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The Eighteenth 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 ten reports submitted by international correspondents in the Asia-Pacific region.

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Bhutan

Ruins of Drukgyel Dzong

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Archaeology Section, Division for Conservation of Heritage Sites, Department of Culture, Ministry of Home and Cultural Affairs

Introduction

Fortresses in Bhutan, locally known as *dzongs,* are architectural masterpieces and regarded as the most significant architectural heritage in the country. *Dzongs* are aesthetically majestic, unique in design and form, strategically located on top of a hill or ridge overlooking a valley or in between the river confluence for defense (fig.1). Most of the principal surviving *dzongs* in the country are attributed to the great historical and religious ruler Zhabdrung Ngawang Namgyel (1594-1651) and his successors (MoWHS 2014, see fig. 2). He is regarded as the unifier of the country as a nation state and built a chain of *dzongs* in the country in the process of unification, gained control over the different regions, then ruled through local chieftains and the clergy of different Buddhist sects (Hasrat 1980). He also established a dual system of governance in which the secular and spiritual affairs of the state functioned from the *dzong* (Phuntsho K 2011).

The ruins of *Drukgyel Dzong* (fig. 3), one of the renowned archaeological sites in the country, was also built under the command of Zhabdrung Ngawang Namgyal to commemorate victory over the Tibetan forces. The name *Drukgyel* was derived from (*"Druk,"* the local name of Bhutan and *"gyel,"* which means victory). According to Lhoyi Choe Jung, the *dzong* was built in 1649 primarily as a *Dra Dzong* (for defensive purposes) to protect the route from possible Tibetan attack (Namgyel et.al 2007; Claude J. W. 1914). The other defense fortresses were *Gasa Trashi Thongmon Dzong, Haa Damthang Dzong,* and *Lingzhi Dzong*. The *Drukgyel Dzong* was unfortunately later completely destroyed by fire in 1951. Hereafter, the ruins of the *dzong* continued to be protected as an important monument linking the people of Bhutan with the great events that contributed to maintaining the sovereignty of the country.

The Archaeology Section under the Division for Conservation of Heritage Sites, Department of Culture, Ministry of Home and Cultural Affairs carried out a detailed survey and documentation of the *Drukgyel Dzong* ruins in 2016-2017 to aid future conservation works, and to ensure the protection of the heritage sites for posterity in a form of a record. This report briefly highlights some of the unique features present in this *dzong* compared to rest of the *dzongs* in the country.

Geographic location

The *Drukgyel Dzong* ruins are located on top of a hill of a *phonde* village under *Tshento gewog, Paro Dzongkhag* (fig. 4), nearby the border with Tibet for strengthening defenses against future invasions, and adapting to the topography of the hill. It is located 14 km from *Paro* town, and covers approximately 19 acres of land.

Exact Location

Coordinates (WGS84): 27°30'N 89° 20' E
Geo URI geo: 27.5, 89.333333
UTM: 45R730506 3043985
Altitude: 2,609 m above sea level

***Drukgyel Dzong* ruins and its unique features**

The ruins of the *Drukgyel Dzong* (fig. 3) are comparatively well preserved with major portions of the stone and rammed earth wall structures still standing up to a certain height. Since the main fortress complex of the ruins of Drukgyel is similar to other *dzongs* built by Zhabdrung Ngawang Namgyel, it is comparatively easy to understand the layout and the features of the fortress complex.

The main *dzong* complex (fig. 5) consists of three distinct courtyards arranged in a northwest to southeast orientation. Each courtyard is enclosed by elongated square and rectangular buildings also known as *shabkhor* (residence/ living quarters/stores) built according to the profile of the terrain similar in layout to other *dzongs*. The main tower, known as the *Utse*, is situated in the innermost courtyard on an elevated level higher than the first and second courtyards. The main entrance to the fortress complex on the southeast is connected by fortified pathways to a water cistern tower at the base of the hill connected in between by two rectangular and one round watchtower. Similarly, it is also connected by a fortified pathway passing through two watchtowers in a northeast direction facing Mount Jomolhari. The total land area of the ruins is more than 19 acres.

Although the layout of the main *dzong* complex is similar to that of other *dzongs*, one of the distinct differences is the presence of watch towers and a water cistern connected by fortified pathways to the main fort complex. *Drukgyel Dzong*, being built principally as a defensive fortress, high and massive stone masonry walls built along the profile of the steep slope of the hill enclose the inner space of the *dzong*, with the only entrance from southeast guarded by the fortified pathways and several watch towers situated between the entrance and the foot of the hill (fig. 6). As Samuel Turners states in his book *An Account of an Embassy to the Court of the Teshoo Lama*, these defense mechanisms could even preserve safe communication within themselves even in times of the greatest peril.

However, in most of the *dzongs* built by Zhabdrung, watch towers known as *Ta-* were clearly built shortly after to guard the *dzong*. They are generally located on top of a hill, not within the fort complex as in the case of *Drukgyel Dzong*. For instance, Namgyel et al (2007) maintains that the *Paro Ta-dzong* was built in order to protect *Paro Rinpung Dzong* and similarly, *Trongsa Ta-dzong* was apparently built in 1652 to guard the *Trongsa Dzong* (fig.7). Furthermore, the presence of a water cistern, as

Claude J. W. (1914, p.374) explains, would allow occupants to access the water supply under cover in the case of a siege. Thus, the presence of three water cisterns (figs. 5 and 8) also signifies that the *Drukgyal Dzong* housed a huge number of armies in the past. Therefore, being built for defense, namely to protect the route from possible Tibetan attack, it was for military purposes, without administrative and religious functions (Namgyel et. al 2007; Claude J. W. 1914), whereas most of the *dzongs* served as a center for administrative and religious functions, a dual system of governance introduced by Zhabdrung.

There are views that all the buildings within the second and third courtyard are internally connected to each other so that one can walk all the way through the passage doors connecting rooms from the inside. This is clearly evident from the door remnants in each structure interlinking every other structure. The 360 degree access within the fort complex must have been a good way to keep a close watch for enemies in all directions. Furthermore, the *dzong* had been constructed as a fortification complex as a whole with the first courtyard as a horse stable, which is also one of its unique features compared to other *dzongs* (fig. 5).

There are numerous arrow slits like in other *dzongs* across the country. However, unlike other *dzongs*, *Drukgyal Dzong* has some very interesting unique arrow slits facing the north. They have made in such a way that the arrow slits are targeted towards the north by constructing slanting stone walls from inside (fig. 9). Another two distinctive arrow slits can be seen in the walls inside the entrance door of the second courtyard, through which one can see who is coming into the *dzong* from the main entrance door of the fortress complex.

One of the unique features is the presence of a long underground channel measuring 300 x 500 mm, starting from the base of the platform near the circular structure running farther down in the direction of the northeast water cistern (fig. 10). It is quite certain that it is a water channel; however, since it is not connected to the courtyard or any drains from the courtyard, one can conclude that it is not part of the drainage system. Therefore, excavation of this channel further downhill is important to understand the purpose of this channel. There is a myth that says there was a lake inside the *dzong* complex. At the moment, one can assume that the so-called lake must have been some kind of system where rainwater was harvested, and this water channel might have been used to drain out excess water.

In conclusion, *Drukgyel Dzong* ruins, being one of the *dzongs* principally built as a defensive fortress, is unique in its layout and the way it functioned compared to the other *dzongs*. Although the courtyard concept plan is similar to other *dzongs*, with the main tower in the center surrounded by *shabkhor*, it has numerous watchtowers connected by fortified pathways and a water cistern built solely for the purpose of defense. Moreover, *Drukgyel Dzong*, being primarily built for defense, had a military purpose, without an administrative or religious function, unlike other *dzongs* which served as religious and administrative centers.

Glossary

Drukgyel = Name of the present site
Dzong = Fortress
Tshento = Name of a block
Gewog = block
Paro = Name of place
Dzongkhag = Districts
Utse = main central tower
*Shabkhor = the surrounding living/residential struc*tures

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Fig. 1 Dzongs. Source: MoWHS (2014 p.19)

Historical *dzongs* (timeline)

Built year (AD)	Name	Built/Founder
1549	Jakar dzong	Ngagi Wangchuk (1517-1554)
1629	Semtokha dzong	Zhabdrung Ngawang Namgyel (1594-1651)
1637	Punakha dzong	Zhabdrung Ngawang Namgyel
1638	Wangduephodrang dzong	Zhabdrung Ngawang Namgyel
1641	Trashichho dzong	Zhabdrung Ngawang Namgyel
1644	Paro Rinpung dzong	Zhabdrung Ngawang Namgyel
1647	Trongsa dzong	Chogyal Minjur Tenpa
1648??	Gasa dzong	Zhabdrung Ngawang Namgyel?
1648	Daga Trashi Yangtse dzong	Druk Namgyel
1649	Drukgyel dzong	Zhabdrung Ngawang Namgyel? /Tenzin Drukda
1649	Paro Ta dzong	La-Ngoenpa Tenzin Drugda and Chogyal Minjur Tenpa
1654	Lhuentse dzong	Chogyal Minjur Tenpa
1655	Zhemgang dzong	??
1659	Trashigang dzong	Chogyal Minjur Tenpa
1667	Lingzhi dzong	Chogyal Minjur Tenpa

Fig. 2 Timeline of historical *dzongs* in Bhutan. Source: Namgyel etal (2007), Phuntsho (2014)

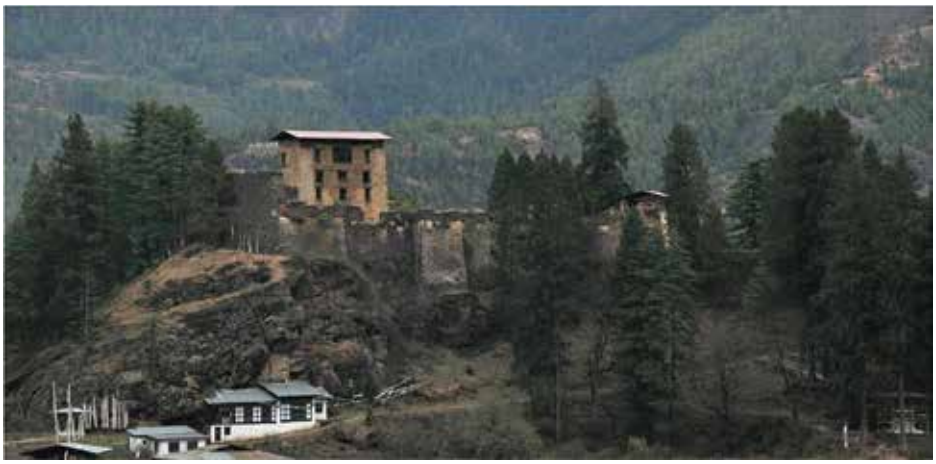

Fig. 3 South-west view of Drukgyel Dzong. Source: DCHS

Fig. 4 Location of Drukgyel Dzong. Source: Google Earth

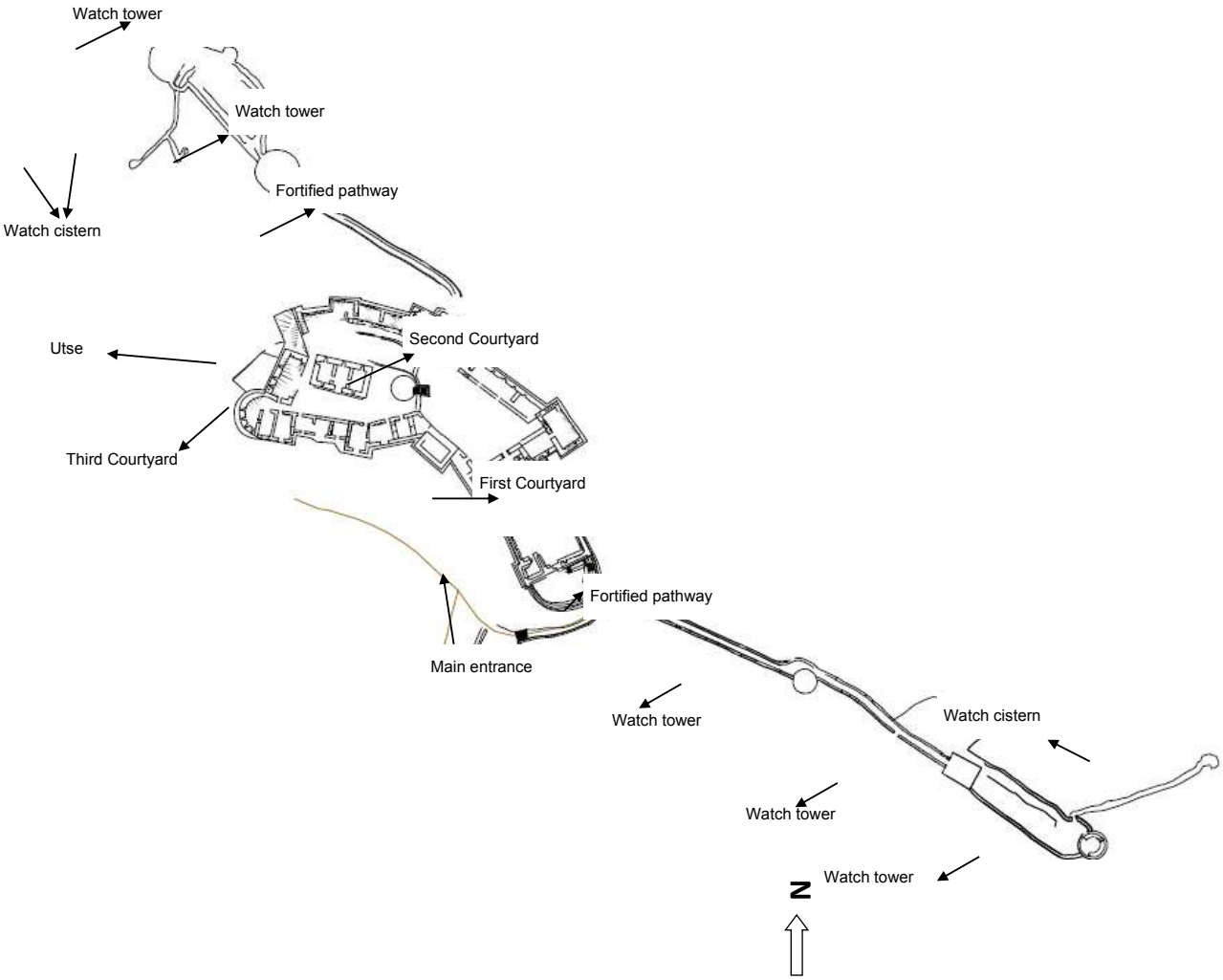

Fig. 5 Ground Plan of Drukgyel Dzong ruins. Source: DCHS

Fig. 6 Fortified pathways and watch towers (above and below). Source: DCHS

Fig. 7 Paro Rinpung *dzong* (left) and Paro Ta-dzong (right) showing the location of the main *dzong* and watch tower. Source: DCHS

Fig. 8 Water cistern (right and left). Source: DCHS

Fig. 9 Arrow slit. Source: DCHS

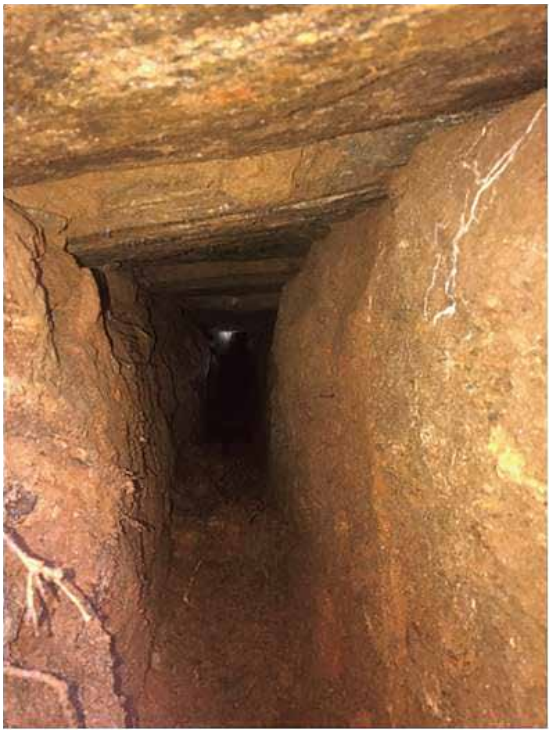

Fig. 10 Underground channel. Source: DCHS

Preliminary Study of the Research-oriented Conservation Project — Hall of Mental Cultivation

Zhao Peng, *Deputy Director*
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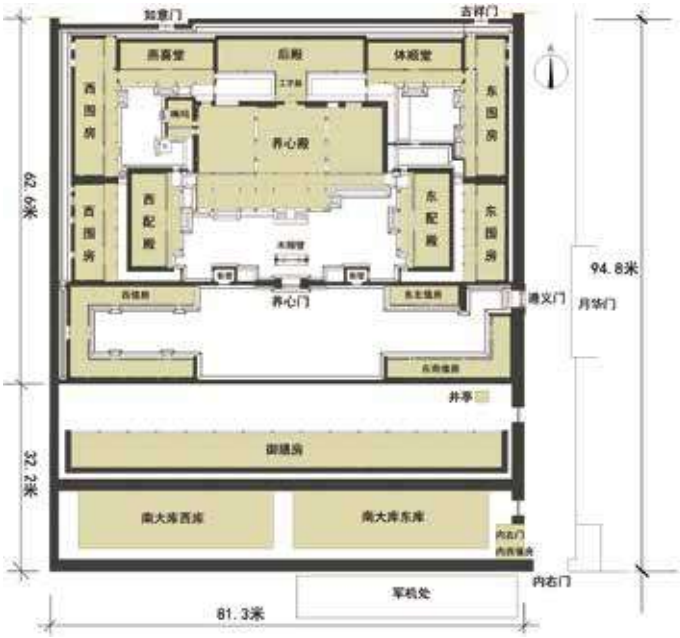
1. Background information and overview of the project

At the end of 2015, the Palace Museum launched the "Research-oriented Conservation Project of the Hall of Mental Cultivation." The emphasis on the name "Research-oriented Conservation Project" suggests that the Palace Museum will explore new implementation mechanisms and ways of inheritance with respect to architectural restoration. Currently, the Palace Museum is responsible for the preservation and maintenance of more than 1,200 ancient buildings, covering an area of approximately 23,000 square meters. It is not only the largest palace complex in the world, but also the most complete and integrated ancient architectural complex with wooden structures in existence. Within the region surrounding the Hall of Mental Cultivation, there stands ancient buildings that are laden with exceptionally deep cultural associations. Hence, this region is rendered the central focal point of architectural restoration within the Forbidden City, consisting of 18 buildings in total, with an area of more than 3,800 square meters. The Hall of Mental Cultivation served as the resting quarters of 8 Qing Dynasty emperors, the first of whom being emperor Yongzheng. Moreover, it functioned as the heart of Emperor's daily administration over a long historical period until the late Qing dynasty. In fact, every ancient building in the Palace Museum has its own unique life course. We should dig deep into all the historical data that corresponds to different temporal periods, much like the method of archaeological excavation—paying attention to the study and protection of historical information on every archaeological site. During the implementation process of the "Research-oriented Conservation Project of the Hall of Mental Cultivation," three fundamental principles must be acknowledged and actualized: maximize the retention of ancient architectural historical information; make no change to the relics and status of the original ancient architecture; pass on the traditional craftsmanship of ancient architectural restoration; these three principles should be implemented throughout the restoration of ancient buildings in the Forbidden City.

The ancient buildings in the area of the Hall of Mental Cultivation have not been systematically maintained and protected for a long time; therefore, the present status of preservation is poor, and the buildings are in urgent need of systematic renovation. Defining the restoration of the Hall of Mental Cultivation as a "research-oriented project" expresses the hope of breaking away from the management mode of general construction projects, placing scientific research in a more important position, and allowing the pace of the project to bow to the quality of restoration. The primary tasks of the project are to optimize and perpetuate its value, to fully restore its health, to effectively improve its environment and to show its glamor in a scientifically palpable manner. In a sense, the problems expected to be encountered during the architectural restoration in the Forbidden City are not only related to craftsmanship and technique, but also understanding and attitude, namely, the question of how we should treat Chinese traditional culture and the cultural heritage of mankind.



Floor plan and aerial view of the Hall of Mental Cultivation

2. Existing problems

Because annual maintenance is not completely finished many architectural components are seriously damaged. The glaze on roof tiles keeps peeling off, the mortar layers are decaying and coming loose, some components have been lost, and gutters are damaged; the timber structure has become rotten and the sinking of some components is obvious; the underneath layer of colored painting is sagging and partly peeling, the painting on the flying rafters is basically all cracked and peeling off, and some parts have flaked off already; a large section of the oil painting appears to be hollowing, peeling off and even showing the bare wood structure; the decorations on the eaves, silk fabric and paint have been damaged by insects, or are broken or missing; about 90 percent of the surface of the floor tiles in the courtyard appears to be somewhat damaged, and the undulating surface of the ground prevents the confluence of rain to the outlets, resulting in ponding in multiple places. These conditions affect the viewer's safety and the World Cultural Heritage image of the Forbidden City to varying degrees.

3. Research plan of the project

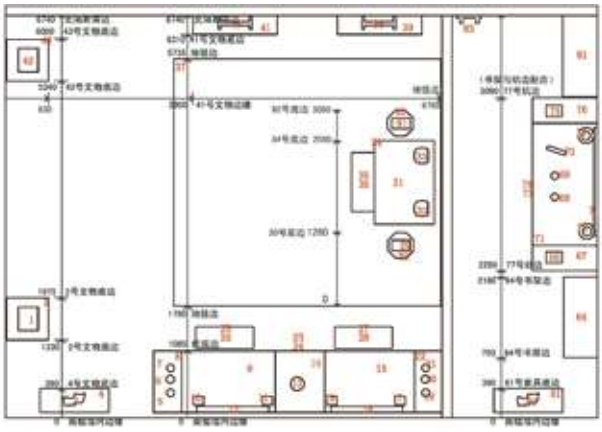
The restoration of the Hall of Mental Cultivation is a comprehensive project being jointly carried out by the whole Palace Museum with the aid of outside scientific research teams. The main contents are divided into 20 subsections, including overall planning, value assessment, construction investigation, archives research, movable cultural relics protection, material base construction, infrastructure transformation, etc. Of these, the recording, research and protection scheme of this architectural heritage project is 90 percent complete, which is essentially the overall project's preliminary research. In addition, we have also completed the location records of 1,168 pieces of movable cultural relics inside the Hall of Mental Cultivation, the field experiments on the application of photogrammetry technology in the complex's indoor space, and development of the technical scheme of equipment.

According to various aspects of craftsmanship such as the timber structure, tiling, colored painting, wallpaper, walls and flooring, etc., the architectural heritage subsections are further divided for classification to each establish a professional team, with the hiring of experts with extensive experience to provide on-site guidance, and gradually completing the project plan according to the protection procedures in the Principles for the Conservation of Heritage Sites in China.

The overall goal of the research and protection scheme is to be able to make disease assessment levels, study the environmental characteristics, analyze the causes of diseases, and conduct an overall assessment of structural safety by completing a thorough scientific and detailed record of the architectural structure and diseases. Combined with historical documents, we analyze the structural features of the Hall of Mental Cultivation, and probe the value of the architectural relics in depth, striving to date all components. On the basis of the scientific disease assessment and value assessment, we ensure the safety of the architectural structure, maximizing the preservation of historic information while insisting upon the principle of not altering the original status of the relics, formulating reasonable measures to protect the architecture,

The architectural damage of the Hall of Mental Cultivation

Experts with extensive experience on site to provide guidance



Location record of movable cultural relics

and archiving all the records and information. During this process, an expert consultation system will be established to realize the participation of the expert teams in the whole process. This research-oriented approach will penetrate the entire project. Through the Hall of Mental Cultivation project, we are striving to consolidate the standard of surveying and mapping for investigation of the architecture in the Forbidden City, form protection design requirements and disease assessment criteria, and transform the project into a restoration model for Chinese ancient official architecture.

4. Research results

The preliminary study of the Research-oriented Conservation Project of the Hall of Mental Cultivation is a process of cognition that focuses on finding value, an attitude that gives far greater priority to the issues of utilization and management in the latter phase, even before the project is implemented, a consideration that covers how to inherit culture, and for whom we are protecting the architecture.

The results of the preliminary research will directly impact and guide the implementation of the restoration scheme, which is expected to start in the second half of 2018.

References:

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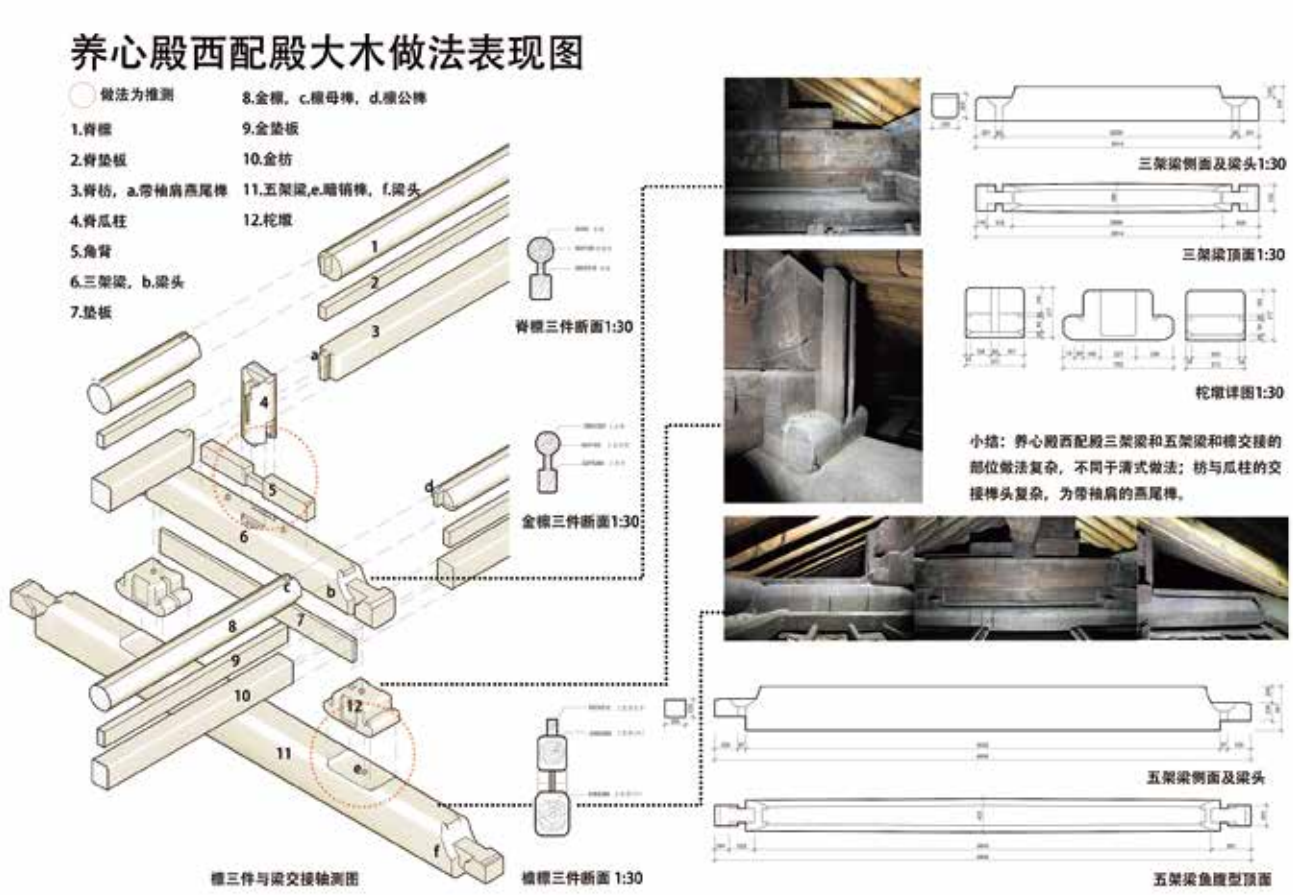
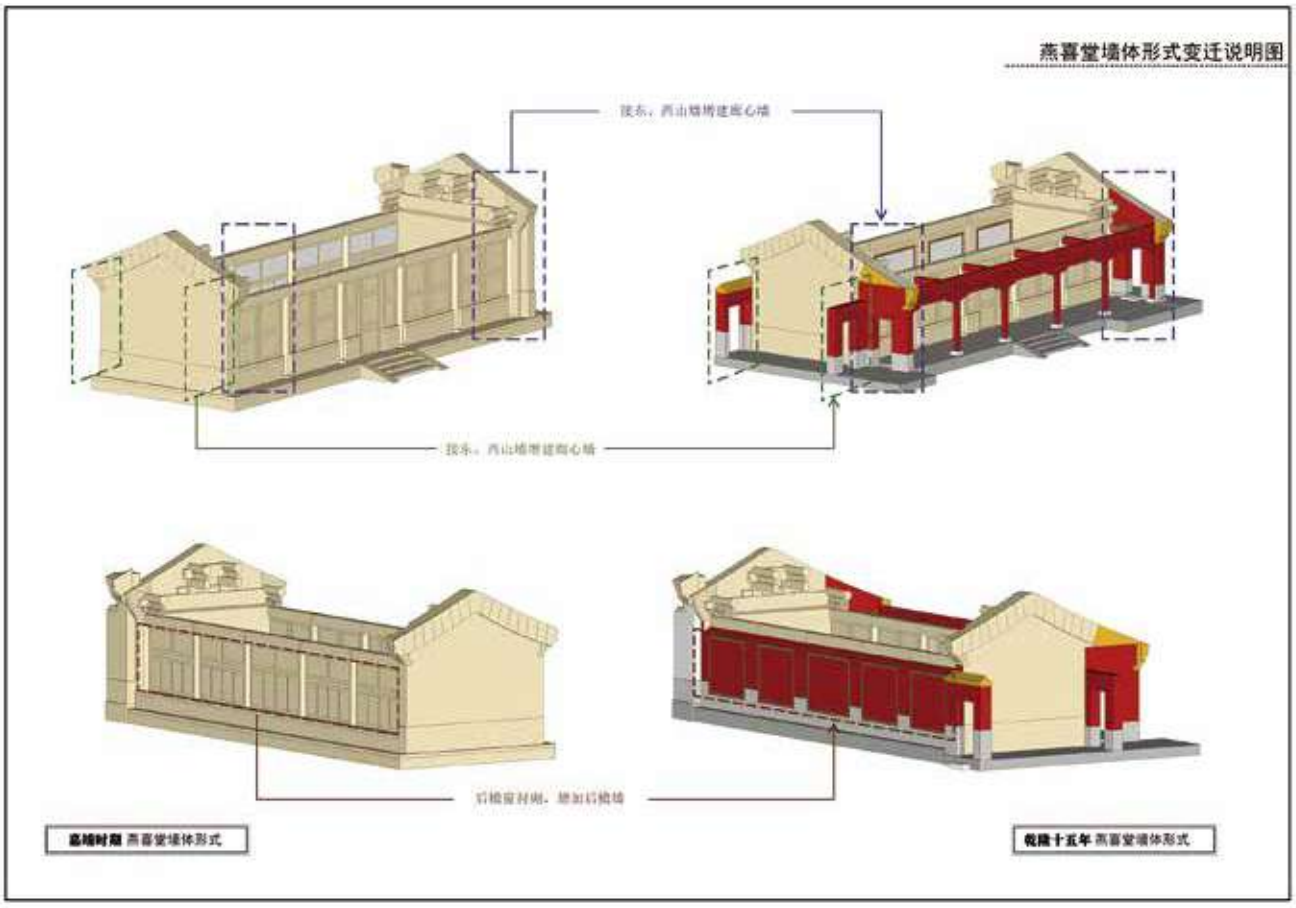


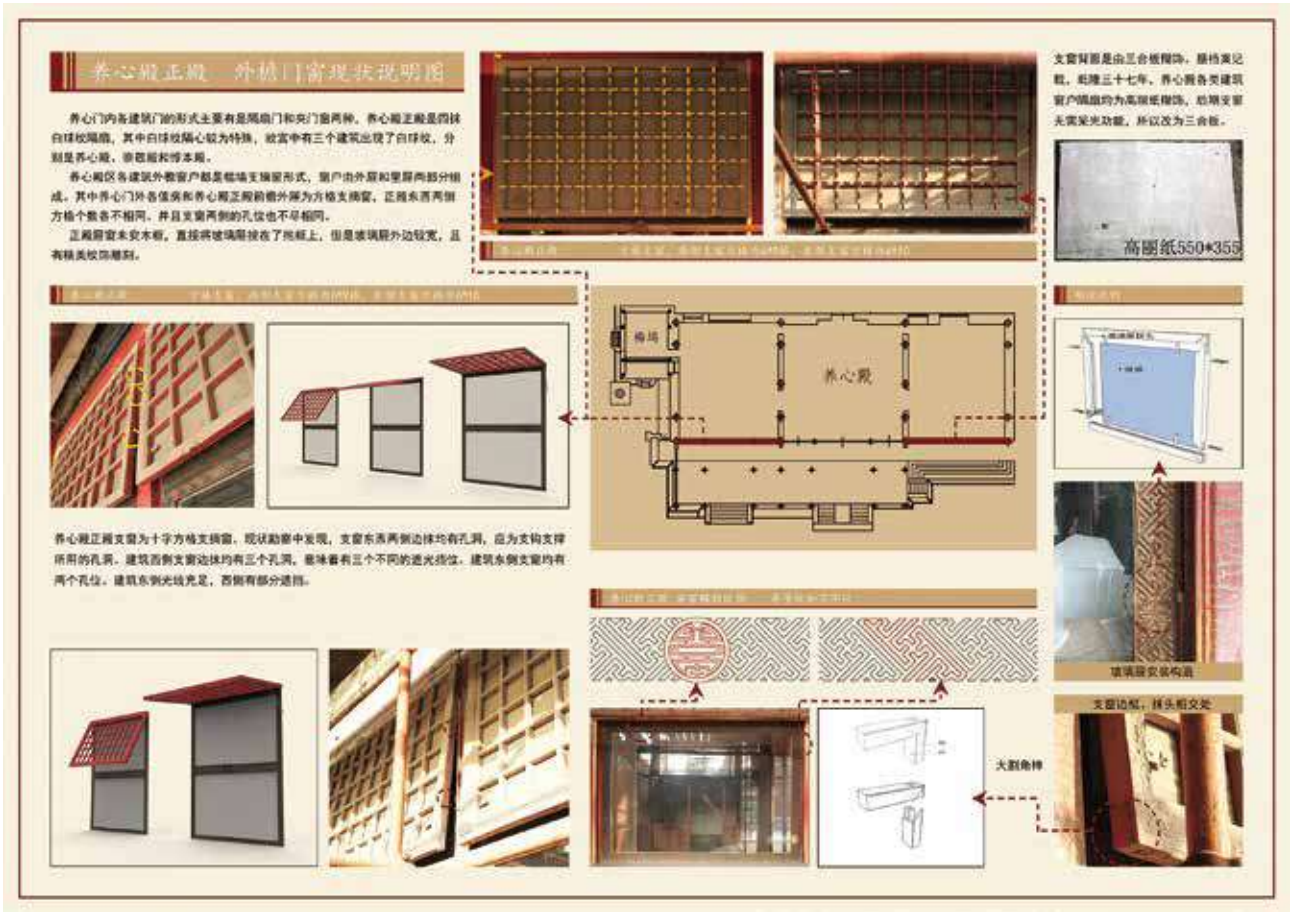
Analysis of timber structure

Analysis of colored painting

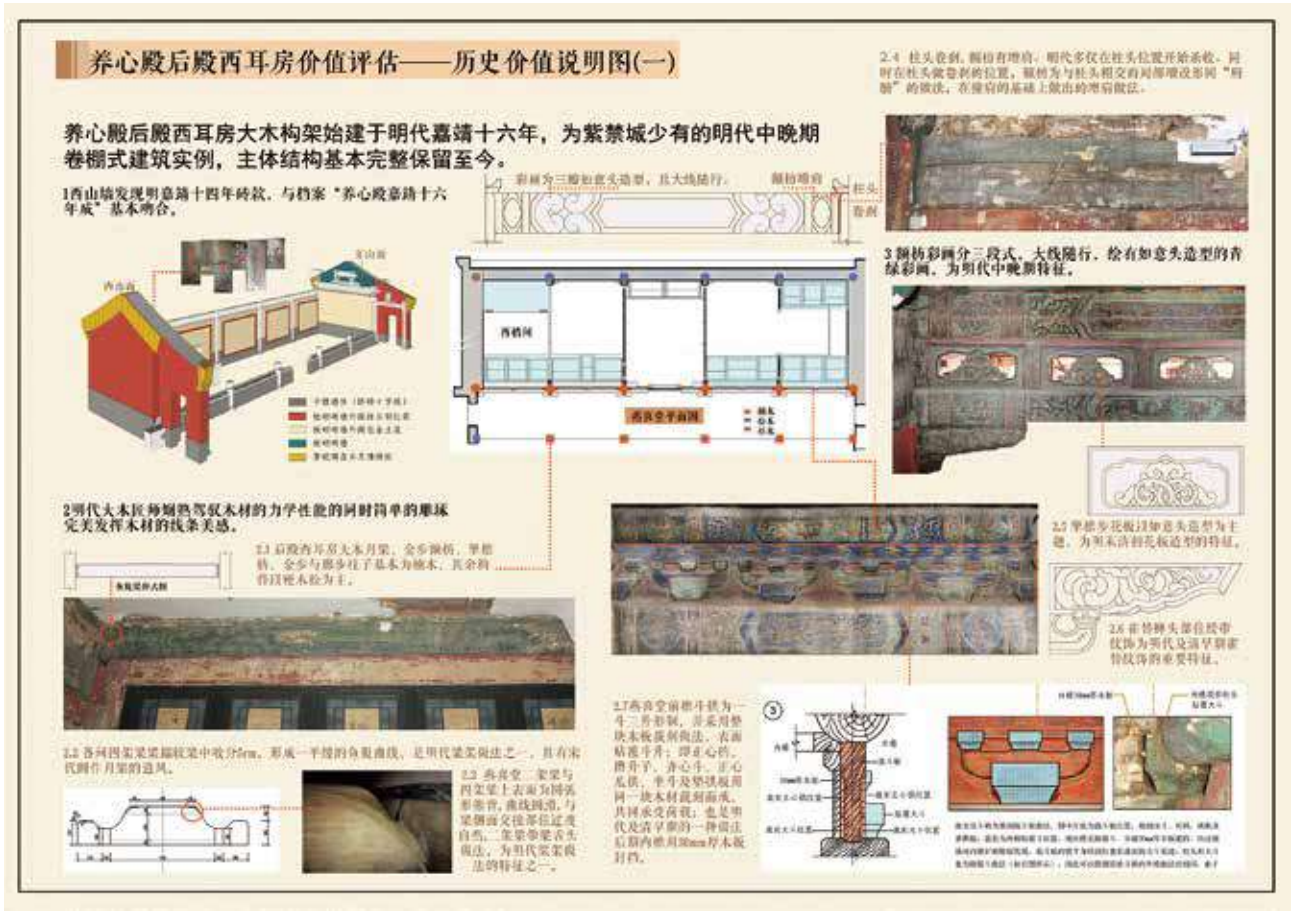
Analysis of wallpaper



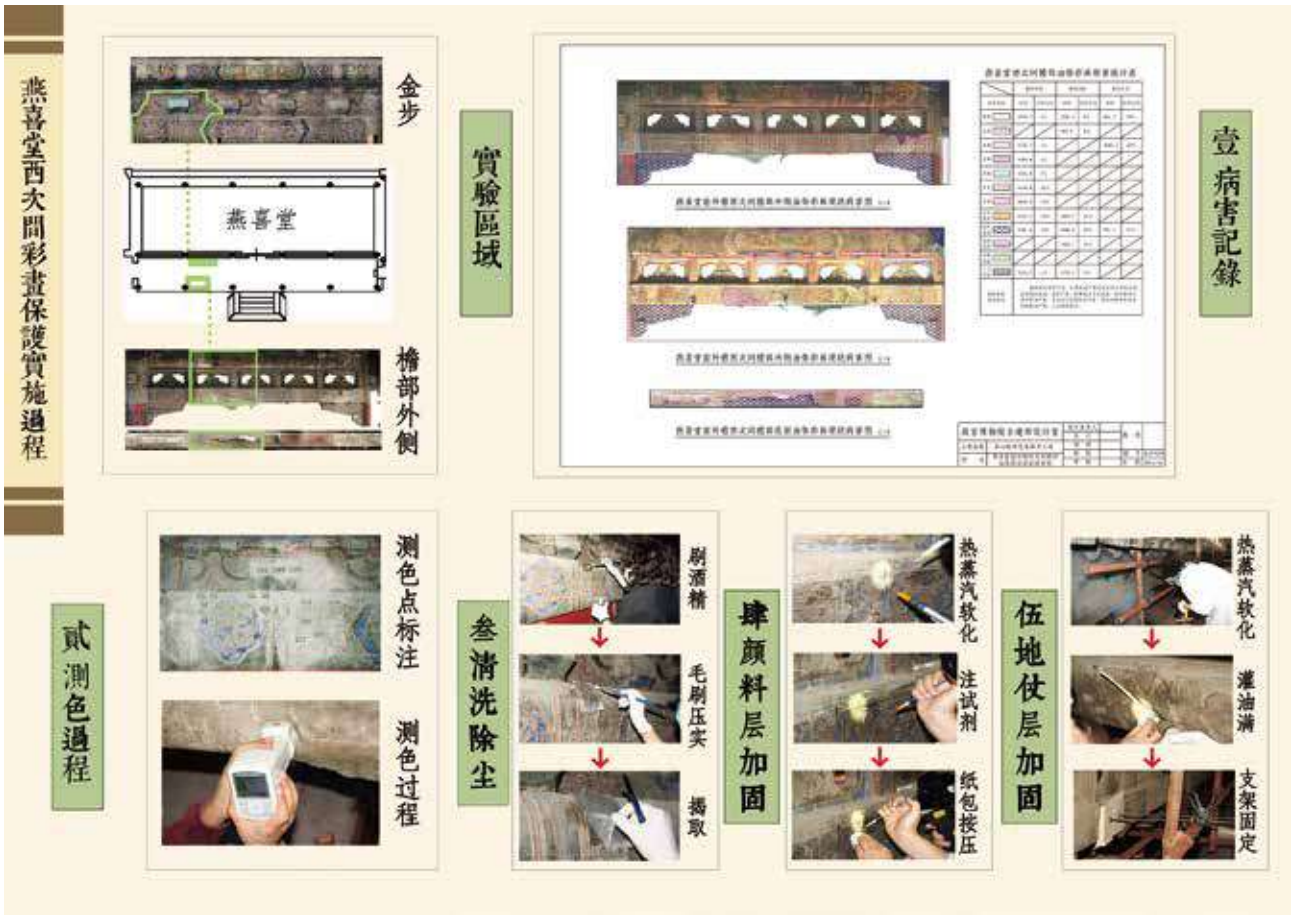
Analysis of walls



Analysis of doors and windows



Value assessment



Experiments on restoration of colored painting

India

Refreshing Forgotten Reminiscences: Conservation of CIB Building at Basheerbagh, Hyderabad

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"What a country chooses to save is what the country chooses to say about itself", these words by Mollie Beattie, former director of the U.S. Fish and Wildlife Service hold true in case of India, city of Hyderabad in specific, which is committed to conserving the 18th century Majlis-e-Aaraish-e-Balda (City Improvement Board) building of the Nizam era, reinforcing the fact that the region is proud of its vibrant history and heritage. Hyderabad, the sixth most populous metropolitan city in India, an Information Technology (IT) & Bio-Technology hub; yet the city refuses to part with its glorious past and embraces its various layers through food, culture, art and architecture.

The original dreamy setting of the structure was at the centre of the Basheer Bagh Palace garden. The building boasts an Indo-Saracenic style of architecture comprising a single storey made of granite and lime mortar. The restoration works were completed at an approximate cost of five million rupees.

The CIB building before its conservation

The CIB building restored

The responsibility of restoring this building was given to Conservation Architect Prof. N. Ramaswamy, originally belonged to Nizam era. This project has received accolades and awards under Heritage and Restoration category. Experienced persons in the restoration of Nizam's palaces and a team of 60 workers from Kerala have worked in this task of restoring the structure.

A brief timeline of the City Improvement Board (CIB) building and site:

- 1890s: Constructed by Paigahs as a maintenance office of the Besheer Bagh Palace & Garden
- 1914: Converted to Majlis-e-Aaraish-e-Balda (Head quarters of City Improvement Board with Moazzam Jha, son of Nizam as president)
- 1958: Handed over to Gandhi Medical College established on the site
- 2003: Handed over to Dept. of Tourism after Gandhi Medical College moved to Secunderabad
- 2008: Restoration process of the structure has started Present: Heritage Gallery of Greater Hyderabad Municipal Corporation (GHMC)

Project Ambit

Soon after Gandhi Medical College was shifted to its new campus built in Musheerabad, Secunderabad, the obsolete site at Basheer Bagh became a favored spot for private developers. As the site along with all the heritage structures was leased to a developer by the State Government, the developers wanted to demolish all the existing structures including the CIB building, a Grade-I Heritage structure to make room for a commercial complex. Owing to the efforts of the Indian Institute of Architects (IIA), Andhra Pradesh (AP) Chapter, a Public Interest Litigation (PIL) was filed in the court. The court directed the developers to restore the buildings and conserve the site and conservation works were then taken up for the restoration. The court directed that the works be taken up according to recommendations and in accordance with the standards and ethics of international conservation practices for the building to be restored to the known original details, which were submitted by the State Department of Archaeology.

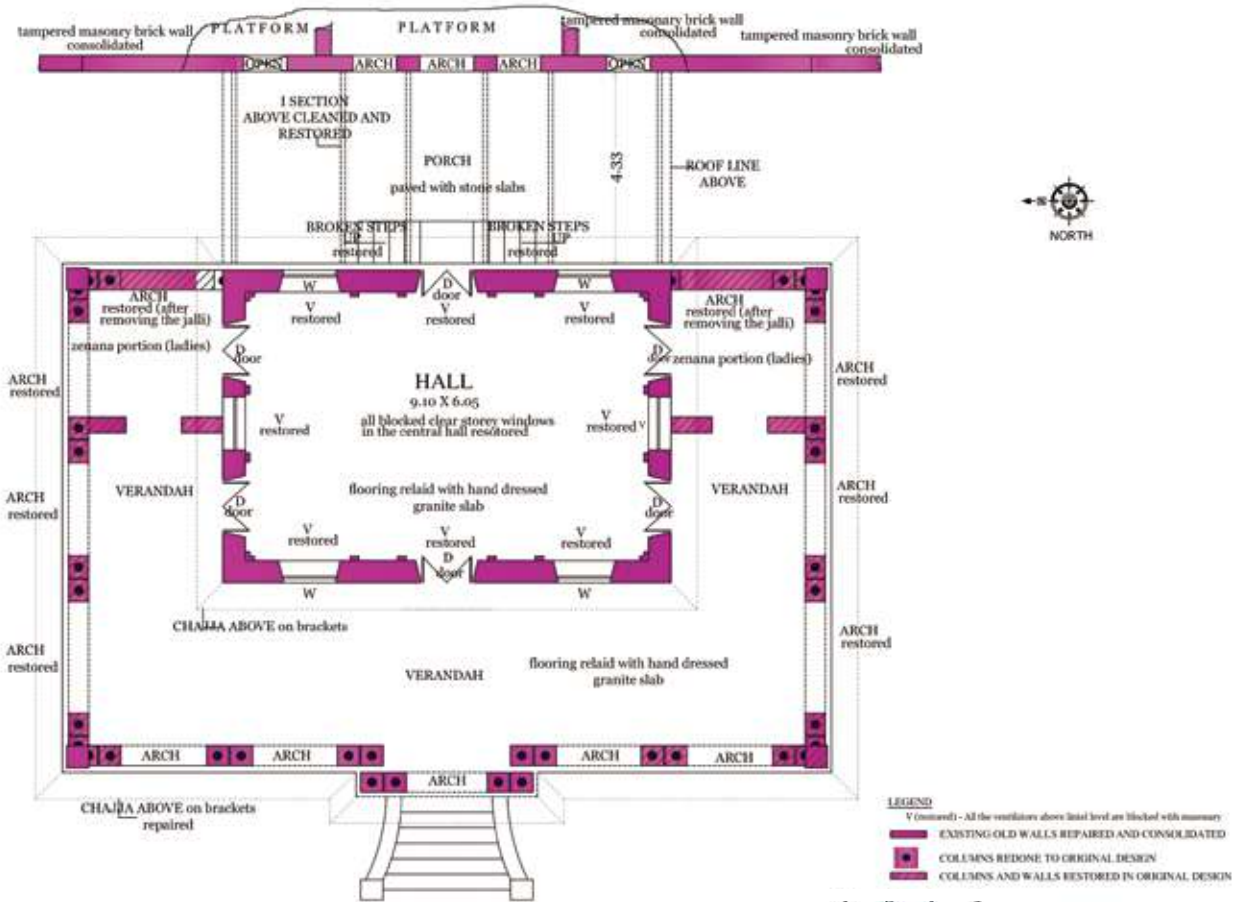
History of the Building

The City Improvement Board building was a representative architectural marvel of the bygone Nizam era. The building was constructed by Nizam as part of a garden complex in the 19th century and is located today in the main commercial hub of Hyderabad city. The structure originally stood in the centre of the garden; **'Basheer Bagh'** appearing as a beautiful art/sculpture planted amidst of the green landscape and very well blended with the environment.

The Architectural Heritage

The CIB heritage building is a representative example of

the architectural character of Deccan and Islamic style. The building is simple in plan with a central hall and a wrap around verandah with a roof supported by double columns and with foliated arches on three sides. The central hall had a vaulted roof raised above the flat terrace roof of the verandah, forming a clearstory. The building was profusely damaged due to unsympathetic intervention when it was used as the Principal's office of the old Gandhi Medical College. The verandahs on the north and south were enclosed and converted into rooms and a toilet was added on the south-east side of the hall. The walls, constructed with cement mortar not only enclosed the pillars of the structure but also damaged the capital, arches and columns. The century-old CIB building was weakened further due to all the demolition activities around it, and as a result, the roof and walls were rendered fragile. Over the years, various modifications had been made to the structure including dissenting additions and the use of inappropriate building materials, which had further damaged the structure.



The Post-Restoration building plan

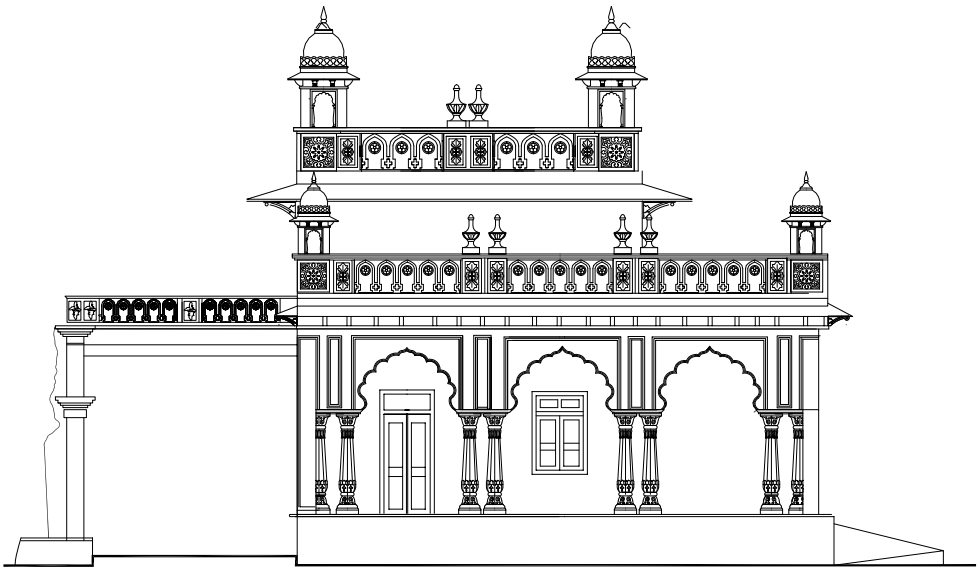
The simplicity of the building plan is in contrast with the grandeur created by the configuration of the various architectural components arranged in complementing layers and levels. The plan is a central rectangular hall which is protected from direct heat and rain by a wrapped verandah on three sides. The vaulted roof of the central hall is at a higher level than that of the flat terrace over the pillared verandah. This level difference creates a distinct clearstory, which enhances the lighting and ventilation of the hall. Characteristic cusped arches at openings, fluted twin columns with ornamented capitals, along with domed kiosks create a distinct drama. The stone chajjas braced by decorated brackets create a rhythm in the exterior facade. The terrace parapet is liberally adorned with mouldings in lime plaster. The roof levels are enhanced by small kiosks at the corners alternating with double vases.

The concept of restoration was to take the building back to its original form using the traditional materials and technology with which the building was constructed. The building was thoroughly studied and documented prior to the commencement of restoration work. All the missing parts were recreated in drawings to scale, and the later additions were identified for removal. The concept was to restore the building to the time when it was originally constructed, while keeping in mind the global norms and ethics of conservation.

The idea of conservation was maximum retention, sensitive restoration and careful repair to return the building to a known period using traditional knowledge of the materials and techniques with which the structure was originally constructed. The works were taken up by skilled traditional workers and craftsmen only after careful scientific study and documentation of the style and architecture. The missing or damaged parts were refurbished in scaled drawings and the later additions were marked for removal.

The Project Interventions

- The enclosure created on the north and south sides of



The Post-Restoration North-side building elevation

Enclosed verandah before restoration

The verandah after restoration

the verandah, damaging the pillars, capitals, arches and the toilet inappropriately added on the south side, were dismantled.

- The dilapidated roof was made water proof and the blocked drainage holes were cleared. The bitumen sheet on the roof top was removed carefully, and was cleaned with water to remove any dirt & dust. It was then leveled to apply the first layer of coarse lime mortar over which tiles were laid. Another layer of lime concrete prepared in situ by slaking lime stone and adding water with vegetable additives ensured complete waterproofing of the roof.

- The interventions made with cement were reworked in lime. The cornices, ornamentation, and other features which were spoilt were redone in traditional lime plaster. The entire building was finished in cebara, a fine

Cleaning of the terrace in progress

Waterproofed and finished terrace

The column ornamentation before and after the lime finishing works

Kiosks, bowl-shaped finials and parapet wall detailing before and after restoration

lime finish and exterior lime wash.

- The damaged parapet wall, kiosks, vases and decorative ornamentations in plaster on both roof levels were redone. A total of ten kiosks on the roof were dusted with a soft brush and flaked plaster was removed. Twelve bowl-shaped finials were reworked and restored to their original shape and size.

- The projecting chajjas of the roof of the central hall are supported by 48 brackets, and the roof chajjas of the verandah are supported by 76 brackets, most of which were wrecked. These brackets were reworked and restored through the processes of cleaning, scraping of loose plaster and replastering with lime mortar.

- In the central hall, the blockage, obscuring the jaali screens of the clearstory windows was removed. The cement repair work done previously to the high ceiling was thoroughly scraped off and lime mortar was reapplied. The steel sections were scraped and an anti-corrosive coating was applied.

The revamped brackets of the chajja over the verandah before and after restoration

Images of the ceiling before restoration

Finished ceiling

The installed doors and windows

The finished verandah

- The door, window frames and shutters were cleaned, polished and installed in the same position, except for two windows on the eastern wall, which were enclosed with jaalis

- The walls, cusped arches and the portion above the capital of the pillars decorated with pilasters and cornices which were restored. The portion above the cusped arch in the exterior façade, which was covered with paint, was cleaned and the original Shahabad cladded grey stone was revealed.

- A set-back of 12 meters was defined all around the building within which no construction is allowed. The landscaping plan includes a paved walkway all around to enable visitors to walk around and appreciate the experience offered by this magnificent, yet humble piece of heritage.

The cusped arched façade with Shahbad stone before and after restoration

The column capitals before and after strengthening and finishing

The verandah opens to visitors after the completion of works

The conserved structure and completed landscaping with walkways

Conclusion

Considering the rapid commercialization and growth of the present times, the world needs to ensure that heritage structures crafted through the various layers of history that we have inherited from our ancestors and which have challenged the test of time are protected, as in the case of the CIB building in Hyderabad. It becomes our fundamental duty to ensure that the treasure trove of heritage is passed on to future ages. After all, as Frank Gehry has penned, **"In the end, the character of a civilization is encased in its structures".** India, being a country which has witnessed various cultures starting from the very first human settlements, is gifted with numerous overlapping inheritances which are and will be protected for as long as possible, with utmost pride and humility at the same time.

Acknowledgements

The author wishes to thank Prof. Ramaswamy, a Conservation architect, for allowing using photos and drawings in writing this article.

Inventory of Archeological Resources in Pangandaran Regency, West Java Province, Indonesia

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Archaeological resources are cultural treasures that matter to the understanding and development of history, science and culture. Archaeological resources are also very important indeveloping national pride and awareness of national identity, and supporting the success of education, science, religion, economics, and tourism programs. Therefore, archaeological resources need to be preserved and managed in the sense of being protected, developed, and utilized. From these statements, it is necessary to carry out a series of actions on archaeological resources that include authorization, ownership, discovery, search, protection, maintenance, management, utilization and supervision in accordance with applicable laws and regulations.

At its most basic, conservation is the endeavor for a cultural work to remain or to reside within the context of living culture (system context), through reuse, recycling and revitalization (Tanudirjo, 2008). For example, the research and restoration of collapsed temples buried in the ground and abandoned by the support community—including Borobudur Temple and Prambanan Temple—was an attempt by the Indonesian government to return the temples back to the community, although this function was later changed. This effort can be referred to as "recycling". There are several stages of preservation according to Pearson & Sullivan (1995):

1. Identification: discovering, recognizing, and recording various aspects related to archaeological resources, whether its location, environment, the size, shape and type, amount, the ownership, or other aspects of archaeological resources or region.
2. Determination of important values: examining and discovering the essential values of archaeological resources and its parts that may contain, indicate, or reflect these important values.
3. Recognizing the constraints and potential for preserving and managing archaeological resources.
4. Designing a management policy based on the importance of archeological resources (the result of important value determination) taking into account the constraints and potential for preserving and managing the archaeological resources.
5. Determining strategies for realizing management policies through management and conservation plans and their programs.
6. Developing ways to monitor and evaluate the implementation of management and conservation.

Referring to the stages of preservation, in March 2017, the Heritage Conservation Office of Banten (Balai Pelestarian Cagar Budaya Banten) began to take an inventory of archaeological resources in Pangandaran Regency, West Java Province. This inventory activity aims to identify archaeological resources in Pangandaran Regency so that it is recorded in the archaeological inventory list of BPCB Banten. The results of this activity will be used as a guide to determine the strategy for archeology resource management in Pangandaran Regency.
In this activity, BPCB Banten team has identified several archaeological resources:

1. Sutra Reregan Cave
   Sutra Reregan Cave is administratively located in Selakambang Hamlet, Selasari Village, Parigi District, Pangandaran Regency. Sutra Reregan Cave is a natural cave located in karst hills. Geographically, the Sutra Reregan Cave is located at 108° 31' 19.3" East longitude and 07° 36' 55.5" South latitude with an average height of ± 159 meters above sea level. Sutra Reregan Cave has two mouths, facing the west and east.

Measuring and drawing the cave

In this cave there are archaeological finds in the form of stone tools of obsidian rock material, *kjokkenmoddinger* ("kitchen garbage" in Danish) comprising piles of fossils of seashells and snails, and animal bones.

Kjokkenmoddinger (kitchen garbage)

2. Panggung Cave
   The administrative location of the Panggung Cave is Selakambang Hamlet, Selasari Village, Parigi District, Pangandaran Regency. Panggung Cave is located not

too far from Sutra Reregan Cave. Geographically, Panggung Cave is at 108° 31' 22.7" East longitude and 07° 36' 57.9" South latitude with an average height of ± 150 meters above sea level.

Surface survey inside the cave

Based on the results of ground-level surveys, the team found shards of pottery, kjokkenmoddinger in the form of piles of fossil shells and snails, charcoal, animal bone fragments, fossil canines, and stone tools.

Stone tool found in Panggung Cave

3. Peuteng Cave

The administrative location of Peuteng Cave is also Selakambang Hamlet, Selasari Village, Parigi District, Pangandaran Regency. Peuteng Cave lies not too far from Panggung Cave. Peuteng Cave is located at 108° 31' 27.5" East longitude and 07° 36' 58.6" South latitude with an average height of ± 157 meters above sea level.

Measuring and drawing the cave

From the results of ground surface surveys in the cave, the team found indications of archaeological remains such as pottery shards, *kjokkenmoddinger,* animal teeth, and foreign ceramics.

Pottery shards

4. Mangunjaya Site

Mangunjaya Site is located in Pasir Laja Hamlet, Mangunjaya Village, Mangunjaya District, Pangandaran Regency, precisely at coordinates 07° 29' 13.4" South latitude, 108° 41' 47.1" East longitude with a height of 32 meters above sea level.

Measuring and drawing archaeological finds

The finds at Mangunjaya Site comprise yoni fragments and two rounder busts. The yoni is split down the middle into two parts. The yoni is in an upside down position, with the spout at the bottom, while the rounder busts are immediately to the west of the yoni.

Yoni and rounder busts at Mangunjaya Site

5. Prayanagara Site

This site is not far from Mangunjaya Site. Prayanagara Site is located in Gimbal Hamlet, Mangunjaya Village, Mangunjaya District, Pangandaran Regency, at coordinates 07° 28' 56.1" South latitude, 108° 41' 36.9" East longitude with a height of 38 meters above sea level. Prayanagara Site consists of four round ubiquitous stones, and one round stone like a cannonball.

Rounder bust and round stone at Prayanagara Site

6. Lingga Kencana Naga Wiluya

Lingga Kencana Naga Wiluya, as it is locally called, is located in Sentul Hamlet, Lingga Block, Sukanegara Village, Padaherang District, Pangandaran Regency, precisely at 07° 33' 10.7" South latitude, 108° 44' 05.9" East longitudeatan altitude 28 meters above sea level. The lingga (Siva phallus) is in a cupola, placed on a rounder bust stone, and some old brick fragments are placed near the lingga. The lingga is split in two inside the cylinder.

Lingga, rounder bust stone, and brick fragments

In an inventory of archaeological resources activities, not only physical buildings and historical background are recorded, but also supporting data such as building ownership, building area, and other information related to the archaeological resources. Object data collection is done by observation, both of objects related to the building and their environment, and then taking and recording of the coordinate points of where the objects lay, measurement and depiction of the building plan, and visual recording using a camera are carried out. In addition, interviews are also done to complete the verbal data, of course with competent sources. Thus, it can be said that this activity is carried out with thorough documentation, both verbally and pictorially, covering the historical background, archaeological value, and architectural review, which is necessary for the conservation effort.

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Kazakhstan

Regular Report, Results of Archaeological Research of Ancient Taraz

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The third year of research of the ancient city of Taraz according to the Program of the Ministry of Culture and Sports of the Republic of Kazakhstan — "The archaeological research of the medieval settlement of Taraz with the purpose of creating an Archaeological Park" — became the most fruitful so far. A significant area of the ancient city had already been discovered — over 20,000 square meters of solid excavation of the central part of the city in terms of the cultural layer of the 10th to 13th centuries, in places until the 5th to 6th centuries.

The cultural layer of the 10th to 12th centuries in Taraz refers to the period of the Karakhanid state. This period is marked as the heyday of the ancient city.

Layout of the city

Excavations revealed a "quarterly" development of the central part of the city. The main part of the medieval city is the central stone-lined street, stretching from the east gate to the west. Along this street there were aryks lined with stone slabs, feeding water from the main pipeline, laid from the south to the north. Perpendicular to the central street, there were small cobblestone streets that divided the urban development into quarters. Quarters are also indicated by raw walls on a stone foundation with a width of up to 1 meter. Inside the blocks there were both residential and public buildings (caravanserais). Residential quarters comprise a closed quadrangular space, bounded by walls. From the inside to which the rooms are attached, the central part served as a common courtyard. The yard as a rule has several well-shaped pits of various depths, which were used as garbage cesspits.

On the outside of the blocks, from the central street side, there were commercial premises in the form of small adjacent single-chamber rooms.

In the excavation, the remains of caravanserais 2, occupying the space between the quarter streets, were revealed. This served as a trading building, and is also arranged by trading premises along the perimeter and courtyard. The powerful stone walls suggest that the ceiling above the rooms was vaulted.

In the southwestern part of the excavation, a small area, carefully laid out with a stone flagstone, was revealed.

Finds

Ceramics, consisting of two main groups: handicrafts created on a potter's wheel, and home-made hand-made dishes.

Pottery produced by professional potters was made from a good homogeneous clay. The outsides of these dishes were decorated mainly with wavy lines, trefoils and zoomorphic "qoshqar muyiz." Some of these vessels were covered with glaze with a multicolored yellow, blue, white, brown, and green watering. In the ornamentation of this glassware predominate vegetable and geometric ornaments.

Of particular interest are complex ornaments in the form of "braids" with interlacing epigraphic patterns. There were also mythological stories composed of images of horned dragons, or Idahar. The symbolic horns serve as a sting for the subsequent dragon and unite them into a single composition. The dedicated dragon's head turns into the body with the signs of a reptile — a dark back and bright stripes on the belly.

Molded ceramics are of great importance for studying the ethnic composition of the urban population, allowing them to be associated with a particular people. The most striking type of this cookware is the cauldrons, or *kazans*. They have a characteristic rounded bottom; the main advantage of this cookware is the ability to make certain types of food in it. Being one of the most common types of kitchenware from the cultural layers of ancient Taraz, they show nothing more than a connection with the nomads of the Eurasian steppes. We found such boilers in the burial mounds of the Kazakh steppes from Merke and Kordai to Kegen and Alakol. In the cultural layers of ancient settlements south of Taraz, cauldrons are rare.

To study the history of nomadic peoples and the process of their settling in cities, a special so-called "nomadic" pottery is of great importance, ornamented as carved, stamped and molded ornaments in the form of zoomorphic, floral and anthropomorphic models. These dishes, presented as rough kitchen utensils, as well as pots and jugs, are original and diverse.

The molded nomadic pottery, like no other source, illustrates the achievements of the population of the Kazakh steppes in achieving a high level of development, when whole cities of sedentary craftspeople grew out of small settlements in the fertile autumn-winter nomad camps. The achievement of high results in the mining and smelting of metals, forging and other crafts, along with the development of indispensable companions in the form of nomadic cattle bred with irrigated agriculture, made it possible to form urban centers.

Money

Based on the results of our study of the cultural layers of Taraz, the coin collection today amounts to more than 2,000 coins. Their special historical value is represented by the silver dirhams of the Taraz Chekan, Turgesh copper coins, and Chagataid silver coins. In addition to the local coinage, the collection comprises gold solide of the Byzantine emperors Foki and Justinian I, gold dinars of the Samanids chased into Nishapur, Chinese copper coins of the Tang and Qin Dynasty, and the silver dirham of the Abbasids.

This numismatic collection is one of the most informative sources on the political and economic development of ancient Taraz, its international connections and significance, as shown by medieval written sources.

Artistic metal

With the excavation of Taraz, a truly unique collection of metal products has been obtained. First of all, the great historical significance of Taraz in the ancient world is confirmed by items from two treasures found during our excavations.

Jewelry bracelets, earrings, rings, amulet-fogs, intricate patches made of gold, silver and bronze, and usually gilded or covered with silver plates, perfectly illustrate the aesthetic tastes of the medieval population of Taraz.

Rich, expensive "imported" dishes and lamps made from silver, bronze and copper have a rich ornamentation. Items made from silver, along with the ornamentation, are covered with black ink. The candelabra of the lamps are covered with an intricate openwork pattern.

In the cultural layers of Taraz, there were numerous beads of ornamental stones, glass and paste, and Indian corals.

The results of archaeological excavations make it possible to supplement and richly illustrate the information of medieval written sources on the ancient city of Taraz, the only city existing in our country today that has a continuous two-thousand-year history, and that experienced periods of power and prosperity, as well as decline and oblivion.

The study of Taraz will help solve the most important problems of our country's history, to understand and to prove the genesis of urban culture in the state, the dominant view that the economy was based on nomadic herding, the basis for the cult mentality of free citizen-riders, the cult's ancestral spirits, saints, and especially the venerated blacksmiths.

The basis for the emergence of cities was not external influences in the form of trade routes, but internal development, leading to the emergence of strong Kaganate states. The authorities demanded the creation of political centers, and strong power and a sufficiently developed industry and agriculture made it possible to join the world economy and its political structures.

View of the excavation in 2017 from a height

View of the excavation in 2017 from a height

View of the excavation in 2017 from a height

View of the excavation in 2017 from a height

Amulet-fogs

Bronze bowl with zoomorphic image

Bronze lamp part

Bronze lamp with two spouts

Bronze plaque

Bronze plaque 2

Bronze tripod

Anomalous bronze image

Collection of ceramics

Decorated lid of a vessel

Decorative front ceramic tiles

Fragment of a ceramic table-dastarkhan

Fragment of a bronze censer

Gold and silver earrings

Gold coin – “bracteate” of the Samanid. Nishapur

Golden solid – ”bracteate” of the Emperor Justinian 1

Jewelry made of blackened silver

Molded nomadic pot with one handle

Patricia

Sipaya – an image of mythical dragons – Aidaharov

Stone three-tank vessel

A gold coin – the Samanid dinar. Nishapur.

A gold coin – the Solidus of Emperor Focky

Treasure # 2 from Taraz

Tubek - hygienic vessel for a cradle

Twisted bracelet. Silver

Maldives

Second Season of Excavation in the Maldives for the 'Cowrie Shells: An Early Global Commodity' Project, 2017

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The second season of excavation for the project 'Cowrie shells: an early global commodity' was carried out earlier this year in the Maldives. As mentioned in my report last year (which summarised the excavations carried out at the beginning of last year, 2016), Prof. Anne Haour from the University of East Anglia received a grant from the Leverhulme Trust to conduct research in the Maldives as part of a research project investigating the timescale and nature of the importation of cowrie shells into West Africa between 1150 and 1900 AD.

Thus, this paper will briefly report on the archaeological fieldwork undertaken in early 2017 in the Maldives which involved the continuation of the excavation of one of the five trenches (trench 3, which was located within a vegetated area marked as a tourism zone on the north western side) on the island of Utheemu in Haa Alif Atoll, as well as the large-scale excavation of seven units on the island of Kinolhas in Raa Atoll. In addition, archaeological surveys were also conducted in Kinolhas to record and document any architectural features visible within and around the site. The field team consisted of the Principal Investigator Prof. Anne Haour, Post-Doctoral Researcher Dr. Annalisa Christie, Field archaeologist David Vigouroux, and the author as the PhD candidate for the project. The aim of the research was to identify sites likely to date to the medieval Islamic period.

Work was first started at Utheemu at trench 3, which was left tarpaulined and backfilled last year until the team could come back and investigate the coral stone blocks that had been discovered. This 2 x 1.5 m trench was extended, resulting in a 5.5 x 3.5 m trench in order to identify the associated material culture and for better understanding of the nature of the coral stone blocks. The 5-day excavation at this trench resulted in the full exposure of one of the coral stone blocks that was half exposed before as well as other similar coral stones. Thus, although it was not possible to identify the nature and function of the slabs, some progress was made in identifying other coral stone blocks within this trench and the material associated with them, which included a lot of pottery and some faunal remains.

The following four weeks of this season were spent on Kinolhas as this is historically a very important island with reports of a medieval harbour, and one of its claims to fame being that Ibn Battuta first landed here during both his visits to the Maldives. The archaeology of the island includes mosques as well as a shrine of a king who used to rule across the Maldives. In addition, the shrine vicinity also had two white marble gravestones—the inscribed stone of one is now housed at the National Museum in Male while the other stone is still left where it was found within the shrine area. These stones are said to have come from Gujurat in India (Ludvik and Claude 2005).

The island of Kinolhas is about 0.5 km^2 in size and roughly a third of the island is covered in dense vegetation. The medieval settlement was said to be located at the western end of the island, which was largely occupied by vegetable fields and forest. Thus, an area of roughly 180 x 160 m was

Fig 1: Trench at Ha. Utheemu (Haour 2017)

Fig 2: Map of R. Kinolhas (Google Images)

sampled at the western end by digging shovel test pits every 20 m with some amount of clearing through the forest in order to be able to excavate and move around. A total of 45 test pits were dug within this area and the finds were compared with each other to determine where to conduct large scale excavations. Finds included pottery, and faunal and stone remains. After focussing on the particular concentration of materials, seven of these test pits were selected for large scale excavations, which were trenches 325, 321, 449, 544, 631, 443 and 360.

Four of these trenches were extended to 2 x 2 m units (325, 321, 449 and 544) while two were extended to 1 x 2 m units (360 and 443). One of the most outstanding of the seven was trench 631, which was extended to a 6 x 4.5 m unit. This trench recovered a rectangular sandstone structure in the south west corner of the unit of the trench, adjacent to a large mound of coral and stone rubble spread over the northern part of the trench. The coral stones were subsequently found to be tombstones in varying degrees of fragmentation. The remaining sandstone rubble was provisionally interpreted as having come from the destruction of the associated rectangular structure. The coral stones in the rubble represented the remains of at least six tombstones. Moreover, a dispersal of many large fragments of Chinese porcelain (mostly fragments of bowls) was recovered and associated with the coral and stone rubble mound.

Finds from the trenches include a lot of pottery including a great deal of broken coarse ware, Chinese porcelain and Islamic pottery as well as a miniature pot from trench 449, an intact coarse ware jar from a shovel test pit, faunal remains (including many cowries, various kinds of fish species, chicken and other mammals), metal fragments, glass items (including broken bracelets), a yellow pendant, beads, charcoal and stones foreign to the Maldives.

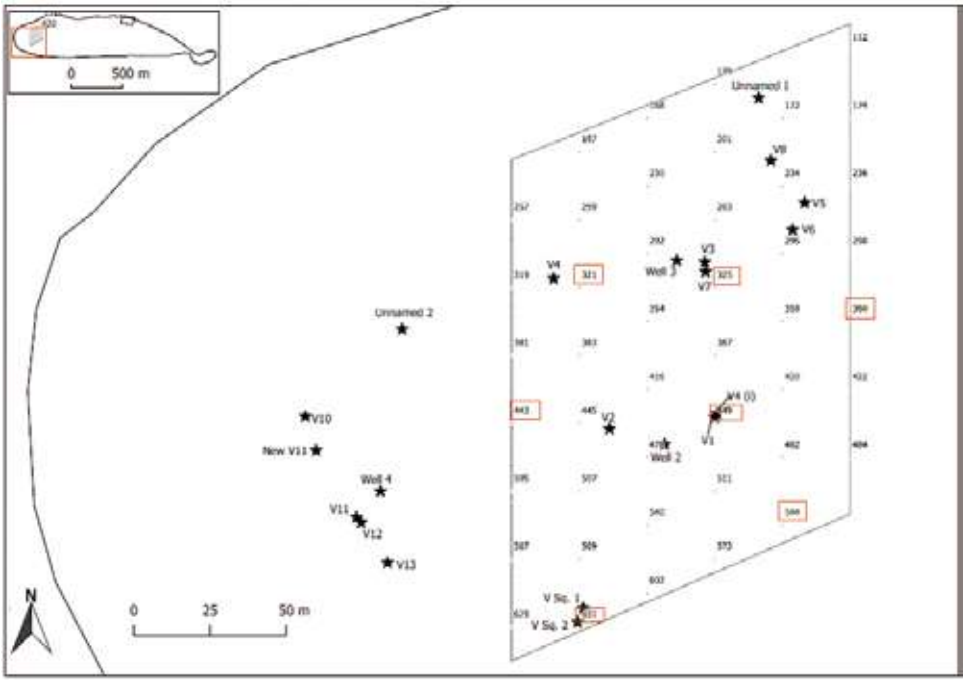

Fig 3: Plan drawing of all the test pits indicated by the three digit numbers, large scale excavated units indicated with the red squares, and stone features recorded during the survey indicated by the stars (Christie 2017)

Fig 4: Drone image of the sampled area showing the vegetation and clearing that was done (Image taken by a local drone owner)

Fig 5: Trench 443 (Christie 2017)

Fig 6: Trench 631 showing funerary features (Christie 2017)

Fig 7: Pottery from the excavations (Vigouroux 2017)

Fig 8: Processing bones (Haour 2017)

Fig 9: Miniature pot with associated cowrie shells from trench 449 (Vigouroux 2017)

Fig 10: Gravestone from trench 631 (Vigouroux 2017)

Fig 11: Recording a squared well (Haour 2017)

Moreover, due to the presence of many quadrilineal features within and around the study area, an area of roughly 50 x 100 m was surveyed to document and map any stone features including measurements, photographs and GPS points for each feature. This resulted in the recovery of about 21 features (both coral and sandstone) including a probable bathing tank as well as remains of wells, tombstones, walls and other domestic features.

After four weeks of excavations, surveys and finds analysis, the team has now completed the excavations for the project and returned to England, and are now in the process of analysing the finds and preparing for further publication.

Acknowledgements
The author would like to thank the project team at the University of East Anglia (United Kingdom), Department of Heritage, Maldives National Museum, Academy of Dhivehi Language, Boduthakurufaanu Memorial Center, Kinolhas council and the locals of both islands for their continuous support for this project.

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Nepal

Restoration of Kageshwor Mahadev Temple at Kathmandu Darbar Square

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Kathmandu Valley Preservation Trust

Kageshwor Mahadev Temple before the April 25th earthquake. (Photo:2005-11-25)

Kageshwor Mahadev Temple during the April 25th earthquake. (Photo:2015-04-25)

The temple of *Kageshwor Mahadev* is located in front of *Taleju* Temple in Kathmandu *Darbar* Square, one of the seven monument sites in the valley listed as a World Heritage Site. The temple is unique because of the skirt roof sheltering the colonnaded circumambulatory in its lower part with the upper part built as a *Shikhara*. This composite style was introduced mostly in the mid-19th century. The temple has a solid masonry core as its lower floor with a steep staircase on its western side leading to the upper floor where the main sanctum is situated. The copper idol of Shiva Linga sits on a stone base at the center of the sanctum and can be accessed from all four sides of the balcony-like space on the upper floor level.

The temple suffered major damage during the earthquake of April 2015. The *Shikhara* collapsed and the fall had a considerable impact on the skirt roof, breaking a few rafters on the northern side. Due to violent shaking, the roof was out of plane in many places and a thorough physical assessment revealed that the walls of the solid masonry core were bulging out above the cornice level on the ground floor.

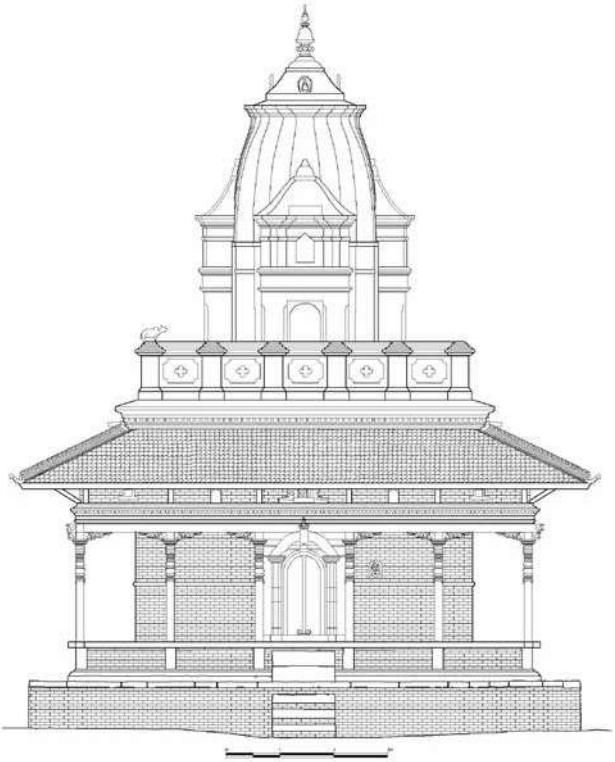
The task of restoring the temple was carried out by Kathmandu Valley Preservation Trust (KVPT) in collaboration with the Department of Archaeology. The project was funded by the US Ambassador's Fund for Cultural Preservation (AFCP). The restoration project started in December 2016 and is scheduled to be completed by September 2017.

A study carried out by a group of conservation architects and engineers revealed that since the *Shikhara* was built using brick masonry in mud mortar, it could only carry a compressive load and was not good enough to resist tensile forces. It was concluded that the absence of timber members was one of the primary causes of the collapse and it was decided to provide timber members embedded within the brick masonry core during the rebuilding of the *Shikhara*. As the work started on site, the dismantling of the upper floor level further revealed that the timber members that were provided to tie the walls of the masonry core were already disintegrating due to rising damp, and in many places bricks were also disintegrating due to moisture. A lot of plastic debris was also found, possibly carried by mice and rats running around.

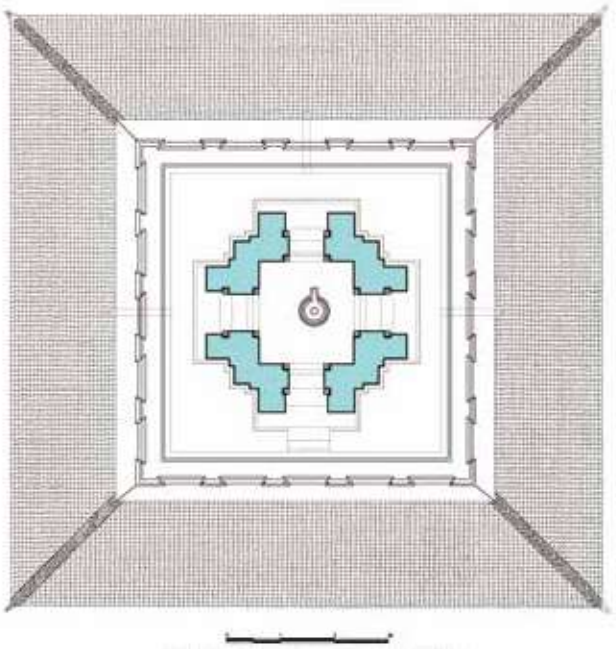
During the rebuilding of the masonry core, wall plates were provided at regular intervals. These shall act as ties to hold the outer veneer wall to the inner masonry core. The upright timber posts at the four corners of the sanctum were erected as planned on a stone base from a depth of 1350 mm from the sanctum floor level. Cross tie beams were also provided at important levels. The tie beams connecting the outer timber colonnade and the main structure were carefully studied and the timber members heavily affected by termite attack and ones not in good shape to carry the load of the entire roof were replaced with new sal wood sections. The number of tie beams was also increased to dissipate the load properly.

For further protection against rising moisture, all the timber coming in contact with brick masonry was coated with bituminous paint. For those timber members that are to be embedded within the masonry core, copper plate wrappings were provided.

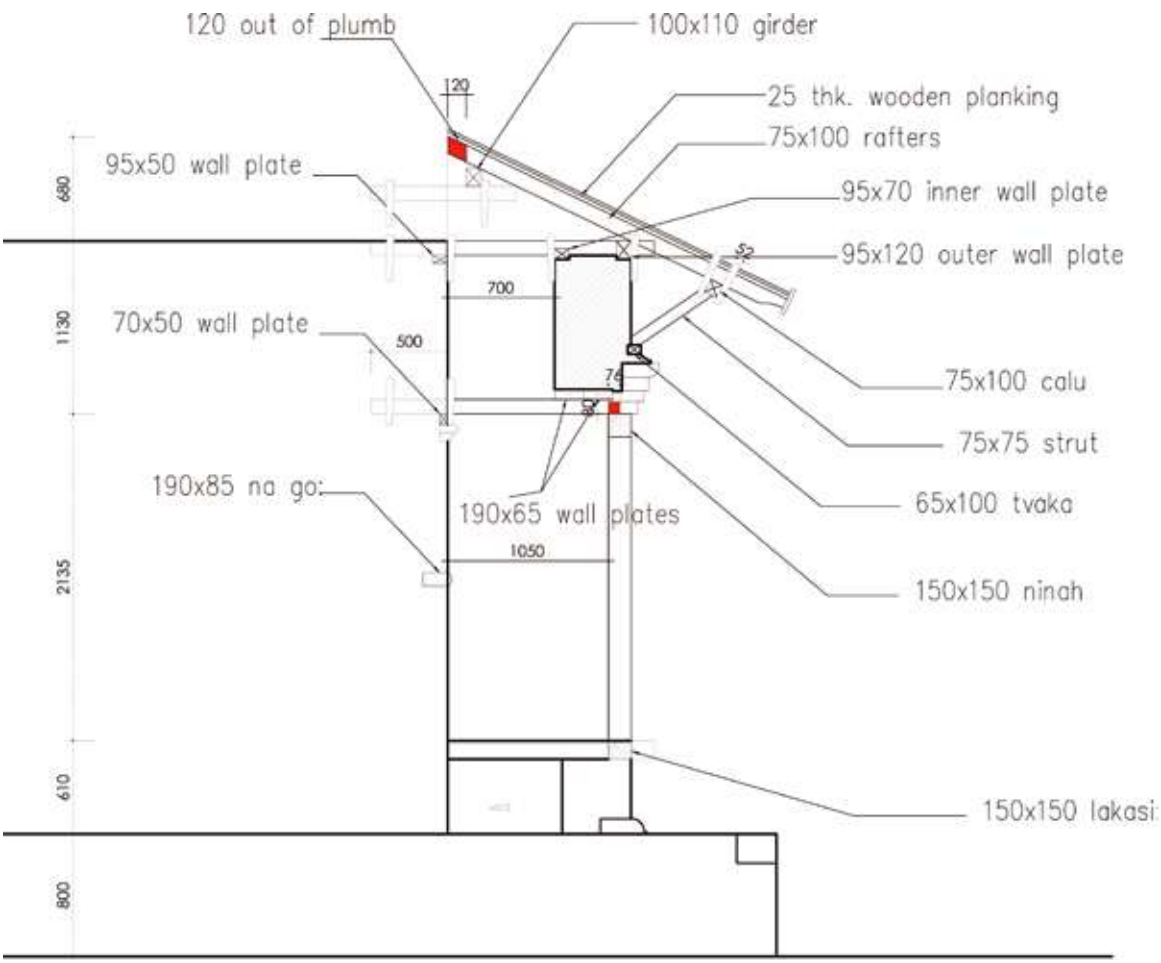
During the rebuilding of the *Shikhara* in brick masonry, care was taken to provide copper rod ties at regular intervals to tie the thick masonry wall. The brick cornices and the turret details were reproduced to match the original details. At present the lime plaster works on the surface of the *Shikhara* is ongoing.



Kageshwor Mahadev Temple south elevation



Kageshwor Mahadev Temple first floor plan



Section of the skirt roof showing the structural details. (2017-04-03)

Carpenters preparing the new timber sections on site, which shall replace the affected and non-reusable timber sections. (Photo: 2017-03-31)

Upright timber posts were erected at four corners of Shikhara. The portion of timber embedded within the brick masonry was coated with bituminous. (Photo: 2017-05-25)

The bottoms of the timber upright posts to be embedded within the masonry were coated with bituminous paint and wrapped with copper sheets for protection against moisture. (Photo: 2017-05-25)

The corner timber posts are tied together at regular intervals with timber tie beams for seismic strengthening. The upright posts on either sides for the sanctum entry are also provided. Such timbers are embedded inside brick masonry and are under constant threat of moisture penetration; to avoid such conditions necessary barriers are provided. (Photo: 2017-06-11)

Constructing the arches above the entry to the main sanctum. (Photo: 2017-06-15)

South-west view. The skirt roof rafters are being laid while the sikhara structure continues to rise. (Photo: 2017-06-26)

Sikhara structure turrets construction continued with rafters on the skirt roof below. (Photo: 2017-06-26)

New timbers were used for rafters of the skirt roof. Each rafter is properly aligned and fixed in place using wooden pegs. (Photo: 2017-06-30)

Timber wall plates provided at important levels of the Shikhara. (Photo: 2017-07-17)

View of the rising Shikhara from the north (Photo: 2017-07-27)

Pakistan

Activities of the Federal Department of Archaeology and Museums in the Field of Archaeological Exploration in Pakistan

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Introduction:

The ancient land where the Islamic Republic of Pakistan is today located has been the seat of a number of the world's leading civilizations. It has a rich history that belongs to both the victor and the vanquished. The various monuments spread out across the length and breadth of the country are architectural testimonies to its diverse cultural history – a heritage that speaks of its glorious past. There are a number of archaeological evidences dating from the pre-historic period to support this claim. Traces of human activity during the Stone Age are well attested on the soil of Pakistan in the Potohar region in Punjab and at Kot Mondahi and Las Bela in Balochsitan. Remains from the earliest Neolithic period have been discovered by archaeologists on the Kacchi Plain near Sibi at Mehrgarh. It was here that people started to settle and engage in cultivation during the 8th to 9th millennia BCE. This provides the base for the subsequent emergence of one of the oldest civilizations of the world in the form of "Indus Valley Civilization" during the 3rd millennium BCE. The Achaemenian of Persia established their sovereignty during the 6th century BCE over most of the lands comprising present-day Pakistan. The Macedonian invasion led by Alexander the Great in 326 BCE is likewise a great event in the history of this region, which served as a vehicle in the process of cultural interaction between eastern and western civilizations. Buddhism reached Gandhara in the 3rd century BCE during the reign of Asoka the Great of the Mauryan dynasty and flourished under the royal patronage of the successive ruling dynasties of the Indo-Greeks, Scythians and Parthians. It reached its climax in the 2nd century CE under the Kushans. The first impulse of Islam was felt in the southwestern regions of Pakistan when a young Arab general, Muhammad Bin Qasim, entered Sindh Province in the early 8th century CE. Mughal rule from the 16th to 18th centuries CE was very important in terms of both the socio-cultural as well as political history of Pakistan. This country is endowed with a number of ancient sites and historic structures.

Pakistan is a treasure house of ancient heritage, spanning scores of centuries. The archaeological discoveries proved that the cultural heritage of Pakistan is spread over many centuries, starting from prehistoric times to the present day and can be reviewed in the following periods:

i) Pre-Historic Period (Ancient Period Ca.10,000 BCE).
ii) Proto-Historic Period; Indus Valley Civilization (2500 – 1500 BCE).
iii) Historic Period (600–300 BCE).
iv) Gandhara Civilization (1st – 7th centuries CE).
v) Hindu Period (6th– 9th centuries CE).
vi) Islamic Period (8th – 18th centuries CE).
vii) British Period (19th century CE).

Department of Archaeology and Museums, Islamabad:

The Federal Department of Archaeology and Museums (DOAM) is custodian of the rich cultural heritage of the country, which is a continuation of the "Archaeological Survey of India" created in 1860 during the British Colonial Period. It was established for the purpose of archaeological survey, archaeological researches including excavations, and protection and conservation of the moveable and immoveable antiquities of British India. After the creation of Pakistan on 14th August, 1947, we inherited the same department by changing its nomenclature to "Department of Archaeology and Museums" to fully express its functional obligations.

Previous Archaeological Surveys and Explorations:

The reports of travelers in the 16th and 17th centuries brought Europe's attention to the ancient sites and monuments in the sub-continent. Important records were contributed by John Huighen van Linschoten in the late 16th century and Pietro della Valle in the early 17th century before the beginning of a systematic and scholarly interest in the middle of the 18th century. Early records of monuments began to appear with recognition of the historical and archaeological importance of the sub-continent. The interest in Gandhāra, however, started in the late 19th century with the collection of coins, reliquaries, and sculptures by adventurers such as Charles Masson, who worked outside the boundaries of British colonial control and by members of British military units who collected objects during punitive raids into "tribal areas". Proper archaeological exploration, excavation, as well as study of epigraphy, establishment of museums including effective legislation on preservation of cultural properties in the sub-continent is however a legacy of the British colonial period.

British explorers had, in fact, long since started looking at the Indian colonies conquered by the British. William Finch (1608-11) was among those who first described the Ashoka pillars in Dehli & Allahabad and recorded observations about the architecture of Dehli, Agra, Lahore and other cities. However, there were also many other adventurers who travelled all over India such as Duarte Barbosa and Tavernier from the Portuguese colonial era, and Thevenot, Niebur, Mahilton, and Tieffenthaler from the French colonial era, and many others. When Maharaja Ranjit Singh (1780-1839) built his kingdom on the banks of the Indus facing British India, he recruited French officers, namely, General Court, Allard and General J.B Ventura, who after Waterloo (1815) had travelled east to the Persian court and from there crossed Afghanistan to the Sikh capital, Lahore. The French officers were steeped in classical culture and familiar with Greco-Roman sources. Among them General Court explored the Mankiyala Stupa and sent an excavation report to the Asiatic Society of Bengal (JASB, 1834). Alfred Foucher, a French expert in Indian culture, made a long journey along the Afghan border in 1897. He was fascinated about the material

discovered by British excavators in different areas of the sub-continent.

A significant step was taken in the year 1860 when the Archeological Survey of India was established. Major General Alexander Cunningham, who had a civil engineering background, was appointed its first Director. He carried out archaeological researches at many places including at Taxila. In the latter half of the 19th century, Alexander Cunningham identified several ancient sites and this process was continued by his successors. However, the early archaeologists were keenly interested in recovering sculptures and art objects of exotic and aesthetic value. Sir John Marshall's outstanding contribution escorts the activities of the Archaeological Survey of India before his retirement in 1928. Another major contribution is credited to Sir Aurel Stein whose major works comprised on archeological tours, surveys and excavations in different regions of the sub-continent.

A systematic study of the Paleolithic sequence in the Potohar region was, however, carried out by De Terra and Peterson during 1933, which gave ample evidence of the Paleolithic period of Pakistan. Peterson was followed by the Italian Mission to Northern Areas of Pakistan in collaboration with the Federal Department of Archaeology and Museums, led by Paolo Graziosi in 1964. He conducted a brief investigation in Potohar Valley. The Paleolithic period survey of Rawalpindi was also carried out by the American Archaeological Mission led by Elden O. Jonson from Minnesota University in 1964. A survey in Punjab Province was conducted in 1972 and archaeological reconnaissance in the surrounding area of Taxila valley was carried out in 1973 by a team from the Federal Department of Archaeology and Museums. An extensive survey in Cholistan and Bahawalpur was carried out during 1974-77.

A detailed archaeological exploration/survey of the Paleolithic period in the Potohar region was undertaken by a British team headed by Bridget and Raymond Allchin of the University of Cambridge, in collaboration with the Federal Department of Archaeology and Museums and the Geological Survey of Pakistan during 1979 to 1990. Archaeological exploration in the Sheikhupura district, Punjab was conducted during 1981-82. The Federal Department of Archaeology and Museums also conducted a comprehensive survey in the country during 1992-1996 and documented a large number of sites and monuments ranging from the pre-historic, proto-historic, historic and Muslim periods.

Recent Archaeological Explorations:

To fill the gaps in the story of the evolution of human society and to provide meaning and substance to the dry bones of history, archaeological explorations constitute an essential source. Therefore, by piecing together the evidence from explorations, archeologists write the blank chapters of the history of nations. One of the main custodians of the nation's cultural heritage, the Federal Department of Archaeology and Museums is supposed to carryout archaeological research in different areas of the country. In order to fulfill the obligations entrusted to it, the Federal Department of Archaeology and Museums, under the auspicious of the National History and Literary Heritage Division, planned to carry out a comprehensive exploration/survey of cultural heritage sites and monuments in the Islamabad capital territory (I.C.T) during 2016.

Historical Context of Islamabad Territory:

Islamabad, the capital of Pakistan, is a transitional region between the highlands of the North-West and the alluvial plains of the Indus River System, which was a meeting point of ancient trade routes. Keeping in view the cultural importance of Islamabad and its surroundings, which possesses a rich cultural heritage dating back two million years, recently a project for an archaeological survey of Islamabad Capital Territory started in October, 2016 by the Department of Archaeology and Museums, which is currently in progress. The cultural context of the Islamabad territory consists of the following distinctive features:

- Fossil remains of animals discovered in Punjab and Balochsitan provinces
- Traces of the Paleolithic Period in different areas of Pakistan
- Rock shelters in Margalla Hills, Islamabad
- Archaeological mounds spread throughout the capital territory
- Historical monuments located in Islamabad

Need and Scope of the Survey Project:

- Archaeological potential of ICT
- Rapid expansion of towns and development projects is a threat to archaeological sites in ICT
- Dire need for thorough survey to protect, preserve and promote the cultural heritage of ICT

Survey Team:

The survey team comprised officers and technical staff of the Federal Department of Archaeology and Museums (including this International Correspondent) in addition to a number of students of archaeology from Quiad-i-Azam University, Islamabad, who participated in on-site field training in this survey project.

Documentation of sites and monuments:

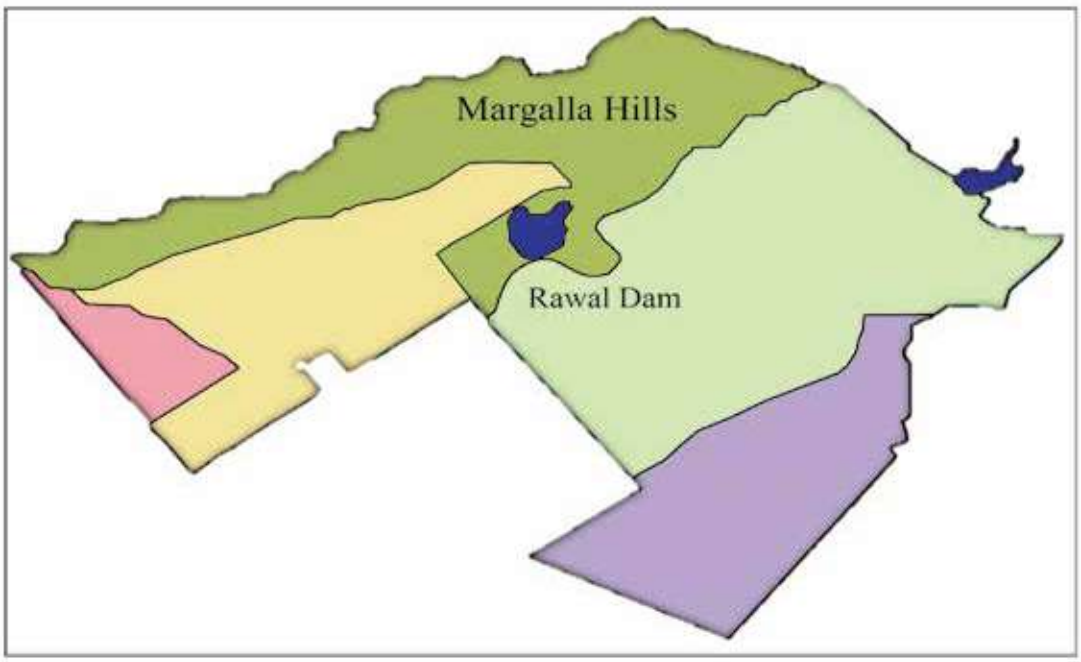
During this recent archaeological survey, 16 archaeological sites and 6 historical monuments have been documented and recorded in Zone-IV of the Islamabad Capital Territory. The names of these sites and monuments are as follows:

1. Hindu temple at Rawal Dam (Hindu Period)
2. Rawat Fort-cum-Caravan Serial (Muslim Period)
3. Pharwala Fort (Muslim Period)
4. Serai Kharbuza, G.T Road (Muslim Period)
5. Hindu Temple and Gurdaara in Saidpur village (Hindu Period)
6. Ban Faqiran Stupa, Margalla Hills near Shah Allah Ditta village (Buddhist Period)
7. Shah Allah Ditta Caves (Buddhist Period)
8. Mughal Period Remains in Shah Allah Ditta Village (Muslim Period)
9. Kos Minars in Golra Village (Muslim Period)
10. Hindu temple in Golra Village (Hindu Period)
11. Archaeological Remains inside FACTO Cement Factory Area (Pre, Proto and Historic Periods)

12. G-13 Rock Shelter (Historic Period)
13. G-10 Rock Carvings (Historic Period)
14. G-12 Archaeological Mound near Mehrabad (Pre and Historic Periods)
15. G-12 Ancient water ponds (Bani) (Historic Period)
16. Gangal mound on Islamabad Expressway (Proto-Historic Period)
17. Ancient well in village Chang (Historic Period)
18. Pavilion near Kuri village (Chak Shahzad) (Hindu and Muslim Period)
19. Kuri Archaeological Sites (Chak Shahzad) (Hindu/ Sikh Period)
20. Ruined ancient structures near Kuri village (Chak Shahzad) (Pre and Historic Period)
21. Zinda Wali Bethak, Bari Imam (Muslim Period)
22. Darya Wala Pir Graveyard near Simly Dam (Muslim Period).

It is, however, very likely that a large number of new archaeological sites and monuments will be explored and documented during this ongoing project of the Federal Department of Archaeology and Museums in the near future.

Map showing location of Pakistan



Islamabad Capital Territory (ICT)

Rewat, Potohar Plateau, Pakistan Gravel deposits, with fresh looking stone tools on the uppermost levels that are dated to two million years. The tools are more likely to have been flaked by hominids

Rock Shelter, G-13, Islamabad

Rock Shelter Near Kurri Village

Shadra Cave

Water Tank, Shah Allah Ditta Caves

Chhappar Mound

Section with Pot Sherds, Gangal West Mound

Kuri Monument

Pehunt Mound

Papua New Guinea

Kuk Early Agricultural Site Threat Assessment Report

Jim Onga, *Acting Manager*
World Heritage Programs, Conservation and Environment Protection Authority (CEPA)

Objectives

The primary objective of this report is to submit to ACCU a threat assessment report on one of Papua New Guinea's World Heritage Sites, which was conducted recently from 6-8 June 2017, to be included in its International Correspondent report.

The reasons for this assessment report are to:

- Conduct a threat assessment at Kuk in order to inform a critical chapter in the Kuk site management plan and assist with budget planning, resourcing and informing the drafting of the implementation plan.
- Reassure the community that the Conservation and Environment Protection Authority (CEPA) will deliver on its commitment to complete the management plan in 2017 and present it to the World Heritage Centre by the end of either October or November.
- Provide an update on the status of the management plan being drafted by Consultants.
- Consult with the community on their views/priorities for the management plan.
- Meet with other key officials to update them on the development of the site management plan.

Background

The Kuk Early Agricultural Site was inscribed on the World Heritage List in 2008. At the time of inscription, the World Heritage Committee in decision 32COM 8b.26 requested a management plan be presented by February 2009. The decision was unusual as it is not common practice to inscribe a property without a management plan in place. For various reasons, PNG is yet to finalise a management plan for Kuk Early Agricultural Site.

CEPA, as the implementing agency for the World Heritage Convention in PNG, has been working with key stakeholders in 2017 and is committed to finalising a management plan for submission to the World Heritage Centre by October/November 2017, as agreed at the stakeholders meeting in February and the follow-up workshop in April in Port Moresby.

Threat Assessment (Environmental Factors)

A threat assessment was conducted by the Conservation and Environment Protection Authority and National Museum team. The assessment took place at the boundary of the core area and moved into the main block where excavations took place. The threat assessment document will be incorporated into the management plan.

The key observations during the visit included:

Flooding - Kuk is historically a swamp area, and research needs to be done on how flooding events may impact heritage values underground. Water assists in preserving material at Kuk, however too much (or too little) and rapid flooding (instead of gradual water seepage into the ground over many years) may present management issues.

Drought - PNG has experienced major droughts in the past two decades—in 1997 and more recently in 2015. The 1997 drought was far worse than the recent one. Comparing the two droughts, the 1997 was far more serious as it lasted for almost a year.

Having said that, Kuk World Heritage Site is basically a swamp area and the scientific evidence beneath the soil is maintained by the water table. We believe the prolonged drought may affect heritage values beneath the soil. No excavations or monitoring equipment are being used at this time to monitor the situation. (*Follow up with experts for advice* on this)

Chemicals are used to control weeds and grass at the site and gardens. It is not clear to site users whether chemical seepage into the ground may damage heritage values. Further research on the types of chemicals and their potential to damage material underground needs to be undertaken as a priority.

Population growth is a concern. There are already relatively new structures/housing located within the core area. As the region's population continues to grow, there will be demand for land, roads, housing and gardens. Currently the community has little ability to prevent settlers from moving into the core area. Further research into management mechanisms to prevent this and to support enforcement, as well as any national gazettal implications, is needed.

Climate Change - Local understanding of the expected impact of climate change is limited. It is not clear if the region expects more rain, or potentially higher chances of drought (e.g., stronger el Niños - which have occurred recently). Further research needs to be done with relevant experts/authorities on likely scenarios so that this can be considered by the management plan. Drought would likely be the most serious concern.

Deep-rooted crops and plants - Deep rooted crops and plants have the potential to impact evidence under the ground. Currently, rules governing the types of crops grown in the core area are limited. Advice is provided to the community and there is a general expectation of compliance, but it cannot be enforced. The community would like to see guidelines established for the types of crops and what can/cannot be done on the land so that values in the core area can be protected.

Knowledge about methods/means to protect the values at Kuk is held by only a limited group of people in the Kuk community. This knowledge is largely dependent on recalling advice provided by experts. Documented

guidelines for managing land within the core area must be a priority. This knowledge is also likely to include cultural heritage values.

Deep Drainage - Drainage is necessary at Kuk for the maintenance of gardens. However, drains deeper than 0.5m have the potential to seriously impact the preservation of archaeological evidence. The construction of new drains or the re-digging of old drains may lead to the direct damage of buried material. Deep drains may also lead to a significant lowering of the water table, leading to decomposition and oxidation of buried organic materials, and soil formation that would destroy archaeological features and inter-mix deposits of different ages. Locals have been advised not to dig deep drains to drain out excess water for gardening. It is understood that heritage values beneath the soil are maintained by the water level and deep drainage may affect the value if such drains are dug.

Human Factors

Mechanized cultivation - Mechanized cultivation, such as the use of agricultural machinery, could cause irreversible damage to the fragile landscape, erosion of the soil, and eventual exposure and disturbance of the buried archaeological remains.

New infrastructure - The construction of new buildings within the property should be limited, particularly if construction activities require digging to a depth of 0.5m or more. Traditional and contemporary single-storey dwellings are unlikely to lead to significant damage if digging is not required. However, supporting infrastructure such as pit toilets, earth ovens, wells, etc. could seriously impact buried remains due to the digging required for construction.

Population - An increased population in the community is expected to lead to demands for an extension or intensification of existing cultivation practices. This may increase the desire for greater food production at Kuk in order to participate in the market economy. As the region's population grows, demand for access to land for housing and gardening will increase.

Landowners may face pressure from settlers wanting to occupy and cultivate land at Kuk. New settlements, including infrastructure and non-traditional agricultural practice have the potential to impact upon Kuk's significance. Currently there are limited means for landowners to resolve instances where settlers have begun to occupy land in the Wahgi Valley.

Population is one of the major issues within the community. Because of the population pressure within the community, the demand for land to build houses and gardening is very high. It is not happening now but we strongly believe it will happen in the future, which will affect the buffer and core areas of the site.

Tourism - Tourism activities are likely to increase at Kuk in the coming years, although impacts from tourism are expected to be very minor. Any supporting facilities (such as the construction of new buildings and toilets) should be located outside the core area to avoid potentially damaging digging and construction activities upon buried material

Adjacent Pressures

As mentioned, population growth may lead to demands for an intensification of agriculture in the region. Drainage of sites adjacent to Kuk for agricultural activities could lower the water table in the Kuk swamp, leading to a potentially serious impact on buried evidence. Activities outside the property that may negatively impact on the water table at Kuk must be avoided by landowners and relevant authorities.

Drain dug by locals near core area/excavated site for gardening (Photo: J. Onga, 2010)

Traditional banana plot surrounding onions (Photo: Jonga)

Mixed crop plot (Photo: Jonga 11/09/2017)

Original Musa species (Photo: Jonga 11/09/2017)

Three months plot with corn and other crops (Photo: Jonga 11/09/2017)

Newly plot prepared for planting (Photo: Jonga 11/09/2017)

Plot planted with sweet potato (Photo: Jonga 11/09/2017)

Philippines

Conservation and Restoration of Mexican Crucifixes

Louella Solmerano Revilla, *Head-Conservation Laboratory*
San Agustin Museum, Intramuros, Manila

For the past few years, there have been conservation and restoration works at San Agustin Church and Museum in Intramuros, Manila (World Heritage Site since 1993). I have mentioned these in my previous papers. This time, I will write about a specific collection in the museum: The Conservation and Restoration of Mexican Crucifixes. These sacred imageries date from the 16th to 18th centuries, and are representations of the Passion of Christ that show aesthetic beauty and realism. They are examples of tangible cultural heritage artefacts showing mastery in Christian sculptures derived from Spanish and ancient manufacturing techniques in Mexico. It was during the process of conservation and restoration that specific materials used and artistic methods applied were discovered. The crucifixes were made of *pasta de caña de maize* or cornstalk paste and mixed media. Each of the Mexican crucifixes reveals the exemplary working skills of the artist who created them during the period they were made.

These Mexican crucifixes were acquired by the late architect-Filipinologist Don Luis Maria Araneta, during his visit to the former *Nueva España*. His collection, comprising religious reliefs, altars, santos, paintings, furniture and crucifixes, was formally inaugurated in the Old Refectory of the San Agustin Monastery on June 29, 1876. In 2013, his entire collection was given to the Augustinian Fathers in Intramuros, Manila, provided that extreme care and maintenance shall be undertaken. Today, the Mexican Crucifixes can be seen in several exhibition halls. Three of the restored Mexican Crucifixes collection which I have mentioned in this paper can be viewed inside the recently inaugurated Luis Maria Araneta Gallery at San Agustin Museum.

The Catholic faith remains a legacy of the years of Spanish rule in the Philippines and Mexico. The link between Mexico and the Philippines dates back to the "Legazpi-Urdaneta" expedition when King Philip II of Spain commissioned Fr. Andres de Urdaneta, OSA—professed in the Augustinian Order in Mexico in 1553—under the command of Miguel López de Legazpi to prepare an expedition to the Philippines. From Acapulco, the expedition arrived in the Philippines in 1565. Fray Andrés de Urdaneta returned to Mexico on June 1st of the same year and discovered the *tornaviaje*, the route which was followed by the Manila Galleons from 1565 to 1815. Mexico became an important trading partner of the Philippines during the Spanish occupation that lasted for 200 years.

The Passion of Christ, one of the great themes of universal art, has absorbed artists for nearly twenty centuries. It has been an inexhaustible source of piety and inspiration for Spanish art. It is the images themselves, judged as works of art, which reveal the degree of importance achieved by the representations of the Passion of Christ, particularly of the Crucifixion, from the 16th century onwards. The Spaniards in Mexico in the middle of the 16th century constituted but a small minority, imposing the whole range of their values upon the great centers of the indigenous population. In the Passion of Christ in studies of Mexican art, it is common to insist that the representations of the Via Crucis, and particularly those of the Crucifixion, were only widely tolerated when evangelization of the country, that great spiritual achievement of the 16th century, had laid the foundation of faith with some success, or in other words, when the Christian religion had triumphed over the old idolatrous cults. *(Mexico Angustia de SusCristos,* 1967)

PASTA DE CAÑA DE MAIZE IMAGERY

Based on some readings, maize or corn was the main staple food in Mexico and continues to be so today. The ancient P'urhépechas, the original inhabitants of the Mexican state of Michoacán, found a different use for this plant, combining it with local ingredients to create figures. This substance is called J'atzingueni—a legacy of the P'urhépechas to the world. It was a tradition that Mesoamericans would carry images of their gods to war. They used to carry heavy and bulky figures that would increase their chances of winning on the battlefield. They believed that if they were defeated and the figures ended up in the hands of the victors, the idols would wreak revenge upon them while in their custody. The P'urhépechas found a way to transport their deities by creating them out of cornstalk paste or J'atzingueni, a material made of lightweight cornstalk fibers bound together with a substance extracted from the bulbs of a wild orchid that grows at Lake Pátzcuaro.

According to research written by Eva Leticia Brito Benitez:

> Maize was a sacred element and the central point of the religiosity for pre-Columbian civilizations in Mexico. The Tarascos, an ancient culture that settled in the western region of Michoacán, manufactured images using parts of the maize plant to represent their gods. After the Spanish conquest in the early 16th century and the beginning of the evangelization of native people, the first Bishop of Michoacán Vasco de Quiroga, promoted the birth of an inedited art creating Christian sculptures with the ancient manufacturing technique. … (It is understood) as the amalgamation of the native religion and Catholic beliefs. … Maize is a plant originally from America. … The pre-Hispanic Tarascan culture settled in Michoacán (AD 1200-1521), western region of Mexico, used parts of the maize plant to manufacture lightweight sculptures representing their deities, which could easily be transported by their priests to the battlefields. … After the discovery of America and the arrival of the Spaniards at the beginning of the

> 16th century, a new religion was imposed to the Mesoamerican cultures. … The missioners looked for symbolic elements in the pre-Hispanic iconography that could converge with the Catholic faith, so that the Indians could identify themselves with it. It was the first Bishop of Michoacán, Don Vasco de Quiroga, who promoted the birth of an inedited art of Christian religious imagery applying the Tarascan manufacturing technique. In a similar form as the effigies were carried by the priests during wars, their lightness resulted ideal to load the new sculptures during the processions of the Holy Week and other festivities of the liturgical calendar. … The images of Tarascan deities of maize later disappeared. This was principally due to the fact that Spanish missioners destroyed and replaced them with new Christian figures. … In 1538, Vasco de Quiroga was named the first Bishop of Michoacán and became the principal promoter of the creation of Christian imagery applying the Tarascan technique. … Although pre-Columbian images of this kind did not survive, Christian sculptures from the 16th to the 18th centuries still exist in Mexico.

This is how *pasta de caña* sculptures were formed: A framework was constructed of dried maize leaves fastened together with fibers of the agave cactusroughly covered with a paste composed of the pith of cornstalks mixed with ground-up bulbs of a local orchid. For fingers and toes turkey feathers were used. These parts were bound with strips of cotton or agave cloth to reinforce strong joints and extremities. A fine coating would be applied over it. Coloring effects were added. A quick drying oil that gives luster to the figure was lastly placed. The representations of blood were simulated by a compound of cochineal and lampblack. Head and beard could be made of human hair or modelled and stained black. [P. Kelemen, Baroque and Rococo in Latin America, 1967].

An excellent summary of the Mexican practice of making deity figures from maize dough can be found in Esther Pasztory's classic work, Aztec Art, 1983. Dough, resin and paper had primarily ritual importance. For one festival, dough images were made of all the mountains around the Valley of Mexico in a ritual of ancestor veneration; this was appropriate to Aztec thought because, according to one creation myth, man was made out of corn meal. The significance of dough images is related to eating, an important concept in Mesoamerican thought. The gods, in the form of grain and animals, are the food of men; and men, in the form of blood and hearts, are the food of the gods. Many important deities had at least three distinct types of image: a permanent representation as an effigy made of stone, wood, or terracotta, which was fed, dressed and scented; a temporary representation in a dough image, which was sacrificed and eaten by the people, representing the gods' original sacrifice; and another temporary representation in the form of a living victim who was sacrificed and then eaten by the people, standing for the original sacrifice of the deities as well as man's return of their gift of life. In Aztec thought these perishable and communally ingested deity representations were as important as the permanent statues. In the book Christian Texts for Aztecs: Art and Liturgy in Colonial Mexico (2008) by Dr. Jaime Lara, it refers specifically to crucifixes made of corn paste: The use of a light and pliable mixture derived from the pith of the corn had deep significance, for corn was the staple food and had itself been a god in the Aztec pantheon. In a very Hebraic way, maize had been one of the principal "first fruits" offered in the Mesoamerican temples, among the sacrifices to the divine mouth of the earth deity. The Nahuatl word for maize dough is in fact "our sweet sustenance" (toneuhcayotl), which lent itself metaphorically for the flesh of Christ hanging on the cross or eaten at Eucharist. In fact, the Nahuatl verb 'to sacrifice' was the same as 'to knead and spread out', like the act of preparing the dough of the corn tortilla before roasting. Dr. Lara goes on to describe the process of making one of these crucifix figures made of corn paste, and to give clues as to how the artistic tradition evolved from pre-Hispanic times. Bishop Vasco de Quiroga encouraged the modeling of such images under the direction of an aged Tarascan convert, a former pagan priest who knew the ancient technique. Many of the images now extant were probably manufactured in Michoacán around the mid-16th century. They are vivid in color and extraordinarily lightweight, ideal for the long and exhausting Lenten processions. In their own symbolic way, these effigies linked the Passion of Christ on the cross to his eucharistic body and blood ingested in the powerful "sacred tortilla" of the Mass. He notes later that in Nahuatl Eucharistic texts, the word tlaxcalli—tortilla—is commonly used for the communion wafer.

Conservation and Restoration

Below is documentation of three Mexican Crucifixes showing evidence of the variety of materials and methods used to create these divine works of art:

1.





This 18th century Mexican Crucifix measures 159 x 74 cm in height. It had darkened due to accumulated dirt, dust, yellowing varnish, and grime. There are aging cracks on the cross and the image of Christ. The cross was attacked by insects in localized areas which created structural losses that caused the wood to become weak. The details of the

carving and the authentic gold leaf applied on the cross surfaced during the cleaning process. The back of the cross was painted with several layers of paint, such as brown, green, yellow ochre, and red. The broken part of the arm of the image of Christ revealed aspects of its inner structure. The materials used for the arm do not have traces of wood grain except in the peg used for reinforcement, nor does it have the thickness of gesso to mould the arms. The materials found here are evidence of the Mexican indigenous method of using cornstalk paste and other media. The use of cornstalk paste served in particular to create lightweight sculptures for use in processions. Support losses were applied with fillers and retouched. At the top of the vertical crosspiece is a plaque bearing the letters INRI, which stands for *Iesus Nazarenus Rex Iudeorum,* "Jesus of Nazareth, King of the Jews.' The Roman practice was to use such a scroll to identify the offense committedby an individual.

2.

This is another 18th century Mexican Crucifix that measures139x 90 cm in height. The surface of this Mexican Crucifix had turned dark. There were localized paint and structural losses. From optical observation, one glass eye of the image appeared to be missing. Traces of insect eggs were present on the surface of the cross. Mechanical cleaning was initially done to remove dirt and dust. Solubility tests on the paint layers were done prior to the chemical cleaning process. There are ground and paint losses. Paint colors used for the skin tones and representations of blood in yellow ochre, green, black, red, beige, and brown are still intact. The depiction of the loincloth around the waist of the image of Christ has traces of gold leaf. The head of Christ is composed of two pieces of wood which are already loosely attached to each other. The missing left eye was found in one of the holes of the eye in between these two pieces of wood. The right eye was full of soil particles. Mechanical and chemical cleaning was done before restoring the eyes and the head. When carried, the weight of this image of Christ is heavy compared to the other Mexican Crucifixes because of the kind of wood used for this image.

3.

This is an 18th century Mexican Crucifix that measures175 x 108 cm in height. This crucifix suffered severe damage due to biological attacks. Insect excretions can be found. There are dirt, dust, stains, and discoloration of paint. Gesso, paint, and structural losses are also evident.

Note the remarkable artistic intent and aesthetic creation of the artist on the wound, blood, and ribs using creative forms, a variety of materials and colors. Except for some small holes and cracks, the paint colors of the blood on the body of Christ are still intact. There is an embossed portrayal of the grape vine on the cross, a Christian symbol. The materials and method used for the body and the cross are cornstalk paste, wood, simple tabby weave textile, rope, polychrome, gold leaf, and paint medium. This crucifix showed evidence of previous restoration since part of the upper right side of the cross that supports the right arm had a different color. The twisted forms on the cross on that particular side are more defined and uniform compared to the original parts.






The use of sized cloth or textiles in creating these kinds of crucifixes allowed the creation of multi-material constructions and facilitated easy formation of delicate parts often difficult to carve. Sized cloth also served for restoration or reworking purposes during the restoration of the crucifixes.

The Universal Principles in Conservation and Restoration were practiced during the process. Reversible materials were used for the consolidation of loose paint layers and textile, for fillers, and for retouching. The original paint layers and gilding were softly cleaned and retained. Only the areas with ground and paint losses were retouched. Areas of damaged support were reinforced and maintained. Methods used in the art of retouching were applied. By using this process, the original paint layers and retouched areas are identifiable. It is of great importance that we preserve these works of art for future generations to appreciate and to learn from.

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