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The Twentieth 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 nine reports submitted by international correspondents in the Asia-Pacific region.

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Mangalkot: A Significant Archaeological Site of Bangladesh

Mst. Naheed Sultana, *Regional Director*
Department of Archaeology, Ministry of Cultural Affairs

Mahasthangarh (the ancient capital city of Pundranagara) is situated in the village of Mahasthan, 12 km north of Bogra town and on the western side of the Karatoya River and to the north of the Dhaka-Rangpur highway. It is surrounded by the Karatoya River to the east and a moat on the other three sides. The massive mud and brick-built citadel measures about 1500 m N-S and 1350 m E-W and has an average height of 5 m from the surrounding level. The ancient archaeological site Mangalkot (24°57'23"N 89°19'37"E) is situated at the northern end of the village Palibari under Namuja union of Bogra Sadar *Upazila*. It is about 1.25 km west of the ancient Pundranagara or Mahasthan citadel. The other three sides are surrounded by a *bil* (marshland) known as Likara *bil*. The site measures about 70 m N-S and 30 m E-W (0.21 hectare), with a height of 5 m.

This mound was largely destroyed by miscreants in 1974. Subsequently, the Department of Archaeology conducted an archaeological excavation in 1981 and it was continued

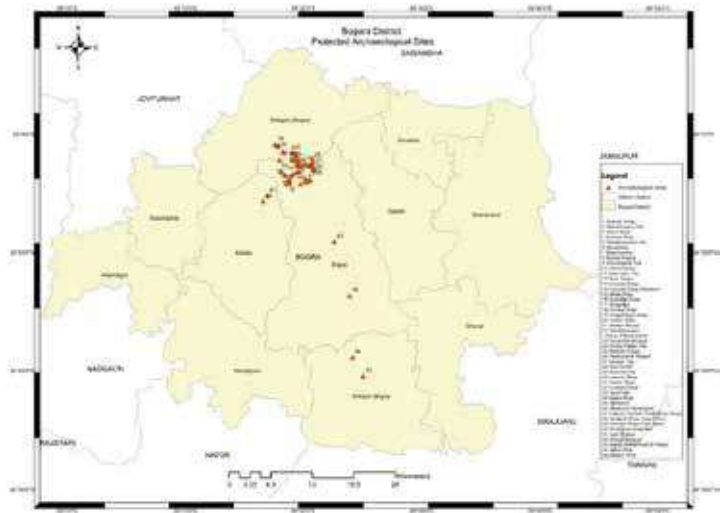
over the next three years under the supervision of Md. Shafiqul Alam and other scholars. The ruins of two important temples have been discovered from the excavations and nearly 1000 large-sized broken terracotta sculptures, ornamental bricks, stone beads and terracotta oil lamps etc. have been collected from the deposited cultural accumulation.

Of the two unveiled temples, the main prayer chamber of the larger temple is approximately square in shape and the measurement of its *Garvagriha* (main prayer chamber) is 4.3 m (N-S) and 3.8 m (E-W). The *Garvagriha* is enclosed by the north, south and west walls. The eastern wall has not been traced at the excavation.

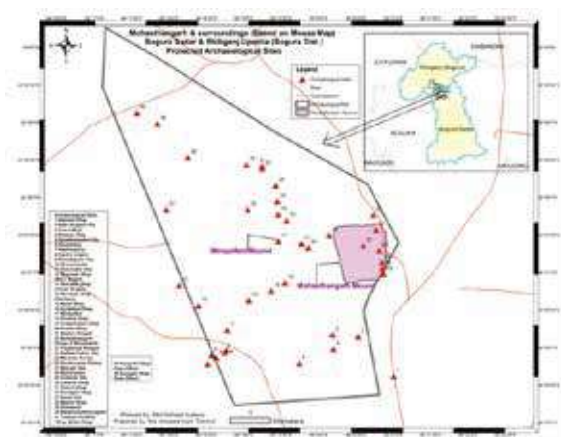
The measurement of the *Garvagriha* of another temple is 5.02 m (N-S)×5 m (E-W). It is surrounded by two layers of brick walls which were built 1 m away from each other. One meter-wide spaces were used as circumambulatory passages for the temple. From the excavation, 16 building



The Bogra district shown on a map of Bangladesh



Archaeological sites of the Bogra district



Mangalkot and Pundranagara with other sites



The ancient archaeological site Mangalkot

levels have been traced, of which four are major of them. The foundation of this temple includes a number of large-sized terracotta sculptures which were unearthed. Moreover, a 24 meter-long and 1.4 meter-wide brick wall on the edge of an ancient road was discovered to the south of the site and another square-sized room was also unveiled. Every arm of the sculptures is 1.8 m long and some separate walls were built on the huge number of deposited broken terracotta sculptures. It is very difficult to provide a proper explanation of this kind of exclusive and significant occurrence. This special type of arrangement was probably used for sacred purposes and for this reason these early period sculptures were preserved underneath the foundation of a later period construction. Of the 16 building levels, most of the terracotta sculptures and other antiquities were recovered from layer 9-11. Of the broken female and male sculptures, various types of animals were also discovered.

The existence of a huge number of terracotta sculptures in a small space of the temple area is surprising. The sculptures were collected from the eastern part of the mound. It is usually flooded in the rainy season and damp conditions exist for the remainder of the year. So, the recovered sculptures were found in a very bad condition during the excavations. Among the sculptures, enormous female heads with serpent hoods are noteworthy. In addition, different parts of bodies, legs and upper parts of figures have also been unearthed. The insides of the sculptures are hollow and empty. Each head features one or several serpent hoods, which is very significant.

Serpent hoods are found on the Nag Goddess of Hinduism as well as on the head of the Jangulee Goddess of Buddhism. Basically, the worship of Nag Devi was conventional practice of the non-Aryans. Subsequently, the Aryans received some religious practices from non-Aryans. This type of worship is one of them. The worship of Manasa Devi was very famous in Bengal from the 8th century CE. Most of the sculptures with serpent hoods are female figures. Indeed, a few male figures have crowns on their heads. The general features of these male and female sculptures are beautiful faces, broad eyes, thin and tall

noses, developed cheeks and thick lips. Besides, the very beautiful face of the female sculptures and well-developed breasts, and the beauty of other organs are very compatible and indicative of the developed art and culture of Bengal. The sculptures are seated on a half circle, rectangular or square pedestal and one leg is folded on the seat and other is seen hanging. The sculptures are depicted holding fruit in one hand and a bird in the other. Their hairstyles are of different types and very nicely decorated, and ornaments include air rings, necklaces, bangles and waist ornaments.

These special types of terracotta sculptures are not found at any other archaeological site in Bangladesh. Yet the developed bodies and ornamentation of these sculptures are comparable with North Indian culture. This sort of aesthetic culture was created in the later period of the Gupta Empire, between 320 and 550 C.E.

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** The maps were prepared by Md. Abusaid Inam Tanvirul, Custodian, Rangpur Tajhat Palace Museum, Department of Archaeology.



Broken terracotta figures recovered from Mangolkot



Terracotta heads recovered from Mangolkot



Terracotta heads recovered from Mangolkot



Broken terracotta figures recovered from Mangolkot



The Emergency Conservation of Octagonal Towers in Prasat Yeay Poan, Sambor Prei Kuk Archaeological Site

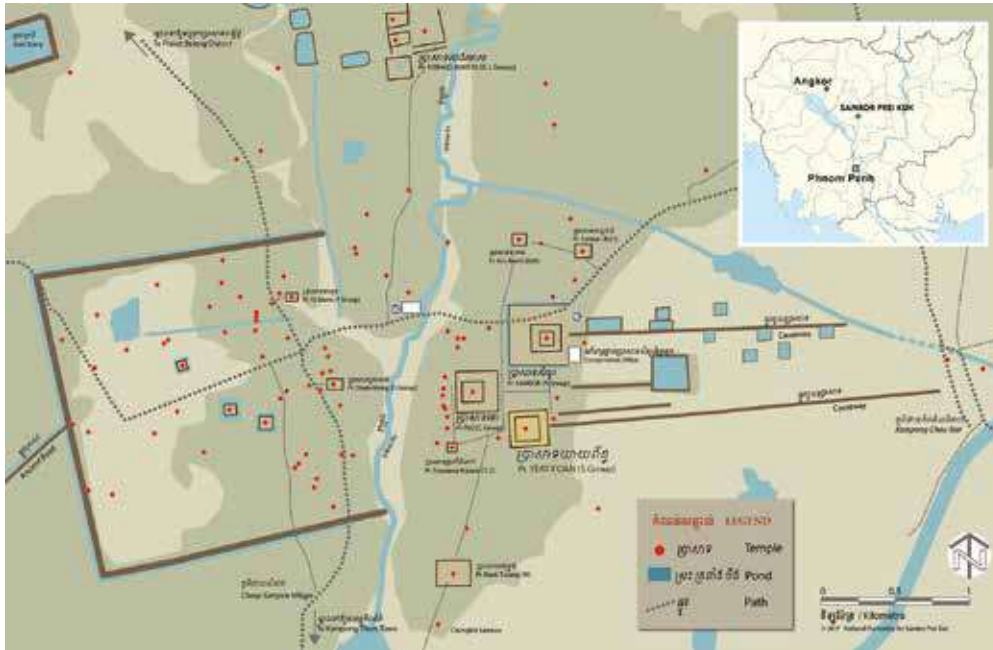
Vitharong Chan, *Director*

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

1. Introduction

Sambor Prei Kuk assumes unique importance in Khmer and Southeast Asian architectural history, as well as having a special place in the global history of architecture. The surviving octagonal temples, which are a distinct adaptation with an Indian influence, introduces and translates itself in

to new aesthetic forms that were manifested at the end of the 6th to early 7th centuries CE, known by the nomenclature as “Sambor Prei Kuk Style.” The site is a major Shivaite complex in the early of the Chenla Dynasty (early 7th century). Sambor Prei Kuk was designated as a World Heritage Site on 8th July 2017.



The map of Sambor Prei Kuk Archaeological Site.

2. Past Actions

In the early 1990s, the Ministry of Culture and Fine Arts (MCFA) began clearance activities in this Group with some preventive actions such as filling in the illegally excavated central area in each tower. In addition, the Sambor Prei Kuk Conservation Project (cooperation between MCFA and Waseda University) took conservation measures for the interior pedestal arrangement within S1 and S2 towers, and S17-1 mandala.

Since 2000, the MCFA and the newly-formed National Authority of Sambor Prei Kuk (NASPK) have monitored and provided rudimentary emergency support for these five octagonal towers, and for S2 tower after it collapsed (see *Report* vol. 13/2014: 8-9). However, there is still the unknown but obvious danger of degradation and collapse, at which time they will become just a footnote in history. Due to the risks associated with the towers and their global outstanding universal value, this proposed project is a vital step in preserving cultural heritage from danger and for the enjoyment of future generations.

Very recently, the MCFA implemented much needed emergency projects for some brick temples in the south of Cambodia and Sambor Prei Kuk (see *Reports* vol. 16/2016:

5-8 & vol. 17/2017: 8-14). However, this is still a very limited number of works compared to the number of temples which are in danger in Cambodia, particularly in Sambor Prei Kuk.

3. Aim of Project

This project will comprise an intervention for five octagonal towers and their artwork in Prasat Yeay Poan (known as the Southern Group) as part of a much larger protection, conservation, and restoration effort. In terms of the sustainability of conservation, this project is significant for the future. The project will introduce the opportunity to educate the next generation of restoration specialists and conservation scientists under the direct supervision of specialists. This initiative will provide on-site practical experience. It is intended that the project participants will gain a more comprehensive understanding of ancient Khmer construction techniques and materials through on-site research and restoration of these towers and artwork without compromising authenticity, enhancing sustainable development of the communities surrounding the site, and educational outreach. This project has been planned and will be implemented by the Department of Site, Archaeology and Conservation of NASPK.

A. Conservation of S11 Tower

The S11 tower is an octagonal tower where conservation activities by NASPK are currently (2018) in progress. In 2006, the MCFA team installed a temporary cabling harness to reinforce the cracked wall structure. After monitoring the structure, in 2011, MCFA decided to enhance the supported structure with a roof covering. The lessons learned and elements that have been identified as risks of varying degree will be applied to the emergency conservation of other towers and used to base conservation requirements on. As new risks are identified they will be prioritized and incorporated into the project plan of each tower. Conservation efforts based on current risk analysis knowledge may include wire restraints, and wooden propping, shoring and bracing. This is the first in a series of interim actions to ensure temple longevity. The technical team will evaluate the risks of each temple in advance before starting the data survey and risk mapping.

B. Preservation of Wall Decorations

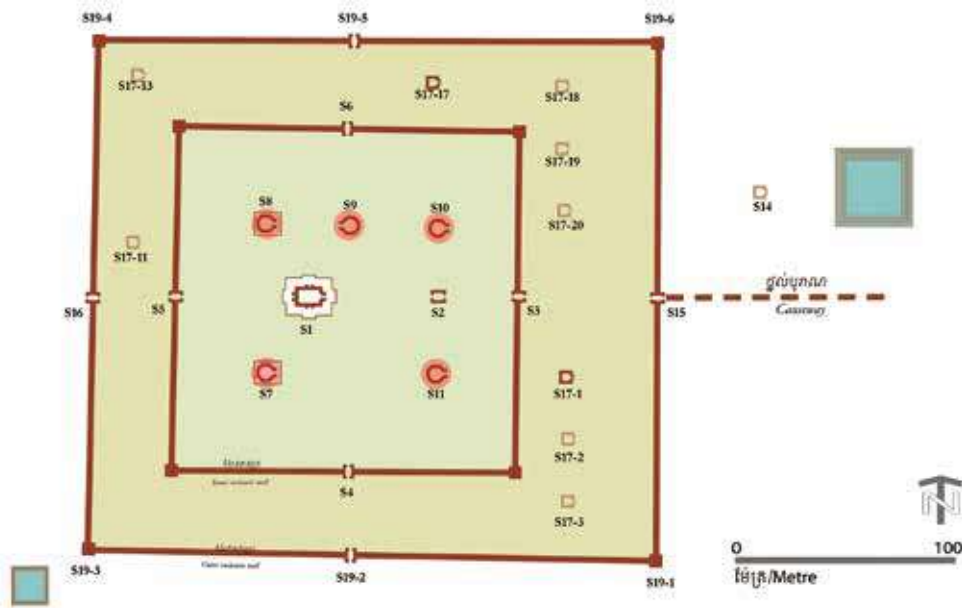
Impressive decorative elements can degrade and disappear due to several causes such as: the ages of the materials and structure, damage from natural causes such as vegetation and rainwater, construction techniques, and man-induced

activities.

Many of the brick temples have various carvings on their exterior walls, including 142 ‘flying palaces.’ Flying palaces are given priority for preventive action. They are unique to Sambor Prei Kuk-style architecture. Additionally, other unique decorations, such as *kudu* which are attached to the temple, also fall into the category of wall decorations requiring preservation.

4. Outcome of the Project

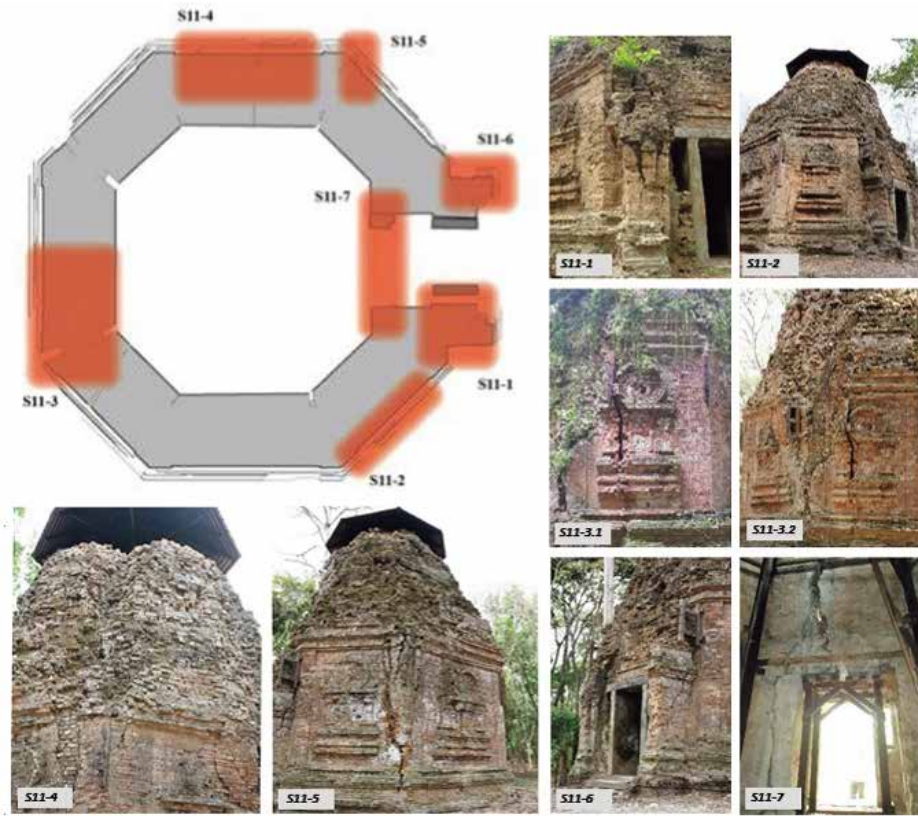
The extended effects of this project will lead to a long-term framework of sustainability in the safeguarding, preservation and conservation of the monuments in the Sambor Prei Kuk. We will also contribute to an increase in trained human resources that will be available for future activities, and for the continuation of work on other important sites. Moreover, the project will provide a source of employment and training for inhabitants of the local communities in the Sambor Prei Kuk environs. This activity is essentially the act of saving the Outstanding Universal Value of unique architecture and its aesthetic forms built from the end of the 6th to the early 7th centuries CE, so that it can be enjoyed by future generations.



Master Plan of Prasat Yeay Poan, Southern Group



The state of conservation of the five octagonal towers in Prasat Yeay Poan



The high risk conditions selected from the risk map of S11 tower



Photoscan images of elevations of the S11 tower before restoration



Example: The 'flying palace' wall carving of S8 tower and its state of conservation (left & middle: before; right: after)



Example: The *kudu* carving of S10 tower and its state of conservation (left: before; right: after)



Some activities in the conservation works

Remarks: *This report is part of the conservation works which are being carried out by the Department of Site, Archaeology and Conservation, National Authority for*

Sambor Prei Kuk. Most of the photos in this report were taken during the conservation period by members of the project team.



Reconstruction of Defense Bunker at Cagar Alam Hill, Pangandaran Regency, West Java Province, Indonesia

Dewi Puspito Rini, Archaeologist

Heritage Conservation Office of Banten under the Ministry of Education and Culture

Pananjung Nature Reserve Area in Pangandaran Regency, West Java Province contains cultural heritage structures which are spread over several locations. Some of them that stand out are the Japanese defense buildings in the form of bunkers, dungeons and defensive trenches. The Japanese defense buildings in Tanjung Pananjung, Pangandaran are located on three hills, one of them being Cagar Alam Hill. On this hill there are basements, bunkers, and trenches. One of the bunkers is located outside the Pananjung Nature Reserve, but is still in Cagar Alam Hill. This bunker is privately owned.

On September 7, 2016, the bunker was dismantled by the land owner, who planned to build a shophouse. According to the landowner, the demolition occurred due to ignorance of the fact that the bunker was a cultural heritage structure protected by law and was listed on the reserve inventory list of Balai Pelestarian Cagar Budaya Banten.

Following up on the demolition, Balai Pelestarian Cagar Budaya Banten sent a letter to the landowner in order to stop the activity and immediately conducted a study to assess the impact of the demolition. After BPCB Banten and the landowner discussed the demolition of the bunker, the owner finally agreed to follow the recommendations and directions from BPCB Banten to reconstruct the bunker. The scope of the supervision was that the damaged bunker would be reconstructed to restore it to its original state, i.e., what it was like before the demolition. The initial form of the bunker prior to dismantling was to be restored to its original state by prioritizing the principles of material authenticity, workmanship, and layout, reusing the rest of the reusable material, as well as the use of new materials as a substitute. This activity was conducted from May to June 2017.

Reconstruction of the bunker through several stages as follows:

1. Cleaning

Cleaning was done to reveal the bunker material that remained covered. This activity was carried out by the owner by picking or cleaning up the remains of the bunker covering the center or part of the remaining bunker wall. The materials from the cleaning were collected near the bunker then sorted into materials that may still be used to reconstruct the bunker, especially relatively intact stones. The constituent materials that could still be used in construction of the bunker were iron and stones.

2. Reconstruction

Reconstruction began with reinforcement of the bunker as well as protection of the hillside below the bunker area on the northern and eastern sides of the bunker. The reinforcement was to be done in the form of an

embankment or awning with a pair of split stones starting from the bottom to the top of the hill parallel to the ground surface. Installation of the embankment was to be done because the landowner had constructed a garage at the bottom of the hill, and there was a need to avoid landslides from the top of the hill where the bunker is located.

Reconstruction included:

a. Depiction

After cleaning, the more visible part of the bunker was damaged but still intact, but it was also possible to measure the volume of the damaged bunker. To know the size of the bunker more clearly, certain drawing activities were done.

b. Installation of framework

Next, installation of a framework using a board that was adapted to the shape and size of the bunker was done. The use of this board was based on observations and comparisons with other bunkers in the Pananjung Nature Reserve. The framework used board that had been mounted on the ceiling of the original bunker .

c. Installation of iron construction

The addition of iron to some parts of the bunker was allowed because the addition was only minor, and only on the northern wall of the bunker. The installation was done by using an iron wire bond without rings.

d. Casting

After installation of the framework and iron construction, and ascertaining its strength, the process continued with casting using the remaining materials that could still be used plus new materials that matched the old material. The concrete comprises a mixture of cement, sand, and gravel with a ratio of 1 part cement, 2 parts sand, and 3 parts gravel.

e. Demolition of framework and finishing

Demolition of the framework was done about one month after casting the concrete, followed by finishing, which comprised repair of parts of the bunker. All parts of the bunker were fixed so that the shape and size of the bunker were in line with the original.

The reconstruction process was carried out by the owner of the bunker using construction workers. The bunker reconstruction was supervised by a team from BPCB Banten with the aim that the reconstruction activities were to be carried out in accordance with the rules of restoration of cultural heritage buildings. In addition, this supervision was to ensure that the owner reconstructed the bunker in accordance with the recommendation of the Heritage Preservation Office of Banten (BPCB Banten).



Concrete reinforcement assembly



Wall framework installation



Details of wall framework and concrete reinforcement



Sand and gravel for making the concrete



The result of the bunker reconstruction



Documenting the Endangered Heritage of the Maldives: Maldives Heritage Survey Project

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Department of Heritage, Republic of Maldives

The small island nation of the Maldives has a rich history comprising a number of previously undocumented archaeological sites belonging to the Buddhist and Islamic periods that are scattered across the country's atolls. Due to its location in the midst of the ancient Indian Ocean trade route, it served as a rather crucial transit point. The country was thus influenced by people from various parts of the world who frequently visited the islands along with their trade goods. Their influence on the people, history and culture of the country can still be seen today. However, the archaeological record of this history today faces serious human and environmental threats and lacks proper documentation.

With the aim of addressing this dire situation, a two-year pilot survey project was launched earlier this year by Dr. Michael Feener, Sultan of Oman Fellow at the Oxford Centre for Islamic Studies. With funding from Arcadia and additional support from the Earth Observatory of Singapore, the project is being carried out in partnership with the Maldives Department of Heritage. The project team consists of Principal Investigator Michael Feener along with Co-Investigator Patrick Daly and a survey team with members from Aceh, Indonesia and the Maldives (including staff from the Department of Heritage) — with additional expertise contributed by Michael Frachetti of Washington University in St. Louis and Paula Levick at Oxford.

The major aim of the project is to systematically inventory and document the endangered tangible cultural heritage in the Maldives including “mosques, Muslim grave markers, the remains of Buddhist ritual sites and other historical structures and physical objects. This is being done through digital photography, 3D terrestrial scanning, and GIS to create an open-access online heritage database” (Feener and Daly 2018). During the survey the project also aims to document and evaluate potential threats to cultural heritage from both natural and human factors that can contribute to a heritage management plan for the Maldives. The project will also “train a local unit in the Maldives in heritage survey, field methods and documentation techniques, heritage management and conservation, and environmental issues, as well as provide a foundation for academic output on the changing history and environment of the Maldives, and its role within wider Indian Ocean maritime trade networks, based upon data collected” (Feener and Daly 2018).

The project will be divided into various phases over the two-year period and the team will be visiting several atolls in the Maldives for the surveys including the capital Male' — central Maldives, Laamu, Fuvamulah and Addu Atolls in southern Maldives and Haa Alifu and Haa Dhaalu Atolls in the north. Other areas of potential prominence will also be surveyed depending on the progress of work in the field.



Fig. 1: Map of Maldives with survey areas circled
(Photo credit: www.bizbilla.com)

The project website includes a fieldwork blog where updates can be followed (Feener 2018).

Over recent months, the first phase of the project has focused on Laamu Atoll, where 43 islands have been surveyed to date, in the course of which a total of 74 sites with 196 structures, 1183 gravestones and 33 small objects have been documented. These sites have included coral stone mosques, cemeteries, and three large Buddhist ritual complexes (Feener 2018). A number of small pre-Islamic statues have also been recorded, including two pieces recovered during construction work carried out to expand a mosque on Isdhoo Kalaidhoo. After the Ramadan break, the team resumed its fieldwork involving conducting

systematic surveys of the largely uninhabited islands of the western rim of Laamu atoll (Feener 2018). The documentation of the sites surveyed are now being processed for entry into the database, which will be made available with open access later this year.

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Fig. 2: Field team for season one
(Photo credit: <http://maldivesheritage.oxcis.ac.uk/>)



Fig. 3: Recording tombstone inscriptions
(Photo credit: <http://maldivesheritage.oxcis.ac.uk/>)



Fig. 4: Recording pre-Islamic statues
(Photo credit: <http://maldivesheritage.oxcis.ac.uk/>)



Fig. 5: Meeting with relevant authorities
(Photo credit: <http://maldivesheritage.oxcis.ac.uk/>)



Protection and Preservation of Settlement Sites in Mongolia

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The ancient settlements in the territory of modern Mongolia were first studied by a mission from the Imperial Russian Geographic Society in the 1870s [Tseveendorj et al. (2007) 2014: 325]. By the mid-twentieth century, thanks to the independence and modernization of the country, Mongolian archaeologists began to study Early and Medieval Ages settlement sites through a variety of academic disciplines [Perlee (1961) 2012: 146]. Now, more than 400 settlements of various types from the Neolithic period to the Medieval Ages have been registered.

Between September 25 and October 10, 2017, within the scope of the national project, “The roles of the Inner Asian pastoral nomads to the development of the Silk Road,” we carried out archaeological documentation work at 57 cultural heritage sites in Central and North Central Mongolia [Enkhtör et al. 2018: 19]. Most of these sites show traces of urban life in the Early and Medieval Ages in Mongolia, the heartland of the Inner Asian pastoral nomads, including walled cities, walls, craftsmen towns, military towns, palaces, etc.

In this way, we also redefined the state of protection of the Early and Medieval settlement sites in the aforementioned areas.

Karakorum

As mentioned many times in the medieval sources, including travelers' notes, historic annals, inscriptions, etc., the question about the location of the Karakorum, the renowned capital of the Mongol Empire, has long attracted historic and archaeological investigations. The ruins of Karakorum are now included in The Orkhon Valley Cultural Landscape, which was inscribed on the UNESCO World Heritage List in 2004 [Decisions 2004: 37; Tüükh 2017: 147]. In 1995-1996, the Mongolian-Japanese Joint Expedition conducted by UNESCO made a full topographic map of the ruins of Karakorum. Based on this map, the expedition members defined the protection zone of the city and enclosed the zone with a fence made of wooden posts and barbed wire [Bayar (2002) 2013: 119; Bayar (2002) 2013b: 125].

It should be noted that the center of Kharkhorin *soum*, Övörkhangaï *aimag* has already endangered the area of Karakorum from the late 1950s [Bayar / Erdenebat (2003) 2013: 396-397]. At the same time, a state farm was established there, which ploughed over the ancient settlement areas in Orkhon valley, including Karakorum, Karabalgasun, etc. The Kharkhorin state farm established a cemetery at the northern part of the ancient Karakorum and reused its stone monuments and bricks for modern graves. Besides the agricultural structures, many buildings were also constructed at the ruins of Karakorum [Bayar/ Erdenebat (2003) 2013: 397].

The area of the ruins of Karakorum, one of the most important cultural heritages of Mongolia, was almost entirely abandoned after the long-term academic activities of the Mongolian-German Joint Archaeological Expeditions at the Karakorum sites between 1999 and 2015. The local authorities and cultural organizations have still not paid attention to the Karakorum protection zone, even though it is the most-visited cultural heritage site in Mongolia. The urban center of Kharkhorin *soum* is now extending day by day and its population is still growing organically, even faster than in the 20th century. The fence of Karakorum, the only sign of the protection zone, is now being destroyed by the local people, who want to use its posts for firewood (Figs. 1 and 2). Recently, the local authorities began to give permission for land use on the southeast, east and northeast sides of the protection zone of Karakorum and some cultural heritage sites outside the zone (Figs. 3-6).

To the west of a large millstone at the eastern part of the ruins of Karakorum, there is a hole which was most probably dug by looters in September 2017 (Figs. 7 and 8). There were small cattle bones, wood charcoal and logs on the mound, which was piled with earth from the hole (Figs. 9 and 10). Many fragments of luxury Chinese porcelain were in front of the hole (Figs. 11 and 12). It can be concluded that these are traces of the looting of an unusual hoard of Yuan period luxury porcelain.

Complex on Melkhii Tolgoi Hill

On the top of a hill to the south of the center of Kharkhorin *soum*, there is a turtle-figure stone statue, forming the base of a stele (Fig. 13). This hill is called Melkhii Tolgoi (literally ‘Turtle Hill’). A memorial complex, which includes the turtle-figure stone statue, is dated to the Uighur period (Fig. 14). Both the inner and outer walls of the Melkhii Tolgoi memorial complex have become a road for visitors' vehicles (Figs. 15 and 16).

Kha Khul Khagan's city

Ruins of a Mongol Empire (perhaps early Yuan) period city are located to the south of the Khanui river, several kilometers southwest from the center of Erdenemandal *soum*, Arkhangai *aimag*. Some walled building complexes in the northeastern district of the city have been destroyed, with a water canal passing from the Khanui River to the east through the ruins (Figs. 17-19). The biggest complex in this district is similar to the Yuan period temple complex called “The Pavilion of the Rising Yuan” in the southwestern district of Karakorum city.

Tsagaan Süm 1

A Uighur period settlement called Tsagaan Sümiin Balgas is located on the east bank of the river Tsagaan Sümiin Gol in Khotont *soum*, Arkhangai *aimag* [Enkhtör 2015: 58]. The northern end of the east side of the 5-6 meters high main

wall of the palace complex in this settlement has collapsed due to natural factors, particularly caused by livestock such as horses and yaks (Figs. 20 and 21).

Tsagaan Süm 2

There is a small rectangular earthen wall to the southeast of Tsagaan Süm 1. Inside the wall there is garbage that has been dumped by the nearest tourist camps (Fig. 22).

Talyn Dörvöljin

A Uighur period earthen wall is located to the north of the center of Kharkhorin *soum*, Uvurkhangai *aimag*. This early wall is now full with modern graves (Fig. 23). On the southern side of the wall, there is even seen a human skull (Fig. 24).

Tsogtyn Tsagaan Baishin

This is part of the temple complex consisting of six monasteries built by Tsogt Taij (1584-1637) and his mother Queen Madi Taiqal from 1601 to 1617. It is situated to the west of the Tuul River in Dashinchilen *soum*, Bulgan *aimag*. Tsogt Taij, who was a famous Khalkha Mongolian poet and a contributor to the “Red Hat” sect of Tibetan Buddhism, also erected a stele with Mongolian and Tibetan inscriptions near his Tsagaan Baishin (literally ‘White House’), after its construction was completed [Budsuren 2011]. The poorly-preserved wall of Tsagaan Baishin was carved with numerous modern inscriptions that were written by visitors (Fig. 25). In summer 2017, a room of the monastery was dug up and many color-glazed clay decorations from the building were revealed and were left at the site (Fig. 26).

It should also be noted that at the palace sites of the Mongol Empire period, such as Khar Khul Khagan’s city, Doityn Tolgoi and Erchü city of Möngke Khagan (1208-1259), we could find only a few small pieces of the green-glazed roof tile, a symbol of Khagan’s palace. Dr. Enkhtur told us that ten years ago there was a sufficient number of pieces of this green-glazed roof tile. Therefore, it can be

suggested that uncontrolled tourist activities have also impacted the preservation of the finds of settlement sites in Mongolia.

All the above examples show that the present state of protection and preservation of settlement sites in Mongolia requires decisive change.

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Fig. 1: Remains of the fence of the Karakorum protection zone in October 2017



Fig. 2: Remains of the fence in August 2018



Fig. 3: Ruins of the Karakorum city. From the north



Fig. 4: Ruins of Karakorum. From the southeast



Fig. 5: The recently cultivated area of the ruins. From the northwest



Fig. 6: Endangered craftsmen's quarter along the modern canal, to the southeast of the *soum* center. From the east



Fig. 7: A looters' hole at the ruins of Karakorum. From the north



Fig. 8: The hole and a millstone. From the west



Fig. 9: Wood charcoal from the hole



Fig. 10: Fragments of Chinese porcelain from the hole. From the southwest



Fig. 11: Fragments of Chinese porcelain from the hole. From the south



Fig. 12: Fragments of Chinese porcelain from the hole. From the south



Fig. 13: A turtle-figure stone statue on the Melkhii Tolgoi Hill



Fig. 14: The memorial complex on the Melkhii Tolgoi Hill. From the south



Fig. 15: The western side of the inner wall of the complex. From the south



Fig. 16: The western side of the outer wall of the complex has become a road. From the west



Fig. 17: Ruins of Khar Khul Khagan's city and a water canal. From the northeast



Fig. 18: Ruins of Khar Khul Khagan's city and a canal. From the north



Fig. 19: The canal. From the east



Fig. 20: The southwest corner of the wall of Tsagaan Süm 1. From the northeast



Fig. 21: The northern end of the eastern side of the main wall of the palace complex. From the northeast



Fig. 22: The northern side of the wall of Tsagaan Süm 2. From the southeast



Fig. 23: A modern cemetery at the Talyn Dörvöljin site



Fig. 24: The southern side of the wall of Talyn Dörvöljin. From the east



Fig. 25: Western wall of Tsagaan Baishin



Fig. 26: Color-glazed clay decorations of Tsagaan Baishin



Rehabilitation: Bauddha Stupa after the Nepal Earthquake 2015

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1. Introduction

Bauddhanath, the largest stupa in Nepal, lies about 8 km away from centre of Kathmandu. The stupa is also known as *Khasti Chaitya*, *Khashau Chaitya*, *Khasto Chaitya* and *Khasa Chaitya*. It is believed that the name Khasti is associated with Khasa, a townlet of Tibet which lies on the way between Lhasa and Nepal. Bauddhanath has been a place of pilgrimage and veneration throughout the ages for the entire Buddhist world since the very dawn of Nepalese history. This also has been a place of Buddhist learning and religion since time immemorial.

The authentic history of this place based on factual evidence, however, is lacking. The famous Indologist of the 19th century, Henry Ambrose Oldfield, in his book *Sketches from Nepal*, has said that this magnificent stupa was erected over the corporeal relics of a Lama from Khasa, and the stupa was named after the place where he belonged.

Another renowned French historian, Sylvain Lévi, in his book *Le Népal*, has given a different but equally interesting story about its consecration. According to the story, this massive stupa was erected long ago by an unknown king intending to please the goddess *Vajrayogini*, a widely revered goddess in Nepal, by offering his intense gratitude from whose kind grace he could be freed from a heinous sin he had once unknowingly committed. It is also very interesting to know that he carried out this very deplorable act on the very wish and command of his own father. It is said that his father had given him this strange order so as to make the once-dried-up *narayanbiti* (water spout) run again as advised by his court astrologer. An almost identical story while dealing with the purpose and motive behind the construction of this stupa has also been given in the oldest available chronicle of Nepal, *The Gopal Raj Vamsavali*, a 14th century manuscript. Here, unlike the story narrated in Lévi's book, the names of both the kings and the prince have also been given. The king who had asked his son to chop off his own head was *Dharma Deva* and his son's name was the famous Lichhavi king *Mana Deva* (459-505 AD). Apart from this, the same chronicle also has a reference to a king named *Siva Deva* as its consecrator.

1.1 Architecture of Bauddha Stupa

Bauddha Stupa represents the best example of Nepalese stupa architectural design. This massive stupa stands over three-tiered crossed rectangles designed in tantric *mandala* form. This unique and exquisite design has also made it a rare and exclusive piece of traditional Nepalese stupa architecture. This type of stupa architectural design is not common in Nepal or elsewhere. Apart from its exclusive design and style, its massive size and dimensions also make it a distinct structure. The stupa

covers an area of 82.36 m×82.03 m and its total height including a three-tiered base is 43.45 m. Moreover, unlike other existing stupas in Nepal, this lacks the idols of the five *Dhyani Buddhas* attached the main dome's cardinal directions. Instead, it has only one image of *Dhyani Buddha*, the *Akchbobbhya*, which has been installed on the northern side of the dome base. The stupa is made from materials such as mud, bricks, lime, stone, metal and wood. It has an enclosure wall all around it and has a total of 735 metal prayer wheels fixed into its 147 chambers. On each prayer wheel is embossed the popular Buddhist mantra *Om Mani Padme Hum* in the Newari script, which was popularly used in medieval times.

The base of the stupa dome rests on its three successive tiered platforms, which are also used as circumambulatory passages. A little above the base of the dome there is a series of recessed niches encircling the entire periphery of the dome where a total of 108 beautiful stone sculptures of different *Mahayana* Buddhist deities have been installed. The stupa has its main entrance on the northern side, from where devotees can approach the base of the stupa for a holy circumambulation, passing again through the flights of stairs given to each of the successive tiers which can also be used as a separate circumambulatory passage. These successive tiers again have six miniature stupas built over them; four to the north and two to the south. On the top of the stupa dome, a square *barmika* has been erected facing all cardinal directions. Each side of features sketches of pairs of eyes along with a symbol like question marks, which have been done very artistically. It is said that with these ever-cautious eyes the Lord beholds every happening constantly with very keen attention and so nothing is secret to him.

Above the *barmika* towers the spire with thirteen steps. According to Buddhist religious belief, these steps represent the different mental stages of human beings which have to be crossed before attaining final salvation, or *nirvana*, by one who wants to be freed from worldly bondages. Above this, over a gilded *amalaka*, or the form of an inverted lotus petal, a vessel has been placed, which, according to the tradition, is filled with the water of knowledge. On the top, there is a gilded metal parasol along with a pinnacle, which is also made of gilded metal. There is a large amount of prayer flags attached to the canopy, leading down along the stupa's dome. These prayer flags contain powerful mantras or prayers.

2. Rehabilitation Activities

2.1 The 2015 Earthquake and Preliminary Assessment of Bauddha Stupa

The 2015 Nepal earthquake damaged many heritage structures in Nepal; however, the Bauddha Stupa was not severely affected in the mainshock on 25th April, but

it was subsequently reported that the upper part of the stupa was damaged severely and must be renovated. As per the site report by the rescue team deployed from the Department of Archaeology, the site was assessed again as a preliminary assessment for the detail documentation, and the diagnosis was to renovate or to take quick action.

The assessment reported that the upper part of the stupa was severely damaged and must be renovated, however the lower part was not affected that much. But the eastern small stupa, *Rangkarik Chaitya*, was severely damaged. As per the assessment report and the recommendations, temporary protective works were carried out immediately; i.e., scaffolding and shoring for the *bermika* and *trayodasha bhuvana*, covering with tarpaulins, etc.

The rainy season and the associated high risk to vulnerable structures was the main challenge at that time, which had to be addressed immediately. Therefore, all of these activities were done with coordination between Department of Archaeology and Bauddha Area Development Committee and with the participation of the local community.

2.2 Community Initiative and Processing for Approval

Due to the vulnerable condition of the structure of Bauddha Stupa, temporary action was taken for immediate protection; however, the community and the Bauddha Area Development Committee (BADC) took the initiative for the renovation of Bauddha Stupa soon after the assessment report and the temporary works were carried out; due to its historical and religious importance, values and belief.

Existing drawings and an estimation of the renovation were prepared by engineers deployed by the Department of Archaeology, as BADC had already declared and made commitments on all the responsibilities to be borne by the Committee in support of the local communities. All these documents were sent to the department for approval to allow BADC to carry out renovation activities.

Finally, approval from the department was granted to BADC and the rehabilitation work started and was completed within the proposed time frame. As the stupa is a major listed monument on the World Heritage List, the DoA clearly mentioned that all process and procedures must be followed and no compromise would be made on the quality of the conservation work and materials, and the process was also strictly supervised by DoA technical staff. The approval was given to Bauddha Area Development Committee on 26 November 2015 (2072/08/10 BS); and renovation work was started formally on 23 January 2016 (2072/10/09 BS) and completed on 18 October 2016 (2073/07/02 BS).

2.3 Rehabilitation Activities

After receiving approval from the Government of Nepal/DoA, BADC organized a meeting with all stakeholders including DoA and came to the conclusion that the renovation project should be led by BADC. However, a Steering Committee was established that included technical personnel from DoA and representatives from

the Ministry of Culture, Tourism and Civil Aviation, Kathmandu Metropolitan City, Nepal Police, Guthi Corporation and other local institutions, as well as local community leaders. The Steering Committee was fully devoted to completion of the renovation work within the set time frame. The following activities were carried out during the rehabilitation of the stupa:

Formulation of Steering Committee

The Steering Committee was established by a grand meeting of the stakeholders as per the suggestion of the representatives of the Department of Archaeology, consisting of 27 members including government authorities and local communities. The committee was established to ensure that the project activities ran smoothly, and this helped to complete the project on time.

Documentation (including religious and archaeological objects from the stupa)

The documentation work was started immediately after the earthquake that damaged the stupa. As preliminary assessment the detail drawings included an estimate for approval; however, when the Steering Committee was established, the first step was preparing the documentation, which included documentation before conservation – during dismantling of the worst parts of the stupa, religious and archaeological objects came out from the upper part, and work such as storing them, witnessing documents (*muchbulka* – a traditional legal document) and many activities needed to be done before starting the conservation work.

Documentation during the conservation work – in other words, activities carried out during working time – included each and every step of the construction work, reinstallation of the religious and archaeological objects which were moved out from the same place and stored, again witnessing documents, the use and reuse of different construction materials, and also drawing up the meeting minutes of the committees, etc.

After completion, separate documentation was also prepared. Accordingly, it was a big challenge to prepare these kinds of documentation during the aftermath of the earthquake when there was a lack of human resources; however, some of the documentation was prepared in accordance with the traditional system and some as per the archaeological documentation system, but the important thing is that a record was prepared, which was also a great achievement.

Scaffolding works (bamboo and metal scaffolding)

Before starting any activity physically in the stupa, it was necessary to build scaffolding around it. Therefore, in the very beginning of the conservation work, bamboo scaffolding was established on the upper part. It needed to be lightweight because it had to be built around the dome of stupa, enabling easy access to any portion of the upper part of the stupa.

In the second step, metal scaffolding was built, with the ground being the base, to make it easier to walk and

work around any part of the stupa. This work was also very challenging.

Removing copper sheets, cleaning and gold gilding

The plated gold on copper sheets had gradually faded even before the earthquake and a project to gold gild the whole copper sheets was once considered, but that did not happen. As the upper part was damaged due to the earthquake, all the copper sheets needed to be removed and repaired; therefore, they were removed and cleaned to be re-plated with gold. During the other renovation work, all the copper sheets were gold gilded.

Reinstallation of copper sheets, wood work, metal work (copper and gold), brick work (including lime surkhi)

The monuments of Nepal were constructed with a mixture of available local material, predominantly wood, stone, brick with mud mortar, and latterly introduced, lime surkhi mortar. Therefore, there was heavy use of brick and wood as well as stonework. When all the physical work with these materials was completed, to cover the stupa, the gold gilded copper sheets were reinstalled, which was actually the final work for the renovation of the stupa.

Following the religious practice for removal and reinstallation of different parts of the stupa – *Chbhema Puja*, *Soksing Puja*, etc.

Monuments in Nepal are regarded as living monuments, that is, they are considered to be “alive” like human beings and form part of the community. Therefore, there are several sacred or religious activities that need to be performed for each monument before any activity can be carried out. For example, there is the practice of performing *Chbhema Puja* (worship to excuse any case of incorrect activity during renovation work) before touching the monument for conservation or renovation.

Before starting any work in the stupa, a grand *Chbhema Puja* was performed by the religious traditional priests of Bouddha in which a large number of local communities participated, especially by the workers who were going to be directly involved in the renovation work. During the renovation work itself, there were several *pujas* as per tradition, and also a grand *Chbhema Puja* after completion. This kind of religious activity is a unique and very important element of the outstanding universal value of the monument.

Security of the site and overall materials (stored)

Security of the elements of the stupa was a big challenge during the renovation work. Security of the site was a big responsibility on one hand and security of the stored elements from the stupa was another important responsibility. Good coordination with the Nepal Police was maintained, CCTV cameras were connected and monitored, and the Government of Nepal deployed a unit of police for temporary security until the completion of the renovation work at Bouddha stupa under the command of a Sub-Inspector for the whole time. The security force of the Bouddhanath Area Development Committee was also mobilized.

All the stored elements as well as the site were protected through a combination of these manual and modern advanced security systems, which were fully reliable and successful.

Reinstallation of religious objects in the Hermika and above

All elements, both religious and archaeological objects, which were found in the Hermika and above were systematically recorded in a *muchulka* (a traditional legal and recording document) in the presence of the designated committee members and government officials during the opening (dismantling) of walls, floors and other parts of the stupa, and these were kept in completely secure storage during the renovation work. After completion of the respective work they were reinstalled as they were before in the stupa. There was a large number of both religious and archaeological objects. All the objects were checked against the *muchulka* (record prepared when they were found) and reinstalled in the same place. A few new religious objects were also added as per local tradition, but due to the heavy load on the stupa, this procedure was suspended.

3. Conclusion

The Nepal Earthquake 2015 affected numerous monuments in Nepal and damaged several monuments within Kathmandu Valley World Heritage Property. Many of them completely collapsed and some of them had not been well recorded before the earthquake. One of the most badly damaged monuments was Bouddhanath stupa, but luckily the stupa was damaged only on the upper part, and the foundation and dome were not damaged. After an immediate assessment, the upper part of the stupa was renovated, a process initiated by the local communities and led by Bouddhanath Area Development Committee (BADC). Receiving approval from the Government of Nepal/DoA, the renovation work was completed within a year, making it one of the biggest renovation works involving monuments damaged by this earthquake and the fastest ever recovered/renovated monument in Nepal with local community involvement, with a big contribution by the religious community as a continuation of the heritage conservation system.

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Bouddha Stupa before Earthquake 2015



Damaged Bouddha Stupa due to Eartquake 2015



Damaged due to Earthquake 2015



The damaged associated stupa within Boudha Main Stupa



Damaged due to Earthquake 2015



Damaged upper parts of sutpa-trayodasha bhuvana



Bamboo scaffoldings prepared for renovation work in the beginning



Damaged parts of *harmika*, explored after removing the copper sheets



Damaged parts of *harmika*, explored after removing the copper sheets with new support



Stupa after opening the severely damaged upper parts to renovate



Reinstalling the soksing (*yesthi*), the central shaft beam which is the main vertebra of the stupa after performing religious activities



Metal scaffoldings to work easily on the upper part of the stupa



Finalizing the renovation of stupa-plastering with lime surkhi in the lower parts of Stupa



Topmost part, gazur-finial of Stupa, almost finalizing the renovation of upper part



After completion of renovation of Stupa



Activities of the Department of Archaeology and Museums for Digital Documentation of Cultural Heritage in Pakistan

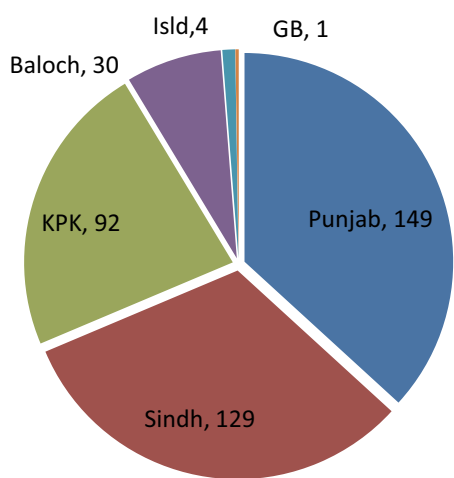
Tahir Saeed, *PhD Scholar/ Deputy Director*
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Introduction to the Rich Cultural Heritage of Pakistan:

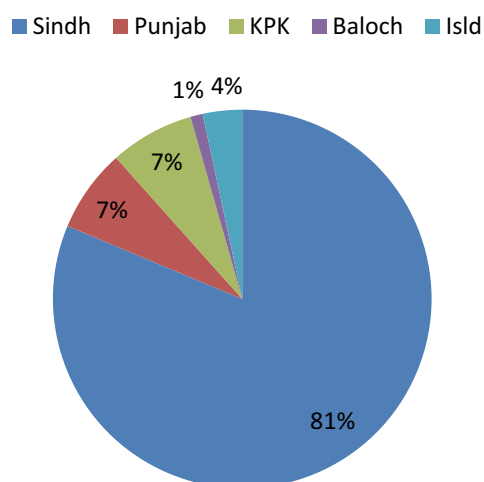
The nation of Pakistan is truly heir to at least two million years of socio-political history going back to the Palaeolithic Age. The earliest stone tools found in the Potohar region of Pakistan belong to an ancient primitive stage in human development and culture. These oldest known tools, comprising cores and flakes from the Siwalik hills of the Potohar region at Rawat are of great interest, as it links the Potohar region with a vast complex of such early centers of human activity stretching from France and Spain through the Mediterranean, south and east Africa, Palestine and Syria, and then on as far as north-eastern China. The archaeological evidence from the Palaeolithic and Mesolithic periods symbolize the hunting and gathering stage in human history, while the Neolithic period symbolizes the stage of food production; i.e., plant cultivation and animal husbandry around 7000 BCE, which enabled man to break through the barrier between barbarism and civilization. Naturally, the full-fledged Neolithic cultures of Pakistan did not spring into existence in a few generations, but were the result of a process of evolution from the Mesolithic stage (7th millennium BCE), which culminated and appeared around 2500 BCE as the Indus Civilization in the greater Indus Valley.

The Achaemenian Empire of Persia established its sovereignty over most of the land comprising present-day Pakistan during the 6th century BCE. The Macedonian invasion led by Alexander the Great in 326 BCE is likewise a gigantic event in the history of this region,

which served as a moving force in the process of cultural interaction between Eastern and Western civilizations. Buddhism reached Gandhara (northern part of Pakistan) in the 3rd century BCE during the reign of Asoka the Great of the Mauryan dynasty. The impetus given to Buddhists by the Mauryan Emperor, Asoka, and the artistic impulses emanating from the Bactrian Greeks in Central Asia led to the culmination of Gandhara Art under the patronage of Kushans and their successors. The period from the 1st to 4th centuries CE is a remarkable period in the history of Pakistan, when sculptural art became a hand maiden to spiritual zeal. The real impact of Islam was felt in Sindh when it came under the control of the Arab general Muhammad ibn-al-Qasim in 711-12 CE. The beginning decades of the 16th century witnessed yet another political change in the Subcontinent, and brought a new reigning power to the scene in the form of Mughal Rule. The Mughal rulers patronized almost all art forms such as paintings, calligraphy, coinage, armory, and other minor arts & crafts. They established imperial libraries and studios to create the best specimens of these arts. Their objects of daily use were in fact *objets d'art* which were made of gold, silver and other precious and semi-precious metals and stones. Numerous examples of these arts, as well as illustrated manuscripts of classical Persian works, albums of painting and calligraphy, and gold and silver coins, are now the proud possessions of various museums and art galleries of Pakistan. The rich immovable and movable cultural heritage of Pakistan can be observed from the following charts:



Distribution of 405 protected archaeological sites and monuments in Pakistan (province-wise): Punjab=149, Sindh=129, Khyber Pakhtunkhwa (KPK)=92, Balochistan=30, Gilgit-Baltistan=1, Islamabad=4



Distribution of movable cultural wealth in Pakistan: Sindh =193495, Punjab =16924, KPK=16924, Balochistan=2500, Federal = 8000

History of Cultural Heritage Protection in Pakistan:

The Federal Department of Archaeology and Museums (DOAM), which serves as one of the main cultural heritage protection agencies, is a continuation of the Archaeological Survey of India (ASI) established in 1860 during the British Colonial Period. It was established for carrying out archaeological researches including excavations, explorations, protection and conservation of the moveable and immovable heritage of British India. After the creation of Pakistan on 14th August 1947, the nation inherited the same department by changing its nomenclature to the Department of Archaeology and Museums to fully express its functional obligations. Since its inception, the Department of Archaeology and Museums served as almost the sole custodian of tangible cultural heritage of Pakistan until 2011. However, as a result of the 18th Constitutional Amendment, all monuments/sites were transferred to the respective provinces in 2011 along with associated assets and human resources, whereas the Department of Archeology and Museums was retained to perform national and international obligations under the appropriate legislation, i.e., the Antiquities Act, 1975 and rules framed under this Act for the proper preservation of cultural heritage.

Preservation of Cultural Heritage through Digital Documentation:

Heritage is explained in UNESCO documents as “our legacy from the past, what we live with today, and what we pass on to future generations.” A heritage is passed from generation to generation because it is valued. The idea of cultural heritage is a familiar one: those sites, objects and intangible things that have cultural, historical, aesthetic, archaeological, scientific, ethnological or anthropological value to groups and individuals. In Pakistan, a great number of archaeological sites and historical monuments of both secular and religious importance are the landmarks of its national history and architectural heritage. Additionally, there are thousands of antiquities and works of art in the shape of inscriptions, manuscripts, traditional arts and crafts as well as other cultural material which need proper preservation. Keeping in view the need for proper preservation and protection of these cultural assets, the Department of Archaeology and Museums has recently established a “digitalization centre for documentation of artifacts and archival material”.

Importance of Document Management:

Preserving and maintaining all important documents is not an easy task. However, a good document management system helps to organize documents in an efficient manner, so that any document can be found whenever needed. With the advent of automation and computing in our daily lives, we naturally turned towards a computer-based document management system to take advantage of the speed, capacity, efficiency and error-free operation of computers. Digital paper is an innovative and versatile software product to manage the growing accumulation of both paper documents and digital documents to create archives or repositories for convenient and efficient operation.

National and International Obligations for Protection of Cultural Heritage:

The role of inventories or documentation in the management of cultural heritage has long been recognized, as they are indispensable for the purposes of identification, protection, interpretation, and physical preservation of movable objects, historic buildings, archaeological sites, and cultural landscapes. Documentation and inventories have a significant place in all the major international conventions relating to the protection of heritage. The 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage included a provision that a World Heritage Committee be established, to which each state party would submit an inventory of its national heritage. The Inventories are also recognized as a vital weapon in the fight against the illicit trade in cultural objects. Article 5 of the 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property called for the establishment and maintenance of national inventories of cultural property.

Rationale for the Application of Digital Documentation:

Basically, documentation is the information (such as software manuals, survey designs, and user guides) provided by a creator and the repository that supplements the metadata and provides enough information to enable the resource's use by others. It is often the only material providing insight into how a digital resource was created, manipulated, managed and used by its creator and it is often the key to others to make informed use of the resource. The importance of 3D metric documentation of cultural and natural heritage is well recognized at the international level, and there is increasing pressure to digitally record heritage sites and objects in three dimensions. Therefore, continuous development of new recording sensors, data capture methodologies, and multi-resolution 3D representation as well as the improvement of existing methods can contribute significantly to the conservation and presentation of heritage.

Establishment of a Documentation Centre for Digitalization of Cultural Artifacts and Archival Material:

The roles and functions of museums are becoming more diverse and expanding day by day in every country. Today, museums are expanding their activities to educate society, providing an opportunity for the younger generations to look deep into their history and re-build their national narratives. There is great potential for museums in Pakistan to serve society as places of learning and education — promoting creativity and fostering peace and social cohesion.

Proper preservation and documentation has always been a matter of great concern in the academic research of the moveable and immovable cultural wealth of a country. The fragility of archaeological material and lack of documentation of the archaeological artifacts in the national repository limits academic study and the verification of records. For the purpose of preservation of archaeological material and its documentation, it is considered imperative that the entire record of the

archaeological artifacts in the custody of the Department of Archeology and Museums be digitally documented, which will not only provide an opportunity to record it for posterity but also make available interpretive information about the data to scholars. Further, this will also be a deterrent against the pilfering of objects from archaeological sites and monuments and their ultimate sale on the black market, as this data will be shared internationally with INTERPOL and other databases for discouraging illicit trafficking in archaeological objects. Besides, it will enable compliance with the UNESCO Convention (1970) on “Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property”.

The establishment of a documentation centre is expected to achieve substantial results such as improving the educational role of the Department of Archaeology and Museums (DOAM) to promote creativity, social cohesion, peace and tourism. This will ultimately help in the development of educational content, access to researchers and academics across the globe, tele-exhibitions in collaboration with other foreign countries, and linkages with creative industries. Further, it will contribute to prohibiting the illicit trafficking of antiquities and their quick identification at ports of exit and entry through the sharing of information. The main purpose for establishing the documentation centre at the Department of Archaeology and Museums is to:

- i) create a database of artifacts with comprehensive information developed through digital documentation

- ii) protect artifacts from illicit trafficking
- iii) share information for the propose of research, education
- iv) prohibit illicit export and import of movable cultural properties.

The Department of Archaeology and Museums has engaged relevant staff and IT professionals for its establishment, as well as a database system, and has initiated the process of digital documentation through the inventorying of artifacts with the Department of Archaeology and Museums, especially those located at Islamabad Museum. This new project of the Department of Archaeology and Museums, Government of Pakistan is in the process of achieving the following goals and tasks:

- i) Preparing authentic information and descriptions of the artifacts and archival material available at DOAM.
- ii) Preparing 3D images of the antiquities available at DOAM and Islamabad Museum for the propose of inventorying and documentation (2000 objects).
- iii) Developing quick response (QR) codes for each object so as to provide easy access to the information to relevant stakeholders.
- iv) Preparation of a Design Database for systematically organizing, storing and retrieving all the information.
- v) Developing an online portal to provide access to object information for the general public and other stakeholders.
- vi) Training the relevant staff of DOAM and sister organizations (at both the federal and provincial levels) in the process of digital documentation.



Digitalization Center at Department of Archaeology and Museums, Islamabad



Digitalization Center at Department of Archaeology and Museums, Islamabad



Antiquities stored at Department of Archaeology & Museums, Islamabad



Antiquities stored at Department of Archaeology & Museums, Islamabad



Antiquities stored at Department of Archaeology & Museums, Islamabad



Specimens of the artifacts to be documented



Specimens of the artifacts to be documented



Specimens of the artifacts to be documented



Specimens of the artifacts in the process of documentation



Specimens of the artifacts to be documented



Specimens of the artifacts to be documented



Specimens of the artifacts to be documented



Specimens of the artifacts to be documented



San Sebastian Basilica: A Formidable Edifice of Faith

Louella Solmerano Revilla, *Head-Conservation*

Conservation Laboratory, San Agustin Museum, Intramuros, Manila

For the past and most recent years, San Sebastian Church — Roman Catholic Minor Basilica, located in Plaza del Carmen, Quiapo, Manila, and administered by the Order of the Augustinian Recollects, has encountered threats to its structural integrity. There is a conservation and restoration programme being carried out to save the basilica, spearheaded by the San Sebastian Basilica Conservation and Development Foundation, Inc., a non-religious organization whose objective is to preserve the cultural and structural aspects of the building. Their main goal is to extend the life span of the San Sebastian Minor Basilica by practicing international conservation standards, and to integrate strategic community outreach and planning to ensure the project's sustainability and relevance within the local and national community. This masterpiece of an entirely metal structure, the only one of its kind in the Philippines, is important for its historical and aesthetic significance. The San Sebastian Basilica is an example of a Neo-Gothic architecture noteworthy for its original interiors. It holds the distinction of being the only prefabricated church in the Philippines. The San Sebastian Church is the first church in the country to be given the grand status of a *minor basilica*. This building is protected under its designation as a National Historical Landmark through P.D. 260 on August 1, 1973 and its listing as a National Cultural Treasure on August 15, 2011.

The present San Sebastian Basilica was completed and inaugurated in 1891. Its construction began in 1888. The property has retained its level of authenticity in terms of its structural design, materials used, techniques and original setting since its inception. It has continuously served as a place for spiritual retreat and solace for the religious community of the Order of the Augustinian Recollects and a place of veneration for devout parishioners. The estate of Calumpang, as the location was then known, was donated in 1621 to the Order of the Augustinian Recollects, also otherwise known as the Order of Discalced Augustinians, by a generous patron and devotee, the Spanish Don Bernardino del Castillo Maldonado y Rivera, *Maestre de Campo* of the Royal Infantry Battalion and Commander of Fort Santiago, and his wife Doña Maria Enriquez de Cespedes, the same people who funded in 1608 the construction of the convent and church in Intramuros. The place was bounded by the old progressive district of Quiapo to the north and west, Sampaloc to the east, and San Miguel to the south. The place got its name from a tree which grew in abundance in the area. Fr. Rodrigo Moriz Agunduru as Vicar Provincial of the Augustinian Recollects considered the estate and house of Calumpang an ideal location as a house for religious and a place of retirement for missionaries. Through a Royal decree, the colonial government readily approved the donation and plans for the new church. On 16 February 1621, the Archbishop of Manila, Msgr. Miguel Garcia Cerrano, O.S.A., issued the necessary authorization for the foundation of the new church and convent.

The Order of the Augustinian Recollects pioneered in bringing the first revered Carmelite image to the Philippines, the image of Our Lady of Mount Carmel or *Nuestra Señora del Carmen*. Devotion to the Brown Scapular of Our Lady of Mount Carmel and this image was fostered and became popular through the efforts of the Augustinian Recollect Order.

It was Father Agunduru who headed the third Augustinian Recollect mission of fifteen religious to the Philippines. He sailed from New Spain (Mexico) on 18 July 1617 and received a serene image of the *Nuestra Señora del Carmen*, as an esteemed token from the Discalced Carmelite Contemplative Nuns serving as a worthy testimonial to that special fraternal bond and spiritual relationship between the Discalced Carmelites and Discalced Augustinians. The Discalced Carmelites and the Discalced Augustinians were offspring of the Catholic Reformation in the 16th century. The expedition reached Manila in 1618.

The church was first built in 1621 under Father Rodrigo Agunduru and through the generosity of Bernardino del Castillo Maldonado, which only lasted for twenty brief years. A series of misfortunes befell the church. The church had to be rebuilt and reconstructed when it was devastated during the uprisings of the Sangleys in 1641 and earthquakes in 1859 and 1863. The church materials then were made of wood, brick, stone, lime and cement. It was completely destroyed by another earthquake in 1880.

In the 1880s, the parish priest of the ruined church, Father Esteban Martinez, sought the expert advice of the renowned Spanish engineer, Genaro Palacios y Guerra, head of public works of the Spanish colonial government at the time. The engineer proposed a plan and design of a church that could withstand fires and earthquakes. He raised the idea of a metal church with Father Esteban Martinez, who was superior of San Sebastian convent in 1879-1882, and to his successor, Father Provincial Father Fidel de Blas 1882-1885, and Prior Provincial Father Leandro Arrúe. Due to the enormous expenses regularly incurred in repairs after several setbacks and calamities, the Order of the Augustinian Recollects approved the plan to build a church made of sturdier material, and this time, the church would be of Neo-Gothic style wholly made of metal. The rebuilding of the church commenced immediately after the approval. Engineer Genaro Palacios spent years travelling to Belgium, Germany and France, canvassing the most acceptable bids, inspecting the progress of construction in the foundries and looking for the best altars and the most brilliant glass windows and mosaics, buying the cheapest but sturdiest tools and cranes in Europe for assembling the steel parts in the church of Manila. The contractor that won the bid was the *Société Anonyme d'Entreprises de Travaux Publics à Brusells*. Palacios monitored the detailed plans of their proposed

works including the final blueprints and condition of materials to be used in the project. The prefabricated metal sections for the church were manufactured in Binche, Belgium. The basilica, composed of 1,500 tons of metal, was shipped to Manila. The assembly of the church was supervised by Belgian engineers, the first column of which was erected on September 11, 1890.

The stained-glass windows were imported from Heinrich Oidtmann Company, a German stained glass firm. The interiors, including 140 figural paintings, were hand-painted in 1890 by the country's premier school, the *Academia de Dibujo, Pintura y Arte*. Around 400 students painstakingly painted the church interior over eight months. The church was raised to the grand status of a *minor basilica* by Pope Leo XIII on June 24, 1890. Upon its completion the following year, on August 16, 1891, the *Basilica Menor de San Sebastian* was inaugurated by the 25th Archbishop of Manila Bernardino Nozaleda y Villa, O.P. with the presence of the image of Our Lady of Mount Carmel above the altar.

Since the completion of this all-metal church in 1891, the San Sebastian Basilica has withstood several earthquakes that have shaken the land. Up to this day, it stands prominently in Manila with its impressive spires, a testimony of the years of deep-rooted religious life of the Order of the Augustinian Recollects, the ever-increasing devotion to the *Virgen del Carmen*, and the incessant faith

of the people.

Through the years, only minor changes have been made to maintain the authenticity of the basilica. The Order of the Augustinian Recollects is beset now with a monumental task. Condition assessments of the building show heavy corrosion, several holes in the walls, extensive pools of water in columns, damaged windows, and severe painting deterioration due to water infiltration. The San Sebastian Basilica Conservation and Development Foundation, Inc. organized a 10-year effort to save this basilica starting in the year 2012. The board members include the Order of the Augustinian friars, aided by an international multidisciplinary team of experts and volunteers. The project has received prior funding from both local and international institutions, together with private donors. Fundraising is still on-going to help save this historic San Sebastian Basilica. The target date of completion of the project has been set for the year 2022.

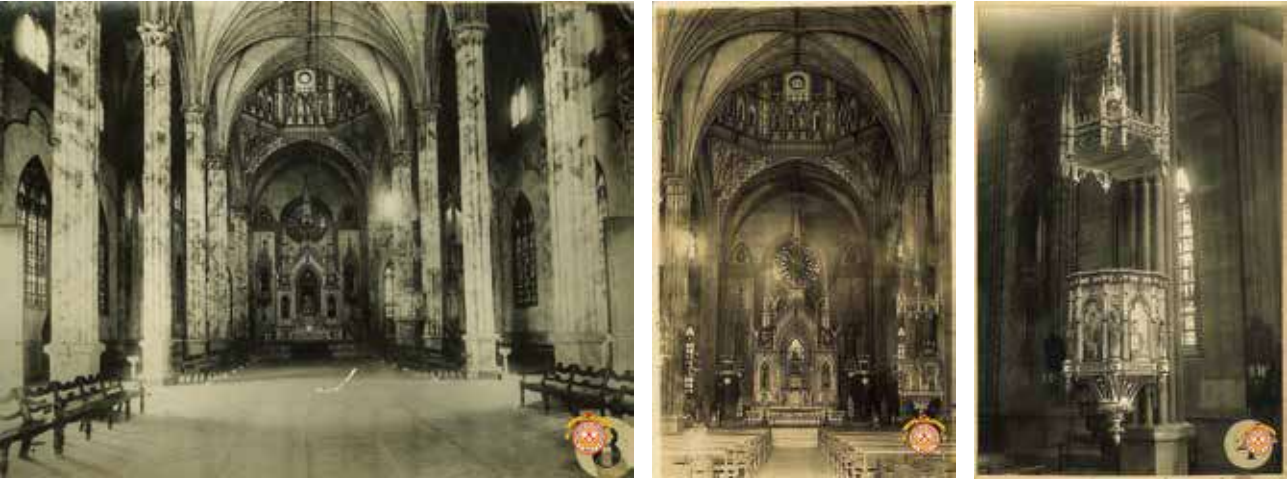
The restoration process will entail in-depth research and study. A tremendous amount of planning is required. It will involve experts from different fields. It will take years to accomplish.

Everything will be worth the effort. The San Sebastian Basilica, after all, is part of the Philippines' deep-rooted heritage. We have a lot to gain in saving this formidable historic edifice.



The first two photos above (from left) were taken in Belgium when they were doing trial mounts of the prefabricated pieces before disassembly and shipment to the Philippines. They had to make sure of the correct measurements before shipping the parts. The San Sebastian Basilica consists of 1,500 tons of metal. The first shipment arrived in 1888 and the first column was erected on September 11, 1890. The basilica has one dome, two towers, 132 columns and 64 spires.





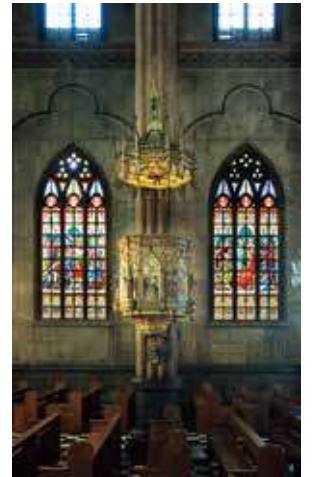
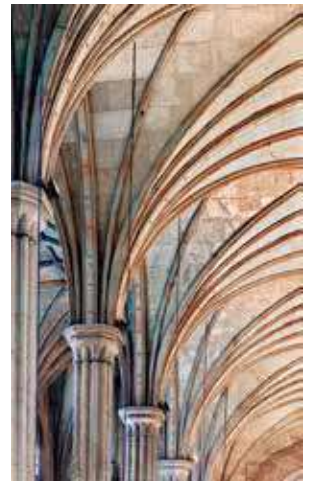
Historic photographs showing the San Sebastian Basilica's facade, its exterior and interior, the main aisle, the old altar and the pulpit. Don Lorenzo Guerrero designed the retablos in the transept as well as the pulpit and the confessionals. Don Eulogio Garcia carved all these fixtures and statues. The retablo of the high altar, hewn in wood and in Gothic style, has Saint Sebastian in its pinnacle. Thirteen Gothic chandeliers, gold plated and with the Carmel coat of arms, were hung in December 1892. Quintin, a Chinese carpenter, was paid for the wooden floor of the church. With the installation of electricity in the capital, these French chandeliers were conveniently replaced with ones manufactured in the shop of Hilario Sunico. Isabelo Tampingco executed the ornate designs of the beautiful chandeliers. The area of the entire floor which accommodates the faithful is 704 square meters.



Above the main altar in the interior is an image of Our lady of Mount Carmel, given to the church by the Carmelite sisters from Mexico City in 1617. San Sebastian Basilica houses this first Carmelite image, the origin of the devotion in the Philippines. The image was enshrined in 1618. The Cofradia of the Virgen del Carmen was established in 1625. The image also survived the earthquakes of 1859, 1863, and 1880. It was canonically crowned in 1991.



A 1934 marker can be seen in the facade of the San Sebastian Basilica. It reads: "San Sebastian Church was designed by Genaro Palacios. The structural metal of which this church is uniquely built was manufactured in Belgium and erected here by Belgian Engineers. The church was solemnly blessed on August 15, 1891. Earlier churches built on this site by the Recollect Friars since 1611 were destroyed by earthquake in 1859, 1863, and 1880."



The 56 stained glass windows, including 10 stained glass windows depicting images of the Joyful and Sorrowful Mysteries and four rose windows with images of the Four Evangelists, were imported from the oldest stained-glass firm in Germany, the Heinrich Oidtmann Studio. Local artisans assisted in applying the finishing touches. The windows and interior paint of San Sebastian are still authentic and original except for one stained glass window depicting the Presentation of Jesus at the Temple, restored by the Kraut Company after the original was destroyed during WWII.



The interiors with 140 figural paintings hand-painted by the country's premier school, the Academia de Dibujo, Pintura y Arte. The Academy Professor Lorenzo Rocha was commissioned by the provincial council to paint the entire edifice. This job, which took months to finish, was shared with his excellent students Felix Martinez, Isabelo Tampinco, Antonio Sanchez, Manuel Martinez, Clemente Paredes, Manuel Espiritu, and Simon Fortic. Several ornamental figures including the four evangelists are painted on the wall behind the main altar. So are the paintings of various saints and angels high above the internal dome. From the floor, the basilica's nave rises 12 meters (39 ft) to the dome, and 32 meters (105 ft) to the tip of the twin spires. There are trompe l'oeil murals of Carmelite saints on the dome's tholobate. The painting on the steel columns, ceilings and walls was executed to give the illusion of marble and jasper.



Full and detailed photographs of the interior showing trompe l'oeil paintings of saints and martyrs. Aside from the result of the paintings' aging process, the extensive corrosion of the metal supports and water leakages further contributed to its deterioration. As an integral part of the conservation and restoration process, there have been initial assessment and testing analyses of these paint layers. The Order of the Augustinian Recollects are seeking assistance on how to preserve these 127-year-old paintings.

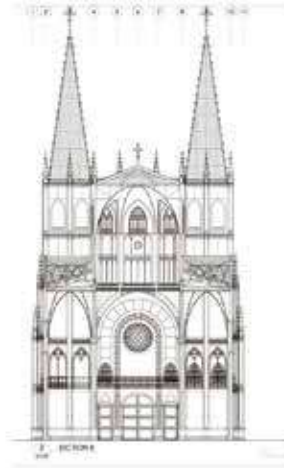
Conservation and Restoration of the San Sebastian Basilica
Phases of Restoration

PHASE I (2012-2015):

Research, Documentation, Diagnostics, Condition Assessment, Testing and Analysis

The metal structure, windows and interior paintings are damaged by corrosion.

1. Building documentation:



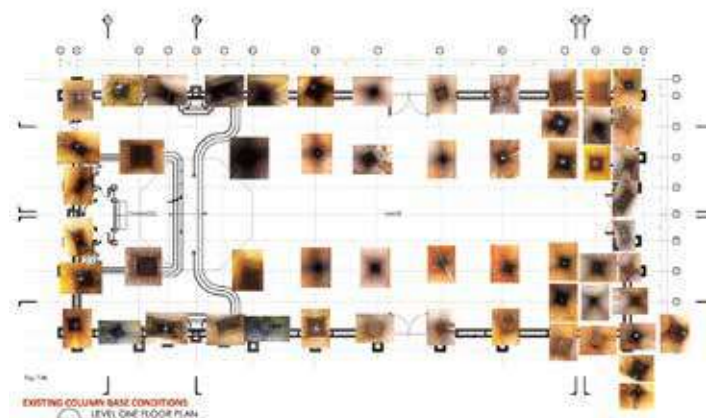
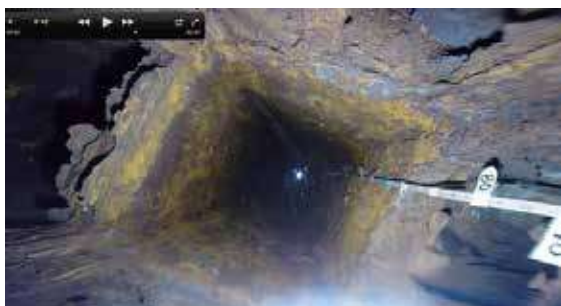
2. Assessment of exterior and interior parts:

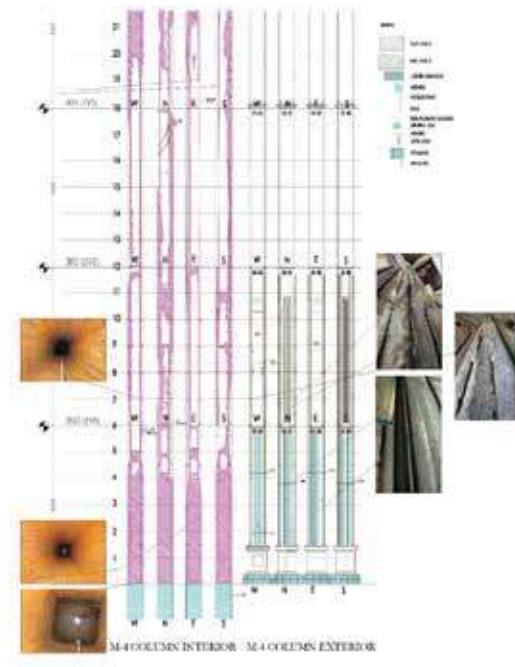
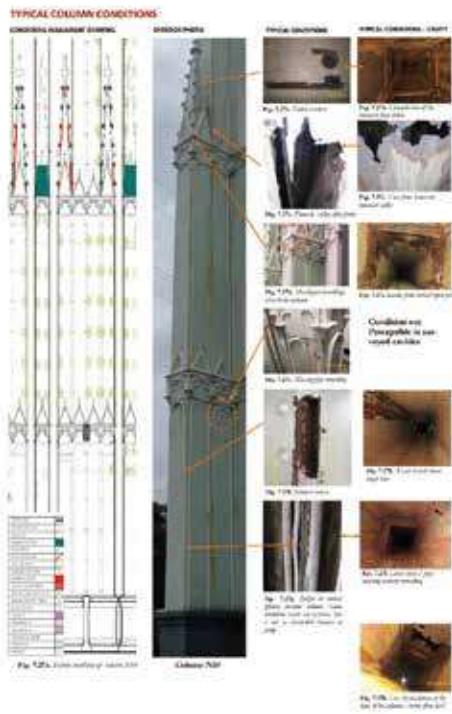
The structure is faced with 126 years of corrosion hidden beneath the church paint.



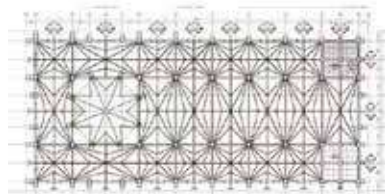
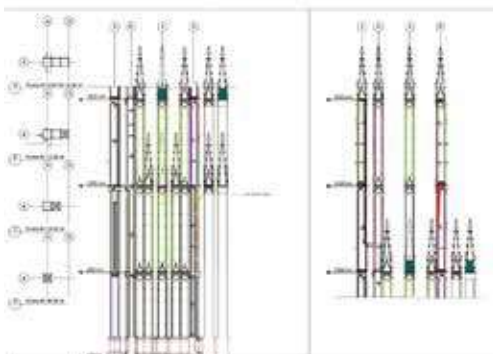
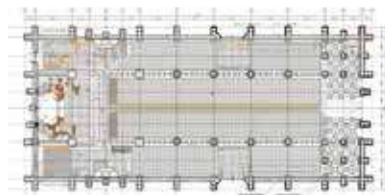
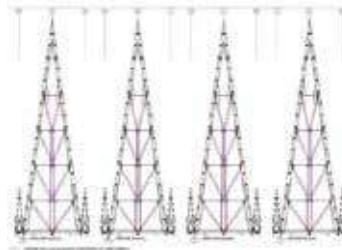
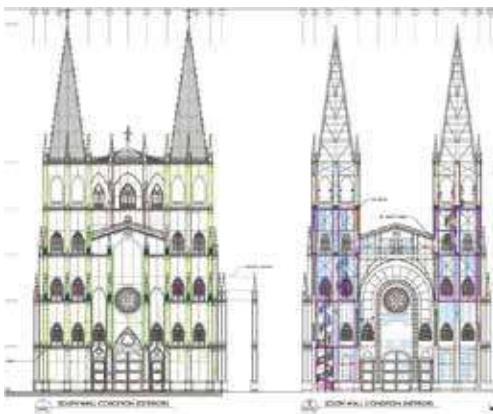
3. Condition of the columns:

Testing and analysis show extensive deterioration of the structure. There are over 300 leaks, large holes inside walls and columns, and pools of water in columns.





4. General condition:



ATTACHED	
BREAKS IN PAINT	
BULGING	
CEMENT PATCH	
CRACKING	
DULLED CORNERS	
GENERAL LOSS	
LOSS BY OXIDATION	
LOSS (INT. OF WALL PANEL)	
LOSS (CAVITY WALL)	
MISSING BOLTS / PEGS	
OPEN JOINTS	
PATCH B	
RUST LEVEL 2	
RUST LEVEL 3	
STREAKING	
WELDED	

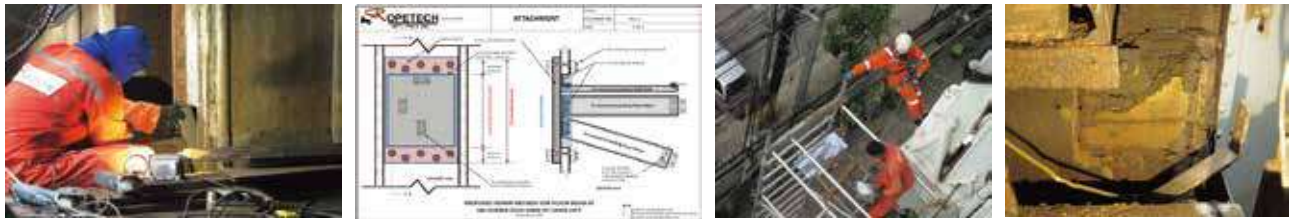
FLOOR CRACK BIGGER	
FLOOR CRACK HAIRLINE	
FLOOR DISCOLORATION 1	
FLOOR DISCOLORATION 2	
FLOOR HOLLOW	
FLOOR PATCH	
FLOOR LOSS	
FLOOR SLOPE	
ROTTED WOOD PLANK	

5. Further investigation:

- 3D Structural Modeling
- Paint Impedance Testing
- Ultrasonic Thickness Gauging
- Calculations of Roof Drainage
- 3D Model to Track Leaks
- 3D Model of Foundations
- Ground Penetrating Radar
- Inclinometers
- 3D Laser Scan & Manipulation of Point Cloud Data
- Temperature & Relative Humidity Monitoring
- Soil Test
- Trompe l'oeil Painting Assessment
- Major probes (subfloor conditions)



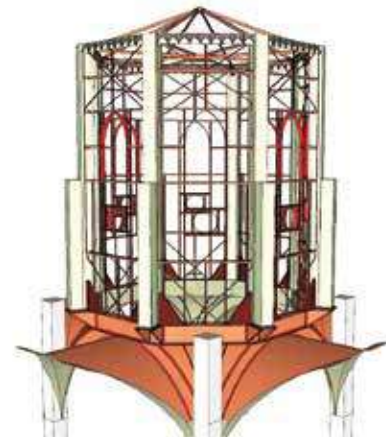
Emergency Repairs: Urgent structural problems (southwest corner repair, valley gutter repair, replacement of downspouts, pinnacle valley repair and box gutter repair), and column repairs



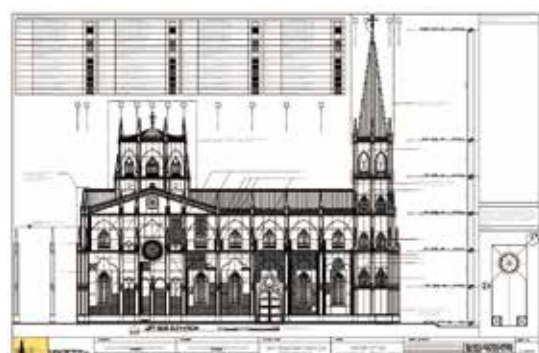
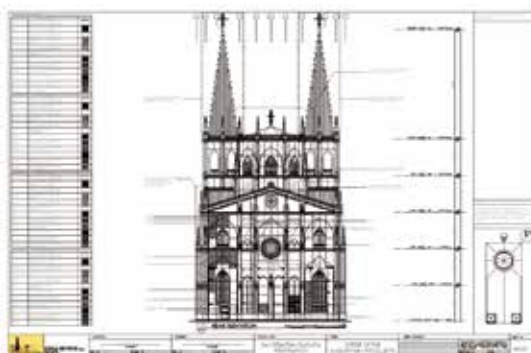
PHASE II: 2016-Present

Design through a grant and local counterpart funding:

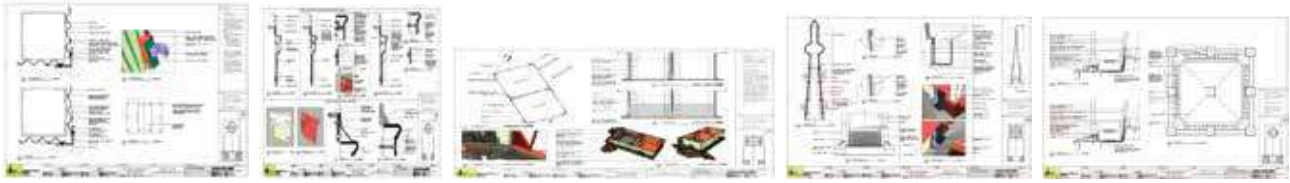
- Restoration recommendations and design documents
- Stabilization, mock ups & construction documents
- Community development, site development and urban planning



Architectural Design & Repairs (In-House)



Sample Architectural Designs and Repairs:
 Dome column, cornice gap ceiling, steeple flashing,
 dome pinnacle, steeple gutter repairs



Consultancy Work and Professional Collaboration:
 Restoration recommendations for different aspects of the building and site (testing, sampling, recommendations, and minor restoration work)



Design Consultancy Work:

- Structural Engineering
- Lighting Design
- Passive Cooling
- Mechanical Engineering
- Site Planning
- Cathodic Protection Design
- Sanitary Engineering
- Architectural Conservation
- Paint Conservation
- Stained Glass Conservation



PHASE III: Public Lecture/Dissemination of the restoration work

There was a lecture on conservation about *Passive Cooling* attended by 217 participants as part of the promotion of public awareness on protecting and preserving historical monuments. Members of the public can also easily take part in the fundraising campaign by simply booking a tour. A member of the team will act as a guide to promote understanding of faith, art, history, and the on-going restoration of the historic San Sebastian Basilica.

Acknowledgements:

- Special thanks to the Order of the Augustinian Recollect Fathers, through Fr. Amado Emmanuel Bolilia, OAR (Executive Director-The San Sebastian Basilica Conservation and Development Foundation, Inc.) for

making this paper possible by providing the research materials and necessary photographs

- Reference material from the book by Emmanuel Luis A. Romanillos: *The Spires of San Sebastian*. San Sebastian Parish, Plaza del Carmen, Quiapo, Manila, 15 August 1991.
- Archival photographs courtesy of the Archives of the Order of the Augustinian Recollects
- Photographic documentation, technical drawings and images of the project by the Technical Team of the San Sebastian Basilica Conservation and Development Foundation, Inc.
- Photographic documentation of San Sebastian Basilica by Estan Cabigas and Chester Ong
- The San Sebastian Basilica Conservation and Development Foundation, Inc., through Ms. Maria Carissa Veloso and Ms. Ysabel de Dios for their assistance.



Conservation Project Development in the Department of Archaeology, Sri Lanka

D.A. Rasika Dissanayaka, *Assistant Director (Promotions) / Civil Engineer*
Department of Archaeology

Introduction

Sri Lanka has a recorded history of more than 2,500 years. Our cultural heritage has been built with the help of the arrival of Buddhism in the 3rd century BC. Heritage identified for protection is defined in the Antiquities Ordinance. Sri Lanka is gifted with thousands of archaeological monuments, and among those there are gigantic monastic complexes and administrative capitals, created as a result of the introduction of Buddhism to the country in the 3rd century BC. These consist of architecture, sculptures and paintings. The most striking feature of these heritages is their continued use since their creation starting from the 3rd century BC to the present. At present, there are six World Heritage Sites in the country. Due to their religious importance, even trees can be identified as heritage in the country but there are still major gaps in the identification of heritage. For instance, massive irrigation systems that have been created since the pre-Christian era and which still function today have not yet been protected. The many heritage values connected with these monuments could be identified.

National Priority

In Sri Lanka the climate is tropical with monsoonal rains and occasional floods. Relative humidity varies from 70% during the day to 90% at night. In the lowlands, the climate is typically tropical with an average temperature of 27-30°C. Bright sunny warm days are the rule. In a country like Sri Lanka, a decayed monument is always in danger due to the heavy rains. Therefore, the monuments must first of all be protected from rain.

Apart from this, these structures are threatened by negligence, deterioration, climate, humidity, biological attack and lack of maintenance. A conservation program should be proposed with the first priority being given to timber monuments. Then the others will commence. Therefore, these monuments must be preserved in a well-fitted manner. In most cases, before starting conservation work, a temporary protection roof, mainly thatched with woven cadjan (dried leaf of the coconut tree), is erected over the monument. That will enable conservators to work in the sun and rain as well.

The main problem related to protection activities is the lack of funds for conservation and maintaining cultural heritage. Although cultural properties contribute a great deal to the country's economy, this is not directly visible. Therefore, the funds allocated for conservation are lower than funds allocated to other purposes in the National Budget.

A large number of monuments are in a state of decay so it is the duty of the Department of Archaeology to protect and preserve all listed cultural properties. But due to insufficient monetary allocations, the department has not

been able to carry out all conservation work. Therefore, the general public is conserving most of the monuments as a meritorious act, because most of our monuments are living monuments related to religion.

The responsibility for conserving the architectural heritage of Sri Lanka belongs to the Architectural Conservation branch of the Department of Archaeology. Fulfilling this task, four conservation architects, one engineer, about sixty architectural conservators and skilled and unskilled technicians are employed by this Branch.

Normally we follow a procedure for Architectural Conservation of Monuments and Layout of Sites

1. Prioritizing conservation projects
2. Documentation/condition assessments
3. Preparation of conservation plans, cost estimates
4. Planning for implementation, and organisation of materials and manpower
5. Implementation of conservation work and quality control
6. Final report (for annual report)

1. Prioritizing conservation projects

The list of monuments and sites to be conserved in each province has already been obtained from regional offices. The main problem for protection activities is the limited funds available for conservation and maintaining cultural heritage. In order to achieve best use of the limited funds, priorities are decided among the many buildings to be restored. A priority list has been prepared with the help of points system.

This system contains a questionnaire for finding the most important monuments to be restored immediately.

Monument Name:

■ Age of monument

- | | | |
|-----------------|-------|----------|
| 100 years | ..... | 1 point |
| 200 years | ..... | 2 points |
| Above 200 years | ..... | 3 points |

■ Present Situation

a. Foundation

- | | | |
|-----------------------------|-------|----------|
| Satisfactory condition | ..... | 1 point |
| To be conserved | ..... | 2 points |
| To be conserved immediately | ..... | 3 points |

b. Walls

- | | | |
|-----------------------------|-------|----------|
| Satisfactory condition | ..... | 1 point |
| To be conserved | ..... | 2 points |
| To be conserved immediately | ..... | 3 points |

c. Roof & ceiling

- | | | |
|-----------------------------|-------|----------|
| Satisfactory condition | ..... | 1 point |
| To be conserved | ..... | 2 points |
| To be conserved immediately | ..... | 3 points |

- **Interconnected environmental condition**
 Environmental condition is not harmful for the monument 1 point
 Environmental condition is harmful for the monument 2 points
 Environmental condition is very harmful for the monument 3 points
- **What is the immediate requirement for conservation?**
 Political 1 point
 Socio-economic 2 points
 Religious 3 points
- **How long it will exist without conservation**
 More than 1 year 1 point
 1 year 2 points
 6 months 3 points
- **Financial or other contribution from external bodies for conservation**
 Give marks according to their contribution
 Labour 1 point
 Materials 2 points
 Funds 3 points
- **Benefit for people living in the area after conserving this monument**
 Economic 1 point
 Religious 2 points
 Social 3 points

- **Difficulties faced without conserving this monument**
 Economic problems 1 point
 Religious problems 2 points
 Social problems 3 points
- **Other details which are important to decide priority**
 Give 1-3 marks according to their importance; i.e. values, factors of deterioration etc.
 * 1 point
 * 2 points
 * 3 points

TOTAL Points points

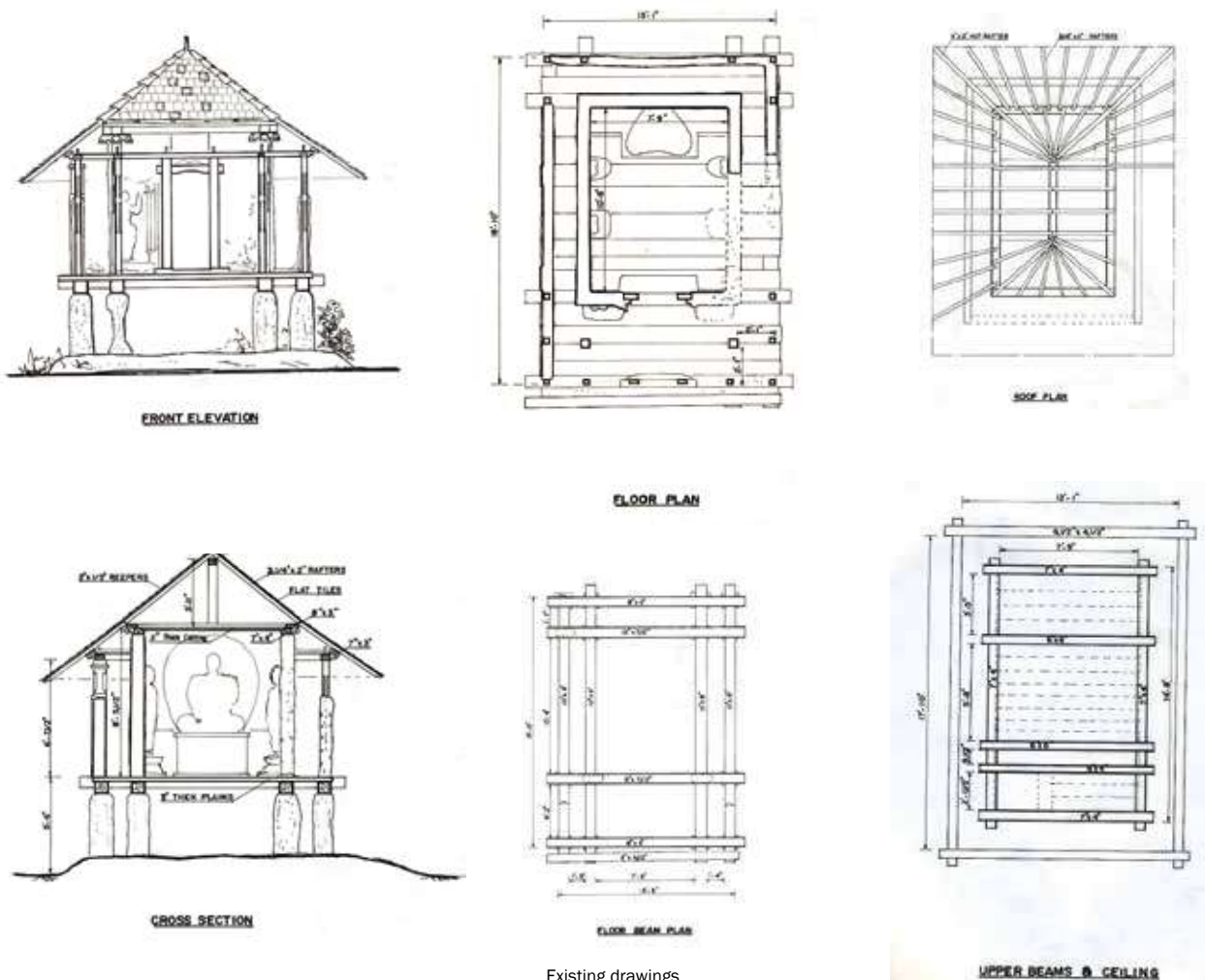
■ Signature: Prepared by:
 Designation: Date:

This contains various data to support the evaluation to select the most critical monuments.

2. Documentation/condition assessments

- i. Documentation mostly by hand measurement
- ii. Condition assessment using a standard template
- iii. Documentation and condition assessment conducted jointly
- iv. Emergency measures are taken (temporary shelter)

The documentation is mostly done by hand measurement, and qualified and experienced draughtsmen prepare drawings.



Existing drawings

Condition Assessment Report

A standard template is used for condition assessment. In most cases, documentation and condition assessment are conducted simultaneously. Conservators, draughtsman, technical personnel, photographers and skilled carpenters and masons often collaborate to prepare this condition assessment. In most cases, the owners of these monuments, normally head monks, help the conservation groups because they have experience dealing with any problems related to the relevant structure. At this stage, if it is observed that the monument is in danger, emergency measures are taken. Normally a temporary roof is erected over the monument. At this stage, if it is observed that the monument or part of the structure is in danger, or is leaning and liable to collapse, emergency measures are taken. Normally, a temporary roof is erected over the monument, as it helps protect the conservators from the sun and rain.

Condition Assessment Using Standard Template

- Preparation of documentation condition reports
 - Measured drawings, sections, elevations of the monument
 - Photographs
 - Survey plans (if required) etc.
- Condition Report
 - Name of the monument
 - Ownership
- Location and area of the monument
 - Province / district etc.
 - Route
- Identification
 - Topography
 - History
 - Social system
 - Folklore
 - Environmental features
- History of conservation
- Present state of monument
 - Foundation
 - Walls
 - Columns
 - Roof, etc.
- Proposals for conservation
 - What is to be conserved
 - Problems and difficulties
 -

Example

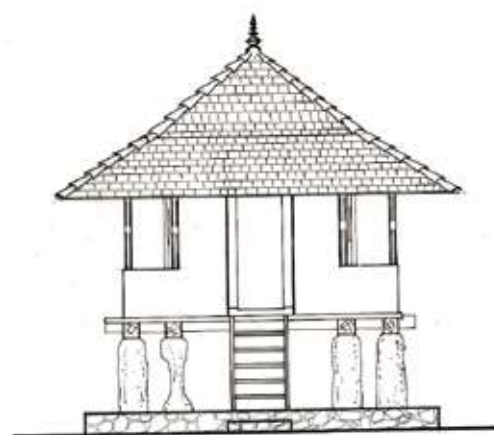
Building Elements		Material / Finishes / Observations	Assessment	Proposed Intervention
Foundation	Drumming Hall	Rough finished stones and cement mortar joints, later interventions	Uneven mortar joints	Remove existing cement grooves and reapply in the proper way
	Tampita Vihara	Smooth finished stones	Proper condition	No intervention
Floor	Drumming Hall	Terracotta tiles laid on floor	Proper condition	No Intervention
	Tampita Vihara (Ground Floor)	6"×6" Ceramic tiles with some printed tiles	Displacement / Bulging	Remove existing ceramic tiles and replace with suitable tiles
	Tampita Vihara (Upper Floor)	Cement rendering on timber floor	Weight of this cement plaster will affect the load bearing capacity of upper floor level timber beams	To reduce the weight on the timber frame, it is recommended to remove cement plaster and fixed timber planks
Walls	Drumming Hall	3'-9" height, 12" thick walls around the drumming hall with top thick cement layer	Detached cement layer	Rectify small cracks and whitewash. Remove the top cement layer and fix timber plank.
	Tampita Vihara (Ground Floor)	Clay walls / Wall paintings on inner and outer surfaces / Another layer of wall painting under the existing painting on outer surface	Discoloured finish	Fill cracks and plaster if necessary and whitewash / Remove the later intervention / Conservation of wall paintings
	Tampita Vihara (Upper Floor)	Wattle and daub walls /Wall paintings on inner and outer surfaces	Discoloured finish	Filling cracks and plastering if necessary and white washing / Conservation of wall paintings

Columns	Drumming Hall	Pekada on stone columns		Cleaning the stone columns using brushes
	Tampita Vihara (Ground Floor)	Pekada on stone columns		Cleaning the stone columns using brushes
	Tampita Vihara (Ground Floor)	Timber columns in outer row	Cracks	Fill cracks with suitable filling material. Removing the paint layer. Applying colourless wood preservatives.
	Tampita Vihara (Upper Floor)	Timber columns in outer row with railings in between them		Cleaning the timber columns and railing and applying colourless wood preservatives.
Timber frame on ground floor walls	Tampita Vihara (Ground Floor)	3 Timber frames on clay walls. Paintings are existed on inner side of beams	Decayed timber beams / Seriously damaged timber parts	Replacing timber beams / or filling cavities with suitable strengthening materials. Consultation with professionals for further intervention.
Timber frame on upper floor walls	Tampita Vihara (Upper Floor)	Timber frames on wattle and daub walls. Paintings exist on inner side of beams	Decayed timber beams / Seriously damaged timber parts	Replacing / Filling cavities
Ceiling	Tampita Vihara (Ground Floor)	Timber planks - underside of upper floor / Paintings	Spaces between planks	Filling cavities in a suitable manner
	Tampita Vihara (Upper Floor)	Timber planks - Paintings	Spaces between planks	Filling cavities in a suitable manner
Roof	Drumming Hall Tampita Vihara (Upper Floor)	Timber rafters are carved and Kandyan tiles appear on timber frame work	Decayed rafters	Replacing decayed timber parts
	Tampita Vihara (Main roof)	Kandyan tiles on timber frame work		No intervention
Staircase	Tampita Vihara	Timber	Cracks	No intervention
Doors	Tampita Vihara	Timber doors	Good	No intervention
Electrical Installation		Already installed	Irregular	Introduce proper electrical installation system

3. Preparation of conservation plans, cost estimates

- i. Develop proposals
- ii. Prepare conservation drawings
- iii. Estimates and budgets and specifications
(Follow the Standard Rate Analysis & Specifications of Sri Lanka Standard Institute (www.slsi.lk))
- iv. Program (if required)

After considering structural problems and causes of decay a conservation plan is raised. Accordingly, conservation drawings are prepared and followed by estimates and specifications. Normally a conservation project cannot be restricted to the allocated budget, because conservation decisions change when the conservation works are being done. In some cases an additional amount of money is estimated for unforeseen works.



FRONT ELEVATION

Conservation drawing

4. Planning for implementation, and organisation of materials and manpower

About 99% of conservation projects are implemented by staff working in the department. In most cases, army engineering regiments are utilised for easy handling and mobilization. The major components of conservation projects are:

- Materials and services
- Manpower – labour

Materials and services

In Sri Lankan practice, an open tender procedure is followed for the supply of materials. In this method, price quotations are called from suppliers who wish to supply materials and services for the project. Government procurement guidelines are followed (<http://www.nprocom.gov.lk>), which are administered by a tender board appointed by the head of the department. The quotations are evaluated by an evaluation committee and priority is given to the quality of the materials and prices. The supplied materials are checked by the technical officer (architectural conservator) and according to their technical report, the materials are used if the report finds them to be acceptable. All these materials should fulfill the specifications of the Sri Lankan standards. (www.slsi.lk) Also, in most cases, people living in the vicinity donate materials as a meritorious act. However, obtaining timber is the main difficulty in conservation works.

Manpower

The labour requirement for the work is divided into:

- a. Skilled – masons & carpenters
- b. Unskilled - labourers

For most conservation projects a permanent staff of skilled labour is used, as they possess experience in various kinds of work. As normal construction work differs from conservation work, personnel with expert skills should be employed.

Normally the practice is that unskilled labour is recruited from nearby areas if our permanent staff is insufficient. The people living in the vicinity of the monument will therefore be interested in preserving the heritage. Even after the project is completed, they will be messengers for conservation, as they will continue to live with the monument. On most occasions people in the vicinity have voluntarily joined in the conservation work.

5. Implementation of conservation work and quality control

All projects will be administered by the conservation architect, who will have the responsibility for the overall project. He will visit the monument occasionally and direct the project through the senior technical personnel.

- i. When a project starts, it will be supervised by an officer in charge of the project, full time and on site. The O.I.C. will be responsible for implementing the project as per the project proposals and estimate. He has to arrange the labour, materials and services properly.
- ii. The senior technical personnel will give the necessary advice, and major matters will be directed to the conservation architects. The project will be regularly inspected by the conservation architect and the senior technical officer with the participation of the custodian.

All the conservation works are carried out under the direct supervision of the department's technical staff. The officer in charge of the site keeps all records for future reference. Further changes and modifications done for the conservation proposal are also included in the documents. As a conservation principle, the operational site is closed to the public until the conservation works are completed.

6. Final report (for annual report)

At the end of any conservation project the officer in charge prepares a conservation report for future reference and maintenance work. It includes all the works done and problems encountered with the conservation, with the help of drawings and photographs. It will be published in the annual report of the relevant year.



Engineering regiments of army forces



Volunteers joined the conservation work in Abhayagiri Dagata, Anuradhapura.



While Conservation



While Conservation



Before conservation



After conservation

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