for Asia and Oceania in Osaka, Japan for funding support for the field investigation in Laos. Sincerely thanks to Asia-Pacific Cultural Centre for UNESCO (ACCU) in Nara, Japan for providing the opportunity as an international correspondent on cultural heritage protection which has crucially improved academic capacity for the author, alongside the protection of cultural property. Thanks to the whole stakeholders in Laos for their facility.

Nepal

SWAYAMBHU STUPA: Conservation of the Gajur (the topmost part – pinnacle)

Dr. Suresh Suras Shrestha, *Director General (Joint Secretary), Executive Director*
National Archive, Nepal; Narayanhiti Palace Museum

1. Introduction

The Swayambhu Stupa is one of the most important and oldest monuments of the Kathmandu Valley, which has been worshipped by many people in Nepal and other countries around the world. It embodies the tranquility between Buddhism and Hindu and is a symbol for world peace. However, there is no inscription or any other evidence about the exact date of its construction, although there was an inscription lying in the white washing pit at the north west corner of Svayambhu Chaitya which shows that the king (Shankar Deva) seems to have donated a piece of land for the chaitya when he renovated Swayambhu Mahachaitya, which was venerated and respected by both Buddhist and Hindu devotees according to their own traditions, based on the Swayambhu purana and the *himvatkhanda*, respectively. King Viswadeva (Vrishdeva) ruled in Nepal at the beginning of the 5th century (400 - 412 AD). According to the history of Nepal, King Sankara Deva was the son of King Vrishdeva. This inscription also stresses that it was constructed before Shankar Deva. King Manadeva was the king since before the written history of Nepal and it is mentioned that he offered an umbrella for the top of the Mahachitya. It also shows that the Chaitya was established and more popular in Nepal since the beginning of the 1st century or earlier.

Although there have been no inscriptions found yet on the construction of this stupa except for the few mentioned above, some of the inscriptions say that some parts of the stupa were renovated in the medieval period (13th to 16th centuries AD) and that there were many conservation works carried out in the medieval period as well as in the Rana period (18th to 19th centuries AD). But there is no complete documentation about the previous conservation/renovation work, except for some documents on funding, including a list of donors and amounts.

History of Conservation of the Stupa

It is difficult to say exactly who founded this stupa and when, but certain repairs and perhaps enlargements of this Swayambhu Stupa must had been carried out in the Licchavi period, although evidence for this has not yet been found. The first authentic historical evidence of such restoration occurred in 1129 AD, recorded in an inscription adjacent to the stupa. This stupa has suffered many natural calamities and human vandalism in the course of its long history. One of the most severe acts of vandalism was the Muslim invasion of the valley in 1349 AD; during this invasion, the army of Sultan Sams-ud-din looted, destroyed, and burnt innumerable monuments of the Kathmandu Valley including the Swayambhu Mahachaitya. Twenty-three years after this incident, a nobleman, Rajharsh Bhallok of Kathmandu city, renovated this stupa in 1372 AD. According to Tibetan sources also, the earliest renovation work at Swayambhunath was done in 1372. The stupa was renovated again during the time of King Jayasthiti Malla and his son Jyotir Malla. The most frequent repairs to this stupa have been either the replacement of the central wooden mast called the 'Yasti' or repair of the finial. During the time of King Laxminarasimha Malla, the central wooden mast was replaced by Shyamarpa Lama of Tibet. In 1751 AD (NS 871) other notable renovation work was carried out at the stupa.

The pinnacle and golden flowers of Swayambhu broke off in a severe tropical cyclone. These were repaired and reinstalled but they were again destroyed by a heavy storm. With the support of the king, merchants reconstructed the Mahachaitya by changing the central beam or mast (Yasti); it took ten months for the entire work to be completed. This was during the reign of King Rajendra Vikram Shah.

The major renovation of Swayambhu Stupa was carried out under the direction of Dharma Man Tuladhar, a devoted businessman, and sponsored by Lamas in NS 1038 (1917 CE). At that time the nine niche shrines—four shrines of Taras along with those of the five Dhyani Buddhas—were rebuilt, sponsored by three brothers: Harsa Sundar, Pushpa Sundar, and Ram Sundar. During the renovation, in order to enhance the beauty of the shrines, they installed railings of mani prayer wheels engraved with the mantra 'Om mani padme hum,' together with four levels of lamp railings. After the completion of these works, gilded images of Vairochana Buddha and the four Taras (namely Saptalochani, Mamaki, Pandara, and Arya Tara) were installed with the proper rites and rituals. King Prithvi Narayan Shah of Gorkha also made a donation, which is mentioned in an inscription found in this area.

Since the 1917 renovation of Swayambhu Stupa there had been no need to repair the stupa, but some parts such as the parasol, pinnacle, and jewel clusters needed to be repaired, and they were repaired in NS 1095 (1974 CE). There is no mention of the damage caused by the 1934 earthquake in this stupa. In 1961, several renovation works were carried out in the area, but there were no conservation works for the whole stupa after the 1917 renovation so the gilded gold of the copper sheets gradually wore out and the wooden materials also decayed day by day in a natural process during this long-time span of nearly a century. So, it was required to renovate the whole stupa, as was done in 1917 (NS 1038).

After around a century, almost the entire stupa was renovated, from the shrines on the dome and all parts above this up to the pinnacle by one of the donors, the Tibetan Mingma Meditation Center based in the USA, in

collaboration with Department of Archaeology and the Federation or Swayambhu Management and Conservation, from 2008 to 2011. During this renovation, many of the decorative parts were strengthened with additional wood and similar materials used in the stupa. The major objective of the project was to re-gild the gold on the copper sheets that had been covering the structure. This renovation was the most important activity carried out after around a century.

2. Conservation of the Pinnacle – the *"Gajur"* of the Stupa

The conservation work was expertly carried out from 2008 to 2011 and the stupa is very strong in terms of its physical structure, as each and every traditional norm and system was followed for its conservation.

Swayambhu Mahachaitya is situated on the hilltop of Swayambhu, which is one of the windiest places in Kathmandu due to its location. The history above also shows that several incidents have occurred over the centuries, especially due to strong winds. One of the vulnerabilities or risks for the stupa is strong wind (cyclone) as a natural disaster. There was the heavy and strong wind on 29 February 2023 in which the uppermost part of the pinnacle (*gajur*) broke; however, it had not fallen onto the ground and the incident was regarded as suspicious. The local people were surprised that there was no *gajur* on top or on the surrounding ground. After a few days, a few locals estimated as per their previous experiences that part of the pinnacle should be at the base of the *gajur*. It was decided to observe the top of the stupa, but this was very risky and there was no way to reach there without scaffolding, which is very long process, and it was not certain that the *gajur* would be found there anyway. Therefore, it was decided to send up a drone with a camera and take video. The drone camera recorded that part of the *gajur* was lying in a corner of the base of the *gajur*.

The initiative for the conservation of the *gajur* was taken by the Federation of Swayambhu Management and Conservation on the basis of detailed photographic descriptions and that the incident was observed by locals and covered by many media outlets. After obtaining approval from the Department of Archaeology, a meeting was held where it was decided to form a dedicated steering committee, to be chaired by the chair of the Federation, which included almost all of the prominent stakeholders and authorities related to Swayambhu Mahachaitya. The steering committee called a series of meetings and discussed the quick rescue, damage assessment, reporting, and the preparation of a plan for the conservation of the recently broken pinnacle, which was done very carefully with support from the locals and related authorities.

2.1 Need for conservation

As mentioned earlier, based on the evidence available, the Mahachaitya was renovated after about a century, from 2008 to 2011. It was not the time for conservation of the main stupa, which had been completed just a decade before, but due to the natural calamity the main pinnacle – the *gajur*, the top part, was broken and that was an emergency activity to carry out.

Similarly, due to the activities of monkeys, the small decorative bronze artistic parts have also been lost during the last decade. The damage assessment also indicated that they must also be renovated.

Therefore, renovation of the *gajur* and few decorative bronze elements within the whole stupa have been carried out.

2.2 Conservation work

2.2.1 Documentation

Documentation is the basic element or the basic process of an archaeological conservation project anywhere in the world, which can provide every detail for the conservation, estimate, and acknowledgement of the conservation work in the future as well. So, the conservation project always starts with documentation, which includes text documents, drawings, photography, visual aids, and every process used in recording the project work. Thus, the documentation of this project also used the different tools of documentation, which are as follows:

Conservation Notes – Before / During / After

According to the principles of archaeological conservation, conservation notes should be prepared in the beginning, if any monument or object is to be conserved, through which the need for conservation and the process would be determined. So, it is important to study and prepare conservation notes before doing anything on the object or monument. FSMC, in collaboration with DoA, prepared the conservation notes before, during, and after the process of documentation as well. The notes were prepared under the direct supervision and guidance of the senior advisor from the MoCTCA (i.e., myself, as I am still working as an advisor for the project), and we tried to include each and every momentum activity in this project.

First of all, the team prepared a conservation note, and as outlined in it, conservation was to be executed first. Next, execution documentation was to be prepared and after completing the conservation work, the report/notes should be prepared.

In this way, the documentation team has been preparing a very good quality of documentation for this project, which is one of the most exemplary conservation works in Swayambhu—a collaboration which also includes the full involvement of the local community and local people in the heritage conservation.

Maintaining a Log Book

We, the steering committee, have formulated four layers of committees for assisting the easy execution of the project. Among these four committees, the Conservation Committee and Monitoring Committee maintained a log book at the time the *gajur* was carried down, as well as for its reinstallation, including the reinstallation of other elements as well. It was therefore much easier at the time of reinstallation of the *gajur*. In the meantime, replacement of the lost small decorative

elements, i.e. leaves in the corners, *fe gan* (wind bells) and many others, which were also newly made as per archaeological norms (studies were carried out before new replacement elements were made), was much easier as they had a full record of every small part, including where they were actually placed and their condition.

In the same way, the Gold and Gold Gilding Monitoring Committee (GMC) also maintained a log book as the gold gilders used a certain amount of gold for the *gajur* and every other element. So, there was documentation with a recording system being developed simultaneously, which also helped the documentation team in the documentation process.

Photography

Photography is also one of the best tools for documentation, as it can be more detailed than text and other tools. In this project, the documentation team prepared as much photographic documentation as possible. Photographic documentation follows the text documents with images of before, during, and after conservation, as well as many other associated photographs, which can give a detailed description of the whole project.

Video

There are several advanced technologies for recording and documenting heritage, and there are also many sophisticated machines for documentation. Video is one of them. The team prepared some of the most important documentation using the technology for recording as video, which is a more reliable and knowledgeable source for everyone. However, even though it was not prepared for the whole project, partial documentation through video supports the entire documentation effort as well.

3. Involvement of the local communities and local people

Heritage conservation actually means to transmit intact to future generations as much as possible of the structure, design, style, and knowledge of heritage. The traditional way we have carried out our conservation work on heritage has been to do it as a duty as well as making it the responsibility of the entire society or the community where the heritage is located; however, this may vary according to the time and circumstances. In Nepal, many communities are very much aware of heritage conservation and management, and carry it out using their own traditional techniques and systems.

The history of the conservation of Swayambhu Mahachaitya, which was completed in 2011, also shows the same evidence, as it's mentioned above that every renovation work was done with the involvement of and in coordination with the local people. Conservation work is not to be done once; it is an ongoing, not an instant, process. As the communities in Swayambu are aware that their community heritage is on the UNESCO World Heritage List, they were involved in the project very actively and were committed to their responsibilities. The steering committee formed different layers of committees for the easy execution of conservation work in the proper way, and declared the responsibility of each committee as mentioned below:

Chair, Federation of Swayambhu Management and Conservation (FSMC) - Chair
Chief Priest / Representative nominate the chief priest - Member
Representative, Department of Archaeology - Member
Representative, Kathmandu Metropolitan City (KMC) - Member
Ward Chair, Ward 15 KMC - Member
Chief, Valley Police Swayambhu Circle (Nepal Police) - Member
Representative, Guthi Corporation - Member
Representative, Three Members (FSMC) - Member
Representative, Locals (Guruju's family) - Member
Experts from FSMC (as nominated by FSMC) - Member
Admin, (nominated by FSMC) - Member Secretary
Senior Advisor (with full rights as a member) Dr. Suresh Suras Shrestha, Joint Secretary, Ministry of Culture, Tourism and Civil Aviation (MoCTCA).

The other sub-committees are as follows:

Technical Sub-Committee:

A technical sub-committee was also formed, consisting of representatives from the municipality, security (Nepal Police), the Buddhacharya family (a local priest's family, who represents the local people as well) under a representative from the DoA. The sub-committee was always devoted to finding an easier way to achieve the conservation without compromising the quality of the project. It was always present and made decisions at the time of removal and reinstallation of elements, and some problematic situations as required for the project.

Conservation (Removing / Reinstallation) Monitoring Sub-Committee

The conservation monitoring sub-committee was formed to monitor the removal, mending, repair, making new, and reinstallation of the *gajur* and other elements of the stupa. The members of this sub-committee always kept a log or catalogue of the objects at the time of inspection and the study as well as for reinstallation of the objects: i.e. the names or parts of objects, pieces, measurement, their physical condition, record of the persons climbing up to the *gajur* for work/inspection and so on. Not only this, they also kept a record of every object found (that might be either of archaeological or religious value) in the process of all the activities in the project. After that, they arranged a handover of all objects to the related team by having them sign a receipt. Again, they kept a record at the time of reinstallation for day-by-day work as previously done. In this way, the main responsibility of this sub-committee was to watch and take care of every object from the stupa and set them back properly in their original place intact, which was also a very sensitive job overall.

The membership of the sub-committee consisted of local people led by a member of the FSMC; however, some of them were representatives of local community organizations.

Similarly, experts as volunteers were involved as the sub-committees on gold and the gold gilding process, which were much appreciated activities that were carried out by the locals as the guardians of their own heritage.

In this way, different layers of committees were formed for the execution of the project and every member could be involved in the decision making—taking part in meetings and so on. Many of the local people were involved in the process of removing, repairing, and reinstallation of objects, together with the project team. All of the committees were comprised almost entirely of local people and local organizations of Swayambhu, which helped to carry out the conservation work more easily. Actually, the local people and the local organizations played a vital role in sensitizing the whole community to heritage conservation, and everyone in the area took care of the work as well as monitoring it indirectly, which helped to secure/guard the archaeological remains of the stupa during the conservation work. That's the reason why it was the best example of community involvement in heritage conservation.

4. Conclusion

Although the pinnacle (*gajur*) of the Swayambhu Mahachaitya Conservation Project had a very limited time to fulfill its goal of conserving the broken *gajur* of the main stupa of Swayambhu, it completed this within six months. After the inspection of the entire stupa up to the *gajur* by steering committee members during the reinstallation of the broken *gajur*, a vigorous discussion was held and came to the conclusion that it is necessary to replace or reinstall all the small decorative elements within the stupa due to natural calamities and the activities of monkeys. Therefore, even though the reinstallation of *gajur* has already been completed, the conservation project continues for the rest of the newly explored conservation activities for the stupa, which might take more or less a year.

The *gajur* of the Swayambhu conservation project is one of the most important conservation works carried out, not only in the Kathmandu Valley, but for the whole range of cultural heritage conservation and management in human society. It was such a very significant conservation project; however, it was small in view of the size of the budget. The locals through their organizations, especially the FSMC, initiated the project in technical collaboration with related government authorities and other agencies, and this important and significant conservation work was carried out successfully with almost all of the locals having the opportunity to get involved in preserving their heritage, which is the most significant part of this project. Secondly, the project team prepared proper and high-quality documentation on conservation of the *gajur*. Similarly, it is the best example of a community-initiated project with coordination among the central and local governments, local people, heritage professionals, and traditional technologies experts, as well as with the workers.

In this way, the *gajur* of Swayambhu conservation project set another record in the history of heritage conservation

Broken gajur lying on the base floor. Drone images.
Source: The Federation of Swayambhu Management and Conservation (FSMC)

Chhemapuja-Worshipping for conservation of gajur. *Source: FSMC*

Scaffolding for conservation activities.
Source: FSMC

The broken gajur taken down for conservation.
Source: FSMC

The gajur under repair. Source: FSMC
Source: FSMC

Replacement for missing parts. Source: FSMC

Reinstallation of missing parts.
Source: FSMC

Reinstallation of gajur by craftsmen.
Source: FSMC

Supports for the gajur during reinstallation *Source: FSMC*

Supports for the other parts of the stupa *Source: FSMC*

Reinstallation of repaired gajur. *Source: FSMC*

Reinstalled gajur. *Source: FSMC*

in Nepal, with such dedicated heritage experts, authority representatives, craftsmen, and local peoples' involvement as well. Through this conservation work, the local people became very much aware of the conservation and preservation of heritage, and they learnt a lot about the importance of peoples' involvement in heritage management. It is acknowledged that cultural heritage preservation, conservation, and management is almost impossible without the people's active participation rather than passive involvement. This was also a great achievement of this conservation.

Technically, the project was significant in that it succeeded to conserve the *gajur*, the top-most part of the stupa, as well as preparing the documentation on it and the process of the conservation work.

Although it was a great achievement, heritage conservation is not for once and not permanent forever after just one time; it is an ongoing process and the people must think about and consider that. The community must obtain knowledge from this for the future conservation of cultural heritage as well. It's also the responsibility of the nation to preserve heritage and the state must allocate adequate budgets for the conservation of monuments, giving higher priority to the cultural sector.

5. Bibliography

1. Shakya, Min Bahadur (2004), ***Sri Swayambhu Mahachaitya*** (Translated into English), Swayambhu Vikash Mandal, Swayambhu, Kathmandu, Nepal.
2. Shakya, Hem Raj (NS 1098). ***Sri Swayambhu Vikash Mandal***, Swayambhu, Kathmandu, Nepal.
3. Bajracharya, D.B. (1993). Lichchhavikalka Abhilekh, CNAS, T.U., Kirtipur, Kathmandu, Nepal.
4. Ehrhard, Franz-Karl (1989). ***Renovation of Swayambhunath Stupa in the 18th Century and its History***, In Ancient Nepal, No. 114 Oct.-Nov, Journal of the Department of Archaeology, Kathmandu, Nepal.
5. Ehrhard, Franz-Karl, ***Further Renovation of Swayambhunath Stupa (From the 13th to the 17th Centuries)***, In Ancient Nepal, No. 123-125, Apr-Sep, Journal of the Department of Archaeology, Kathmandu, Nepal.
6. Shrestha, Suresh Suras (2010). ***Wooden Architecture and Conservation: A Case Study of Swayambhu Stupa Conservation***, In Research, Analysis and Preservation of Archaeological Sites and Remains, CHPC Office-ACCU Nara, Japan.
7. Shrestha, Suresh Suras (2010). ***If Hundreds of People Work for Rescuing People, Only One Person May Contribute for Heritage Rescue***, In Research, Analysis and Preservation of Archaeological Sites and Remains, CHPC Office-ACCU Nara, Japan.
8. Sanday, John. Traditional crafts and modern conservation methods in Nepal
9. Komine, Yukio (2007). Insect Damage in Wooden Buildings (Ecology, Damage, and Control), Japan Institute of Insect Damage to Cultural Properties, Japan.
10. Bajracharya, Y.P. (2009). Swayambhu: Sanchhipta Parichaya. Federation of Swayambhu Management and Conservation, Kathmandu, Nepal.
11. The Conservation of Cultural Property, UNESCO, 1968.

Te Papa Atawhai Cultural Heritage Conservation Projects, Southern South Island: Arrowtown Chinese Settlement Huts 2023

Dr. Matthew Schmidt, *Senior Heritage Advisor/Kaitohu Matua Taonga Tuku Iho*
Southern South Island, Te Papa Atawhai Department of Conservation ("DOC"), New Zealand

Introduction

This report focuses on the conservation of four Chinese miners hut sites dating to the late 19th to early 20th centuries located at the Arrowtown Chinese Settlement in Whakatipu (Figure 1). Archaeologist Dr Neville Ritchie originally excavated these hut sites forty years ago as part of an extensive research programme in the early 1980s on 19th century Chinese miners in Southern New Zealand (see Ritchie 2023). The Arrowtown Chinese Settlement is one of the most visited cultural heritage places in the Central Otago/Whakatipu Districts of Otago attracting thousands of tourists each year coming to learn about the lives of Chinese who came to Otago from the 1860s onwards to make their fortune in gold (Figure 2).

Figure 1. Location of the Arrowtown Chinese Settlement New Zealand

Figure 2. Entrance to the Arrowtown Chinese Settlement (Photo: Briden 2018).

19th Century Chinese Miners in Otago & the Arrowtown Chinese Settlement – a brief history

Gold was first discovered in the Arrow River next to today's Arrowtown by local shearer Jack Tewa in 1862. Jack worked for the pastoralist William Rees who had just acquired large tracks of land for sheep farming and as such the discovery was kept quiet so Rees could farm in peace and not have the area declared a gold field. However, word got out on the discovery and a rush to the Arrow River began with a goldfield soon declared. Thousands of miners flooded into Arrowtown looking for gold in the rivers and streams in the surrounding hills and mountains. By 1864 the easy gold had been won and only those miners who invested in creating the larger more complex mining operations involving water races, reservoirs, dams, sluicing, gold stamper battery's etc. remained. Most miners used simple tools such as shovels, pans and cradles, and it was these miners who moved to the West Coast discoveries in 1865 leaving the Otago Region wanting for miners and the small Otago towns that grew on the early gold finds also wanting for more business and investment.

To fill this void, the Otago Provincial Council encouraged Chinese miners from the Victoria goldfields in Australia to come to Otago. Even though there were Chinese miners already in New Zealand by the mid-1860s, the numbers were few in comparison to the thousands of European miners with only about 200 Chinese miners recorded in Otago by 1866. By 1869 Chinese miners were coming directly from China and mainly from the Canton (Guangdong) province where life was particularly hard at the time. A census in 1874 showed that by this time 3564 Chinese miners were in Otago, a significant and rapid rise from 1866. Many Chinese miners were successful and returned home with *ca*. £100 in their pockets (a fortune at the time), but hundreds remained and were buried in Chinese sections of local cemeteries. At the close of the 19th and in the first few years of the 20th century, a programme of repatriation of Chinese buried in New Zealand was organised by successful local Chinese businessmen seeing many Chinese exhumed and returned home.

Although the Chinese were encouraged to come to Otago, racism was an ongoing issue meaning that the Chinese miners established their own settlements outside of the main European towns. Examples of these Chinese settlements were the Lawrence Chinese Camp, the Cromwell Chinese Settlement and the Arrowtown Chinese Settlement. All these towns existed from the mid-1860s through to the 1920s. The Cromwell Chinese Settlement was archaeologically excavated in 1980 before being flooded in1992/1993 with the creation of Lake Dunstan as part of the Clyde Dam hydroelectric project. The Lawrence Chinese Camp has three buildings associated with the camp but archaeologically, significant evidence of the camp remain which were partially excavated between 2005-2010.

The most easily seen and extensive remains are at the

Arrowtown Chinese Settlement which was excavated in 1983 and where above and below ground evidence of the Chinese occupation still exists today. Established by the first few Chinese miners to the Arrow River in the late 1860s, by 1885, the settlement consisted of about 10 huts, a large social hall and at least two stores and there were numerous gardens providing fresh produce sold to local stores. Gardening became crucial to supplement the meager earnings from gold.

Buildings were constructed from a range of materials including mud brick, mortared stone, wood, and canvas. Some buildings were thatched using local tussock grasses with others roofed with canvas and corrugated iron. Only Chinese men lived in the settlement (around 70% of the Chinese miners who came to New Zealand were married leaving their spouses at home) and initially accommodation was shared (up to 6 at a time) before more huts were constructed. At its peak the settlement may have had 60 Chinese living there being a combination of permanent residents and those temporarily leaving their claims, such as during Winter. During a Chinese New Year festival in 1885, a newspaper reported 200 Chinese from around the District being at the camp. Between 1880 and 1900 there were 16 to 20 permanent residents. In 1932, the settlements last resident, Ah Gum, passed away.

The 1983 excavations and reconstructions from 1987 onwards

In figures 3 to 6 can be seen some of the excavations underway at the settlement in 1983. When the settlement was first surveyed, it was overgrown with thick vegetation

Figure 3. Ah Gum's Hut during excavation in 1983 (Ritchie 1983).

Figure 4. Ah Nue's Hut during excavation in 1983 (Ritchie 1983).

Figure 5. Kong Lum's Hut during excavation in 1983 (Ritchie 1983).

Figure 6. Tin Pan's Hut during excavation in 1983 (Ritchie 1983).

Figure 7. Ah Lum's store. This building is original requiring conservation work only (Photo: Briden 2018).

Figure 8. Ah Wak's stone outhouse. This building is original requiring conservation work only (Photo: Schmidt 2022).

Figure 9. Reconstructed hut of Old Tom (Photo: Briden 2018). Excavations and historic photographs showed that stone, mud and iron were used to construct the hut.

Figure 10. Some of the reconstructed huts and rock shelters (Photo: Briden 2018). Excavations and historic photographs showed that stone, mud, tussock thatching and iron were used to construct the various huts.

Figure 11. Reconstructed Chinese hut made of stone and iron, based on excavations and historic photographs (Photo: Briden 2018).

Figure 12. Reconstructed Chinese hut made of stone, mud and iron based on excavations and historic photographs (Photo: Briden 2018).

obscuring the heritage sites and hence the story of the Chinese who lived there. Archaeologist Dr Neville Ritchie excavated the settlement as part of his PhD research at the time, his resulting work after excavating this settlement and other Chinese heritage sites including the Cromwell settlement providing the first detailed and comprehensive history of the Chinese in the goldfields as seen through archaeology. Twenty-five locations were archaeologically investigated in the Arrowtown Chinese Settlement uncovering 14 hut sites. Conservation work was also undertaken on Ah Lum's store and Ah Wak's outhouse which were the only two complete original structures surviving. Ritchie also compiled histories of some of the Chinese residents of the settlement such as those of Ah Lum, Ah Wak, Tin Pan, Ah Nue, Ah Gum, and Old Tom and that of a Canadian resident named Mr Perry who lived in a hut at the same time as the Chinese at the close of the 19th century.

Soon after the excavations the land was transferred from private ownership to the Department of Conservation/ Te Papa Atawhai and reconstruction of some of the huts began based on the archaeological excavations and historic photographs. The aim of the reconstructions was to provide visitors with a tangible understanding of what it was like for the Chinese miners to live in the various types of huts and rock shelters (Figures 7 to 12).

The 2023 hut re-excavation work and future management

Seven of the excavated hut sites were left open after excavations were completed in 1983 and were not reconstructed to illustrate how such sites looked when found. However, after 40 years and thousands of visitors to the settlement plus some unfortunate taking of stone by fossickers, these sites had become damaged and partially reburied. It was therefore decided that these sites needed conservation work undertaken on them which would require re-excavation, fencing and a new management regime put in place to ensure they would continue to provide their story about the settlement. This would include signage with the names and known history of the Chinese miners who lived in the huts being installed.

In October 2023, four of the seven sites were re-excavated by a team of Department of Conservation archaeologists/ Senior Heritage Advisors (Matthew Schmidt, Brooke Jamieson & Tom Barker) and Heritage Rangers (Richard Kennett & Jim Croawell) and a University of Otago archaeology student (Jovan Andric) (Figures 13 to 14). The re-excavation found that the hut remains were largely intact from 1983, particularly the floors which were in the same condition as when discovered (Figures 15 to 18). Much of the damage had been to the low chimney remains which over time had collapsed into the hut sites. Removal of a tree stump from Tin Pan's Hut revealed a

Figure 13. Re-excavation team at work on Ah Nue's hut. In the picture are Brooke Jamieson, Jim Croawell, Jovan Andric and Tom Barker, who is explaining the work to some visitors (Photo: Schmidt 2023).

Figure 14. Senior Heritage Ranger Richard Kennett re-excavating Ah Nue's Hut (Photo: Schmidt 2023).

Figure 15. Ah Gum's Hut before and after re-excavation (Photos: Schmidt & Jamieson 2023).

Figure 16. Ah Nue's Hut before and after re-excavation (Photos: Schmidt & Jamieson 2023).

Figure 17. Kong Lum's Hut before and after re-excavation (Photos: Schmidt & Jamieson 2023).

small array of artefacts such as Chinese eating bowl and storage jar fragments but most significant were five very heavy oval shaped lead ingots (Figure 19). The ingots were on top of an area of burnt charcoal-stained soil and associated with small pieces of melted lead. It is unclear what such a large deposit of lead means, smaller deposits were found in other huts in 1983 and may have been sold for solder or fireworks. This large deposit, however, is very rare and has not been found at other Chinese goldfields sites. Analysis of this find continues.

The excavations attracted local interest with schools visiting the excavations not only taking part but learning about the Chinese miners' lives (Figures 20 and 21). The work also attracted a national news story (Figure 22, to see the story online. go to https://www.1news.co.nz/2023/10/18/archaeologist-returns-to-120yo-settlement-which-inspired-passion/).

Figure 18. Tin Pan's before and after re-excavation (Photos: Schmidt & Jamieson 2023).

Figure 19. Artefacts from Tin Pan's Hut showing the five very large and heavy lead ingots (Photo: Jamieson 2023).

Figure 20. Visiting pre-school children helping to re-excavate Ah Gum's Hut (Photo: Jamieson 2023).

Figure 21. Secondary School students listening to a talk on the Chinese miners and the re-excavation (Photo: Jamieson 2023).

Figure 22. Seven Sharp television filming the re-excavation for a national news article (Photo: Schmidt 2023).

Conclusions

The re-excavation of the four Chinese miners' huts is just the first step in the conservation work to be undertaken on the seven hut sites first uncovered by Ritchie 40 years ago. The fencing of the four hut sites will commence in the Summer of 2024 and plans are currently underway for the re-excavation of the final three hut sites in October 2024. In addition, development of the signage will commence in 2024.

References

Ritchie N. 2023. *Archaeology and History of the Chinese in Southern New Zealand during the Nineteenth Century: A Study of Acculturation, Adaptation, and Change*. Studies in Australasian Historical Archaeology 9. Sydney University Press.

Acknowledgements

Thank you to Richard Kennett, Jim Croawell, Brooke Jamieson, Tom Barker and Jovan Andric for contributing their skills and knowledge to the October 2023 excavations. Also, thanks to Phil Latham of the University of Otago Archaeology Department for the loan of the excavation equipment.

Sri Lanka

Excavation and Conservation at Jaffna Dutch Fort From 2009 to 2017

Getsy Thavarajah, *Development Officer*
Archaeological Museum, Regional Archaeological Office, Department of Archaeology, Jaffna

The Dutch occupied Sri Lankan coastal areas in 1505 and constructed several forts all around the country for defence and trade purposes. Jaffna Fort on the northern Jaffna Peninsula is the second largest fort after Galle Fort in the south. Jaffna Fort is special due to its massive ramparts, majestic buildings inside including a massive Dutch church, the architectural features, the moat and walls of geometric shapes, unique outer defence walls, etc. It is unique in that the residential quarters were built in a grid city just outside the fort, which is surrounded by a large open esplanade. The plan shape of Jaffna Fort is similar to Bourange Fort in the Netherlands. This is the only star-shaped fortress with five bastion corners in Sri Lanka. It is also famous for its outstanding design, which is comparable to the best forts, even in England.

1.1 Location

Jaffna Dutch Fort is located in Jaffna District in The Northern Province of Sri Lanka and to the Jaffna Fort is situated between longitude 9.6620° N and latitude 80.0084° E with the GPS point (M265+ R97), 2.1 m above sea level. It is located near Kandy Road Junction, 1 km from Jaffna City, if coming from Kangesanthurai Road on the left-hand side of Pannai Road (Figs. 1,2,3).

1.2 History of Jaffna Dutch Fort

The first fort was built by the Portuguese during the period 1624 to 1632 in a square shape with four large bastions. According to the older plans found in the archives, the northwestern and southwestern ramparts were spearhead-shaped while the other two were similar to three quarters of a circle (Fig. 4). After the Dutch conquered the fort in 1656 it was decided to repair it as there was damage due to the war, and in 1665 the present fort was built after the demolition of the original Portuguese fort. As per W. N. Nelson, construction was completed in 1680, together with all the buildings inside, and this is written in the inscription at the entrance wall.

Also, the construction of the moat and the outer ramparts of this fort began in the early 18th century and the construction of Jaffna Dutch Fort was completed as a complete structure in 1792 AD. The exterior parts such as the moat, walls, outer bastions, and gun points were constructed and completed just three years before the Fort was handed over to the British in 1792. Although there were some additional changes in the building structure of the fort during British rule (1796-1948), the present structure reflects the Dutch architectural style, and therefore, Jaffna Fort is called the Dutch Fort by the common folk.

1.3 The Structure of Jaffna Dutch Fort

The total area of Jaffna Dutch Fort is 62 acres including the inner fort structures covering an area of 34 acres, the moat, and the outer fort structures beyond the moat. The width of the outer walls of this fort is 40 feet at the bottom, and 20 feet at the top with a height of 30 feet. Therefore, enemies from outside could not easily climb up and enter. The fort also has a deep moat 20 feet wide around its outer walls. The moat is filled with water flowing in from the adjoining Pannai Lagoon, which is located to the south west of the fort.

Massive artillery emplacements, defensive ramparts, watch towers (Guard Rooms), tunnels, and firing platforms (Gun Points) were constructed in all four parts of this fort. The outer ramparts of the fort and the fort's high curved walls were well placed to make the main gate not easily accessible by enemies.

They had a special method to collect rainwater falling on the rampart walls and to filter it before it drained into the moat. Ventilation into the dungeons and warehouses was ensured through the openings in the walls. Administrative buildings, soldiers' quarters, armory rooms, a Christian church (it was rebuilt in brick), Queen's House, and the

Fig. 1. Aerial view: Dutch Fort – Jaffna. Source: Department of Archaeology

Fig. 2. Map – Dutch Fort, Jaffna, Sri Lanka: Source: Google Map

Fig.3. Map – Dutch Fort, Jaffna. Source: Google Map

Fig. 4. Portuguese Fort, Jaffna: Source: Atlasandmap.com

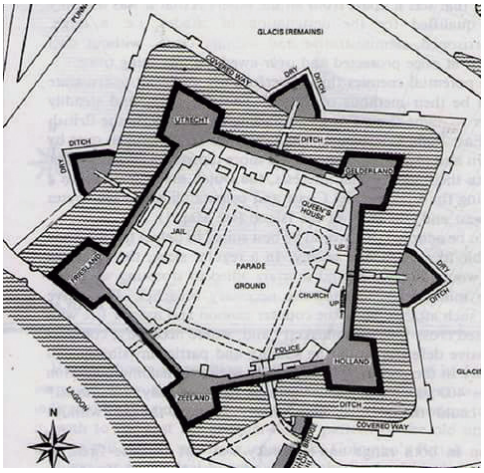


Fig. 5. Plan of the Dutch Fort

prisons are the main building units inside the fort which still recall the memories of the Dutch.

A well was dug in the Utrecht bastion interestingly 30 feet above ground level to the northwest and a bell tower was erected in the Holland bastion to the southwest.

1.3.1 Material used for the fortification

Descriptions of the construction of Jaffna Fort have been given widely through documents of the Portuguese and the Dutch. Jaffna Fort was constructed mostly with cut-to-size pieces of coral stones obtained from places such as Velanai, Kayts, Nainativu, Analaitivu, Eluvaitivu, and Delft.

However, there is little evidence of the limestone and granite stones of various shapes and sizes which were irregularly inserted between the coral stone blocks. But we are unaware from where such limestone stones were obtained and used in the construction of the ramparts. According to folk stories, the City of Nallur, the capital of the Jaffna Kingdom, was conquered in 1519 and the monuments of the capital were destroyed. Simultaneously, five hundred Hindu temples with large houses in Jaffna were destroyed and the fort was built with stones brought by the Portuguese from those structures. Most of those used stones are building blocks of Hindu Temples and reveal much evidence of carvings, decorations, stone pillars and Tamil inscriptions.

Further, the buildings were formed inside of the fort and also above the fort wall, and had been constructed with bricks. Limestone called "Kanda Kal"—pieces of unshaped large limestone—were also used for the construction of some of the buildings.

Furthermore, the builders used cement made out of limestone processed from kilns in Jaffna, jaggeries which were brought from Goa in India, and clay which had been brought from Jaffna ponds as mortar for joining wall stones. Different colours such as white, pink, dark red, and yellow were used for plastering the walls of the fort. It is worth noting here that local masons worked with the European (Portuguese and Dutch) masons to construct this fort.

However, for the structural parts or the internal filling of the ramparts, normal soil was used, similar to other forts such as Galle and Katuwana. It is said that the yellowish thin bricks used in the construction of the arches in the entrance gates were directly brought from the Netherlands. The empty ships sailing from the Netherlands were filled with bricks as ballast for easy sailing, as they were sailing ships which used the natural wind.

1.4 Jaffna Fort in 2010 before Conservation

During the period of the three decades of civil war, the warring troops of the two opposing sides had taken turns to occupy Jaffna Dutch Fort, choosing it as their stronghold and subjecting it to their control. As a result, the fort suffered massive damage as it was frequently attacked by opposing forces. Thus, while its outer ramparts were partially damaged, its inner ramparts including the western rampart and bastions in the southwest and northeast were also heavily damaged. A large part of the interior of the fort has been completely destroyed and is now visible with only partial walls and ruined buildings (e.g., Dutch Church). Only a few buildings remain with partial damage.

Further, due to the location of the fort, since it was built beside a coastal landscape, the salty air and humidity of the sea and wind have caused erosion, deterioration, and cracking of some portions of the Fort. For more than 30 years, there have been massive trees like peepal trees and banyan trees sprouting on the fort, causing further deterioration, especially due to the waste of birds housed in the trees and buildings that had not been maintained for a long time. These are the challenging factors of the stability of buildings after the war. Before the commencement of conservation works of Jaffna Dutch Fort in 2009, the fort looked like a forest. Due to this dense forest covering the inside and outside of the area of the fort, dangerous poisonous insects had been housed in the area. Until 2010 no one except military men entered the ruins of any part of this fort such as the military garrisons, ruins of moats and ruined building elements, as permission was needed to enter.

1.5 Jaffna Dutch Fort – Conservation and Restoration Works

After the end of the civil war in Sri Lanka in 2009, the Department of Archaeology of Sri Lanka started explorations for archaeological remains in the northern part of the country and to document, conserve, and

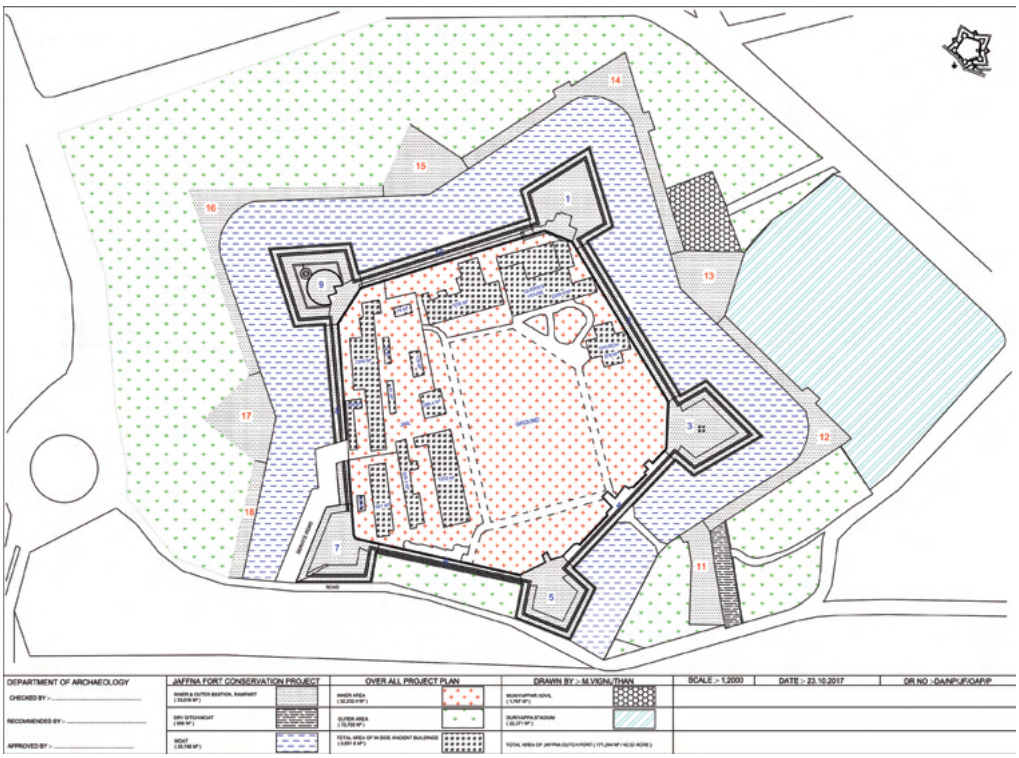


Fig. 6. Jaffna Fort Conservation work divided site map

Table 1: Work Sites of Jaffna Fort – Conservation & Restoration Project Work

Name			Direction	Special Monuments	Done
Site	**Bastian**	**Rampart**			
1	**Gelderland**		NE	Buildings, Tunnels, Queen House	√
2		Between Site 1 & Site3 Bastians	E		√
3	**Holland**		SE	Bell Tower, Tunnels.	√
4		Between Site 3 & Site5 Bastians	S	Tunnels with Air Holes, 4A, 4B: Rooms, Main Entrance.	√
5	**Zeeland**		SW	Buildings' ruins	√
6		Between Site 5 & Site7 Bastians	SW	Tunnels	√
7	**Friesland**		SW	Damaged Bastian	√
8	**Rampart** between Friesland and Utrecht Bastians.	Between Site 7 & Site 9 Bastians	W	Damaged Rampart, Portuguese ¾ round shaped Bastian evidences.	√
9	**Utrecht**		NW	Old well, Tunnel	√

Name					Direction	Special Monuments	Done
Site	**Bastian**	**Rampart**	**Tunnels**	**Outside of moat**			
10		Between Site 9 & Site1 Bastians			N	Buildings' ruins	√
11	√		√	√ & Entrance way	S		√
12		√		√	SE		√
13	√		√	√	E		√
14		√		√	NE		
15	√		√	√	N		
16		√		√	NW		
17	√		√	√	W		
18		√		√	SW		

protect them, which is still continuing.

Although three European countries have colonised Sri Lanka, only the Kingdom of the Netherlands agreed to provide financial and technical assistance as they were convinced for that under the Mutual Heritage concept. Under the scheme the Kingdom of the Netherlands has provided technical and financial assistance for the conservation of Galle Fort, Matara Star Fort, Katuwana Fort, Urubokka Irrigation Dam, and Jaffna Fort. All the projects were initiated by the Department of Archaeology under the supervision of the Director (Architectural Conservation), Archt. Prasanna B. Ratnayake. The conservation staff of the Department of Archaeology commenced the conservation works after detailed documentation of the existing remains. There was a parallel training program for the students of the University of Jaffna, giving them a great opportunity, which had not been available to them for the last thirty years.

It was planned to be completed in three years from when the reconstruction work started in 2009. However, due to a number of reasons, the works were not completed as per schedule, and the renovation work continued till 2015.

As the initial phase of the Jaffna Fort reconstruction work, the Department of Archaeology started clearing and removing bushes and debris from the end of 2009. Also, in 2010, a land measuring survey, exploration works, and sampling excavation works inside and outside of the fort began. Initial works for the reconstruction of the fort were carried out in September 2010. Work sites were divided into 18 sites for easy management of conservation, when starting from the inner fort to the outer ramparts with tunnels and outside of the moat.

After about a year the Ministry of National Heritage appointed Prof. P.B. Mandawala as the Conservation Consultant (until 2015) and Prof P. Pushparathnam was appointed as an Archaeological Consultant. Mr. R.M.B. Rathnayaka was appointed as the Project Manager and 12 Jaffna University archaeological graduates were appointed as supervisors for this work. Hundreds of workers were hired for this work under the classification of Skilled (technical staff, masons, blacksmiths, carpenters, drivers, etc.), and Unskilled (labourers). All employees, including the Project Manager, were paid on a daily basis based on the work schedule and paid once a month.

1.5.1 Conservation Work

1.5.1.1. Before the conservation work

The entire fort area was covered with plants, trees, and other vegetation as result of long-term negligence, and the ramparts were damaged and dilapidated due to the war. There were several trees growing everywhere such as banyan, neem, Morinda tinctoria, and peepal.

Therefore, at first, the entire fort area, which was forested, was cleaned and cleared. Also, the trees on the work sites were classified as small, medium, or large based on their sizes, and uprooted vegetation was removed using human power. The removal of roots from high and sloping walls was difficult. Also, trees growing over the buildings were removed by chemical treatment methods. After that, the soil-covered areas were excavated until the old building remains were exposed and more soil was excavated deeply to the specified level as per the construction requirements. In order to identify the remains of ancient buildings buried under the soil and to carry out their conservation, the soil removal to expose the construction walls was not a planned excavation method, but was carried out as an open-type excavation for conservation.

The excavated soil was piled in one part of the fort to be filled in later when the conservation work was completed. Also, the soil excavated from the ruins was collected and sorted to be used in the works. In addition to that, the soil was used to prepare the ground for the landscaping works and pathways. A number of artifacts were found in the excavations and they were recorded and stored safely.

During the excavation, a large number of unexploded munitions, explosives, claymores, and mortar bombs were also found at the work sites. Sri Lankan Army Engineers were deployed at the work sites to ensure safety, defuse the bombs, and remove them from the designated areas. The ramparts and the ground levels were finished, ensuring the drainage of rainwater into the moat.

GI pipes and square foldings were used to remove the plants and trees at the higher levels of the rampart and the bastions (Figs. 7, 8, 9, 10 & 11 – before conservation).

Fig. 7. Main Entrance pathway & Arch – outer rampart

Fig. 8. The Tunnel – outer rampart of the fort, Site 11 – East view; before the work

Fig. 9. Main Entrance; before conservation work - N

Fig. 10. Rampart between Gelderland Bastion & Holland Bastion; before earth removing work – S

Fig. 11. Rampart between Gelderland Bastion & Holland Bastion; before conservation work – S

1.5.1.2 Works Done during the Conservation Works

The conservation work was commenced after completion of the cleaning and leveling of the site.

The rubble stones needed for the conservation works were taken from the ruined buildings and prepared for the conservation works by the use of grinding and cutting machines. There was a separate team of workers to supply and transport materials to the sites.

The lime chips needed for the lime concreting and casting of block stones were obtained from used coral stones from demolished old houses. To match the ancient finish of the rampart walls, the coral stones were essential and it was easy to work with cut stones, but it took time to shape the stones. Bricks were also used for the conservation of brick-built areas of the fort.

Traditional construction methods were followed in the conservation, but a small amount of cement was added to the mortar to make the works flexible.

It was difficult to find original coral stones for the exterior wall of the rampart. Therefore, imitative blocks were manufactured using soil, lime, metal chips, and cement used for the exterior, while limestone was used as an interior filling material.

The damaged steps and platforms were conserved by using a mixture of cement, sand, lime, and rubble chips.

Several new architectural remains were identified through excavations. Unrecognisable building remains were identified for their original plans and constructed accordingly. Some of them were built according to the designs found in old photographs. The arched entrances and tunnel tops were measured, stones were cut accordingly, and trial conservations were carried out with clay soil mortar. When it was decided to be correct, the mortar was removed and the structure was conserved using permanent mortar in the same place.

Pointing works were done on the top of the walls, and the grooves between the stones were filled in during the conservation with coral stone, lime and bricks.

Finally, in the walls, the spaces between the stones were plastered and embellished with mortar, and the old method of plastering, which was considered essential for the preservation of the buildings, was adopted. As per the old pointing methods on the walls, pointing works were done by applying a mixture of cement, lime, sand, and ant hill clay to distinguish the new construction from the old constructions. In order to distinguish the new constructions from the old constructions, the year was marked between them. Also, the old remains were left intact at 60 cm intervals between the conserved areas to show how much it had degraded before the conservation.

They were built at a certain height (3 m) due to the additional cost of renovating some building ranges, the

non-availability of old stones to build the walls to the old height level, and the non-availability of old coral stones in the required sizes. It should be noted that the old walls had undergone massive damage and could not be detected.

With the support of the Sri Lankan Army, the moat of Jaffna Fort was dredged, desilted, and cleaned, and the moat structures were reconstructed by the conservation team. The Queen House inside of the fort was also partially restored.

Thus, the conservation works from Site 01 to Site 13 were carried out until 2015. The conservation works started from the main entrance areas in the south outside of the moat (Site 11). These works were carried out up

Fig. 12. Damaged rampart between Friesland Bastion and Utrecht Bastion; conservation progress

Fig. 13. Main Entrance pathway & Arch – outer rampart of the fort; after the conservation work.

Fig.14. The Tunnel – outer rampart of the fort; after conservation work.

Fig. 15. The Holland Bastion; after conservation work

Fig. 16. Main Entrance; after conservation work, 2014 – N

Fig. 17. Rampart between Gelderland Bastion & Holland Bastion; after conservation – S

Fig. 18. The Tunnel – Gun points of Gelderland Bastion: after conservation work; earth filling progress

through Site 12 to the eastern outer bastion of Site 13. No conservation work has since been carried out on the outer ramparts and bastions from Site 14 to Site 18 outside of the moat due to lack of funds. (Fig. 12. Conservation progress; Figs. 13, 14, 15, 16 & 17. After conservation).

1.5.1.3 After Conservation Work

The soil that was removed through excavation and collected was used again to fill the gaps in the gun points and ramparts after the completion of the conservation works (Earth filling work) (Fig. 18). The ramparts and bastions on top of the soil-filled fort have been planted with sods of grass cut from the banks of ponds as landscaping to prevent soil erosion. During the rainy season, maintenance works were also carried out for the planted grasses (Turfing work) (Figs.15, 17). Cleaning work was carried out in the conserved areas and in the fort office premises. The works were divided into different categories and executed on the basis of norms.

2. Recent Archaeological Surveys at Jaffna Dutch Fort 2010-2017

In 2010, two model excavations were carried out inside and outside of Jaffna Fort before the conservation of the fort. A small-scale model excavation was carried out at the southwest coast of the outer fort. Another large-scale model excavation was carried out (size: 6'× 6' in the southwest part of the inner ground of the fort (in front of the present storeroom). It was carried out in 2010 under the leadership of archaeologist Dr. Nimal Perera. The excavation carried out complete reports of this up to the identification of the natural soil. That excavation's complete results have not yet been published. However, Dr. Nimal Perera, who spearheaded the excavation, released a study to a newspaper, and said that the evidence found here dated back to the 5th century AD and that was 1200 years before the arrival of the Portuguese in Jaffna (Pushparathnam 2021:14).

The third excavation was carried out in 2011, at the entrance area of the fort, near the present church, with a 10' × 6' × 2.5' (length, width, depth) pit with up to three layers of cultural soil till. Also found in the 3rd cultural crops were Chinese pottery tiles believed to date to between the 10th to 13th centuries AD, 300 years before the arrival of the Portuguese. Prof. Pushparathnam has mentioned that since the said excavation pit was not continuously excavated until the natural soil was identified, the archaeological evidence in that research pit could not be brought out (Pushparathnam 2021:13).
Then, a pit (size: 6' × 6' × 7' – length, width, depth) cut for toilet purposes near the building where the European soldiers stayed was excavated. Some objects were found there accidentally. It cannot be considered a formal excavation as the soil layers had already been disturbed. However, all the archaeological evidence found in this pit was confirmed to be pre-European.

During the excavation work carried out in 2010 (2015 for the conservation of Jaffna Fort), several artifacts were found accidentally. Among them was not only evidence of the European period, but also evidence of earlier periods, such as the Black and Red Ware of the Megalithic period, Chinese ware, Roman ware, Chinese coins, Chola Coins, Terracotta images, with Hindu temple building parts also being found there. Furthermore, it was decided to identify and rebuild the foundations of the war-torn Kruys Kerk Church inside of the fort as a step towards the reconstruction. Accordingly, under the project "Post-disaster Archaeological Investigation in Northern Sri Lanka" implemented by UNESCO, exploration and excavations were carried out under the leadership of the British archaeologist Prof. Robin Coningham in this area in late 2017. These works were carried out in collaboration with Durham University, the British Academy, and Jaffna University under the auspices of the Jaffna project of the Central Cultural Fund of Sri Lanka.

In late 2017, scientific exploration works and excavation works were carried out by this team in the area surrounding where the church ruins are located, using modern technology equipment (e.g. GPR: Ground Penetrating Radar Survey). Their research has confirmed the presence of Portuguese architectural remains under the soil in the ground where the church is located. Many artifacts have been recovered from the church remains and excavations in the church precincts, grounds, and the area near the building where the European soldiers stayed.

Nine different cultural soil layers were identified and their period was estimated to be around 700 BC. The Black & Red Ware of the Megalithic culture found here in the natural soil layer was estimated to date from between 700 BC and 100 AD, and the Gray ware was estimated to date from between 500 BC and 200 AD (Pushparathnam 2021:16). Through these examples, it is clear that 1500 years before the arrival of the Portuguese, the area where Jaffna Fort is located was an area with important

Table 2

No	Name of ware	Period (between)	
		BC	AD
1	Northern Black Polished - India	500-100	
3	Roman Rouletted	200	200
4	India: Tamil Nadu: Arikkamedu (Type 10)		
5	India: Tamil Nadu: Arikkamedu (Type 18)	300	200
6	Roman Arretine	100	100
7	Omphalos – Greek & Roman	200	100
8	Roman Amphora		
9	Indian Red Polished	100	800
10	White Slipped with Red Painted: Tamil Nadu, India, and Sri Lanka		600 - 1100
11	Applique		1200 - 1400
12	Sasanian Islamic: Iran & Iraq	200	700
13	Buff		400 - 800
14	Lustre		800 - 1000
15	Imitation Lustre		
16	White Tin – Glazed		
17	Lead – Glazed		
18	Xing Ding White		
19	Yue Green		
20	Green Splashed White		
21	Changsa Painted: China		800 - 900
22	Coarse Stone		700 - 1100
23	Chinese Porcelain		1400 - 1700

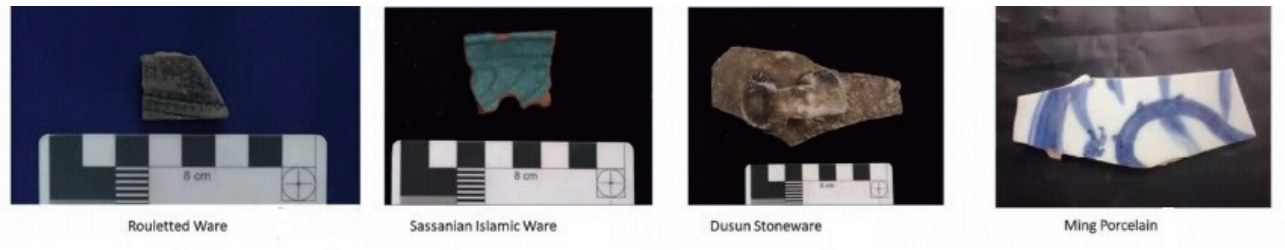


Figure : 20: Pot Shards found from excavation in 2017: Source : Central Cultural Fund, Jaffna (Dr.Prof.R.Coningham)

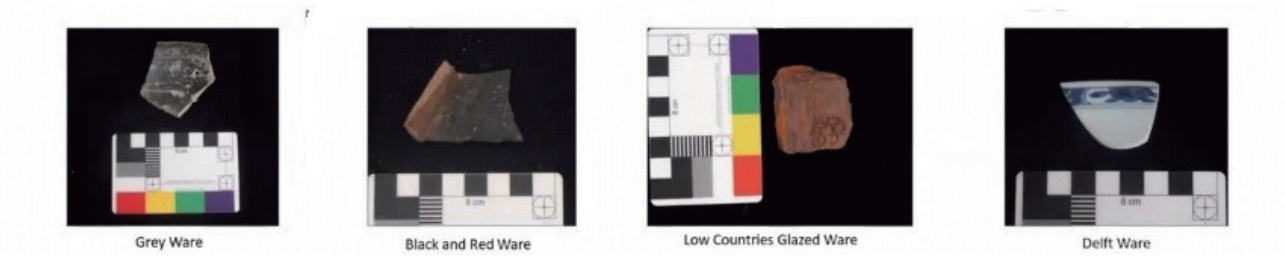


Fig. 20: Pot shards found from excavation in 2017; Source: C.C.F, Jaffna (Dr. R. Coningham)

settlements. And the international evidence found in the excavations here show that this fort area was a maritime trade centre since ancient times. Important potteries which were found in Jaffna Fort are shown in Table 2 & Fig. 20

Through these excavations, it is clear that the area where Jaffna Fort is located was a place with continuous historical settlements with international connections 1500 years before the arrival of the Portuguese. Already, it is noteworthy that pre-European evidence such as the Chola period Tamil inscription from the 11th century (Archaeological Museum, Jaffna) and Roman Era gold coins (Codrington, 1924 Essay reference) have been found in this region.

Conclusion

The reconstruction work of Jaffna Dutch Fort was undertaken as one of the works to preserve a legacy and pass it on to future generations. It is our duty to preserve and protect the heritage symbols of our territory without any discrimination on the basis of caste, language, race, or religion. It is easy to destroy legacy heritage symbols with high technology. But conservation is a very difficult task.

Moreover, there is a tradition of such symbols being erased by local people who regard European-Era heritage symbols as symbols of foreign slavery; however, the fort was built with European technology and artistic tradition with the construction and sculptural skills of local people. Therefore, credit goes to the European and the local people for building the fort in keeping with the local natural resources, nature and land structure, environment, and climate. The fort was built using the remains of materials used in buildings constructed before the arrival of the Europeans. This is evidenced by the artifacts and the building parts found during the reconstruction works.

A number of artifacts with domestic (local) and foreign connections have also been recovered from the site, including the Megalithic period's Black & Red ware (7th century BC to 3rd century AD) which corroborates the alleged history of trade depots at the site prior to the initial establishment of the Portuguese fort. Through these excavations, it is clear that the area where Jaffna Fort is located was a place with continuous historical settlements with international connections 1500 years before the arrival of the Portuguese. The history of Sri Lanka's Northern Region's remains looks similar, like smoky stained glass. There is a need for thorough excavations to be carried out through proper dating methods to discover the history of this region.

In this way, Jaffna Dutch Fort is the first heritage symbol to be conserved, especially after a long period of war, with the aim of creating awareness among the public about the heritage value of our country and its protection.

Sri Lanka

Conservation of Ancient Murals and Sculptures of Yatawatta Temple on Pillars (Tam pita Vihara) in Gampaha District of Sri Lanka

R. Nishanthi Ranasinghe, *Archaeological Research Officer*
Promotion Division, Department of Archaeology

Introduction

The primary responsibility of the Chemical Conservation Division of the Sri Lanka Department of Archaeology is to conserve image houses containing ancient murals and sculptures. Such ancient image houses with murals and sculptures, in varying numbers, can be found in every province in Sri Lanka. The types of image houses are identified according to the nature of their construction or architectural styles. Although these buildings connected with Buddhism are quite ancient, they could be considered living monuments used for worship by Buddhist devotees. It is noteworthy that, despite their age, the murals and sculptures inside the image houses still survive in good condition.

The Temples on Pillars (*Tampita Vihara*) represent a distinct form of Buddhist architecture prevalent across Sri Lanka. The main categories of image houses are cave temples, image houses, and temples on pillars. The cave temples are constructed by adding walls and a jutting roof to natural caves. An ordinary image house is always a building with walls and a roof constructed on a foundation. These are generally large image houses. The third type of image house is the square, wattle, and daub clay building, small in size, constructed on granite or wooden pillars, known as a Temple on Pillars (*Tampita Vihara*). Due to their manner of construction, Temples on Pillars are considered a special type of building, displaying unique characteristics in size, shape, murals, and sculptures. These Temples on Pillars can be traced back to the 17th, 18th, and 19th centuries AD. They can be considered art galleries made by Sri Lankan artists for the religious use of royalty as well as the common people. Painters, sculptors, carpenters, masons, smiths, stone masons, and pottery makers have contributed to the construction of Temples on Pillars.

Similar to the stupa (*dagoba*), Bodhi enclosure (*Bodhighara*) and monks' residence, the image house too was an essential part of an ancient temple. The image houses in the Anuradhapura and Polonnaruwa eras were not large, and the characteristics of such buildings could be seen in the image houses on pillars.

Typically, the image house consists of two parts, the Outer Chamber (*Vatamalaya*) and Inner Chamber (Athulmalaya). In most instances, the Outer Chamber (*Vatamalaya*) is constructed as a circumambulation passage to be used by the worshippers of the image in the Inner Chamber because the Inner Chamber has a very limited space. In addition, the drumming hall can be seen in front of the image house. Since the image house on pillars is located a certain height from ground level, wooden steps have been constructed to give access to the building. Some Temples on Pillars contain two storeys. To base the foundation of the main image house, stone pillars are planted on the ground and levelled, and thereafter wooden beams are laid horizontally on the pillars. The floor of the image house is made of wooden planks positioned on the beams.

The walls are constructed atop the planks using

Fig.1. Inside of the Temple on Pillars (*Yatawatta*)

traditional Sri Lankan methods. This was done with a wooden frame made of bamboo which was filled with a mixture made of rough sand, soil, and water. Next, the frame was completely covered with a plaster made of sieved sand and soil mixed with rice starch which was used as the binding material. Next, the walls were plastered with soft kaolin clay and followed by multiple layers of white clay (*Makulu clay*) or lime, which is considered as the paint receiving layer of the temple. The wattle and daub walls are made by first planting vertical wooden posts and tying horizontal strips of wood to the posts. Then the gaps between the posts and strips are filled with a mixture of clay and water. Both the inside and outside walls of the image house are plastered with a soft clay mixture and finished with a lime or kaolin (*Makulu clay*) plaster smoothened to a fine texture. This surface is painted with beautifully done murals, and sculptures too are made against it.

A circumambulation is constructed around the image house. It is surrounded by half walls. The roof of the image house has a four-sided roof, square or rectangular in shape and covered in flat tiles (*pethi-ulu*). Mainly, the image house has a single entrance, a wooden door elaborately carved. The door panels, too, contain paintings. On either side of the door there are two figures of guardians, either painted or sculptured. There are wall paintings and statues of gods and the Buddha. The wooden ceiling contains attractive paintings of lotus flowers.

Several factors can be identified as being instrumental in giving rise to the tradition of Temples on Pillars. Most of these temples are to be found in the wet zone of Sri Lanka. The design helps to protect the building from the environmental and climatic conditions. The height from the ground level and the stone pillars provide protection from termites and other insects.

Although the Temples on Pillars are small in size due to being constructed during a period of minimal royal patronage, still, the fact that they are placed at a level higher than the ground conveys a sense of grandeur.

The tradition of Temples on Pillars could be considered impressive despite the buildings being smaller and different from the tradition of temples in the Anuradhapura and Polonnaruwa eras (5th century CE and 12th century CE).

Yatawatta Temple, chosen for this research paper, belongs to the unique tradition of Temples on Pillars explained above. The murals and sculptures of *Yatawatta* Image House were conserved by the Chemical Conservation Division of the Department of Archaeology in 2012. The conservation team involved in this project was led by me and included four other members.

Objective

In 2012, after preliminary investigation, it was identified that *Yatawatta* Image House was facing deterioration. Accordingly, during the period of a month from October to November 2012, the Chemical Conservation Division of the Department conducted conservation activities using standard methods. This temple was given priority, taking into consideration the fact that it contained ancient murals and sculptures belonging to the Kandyan era (18th century CE), and also the aesthetic value of the wall paintings of the image house.

Several factors were identified in the image house and urgent measures were taken. The main objective of the project was to minimize the deteriorating conditions and increase the lifetime of the image house. Despite being an ancient temple, it has continued to exist up to the present time as a living monument subject to religious worship by the people of the villages, which contributed the importance in conserving it. Another unusual feature of

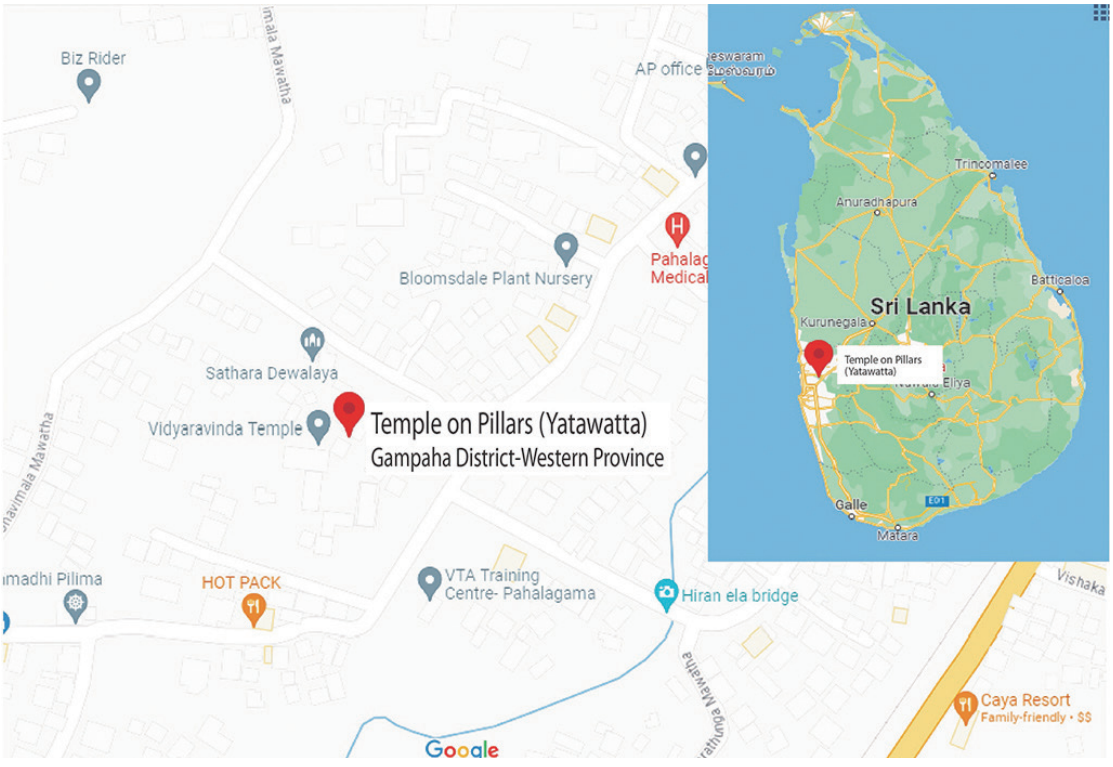


Fig. 2. Location Map

this image house is the location of the Shrine to the Gods (*Devalaya*) inside the image house itself, by sculpting the images of the gods there.

The principle aims of the project included the preservation of the image house as an archaeological heritage for future generations and for use of the researchers and university academics studying the tradition of Temples on Pillars.

Location

The temple is situated in the divisional secretariat of *Pahalagama* in the District of *Gampaha*, Western Province. The temple is approximately 35 km from *Colombo* city and 3 km from *Gampaha* town. This ancient Temple on Pillars is located within the premises of *Yatawatte Vidyaravinda Maha Pirivena Vihara* (*Yatawatta* School for Monks).

Historical Background

The temple was gazetted as an Archaeological Monument on 22nd November, 2002. The establishment of the temple runs as far back as the reign of King *Parakramabahu VI*. The king had instructed his ministers to conduct an investigation to find suitable locations to establish Buddhist temples in the *Gampaha* area (*Siyane Korale*). Accordingly, *Dadagamuwa, Godagedara, Ragama*, and *Yatawatta* were selected and King Parakramabahu VI had Buddhist temples constructed at these sites. Yatawatta Temple on Pillars is considered as one of the temples so established. However, with the passage of time, the temple had gone to ruin, and had been reconstructed under the leadership of *Walpola Sonuttara* Thero in 1861 AD, according to historical sources. In 1867, the ownership of the temple was granted to his brother monk by *Udugampola Sonuttara* Thero. Once again, the trusteeship of the temple passed to *Udugampola Indrasara* Thero in 1888.

It is mentioned that this temple was constructed using the stone pillars of an ancient shrine (*devale*) which had existed there. The wooden beams were obtained from Gampaha Botanical Gardens adjacent to Yatawatta village. Ceylon Ironwood (*mesua ferrea*) timber from the gardens was used for the construction. Although historical sources mention the existence of an ancient shrine (*devale*) on pillars at this site, at present only the Temple on Pillars survives. This can be identified as a Buddhist temple used for worship by the devotees of the area from ancient times to date.

Site Plan and Characteristics of the Temple

At the site where *Yatawatta* Temple on Pillars is located, a few other characteristics could be observed. Among these, the stupa, Bodhi enclosure (*Bodhighara*), preaching hall, chapter house (*uposathagharaya*), shrine (*devale*) and Residence of the Monks take precedence. The image house could be considered as middle-sized among the Temples on Pillars in Sri Lanka. The entire image house is constructed so that it is raised from the ground level on granite pillars. There are 30 such pillars here. The ground plan is rectangular: 450 cm in length

Fig.3. Main entrance of the temple complex

Fig.4. Side elevation of the Temple on Pillars with drumming hall

Fig.5. Front elevation of the image house

Fig.6.The wooden beams were made by Ceylon ironwood (*mesua ferrea*)

and 270 cm in width. There is a 60 cm circumambulation ledge around the image house, covered by a half wall. A subsequently constructed platform for drummers (drumming hall) is located in front of the temple. Between the stage and the image house there are two sets of stairs constructed of wood. The image house is divided into two main parts, the Outer Chamber (*Pitatha Malaya*) and the Inner Chamber (*Athul Malaya*). In addition to the main entrance, the Outer Chamber has two side entrances providing access to the circumambulation passage ledge. The Inner Chamber has a sculpted Dragon Arch (*Makara Torana*) located above the entrance.

Style of Murals and Sculptures in the Image House and Subject Matter

The murals in the image house show characteristics of the Kandyan period (18th century CE). There are murals in the ceilings and walls of the Outer Chamber and Inner Chamber. These paintings are done on panels, the wall is divided horizontally into several sections from the top to bottom, and the murals are painted from the left to right in each section.

There are several types of murals:

- Traditional floral decorative vine with flowers (*liyawel*)
- The 16 sacred sites
- Image of the God *Kataragama*
- Flowers in the images of stylized females (*narilatha*) flower designs
- Image of the God of Creations (*Vishvakarma*)
- Image of the god *Genebandara*
- Image of the Chief Incumbent of the temple at the time
- Images of Arhants bearing lotus flowers in hand
- Images of the chief disciples of Lord Buddha, Arhants Sariyut, and Mugalan
- Lotus flower designs on the ceiling

The following sculptures could be identified:

- Standing Buddha in Dhayana posture (*Dhyana mudra*) Buddha statue
- Dragon Arch (*Makara Torana*)
- Two guardian deities holding swords
- Statue of the god *Natha*
- Statue of the god *Vishnu*

The murals are coloured using the flat colour method. The human figures show partial characteristics. Red, yellow, blue, green, black, and white could be identified as the main colours. The colours black and white seem to be soluble in water.

Conservation Process

The conservation proceeded in several parts:

- Preliminary examination and site inspection
- Preparation of estimates and purchase of necessary equipment and goods
- Study of the decay conditions of the image house and preparation of a technical report containing remedial measures
- Afterwards, the conservation process commenced in the following manner:
  - Pre-conservation photography
  - Survey and preparation of plans of the image house
  - Sketching the murals on grid paper and reporting decay conditions by tracing the images using symbols (graphic documentation)
  - Written recording of murals and sculptures
  - Mechanical cleaning
  - Consolidating the weak parts of the colour layers
  - Chemical cleaning for removing soot
  - Filling and stabilizing the decayed parts of the plaster on the walls containing murals and sculptures
  - Restoring damaged parts of the colour layer by applying colours
  - Applying a protecting layer
  - Using chemical remedies for termite attacks
  - After conservation, establishing a notice board to signify the site as a conserved place
  - Educating the Chief Incumbent of the temple regarding the ordinary maintenance of the image house. This included attention paid to the controlling of sunlight from open doors and windows, and controlling the lighting of oil lamps and incense sticks
  - Monitoring of the site by our conservation team once every six months after the conservation

Beginning of the Conservation Process

Photographic Recording

Prior to the conservation process, walls were numbered and all data regarding the condition of the image house were photographed. Here, priority was given to the decayed condition of the murals and sculptures, and in addition, the front elevation, side elevation, foundation, roof, and other architectural aspects were photographed.

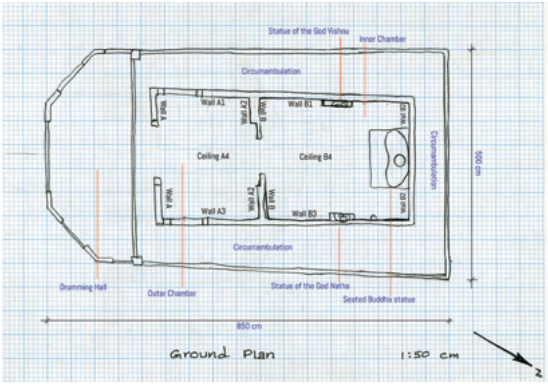


Fig.7. Plan of the Temple on Pillars

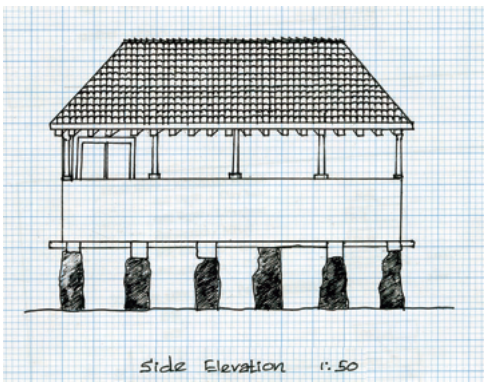


Fig.8. Side elevation (without drumming hall)

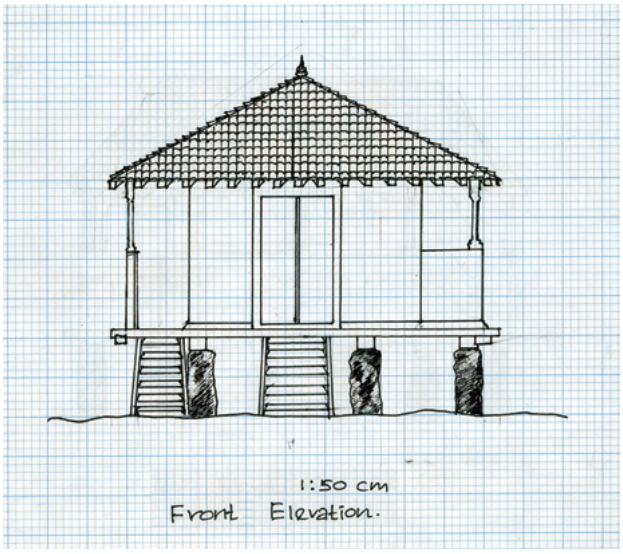


Fig.9. Front elevation

Drawing Plans

The image house was measured, and the ground plan, side, front elevation, and a cross section were drawn. In addition, plans of the walls and ceiling containing the murals and sculptures were prepared to scale.

Sketches of Murals and Sculptures, Reporting Decaying Conditions and Situation (Graphic Documentation).

Sketches of the murals and sculptures were drawn upon the plans of the walls done to scale, using grid sheets. All data of the murals and sculptures were included in these sketches. Thereafter, the decaying condition of the walls was documented, using standard symbols by tracing the sketches made on the grid paper onto tracing paper. Also, the places where the plaster has broken away from the wall were studied with the naked eye, and cross sections of the wall were made. At that point it was identified that the cross section consisted of several layers.

- Support: It is a wattle and daub wall using clay mortar. The materials used were identified as Caryota urens *(arecaceae)* (*Kitul palm in Sinhala*) timber and bamboo tree (*bambusa vulgaris*), sand, clay, and small gravel.
- Plaster Layer: This consists of sand and clay, and is finer in texture than the mortar of the supporting structure.
- Paint Receiving Layer: This is a very thin layer, made from finely powdered sand and lime.
- Paint Layer: Mainly, the colours red, black, white, yellow, blue, and green could be identified. The black and white are soluble in water.
- Protecting Layer: It was identified that a protective coating has been applied to the murals in certain places. The coating was assumed to be Polyvinyl Acetate (PVA).
- Wooden Ceiling: Upon the wooden planks a thin layer of lime plaster has been applied and the murals are painted on it.
- Sculptures: These are made using clay plaster with the main structure consisting of clay bricks and small pieces of gravel. Caryota Urens (*arecaceae*) (*kitul palm* in Sinhala) wood has been used for arms. All the sculptures are painted in various colours.

Fig.10. Graphic documentation (wall no. B2)

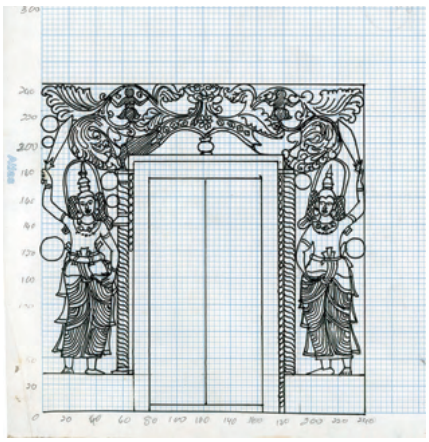


Fig.11. Graphic documentation (wall no. A2)

Identified Decaying Conditions

A number of decaying conditions were identified:

- On the surface of the paint layer, cobwebs and small nests of insects (wasp nests) were first observed. Also, carbon particles (soot) deposited on the paint layer as a result of the lighting of oil lamps and incense sticks over a long period of time was identified. The murals on the ceiling have suffered the most from the soot. The lotus flower designs on the ceiling were almost unrecognisable, being entirely covered with a layer of soot.
- A certain amount of flacking of the colour layer was observed. The weakening of the bond between the paint receiving layer and the paint layer was established as the reason for the flacking colour layer.
- In certain places the paint receiving layer has broken away. The bonding between the rendering layer and the paint receiving layer has weakened, and as a result the rendering layer was exposed in the places where the paint receiving layer had broken off.
- There were places where the bond between the support and the rendering layer had weakened, and parts of the wattle and daub were exposed where the plaster had fallen off.
- Some minor cracks could be observed on the walls. They ran from the top of the wall to the bottom.
- As another common decaying condition, it was identified that in certain places the paint layer had been entirely destroyed.
- There were many instances where pieces had broken off from the sculptures. The devotees were used to tying tokens, mostly coins in pieces of cloth, to the arms of statues of gods as part of the

Fig.12. Graphic documentation of the state of decay - wall no. B2

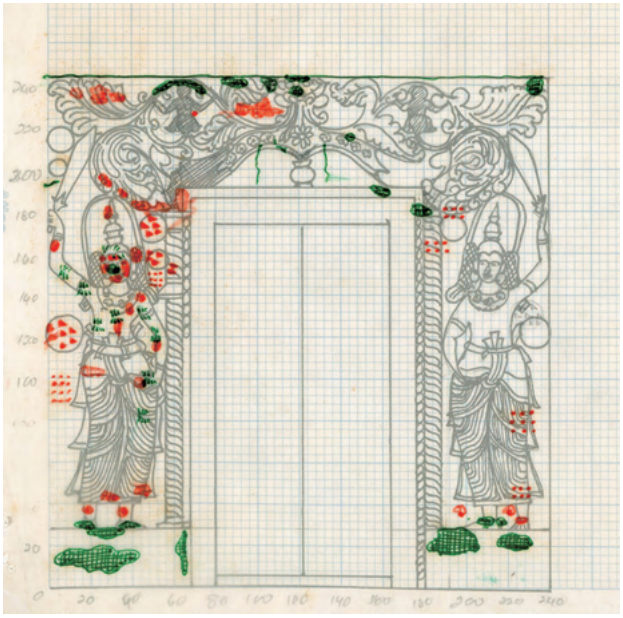


Fig.13. Graphic documentation of the state of decay - wall no. A2

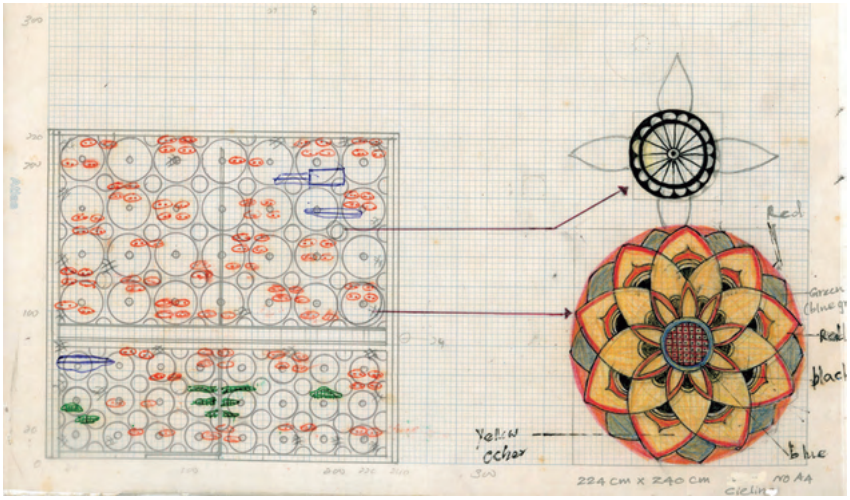


Fig.14. Graphic documentation of the state of decay - wooden ceiling no. A4

Fig.15. Wooden ceiling before chemical cleaning

Fig.16. Deep lacunae in the support (wall no. A)

ritual of making a vow. This practice had caused considerable damage to the hands and arms of the statues.

- The Dragon Arch (*Makara Torana*) contains a series of small sculptures, and parts of some had broken off.
- The damage by termites was observed both inside and outside the image house.
- The wooden floor of the image house had been subject to the risk of decay due to rainwater flowing in through the damaged sections of the roof.

Fig.17. Rendering plaster had broken off from the Dragon Arch (*Makara Torana*) - (wall no. A2)

Fig.19. Human abrasions

Fig.18.Before consolidation

Fig.20. Before cleaning - stone pillars and wooden beams - under the base of the image house

Remedial Conservation Measures Undertaken

The initial step in the conservation process involved the preparation of plaster. In this phase, the plaster structure of the walls of the image house was observed with the naked eye, and the raw materials used in the construction of the walls were identified. Accordingly, the clay obtained from ant hills, sand, lime, and small gravel were identified. The same materials were used in the preparation of the plaster for conservation. The strength of the plaster structure prepared was kept at a lower level than the original plaster. Two different types of plasters were made—rough plaster and soft plaster. The rough plaster was made of a mixture of clay and sand without grinding to fine powder at the ratio of 3 sand : 2 clay, with lime water as the bonding medium. The soft plaster sand and clay finely ground and sieved was mixed with lime water at the ratio of 2 fine sand : 1 fine lime, and water. The layer bearing colours was prepared at the ratio of 2 fine sand : 1 fine lime, and water. These types of plasters were prepared in the necessary quantities and kept in air-tight polythene bags for approximately four days to season, before use. To use for consolidation of the cracks in the walls, the soft plaster had to be made in liquid form (grout).

Prior to the commencement of the conservation, the roof of the image house was repaired with the contribution of the Chief Incumbent of the temple, under the supervision of the Architectural Conservation Division of the Department of Archaeology.

- First, the cobwebs and dust on the colour layer were mechanically cleaned off by the careful use of a brush with soft bristles. It was necessary to be very cautious in removing dust particles as flaking of the paint layer was observed in some places.
- After the mechanical cleaning, flacking of the paint layer was consolidated, using the chemical plexicum diluted in 2% xylene medium. The flacking places in the colour layer were glued and consolidated using an Apple brand No. 1 pointed brush.
- Thereafter, the chemical cleaning commenced. This method had to be employed in the removal of carbon particles deposited on the surface of the ceiling murals. A mixture of 5% ammonium hydroxide in water was applied by cotton buds to remove the layers of soot,

by wiping softly in a circular motion. Here, a deep cleaning process was not used, and care was taken not to remove the patina on the ancient paint layer. Thereafter, cotton buds soaked in distilled water were used to very carefully wipe the remaining chemicals off the colour layer. The murals became clearly visible after the layer of carbon particles was cleaned off the surface. A 6-square-foot section of the ceiling murals was not cleaned and left intact for research by future conservationists.

- Consolidation of rendering layers: The deep lacunae were consolidated first by using the coarse plaster and then the fine plaster mixture. The paint receiving layer was applied thereafter. This process was undertaken layer by layer. Only after one layer had been consolidated and dried well could the work on the next layer commence.
- In consolidating the cracks in the walls, water mixed with 2% ethyl alcohol solution was injected by syringe and the cracked area was well hydrated prior to injecting the plaster mixture (grout). Using a syringe, the plaster mixture was injected several times inside the cracks. A limited quantity of the grout was injected at a time and only after it had solidified could the process be repeated.
- The wasp nests on the colour layer were removed without any damage to the colours after moistening the nests with a solution of 2% ethyl alcohol in water.
- Consolidating broken plaster on sculptures: The plaster was used to consolidate the places where pieces of plaster were missing in the Dragon Arch (*Makara Torana*) above the entrance to the inner sanctum. Repairing the damage to small sculptures there involved a rather complex process. The damaged sections of the Buddha statue facing the main entrance to the inner sanctum and its seat were consolidated using plaster. It was discovered that cement had been used to repair the arms of the statues of the gods *Natha* and *Vishnu*. This plaster had to be carefully removed before consolidating the damaged parts with the prepared mixture of clay plaster.
- After consolidating the walls and sculptures, the reintegration of damaged parts of murals and sculptures was undertaken using water colour medium. For the reintegration of murals, the aqueouspoke technique was employed.
- The plexicum 2% xylene solution was applied as a protective coating by a flat brush with fine bristles only in the places where the murals faced the danger of flacking off or decaying to powder.
- As the final stage of conservation, chemicals were used on the places damaged by termites

Fig.21. Preparation of clay plaster

Fig.22. Preparation of paint receiving plaster

Fig.23. Chemical cleaning for removing soot. (Wooden ceiling no. 4)

Fig.24. After chemical cleaning (wooden ceiling)

Fig.25. During consolidation of the Dragon Arch (*Makara Torana*) by using clay plaster

Fig.26. During consolidation of the Dragon Arch (*Makara Torana*) by using lime plaster

Fig.27. After consolidation and reintegration

Fig.28. After conservation (1)

Fig.29. During conservation

Fig.30. After conservation (2)

Fig.31. After conservation (3)

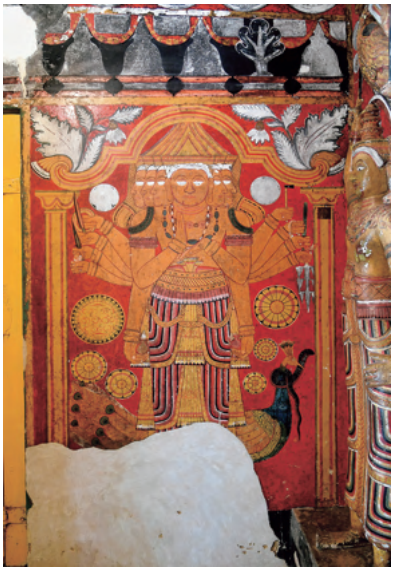


Fig.32. After conservation (4)

Fig.33. After conservation (5)

Fig.34. During reintegration

Fig.35. After cleaning under the Temple on Pillars

inside and outside the image house. 2% Phyrenex mixed in water was injected by syringe to the areas. This treatment continued once every three months until the termite damage was minimized.

Conclusion

The Temple on Pillars (*Tampita Vihara*) stands as a unique hallmark of the Sri Lankan temple tradition. Therefore, the preservation of *Yatawatta* Temple on Pillars stands as a testament to the commitment of the Chemical Conservation Division to safeguarding Sri Lanka's cultural heritage. Temples on Pillars are found scattered all over the country and some are in danger of decay and destruction. The conservation of one such decayed temple, the ancient image house on pillars at *Yatawatta*, was successfully completed in 2012, and follow up inspections are conducted periodically.

Throughout this conservation process, all materials and chemicals in this conservation were utilized with minimum interference. Great care was taken to employ conservation methods according to the rules and regulations of the Venice Convention. The plaster used for repairs was made at a lower strength than the existing original plaster. The raw materials of the plaster and the water colours for the reintegration of murals were used in a manner that would facilitate reversibility if necessary. Photographs were taken methodically before, during, and after the conservation process. A final conservation report containing all the data was prepared for reference for future conservationists, researchers, and university students.

The murals and sculptures within the *Yatawatta* Image House vividly portray the distinctive characteristics of the Kandyan style, a significant facet of Sri Lankan mural traditions. Additionally, the image house boasts numerous architectural and archaeological features of great value. The intention of our conservation team at *Yatawatta* Ancient Temple on Pillars (*Tampita Vihara*) was to enhance the longevity of the image house by minimizing the deteriorating factors affecting this monument, which possesses considerable archaeological, architectural, and aesthetic value. The final result of our conservation process is expected to be the preservation of this archaeological heritage for the future generations of the country and to protect it as a living monument treasured and revered by the populace from ancient times.

Acknowledgements:

Our team members of the mural painting conservation project: Mr. Wasantha Wijerathne, Mr. Amila Jayasundara, Mr. Dammith Anura Franando, and Mr. R. Aloka Bandara
Photographs: Mr. Arjuna Samaraweera - Reprographer, Department of Archaeology
Scale drawings and plans: R. Nishanthi Ranasinghe

References:

1. Coomaraswamy, A. K. (1908). *Mediaeval Sinhalese Art.*

United States of America Reprinted at States Printing Corporation, Sri Lanka.
2. Karunarathne, L. K. (1971 January). *Ancient Ceylon No. 1 Architecture in Wood*. Department of Archaeology, Colombo7, Ceylon.
3. Mora, P. Mora, L. (1984). *Conservation of Wall Paintings*. Blantyre Printing and Binding Co. Ltd, Glasgow, Scotland.
4. Wejesekara, N. (Editor-in-chief). (1990). *Painting-Archaeological Department Century (1890-1990) Commemorative Series*. State Printing Corporation, Sri Lanka.
5. (*1999*). *Sri Lankawe Tampita Vihara Sampradaya (Sinhala medium)* (Temple on Pillars tradition in Sri Lanka). Department of Archaeology. Colombo7, Ceylon.
6. (*1999*). *Gampaha Disthrikkaye Samaja Sanskruthika Adhyanaya (Sinhala medium)* (Gampaha District Socio Cultural Studies). Department of Cultural Affairs, Sridevi Printers Pvt Ltd, Colombo 5, Ceylon.
7. Agrawal, O. P., Wickramasinghe, N. A. (2002). Materials and Techniques of Ancient Wall Paintings of Sri Lanka. Sundeep Prakashan, New Delhi, India.
8. Wijayawardane, K. (2010). *Sri Lankawe Tampita Vihara (Sinhala medium)* (Temple on Pillars Tradition in Sri Lanka), Dayawansa Jayakodi and Company, Colombo 10, Ceylon.

Uzbekistan

The Practical Experience of Conservation of Museum Exhibits During Touring Exhibitions

Dr. Akmal Ulmasov, *Head of Department "Unique Objects" PhD,*
Fine Arts Institute, Uzbekistan Academy of Sciences

Introduction

As a rule, before visiting exhibitions, selected museum exhibits are subject to preventive conservation. And, if necessary, some of them are restored. This practice has been carried out in many restoration laboratories of museums and scientific institutions in Uzbekistan. The author of this report, as a restorer, has been directly involved in the work related to exhibitions. This report briefly outlines the process of practical work on museum exhibits when organizing two major outside exhibitions.[1]

Touring exhibitions

The first exhibition was held at the Louvre Museum in Paris from last autumn to this spring. The exhibition, entitled "The Splendours of Uzbekistan's Oases: at the Crossroads of the Caravan Routes," was dedicated to the theme of the Great Silk Road, which in ancient times passed through many cities of Central Asia, including Uzbekistan. About 170 exhibits were shown at the exhibition, most of which were selected from major museums and collections of scientific institutions of the Republic. In addition, some exhibits were brought from the Louvre Museum itself and other museums in France, from the British Museum, from the Cleveland Museum (USA), etc. (Fig. 1 a).

More than ten of the most remarkable museum exhibits from the archaeological collection of the Fine Arts Institute were part of this exhibition. Among them are monumental clay and *ganch*[2] sculptures of Buddha and Bodhisattva, the head of a Kushan prince and a Devata with a necklace, an ivory comb from the settlement of Dalverzintepa (1st to 3rd centuries AD); a statue of the Ruler, the head of a warrior and a terracotta medallion from the early Kushan site Khalchayan (1st century BC to 1st century AD); bone belt plates with engraved images from the Orlat burial ground, etc.

It should be recognized that the "Dalverzintepa gold treasure" was one of the most impressive and amazing exhibits in the Louvre exhibition. It weighs about 36 kg and consists of 115 pieces. For this and the next exhibition, the most unique of them were selected, among them rectangular bullion with an ancient Kharoshti inscription, a pectoral with the image of Hercules, a necklace inlaid with precious stones, and much more. It is important to note that these unique masterpieces were exhibited outside of Uzbekistan for the first time.

The second exhibition opened on Museum Island, Berlin (Germany) in the middle of this year and will last until the beginning of next year. The exhibition is called "Archaeological Treasures of Uzbekistan from Alexander the Great to the Kushan Empire." It presents archaeological finds that cover the period from the arrival of Alexander the Great in the second half of the 4th century BC until the end of Kushan rule in the 4th century AD. The exhibition presents about 300 exhibits from different museums of Uzbekistan, of which more than a hundred belong to the Institute (Fig. 1 b).

At this exhibition, judging by the subject matter, those exhibits that are presented in the Louvre have been selected first of all. Clay-ganch sculptures, terracotta figurines from Dalverzintepa and Khalchayan, ceramic and bone objects, and samples of ancient inscriptions on shards were added to them. Also, for the first time, this exhibition presents new coins from the Hellenistic fortress of Uzundara (in the south of Uzbekistan), which date back to the middle of the 4th century BC to the 1st century AD. These coins depict portraits of emperors and kings who ruled various state associations. For example, on two coins you can see portraits of Alexander the Great III; on others, Antiochus, Diodotus, Euthydemus,

Fig. 1 a, b. Exhibition posters: at the Louvre Museum and the James Simon Gallery (source: https://gk-usbekistan.de, "Daryo" / Madina Nurman https://daryo.uz/en)

[1] The Exhibitions were organized by the Art and Culture Development Foundation of Uzbekistan.

[2] Ganch (local variety of gypsum) – a binder, artificial or (rarely) natural mixture of gypsum (from 30% to 60% calcium sulfate dihydrate $CaSO_4 \cdot 2H_2O$) and from 40% to 70% small clay particles.

Demetrius, Eucratides, Heliocles, and other Seleucid and Greco-Bactrian basileus. A large number of exhibits are occupied by bronze arrowheads of the 4th to 3rd centuries BC from the Uzundara site. In addition, new unique finds are involved from Uzundara, such as fragments of ceramic vessels with moldings of human figures and floral ornaments, flasks for water, and a fragment of the cheek piece of a pseudo-Attic helmet, etc.

At both exhibitions, in addition to exhibits of the institute, unique objects of culture and art from other museums of the republic have been exhibited for the first time. Among them a stone statue depicting two snakes of the Bronze Age, a stone sculpture of the Kushan period from the Buddhist monument Fayaz-tepa, which depicts Buddha with two monks, the famous early medieval wall painting from Afrasiab, a wooden carved door of the mausoleum of Emir Timur, and many unique exhibits of the Timurid period. For both exhibitions were published special colorful catalogs/albums. They contain annotations on the subject of the exhibition, a brief description of archaeological sites and explanations of the finds. The texts are written mainly by local scholars and also by scholars from France, Germany, and other countries.

Preparation for exhibitions

The presence of a large number of exhibits from the Institute at both exhibitions attracted the special attention of the organizers for their preparation. First, the curators and specialists got acquainted with the museum exhibits related to the themes of the exhibitions and they selected the most expressive items. After the list of exhibits was approved, a bilateral agreement was signed, which specifies all details of the organization of the exhibitions. Researchers and restorers presenting the exhibits examined the selected objects and compiled a "condition report." In addition, various documents were drawn up, including insurance policies, a list of exhibits, which indicated their dimensions, weight, and other information (Fig. 2 a, b).

Packing and unpacking, and assembling and dismantling of the exhibits were carried out by professionals from specialized companies that have extensive experience in the field of exhibition preparation. For the packing of each exhibit, the properties of the materials from which they are made, their dimensions, strength, and other features were taken into account. For all the exhibits, special wooden boxes of different sizes were made. The transportation of exhibits was also well organized: for the land route between the museum and the airport, the exhibits were conveyed on special trucks; they were then transported by plane to the country hosting the exhibition. It should be noted that, according to the contract, in all procedures, in particular from packing to unpacking, during the flight, and during customs procedures, responsible persons from both sides were present without fail (Fig. 3 a).

At both exhibitions, there is an individual approach to the installation of exhibits. For example, special metal fixtures were made to attach a monumental sculpture of a Bodhisattva to a wall, and special pedestals, podiums, or metal frames were made for some objects. All these necessary things were specially made in the workshops and laboratories of the Louvre Museum. We must also mention the designers and artists, technical specialists who installed lighting fixtures, and many others (Fig. 3 b).

Conservation and Restoration works

Due to the different sizes and dimensions of the exhibits and the short time before the exhibition, several groups of restorers were invited from the exhibiting countries. Among the exhibits subjected to conservation and restoration, monumental clay-stucco sculptures took a lot of time to prepare because most of them are large (for example, the Bodhisattva statue reaches a height of more than 2 meters). Moreover, they have not been restored for many years. In addition, the sculptures were prepared not only for transportation, but also for installation according to special conditions (for example, one directly on the wall, another on a pedestal, and so on).

The restored sculptures also included the head of a Buddha and a Bodhisattva, the head of a Kushan prince, a statue of a ruler, the head of a Devata, the head of a warrior, etc. Clay sculptures have been found at archaeological sites such as Khalchayan (1st century BC to 1st century AD) and Dalverzintepa (1st to 3rd centuries AD), located in the south of Uzbekistan (Fig. 4 a, b).

The surfaces of almost all clay-gypsum sculptures and their fragments were cleaned with a cotton swab moistened with acetone. This solvent can dissolve the polymer resin of poly butyl methacrylate (PBMA) and partially remove this dusty resin film. If necessary, cracks

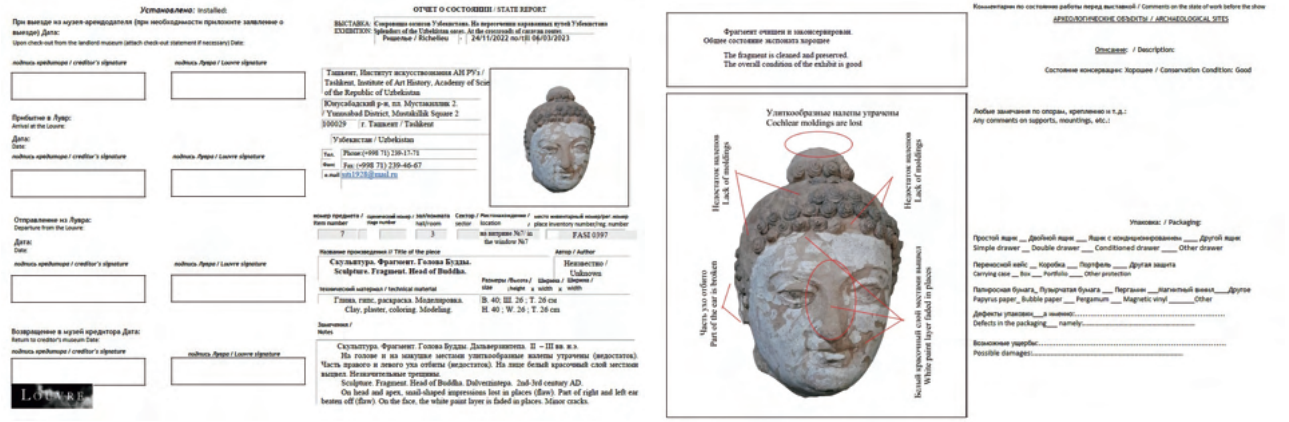


Fig. 2 a, b. Example of a condition report for exibits

Fig. 3 a, b. Packing and installation of Exibits (photo by author)

Fig. 4 a, b. Process of treatment of exibits before exhibitions: at the laboratories of the Fine Arts Institute and James Simon Gallery

Fig. 5 a, b. Preparing the Bodhisattva statue for the exhibition

were sealed and powder coated with 7% Primal E330 in ethanol. The cracks were filled with sifted marble powder, pigment, and 30% Plextol B500 in water. The restored areas were chromatically reintegrated with Winsor & Newton watercolors.

When installed on one of the monumental sculptures, a kind of handicraft was carried out. The fact is that the head and torso of this sculpture, that is, the Bodhisattva, were found separated during excavations, and for ease of transportation, they were left in this form. Before the exhibition, in agreement with the experts, the neck was slightly raised to make the head more vertical. After the statue was put on display, the horizontal gap between the head and neck was filled with special mastic (a 50% solution of water-based Flextol glue in water and sand powder). Backfilling was carried out in two stages: first, the pits were filled with an adhesive mixture, and then the covered surface was leveled with a soil mixture (Fig. 5 a, b).

The collection also includes bone items, including combs, chess pieces, and belt buckles. On two surfaces near one crest, a female head and a bird are depicted. And, on the second ridge of the image, a scene is carved with the participation of the queen in the palace and an elephant. The chess pieces, which are carved from ivory, represent the Indian elephant and the humpbacked zebu bull. Two other bone artifacts are male belt buckles, probably belonging to high military official. On their obverse flat surface, a hunting scene and a battle scene are depicted in the technique of fine and high-quality plastic engraving. Among the restored items were also ceramics, metal and glassware, fragments of wall paintings, etc.

As part of the exhibition, a group of French and German restorers took part in the preventive conservation and restoration of the exhibited items, as well as preparation for the exposition, in the largest museums and restoration laboratories of scientific institutions in Uzbekistan. In particular, the French restorers headed by A. Liegey restored clay-stucco sculptures; D. Elie-Lefebvre processed the bone products of an elephant and other animals. The German restorers S. Krebstakies and R. Froelich worked on the archaeological items that were selected for the exhibition in Berlin. Among the restored objects were mainly ceramic vessels, fragments of sculpture, bone objects, coins, arrowheads, and other metal objects. It should be noted that local specialists actively participated in the restoration work. They comprehensively helped their foreign colleagues and at the same time gained a lot of experience and skills (Fig. 6 a).

Another French restorer, C. Pariselle, carried out work on the conservation of metal objects, among the selected museum items for exhibition at the Louvre. In particular, she conserved a bronze mortar of the 11th century from the archaeological collection of the institute. First of all, the dimensions, weight, raw materials, and physical condition of the exhibit were determined. Rust, debris, and dust on the surface of the product were removed mechanically with cotton wool using solvents. Remains of corrosion and deposits inside the pores were mechanically cleaned using soft rotating brushes mounted on a micromotor. The hardest shells were removed with a scalpel and bur. The inner surface of the mortar was only lightly cleaned with a brush so that traces of use from the time of its manufacture would not disappear. On the outer surface of the mark, deposits from the pits were removed with a scalpel.

Among the French restorers, Geraldine Frey, who has been collaborating with scientific institutions in Uzbekistan for many years, should be especially noted. G. Frey mainly specializes in the restoration and conservation of ancient and early medieval wall paintings and frescoes. She and her colleague actively participated in the preparation of museum objects for the exhibition and successfully carried out preventive conservation of wall paintings from early medieval archaeological sites such as Afrasiab, Balalyk-tepa, and Akchakhan-kala. In these works, they were assisted by the chemist-restorer M. Reutova, a local specialist with extensive experience in the conservation of ancient wall paintings and other archaeological items. In addition to conservation, they actively participated in the installation and dismantling of murals (Fig. 6 b).

Conclusion

These exhibitions gave me, as well as other local restorers, great experience and many new skills. Those specialists who participated in the restoration and packing

Fig. 6 a, b. Restorers during the work process
(Source: 6a: Author, 6b: https://www.facebook.com/termizarxeologiyamuzeyi)

mastered new technologies, and got acquainted with new restoration materials and preventive conservation techniques. As suggestions, I would like to say that within the framework of such international exhibitions, it would be useful to send young museum employees and restorers to museums and restoration laboratories. Or, invite professional specialists from museums and scientific institutions, where they have accumulated a great deal of experience, and organize training and master classes. Firstly, such events stimulate the local specialists, and give them the opportunity to learn new technical skills. Secondly, the events strengthen intercultural relations between Uzbekistan and other countries.

As a result, we can say that, in general, the first exhibition was successful and set a record for attendance. That is, the exhibition was visited by about 300,000 visitors, most of whom were foreign tourists. These exhibitions are of historical significance in terms of intercultural cooperation between Uzbekistan and European countries, and will acquaint history and art lovers from all over the world, foreign tourists, and local residents with the rich history, culture, and art of Uzbekistan. Most importantly, given the large number of visitors to the Louvre and Berlin museums from other regions besides Europe, it can be said that these exhibitions play an important role in introducing Uzbekistan to the world community. In this way, we hope to increase interest in our country and, ultimately, stimulate the development of the tourism industry.

Published by
Cultural Heritage Protection Cooperation Office,
Asia-Pacific Cultural Centre for UNESCO (ACCU)
437-3 Somanouchi-cho, Tenri, 632-0032 Japan
Tel : +81-743-69-5010
Fax: +81-743-69-5021
E-mail: nara@accu.or.jp
URL: https://www.nara.accu.or.jp

公益財団法人　ユネスコ･アジア文化センター
文化遺産保護協力事務所

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