ACCU
Asia-Pacific Cultural Centre for UNESCO

Training Course on Cultural Heritage Protection
in the Asia-Pacific Region 2017

# Preservation and Restoration of Wooden Structures

29 August - 28 September, 2017, Nara, Japan

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

Agency for Cultural Affairs, Japan

National Institutes for Cultural Heritage
Tokyo National Research Institute for Cultural Properties,
Nara National Research Institute for Cultural Properties

International Centre for the Study of the Preservation
and Restoration of Cultural Property (ICCROM)

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Opening ceremony

Discussion and preparation for group presentation

Hands-on activity of Japanese traditional spear plane at Takenaka Carpentry Tools Museum
(Instructor: Mr Kitamura)

Practical training on painting restoration at
Jibutsudo of Todai-ji Temple

On-site study of reconstruction project of Nagoya
Castle Honmaru Palace (Lecturer: Mr Imai)

On-site lecture on painting restoration in Zenrin-ji Temple in Kyoto (Lecturer: Mr Kubodera)

Practical training on measured drawing at Tanaka Family Residence

Observation of total dismantling repair work of the east pagoda in Yakushi-ji Temple
(Assembling the members to original position)

On-site study: Mr Shimada guided to re-roofing repair site of main hall at Kiyomizu-dera Temple
(Restoration site is covered in scaffolding roof)

## *Preface*

Asia-Pacific Cultural Centre for UNESCO (ACCU) was founded in Tokyo in 1971, one year earlier when the General Conference of UNESCO adopted the Convention concerning the Protection of the World Cultural and Natural Heritage. ACCU was established in collaboration with the Japanese government and the private sector, and aims to contribute to the development of culture and education as well as to foster mutual understanding and friendship among the countries in the Asia-Pacific region. Subsequently, ACCU established the Cultural Heritage Protection Cooperation Office (ACCU Nara) in 1999 as a centre to promote protection of cultural heritage in the region. Since then, ACCU Nara has been contributing to the international cooperation concerning cultural heritage protection through the Training Courses, International Conferences, Workshops and International Correspondents, in cooperation with the Agency for Cultural Affairs, Japan (Bunkacho); the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM); the National Research Institute for Cultural Properties, Tokyo and Nara (Independent Administrative Institution); the Nara Prefectural Government; the Nara Municipal Government; universities, museums and temples.

Among various activities, this Group Training Course plays an important role for human resources development; we annually invite 15 experts from the Asia-Pacific region, and implement the training course with the themes of "Research, Analysis, and Preservation of Archaeological Sites and Remains" and "Preservation and Restoration of Wooden Structures" alternately every other year.

I believe that the participants could acquire the technical knowledge and practical skills about "Preservation and Restoration of Wooden Structures" as well as broaden their experience throughout the course. It was our pleasure to see the participants sharing knowledge and challenges in their own countries during the course period. Plenty of lively discussions between the participants and established friendship could also be valuable for their future activities as experts in the cultural heritage protection field.

Finally, I would like to express my profound appreciation to the distinguished lecturers who kindly offered their expertise and to the organisations which provided us with generous support. I also appreciate that all participants actively took part in the programme and helped each other in a friendly atmosphere to acquire latest knowledge and techniques in this far foreign country, Japan.

*NISHIMURA Yasushi*
*Director*
*The Cultural Heritage Protection Cooperation Office,*
*Asia/Pacific Cultural Centre for UNESCO (ACCU)*

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2. Summary of Training Course


With Dr Wijesuriya and Prof. INABA in front of ACCU Nara Office

# 1. General Information

**Training Course on Cultural Heritage Protection**
**in the Asia-Pacific Region 2017**
**Group Training Course**
## Preservation and Restoration of Wooden Structures

**1. Background**
The 18th ACCU Group Training Course on Preservation and Restoration of Wooden Structures was held in Nara 29 August (Tue.) to 28 September (Thur.) 2017. ACCU Nara Office, in partnership with ICCROM and Agency for Cultural Affairs, Government of Japan (*Bunkacho*), has been organising training courses since 2000 on this topic with a view to building the capacities of professionals who have been involved in cultural heritage protection in the Asia and the Pacific region. In the Asia and the Pacific region there are various forms of cultural heritage, including wooden structures, which are of great value from a global point of view. In order to safeguard this important cultural heritage for future generations, it is necessary for heritage professionals to carry out proper investigation, analysis and preservation. This training course aims to provide participants with the latest methods and techniques for investigation, preservation, restoration and management of wooden structures.

**2. Organisation**
**Organisers**
- Agency for Cultural Affairs, Japan (*Bunkacho*): financial support of the course.
-Asia-Pacific Cultural Centre for UNESCO (ACCU): overall course planning and administration.
-International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) professional and practical contribution and support.
-National Research Institute for Cultural Properties [Tokyo and Nara]: professional contribution and advices of overall course planning.

**Support**
-Japanese Association for Conservation of Architectural Monuments (JACAM)
-Japan Consortium for International Cooperation in Cultural Heritage (JCIC-Heritage)
-Ministry of Foreign Affairs of Japan
-Japanese National Commission for UNESCO
-Nara Prefectural Government
-Nara City Government

**3. Objectives**
The objectives of the training course are to provide participants with:
- a knowledge of skills-based techniques for the recording/documentation and analysis of wooden structures;
- a knowledge of skills-based techniques for the preservation and restoration of wooden structures;
- a knowledge of skills-based techniques for the maintenance, utilisation and risk management of wooden structures;
- a knowledge of the principles and methodologies for protection of wooden structures;
- an opportunity to share their experiences and establish their regional networks.

## 4. Training Curriculum

Training Course on Cultural Heritage Protection in the Asia-Pacific Region
(29 August - 28 September, 2017 Nara, Japan)
Course Schedule

| | Date | | Morning (9:30-12:30) | Afternoon (13:30-16:30) | Venue | Lecturer |
|---|---|---|---|---|---|---|
| August | 29 | Tue. | Opening Ceremony<br>Orientation Session | Visiting Deputy Governor of Nara Prefecture | Hotel Fujita | ACCU Nara |
| | 30 | Wed. | **[Presentations and Discussion]** Country Reports by Participants | | ACCU Nara | Gamini WIJESURIYA (ICCROM)<br>INABA Nobuko (University of Tsukuba) |
| | 31 | Thu. | | | | |
| September | 1 | Fri. | **[Lecture]** Introduction to Architectural Heritage in the Asia-Pacific Region | | | Gamini WIJESURIYA (ICCROM) |
| | 2 | Sat. | | | | |
| | 3 | Sun. | | | | |
| | 4 | Mon. | **[Lecture]** Cultural Heritage Protection Systems in Japan | **[Lecture]** Conservation and Restoration of Wooden Structures in Japan | ACCU Nara | UENO Katsuhisa (Agency for Cultural Affairs, Japan)<br>KIYONAGA Yohei (Agency for Cultural Affairs, Japan) |
| | 5 | Tue. | [Lecture] Systems for Restoration Project and Construction Planning | [Lecture] Orientation for the Practical Training: "Overall Process of Repairs" | ACCU Nara | KONDO Mitsuo (Japanese Association for Conservation of Architectural Monuments) |
| | 6 | Wed. | [Work Session] Recording/Documentation of Wooden Structures I | | Tanaka Family Residence | NISHIYAMA Kazuhiro (NNRICP)<br>YAMASHITA Hideki/HAMAGUCHI Tomonari (Nara Prefectural Government)<br>YAMAGUCHI Isamu (Nara City Government) |
| | 7 | Thu. | [Work Session] Recording/Documentation of Wooden Structures II | | | |
| | 8 | Fri. | [Work Session] Survey on Damage and Planning for Restoration Work | | | |
| | 9 | Sat. | | | | |
| | 10 | Sun. | | | | |
| | 11 | Mon. | [On-site Study] Restoration of Wooden Structures I | | Yakushi-ji Temple<br>Toshodai-ji Temple | KANEKO Takayuki<br>TAKAMIYA Kunihiro (Nara Prefectural Board of Education) |
| | 12 | Tue. | [On-site Study] Conservation/Restoration and Maintenance of Historic Monuments of Ancient Nara | | Todai-ji Temple | IMANISHI Yoshio (Todai-ji Temple) |
| | 13 | Wed. | [On-site Study] Preservation and Maintenance of Wooden Structures I: Vernacular Houses and Townscape | | Takayama City | IWATA Takashi (Takayama City Board of Education) |
| | 14 | Thu. | [On-site Study] Preservation and Maintenance of Wooden Structures II: Vernacular Houses and Townscape | | Shirakawa Village | MATSUMOTO Keita (Shirakawa Village Board of Education) |
| | 15 | Fri. | [On-site Study] Reconstruction and Utilisation of Wooden Structures | | Nagoya Castle | IMAI Keisuke (Nagoya Castle General Administration Office) KATO Junko (Association of Wall Painting Restoration and Duplicate at Nagoya Castle Honmaru Palace) |
| | 16 | Sat. | | | | |
| | 17 | Sun. | | | | |
| | 18 | Mon. | [Work Session] Survey on Painted Surfaces and Planning for Painting Restoration | | Jibutsu-do,Todai-ji Temple | KUBODERA Shigeru (Historical Research Institute for Architectural Decoration Technology) |
| | 19 | Tue. | [On-site Study] Restoration of Wooden Structures II: Painting Restoration | | Kiyomizudera Temple<br>Zenrin-ji Temple | SHIMADA Yutaka (Kyoto Prefectural Board of Education)<br>KUBODERA Shigeru |
| | 20 | Wed. | [On-site Study] Restoration of Wooden Structures III | | Horyu-ji Temple | YOSHIDA Mitsuyoshi (Nara Prefectural Board of Education) |
| | 21 | Thu. | [On-site Study] Traditional Craftsmanship and Conservation of Tools | | Takenaka Carpentry Tools Museum | NISHIYAMA Marcelo (Takenaka Carpentry Tools Museum) |
| | 22 | Fri. | [On-site Study] Risk Management for Cultural Heritage | | Kobe City | MURAKAMI Yasumichi (Hyogo Prefectural Board of Education) |
| | 23 | Sat. | | | | |
| | 24 | Sun. | | | | |
| | 25 | Mon. | [Lecture and Discussion] Statement of Significance and Values-led Conservation I | | ACCU Nara | Rachael EDERTON (Heritage Consultant) |
| | 26 | Tue. | [Lecture and Discussion] Statement of Significance and Values-led Conservation II | | ACCU Nara | Rachael EDERTON (Heritage Consultant) |
| | 27 | Wed. | Writing Final Report/Submission of Final Report | | ACCU Nara | |
| | 28 | Thu. | Closing Ceremony | | Hotel Fujita | |

ICCROM: International Centre for the Study of Preservation and Restoration of Cultural Property
NNRICP: Nara National Research Institute for Cultural Properties
ACCU Nara: Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO

The course was consisted of four-days presentations/discussions, three days lectures, four days practical work sessions and eight days on-site studies. The curriculum includes following topics;

**Presentations and Discussions**
- Presentations of the present situation of preservation and restoration of wooden structures in each country and exchange of views
- Discussion on theory and practice of cultural heritage conservation
- Recapitulation of the training sessions

**Lectures**
- Introduction to wooden structures in the Asia-Pacific region
- Theory and practice of conservation of cultural heritage
- Cultural heritage protection systems in Japan
- Policies on restoration of wooden structures in Japan

**Work Sessions**
- Practical work on documentation of wooden structures
- Damage/deterioration survey and restoration of wooden structures
- Survey on painted surfaces and planning for paintings restoration

**On-site Studies**
- On-site studies on paintings restoration
- On-site studies at restoration sites of wooden structures
- On-site studies on management/utilisation of wooden structures

**5. Participants**

**Announcement and Response**

The training course is offered to participants from the following 42 signatory countries to the UNESCO World Heritage Convention from Asia and the Pacific:

*Afghanistan, Australia, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Cook Islands, Fiji, India, Indonesia, Iran, Kazakhstan, Kiribati, Kyrgyz Republic, Lao P.D.R., Malaysia, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nepal, New Zealand, Niue, Pakistan, Palau, Papua New Guinea, the Philippines, Republic of Korea, Samoa, Singapore, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Timor-Leste, Tonga, Turkmenistan, Uzbekistan, Vanuatu and Viet Nam.*

The course announcement was published on the ICCROM and ACCU Nara Office web sites in April 2017. By the closing date for applications 9 June 2017, we received 50 applicants from 24 different countries. The total number of applicants was lower than in 2015.

**Selection of Participants**

It is desirable that participants are:

(1) those who are professionals, not older than 45 years of age on 29 August 2017, who are engaged in the preservation and restoration of wooden structures, and who can make effective use of the result of the training course upon returning to their home countries;

(2) those who have a good command of English, participants should deliver presentations and write reports in English;
(3) those who can attend the entire training programme;
(4) those who are in good health and able to participate in the training programme;
(5) those who submit all of the required documents (listed below) by the stated deadlines;
(6) those who will most likely continue to exchange information and interact with ACCU after returning to their home countries;
(7) those who were not previous participants in training courses on *Cultural Heritage Protection in the Asia-Pacific Region; Preservation and Restoration of Wooden Structures* organised by ACCU Nara Office;

The documents necessary for application are as follows:
(1) Application Form
Please attach a copy of the applicant's passport, if he/she has a valid passport as of 29 August 2017. This is not necessary if he/she does not currently have a passport.
(2) Report relating to the applicant's achievements/involvement in conservation of wooden structures.
This report should be written by the applicant and should comprise:
-the reason for applying;
-a brief summary of the work related to the preservation/restoration of wooden structures in which he/she has been involved;
-the future plan to utilise and develop the outcomes of the training course in respective country.
(3) Letter of Recommendation from National Commission for UNESCO (NATCOM)
(4) Letter of Recommendation from the head of the organisation to which the applicant belongs
(5) Document Indicating English Proficiency if the applicant has such a document as a reference for the screening. There is no need to attach this if he/she does not have one at present.

**Screening Results**
ACCU Nara Office shared all of the applications with ICCROM. Consulting them for advice, we selected 16 people from 15 different countries and 3 people on waiting list. We informed successful candidates and each NATCOM of the result in late July. As 1 participant cancelled just before the course, the 15 participants from 14 different countries participated in the training course this year.

The final group of participants consisted of:
- 15 participants from 14 different countries: East Asia 2, Southeast Asia 6, South Asia 4, West Asia 2 and the Pacific 1 (refer to Appendix).
- 10 participants had background as architects or engineers and worked with historic building. 4 had one as archaeologist and worked with site management and 1 was conservator.
- The majority of the participants worked for governmental organisation.
- The youngest participant was 25 years old, the oldest 36. The average age was 30.6, the youngest over the 18 years.
- There were 7 male and 8 female participants

**Certificate of Completion**
All participants submitted a final report and evaluation form by the end of training programme and were awarded a certificate upon completion of the course.

**6. The role of the participants during the course**

English is the working language throughout the course and participants need English proficiency to play an active role in the programme. During the course period, each participant is required to make a 20-minute presentation regarding their own work and challenges. They are encouraged to share each other's knowledge and experiences through active discussion.

**7. Funding**

ACCU Nara Office covered the expenses during the training course as follows:

(1) Travel expenses:

Each participant (except those from New Zealand and Republic of Korea) were provided with an economy class return air ticket from the nearest international airport to their residence to Kansai International Airport, and transportation fees between Kansai International Airport and hotel in Nara.

(2) Living expenses:

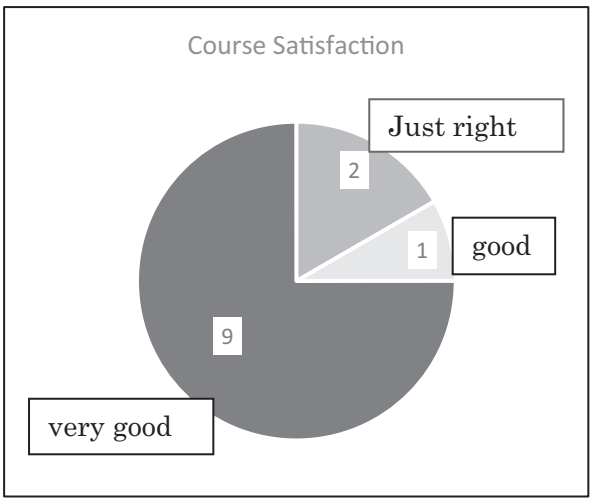
All of the participants were provided with the basic living expenses during the training course, i.e., from 28 August to 29 September 2017 according to ACCU Nara Office's regulations. Arrangements for accommodation (a room for single occupancy) during the training course was also made by ACCU Nara Office. In case a participant needs accommodation on the way to and/or from Japan for any unavoidable reason (such as visa application or limited flight connections), ACCU Nara Office covered the accommodation expenses.

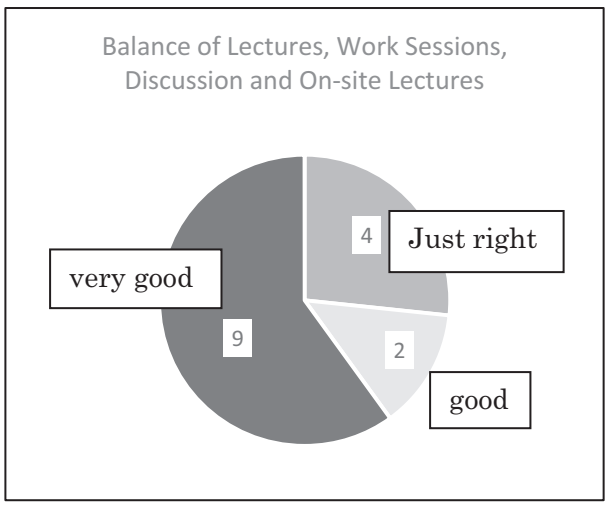
(3) Others:

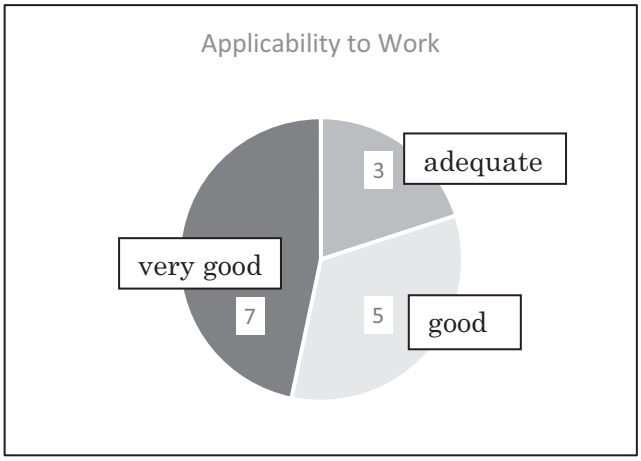
Participants were responsible for visa application fee and domestic travel expenses.

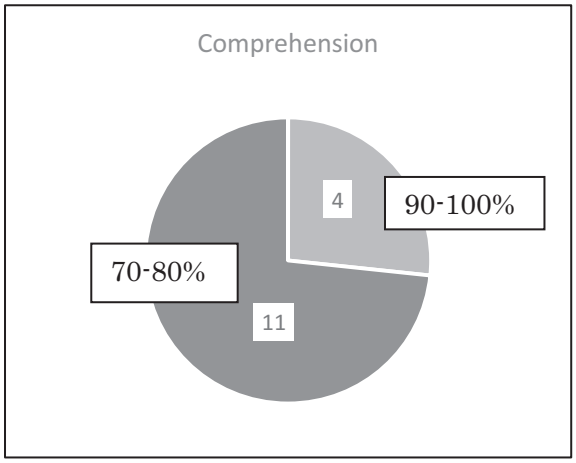
**8. Course evaluation**

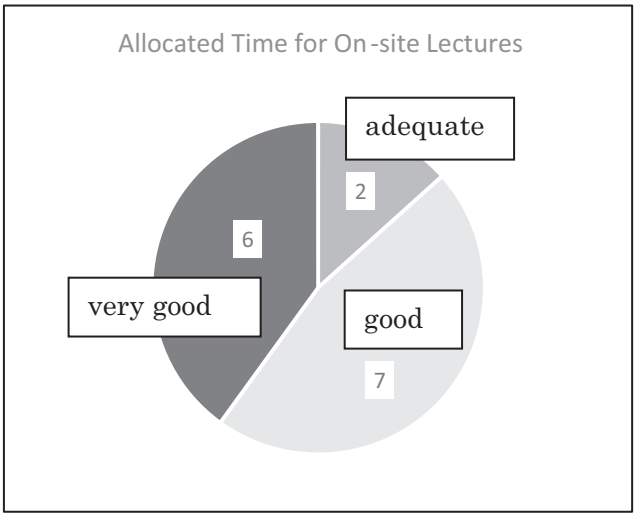
Each participants submitted a course evaluation at the end of the course simultaneously with the oral evaluation meeting with the course organisers. The general feedback from fifteen participants is as follows;

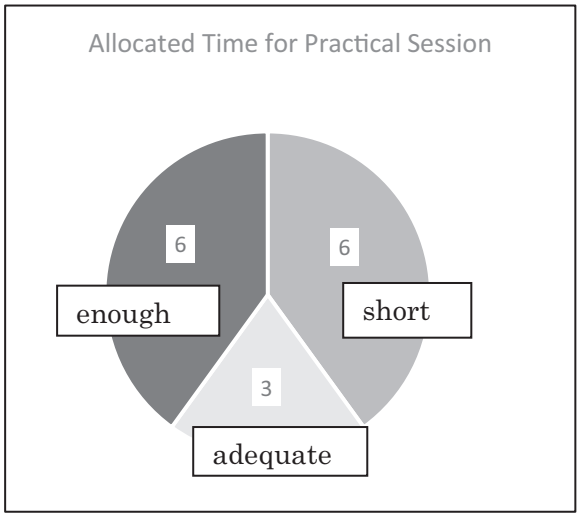





**8. Secretariat**

**ACCU Nara Office**

Nakai Isao, Director of Programme Operation Department and Wakiya Kayoko, Director of International Cooperation Division were responsible for the overall course planning and arrangement. Suzuki Sonoko, staff of International Cooperation Division was responsible for disseminating the course information and making the training materials. The Planning Coordination Division was assisted for financial work of the course.

**ICCROM**

Joseph King (Unit Director), Gamimi Wijesuriya (Projector Manager) and Nishikawa Eisuke (Projector Manager) assisted us with selection of participants. Additionally, Gamini Wijesuriya attended the opening ceremony and gave lectures for three days at the beginning of the course.

## 2. Summary of Training Course

29 August (Tue.)

**■ Opening Ceremony**

The opening ceremony was held at the Hotel Fujita Nara. Fifteen participants from 14 countries in the Asia-Pacific region gathered together with the organisers and representatives of the related institutions to the programme. Mr Nishimura, the director of ACCU Nara, and the representatives of each institution gave their welcoming addresses, wishing them to make the most of their time during the training course.

After that, the participants had an orientation session of the programme and visited Nara Prefectural Office to meet the vice governor, who introduced the historical and cultural background of Nara and had some time to exchange ideas and information with them. They also enjoyed the panoramic view of the World Heritage monuments from the rooftop of the office building: the Todai-ji Temple and the Kohfuku-ji Temple.


*Top:* Welcome speech by Dr Gamini Wijesuriya (ICCROM)

Mr Nishimura Yasushi, Director of ACCU Nara Office


Ms HAMADA Yasue from Agency for Cultural Affairs, Japan



Self-introduction (*Top*: Jamyang Namgyel (Bhutan); *Bottom*:Titin Puteri (Indonesia)

With Vice Governor of Nara Prefecture (centre in the front)

30 – 31 August (Wed. - Thur.)

**■ Country Reports by Participants**

Gamini WIJESURIYA (ICCROM)

INABA Nobuko (University of Tsukuba)

The class was divided into two groups to make presentations on their own countries. After each presentation, they exchanged information and ideas on the issue and realized that the challenges being addressed in the presentation had something in common as the Asian-Pacific region. They seemed to widen their perspective on the heritage protection by lecturers' comments.

In the afternoon on 31st, Prof. Inaba lectured on the Japanese system for cultural heritage management and the architectural conservation for wooden structures in Japan. She introduced main concepts under the legal framework for protecting the cultural heritage in Japan and the history of its implementation from the early twentieth century. Through a question and answer session, the participants were able to develop their understandings on the Japanese system and practices.


*Left*: Comment from Duong An (Viet Nam)

*Right:* Coutry report presentations and discussions with guidance from Dr Wijesuriya and Prof. Inaba


*Left:* (left to right) Ram Suwal (Nepal), Ambrosia Crum (NZ), Anam Sami (India), Bi Yi (China)

*Right*: Presentation by Laiba Sundas (Pakistan)

Comment from Ro Sovandaroath (Cambodia)

*Right:* Presentation by Monthatip Yaempradit (Thailand)

Lecture by Prof. Inaba

*Left*: Jamyang Namgyel (Bhutan)

*Right:* Presentation by Tran Phuc (Viet Nam)

*Left*: Comment from Anam Sami (India)

*Right*: Presentation by Yoo Hyeonok (Korea)

**1 September (Fri.)**

**■ Introduction to Architectural Heritage in the Asia-Pacific Region**

Gamini WIJESURIYA (ICCROM)

At first, Dr Gamini Wijesuriya gave an overview of ICCROM: the history; the institutional partnership; and various conservation projects in many countries. As a project manager, he also provided a detailed explanation about the conservation activities of ICCROM, which included World Heritage advisory services, monitoring the World Heritage sites and conservation reporting activities and scientific development. He also highlighted the commitment of ICCROM with the development of human resources for the heritage preservation.

Then he presented two cases of heritage management in Asia: The Honghe Hani Rice Terraces in China and Anuradhapura in Sri Lanka. He emphasized the importance of involving the community participation for the preservation of the local heritage. The participants also learned the different types of assistance provided by ICCROM to solve the variety of heritage issues.

The class was divided into two groups to discuss the challenges presented by their country reports; they had to detect similarities and differences and express their opinion. They found many common issues: the limited resources in investment and technical knowledge; the lack of involvement of the local people; lack of the risk management; and little effort to sustain authenticity. In the lecture on the wooden structures in Asia, he emphasized that the continuity of the traditional knowledge was important as well as securing the supply of wood and the maintenance of structures. Divided into groups, they exchanged their views and wrote the speculations on the issue.


Dr Wijesuriya teaching heritage management in Asia at ACCU Nara Office


Participants discussing about common issues on cultural heritage protection in the Asia-pacific region

**4 September (Mon.)**

**■ Cultural Heritage Protection Systems in Japan**

UENO Katsuhisa (Agency for Cultural Affairs, Japan)

The lecturer explained on the Japanese system for the protection of cultural properties which consisted of several categories such as tangible, intangible, folk cultural properties, monuments and cultural landscapes. He also presented some key factors related to the heritage conservation and management in Japan and mentioned some examples to illustrate how the policies are being applied in different context.


Mr UENO Katsuhisa


Question from Ms Rahman Sabrina (Bangladesh)

**■ Conservation and Restoration of Wooden Structures in Japan**

KIYONAGA Yohei (Agency for Cultural Affairs, Japan)

The second lecture was focused on the repair and maintenance of wooden structures, especially on the dismantling process commonly practiced in Japan to repair the temples and shrines. The lecturer also talked about the risk management of the wooden structures and listed the methods mostly used in Japan to prevent the physical deterioration and to control the disaster damage. The participants asked questions after each lecture to clarify their ideas about the concepts addressed by the lecturer.

*Left*: Question from Ram Suwal (Nepal)  *Right*: Lecture by Mr Kiyonaga Yohei

**5 September (Tue.)**

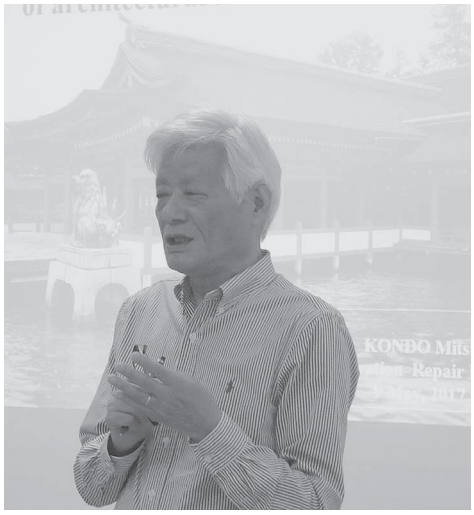
**■ Systems for Restoration Project and Construction Planning**

**■ Orientation for the Practical Training: "Overall Process of Repairs"**

KONDO Mitsuo (The Japanese Association for Conservation of Architectural Monuments)

The lecture was focused on the heritage buildings investigation in Japan, an important aspect to consider prior to any kind of intervention for conservation. In the first part, he pointed out the differences in terms of restrictions and the management between the categories of designated and registered cultural properties. The lecture also included explanations about the dismantling process and the human resources specialised in the traditional techniques, since those are key elements in the management for the preservation of the built heritage.

The second lecture was on the research and assessment of built heritage, which ultimately underlay the methodological basis and the policies of any conservation project. Considering that the interventions aim to maintain the original features of the building, there should be an emphasis on identification of traces and previous repairs, as well as the assessment of damage to define what to keep or what to be replaced. The lecturer illustrated the concept with some examples so that the participants easily understand the content.



Mr Kondo Mitsuo from JACAM

Question from Wilmer Godoy (Philippines)

**6 September (Wed.)**

**■ Recording/Documentation of Wooden Structures I**

NISHIYAMA Kazuhiro (NNRICP)

YAMASHITA Hideki (Nara Prefectural Board of Education)

YAMAGUCHI Isamu (Nara City Board of Education)

This was the first of three sessions of workshop conducted at the Tanaka Family residence, located in the surroundings of the Toshodai-ji temple, the World Heritage site. The lecturers explained the historical background of the residence and the management of restoration processes, focusing on its importance as the cultural properties in Nara. Mr. Yamaguchi mentioned that he expected participants, through a three-day workshop, to assess the restoration of the residence, to suggest ideas on how it should be repaired and to provide ideas on how to utilize it.

The first task was to draw a floor plan of the house by measurement. The lecturers, while supervising the students' work, provided some key points for the measurement of the structure and dedicated their time to answer any questions. Then, the lecturers checked drawings and gave useful feedbacks.

**7 September (Thu.)**

**■ Recording/Documentation of Wooden Structures II**

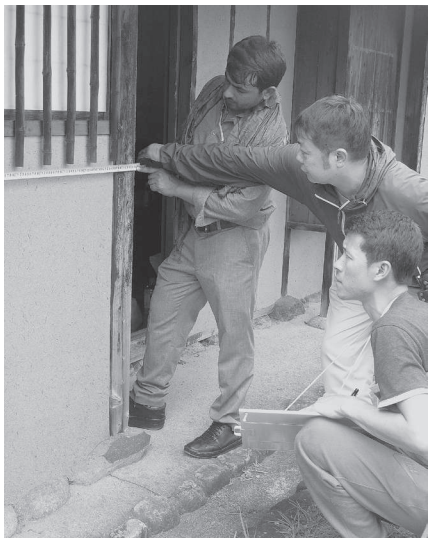
NISHIYAMA Kazuhiro (NNRICP)
HAMAGUCHI Tomonari (Nara Prefectural Board of Education)
YAMAGUCHI Isamu (Nara City Board of Education)

The second session focused again, like in the previous day, on drawing. This time, the participants were asked to draw a section plan of the entire building. The lecturer remarked the importance of considering some tips to make the drawing process easier, such as using fewer points for each member. The next task was to take all necessary measurements for the previously finished section plan. At the end, the lecturers checked all drawings and provided them with comments and advice to increase the degree of accuracy of their drawings.

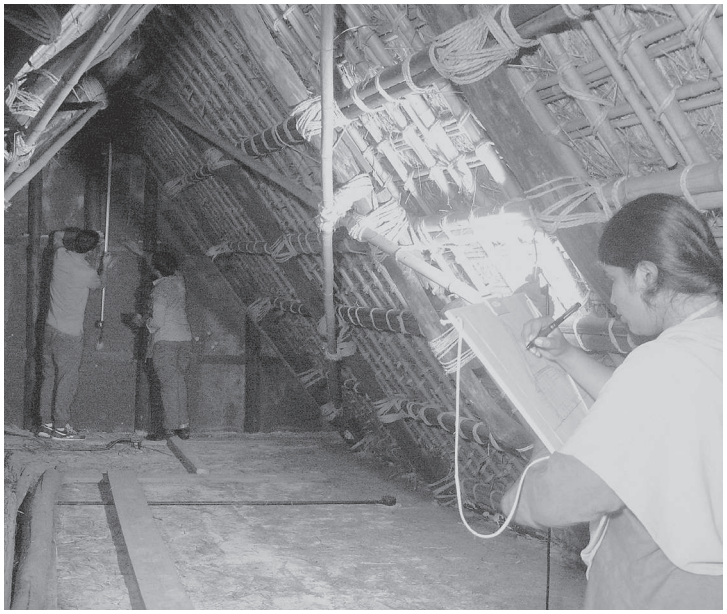
*Top*: Training venue:Tanaka Familiy Residence (traditional vernacular house built in 18-19C)
*Bottom*: Orientation lecture of three-day workshop by Mr Yamaguchi Isamu



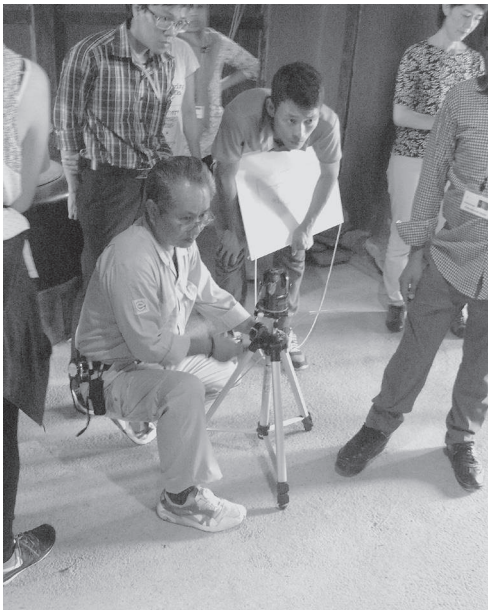
Drawing floor plan at traditional kitchen area in Tanaka Family Residence

*Left*: Mr Yamaguchi and Mr Nishiyama checking participants' drawings
*Right:* Mr Yamashita teaching how to draw exterior details



Participants drawing a cross section plan



Mr Hamaguchi demonstrating meassurement with a lazer level

**8 September (Fri.)**

**■ Survey on Damage and Planning for Restoration Work**

NISHIYAMA Kazuhiro (NNRICP)
HAMAGUCHI Tomonari (Nara Prefectural Board of Education)
YAMAGUCHI Isamu (Nara City Board of Education)

The third and last day of workshop focused on the survey of damage. Today's task was to identify old and new members, renewed parts, and those requiring restoration.

The participants started evaluation of the house condition after receiving some key points by the lecturers to identify the traces of previous restoration. After evaluation, Mr. Hamaguchi lectured on the identification of materials and brought some wood samples to recognize the features of wood (cedar, pine, and cypress); he demonstrated that the surface, the texture and treatment of wood would determine its use in specific parts of the buildings.

The lecturer underlined the importance of periodical maintenance to prevent the continuous environmental deterioration caused by water and weathering. This is an essential procedure since the goal of any conservation project is to maintain the original form of the structures and to reduce the frequent replacement.

The final session focused on a group discussion on the effective use of the building. The class made various good suggestion and the lecturer mentioned he would consider it for future proposals. The three lecturers concluded the sessions with their final comments and words of gratitude.

Damaged survey and making management plan for Tanaka Family Residence in groups

**11 September (Mon.)**

**■ Restoration of Wooden Structures I**

KANEKO Takayuki (Nara Prefectural Board of Education)
TAKAMIYA Kunihiro (Nara Prefectural Board of Education)

The participants visited the Yakushi-ji Temple, one of the World Heritage sites, and observed the total repair work of the east pagoda being dismantled under a guidance of Mr Kaneko. He outlined the repair project and lectured on damage of the east pagoda in detail. Because of current severe deterioration such as a hollowed central pillar, a sinking foundation stone and weakened foundations, the east pagoda was being repaired by total dismantlement. He also introduced two basic principles

Observation of total dismantlement work of east pagoda at Yakushi-ji Temple

*Left:* Mr Kaneko instructing damaged survey of wooden members
*Right:* Observation of Japanese traditional repair work '*hikiya*'

important for the repair work: to use original materials as many as possible; and to highly regard the original structures of the building. It was a good opportunity to learn the Japanese-style repair process by total dismantlement and to consider it from the perspective of cultural heritage protection.

Then, participants visited Mieido in the Toshodai-ji Temple and observed the work of partial repair; the sinking foundation and damaged roofs were being repaired. Mr Takamiya explained the Japanese traditional technique termed *hikiya* which relocates the whole structures by raising and transferring to another location.

**12 September (Tue.)**

**■ Conservation/Restoration and Maintenance of Historic Monuments of Ancient Nara**

IMANISHI Yoshio (Todai-ji Temple)

The lecturer explained the maintenance and management system of the Todai-ji Temple, the World Heritage site, while touring around the precincts: Nandaimon (Great South Gate), a cloister, Daibutsuden (Great Buddha Hall) and Hokke-do. At Nandaimon, he provided an overview of the history of the temple and past repair/reinforcement work. Then he introduced the past repair cases in detail: Nandaimon was repaired and reinforced by embedding the iron frames without being seen from the surface. Even after finishing the repair work, the regular inspection is essential for preventing damage. He took an example of the deterioration caused by water and explained the case in detail. He also lectured on how to repair wooden pillars and roofs, how to paint pigments, preservative treatment of wooden structures, and the termite control at the Todai-ji Temple. It was a good opportunity for all participant to learn how to manage the historic wooden structures and hand over to the next generation.

Mr IMANISHI lecturing on maintenance and management system of the Todai-ji Temple, the World Heritage Site

**13 September (Wed.)**

**■ Preservation and Maintenance of Wooden Structures I: Vernacular Houses and Townscape**

IWATA Takashi (Takayama City Board of Education)

The participants visited Takayama City and observed the historic townscape, designated as Important Preservation Districts for Groups of Historic Buildings, under a guidance of the lecturer who outlined history and culture of the city and preservation efforts of local residence. According to his explanation, the townscape of the area had been preserved mainly by local residence rather

than the local administration, especially in the field of fire prevention measures. Most of the traditional townscape in Japan were built along the narrow streets, so fire engines cannot enter the street, which prevented fire extinguishing activities. The situation was the same with Takayama City. The fire extinguishing equipment such as a firehose and water storage devices, were installed at each residence; each community assigned their roles in fire fighting for emergency. It was a good opportunity to learn the community-led preservation measures while observing/experiencing the facilities.


*Left:* Mr Iwata explaining the fire prevention system which have been preserved by local residents

**14 September (Thur.)**

**■ Preservation and Maintenance of Wooden Structures II: Vernacular Houses and Townscape**

MATSUMOTO Keita (Shirakawa Village Board of Education)

Shirakawa Village is located among mountains where a group of traditional wooden houses are preserved. The local community plays a major role in preserving the cultural heritage, managing tourist activities and utilisation of heritage. In 1995, Shirakawa Village was registered as the UNESCO

With Mr Matsumoto (centre in the front), at Shirakawa Village

World Heritage Site of the “Historic Villages of Shirakawa-go and Gokayama”. The unique gassho style houses and outstanding examples of a traditional way of life were appreciated. After the designation, the growing number of tourists annually visited the village and currently reached to 5000 visitors per day compared to 1600 residents, which caused various trouble. The lecturer introduced countermeasures taken by the local government in cooperation with residents: regulation of private cars and building new parking lots. In conclusion the lecturer summarized the lesson in two points: (1) the community-led movements are essential for preservation of the settlements; the local government should raise awareness of the residents and facilitate them to play responsible roles; (2) Being aware that the increasing speed of tourists is higher than that of preservation efforts, we should try to devise protective measures in trial and error.

Mr Matsumoto explaining fire prevention system (left) and drainage ditch (right)

Lecture at the Gassyo-style house, Wada House

**15 September (Fri.)**

**■ Reconstruction and Utilisation of Wooden Structures**

IMAI Keisuke (Nagoya Castle General Administration Office)
KATO Junko
(Association of Wall Painting Restoration and Duplicate at Nagoya Castle Honmaru Palace)

IMAI Keisuke gave the general information on the history of Nagoya Castle and the natural climate of the area and presented the reconstruction project of Nagoya Castle Honmaru Palace in detail. Nagoya Castle was destroyed by fire during the World War II, but there remained many photographs, literary materials and design drawings, which enabled them to reconstruct the almost perfect copy of the castle. Special attention was paid to the details of structures; the same types of wood as the original were used and the same pigment was used to restore the wall paintings.

Through those reconstruction work experiences, importance of the wood supply was keenly recognized for reconstruction; the reforestation project and restoration of traditional techniques and tools were initiated at the same time. He introduced Japanese carpentry techniques such as kigumi (wood joinery) and kidori (conversion of timber) by showing wooden models. Then, he guided the participants to the

Mr Imai explaining Japanese carpentry techniques such as *kigumi* (wood joinery)

Observation of reconstructed Honmaru Palace

In front of Nagoya Castle Tower

reconstruction facilities and to the restoration laboratory of wall paintings. The wall paintings were partially stripped off during the World War II and escaped fire, so the original painting remained. By analyzing the pigment components, they can restore them with the same pigment as the original. At the end, KATO Junko underlined that the most important principle was not only to reproduce the paintings in detail but to restore the aesthetic sense of former days.

**18 September (Mon.)**

**■ Survey on the Painted Surfaces and Planning for Painting Restoration**

KUBODERA Shigeru (Historical Research Institute for Architectural Decoration Technology)

In the opening introduction, the lecturer talked about how to observe and draw paintings; how to decide colours based on observation of the original colours and pigments. Then, he guided the participants to the external decorated façade of Jibutsu-do in the Todai-ji Temple precincts, and asked them to select a part of the decoration and to start drawing.

The afternoon session was divided into three sessions:

1. To observe the painted colours, to identify the original pigment applied on the façade and to decide the colours on the drawing.

*Top left*: Anam Sami (India) doing damage survey *Bottom left:* Wilmer Godoy (Philippines) drawing paintings

2. To write the short restoration plan of Jibutsu-do
3. To check the drawing in front of the façade and to decide applicable colours

**19 September (Tue.)**

**■ Restoration of Wooden Structures II: Painting Restoration**

KUBODERA Shigeru (Historical Research Institute for Architectural Decoration Technology)
SHIMADA Yutaka (Kyoto Prefectural Board of Education)

The training session was held in the Zenrin-ji Temple in Kyoto. The lecturer explained on the temple's history and illustrated the restoration and repainting of the Amitabha's interior and exterior. The experts demonstrated how to re-paint colours by observing the original, which provided the participants with professional information about the Japanese new techniques of preserving original colours.

In the afternoon Mr Shimada welcomed all participants in the Kiyomizu-dera Temple and guided them to observe the restoration work and paintings done at the Amitabha and Okuno-in halls. They also had an opportunity to observe closely ongoing painting restoration works in the gate; to see the ongoing re-roofing work of the main hall in the temple; to get plenty of information about the technique of removing the old cypress bark; and to observe how the cypress bark was packed and applied on the roof.

*Left:* Bracket complex: original painting partly preserved *Right:* Re-roofing work of the main hall

At Kiyomizu-dera Temple: Mr Kubodera (second left in the front) and Mr Shimada (centre in the back)

**20 September (Wed.)**

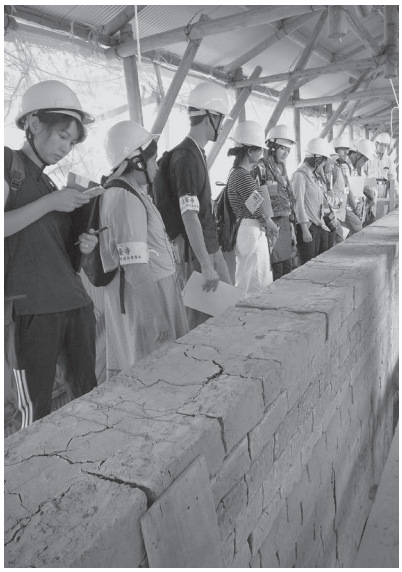
**■ Restoration of Wooden Structures III**

YOSHIDA Mitsuyoshi (Nara Prefectural Board of Education)

The lecturer guided the participants to three sites under restoration in Horyu-ji Temple: (1) the Horyu-ji Temple's main gate, (2) Jizou-do, and (3) the earthen wall.

The lecturer presented current condition of the main gate and guided the class to identify the damage in the pillars and the roof; he also explained the damage of the roof and the process of re-roofing by using new roof tiles; and moved to another roofing site at the Jizou-do building. Then he introduced Mr ASHIDA Jun'ichi, a specialist in roof tiles, who illustrated the ancient and modern techniques of manufacturing the roof tiles; how to identify good or damaged tiles. At the end, he demonstrated the way to identify the clicking sound by using a small hammer to check the condition of roof tiles. Next, the lecturer illustrated the method of restoring the earthen wall and applying new mud walls.

*Left:* Mr Ashida instructing how to identify damaged roof tiles *Right:* Observation of re-roofing work of main gate



*Left:* With lecturer, Mr Yoshida (second right in the front) *Right:* Restoration work of earthen wall

Guideed tour by Citizens Volunteers

Group photo with four Citizens Volunteers at the southern gate of Horyu-ji Temple

At the end, four volunteers of local people, kindly guided the participants for two hours in the Horyu-ji Temple. Through this tour, they also experienced one of the educational activities cooperated with local people.

**21 September (Thur.)**

**■ Traditional Craftsmanship and Conservation of Tools**

NISHIYAMA Marcelo (Takenaka Carpentry Tools Museum)

The lecturer described the design of the museum and the materials used in construction, after displaying a video introducing master carpenters work. The participants learned how to use carpentry tools and how to smooth the wood surface by using different kind of tools. They visited tea ceremony

Mr Nishiyama explaining the design and the materials of the construction

Ram Suwal (Nepal) trying hands-on activity, *kigumi (wood joinery)*

house in the museum and experienced the Japanese tea ceremony. Then, Mr Kitamura from the museum workshop demonstrated the Japanese various kinds of woods and their usage; he also showed how to use yarigannna (a spear plane) to plane the wooden surface. All participants experienced to smooth a wooden surface by themselves and learned the way of cleaning, sharping and preserving the tools.

**22 September (Fri.)**

**■ Risk Management for Cultural Heritage**

MURAKAMI Yasumichi (Hyogo Prefectural Board of Education)

The morning session was held at Hotel Kitano Plaza in Kobe. Mr Murakami lectured on risk management of cultural properties based on his own experience, when the devastating earthquake struck Kobe in 1995. He emphasised that the rescue work for cultural properties should be started after earthquake victims settled down to the ordinary life. The participants learned the documentation method and damage survey of the historical buildings in the city; they also learned

how to estimate damage; how to make restoration plans; how to get budget and support from various organisations and local people.

In the afternoon, the lecturers guided them to visit foreign residences in Kobe to observe the restoration work and the technique of fixing brick walls to prevent collapsing if a natural disaster would occur in the future. At the end, Ms Kobayashi accompanied participants to the foreign house under restoration. She outlined the history of restoration and the on-going restoration plans; she showed the materials used in restoration and demonstrated their plan of keeping the undamaged parts of the building and replacing the damaged one.

With lecturers, Mr Murakami and Ms Kobayashi (centre in the back), at Moegi House built in 19C

**25-26 September (Mon.)**

■ **Statement of Significance and Values-led Conservation**

Rachael EGERTON (Heritage Consultant)

The lecturer from New Zealand talked about the meaning of value and its characteristics; she presented an example of Italy and described how the value was changing over time. In evaluation of the heritage, we should consider different factors that would affect significant values: architectural forms, historical themes, the age/era, the socio/economic culture and so on. She also detailed the development process of the statement of significant values by analyzing information. The case study of Port Craig Sawmills and Settlement was presented as an example of heritage value with historical significance.

In the afternoon session, the class visited the Kohfukuji Temple and exercised what they had learned. They were divided into four groups and each group had to identify three values about the temple.

On the second day, the class continued yesterday's task on the significant value and preparing the statement on three values they identified at the Kohfuku-ji Temple. Then, the second task was to prepare the values-led conservation plan.

In the afternoon, each group made a 20 minutes presentation on the value they identified at the Kohfukuji temple. The class commonly identified historical, architectural, and religious value; some mentioned archaeological and spiritual value. The lecturer admired the group work that presented a new perspective to the heritage value and appreciated their efforts.

At the end, the lecturer introduced the World Heritage Convention and the Outstanding Universal Value (OUV), the criteria of selection. She clarified the convention and facilitated the understanding of the authenticity of cultural heritage.

Ms Egerton (centre) giving advices

Group work at Kohfuku-ji Temple

Discussing the value of Kohfuku-ji Temple and making 20 minutes presentation in groups

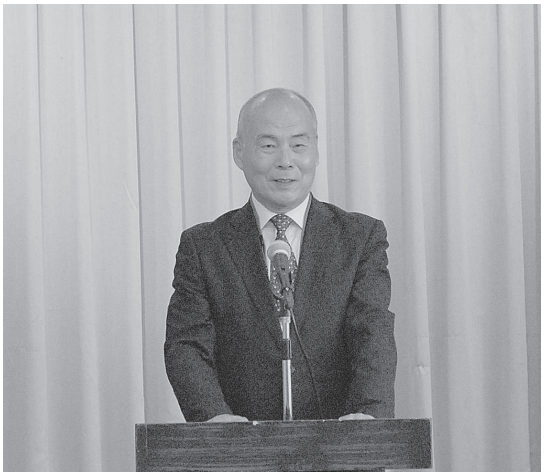
With lecturer at Kohfuku-ji Temple

## 28 September (Thur.)

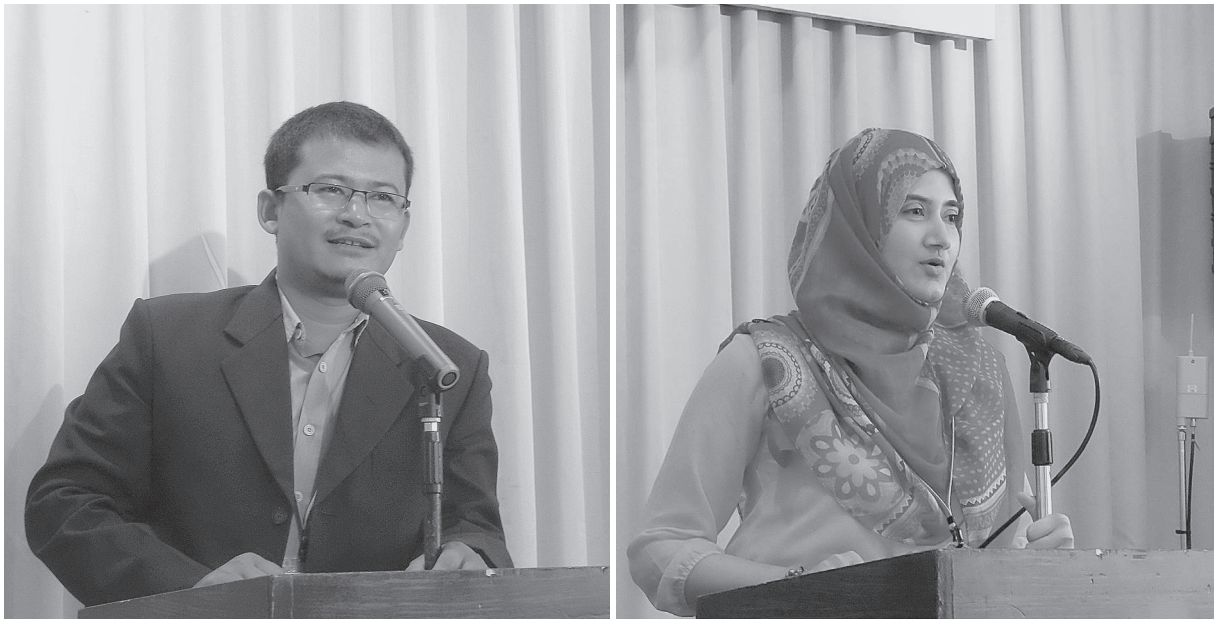
**■ Closing Ceremony**

The closing ceremony was held in Hotel Fujita Nara. NISHIMURA Yasushi, the director of ACCU Nara delivered a closing address and congratulated the participants for accomplishing a month of training successfully on behalf of all the related institutions. Then he awarded a certificate of completion to each participant. Mr Ram Prasad Suwal and Ms Laiba Sundas made a speech representing all participants, and expressed their appreciation and gratitude to ACCU Nara for the warm support for one-month training in Nara. At the end, ACCU Nara asked them to make further comments and suggestions on the programme.

Closing Ceremony



Congratulatory address by the director Nishimura



Closing speech (*Left*: Ram Suwal from Nepal, *Right*: Laiba Sundas from Pakistan)


At Closing Ceremony


# II. Country Reports by Participants

Japanese tea ceremony house in Takenaka Carpentry Tools Museum

**Bangladesh**
**Sabrina Rahman**
*Assistant Secretary*
Cultural Heritage Section
Ministry of Cultural Affairs

# Problems and needs for cultural heritage protection and restoration activities in Bangladesh

## Introduction

Bangladesh, benefitting from two thousand five hundred years of glorious history, is enriched with diversified cultural heritage in various forms encompassing small artifacts of prehistoric people of the remote past to gigantic monuments such as monasteries of the historic era. Vestiges of ancient hunter-gatherers and Neolithic agrarians lie among prominent clusters of features produced by historic religious groups such as Hindus, Buddhists, Muslims and Christians. Also, the country has a number of small ethnic communities with their own distinctive long-cherished cultures and heritage. Accordingly this multifarious heritage undoubtedly testifies to the richness of our colorful history.

Out of thousands of archaeological sites around the country, not all have yet been declared as protected monuments or sites by the Government of Bangladesh. At present there are 455 protected archaeological sites under the jurisdiction of the Department of Archeology (DOA).

World Cultural Heritage Sites in Bangladesh consist of the following.

1. Historic Mosque City of Bagerhat
2. Ruins of the Buddhist Vihara at Paharpur

Fig. 1. Mosque of Bagerhat

Fig. 2. Buddhist Vihara at Paharpur

The following is the Tentative List of Proposed World Cultural Heritage Sites in Bangladesh.

1. Mahasthan and Its Environs, Bogra District
2. Halud Vihara, Naogaon District

3. Jagaddala Vihara, Naogaon District
4. Lalbagh Fort, Dhaka District
5. Lalmai-Mainamati Hill range, Comilla District
6. Kantanagar Temple, Dinajpur District

## Organizations responsible for the protection of heritage

In Bangladesh the protection and restoration of all tangible and intangible cultural heritage is the responsibility of the following departments under the Ministry of Cultural Affairs.

1. Department of Archaeology (DOA)
2. Bangladesh Shilpakala Academy
3. Bangla Academy
4. Bangladesh National Museum (BNM)
5. National Archives and Library
6. Folk Arts and Crafts Foundation in Sonargaon

Besides these, other organizations are working on the exploration, excavation, collection, research and display of the cultural heritage of the country in the roles of custodian or academician.

## Policies, acts and laws

The cultural rights of the country are protected by Articles 15, 23 and 34 of our constitution. The Bangladesh government has already countersigned almost all of the conventions on cultural affairs of UNESCO, such as the Convention Concerning the Protection of the World Cultural and Natural Heritage of 1972 (on 03/08/1983), the Convention on the Protection and Promotion of the Diversity of Cultural Expressions of 2005 (on 31/05/2007), the Convention for the Safeguarding of the Intangible Cultural Heritage (on 11/06/2009), etc. (The preceding information has been taken from the 2nd meeting on "Sub-Commission for Cultural Affairs of Bangladesh National Commission for UNESCO" held 16/09/2010).

The Ministry of Cultural Affairs drew up a National Cultural Policy in 2006. It provides guidelines for coordination between cultural development and economic development. It also talks about building bonds between people of all races, religious beliefs and ethnic communities. For preserving and protecting heritage sites there is a separate law. The Antiquities Act, 1968, is an act to consolidate and amend the laws relating to the preservation and protection of antiquities. Other related laws for protecting cultural heritage are the Ancient Monuments Preservation Act of 1904, the Conservation Manual of 1923, the Archaeological Works Code of 1938, the Antiquities Export Control Act of 1947, and the Antiquities Preservation Rules of 1986.

Under the provision of the Antiquities Act, 1968 and the Ancient Monuments Preservation Act of 1904, the Department of Archaeology of the Ministry of Cultural Affairs can take steps to nominate and

declare monuments, sites, artifacts or collections as cultural heritage. Department officials investigate and explore the cultural property in question and declare it as cultural heritage. Local administration is also involved in the process of nominating and declaring a site as cultural heritage.

Among the stated responsible departments, only the DOA has jurisdiction and authority to protect and declare an archaeological site as protected cultural heritage. Every official and staff member of the DOA has their own responsibility for safeguarding the cultural heritage of the country. There are four tiers (Director General, Regional Director, Custodian, Site Attendant) of the safeguarding system. Centrally, the Director General of the DOA has the key responsibility for controlling, safeguarding and implementing the management of the cultural heritage of the country. Additionally, the Regional Director's office and field offices are responsible for protecting, preserving, conserving and managing heritage sites and museums in their respective areas.

The designated objectives of the BNM are the collection, preservation, conservation, documentation, display, education, research and publication of objects of the historical, cultural and natural heritage of Bangladesh. The BNM is also devoted to the study of classical, decorative and contemporary art and art history, and the archaeology, natural history and ethnography of world civilization. It has splendid collections which range in date from prehistory to the present time. Both in number and uniqueness, the Museum is extremely rich in stone, metal and wooden sculptures, in gold, silver and copper coins, in stone inscriptions and copperplates and in terracottas and other artifacts of archaeological interest.


Fig. 3. The Conference of Parties to the Convention on the Protection and Promotion of the Diversity of Cultural Expressions, presided by Asaduzzaman Noor, MP, Minster of Cultural Affairs, Government of the People's Republic of Bangladesh.

It is a matter of honour for Bangladesh that the honourable Minister of Cultural Affairs, Mr Asaduzzaman Noor (MP) has chaired the 6th session of the Conference of Parties to the Convention on the Protection and Promotion of the Diversity of Cultural Expression held in June 2017 in Paris. That session was important for participating countries to protect and promote the diversity of cultural heritage for development. The Government of Bangladesh is planning to arrange a global conference for UNESCO in Dhaka by the end of next year.

## Problems and needs for cultural heritage protection and restoration activities

Heritage is a reflection of the identity of the people of a nation. It is a mirror of national unity. One identifies himself or herself through the past which gives a sense of pride and honour. It connects the historic past to the present, conveys knowledge and defines uniqueness in nationality. In recent times, several problems have been addressed as threats to the preservation and restoration of our cultural heritage.

**Climate change:** Climate change poses significant risks for Bangladesh. The effects of climate change on different human dimensions of cultural and social phenomena, more specifically the archaeological heritage and culture of Bangladesh, are noteworthy. Being located in the eastern matrix of the Bengal delta, Bangladesh possesses a significant content of the archaeological heritage and historical record of eastern India, an important part of historical India. The southern part of Bangladesh, an area of the country at risk to the effects of climate change, encompasses numerous archaeological materials and sites constituting the heritage of human settlement since the Early Medieval to the British Colonial periods. The above-mentioned climatic impact will certainly strengthen the degenerating factors against these archaeological records which will result in substantial loss to the history, heritage and archaeological research in the country.

**Salinity, efflorescence and deterioration of bricks and terracotta plaques:** In the courtyard at Paharpur Temple, many undulations and depressions have been found where rainwater is trapped during the monsoons. Some of those depressions are found very close to structures remaining in the northeastern corner and close to peripheral monastic cells. Due to inadequate drainage facilities, water trapped here infiltrates the basement of the structures as well as the monastic cells and creates efflorescence, building up salinity and the threat of corrosion to the structure.

**Waterlogging problem:** Waterlogging is one of the common phenomena leading to deterioration of bricks and terracotta plaques at Paharpur. An artificial channel which was around 20 feet away from the main temple had been dug to drain rainwater from the surrounding areas. The water draining into the channel accumulates in a ditch. From the ancient period there was a disc-shaped vertical water channel at the top of the temple, through which rain water entered into the wall by capillary action. Waterlogging is a vital issue and has a wider impact at the northwest corner of the entrance wall.

**Harmful biological and chemical agents:** Flora and fauna such as algae (living and nonliving), moss, lichen, plants, different types of grass, birds, termites, insects, etc. often exert detrimental effects on the brick and terracotta of monuments. Sometimes moss and lichens are considered as protective, but they are more often destructive. They grow on buildings and act as humus for supporting the growth of higher plants on the monument. Lichen grows slowly, but is very resistant to extreme conditions of humidity and temperature.

**Flaking:** One of the main causes of deterioration of bricks and terracotta plaques at Paharpur, Bagerhat and other monuments is flaking. The causes of flaking are heavy rain fall, high temperature and humidity, air pollution, chemical reaction of salt, and human action, etc.

**Dampness:** Most of the monuments and historic houses have been affected by too much dampness due to lack of sunlight, and thus absorb water all year round. The historic house of the Bangabandhu Memorial Museum's main building has been affected by dampness.

**Human activity:** The following anthropogenic activities promote various kinds of deterioration at cultural heritage sites and structures.

1. Religious-based activity, destruction or demolition
2. Religious and community insensitivity
3. Lack of updated conservation rules, policy framework and implementation
4. Lack of skillful knowledge for proper treatment
5. Lack of scientific display and storage systems and improper conservation practices
6. Lack of security, allowing theft and vandalism
7. Lack of adequate and available human resources
8. Lack of funding, institutional infrastructure and proper monitoring
9. Lack of interest of the succeeding generations to maintain intangible heritage
10. Lack of proper and scientific digital documentation and technical approaches
11. Problems of land acquisition, resettlement and mitigation

**Lack of funds:** In Bangladesh, limitations on resources especially funding is one cause that hinders the preservation and proper maintenance of our historical sites. The current budget allocation for safeguarding and maintaining historic and cultural heritage sites is insufficient.

**Recommendations and needs**

In spite of financial and infrastructural limitations, the Government of Bangladesh is attempting to move forward to create the means for effective restoration and protection of our national heritage and cultural resources. In this regard, the Ministry of Cultural Affairs is devoted to implementing governmental goals and targets in keeping with its mandated duties. Since the heritage materials are very vulnerable, there is urgent need for heritage management to take some immediate drastic actions. The Department of Archaeology has taken the following initiatives as mandated by its charter.

1. Top priority should be given to the development of human resources. Qualified personnel should be recruited, and additionally regular training programmes should be organized to refresh their knowledge and acquaint them with the latest methods of heritage management.
2. Preservation efforts should be well coordinated with those of other agents such as the Department of Archaeology, scholars from various universities, national libraries, research libraries, and museums. Nationwide preservation awareness programmes should be organized,

through workshops, seminars and refresher courses, to safeguard the rich cultural and documentary heritage of the country.

3. Adequate infrastructure should be developed for the preservation as well as handling of the cultural properties. There should be well-equipped modern laboratories with the latest technological facilities required for effective conservation.
4. There should be updates of policy, acts and rules, and proper implementation.
5. International cooperation should be built up in order to improve supranational preservation and conservation activities and initiatives through the organization of training programmes in cooperation with the similar institutions of other developed or developing countries.
6. Intangible heritage should be patronized so that the younger generation develops an interest in its maintenance.
7. Multidisciplinary efforts are required for the systematic documentation of historical records and classification of sites to develop their potential within the present scope of heritage management and for upcoming cultural heritage management projects.

## Conclusion

The training provided by the ACCU will open up windows of opportunity for sharing knowledge and create a rare chance to absorb technical advancements in this sector in a global context. We hope that affluent countries and organizations like the ACCU will extend further assistance in both funding and by providing appropriate training to designated personnel, so that we may succeed in saving our precious cultural heritage.

**Bhutan**
**Jamyang Singye Namgyel**
*Architect*
Division for Conservation of Heritage Sites
Department of Culture
Ministry of Home and Cultural Affairs

# Importance of conservation and its challenges in Bhutan

## Introduction

Bhutan has a rich tradition of cultural heritage, in terms of both tangible and intangible forms of heritage. The centuries-old dzongs/fortresses, temples, houses, stupas, bridges and palaces stand as symbols of national identity. All traditional Bhutanese structures have timber as one of the main structural as well as architectural components. The traditional construction system has enabled the longevity of timber components which have survived through the centuries.

Although with the advent of modernization, new construction techniques and materials are preferred when building new infrastructure, traditional construction methods and materials are still being used extensively in the country. All monuments with cultural heritage value are to be conserved or restored using traditional methods and materials to their original grandeur if not greater.

Figure 1. A tradtitional house in Dagana

Figure 2. Trongsa Dzong

## Construction typology

Rammed earth and stone with mud masonry are the two types of materials seen in traditional Bhutanese structures. Timber plays a very diverse and important role in the traditional structures.

Figure 3. Timber façade in Tashichoodzong

Figure 4. Timber used for structural components

Therefore, it is absolutely crucial to understand the characteristics, nature and properties of timber so that we can ensure the right steps and interventions are applied while carrying out conservation work on traditional Bhutanese structures.

## Conservation in Bhutan

In my experience as a conservation architect, I have realized that the concept and motives behind conservation in Bhutan are a bit different from the rest of the world. Bhutan boasts its heritage structures as living heritage as they still continue to function and cater to the people in the same manner as centuries ago. Therefore, it is thought that the continuity of both the traditional knowledge system and the function of the heritage structure are more important than just conserving the structure in its original form. While this enables the continuity of traditional construction techniques and living heritage structures, the architectural diversity of our heritage structures is getting lost. This perhaps is the biggest challenge of conservation in Bhutan.

Replacement of timber components is a major focus of work in conservation. The replacement of timber structural components dictates the need to demolish walls and consolidate them as well because the timber components are connected to the walls. The following conservation projects that I have been involved in will explain these issues.

1. Tango Monastery Conservation Project

Tango Monastery is one of the most important Drukpa monasteries in the country and has significant heritage value to the people of Bhutan. It also houses one of the most outstanding wall paintings dating back to the 17th century and is believed to be the best in the world of that time. The walls

with the painting have suffered major cracks due to settlement, requiring major intervention which would destroy the paintings. Although the importance of the wall paintings has been recognized by the government, the monks are reluctant to use the structure due to its condition, and therefore the government is still looking for alternatives to restore the structure without disturbing the paintings. Leaving the walls untouched and keeping the paintings as a mere display is not an option for the monks as well as for the government and the people.

In order to scientifically validate the condition of the timber joists of the structure, I was involved in studying the strength of the timber components under the guidance of an international expert. We used a resistograph to study the condition of the timber by drilling through the components. Although the condition of the timber within can be determined to a certain extent, it is difficult to establish how long the timber component would continue to safely retain the structure. This lack of confidence and knowledge about timber is one reason why we tend to take the safer route and replace everything while carrying out conservation work.

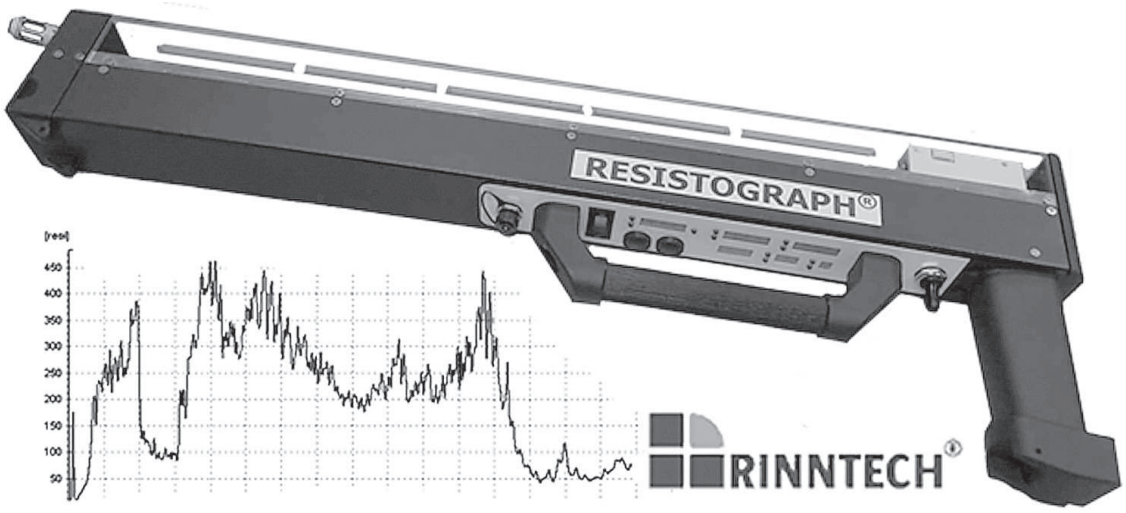



Figure 5. Resistograph measuring device and a reading from the Tango Monastery

2. Phajoding Monastery Conservation Project

Phajoding Monastery is also one of the most important Drukpa monasteries and meditation centers in the country. There are a total of about 15 important temples in the whole area. I have been involved in the project as the project architect for the past three years.

The proposal for renovation always starts with the objective of minimum intervention to the structure. The proposed scope of the work would include replacement of deteriorated timber components and stabilization of damaged walls while maintaining the original design of the structure. It is challenging not only to establish which timber components are not be disturbed but also how to retain the design of the architectural elements. Although the project is being monitored and implemented by the Division for Conservation of Heritage Sites, the desire of the monks who are the primary stakeholders and guardians of such monasteries is always to glorify the structures whenever they can. This leads to changes in the design of the structures as well as a loss in diversity of the architectural designs.

Blue pine and mixed conifers are the major timber species found in our heritage structures and the parts of timber components that are inserted into the walls such as the joists are always seen to be degraded or rotten compared to the portions not inserted in the walls. This results in replacing the whole timber component while carrying out the conservation work.

Figure 6. The structural walls and timber components are interlinked. Wogmin Lhakhang at Phajoding.

Figure 7. Wogmin Lhakhang before renovation

Figure 8. Wogmin Lhakhang after renovation

## Learning from international practice

While attending a course on the preservation of wooden structures in Nepal, I learned about the conservation principles and work done by the Kathmandu Valley Preservation Trust on the heritage structures of Kathmandu Valley. The intricate wood carvings are restored with precision and only the portion of the timber component that has been damaged is being carefully taken out and replaced. Their approach towards conservation is meticulous but unlike Bhutan, the timber species used is sal which is a very hard wood compared to the blue pine and mixed conifer species used in Bhutan. I also felt that their heritage structures, particularly the Newari temples, were themselves the object of worship and the number of people using the structures extensively and living inside the structures is therefore very minimal.

Therefore, the challenges of conservation in Bhutan from my point of view are as follows.

1. Bhutanese heritage structures cater to many people every day, with monks living inside them. Therefore, their structural integrity is not to be compromised during times of renovation or restoration, which ultimately leads to the replacement of all timber components and also stabilization of major parts of the structural walls.
2. Monks being the primary stakeholders of most heritage structures, their insistence on glorifying the structures has resulted in a loss of architectural diversity.
3. Very few people are aware of the importance of conservation and the need to preserve the architectural diversity of heritage structures. The people involved in decision making are also not well aware of this issue and therefore the fight to conserve our heritage structures as they are is a challenge.
4. There is a lack of technically trained personnel who are able to obtain and interpret scientific data about the materials.

**Cambodia**
**Ro Sovandaroath**
*Cultural Heritage Restorer*
Department of Cultural Development
Museum and Heritage Norms
APSARA National Authority

# Problems and needs for cultural heritage protection and restoration activities in Cambodia

## 1. Introduction to Cambodia

Cambodia or the Khmer Kingdom is located on the Southeast Asian mainland. Its total landmass is 181,035 square kilometers, bordered by Thailand, Laos, Vietnam and the gulf of Thailand. The population is about 15 million, and the capital is Phnom Penh. The state religion is Theravada Buddhism which is practiced by approximately 95% of the total population. Moreover, in daily life the people also regularly practice Hinduism and Animism. The country has a long history of great culture and civilization, which spread outward and was accepted by many countries.

Angkor, in Cambodia's northern province of Siem Reap, is one of the most important archaeological sites of Southeast Asia. It extends over approximately 400 square kilometers and consists of scores of temples, hydraulic structures (basins, dikes, reservoirs, canals) as well as communication routes. It was named a World Heritage site in 1992 it was also added to the List of World Heritage in Danger; as this incomparable site was threatened by pillaging, plagued by illegal excavations, and even dotted with land mines. In 1993 UNESCO launched a major campaign to restore and safeguard Angkor. Angkor was removed from the List of World Heritage in Danger in 2004. UNESCO continues to be a part of Angkor's future, working with the Cambodian authorities to ensure that tourism access and development do not compromise this great cultural treasure.

APSARA (Authority for the Protection of the Site and Management of the Region of Angkor) is the Cambodian management authority responsible for protecting the archaeological park of Angkor. Founded in 1995, it is in charge of the research, protection, and conservation as well as the urban and tourist development of the park.

## 2. Conservation and restoration

Angkor was re-discovered by the European traveler and French naturalist, Henri Mohout, in the nineteenth century. Angkor Wat was well preserved with Buddhist cults thriving within its walls, even after its abandonment by the Khmer kings as capital. Angkor was a primary motivation behind the founding of École Française d'Extême-Orient (EFEO) in 1899. In 1908, the director of EFEO created a center named Angkor Conservation, which played a major role in the research, conservation and

restoration activities at Angkor up until the early 1970s. The Angkor Conservation office's efforts were mainly focused on prevention and the restoration of monuments, while EFEO itself concentrated on research about history, arts, linguistics, etc. During the 1960s, under the direction of Jean Boisselier, director of Angkor Conservation and Khmer conservators, some broken images were restored. After the civil war (1975-1979), in the 1980s Angkor Conservation was reopened and cultural heritage objects from the Angkor area and some parts of Siem Reap province were removed to Angkor Conservation for the purpose of guarding them from the illegal looting.

Today, the storage of Angkor Conservation houses thousands of artifacts including stone, wood, and metal objects, and some ceramics.

Nowadays there are more than 16 international teams playing a major role in the conservation, restoration and community development at Angkor, including Japan (one of the biggest international teams for conservation and restoration of cultural heritage in Cambodia).

The Italia Training team for Archaeological Legacy conservation and Improvement in Angkor (I.T.A.L.I.A) is the first Cambodian professional team in conservation and restoration of artifacts in Cambodia, established in 2014 and funded by the APSARA Authority, Ministry of Culture and Fine Arts, Palermo University (Italy), and the Cambodia commission for UNESCO with technical support from Italian experts. Currently the team covers three different fields:

1. Angkor Wat temple (conservation and restoration of sandstone window balusters),
2. Angkor Conservation building laboratory (conservation and restoration of the sandstone Buddha footprint and bronze objects), and
3. Raja Bo pagoda (conservation and restoration of wooden windows, wooden roof structure and the big Buddha statue).

## 3. Problems and needs for cultural heritage protection and restoration

### 3.1. Problems

*3.1.1. Problems after the civil war*

After the civil war (1975-1979), the cultural heritage of Cambodia was damaged seriously by the explosions, fires and the illegal looting for export to neighboring countries and also to Europe, and this damage is one of the main challenges remaining for restoration work.

A Buddha footprint (N. 2476) with truly precious polychrome and gilded decoration (Figure 1), perhaps carved during the middle period ($14^{th}$-$18^{th}$ c.) and broken into 62 pieces during the Pol Pot regime, is one piece of evidence for damage from the civil war. This artifact has been originally stored in the Thousand Buddha gallery of Angkor Wat temple together with one thousand Buddha statues, dated from the $14^{th}$ to $16^{th}$ (?) centuries.

The fragments of this Buddha footprint were moved to the storage of the Angkor Conservation building to avoid illegal looting, but some of the fragments were still scattered around the Angkor Wat temple area. Nowadays, it is being restored by the I.T.A.L.I.A team in the laboratory at the Angkor Conservation office in Siem Reap, in order to restore its value as heritage, and also to be put on display in the future.

Storage at Angkor

Statues in the Thousand Buddha galleries in Angkor Wat temple in 1949

Restoration work of the Buddha footprint N. 2476 in the I.T.A.L.I.A laboratory

Figure 1. Buddha footprint N. 2476 and its restoration

*3.1.2. Problems due to biotic agents (fungi, bacteria and insects)*

Climatic factors of temperature, humidity and light are harmful elements which can facilitate the decay of the wood. Unsuitable levels of these elements permit the growth of fungi, bacteria and insects, agents which ruin cultural heritage objects, and especially wooden material. Termites are very active agents commonly involved in the decay of ancient wooden structures and artifacts in Cambodia. As an example, the showroom of the I.T.A.L.I.A artifacts restoration team (Figure 2) in 2016 was attacked twice by termites, mostly damaging the wood material and also some of the wooden supports. This problem happened for a number of reasons, such as the following.

- The room is very small and stores more than one hundred artifacts of different materials, which can lead to high humidity.

- All the artifacts were put directly against the walls and floor in close proximity to each other, with poor air circulation.
- There is no equipment for monitoring the temperature and humidity, or for moisture control.
- The building complex is surrounded by many trees.

But now the artifacts are safe after applying some insecticide around the room to prevent insect attacks, plus new preparations for display with better air circulation, and regular checks even though there is still no monitoring equipment.

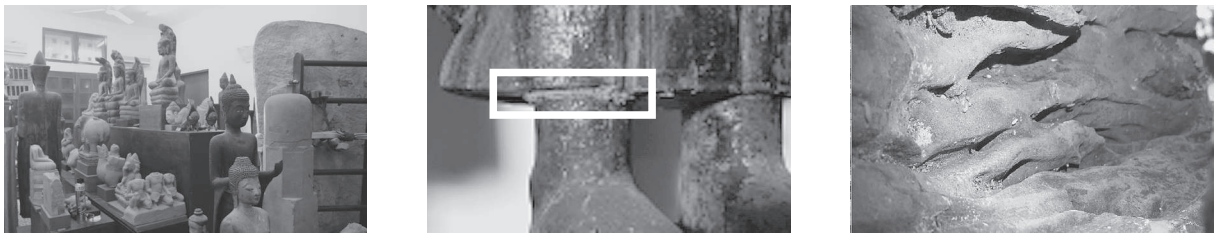


Figure 2. Termite damage in the showroom of the I.T.A.L.I.A artifacts restoration team

Another example of damage by these biotic agents happened at the Raja Bo Pagoda (Figure 3) which retains the original appearance of a traditional Theravada culture sacred Vihara. It is also the oldest such temple in Siem Reap and the entire province, having been founded probably towards the end of 18th century. It is decorated with an extraordinary wall painting all over the walls and a great golden Buddha inside, plus carved wooden decorations, stucco work and a beautiful wooden roof covering all of the building. The building was restored probably at least twice in the past. Nowadays it is in a good state of conservation but there are still some problems of continual deterioration, such as the following.

- The artifact collection is stored with items of different materials all together and placed close to each other without sufficient access for cleaning or monitoring. Most items are largely covered by dust, and the floor is full of dust and insect excrement which can cause problems such as scaling on stone material, decay in wood from insects (termites), and oxidation of the surface of items from the salt.
- The wooden structure and decorative elements on the roof are soiled by bird excrement, risking high humidity and moisture as factors facilitating the decay of wood. There are some broken tiles that also can allow the water come to the inner part of the roof and slowly cause problems for the wood and the entire structure.
- The extension of the nearby road also brings vibration and movement to the whole building.

Figure 3. Raja Bo Pagoda in Siem Reap

*3.1.3. Problems from conservation and restoration applications, tourists, and natural factors*

Conservation and restoration in previous times also impacts cultural heritage, mostly due to the choice of improper materials and techniques which are not compatible with the original materials and the environment. As is clearly evident, many temples at the Angkor site were restored by foreign conservators in the early and late twentieth century. During that time, because of the urgent need to safeguard the temples as well as the limited nature of scientific materials developed for this field, materials such as cement were used for architectural support and for filling, which contain high levels of salt and other minerals that contribute to the decay of stone. Moreover, in some cases water-repellent material was applied to the sandstone walls to prevent the penetration of water from the outside, especially from rainfall. Such application was a failure because it closed off the porosity of the stone so that salt water which did penetrate was trapped inside, and became the source of pressure from salt crystallization within the stone. These problems remain as challenges for future conservators.

The lack of instruments, equipment and techniques for analyzing materials before conservation and restoration activity are still significant problems for many restoration teams in Cambodia.

Tourists' activities also contribute a negative impact to the cultural heritage. As an example, in 2015 there was a window baluster in the second southern gallery at the Angkor Wat temple that collapsed when a tourist tried to climb onto the window by holding onto the fragile baluster to take a photo, and the baluster collapsed immediately. After receiving full authorization from APSARA and the relevant authorities, all of the fragments were removed to the laboratory of the I.T.A.L.I.A team for restoration. After the completion of restoration work the baluster was put back onto the window where it belonged. Additionally, the graffiti made by tourists as their memorials, etc., also affects the authenticity of the temple and artifacts.

Natural factors are also continually deteriorating the cultural heritage, especially the stone temples due to weathering and the aging of the material, causing many problems for the stone such as cracking, deformation, detachment, decoloration, foreign deposits and biological colonizations.

Deterioration due to salt from the concrete support

A baluster collapsed due to tourists' activities

Biological colonization

Figure 4. Problems for conservation due to various factors

## 3.2. Needs for cultural heritage protection

Cambodia is still a developing country so there are many things that need to be developed and supported for its cultural heritage protection, especially in terms of both funding and technical aspects.

As is already evident in part from the problems mentioned above, areas needing development for the protection of cultural heritage at present are as follows.

- Specific training courses on cultural heritage conservation and restoration for Cambodian conservators, especially in analysis skills which are still limited for them, and also training courses on wood restoration and conservation as there has already been considerable training regarding stone materials.
- Monitoring instruments for temperature, relative humidity, moisture content, and light, especially for the museums and the showrooms of artifacts.
- Cooperation from the tour agencies, especially from the tour guides, to help avoid damage or other impact to sacred temple from tourists.
- Education for Cambodian citizens about the value of their cultural heritage, especially the people living within the Angkor site, in order to inspire them to participate in the protection efforts.
- Support from international teams.

## 4. Conclusion

Nowadays, many national and international teams are working in the Angkor site. They introduce many new materials and techniques in the restoration and conservation of both the monuments and the artifacts which are more compatible with Khmer ancient materials and the environment. Cultural heritage protection is not only the responsibility of the conservator or the authorities in charge of this field, but also of the people of the entire nation because it represents their history and their identity, the bonds linking their past, present and future.

**China**
**Bi Yi**
*Project Leader*
Studo Three, Beijing GuoWenYan Cultural Heritage Conservation Center Co.Ltd.

# Problems and Needs for Vernacular Heritage Protection and Restoration Activities in China

It is widely known that China is a country with a considerable amount of cultural heritage, especially wooden structures, including "official style" buildings and all kinds of vernacular buildings. China's heritage protection work in the modern sense began in the early 1920s. After the People's Republic of China (PRC) was founded, the pace of heritage conservation accelerated, particularly after the 1980s. The Law of PRC on the Protection of Cultural Relics was promulgated in 1982, and the National Relic Survey has been implemented three times so far. In 1985, China ratified the Convention Concerning the Protection of the World Cultural and Natural Heritage, which helped China's conservation work keep in line with international standards. At present there are 52 World Heritage and 4,290 National Priority Protected Sites in China; meanwhile, a variety of protection technology has been developing rapidly. In summary, China's achievements in heritage conservation in recent years have been remarkable. At the same time, all sorts of problems have been emerging, waiting to be solved.

I have been engaged in heritage conservation since 2010, mainly working on preservation planning, repair intervention, consulting and so on. Since I have focused more on vernacular heritage in recent years, I would like to put forward the issues below which are prominent in the conservation of wooden vernacular heritage.

## 1. Problems involving laws, regulations and norms/codes

Laws, regulations and norm systems regarding heritage conservation in China are relatively incomplete compared with other industries. To take norms for example, the category of heritage is becoming more varied in keeping with the advanced understanding of heritage, and we realize that different types of heritage require different norms to constrain or guide conservation work. However, many of these still have yet to be formulated. Norms for vernacular heritage regarding conservation and utilization are now being drawn up by my group, so I hope I can take advantage of this training course to learn other countries' experiences as a valuable reference for our own writing.

## 2. Problems involving theory

In 2000, Principles for the Conservation of Heritage Sites in China was published by China ICOMOS. From that time, discussions and debate have not stopped even now. There is still no broad consensus regarding some essential theories and conceptions. For example, there are various interpretations of authenticity, reconstruction, and all kinds of standpoints as to what is appropriate utilization.

For vernacular heritage, many examples are still in use and thus still "living," which means they need continuous improvement in their own life processes. Communities that build and use these architectural items regard them as "dwellings" rather than "heritage." Accordingly they keep adding or removing things from those buildings, improving the utilitarian functions, just like they always have before we considered those buildings as heritage. However, now because of the heritage identity, we confront a dilemma between maintaining their living state and protecting their historic information. How should we perceive the value and authenticity of such heritage? Which aspect is more essential for us to protect? We are still groping for the answers to these questions.


Figures 1 and 2. Poor condition of a vernacular house needing improvement (photo by the author)

### 3. Problems involving technical treatment

Current techniques of damage survey and protection are becoming more and more advanced and diversified, and can help us in dealing with problems which used to be hard to solve. Yet advanced techniques are often costly and difficult to carry out, making them unsuitable for vernacular houses in large numbers. Thus we need to seek suitable approaches and methods which are relatively economical, efficient and easy for local workers to master.

### 4. Problems involving personnel capacity building

Compared with the number of heritage sites in China, professionals are in limited quantity. As to officials who are in charge of heritage management, many of them have little knowledge of heritage conservation.

For those professionals who are involved—planners, architects, consultants, etc.—the level of their professional abilities varies. A check-up system for individuals has not been set up, and many of those professionals are not only unfamiliar with the practical process of restoration, they further are not required by regulation to participate regularly in that process, which can lead to the consequence of their being unable to control the final result of a restoration.

Regarding workers/craftsmen, because of the nationwide "tendering and bidding system," workers in intervention/restoration projects are not local craftsmen, which may have a significantly negative impact on vernacular heritage, as they are more likely to diminish the local features of those buildings.

Worse still, almost all of these workers have no idea about heritage conservation because of their low education level.

Vernacular heritage is generally located in rural regions. Communities there consist of peasants, and intervention projects are usually conducted by the government. This makes it difficult for communities to get involved in the process, and thus "bottom up" conservation promoted the community—common in many countries—seldom happens in those places.

In one case we carried out recently, for example, we made some attempts to ask the construction team to recruit local carpenters to participate in the project, and initiated a set of training courses for the officials, workers and peasants. All such attempts are aimed at helping them comprehend what heritage conservation is.

Figure 3. The author explaining repair techniques to local craft workers (photo by Zhai Shanshan)

Figure 4. Training course for peasants (photo by Zou Yiqing)

Problems such as the above prompt me to find better solutions. This is the main reason I am eager to participate in this training course, to learn more, to see more, and thereby improve myself and share those experiences with the people I will encounter in my future conservation projects.

**India**
**Anam Sami**
*Conservation Architect*
Architectural Heritage Department
Indian National Trust for Art and Cultural Heritage (INTACH)

# Problems and needs for cultural heritage protection and restoration of lesser recognized and threatened vernacular architecture in India

India has a rich and diverse heritage of both tangible and intangible culture spanning more than 3,000 years of continuous civilization. In most countries, the built heritage is mostly evaluated in terms of monumental architecture of the past, treating such structures as the only visible manifestation of the sociocultural achievements of the region. The Archaeological Survey of India, a prestigious organization engaged in archaeological research and protecting the cultural heritage of the nation, has effectively protected 3,678 cultural heritage sites [1]. However, the major shortcoming of the current list of legally protected heritage is that it does not recognize vernacular architecture as a category of heritage worthy of being conserved.

The built vernacular heritage of India is also a sphere deserving attention. It reflects continuity in traditional knowledge, customs and skills. Customs and traditions still attached to buildings and sites provide them not only with cultural continuity and context but also make these sites community participatory heritage sites. Sadly this aspect is not reflected in their management [1].

These vernacular practices are developed by the people, for the people, without any technical/ professional training, and with the help of locally available, natural and environmentally friendly construction materials and indigenous construction techniques, which people have learned, developed, and refined over centuries. These vernacular practices and styles are developed with the objective of having sufficient protection against harsh climatic conditions and natural calamities [2].

“The built vernacular heritage is important; it is the fundamental expression of the culture of a community, of its relationship with its territory and, at the same time, the expression of the world’s cultural diversity” (ICOMOS) [3].

From the above definition, it is evident that it would be unworthy of the heritage of man if care were not taken to conserve these traditional harmonies, which constitute the core of man’s own existence.

Today, characteristics of building spaces and formal patterns have been transformed due to modernization, changes of lifestyle and local climate, as well as smaller family size and occupational diversification. “The survival of this tradition is threatened world-wide by the forces of economic, cultural and architectural homogenisation” (ICOMOS) [3].

The following three different areas in India have been identified during the course of my study as instructive for building a case for the need to protect the vernacular architecture in India, which is closely linked to the environment, climate, crafts, customs and occupations of the people.

1. Srinagar clubhouse, a colonial layer of architecture adapting to local building materials and construction techniques in the state of Jammu and Kashmir; an example of city vernacular architecture.
2. The vernacular architecture of a Gaddi tribe hamlet in Thimran, Anantnag District in the state of Jammu and Kashmir; an example of rural vernacular architecture.
3. The saree weaving vernacular cluster in Chanderi in the state of Madhya Pradesh; an example of historic town vernacular architecture.

The following sections introduce these three cases, grouped by the states in which they are located.

## Vernacular architecture of Jammu and Kashmir

Jammu and Kashmir is a state in northern India lying mostly in the Himalayan mountains. It has a history of unique vernacular architecture with an extensive use of timber in two systems of construction techniques, namely *taq* and *dhajji* dewari.[2] The architecture of Kashmir has evolved over time with inputs from generations of artisans and shows an intelligent approach to the adversities of climate and also a balance of sociocultural factors that is clearly evident through its architectural vocabulary. They have responded to the cold climate and natural landscape.

Unfortunately, the journey to modern times reflects a lack of sensitivity towards this rich heritage. The city of Srinagar has witnessed distortions and vandalism on an unprecedented scale. The present construction activity is not only in compliance with modern local requirements but also in stark contradiction with the topography, climate and social requirements.

The two buildings/group of buildings studied in the region are the Srinagar clubhouse and the vernacular architecture of a Gaddi tribe hamlet in Thimran. These projects were undertaken by the Jammu and Kashmir Chapter of the Indian National Trust for Art and Cultural Heritage (INTACH) in 2014.

### *Srinagar clubhouse [4]*

This is located on the west bank of the river Jhelum in the same complex as the Doordarshan building to its north. It was built by the British in the early 19th century to cater to the high lifestyle of their

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[1] The Gaddis are a tribe living mainly in the Indian states of Himachal Pradesh and Jammu and Kashmir. The main occupation of Gaddi tribes is shepherding and they make their livelihood by rearing and selling sheep, goats, mules and horses.

[2] The first system, taq, consists of load-bearing masonry piers and infill walls, with wood runners at each floor level used to tie the walls together with the floors. The second system, known as dhajji dewari construction, consists of a braced timber frame with masonry infill.

[3] This information is from Mr. Ashraf, a former member of the Srinagar Club.

elite [5]. The club underwent certain phases of reconstruction, demolition and expansion. The first reconstruction took place after the building was burnt in the aftermath of strife when, according to a source,[3] the deposed Prime Minister of Pakistan Zulfiqar Ali Bhutto was hanged in 1979.

Due to fire, it has undergone several construction changes and the introduction of new materials for external features such as doors and windows. These are not well bonded with the older historic material resulting in structural cracks. The roof of the entire block was redone in a haphazard manner after 1979 when it was burnt, changing the original roof line and perhaps also the trusses. The main problem in the roof structure is the percolation of rainwater from open gaps.

gure 1. (Left) Front façade of the house. (Center) Structural crack observed in the basement. (Right) Billiards room, Khatamband ceiling damaged and replaced with wooden planks. (photos by the author)

The conservation plan for the Srinagar clubhouse has been prepared keeping in view the proposal for restoration of the building to its original form, its utilization as a functional place of a club, and the adaptive reuse of spaces. Points of the conservation proposal are as follows.

- **Roof:** Most of the wooden members used in roof truss as ties, braces, posts, rafters and purlins are in good condition, however since the roof was re-done there is need to add an insulation layer on top of the roof, using wooden shingles in keeping with the authenticity of the building.
- **Flooring:** It was recommended to maintain and paint the existing wooden flooring with traditional polish. Damaged flooring was proposed to be re-laid, fixing with tongue-and-groove joints.
- **Ceiling:** It was proposed that the ceiling should be done traditionally with Khatamband patterns found on the existing ceilings in a few areas. Ceilings of some areas are heavily damaged and have temporary false ceilings of plywood, which needs to be removed and restored to the original form.
- **Antiquities and art treasures:** Those items needing to be cleaned and preserved are trophies, furniture including a billiards table and dining table, piano, billiard cue cases, archival books, etc. Fireplaces and chimneys also to be cleaned and restored.

***Vernacular Architecture of a Gaddi tribe hamlet in Thimran, Anantnag District [6]***

Thimran is small hamlet located in Shangus Tehsil of Anantnag district, Jammu and Kashmir, with a total of 64 families residing in about 25 houses. The project aimed to create an inventory, thus giving the different typologies of the structures, in terms of cluster pattern, spatial design, materials and construction techniques. It further aimed to analyze the transformation process in vernacular houses

of the village and the pattern of expansion. There is a need for the identification of rural vernacular architecture because most examples are found in far-flung rural areas that are not easily accessible, leaving them in a state of ignorance. Due to the modernization of both construction materials as well as techniques, the traditional plans and designs are being discontinued.

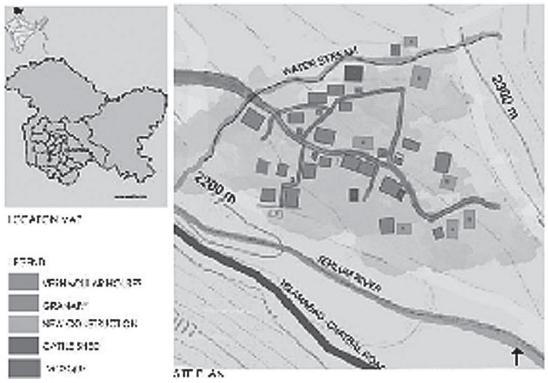

Figure 2. Site plan of Thimran village

Figure 3. People of the Gaddi tribe, Thimran village (photos by the author)

The houses are made of stone and timber of cedar, pine and fir. The plinth is formed of local stones called kashir kein (a boulder) usually extracted from Nallah beds. The structures consist mainly of residences, public structures being only a mosque and a school. These come basically under the category of wooden log houses (lakkad-makan) of Kashmir with some minor local alterations.
Figure 4. External view of houses found in Thimran; storey use is divided with lower level dedicated as a cattle shed and upper level for human habitation. (photos by the author)

Figure 4. External view of houses found in Thimran; storey use is divided with lower level dedicated as a cattle shed and upper level for human habitation. (photos by the author)

The houses are constructed of wooden logs laid alternatively over one another, with the end joints dovetailed. The plinth is supported on a random rubble stone masonry foundation. These houses follow a simple plan, having a small square/rectangular room on the ground floor with a similar room on the first floor. Access to the upper floor is from a wooden staircase aligned along the walls. In many of the houses the ground floor is used for holding livestock while the upper floor comprises the family sleeping and living quarters. The house is provided with a steeply pitched sloping roof consisting of layers of hay laid over the roof purlins directly, or in certain cases the hay is placed on top of wooden planks in turn supported by wooden trusses. The use of wooden shingles is also a common practice.

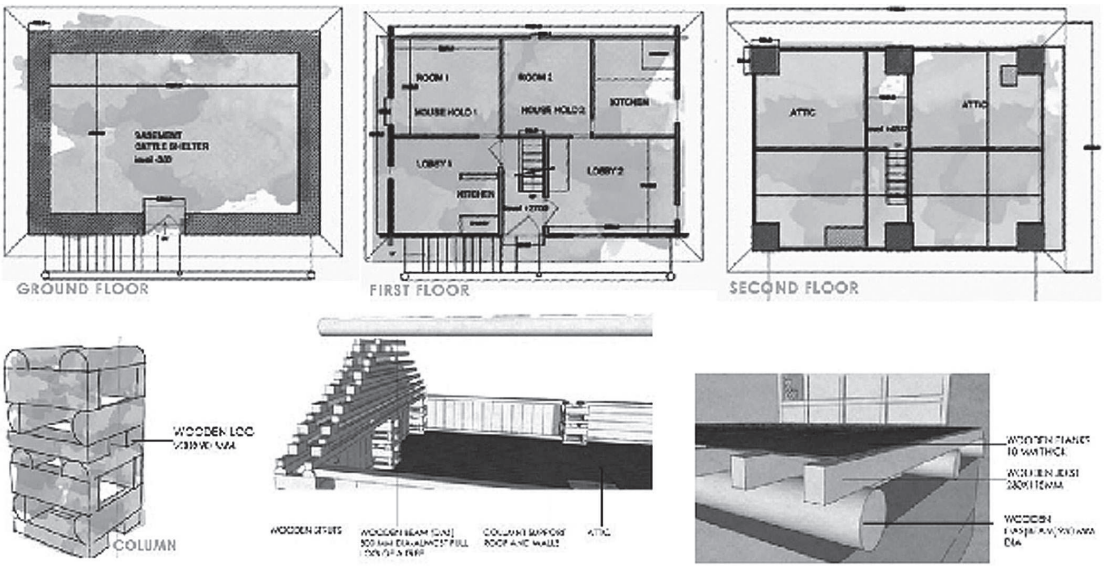


Figure 5. (*Top, left to right*) Floor plans with basement for cattle shelter, first floor for habitation and attic for food storage. (*Bottom, left to right*) Details of a typical column, roof, and flooring.

## Conservation and repair work using traditional materials in Chanderi, Madhya Pradesh

Chanderi is situated in the valley of the ancient Betwa river, in the district of Ashok Nagar, in Madhya Pradesh. Although a small town, Chanderi is famed throughout India for its skill in producing exquisite saree weaving renowned for its finesse and delicacy. The traditional dwellings of the weavers typify a vernacular structure which has developed throughout the centuries to suit the occupational needs of the community.

The project was a sample initiative for the benefit of handloom saree weaver communities. Repair of identified weaver homes was aimed to be carried out with traditional materials. The intent was to demonstrate the advantages of continued usage of vernacular building materials, and promote safeguarding of the vernacular architecture in weaver settlements. The project was undertaken in 2017 by INTACH, Architectural Heritage (AH) Division [7].

Figure 6. (*Left*) House of Abdul Mubeen, identified for repair proposal. (*Center*) Weaving on the chabutra (terrace). (*Right*) Pit loom placed in the living room of a vernacular house. (photos courtesy INTACH, AH Division)

The traditional vernacular homes of the weavers are essentially constructed of stone masonry walls, mud and lime-wash plaster and a timber roof truss system completed with large stone tiles and a broken pottery ridgeline. Both the interior and exterior walls are in most cases finished with mud plaster and a pale blue lime-wash giving the entire cluster a cohesive aesthetic.

The proposal aims at promoting and conserving the following features.

- **Promoting local craftsmanship and community participation to create a sense of ownership:** Detailed proposals were prepared after discussions with local crafts persons and skilled laborers aware of the traditional knowledge system of vernacular building techniques. Many details were worked out on site with the skilled laborers, such as the specific roof details. This also facilitated the integration of individual contributions to the collective construction decisions.
- **Tackling water leakage issues:** In order to curb the critical issue of water leakage, large-size stone slabs have been used in re-laying the roofs. This minimizes joints that were previously in excess between the small stone *pataur*[4] tiles. Moreover, the overlapping of stone slabs has been executed following traditional methods to avoid water ingress.
- **Ensuring reuse of the materials:** The existing stone *chinkari*[5] was reused in the construction of the walls. The existing stone *pataur* pieces on the roofs were cut into finer portions of size 1' x 1' and reused in the flooring.
- **Building material limitation:** The timber roof truss system, that was composed of a heavy meyar (wooden beam) stretching the width of the home, was replaced with stone beams because of constraints in the availability of timber.

The weavers' homes were successfully conserved using traditional materials while keeping the loss of historic fabric to a minimum, strengthening the structural performance of the building, keeping the traditional breathing performance of the roof intact, and eliminating water leakage from the roof and a shared toilet facility to illustrate an example of a shared toilet with traditional construction techniques. The homes were appreciated by the local people and the initiative provided encouragement for the use of traditional materials which are economical and climatically suitable.

Figure 7. (*Left, center*) Before-and-after images of a repaired roof of Salim's house in Chanderi. (*Right*) External façade after repair of the house using traditional materials. (photos courtesy INTACH, AH Division, New Delhi)

[4] *Pataur* is a sandstone tile used in re-laying the roof. The size used for the stone slabs in the repair proposal is 6' x 3' with 1" thickness.

[5] *Chinkari* is a dressed stone block used for making walls in mud mortar. The size of stone block is 12" x 8" x 4" thick.

## Conclusion

The above case studies clearly depict the current scenario and challenges in maintaining the vernacular architecture in the country. In recent times, organizations like INTACH, the Archaeological Society of India (ASI) and others have taken up initiatives to conserve and restore vernacular architecture in different regions. However, to address the challenge of the rapidly deteriorating character of these historic settlements, it is essential to include not only the building as a whole, but the vernacular features as well, in the list of protected heritage. With numerous diverse regions and their characteristic vernacular styles, India holds a great opportunity for enhancing its identity through its illustrious past captured within these buildings and settlements.

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# Problems and Needs for the Preservation of Rumah Gadang in West Sumatra Province, Indonesia

*Rumah gadang* is a traditional house of the Minangkabau ethnic group. This traditional house is also called *rumah bagonjong* because its curved roof shape called gonjong is believed to resemble a buffalo horn. *Rumah gadang* has its own uniqueness in terms of architecture and philosophic values, which shows the local wisdom of the ancestors of the Minangkabau ethnic group in building their residences. It is also a characteristic element of Minangkabau identity with this *gonjong* roof even applied to modern buildings. In terms of materials, almost all components of a *rumah gadang* are made of wood or bamboo except the roof (usually made of fibers or zinc) and the building foundation (made with flat stone). Basically the plan of a *rumah gadang* is a simple rectangle with simple space division, but it embodies many elements of Minangkabau life philosophy. One of these is the enactment of the matrilineal system (lineage organization based on descent through women), which can be seen from the way of life led within the *rumah gadang.*

Fig. 1. Rumah Tuo Kampai Nan Panjang in Tanah Datar Regency

Fig. 2. Rumah Gadang Datuak Bandaro Kuniang in Tanah Datar Regency

However, at present, the existence of rumah gadang is decreasing both in quality and quantity. This is because the existing *rumah* gadang have been damaged and weathered or may have been destroyed by various factors, while we are more likely to make new buildings with modern materials and styles. The high cost of construction and repair of *rumah gadang* and the difficulty of obtaining materials and traditional handymen is also a factor in the decreasing existence of *rumah gadang*. This means that the rate of deterioration in the quality and quantity of *rumah gadang* has not been affected by our efforts to maintain and preserve it.

Here are some of the problems and needs for the preservation of *rumah gadang* in West Sumatra (I hope it can also represent the problems and needs for preservation of traditional buildings of wooden structure in other areas).

### 1. Data collection for all rumah gadang

Data collection for all *rumah gadang* in West Sumatra is a strategic program for the documentation and database compilation for all *rumah gadang* and their distribution. In recording and delineating the current condition of *rumah gadang*, it is expected to accumulate data for these structures on the location, land status, tribe, historical data, construction, size, photograph, layout, figures, etc. Based on these data from the field, there will be many analyses and classifications that can be made of the variations among existing *rumah gadang* in terms of elements such as orientation, the number of gonjong, roofing materials, ancient poles, presence of a porch, position of the stairs, number of stairs, number of booths, carvings, etc. From the results, we will know which rumah gadang are unique and can provide criteria for their definition as cultural heritage through comparison with other *rumah gadang*. In reality, not all rumah gadang should be included as cultural heritage.

By knowing the number of *rumah gadang*, we can identify and statistically monitor the degradation of quality and quantity of *rumah gadang* every year. We can also predict how long it will take for the disappearance of this traditional house if there are no greater efforts to preserve it, because in fact the rate of deterioration in the quality and quantity of *rumah gadang* has not been affected by our efforts to maintain and preserve it thus far. With the data collection of *rumah gadang*, we will know the condition of *rumah gadang*, and it can be up to the consideration of the owners of *rumah gadang*, local governments, and indigenous communities to plan and determine the activities of conservation. West Sumatra has an area of 42,013 km2 and consists of 19 districts. Devising effective and efficient methods, plus the factors of budget, manpower, and the relatively large area, constitute the problems for data collection on *rumah gadang* as a whole.

### 2. Identification of the wood species of *rumah gadang*

Information about the wood species of *rumah gadang* is difficult to obtain from parties that still have relationships with the buildings, such as owners, occupants, indigenous communities, and local communities. Literature that mentions the wood species of *rumah gadang* and its source is relatively difficult to find. In addition, there are different local names for wood species in different regions.

Wood sampling followed by identification of the species is one of our efforts to document the wood species (in terms of scientific name and trade name). This activity becomes important in order to maintain the authenticity of the material in case of repair or restoration of the building. This is a destructive sampling method, so it must be done carefully. Sampling is done on building components that technically do not damage the structure of the building, the samples taken are only a small part of the building component, and the part is not generally visible (not disturbing aesthetically), such as portions in the bottom or under the building, or on the top or in the attic. The equipment used is also simple, consisting of saws, hammer, chisel, label paper, and plastic (for the sampled place).

In 2011 we visited 14 wooden cultural heritage structures in different districts in West Sumatra. We observed and took samples, which were identified with the cooperation of Dr. Ir. Yustinus Suranto, M.P, Forest Product Technology Division, Faculty of Forestry, Gadjah Mada University. The principle of identification is to observe and match photomicrographs of wood sections and physical characteristics of the wood with the existing literature. Observations were made on transverse sections of the wood, the most complete cross-section providing information about the cytological components (wood vessels, fibers, parenchyma, radius, and resin channels). The subsequent literature search to match the image and the wooden structure of the photomicrographs was quite complex because of the large number of existing wood species. From this activity, we have learned scientifically the wood species of wooden cultural heritage structures in West Sumatra as *johar* (*Cassia siamea* Lam.), *puspa* (*Schima wallichii* Korth.), and *bayur* (*Pterospermum javanicum* Jungh.).

Fig. 3. Sampling wood from the bottom of a building, 2011

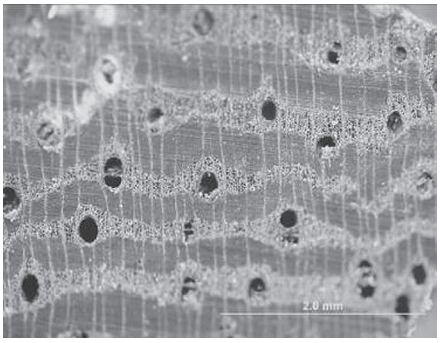


Fig. 4. Microphotograph of a wooden section of Cassia siamea, 2011

Limitations of equipment, experts, and the literature have become problems for us in identifying the species of wood of *rumah gadang* wooden cultural heritage structures in West Sumatra. We also hope there are other non-destructive methods that can be used for the scientific identification of wood.

Identification of the wood species also becomes important for the realization of a "cultural forest" in West Sumatra in particular, because as far as I know there is no forest specifically cultivated and designated for cultural heritage buildings. Accordingly it is difficult to obtain good quality wood for the preservation of wooden cultural heritage structures. Wood for building, and the trees and forests for its supply, of course have a mutually influencing relationship.

## 3. Determining appropriate materials, methods, and techniques for treating degraded wood

The material of cultural heritage degrades due to various factors, which applies as well to wood as a cultural heritage material. Degradation and aging of materials are natural processes that cannot be completely stopped. We can only try to extend the life of heritable objects by inhibiting the process of

degradation. We use different terms for talking about the degradation of wood: damage, weathering, and rotten wood. Wood damage is a form of physical degradation suffered by wood, seen in the form of holes, and cracked, broken, or split wood. Weathering is a form of chemical degradation suffered by wood in dry conditions, such as decayed wood and porous wood. Rotten wood is a chemical degradation suffered in wet conditions.

Wood in a damaged condition still largely retains its mechanical properties, so the wood can have the strength to withstand the load. By contrast, wood in a rotten condition is losing its mechanical properties, so the wood may no longer be able withstand the load. For the damaged wood, we usually try to keep and preserve the wood because it still has the strength. For damage caused by termites, we use tobacco juice and clove to preserve the wood. The effectiveness of tobacco and cloves as conservational materials has been sufficiently tested, and it was published in the *Journal of Cultural Heritage Conservation* of the Borobudur Conservation Office, Vol. II, No. 2, December 2008. We are still looking for alternative materials, methods and techniques that can be easily applied by the community to maintain and preserve wooden rumah gadang. For weathered and rotten woods, repair and replacement are usually performed. The difficulty of obtaining good quality wood and the limited supply of traditional carpenters are challenges in restoring and repairing *rumah gadang* and other wooden cultural heritage structures.

Fig. 5. Wood damage caused by termites in rumah gadang Rosma Syarif, Sumpur district, Tanah Datar Regency, 2016

Fig. 6. Application of tobacco and cloves for cleaning and pickling wood in rumah gadang Rosma Syarif, Sumpur district, Tanah Datar Regency, 2016

## 4. Identifying and scientifically proving local wisdom for preservation

Preservation of cultural heritage based on local wisdom uses traditional methods, technology, and materials. Nowadays, the wisdom of traditional culture often proves effective and gives good result in the preservation of cultural heritage. Our predecessors, armed with experience and the materials available in nature, had their own wisdom which can provide us with knowledge for preserving the cultural heritage. When supported by scientific evidence, local wisdom can make a significant contribution in this regard.

Here are some indications of traditional wisdom of Minangkabau society in preparing good quality wood for *rumah gadang*, and scientific reasons for their efficacy.

| No. | Indications of traditional wisdom | Scientific reasons |
|---|---|---|
| 1. | The wood chosen should not have vines wrapped around the tree. According to belief, if such wood is used as building material, the residents will be wrapped in debt. | Vines are termed lianas. Trees that host lianas suffer a decline in the wood quality because the liana takes food from the bark of the tree, depriving it of nutrients. Some lianas may even kill trees. Therefore, to obtain good quality wood for rumah gadang, it is not taken from trees that are wrapped by vines. |
| 2. | The selected tree should not be in a blossoming or flowering state. | At the time of blossoming or flowering, the starch content in the trees is high and it is susceptible to insect attack. In this condition, the trees are young with the availability of plenty of water and the process of photosynthesis is underway. |
| 3. | Trees should not be felled in the rainy season. | Trees felled in the rainy season will have high water and starch content, making them vulnerable to weathering. |
| 4. | Before a tree is felled, it is struck with a wooden hammer three times, and a few moments are let pass.<br>If there are young leaves or falling tree shoots, the wood is not good for use in a gadang house, because according to belief the inhabitants can die young.<br>If poisonous animals fall, such as snakes, scorpions, centipedes, etc., the inhabitants of the house will be sickly. | Tapping a tree is a means to know if there are cavities in the wood. A wooden hammer is used because it gives a resonant sound.<br>Leaves on twigs have different adhesiveness levels. The top of the leaf has higher stickiness than the base. Nutrient deficiency starts to show from aborted leaves, so young leaves or falling shoots show a decline in wood quality.<br>Animals generally live in hollows of trees. If an animal falls, it indicates there is a cavity in the tree, so the tree is not of good quality for building materials. |
| 5. | After being felled, the tree is traced to its top. If the shoots fall on a tributary or a place where water flows, it is a good sign that the owner will get a lot of income. | Aiming the tree's fall toward a river is a more efficient way of logging. Together with the gravity of the earth, this kind of logging will require the minimum energy for tree felling. |
| 6. | The logged timber is processed in the forest until reduced to a pole, then drawn to the construction site by cooperative work. Then the wood is soaked for a year in water or mud | During soaking in water or mud, wood or bamboo absorbs water and expands, followed by the dissolution of water soluble substances such as sugar, glucoside, tannins, some nitrogen compounds, and wood or bamboo dyes. Starch is not water soluble so it remains, although the process of fermentation in the water of immersion results in decreased starch levels. This helps prevent the attack of beetles, so the wood or bamboo becomes more durable. |
| 7. | Then the wood is dried without direct exposure to the sun. | Drying without direct exposure to sunlight prevents defects such as surface cracks, cracked or broken edges, and splitting. Drying the wood in a sloping position promotes the smooth flow of water out of the wood through the vessel network. |
| 8. | The Minangkabau ethnic ancestor has the ability to determine the species of wood that is good for poles of rumah gadang. From that information, generally use the poles of black wood cassia. | Sampling and identification of the wood species showed that black wood cassia (Cassia siamea) is favored in rumah gadang construction. Black wood cassia is a good quality wood with strength of class I–II and durability of class II–I. |
| 9. | Construct buildings that do not touch the ground but stand on flat stones that serve as the foundation. | This helps produce buildings of earthquake resistant construction. |

We have not been able to identify all of the local wisdom about preparing good quality wood and prove it scientifically, regarding matters such as: How to choose a good tree to fell in the midst of the many trees available in the forest? When is the right logging time? How to log a good tree? What about the subsequent treatment of the logs? How long should wood be immersed to be effective in preserving the wood? How long for the wood to not have significant development and depreciation when used as a building component? What techniques should be used for the subsequent shaping of wood, such as cutting, sawing, shrinking, etc.? How to determine if a certain type of wood is suitable for a particular function? The identification, documentation, and scientific proof of these processes are expected to contribute to the preservation of *rumah gadang*. The identification of traditional materials for the preservation of wood also needs to be done, so they can be applied in maintaining the wood used for building components.

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# Restoration Activities of Korea's Cultural Heritage

## Introduction

It has already been about 70 years since South Korea began to repair and restore cultural heritage itself. In 1974, the Standard Specification of Repair of Cultural Heritage was enacted for the first time, and in 2005, it was fully revised to suit the changing environment. In 2009, the General Principle for the Restoration and Management of Historic Structures and Relics was announced. To examine its details, it provides that "Restoration is possible when historic and cultural values can be restored through sufficient direct evidence by historical research." That is, restoration is possible only when historical research is possible.

Based on projects in which the researcher took part from 2007 through 2012, this study introduces cases in which ruins are restored in Korea.

## Restoration of Woljeongkyo Bridge

The Woljeongkyo Bridge is an ancient bridge built in the 19th year of the reign of King Gyeongdeok at the peak of Unified Silla (760). Judging from the surviving record of repair in the 8th year of the reign of King Chungnyeol of Goryeo (1280), the bridge was in existence for at least 520 years, but only its remains have been known since the Joseon Dynasty period. In April 1975, survey and research were conducted at the site of the pier and abutment of the Woljeongkyo Bridge for the first time, and in 1983, a plan for the restoration of the Woljeongkyo Bridge was drawn up and a stonework survey and restoration design were completed by 1986. From 1986 through 1987, the Woljeongkyo Bridge site excavation survey was conducted, and *yeon ham* (roof tile supports), roof tiles and iron nails were excavated. The project was subsequently suspended due to budget shortfalls, and since 2005, a 3D scan detailed investigation of the remains, stone damage survey, ground survey, unearthed wood species analysis, structural stability research, hydraulic model test, ground foundation research and 1/20 modeling have been conducted. The final plan for restoration was based on this research, and restoration work was conducted from 2008, finishing in 2013.

The Woljeongkyo Bridge was restored on top of the actual remains, but it was constructed so that the site could revert to the original state anytime, and that there would be no secondary damage to the existing remains. The deposit of soil that had accumulated on the river bed was cleared away to expose the pier, then 12 tiers were piled on top of the existing pier, using the surviving stones and new

stones. This height was based on the height of the surviving abutment, review of 100 years of flood levels and the result obtained through a hydraulic model experiment. On the stone pier, a wooden cantilever was extended over the span, the floor was laid, and a banister was installed. The width of the bridge could be estimated through the width of its pier and abutment and the width of wheel marks of the Silla Dynasty period excavated in the neighborhood. The reason why the bridge was designed with a pavilion is because of architectural fillets, roof tiles and spikes in the river bed found through excavation. Currently, a gate tower is being restored for the Woljeongkyo Bridge, on the abutment on both sides. Personally, considering the ground for the gate tower this restoration is not desirable, but the project is being implemented for political reasons.

Fig. 1. Before the Woljeongkyo Bridge restoration (2005)

Fig. 2. After the Woljeongkyo Bridge restoration (2012)

**Restoration model of the nine-story wooden pagoda of Hwangnyong-sa Temple**

The nine-story wooden pagoda of Hwangnyong-sa Temple was built in the 12th year of the reign of Queen Seondeok (643), and is known as one of three treasures of Silla. According to the *Samguk Sagi* (*The Chronicles of the Three States*), it was a tall pagoda with the total height for the wooden tower of 225 cheok, or approximately 80 m, but in the 25th year of the reign of King Gojong of Goryeo (1238), the entire temple was destroyed by fire in the Mongolian invasion, and currently only the site remains.

Since 2005, the Architectural Heritage Research Institute of the National Research Institute of Cultural Heritage has been in full charge of the plan for the restoration and maintenance of Hwangnyong-sa Temple. In addition, the design for a restoration model of the nine-story wooden pagoda of the temple was devised by the Traditional Architecture Planning Institute of the Korea National University of Cultural Heritage. From 2008 through 2012, after analysis of the tower remains in order to design the restoration, plus research and analysis of similar cases, and comparative analysis of the existing plan for restoration, 3D modeling and restoration design were carried out, and a 1/10 scale maquette was produced based on the final design from 2012

Fig. 3. Model of the nine-story wooden pagoda of Hwangnyong-sa Temple

through 2016. In producing the 1/10 scale model, all members were assembled in the same manner as building the actual wooden tower by connecting and joining, and roof tiling and decorative hardware were produced in the appropriate forms based on the excavated remains. The finished wooden tower is currently displayed in the Hwangnyong-sa Temple History and Culture Center, showing the splendor of the nine-story wooden pagoda as it originally stood at the temple.

The nine-story wooden pagoda of the Hwangnyong-sa Temple is a very large wooden structure even by current standards, so there were difficulties in the actual restoration. It required a huge budget and a long period of time. Meanwhile the existing remains are at risk of being destroyed, and Korea thus opted to make a 1/10 model as the next best plan. Through this, the structure of the building could be examined before any attempt to restore the actual structure, and it could also be utilized for education and exhibition. Currently, Korea carries out 3D modeling and model making before the restoration of all important cultural heritage.

## Representation project of Baekje Cultural Land

Fig. 4. Panoramic view of Baekje Cultural Land (2010)

Baekje Cultural Land is a complex that restores and represents Baekje palaces, temples, villages and castles through historical research. Since the restored building will itself become historic in 100 years' time and be carried down, specialists in areas such as Architecture, Archaeology and Art History and the best artisans such as Daemokjang (Traditional Wooden Architecture/ National Intangible Cultural Heritage No. 74), Beonwajang (Tile Roofing/National Intangible Cultural Heritage No. 121) and Dancheongjang (Ornamental Painting/National Intangible Cultural Heritage No. 48) gathered to build it to be a cultural heritage of the present age, so that it does not become an indiscriminate reproduction. Research, survey, design and construction were conducted over a period of about 20 years, and considerable research results were achieved across various fields such as Architecture, Art, Archaeology and Civil Engineering, and expertise developed in these areas. In addition, through restoration work such as the Ha-ang (descending cantilever) type wooden tower building technique and the Baekje stamped earth technique, traditional techniques could be maintained and passed down. Controversy arose over the huge budgets invested, prompting criticisms that it was a "filming site built at government expense," but it currently draws the largest number of tourists of all the sites in the Chungcheong area, and as a cradle of the experience and education of Baekje culture, it is in the limelight as a location of various TV dramas and films.

## Cases in which heritage remains are restored in Korea

The cases in which heritage remains are restored in Korea can be divided into three types.

First, there are cases in which there are sufficient materials for restoration. The representative example is Suwon Hwaseong Fortress, one of the UNESCO World Heritage Sites. There was some damage

to the Suwon Hwaseong Fortress, for example the fortress gate was partially destroyed during the Japanese colonial era and the Korean War, and the fortress collapsed; however, since there were drawings and reports made at the time of the beginning of the construction, called Hwaseong Songyeok *Uigwe* (Royal Protocols on Hwaseong Fortress Building), restoration of the original form was possible.

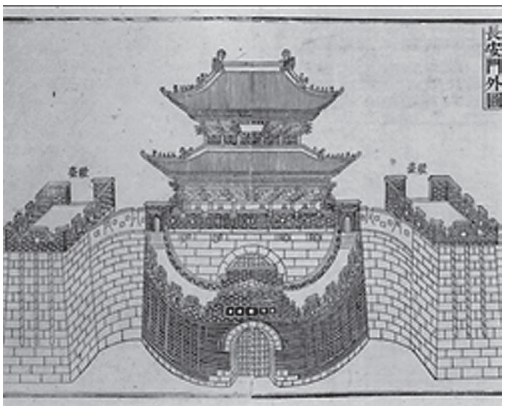

Fig. 5. Janganmun drawing in the Hwaseong Songyeok Uigwe

Second, there are cases of restoration according to the necessity of the times. The government may promote restoration since architectural heritage is of high monumental value as a symbolic icon of national culture. In addition, local governments actively conduct restoration to develop resources for tourism. The representative case is the Woljeongkyo Bridge, mentioned above. Of course, in this case as well, no restoration is possible without historical research.[1]

Third, there are cases of restoration as a means of preserving traditional techniques and culture for aesthetics and historicity. Traditional techniques are intangible cultural heritage, which may disappear in their current form and discontinue at anytime unless they are used. When Sungnyemun Gate, which had been destroyed by fire, was restored, the restoration project was implemented by reviving various traditional techniques, for example firing roof tiles with the traditional method and using traditional tools.

## Conclusion

A historic site in itself is history. Restoration of a heritage site may result in unintended damage to the remains and hinder the imagination. Thus, restoration should be carried out only after sufficient historical research. Since cultural heritage restoration involves some uncertain supposition about buildings of the past, there cannot but other than constant controversy. Nevertheless, it is necessary to make steady efforts in this manner, so that better restoration can become possible by supplementing the shortcomings that come to light.

In Korea, for decisions related to cultural heritage conservation and restoration, the Cultural Heritage Committee, affiliated with the Cultural Heritage Administration (CHA), makes the decisions. Cultural heritage experts in various fields of academics, and in religious and journalistic circles have been

[1] In South Korea, the restoration, maintenance, excavation and utilization of cultural heritage designated by a national, provincial, or local municipal government is deliberated by the Cultural Heritage Committee before implementation. The Cultural Heritage Committee is the consultative body of the Cultural Heritage Administration which deliberates on state-designated cultural heritage, and individual local governments, such as Seoul, Gyeonggi-do and Chungcheongnam-do have Cultural Heritage Committees according to their size.

appointed, and they hold considerable authority over the cultural heritage.

However, most of all, the expertise of the related government officials and researchers in charge of the practices of cultural heritage conservation and restoration is important.

Unfortunately, the majority of the cultural heritage-related organizations in Korea use the system of circulating appointments, which makes it difficult for any person to be in charge of a particular project for an extended period of time and develop the relevant expertise. This issue ultimately leads to differences in skills. In specialized areas in which long training and understanding of cultural heritage restoration are needed, it is judged that some form of supplementary input is necessary.

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# Private dwellings and their importance in safeguarding the world heritage

This country report stems from observations of the core area of Bhaktapur which has large numbers of traditional buildings, and is rich physically, socially, religiously and culturally. The city is rich in its heritage expressed through harmonized building materials and construction techniques. The outstanding artistry of Nepalese woodwork is renowned and is a prime element of traditional Nepalese architecture. Historical buildings, including private dwellings, palaces, temples, rest houses (*pati and sattle*), priest houses (*matha*) and monasteries (*bahals and bahils*) display as much structural use of timber as the skill and artistry of the medieval period which bears the essence of tangible and intangible heritage. The overall integrity of this heritage gives a sense of place, an essence of space and the feeling of the built environment.

Most of the world monuments are built using local technology and materials, yet they are not always well studied and documented. It is essential to understand the use of these materials and technologies and commit them to some form of documentation that will serve as reference for future learners, scholars and professionals.

Traditional buildings are of great importance to our heritage. The identity of any place or the location is reflected by its built environment, the people living in it, their religions, and social and cultural activities. Public monuments not surrounded by any residential cluster seem like mere objects on exhibit in a museum, but residential dwellings are like a live museum, giving a sense of harmony in all aspects, a reality and life to the city.

Fig. 1. Harmony between tangible and intangible elements

Fig. 2. Cultural performance (intangible heritage)

Accordingly, to retain the essence of place and to protect the vernacular heritage, as an architect, I have been participating in nongovernmental conservation work. Simultaneously I have been working at Nepal Engineering College as an Assistant Professor. The theoretical and practical knowledge I bring to these tasks benefits the house owners and students.

Fig. 3. Residential dwelling damaged by the Gorkha Earthquake of 2015

The city of Bhaktapur was inscribed as part of Kathmandu Valley on the World Heritage list by UNESCO World Heritage Committee in 1979. In 2003, it was included on the List of World Heritage in Danger, and was later removed in 2007. Subsequently, damage by the Gorkha Earthquake of 2015 included the loss of numerous monuments, palaces and residential buildings, and also took the lives of many habitants. The physical loss is being replaced by reconstruction and restoration work. As a registered architect, the private buildings that I am involved with for reconstruction and restoration are described below.

Traditional buildings in Bhaktapur are examples of valley architecture. The traditional materials available in Bhaktapur are mud or clay, timber, brick, stone, wood and special types of metals such as roofing sheets and decorative elements. In this report, the materials and construction methods of traditional buildings are explained.

Before starting the project descriptions, it is essential to understand the local municipal bylaws published by Bhaktapur Municipality. A brief translated summary of the bylaws is listed in Table 1.

**Table 1. Bhaktapur Municipality's Physical Infrastructure and Construction Bylaws in Brief**

| No. | Building aspect | World Heritage Site | Old City Zone |
|---|---|---|---|
| 1 | Maximum ground coverage | Plot size up to 855.6 sq. ft.: 90% | Up to 855.6 sq. ft.: 90% |
| | | Plot size greater than 855.6 sq. ft.: 80% or 770 sq. ft. whichever is greater | Greater than 855.6 sq. ft. = 80%, or 770 sq. ft. whichever is greater |
| | | 100% for reconstruction | 100% for reconstruction |
| | | After leaving set back, maximum depth should be 6 m | After leaving set back, maximum depth should be 6 m |
| 2 | Set back | For doors and windows fitting = 1.5 m | For doors and windows fitting = 1.5 m |
| | | Minimum 1 m from the edge of road | Minimum 1 m from edge of road |
| | | No setback for building aligned in row | No setback for building alignment |
| | | Around stone spout = 2 m | Stone spout = 2 m |
| | | Around public land = 1 m | Public land = 1 m |
| | | Around public well = 3 m | Public well = 3 m |
| | | Pokhari (pond) = 5 m | Pokhari (pond) = 5 m from edge |
| | | Water channel = 1 m | Stream = 1 m |
| | | | Jhartila stream = 4 m |

| | | | |
|---|---|---|---|
| 3 | Basement/semi-basement | Semi-basement is permitted | Semi-basement is permitted |
| | | One storey is not counted in height | One storey is not count in height |
| 4 | Façade and minimum width | | |
| 5 | Plinth height | As per old building and balance with neighboring buildings; new house = 0.45 m | As per old building and balance with neighboring buildings; new house = 0.45 m |
| 6 | Floor height | Maximum 8 ft., from the eves level to floor = 8 ft. | Maximum ground floor height = 9 ft., other floor = 2.59 m, from eaves level to floor = 2.44 m |
| 7 | Plinth terrace/steps | New house: width = 0.60 m, | |
| | | height = 0.45 m, matching to adjoining buildings | New house: width = 0.60 m, height = 0.45 m, matching to adjoining buildings |
| | | On sloping land, height of plinth is measured from main door to road | On sloping land, height of plinth is measured from main door to road |
| 8 | Staircase | Minimum staircase width = 0.81 m | Minimum staircase width = 0.81 m, staircase can be covered beyond the height limit of 10.66 m |
| 9 | Cornice | 154 mm | 154 mm |
| 10 | Top projection/chhaza | | |
| 11 | Balcony | Third floor: 0.81 m towards main road, and second floor: 0.91 m towards chowk with traditional material | Third floor: 0.81 m towards main road, and second floor: 0.91 m towards chowk with traditional material |
| 12 | Cantilever | No | No |
| 13 | Baleni (hanging roof ) | 0.91 m below top floor | 0.91 m below top floor |
| 14 | Door window and ventilation | Odd number with traditional wooden materials | Odd number with traditional wooden materials |
| 15 | Maximum storeys | Maximum 4 storeys | Maximum 5 storeys |
| 16 | Maximum building height | Only 10.67 m | 10.67 m excluding parapet height and staircase cover on top terrace |
| 17 | Flat terrace | Up to 33% | As per requirement on 4th floor |
| 18 | Slope roof and roof projection | 1 m eave projection with 25 to 30 degree two-way slope roof | 1 m eave projection with 25 to 30 degree two-way slope roof, and above 10.67 m, staircase covered area should have slope roof with traditional roofing tiles |
| 19 | Toilet | Minimum no. = 1 | Minimum no. = 1 |
| 20 | Septic tank/ sock pit/ municipal sewerage | Either municipal sewerage or septic tank | Either municipal sewerage or septic tank |
| 21 | Boundary wall | Maximum ht.:1.2 m | Maximum ht.: 1.2 m |
| 22 | Exterior Façade | Brick exposed | Brick exposed |

Note. Effective from 29 November 2015. (Translated by the author.)

The conservation of residential buildings differs from that of monuments. Houses have owners with needs, interests and spatial requirements, and for this reason conservation as such is not entirely possible, as transformation is natural in a living space. The question is not how to conserve but how to control the transformation in order to assure the existence of the actual urban fabric as much as possible while addressing the requirements of modern life. The reason why only residential buildings were taken into account for the present report is because monuments have survived further erosion as their restoration management is under control.

The locations of the buildings which I have designed and reconstructed in the city of Bhaktapur are marked on the map below, followed by explanations of two examples.

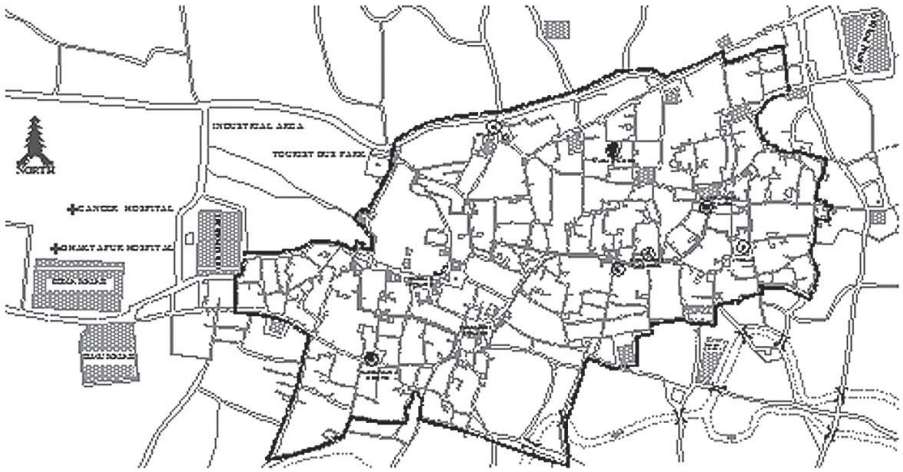


Fig. 4. Map of Bhaktapur City and designed private buildings

**Case 1 (within the World Heritage Site):** Residence at Golmadhi- 07, Bhaktapur Municipality, on a 877.02 sq. ft. (81.51 sq. m) plot, owned by Mrs. Ram Shova Palikhel and Aachal Palikhel

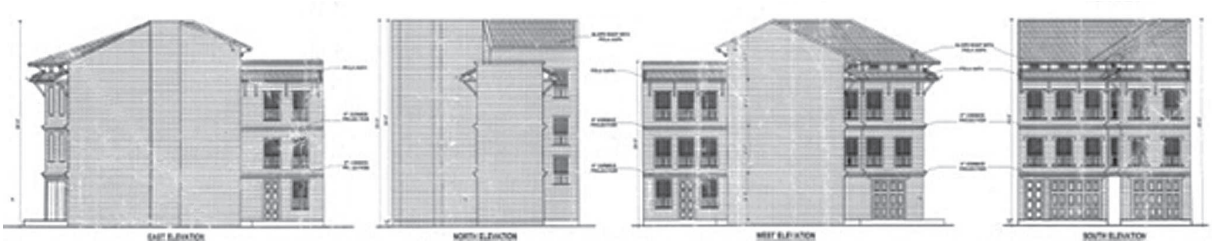

Fig. 5. Municipality approved elevations in the World Heritage Site

This building in the World Heritage Site stands 35 ft. from ground to ridge level with brick exposed elevations, timber cladding on exposed concrete, timber struts, eaves boards, windows, doors and traditional cornices with sloped roof tiles (*pola aapa*). The ground coverage of the building is 79.13%. The floor height is 8 ft. The opening to blank walk ratio is 43%, or around 50%. The slope of the roof is between 25–30 degrees. The flat terrace is less than 33% of the total roof area. A building on the main street can have a balcony projecting above the third floor, but it must be within 2ft. 6 in.

The problems in this building are roof structure and balcony projection. The clients had followed most of the bylaws but removed the sloped roof to have a flat terrace. They are not willing to keep a sloped roof because of a deficiency of space inside. With public socialization space being lost day by day, they want a flat terrace for social and cultural activities. The flat terrace balcony serves to overlook different cultural and religious activities on the street. It

Fig. 6. Views of the building from the chowk and terrace to the main street

is difficult to make the people more conscientious due to their family structure. This building is a residential building for a joint family.

**Case 2 (in the Historical Core Area/Old City Zone):** Residence at Nashamana- 13, Bhaktapur Municipality, 1967.93 sq. ft. (182.89 sq. m.) plot, owned by Mrs. Rameswori Pradhananga and Mr. Ramesh Pradhananga

Fig.7. Municipality approved elevations in Historical Core Area

This building in the Historical Core Area stands 35 ft. from ground to top floor level and has a covered staircase which is not counted in floor area ratio (FAR). It has brick exposed elevations, timber cladding on exposed concrete, timber struts, eaves boards, windows, doors and traditional cornices with sloped roofing tiles (*pola aapa*). The ground coverage of this building is 75%. The ground floor height is 9 ft. and the upper floors are 8 ft. The opening to blank walk ratio is 45%, or around 50%. Also the slope of the roof is between 25–30 degrees. The flat terrace is allowed in this zone and the staircase cover has to have the traditional sloped roof. A building on the main street can have a balcony projecting above the third floor, but it must be within 2 ft. 6 in. The original traditional windows, a statue of Lord Shiva and carved timber posts are placed in this building. Conservation of traditional elements in reconstruction is essential. So to blend with the contextual harmony, all the elements are placed in their right positions.

The problem in this building is the change in roof design. The client added a room along the covered staircase, in order to have an overhead water tank and solar heater. But the building harmonized with the built environment and set an example for society. Now this building functions as a guest house.

Fig. 8. Exterior view of building and the use of original windows and statue of Lord Shiva

The major problems and challenges to architects working in the historical core area are plot size, site location, client demands for maximum space, financial matters, social structure and demands for new building materials. Clients prefer concrete buildings rather than traditional load-bearing structures. The traditional building materials such as timber and brick are expensive and difficult to obtain. The public spaces are occupied by vehicles, so clients prefer flat terraces in their buildings which are used for social and cultural gatherings and for drying their daily goods and vegetables. Because of a lack of sufficient land and pressure due to social structure, they tend to go against municipal bylaws.

**New Zealand - Aotearoa**
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# Problems and Needs for Cultural Heritage Protection and Restoration Activities in Aotearoa New Zealand

| | |
|---|---|
| *Ko Whakarongorua toku Maunga* | Whakarongorua is my mountain |
| *Ko Waihou toku Awa* | Waihou is my river |
| *Ko Ngatokimatawhaorua toku Waka* | Ngatokimatawhaorua is my waka |
| *Ko Piki Te Aroha toku Marae* | Piki Te Aroha is my marae |
| *Ngāpuhi ratou ko Ngāti Whātua me Tarara me Ngāti Pākehā oku iwi* | I am of Ngāpuhi, Ngāti Whātua, Croatian and European descent |
| *Ko Ambrosia Crum taku ingoa* | My name is Ambrosia Crum |

## 1. Introduction

This report considers the problems and needs for cultural heritage protection and restoration activities in Aotearoa New Zealand with an emphasis on Māori built heritage based on my personal perspective and experience.

Architecture is a visual language of form and space, aesthetic statement and spatial functionality defined by a physical assemblage of parts and components. Māori form – inclusive of built structures, their pattern and style – is a language of context and cultural narrative. In my experience, where Western built environments often place emphasis on modernity and expansion, traditional Māori places are "imbued with mana and spirituality that endure through generations…[Māori Heritage] lives on through relationships of people and place." [1]

Currently, Māori built heritage is in crisis. This report identifies the following three main factors impacting Māori cultural heritage protection and restoration activities.

[1] Heritage New Zealand Pouhere Taonga. 2017, Tapuwae: Nā te Kaunihera Māori mō te Pouhere Taonga Māori. The Māori Heritage Council Statement on Māori Heritage. Heritage New Zealand Pouhere Taonga, p. 6.

a) Crisis: Shortage of Māori conservation practitioners
b) Diminishing natural resources
c) Marae re-development

## 2. Identifying Māori heritage

"Ngā taonga tuku iho nā ngā tūpuna.
Treasures handed down by our ancestors."

Heritage New Zealand Pouhere Taonga takes a regulatory and active interest in Māori heritage taonga (treasures) whose origin and type can vary. The importance these carry with them are in the activities, identities and traditional histories specific to the iwi (tribal groupings), hapu (sub tribal groupings) and whanau (family groupings) to which they belong. These taonga can be categorised as

- **physical/tangible:** *land-based places created, formed or shaped by early inhabitants* (e.g. built sites and archaeological sites);
- **natural:** *features associated with traditional activities where no human activity is evident* (e.g. natural features and tribal landmarks such as a mountain or river); and
- **intangible:** *places where a significant event or activity took place where no visible features are present* (e.g. battlefields and places of meeting, learning or ritual). [2]

Māori built sites are a physical manifestation of identity and heritage. They are representative of many layers of history, behaviours and activities. Māori built heritage encapsulates the essence of matauranga Māori (traditional knowledge) and is designed to be read and used as a structural repository of tradition and memory, informed by a holistic value-system and supported by a complex series of interconnected relationships. Traditional Māori whare (houses) are cultural and spiritual sanctuaries sustained by ingrained linkages to the past.

### 2.1. Marae and traditional expression

The marae complex is a place where Māori are able to express identity and belonging, a place to meet (for discussions of tribal affairs), to grieve (for funerary ceremonies) and to connect (to place, to one another and to ancestry).

There are currently over 1000 marae in active use throughout New Zealand,[3] each a unique acknowledgement of tribal associations, histories and lore, bound by tribal tikanga and kawa (custom and protocol). Marae are a series of structures and spaces ordered within a defined landscape consisting of

- **buildings:** to accommodate the coming together of iwi and whanau groups, e.g., whare (meeting house), wharekai (dining hall and kitchen facilities) and wharepaku (ablutions block).

[2] "Māori Heritage. Ngā Taonga Tuku Iho nō Ngā Tūpuna." Heritage New Zealand Pouhere Taonga Website. www.heritage.org.nz/protecting-heritage/maori-heritage viewed 17.08.2017.

[3] Schuster, J. & Whiting, D. 2007, 'Marae Conservation in Aotearoa', in: Sully, D. (eds), *Decolonising Conservation: Caring for Maori Meeting Houses outside New Zealand.* Left Coast Press, Inc, pp. 77–88.

- **structures:** in recognition of tradition and significant past events, e.g., whakamaumahara (memorial) and pouhaki (flagpole).
- **in-between spaces:** to allow for the separation of sacred, profane and ordinary; used as a protection mechanism for ensuring the safety of people using the complex, e.g., atea (ceremonial courtyard) and spaces between buildings.

The construction of these buildings and structures has always been primarily focused around wood and plant-based fibre materials. In many cases traditional arts, inclusive of whakairo (carving), tukutuku (panelled latticework) and kowhaiwhai (painted patterns seen on rafters), adorn built forms found in the marae. Whare whakairo (carved houses) are a physical representation of tribal knowledge, history and are canvases which exhibit a local cultural footprint. Māori culture is practiced and upheld on the marae whereby tribal and individual identity is reaffirmed. Elaborate artworks are a symbol of tribal mana or standing and are expressive of mana whenua (local tribal authority) in style, form and placement.

Revitalisation of traditional Māori culture and identity is rooted in the passing of matauranga Māori (traditional knowledge) and whakapapa (genealogy) which is inherent in and largely communicated through mahi toi (art and crafts) and as taonga passed through generational knowledge.

### 2.1.1. Crisis: Shortage of Māori conservation practitioners

The marae is the centre of the tribal community. The health and wellbeing of a community can be gauged by the state of the marae; it is a reflection of its people. Many of our marae buildings are in a state of disrepair through lack of resources, support and expertise – educated rangatahi (young people) are often under-utilised as a resource – and it is the older generation who are taking on these pressures. Matauranga held by elders will be lost if it is not passed to younger generations through implementation of a succession plan.

As indigenous peoples, our innate sense of kaitiakitanga sees us compelled to exercise a value system centred on caring and protecting. If others, who exist outside of this world view, do not place the same importance on our culture, are not we the only ones invested in its preservation?

#### 2.1.1.1. Are Māori conservators the solution to the problem?

The community of Māori heritage conservatorship specialists is so restricted that we lack the capacity to address what is a national problem on a massive scale. A multi-faceted strategy is required, including the following elements.

- Grow our own experts.
- Increase support within iwi and hapu entities for self-management of tribal heritage assets.
- Develop tikanga-centric conservation architecture degrees and programmes in tertiary institutions.
- Create practicums and on-site placements for architectural students to improve post-graduate prospects and possibilities.

- Offer additional scholarships to enable proactive youth.
- Tailor specific training opportunities to Māori communities.
- Encourage tribal groups to find ways of self-funding (i.e., building into cultural redress packages).
- Build relationships and networks between marae communities, tribal councils, heritage agencies, government agencies and regulatory bodies.
- Increase support to expand beyond the current sole dependency on national services (i.e., Heritage New Zealand Pouhere Taonga). Continue growth of resources at a regional level to allow coordination and maintenance of marae conservation programmes within the regions.
- Empower the Māori Heritage Council with greater control over decision making frameworks to increase advocacy, promotion and recognition for Māori heritage.
- Increase capacity for a Māori arts-based network – this can be based in an existing arts institute (i.e., Te Puia New Zealand Māori Arts and Crafts Institute).

#### 2.1.1.2. How can marae communities assist in the solution?

- Encourage engagement with the professional sector.
- See the merit in supporting prospective young people.
- Actively seek opportunities for improvement.
- Hapu based training approach – instil pride of ownership and involvement, utilise skillsets.
- Passing of traditional knowledge – create a succession plan.
- Invest in the people – time, money, education or other assets.
- Establish forums for cross-fertilisation of knowledge and materials.
- Query or challenge professional advice.

### 2.1.2. Diminishing natural resources

Traditional lands once provided all resources necessary for tangata whenua (people of the land) to not only survive but to thrive in their respective environments. Whare built of timbers from the local forests were decorated with woven material sourced from the natural surroundings. An abundance of resources available in nature sustained a way of life and informed traditional building practice.

The availability of these resources has been affected enormously by the development of farmlands and the introduction of pests and disease. Many traditional plant resources are rare, often endangered and are threatened further by grazing farm stock and competing introduced species. Healthy and plentiful stands are often located in places that are difficult to access.

#### 2.1.2.1. What are the key natural resources for Māori built heritage restoration?

- Toetoe – kakaho used in backing of tukutuku.
- Kiekie – used in weaving tukutuku.
- Pingao – used in weaving tukutuku.
- Raupo – traditional insulation.

- Paru – black mud dye.
- Native timbers – traditional construction material, carvings.
- Native tree barks – used in dyeing weaving material.
- Harakeke – used weaving whariki mats, bags and cloak.

### 2.1.2.2. What strategies can we develop to restore natural resource bases?

- Make eradication of exotic/introduced species/pests focus on a national scale.
- Give traditional weavers access to resources on DOC estates inclusive of all flora and fauna.
- Hapu based training programmes – how to plant and care for native species, how to identify introduced species and increased focus on developing weaving skills.
- Iwi-wide planting schemes.
- Horticultural training with bi-cultural curriculum.
- On-site marae planting for resources used in weaving and dyeing.
- Conservation training in Māori communities with local authorities and government agencies.
- Local authorities and government agencies provide for larger planting schemes on a regional level in their planning documents (i.e. DOC and NZTA).
- Local authorities provide incentives and plant resources to landowners (i.e. rate relief).
- Promotion of protection and conservation of natural resource areas with focused planting schemes over multiple environments such as swamps and forests.

### 2.1.2.3. Three projects identifying varied instances for the use of natural resources in heritage restoration work

*Hinemihi's return.* Since being purchased and shipped to Britain in 1892, Hinemihi wharenui has stood as a 'garden folly' in Clandon Park, Surrey, England.[4] After a recent fire at Clandon House Hinemihi was dismantled; as she awaits restoration there are many matters to consider:

- Her significance to Ngāti Hinemihi – a sub tribe of Te Arawa – is paramount as she sheltered their ancestors during the 1886 Mt Tarawera eruption which claimed over 150 lives.
- Hinemihi's presence in England sees her detached from her spiritual, cultural and geographical home.
- As she is regarded as part of a family in Aotearoa, after 125 years, should they not have the opportunity to look after her?
- Reliable expertise with understanding of cultural underpinnings and technical aspects in how to care for her, are skills held within direct descendants of her carver, Tene Waitere, and those she saved in 1886, in Aotearoa.
- The natural resources required for her restoration are not available in England.

*Te Poti Village.* Koanga Rehua (ancestral house) sits in a remote forested area near the edge of the Whanganui River and is unique insofar as it has an original earth floor. This whare is the only one of its type in Aotearoa and was abandoned over 100 years ago. The extent of work required, future plans

[4] Sully, D. & Gallop, A. 2007, 'Introducing Hinemihi', in: Sully, D. (eds), *Decolonising Conservation: Caring for Maori Meeting Houses outside New Zealand.* Left Coast Press, Inc, pp. 127–148.

for the village and its location see the restoration programme extended over a long period. Some of the many considerations and practices utilised so far are as follows.

- Working with home-people to develop a programme that suits them.
- Traditional building techniques and practices with sourcing and use of native timbers.
- Repair and replacement of timber elements – like with like.
- Utilisation of traditional insulation methods (raupo reeds).
- Harvest and preparation of traditional resources and materials nearby.
- Methods for preserving associated art practices including paint work.
- Investigation of building archaeology and documentation of findings.

*Te Kohatu o Hatupatu.* Partnership between tribal authorities and government agencies has seen the recent revitalisation of this sacred site renowned for its traditional associations within the cultural narrative. Included in this project was the following large scale planting scheme in and around the site.

- Resources used as catalyst in supporting an integrated approach between tribe and crown.
- Re-generation of plants specific to local ancestral and mythological associations.
- Cultural use of plant material as sacred offering.
- Local weavers to have a resource available in the future.
- Revitalisation and uplifting of a sacred site.

### 2.1.3. Marae re-development

Kaitiakitanga is the expression of protection, care and preservation. The obligation to care for our places can be challenging and difficult. The choice to either protect or preserve is a reality marae are facing where both are not achievable or potentially not even considered. To both protect and preserve is the basis from which we operate as conservation practitioners.

## 2.2. Modern cultural environment

The systematic use of legislation designed to alienate Māori from their tribal lands has given rise to the challenges faced today. An adapted lifestyle has seen Māori largely separated from their whenua (ancestral lands), kainga (homes/communities) and marae (meeting places) with the migration of substantial numbers of Māori, up to 75%,[5] to urban centres in the mid-20th century. In many rural landscapes, which traditionally hosted communities of complex social structure, we often now see few home-people performing the duties of the ahi kaa - those who keep the home fires burning. The marae in many instances nationwide is often the only tie that urban Māori have left to traditional lands on rare visits at times of tangihanga (funerals). The continuation of a traditional way of life is at risk with a lack of connection and loss of identity being a reality that many contemporary Māori face. Urban marae built at secondary schools and tertiary institutions are a response to establish and maintain a connection to Māori identity and culture within youth.[6] Increased advocacy for the preservation of traditional buildings is essential. Many Māori are drawn to the idea of modernising, however true value lies in keeping tradition alive while integrating innovative ideas that allow growth.

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[5] Walker, R. 1996, Nga Pepeha a Ranginui – The Walker Papers: Thought-Provoking Views on the Issues Affecting Māori and Pākehā. Penguin Books (NZ) Ltd, p. 83.

[6] Ibid., p. 51.

## 2.3. Current pressures

*Contemporary innovation*. Balance between protection and preservation is hard to manage with technological advances challenging Māori with innovative and contemporary ideas. These ideas not only challenge a new aesthetic expression through materiality and style but the atua and associated spiritual entities imbued in the fabric of traditional built form.

*Local authorities*. In the wake of national disasters, i.e., Christchurch earthquakes and recent flooding and cyclone damage in the Bay of Plenty, whole new frameworks and approaches are being devised to address the complexities of rebuilding and structural reinforcement. These demands are a challenge for both communities and the Māori Heritage programme at Heritage New Zealand Pouhere Taonga.

## 3. Conclusion

My experience in the communities I work with and my background as wahine Māori drive my motivations as a Māori built heritage conservation practitioner and future expert.

To uphold the authenticity of culture is to reach a balance between preservation and innovation. The knowledge held in these sacred places is where we can source guidance and a sense of continuity and connection to our past, our ancestors and a way forward.

"Tairangahia a tua whakarere; Tatakihia ngā reanga ō āmuri ake nei.
Honouring the past; inspiring the future." [7]

[7] Heritage New Zealand Pouhere Taonga. 2017, Heritage New Zealand Pouhere Taonga: Statement of Intent 2017-2021. Heritage New Zealand Pouhere Taonga, p. 4.

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# Prospects and Challenges of Cultural Heritage Protection in Pakistan

## Introduction

The cultural heritage of a nation strengthens its sense of identity and displays its historical and cultural development. It can be tangible in the form of historical structures and sites, or intangible as in customs, beliefs, languages, music and arts.

Pakistan is a country endowed with rich cultural heritage and diversity. It is a melting pot of many great ancient civilizations spanning scores of centuries due to its important geographic position. It is home to some of the first known sites of civilization in the world such as Mehargarh, Harrappa and Moenjodaro, inspiring this description of its history:
…it is the land that beckoned Alexander to sail down river Jhelum with purple flags fluttering; the spectacular Gandharan civilization as the seat of Buddhism; the devotional carvings of the Hindu Shahi temples of the Salt Range and Tharparkar; the stately funerary clusters of Makli, Multan and Ucch Sharif, a fusion of local and imported arcuate, representing successive Sultanate dynasties; the heart-expanding chahar-baghs and jewel-like edifices of the greatest kingdom, established by the young ruler of Farghana; the Sikhs emulating the Great Mughals, and the shared legacy of eclectic architecture with its European overtones, a bequest of the British who colonized this land. (Heritage Foundation of Pakistan, n.d.)

The Directorate General of Archaeology, Govt. of the Punjab, which is currently working as a sub-department of the provincial Department of Youth Affairs, Sports, Archaeology, and Tourism, was


Fig. 1. Gandharan civilization remains at Taxila


Fig. 2. Tomb of Bibi Jawindi Ucch Sharif


Fig. 3. Shalamar Gardens Lahore

(Figs. 1–3 source: Archaeology Department Archives)

established in 1987 after the realization that the Federal Department of Archaeology and Museums cannot adequately protect and preserve the cultural assets of the country. Therefore, provinces had to get involved by establishing their own Archaeology Departments.

The Directorate General of Archaeology, Govt. of the Punjab is actively working on its mission since its establishment to preserve and protect the heritage and archaeological sites of the province under the legal framework of the Antiquity Act (1975) and the Punjab Special Premises (Preservation) Ordinance (1985).

I started working at the Directorate General of Archaeology, Govt. of the Punjab, on 24 March 2016 as a Sub-Divisional Officer of Archaeology, in the Provincial Headquarters, Lahore. As the cultural capital of the province, the city of Lahore manifests multiple layers of history.

I have been very lucky to work on some of the most remarkable and wonderful historical structures of the Mughal and Sikh eras in Punjab during the short period of my service, such as Smadhi Sher Singh, the tentative World Heritage Site of Hiran Minar and Sheikhupura Fort, and Haveli Naunihal Singh. I have also been fortunate enough to have the opportunity of being a part of new initiatives and projects for the restoration and conservation of many other historical sites in the province and to get these cases approved from higher authorities with appropriate allocations of funds.

## Prospects and Challenges

Following are the prospects and challenges I have faced in cultural heritage protection and restoration in Pakistan during my limited service.

1. Lack of public awareness about importance of cultural assets
2. Non-availability of quality materials and tools for conservation
3. Scarcity of trained personnel
4. Pollution
5. State vandalism

### *1. Lack of public awareness about importance of cultural assets*

It is rightly said that “people without the knowledge of their past, origin and culture are like a tree with no roots.”

Lack of awareness about preservation of cultural assets of the country is the key concern regarding the protection of cultural heritage. The people of Pakistan are unaware of the rich cultural heritage of their country and this is the root cause of all other threats and problems arising involving the protection and restoration of heritage sites. It is not only the case with common people but also with officials from the administration, politicians, bureaucrats and even professionals working in the field, who are less concerned with the conservation of historical heritage than with matters of budget and pace. Consequently, people have no love for historical sites, and cases of illegal encroachments, littering, vandalism, graffiti and damage of historical assets is common.

I have encountered numerous cases of graffiti, theft, vandalism, and encroachments during my work on Sheikhupura Fort and Hiran Minar. It is a pity to see these magnificent emblems of Mughal architecture subjected to this ignorance in spite of the efforts of the Archaeology Department, resulting in the destruction of building fabric and treasured layers of history (Figs. 4–6).

Fig. 4 Crumbling glory of Sheikhupura Fort due to vandalism and theft of wooden doors and ***jalis***

Fig.5. Graffiti at Hiran Minar

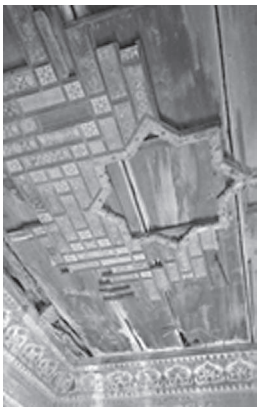

Fig. 6. Encroachments and deteriorated wooden ceiling due to lack of timely conservation and restoration at Sheikhupura Fort

To address this problem, the Department of Archaeology, Punjab, has launched public awareness campaigns regarding cultural heritage protection, in the form of developing a departmental website and publishing several books and brochures, and the results are very encouraging but there is a dire need for more steps of this nature. The importance of cultural heritage sites and information regarding the World Heritage Sites in Pakistan has to be included in the curriculum of schools and colleges. Seminars, conferences and workshops regarding the importance of archaeological sites and cultural preservation can create awareness among the people and help prevent further damage.

### *2. Non-availability of quality materials and tools for conservation*

The magnificent forts, palaces, gardens, *havelis* and temples built by the Mughal, Sikh and Hindu kings were constructed with high quality materials and special tools. Now it is difficult to replicate the mortar, brick, stone, wood and other construction material used at that time. The quality and nature of building materials and craftsmanship available today are not up to the mark to produce the required excellence and durability.

Sheikhupura Fort, presumably built during the reign of Mughal emperor Jahangir in 1607, is under a process of immediate conservation (2017–19). The ancient construction materials and techniques, intricate fresco work, designed wooden ceiling, elaborate wooden carved doors and *jharokhas* of the fort are all dilapidated (Figs. 7–8). The timber roof structure of the monument is completely missing in several places due to water penetration and termite infestation (Fig. 9). The non-availability of quality materials and craftsmanship has made it very difficult to restore the monument to its original condition while conserving historical authenticity.

Fig. 7. Deteriorated timber roof due to water seepage and termite attacks

Fig. 8. Missing wooden doors, roof and *jharokhas*

Fig. 9. Decayed wooden beams and columns

### *3. Scarcity of trained personnel*

Historical sites such as forts, palaces, mausoleums, temples and shrines built by ancient rulers are examples of wonderful craftsmanship, design and aesthetics. The best engineers and masons from all over the world used to take part in the construction of these architectural jewels. These craftsmen were expert in traditional techniques of building, arts and crafts. It is difficult to replicate that kind of expertise nowadays. People having skill and proficiency in preservation techniques such as carving, fresco work, glazed tiled work, etc., are rare and getting old. Due to a lack of regular teaching or training programmes in heritage conservation, management and museum administration in the country, there is a dearth of trained personnel.

It is a current pressing need to create a comprehensive and progressive programme of teaching and training in cultural heritage to conduct national and international training. The Department of Archaeology has also recently taken the initiative to revive the PIATR (Pakistan Institute of International Training and Research) which has been inactive since 1994.

### *4. Pollution*

Pakistan is a well-populated country. Industrial waste, increased numbers of automobiles, excavation for sewage, use of electricity and roads have caused severe air and water pollution, causing damage to the heritage sites. The unique hunting resort of the Mughal era, Hiran Minar, is facing serious threat due to the presence of a number of brick kilns all around the monument. The smoke and soot generated by the kilns is causing damage to the plaster and fresco work (Fig. 10).

Fig. 10. Brick kilns in the environs of Hiran Minar, Sheikhupura

### *5. State vandalism*

State vandalism is also a phenomenon causing damage to cultural assets, which is usually ignored due to its controversial nature. Historical buildings are often used for functions, parties and state dinners by government officials. Mishandling of frail and sensitive heritage materials is common at such events and intrusions on the part of masses of people causes irreversible damage to the buildings.

Recently the construction of the Orange Line train project by the government in Punjab is generating considerable criticism for causing damage to many heritage properties, including the World Heritage Site of Shalamar Gardens (Figs. 11–12).

Fig. 11. Advertising the Metro train on the perimeter wall of Shalamar Bagh

Fig. 12. Artist's rendition of Orange Line track affecting Chauburji monument (Source: Lahore Conservation Society)

## Conclusion

In a nutshell, cultural heritage being an important part of a nation's identity and individuality has to be protected and restored. There is a dire need for creating awareness among the people of Pakistan to appreciate the worth of their cultural assets and roots. Major problems regarding the protection of cultural assets in the country can all be tackled through creating awareness and the introduction of proper training programs.

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# The Restoration of Gapan Old Casa Municipal: Precursor to the Proposed Conservation of Gapan City Old Section/Heritage Zone

—a specific study on the problems and needs for local cultural heritage protection in the Philippines

## I. Introduction

There are so many challenges in the field of heritage conservation in the Philippines, especially with regards to the protection and preservation of built heritage such as architecture. This country report aims to identify what are the common issues perennial to the preservation of heritage houses (predominantly wood and stone structures) and aims to explore what are the possible solutions to address these common issues. The restoration of Gapan Old Casa Municipal is presented as a specific example to study the various threats, problems and needs at the micro-local level of conservation in the Philippines.

## II. General background of heritage architecture in the Philippines (from the Pre-Colonial to the Post-War Periods)

The Philippines is one of the countries in the Asia-Pacific Region. It is composed of three major groups of islands, namely Luzon, Visayas, and Mindanao, and many other scattered small islands, thus, being literally an archipelago, this explains why the Philippines has a diverse culture. Heritage architecture in this country is a result of past centuries and a long history dating from the Pre-Colonial (before 1565) to the Spanish Colonial, American Colonial, Japanese Occupation and Post-War periods (after 1945). The conglomeration of myriad influences produced a rich cultural heritage of the Filipinos.

Pre-colonial domestic architecture is typically a wooden structure or of similar light materials. Surviving styles of this pre-colonial dwelling can still be found in different regions of the Philippines. Extant examples can be discovered in the mountainous areas of the northern part of Luzon, particularly in Ifugao, Mountain Province and other provinces.

Fig. 1. Ifugao house (*bale*)

Fig. 2. Nipa hut (*bahay kubo*)

Fig. 3. Maranao house (*torogan*) in Mindanao

Spanish colonial structures can be traced in towns and cities where *reduccion* (relocation of native inhabitants into settlements) was implemented by the Spanish colonial government. The best example of this period is the plaza complex, usually characterized by a rectangular open space in the center of a town (*pueblo*) or city (*cabecera*), surrounded by structures governed by a hierarchy, i.e., church (*casa iglesia y convento*), government buildings (*casa de gobierno*) and houses for the *principalia* or the elite.

During this period, the Catholic Church performed a major role in the everyday lives of the people (*cristianos*). The most dominant building in the plaza complex was the church (*simbahan*), an imposing structure made up of stone masonry (*cal y canto*) and wood (*madera*) considered as durable materials (*materiales fuertes*). The time and activities were regulated by a bell (*campana*), thus bajo de las campanas. Literally, all of the structures in the town were within the sound of the bell.

Fig. 4. Houses during Spanish Colonial Period clustered around the central plaza. The elite enjoyed the privilege of building their houses near the main plaza. The proximity of the location of the house with reference to the plaza signifies the position/ importance of its owner to the community.

Fig. 5. The Old Manila Cathedral dominating Plaza Roma, surrounded by other government buildings (not shown)

About the time of the American Colonial and Post-War periods, structures had recourse to the use of concrete and also wood. Popular architectural styles from the West were also introduced. Though there were still wooden structures built during this period, cement and concrete were favored by the people. This can be traced in government buildings and other institutional structures built before and

Fig. 6. Carcar Dispensary, now a museum located in Carcar City, Island of Cebu, Visayas

Fig. 7. Baguio Diocesan Library and Archives in Baguio City, Benguet. Baguio was developed by the Americans as a summer resort.

after World War II. Many of the heritage structures in the Philippines which were built in the previous centuries had been utterly destroyed during the war. Fortunately, there are still heritage structures that were inadvertently spared from the catastrophe.

## III. Major concerns and present needs in the field of heritage conservation particularly in the Philippines

There are major issues in the field of heritage conservation of the Philippines, however, this country report is focused particularly on the conservation of wooden structures and mainly based on the personal experience of the participant. Architect Godoy has been on the staff of the NHCP since 2014 and has been involved in research, documentation and conservation efforts of the Commission.

Based on the personal experience of Architect Godoy, the three main reasons that resulted in the damage or loss of wooden heritage structures in the Philippines are the following.

1. Neglect and poor maintenance of heritage structures
2. Insufficient funds for the conservation of heritage structures
3. Absence of feasible conservation plans to preserve heritage structures

Most of the owners of heritage structures such as *bahay* na bato are not very knowledgeable when it comes to the proper maintenance of their heritage houses. Some would prefer to tear down the deteriorated parts rather than restore them to their original forms. There are many heritage houses that have fallen into neglect. Some of the owners are no longer interested in preserving their old houses, and will thus allow the condition of a house to deteriorate until it totally crumbles. Other heritage house owners have already migrated to other regions where they are working or rather choose to stay overseas, thereby leaving their homes to tenants or caretakers.

Other predominant factors that contribute to the increasing number of deteriorating heritage structures include the insufficiency of funds to keep or maintain the old buildings. Even if the owner really wants to restore his/her old house, if there are no available funds, then conservation is futile. The Philippine National Government is the key source of funds for restoration projects. However, it is prohibited to allocate funds for private purposes, in other words for anything other than public buildings or communal structures such as old government buildings, heritage churches and the like where the main purpose of the heritage structure is intended for common use.

## IV. Proposed solution for these current issues with regards to the preservation of heritage structures

1. Conservation awareness and promotion.
2. Local Government Units (LGU) should craft effective ordinances to help the owners restore their own heritage structures.

3. Respective LGUs in coordination with the stakeholders involved should create a sustainable conservation plan that will protect and preserve their heritage assets including built heritage structures.

The NHCP is continuously providing seminars and lectures with regards to the appreciation and conservation of heritage sites and structures. Architects, engineers and conservators of the Commission are regularly visiting the provinces in order to inform the public and stakeholders about proper ways of maintenance and to inform them about the Heritage Law or R.A. 10066. As stipulated in Article III, Section 5 of the same law, heritage structures or "structures dating at least fifty (50) years old can be considered as 'important cultural property' and must be protected from any modification or demolition."

The NHCP also encourages the LGUs to adapt or formulate policies related to the promotion of culture and heritage conservation. Respective LGUs could enact specific ordinances that will help the cultural workers and heritage owners to get awards or be given tax exemptions in their conservation efforts. For example, when owners of a heritage house decide to preserve or maintain their old house, they could get appropriate tax discounts, exemptions or rewards based on the magnanimity or scope of their effort accordingly.Respective LGUs are enjoined to create master conservation plans to protect and preserve their heritage assets including but not limited to built heritage structures. A feasible conservation plan should involve the stakeholders, technical experts and personnel, heritage workers and advocates, policy makers and other parties that could contribute to formulating an effective conservation plan for the community.

## V. Case Study: Restoration of Gapan Old Casa Municipal/Casa Presidencia (a project with Archt. Godoy in charge)

Location of the restoration project

The Old Casa Municipal is part of the old town (now city) of Gapan. It is located in a row/cluster of old houses known as *bahay* na bato. The Local Government Unit and the NHCP are looking into

Fig. 8. Façade of the Gapan Old Casa Municipal. The heritage structure is located within the old section of the town, proposed for declaration as a heritage zone

Fig. 9. The Casa Municipal with adjacent private heritage structures such as wooden and stone houses built during the Spanish Colonial and American Colonial periods

the possibility of declaring the old section of the city a heritage zone. Right now, the Philippines has declared eight heritage zones within the country. Gapan City is within the province of Nueva Ecija, known as the rice granary of the Philippines. It is situated in the central plain of the island of Luzon where vast tracts of land are extensively dedicated to agriculture.

Historical background of the project

The architectural character of the Old Casa Municipal implies that it was built during the 1800s, probably during the late part of the Spanish Colonial period or the early part of the American Colonial period. Until it was abandoned many years back due to its dilapidated condition, the old building served as seat of the local government. Subsequently, it was converted into a post office and court house before it was utilized as class rooms for elementary grade students long ago. The old building is made of brick and wood. The thick external walls are of brick while the interior members such as posts, beams, girders, floor joists, floor planks, doors, windows, stairs and trusses are entirely made of wood.

Inadvertently, due to many years of neglect, the old casa started to deteriorate. However, in the middle of this current year (2017), the NHCP started the restoration of the structure. The project is now ongoing.

Scope of the Restoration of Gapan Old Casa Municipal

A. General facilities
   1. Temporary facilities
      1.1 Contractors field office
      1.2 light, power, water service connection, toilet, security, and fencing
   2. Photo documentation (before, during, and after)
   3. Rental of scaffoldings
   4. Construction safety and signages
      4.1 Construction signage
      4.2 Installation of drop nets
      4.3 Personal protective equipment
B. Restoration/rehabilitation works
   1. Surface preparation for cleaning of masonry walls
      1.1 Mechanical cleaning, vegetation removal
      1.2 Chemical treatment, herbicide and biocide treatment
   2. Dismantling and hauling work
      2.1 Dismantling of existing concrete and wooden structures which are not part of the original building
      2.2 Disposal of debris
   3. Restoration and consolidation of unreinforced masonry walls
      3.1 Stabilization of rubble core

3.2 Repointing of masonry block joints and gaps
3.3 Injection of lime-based grout on cracks of masonry walls
3.4 Removal of concrete elements and plaster on masonry walls
3.5 Fabrication and reinstallation of fallen and missing parts of the masonry walls
3.6 Application of lime wash and lime plaster to the masonry walls
3.7 Application of damp proofing/water repellent solution to the masonry walls

4. Structural works
   4.1 Provision of independent reinforced concrete foundation, beams, slabs and columns at balcony (rear side)
   4.2 Restoration of damaged walls at rear side of Casa Municipal
5. Architectural and carpentry works
   5.1 Restoration and replacement of dilapidated wooden posts and girders
   5.2 Restoration and replacement of dilapidated wooden floor joists, bridging and wooden floor planks
   5.3 Restoration, restructuring, and replacement of missing parts of wooden stair
   5.4 Provision of paneled wooden partitions with wooden framings
   5.5 Fabrication and installation of brackets/consoles, calados and mouldings along wooden partitions, on top of doors and windows, and between posts
   5.6 Rehabilitation and restoration of existing doors and windows, including fabrication of missing doors and windows
6. Roofing works
   6.1 Rehabilitation and replacement of deteriorated truss members
   6.2 Replacement of the existing roof with galvanized iron (GI) long span corrugated type with insulation
   6.3 Installation of new fascia and wooden tongue and groove with traceried vent at roof volada
7. Finishing work
   7.1 Cladding of brick veneers at the concrete walls and columns (interior and exterior)
   7.2 Provision of steel gates
   7.3 Provision of new coffered ceiling
   7.4 Provision of vigan tiles and cobble stones at ground floor
   7.5 Installation of machuca tiles at balcony
   7.6 Application of anti-termite/insect treatment to all wooden components
   7.7 Varnishing and painting work
   7.8 Rehabilitation of all existing grills at ground floor and second floor
8. Electrical work
   8.1 Provision of new electrical system and fixtures
9. Site development work
   9.1 Provision of drainage canal with concrete cover along the masonry wall
   9.2 Provision of cobblestone path walk around the building for access
10. Clearing and cleaning of site

Fig. 10. Old wooden stair. Though worn out from use, it is still functional. It will be dismantled and reinstalled after repair and restoration.

Fig. 11. Wooden girders and floor joists of the second floor, shown here with dilapidated members

Fig. 12. View of the interior of the balcony. Many wooden parts in this section of the building are already dilapidated.

Fig. 13. View of the second floor ceiling. Almost all of the ceiling is in bad condition.

Fig. 14. Wooden floor joists and bridging on the second floor of the building undergoing repair

Fig. 15. Wooden floor planks being dismantled for rehabilitation, cleaning and treatment

Fig. 16. Truss members and ceiling joists of the roofing. Many of the truss members are still intact and need only minor repairs and rehabilitation.

Fig. 17. Part of the roof showing wooden trusses and purlins being repaired after the corrugated GI roofing was dismantled for replacement

Fig. 18. Perspective of the Gapan Old Casa Municipal

The restoration project is expected to be completed by the end of this year, December 2017 and will be turned over to the LGU. The NHCP recommended to the LGU that the restored building be used only for cultural purposes such as a library or museum. The LGU assented to the proposal.

## VI. Viable results of the restoration of Gapan Old Casa Municipal

Upon the commencement of the restoration of the Old Casa Municipal, the Mayor of Gapan City on behalf of the local government called for the gentrification of the old street where the old buildings clustered. This initial effort of the LGU signifies the consequent overall conservation of the old section of the city. To date, the LGU is also in its own way formulating a conservation plan to preserve and protect the remaining old structures. The city government has anticipated the potential results of heritage conservation such as promotion and growth of tourism in the area. Alongside the old structures, Gapan City also has many cultural activities such as feasts and festivals. The city has a great potential as a cultural destination in the province if not in the region.

## VII. Generalization

When heritage structures like wooden houses can be restored and managed carefully, the owners will eventually realize the importance of conservation and the results it could bring to the community. The restored structure would be a source of pride and give economic benefits through heritage tourism.

## VIII. Conclusion

The particular case study presented, "The Restoration of Gapan Old Casa Municipal: Precursor to the Proposed Conservation of Gapan City Old Section/Heritage Zone—a specific study on the problems and needs for local cultural heritage protection in the Philippines," identifies the common challenges in the conservation of heritage structures and explores feasible solutions to address particular needs at the micro-level. The involvement of the community and the motivation of the local government are positive signs of attainable heritage conservation in the area.

Glossary of terms

**bahay na bato** – sturdy house built with wood and stone
*bahay-kubo* – general term for native hut
*bale* – local term for Ifugao house
*cabecera* – capital i.e., city
*cal y canto* – lime and stone
*calado* – fretwork
*camarin/almacen* – store/provision house
*campana* – bell
*casa de escuela pia* – school house
*casa de gobierno* – government houses such as but not limited to:
*casa municipal/presidencia* – municipal building
*cuartel* – jail house
*casa moneda* – minting house
*casa tribunal* – court house
*casa hacienda* – country house
*casa iglesia* – church structure
*casa parroquial*/convento – house for priests
*cristianos* – baptized Christians
*madera* – wood
*materiales fuertes* – durable/strong materials
*plaza* – square/open space
*pueblo* – town
*torogan* – wooden house for the elite particularly in Mindanao
*volada* – eaves

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# Master Plan for Conservation and Development Projects of the Historic City of Ayutthaya

## Introduction

Archaeological work in Phra Nakorn Si Ayutthaya was started in 1908 by Phraya Boran Ratchatanin Samuhathesapiban, who as Acting Governor of the Old City District surveyed, excavated and improved landscape within the Ancient Palace, and preserved the area of the Historic City Island from private ownership. In 1976, the Fine Arts Department delineated an area within the City Island of 289.6 ha as the National Ancient Area, and in 1987 began to draft a Master Plan for Conservation and Development Projects for the Historic City of Ayutthaya and associated areas, before it was inscribed on the World Heritage List by UNESCO on 13 December 1991. After that, the National Ancient Area increased in 1997 from 289.6 ha to 480 ha to include the entire Island and beyond in all directions that appear to have archaeological remains.

From 1993, when the government cabinet approved in concept the Master Plan for the Historic City of Ayutthaya, the plan covered 6 years until it expired in 2001, and the Fine Arts Department now has an idea for revising it. The background of the idea is as follows.

- A decision at the 39th World Heritage Committee Meeting in 2016, Bonn, Germany, proposed that Thailand implement various initiatives concerning the conservation and development of the Historic City of Ayutthaya, focusing on capacity-building for human resources related to conservation and control of new buildings within the World Heritage area.
- Consideration began of lessons learned from implementing the former Master Plan.
- An assessment was conducted of implementation outcomes of the old Master Plan, in order to gather information useful to perfect the new Master Plan.
- A working committee consisting of experts was established, with the Fine Arts Department as the main coordinator.

The aim of the Revised Master Plan accordingly is to use multi-disciplinary approaches to study and draft the new Master Plan as an up-to-date guideline for the conservation and development of the Historic City of Ayutthaya. The main idea is to conserve and develop areas in the Historic City of

Ayutthaya for cultural tourism in line with the concept of creative economy and to enable local people to live non-intrusively with archaeological sites, under regulations and mutual agreements.

## Problems and Challenges from the Implementation of Old Master Plan

Even the old Master Plan has been followed until now with success for many of its action plans. But problems also occur with some sections during and after projects are carried out. An overview of the problems can be outlined as follows.

- Cooperation and coordination between different agencies
- Laws, enforcement and monitoring measures
- Incompatibility of guidelines of the old Master Plan with reality

The effects of these problems are seen as the encroachment into areas of archaeological sites by local houses, shops, markets and buildings, as the traffic jam issue, as polluted water and as construction built according to projects of the Old Master Plan but not used for the intended purposes.

Figure 1. Problem situations on Ayutthaya Island

## Action Plans of the Revised Master Plan

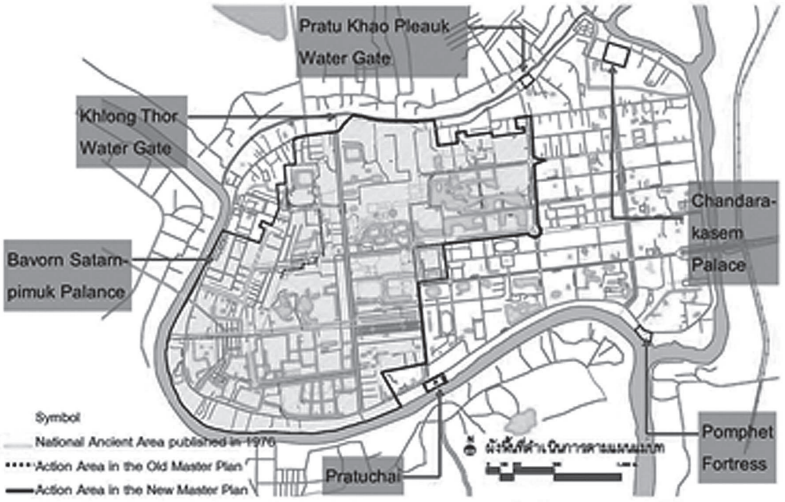


Figure 2. Action area

The Revised Master Plan proposes action in the same area while adding space on the western side as in Figure 2, with an implementation period of 10 years. The detailed action plans are as follows.

1. Plan on the Use of Lands and Laws. Determine how to use lands in the World Heritage site for conservation, development and tourism. The decisions stand on the historical and archaeological basis of the place. The aims of the legal aspects are construction control, methodologies in conservation and land development, and research on special laws. Also, land will be separated by function in relation to the heritage monument and will include (1) the most important monument sites, (2) Srinakarindra Public Park, (3) the Administration Office of the archaeological park, (4) academic and tourism services, (5) sites supporting transplantation, (6) sites as compensation for transplantation, (7) the old village, and (8) Siriyalai Palace.
2. Plan on the Archaeology and Conservation of Monuments. The main ideas are to (1) advance research on archaeology, histories and conservation of monument; (2) develop documentation for the 47 sites already researched and extend this to the other 134 sites that have not yet been studied; (3) revive the essence of a World Heritage city, appropriating the environment of new communities within the old city and maintaining the outstanding universal value of the site; and (4) revitalize the historic physical characteristics of the city for modern use.

Figure 3. Sites of the Archaeology and Conservation of Monuments plan

3. Plan on Developing Public Utilities and Infrastructure. The main ideas are to (1) enable better traffic for both land and water transportation (2) revive the ancient road and some canal systems for modern utilization and (3) upgrade public utilities: water treatment and disposal, electricity, water supply and telecommunication systems.
4. Plan on Developing and Improving Communities. The main ideas are to (1) relocate houses and built structures from important archaeological sites, especially those built on top of archaeological ruins, from routes of ancient roads or encroaching routes of ancient canals and areas designated for touristic development; and (2) evict encroaching commercial vendors to allow effective administration according to the plan and improvement of the landscape. The main targets are (1) the relocation and improvement of 435 built structures and 255 street vendors; (2) the improvement of public utilities, infrastructure, security, local environment, waste management system, and the

landscape in old and new communities; and (3) the revision of municipal regulations to control built structures.

5. Plan on Improving Regional Office and Human Resources. The main ideas are to (1) increase the number of skilled staff in both the management of the Historic Park and the conservation of heritage sites; (2) relocate accommodations for public officials and Historic Park staff, warehouses and maintenance workshops to suitable areas outside the area, in order to secure space for the expansion of Srinakarindra Public Park; and (3) increase work efficiency of the officials through capacity building.
6. Plan on Servicing Academic Progress, Tourism and Public Relations. The main ideas are to (1) upgrade academic services and touristic services within the Historic City area, as well as amplify the function of public relations and knowledge dissemination; and (2) as an urgent issue, upgrade management of the Town Hall to accommodate large numbers of arriving tourists, following up the former Master Plan. The main targets are area usage including parking space, academic service building, tourist service areas, areas for shops/vendors, banking and communication, cultural activity areas, tourism management area, and management including academic services (Part 1), tourist services (Part 2), general management (Part 3) and public relations (Part 4).
7. Plan on the Economy and Society. The main ideas are to (1) safeguard local cultures, promote jobs and increase incomes both directly and indirectly; (2) distribute and transmit knowledge on the economy through raising awareness of archaeological sites and artifacts as a means for creative craftsmanship; and (3) in terms of the social aspect, support activities that build knowledge, understanding and good attitudes towards sustainable living with heritage sites.
8. Plan on Measures to Reduce Disaster Risk. The main ideas are to (1) prevent and handle impacts from disasters; (2) review existing measures, especially those in the former Master Plan that have not been implemented, adapting them to the present situation and objectives of the Historic City; (3) establish a risk mitigation plan; (4) assign personnel responsible for different levels of disaster responses, in accordance to the National Plan for Disaster Prevention and Risk Reduction (2015); (5) provide for emergency preparedness before a disaster happens, and management during and after the disaster; and (6) plan highly effective evacuation plans in cases of disasters.

Figure 4. Perspective of Ayutthaya following the Revised Master Plan

## Management Scheme under the Revised Master Plan

The Management Scheme includes the coordinating committee, and sub-committees on management and academics. The coordinating committee is headed by the deputy prime minister who is responsible for its direction, organization, coordination of the sub-committees, approval of the action plan, improving the action plan and reviewing annual performance. The sub-committee on management is headed by Phra Nakorn Si, Ayutthaya Governor, and the Director of the 3rd Regional Office of Fine Arts works as secretary, who is appointed to manage land use and the practice of following the action plan, solving problems of the project and writing the operation plan. Also, the sub-committee on academics is headed by the director of Fine Arts Department, and experts of various institutions work on this sub-committee, and the director of 3rd Regional Office of Fine Arts works as secretary, appointed to execute the Master Plan regarding academic knowledge, setting standards of conservation work and writing the institutional operation plan.


Figure 5. Management diagram

## Expected Result

The operation of the eight action plans has been analyzed in light of the present problems. The plans were changed from the unsuccessful parts of the Old Master Plan and more details added to benefit the Historic City of Ayutthaya. Therefore, the system for operating the Historic City of Ayutthaya should be effective and sustainable, allowing the heritage site to be preserved along with local human coexistence. Presently, the Revised Master Plan of 2016 is being drafted and readied for presentation to the cabinet for approval. In addition, the image of Ayutthaya is the resurrection of heritage as visible and in operation.

Besides the Master Plan, the revival of traditional building craftsmanship has been raised and is being developed as well. Also, points of the action plans include a curriculum for professionals involved in conserving Thailand' cultural World Heritage properties, a comprehensive updating of the management plan and the establishment of local control mechanisms and international symposiums on the conservation of brick monuments at World Heritage Sites. Accordingly, conditions for the director, the monument and the workers are improved for the most effective conservation together.

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# Some difficulties of preservation and restoration of wooden structures in Hue's royal architectural monuments

With thousands of years of history, through many different dynasties, the wooden architectural monuments of Vietnam are distributed throughout the country with many different forms, styles and functions; especially noteworthy are Hue's royal architectural monuments, with over 500 large and small wooden structures.

Thua Thien Hue is a province in central Vietnam. It was the seat of the Nguyen Dynasty emperors and the national capital from 1802–1945. Today, Thua Thien Hue province is the center of many aspects of central Viet Nam such as culture, politics, health, education, and science.

The Hue Imperial Citadel has been recognized by UNESCO as a cultural World Heritage Site since 1993. Since then, five more items of heritage have been recognized by UNESCO: (1) Hue Monuments Complex (World Cultural Heritage Site, 2003), (2) Nha Nhac - Vietnam royal court music (Masterpiece of the Oral and Intangible Heritage of Humanity, 2003), (3) Woodblocks of the Nguyen Dynasty (World Documentary Heritage, 2009), (4) Nguyen Dynasty royal administrative documents (World Documentary Heritage, 2014), and (5) Royal Literature on Hue Royal Architecture (World Documentary Heritage, 2016).

The Hue Monuments Conservation Centre (hereinafter HMCC) was established on June 10, 1982. Directly under the control of Thua Thien Hue Province administratively and of National Cultural Heritage Department (Ministry of Culture, Sport and Tourism) professionally, the HMCC is responsible for managing, preserving, restoring and promoting values of Hue Monuments Complex/ Hue World Heritage property, the Nha Nhac (Hue Court Music)/representative of the Intangible Cultural Heritage of Humanity, as well as the historical landscape.

In recent times, the HMCC in Hue Imperial City has registered many achievements in the preservation and restoration of wooden architectural monuments. According to UNESCO experts and international organizations, Hue Imperial City is a bright spot in heritage preservation today.

However, the preservation and restoration of wooden architectural monuments in the world in general and in Viet Nam in particular is encountering many difficulties due to a variety of reasons.

The main difficulties in the preservation and restoration of wooden structures in Hue's royal architectural monuments are summarized below.

## 1. Characteristics of wood materials and factors affecting them

Thua Thien Hue province is located in central Vietnam, in the region of the tropical monsoon climate, which is very hot in summer and has heavy rain in winter. Thua Thien Hue Province suffers from more than 10 hurricanes and tropical depressions each year, accompanied by heavy rains and floods.

For over 200 years of their existence, with the effect of time, climate, war, etc., the wooden structures of Hue's royal monuments have degraded, and have suffered severe damage.

Fig. 1. Ngọ Môn Gate – Đại Nội Hue (HMCC, 1999)

Fig. 2. Ngọ Môn gate – Đại Nội Hue (HMCC, 1968)

Fig. 3. Nghinh Luong Dinh – Hue Imperial City (HMCC, 2003)

Fig. 4. Nghinh Luong Dinh – Hue Imperial City (VNP, 1999)

The main reason is the vulnerability of the material to deformation and its degradation under varying environmental and climatic conditions, due to fluctuations in moisture, light, fungus, insects, fire, etc

With large differences in temperature and moisture between seasons, especially with the negative effects of global climate change, the rate of degradation of wooden materials as well as wooden structures in the Hue royal monuments is growing faster and more serious.

Most of the wooden constructions built before 1945 were severely damaged or degraded, and are at risk of collapsing and disappearing at any time. Therefore, the need for restoration and preservation of wooden structures in Hue is not just necessary but truly urgent. In order to meet this demand, it will require enormous resources, huge expenses over a long time. This is a big challenge for a developing country like Vietnam.

Besides, with the characteristics of a tropical country, mold and insects (termites) are the main harmful factors affecting the rapid degradation of wooden structures in Hue.

Fig. 5. The end of a degraded pillar (HMCC, 2014)

Fig. 6. Beams suffering from termites (HMCC, 2014)

Fig. 7. Deformed roof system (HMCC, 2014)

Fig. 8. Deformed roof system (HMCC, 2014)

Today, there are two main types of wood of Group II (according to the Vietnamese standard), which are *kiền kiền* (*Hopea pierrei*) and lim (*Erythrophleum fordii*), used for the work of preserving and restoring the timber structures of the Hue royal architectural monuments. Up to the present, there have been no detailed studies on these two species of wood which are used for restoring the monuments.

In addition, the depletion of forest resources as well as measures to limit forest exploitation present difficulties in finding alternative materials.

## 2. Traditional wooden structure preservation techniques

One of the major difficulties is to determine the bearing capacity of wooden structures after years of withstanding damage and being patched.

In the process of monument restoration, ensuring the authenticity, accuracy, safety and durability are mandatory rules, which have been formalized in the legal documents of Vietnam and the international conventions. The first objective of preservation is to preserve the authenticity of history and the integrity of the cultural heritage, which means not only sustaining the heritage structure but also preserving traditional techniques. All proposed interventions should prioritize the use of traditional technical methods, making full use of all original materials, particularly for wooden structures.

Wooden structures being restored may be partially or wholly damaged; damaged parts are to be replaced by new wooden portions integrated into the older portion by different types of joining, through the use of carpentry techniques such as mortise and tenon, or bolts, glue, etc.

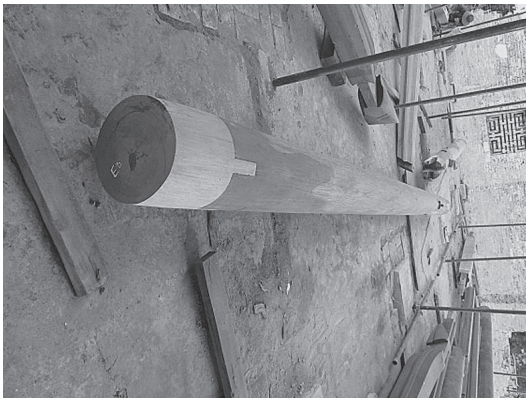

Fig. 9. The replaced end of a pillar (HMCC, 2014)

Fig. 10. A restored beam (HMCC, 2014)

The formation of this new link both reduces the bearing strength of the coupled component and changes the load calculation scheme compared to the original construction.

How can the strength of these new links be calculated? How can we assess their ability to meet the requirements of the forces? These are difficult problems that we cannot solve at present.

In the work of restoration and conservation of the wooden architectural monuments in Vietnam today, restoration and conservation are mainly based on the experience of longtime artisans. Most of these artisans are elderly but lack successors in younger generations, leading to the risk of losing their traditional work skills.

There are no technical instructions on structural calculation in the restoration of traditional wooden structures. There is no theoretical system of calculation for Vietnamese wooden structures, especially the structures of traditional wooden architecture. The system of standards is incomplete. These are also major obstacles in this work.

In addition, many extant structures have suffered abuse from the use of modern construction techniques and the severe shortage of skills, so that their engineering designs and traditional construction have been disfigured, causing loss of value for these wooden architectural monuments.

### 3. Traditional paint restoration solutions

Traditional paints in Vietnam include conventional paints, lacquer, gold lacquer, and silver lacquer. The restoring of traditional paint solutions poses a really difficult problem. The process of making and restoring traditional paints depends on many factors: the quality of crude paints (water and oil content), the quality and dosage of additives, humidity of the environment, painting techniques, etc.

At present, we still use traditional methods to process the paints. Crude paints after being harvested from the tree (collected in Tam Nong, Phu Tho, Vietnam) will be preliminarily processed and fabricated in various stages to obtain finished paint. However, in this method, the volume of finished products is low, the quality is uneven, and the loss is very large (about 30%) leading to high cost, and difficulty in execution.

Figs. 11–12. Traditional method of processing paints (HMCC, 2014)

The traditional painting process is too dependent on the humidity of the environment. Although there are many measures to compensate, such as the choice of the construction time in the spring, or at night, the use of spray steam to humidify, setting the air-conditioning and controlling the temperature, etc., still the traditional painting process encounters many difficulties, especially with large structures (the main framework, the roof system, the details of lacquer painting, etc.).

Fig. 13. Gold lacquer (HMCC, 2014)

Fig. 14. Lacquer painting (HMCC, 2014)

In past years, with the support of the Vietnamese government together with individuals from national and international organizations, especially those concerned with improving knowledge and standards, the Hue Monuments Conservation Center has made outstanding achievements. Most of the heritage objects have been preserved or maintained by various methods in order to counter decay or collapse. Many structures and their infrastructure have been restored or rebuilt. Approximately 100 or more monuments and structures in different states of preservation have been fully and partly restored.

To conduct heritage preservation and restoration efficiently, many kinds of traditional handicrafts essential to such restoration have been revived, such as gilding, painting, plastering, porcelain mosaic, carpentry, manufacture of enameled bronze items, and traditional bronze casting. Traditional handicraft masters have been supported to preserve and develop their skills in accordance with the needs and objectives of preservation and to achieve practical effects and outcomes.

Hue heritage preservation will not stop with these achievements. Dr. Richard Engelhardt, UNESCO Regional Advisor for Culture in Asia and the Pacific, has affirmed that “Hue will be eternally preserved.”

**Viet Nam**
**Tran Thanh Hoang Phuc**
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# Challenges of cultural heritage and conservation in Hoi An Ancient Town

## I. Introduction

Hoi An Ancient Town is well-known as one of the most well-conserved traditional trading ports in Southeast Asia. Constructed from the 17th to 19th centuries along the river (Figure 1), most of the houses have been conserved until now for their historical, heritage and architecture values. Besides these tangible values, the diverse intangible values of the people living in Hoi An such as religion, folk art, and traditional festivals have been continuously kept and promoted. Hoi An becomes a living museum of architectural heritage and lifestyle. In recognition of its outstanding significance, the Hoi An Ancient Town was inscribed on the list of World Heritage in 1999.

Figure 1. Aerial view of Hoi An Ancient Town with conserved shophouses built along the river in the 17th–19th centuries (photo by Vu Phan)

According to the statistics of the Hoi An Center for Cultural Heritage Management and Preservation, Hoi An has a total of 1,432 heritage buildings and an infrastructure consisting of houses, assembly halls, markets, bridge, tombs and wells which have been conserved.

Over the years, the conservation activities in Hoi An have always been overseen by the local government with generous support from international technical experts, i.e., Japanese specialists on the conservation of heritage buildings, especially wooden structures. The conservation work has been highly recognised by both local and international organizations (Figure 2).

Figure 2. Conservation work on a wooden structure, Dang family chapel in Hoi An (photo by the author)

However, the conservation work in Hoi An is still facing many challenges due to several reasons such as the unavoidable downgrading of heritage buildings due to the impacts of environment and the pressure from social and economic development for the needs of modern life. Several wooden structures of the conserved buildings have been gradually downgraded.

## II. Challenges in conservation work

### 1. Lack of alternative materials for conservation

#### a. In order to preserve the structure

The original structure and materials with heritage values are supposed to be preserved. However, the structure, especially wooden elements, may easily rot from the impact of the environment and insects and no longer be structurally sound. In developed countries like Japan, new chemical substances have been developed that can easily be applied to wooden surfaces, not only to enhance the structure's durability but also to protect the materials from the impact of the environment and insects.

In Vietnam, particularly in Hoi An, the research, development and deployment of conservation technologies have not been well explored, although based on local customary practice, the use of certain chemical substances for preservation is commonly adopted. However, the origins of these chemicals are not properly monitored and recorded. There is also no scientific evidence for their effectiveness, for their adaption to the local weather as well as for any side effects on human being and the environment.

Without chemical treatments, the original structure and materials will easily rot. Buildings with a degraded structure might not be safe for the existing residents to occupy. In some critical cases, the structure needs to be immediately repaired or replaced. If repair or replacement happens frequently without proper conservation solutions and controls, the original details and heritage value of the building may be gradually lost over the time.

### b. In order to replace the structure

To replace a degraded structure, similar material is difficult to find or make. For example, for a structure made from a valuable wood, finding a replacement is impossible as harvesting that type of wood from the forest is prohibited. Bricks and tiles made by the traditional process, i.e., manually fired causing air pollution, are hard to find on the market. There is also a shortage in the supply of clay due to the limitations of local resources.

Another example is lime mortar. Traditionally, this material is made from sand, lime and an adhesive extracted from plants such as cactus or molasses. Nevertheless, this material is not convenient and economical to make nowadays. Instead, cement mortar is commonly used. Only a small amount of lime mortar is used to tile the yin-yang tile roof.

Even the coatings, similar to those made with traditional techniques, which are used to paint, cover and preserve wooden structures are rarely produced. Hence, the renovation and restoration of conserved buildings have to rely on unsuitable materials in terms of quality and categories. For instance, due to a shortage in the supply of local materials, peckwood (*Hopea pierrei*) is often imported from other regions and overseas. Sometimes, without the proper quality control at the exporting sources, the materials are delivered with poor quality. Also, due to differences between regions, alternative materials may not perform well in the local climate.

## 2. Investment and management

In Vietnam, the investment and management procedures for conservation buildings is still classified under the category of national basic construction in which the research, development and deployment of conservation are not prioritized. Compared to other basic infrastructure, budgets for heritage conservation and renovation are hard to justify. In addition, the tasks of estimating the scope of work, issuing orders for variations, and manufacturing and purchasing conservation-related materials and equipment have faced the same problem.

In Hoi An, more than 90% of the conserved buildings are privately owned. The conservation work is conducted mainly by the owners. Hence, it is difficult to ensure that renovation work follows local conservation guidelines. By right, the government would not allow the renovation to commence if the proposed work does not comply with conservation standards. In practice, however, due to the safety concerns of the existing residents, the downgraded structure has to be immediately repaired or replaced. As such, proper conservation solutions or techniques are often compromised as it takes time for the problems to be studied and solutions properly implemented.

## 3. Financing

Financing for conservation work is a great challenge for the local government and the people. The cost of conserving a heritage building in compliance with local conservation guidelines requires as much as three or four times the budget to build a new modern house on the same site. Therefore, the owners are reluctant to spend that much money due to the high cost of the investment and the limited usable

space of the heritage buildings, although they can seek subsidies from the local government for the conservation and renovation work, and depending on the heritage value of their conserved property the subsidized amount can range from 40% to 70% of the total renovation cost.

Over the years, the Hoi An government has continually tried to balance the financing needs by seeking investments from the other regional and international organizations, to continue to support heritage conservation activities.

### 4. Manpower supply

Construction workers, technicians and managing officers who are well trained in heritage conservation work are limited. Young people are not interested in either conducting conservation work or learning the traditional crafts. They are reluctant to be carpenters, yin-yang tile construction workers and so on. Therefore, the tasks of finding and training the next generation of local experts are challenging.

### 5. Other negative impacts

#### a. Impact of the environment

The humid environment provides good living conditions for termites and moulds which potentially shorten the life-span of wooden structures (Figure 3). Although anti-termite procedures are conducted during restoration work, termites still spread underground to other buildings.

Figure 3. Traditional decorative woodwork decayed due to termite inflection (photo by the author)

Due to climate change, recent massive discharges from the nearby hydropower dams and severe typhoons, uncontrolled flooding has become more frequent. Many areas in Hoi An Ancient Town have low platform levels which are occasionally affected (Figure 4). Natural disasters not only threaten people's lives but also the stability of the buildings and infrastructure in Hoi An.

Figure 4. Conserved shophouses in Hoi An Town are occasionally flooded (photo by Hong Viet)

### b. Impact of human activities

Due to the high density and flammable materials of heritage buildings as wooden structures, Hoi An Ancient Town has a very high fire risk. Daily activities in the heritage buildings such as cooking, worshiping and pursuing trades are fire hazards. Unfortunately, these activities are not controlled under local regulations.

In addition, the pressure of tourism development has directly impacted building conservation efforts. The limited areas for living are now serve doubly for business activities. To maximize the profit of business activities, illegal expansions of conserved buildings are beyond the control and enforcement of the local government. These seriously affect the heritage value of the buildings.

Property transactions of heritage buildings have been actively taking place. The value of common properties in the region and especially heritage buildings in Hoi An has been increasing with the development of heritage tourism. Changes in homeownership lead to changes in the original usages of the buildings and traditional lifestyles. As a result, the intangible heritage values fade over time.

## III. Moving forward

Faced with the above-mentioned challenges, Hoi An has unfortunately only managed to achieve part of its cultural and heritage vision and mission. Annually, based on the officially approved licenses, nearly 200 private and public owned heritage buildings are being conserved and renovated. Without further improvements in the processes and quality of local heritage conservation work, more and more conserved buildings will lose their heritage and culture value.

To overcome the challenges, it is suggested to further improve the conservation processes as follows.

a. Ensure sufficient supply of materials for conservation work, e.g., by carrying out advanced tree planting.

b. Tackle the shortage of funding for conservation work with a top-down approach or by seeking help from international organizations.
c. Ensure a high quality of conservation work, especially with wooden structures. The goal is to match with the quality of work of Japan and other developed countries.
d. Have human resource promotion policies for the workforce, e.g., by proposing attractive employment and retirement schemes for traditional artisans
e. Sponsor young people to study and secure jobs in conservation fields.

In summing up, under the current conditions, we are trying to conserve the authenticity of Hoi An's World Heritage Site as best as we can, in terms of both the buildings themselves, and the relationship of the buildings to the customs and daily lives of their inhabitants.

# III. Final Reports by Participants




At Nagoya Castle

**Bangladesh**
**Sabrina Rahman**

# A Proposal of Policy Initiatives towards Authenticity Restoration of Heritage Structures

## Background

The Asia-Pacific Cultural Centre for UNESCO (ACCU), in cooperation with ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property) and The Agency for Cultural Affairs, Japan hosted a month-long training course from 29 August 2017 to 28 September 2017 for the support of professionals and academicians working on cultural heritage protection and restoration in different countries. Focusing on 'Preservation and Restoration of Wooden Structures', the training passed on to the participants knowledge of proper investigation, analysis and preservation of wooden heritage structures. The training encompassed site visits, in-field practice, expert demonstrations and lectures, and finally a group discussion among the trainers and the participants. During the discussion, the issue of how to maintain authenticity while restoration is carried out on any heritage building or site became a matter of discord. Different initiatives have been taken so far by the respective countries to preserve the authenticity of any structure during restoration. In this report, the author proposes the most plausible practices suitable for Bangladesh in this regard.

## Introduction: Authenticity dilemma

Measuring the 'authenticity' of any heritage structure after restoration cannot be evaluated merely by the percentage of original material retained. Eventually, since there are changes in design compared to the original, it cannot be said that the authenticity has been compromised. Before going too deep into the matter, let us see how the restoration approaches of different times in history approached the authenticity issue.

In the 19th century, the definition of restoration by Eugène Emmanuel Viollet-le-Duc, the most prominent European architect-restorer, highly influenced the principles of restoration. He described restoration as "To restore an edifice means neither to maintain it, nor to repair it, nor to rebuild it; it means to reestablish it in a finished state, which may in fact have never existed at any given time". This approach to restoration was rather a threat to conserving 'authenticity', since heritage once destroyed can never be regained; this approach was rejected by the restorers of the 20th century. The Athens Charter (1931) and the Venice Charter (1964) are the most important international documents on heritage protection. The Venice Charter says, 'It is our duty to hand them (historic monuments) on in the full richness of their authenticity'. Though this charter does not define authenticity directly, it gives the basis of restoring authenticity. Later the Nara Document identified that authenticity can be of "form and design, materials and substance, use and function, traditions and techniques, location and setting, spirit and feeling, and other internal and external factors".

The Nara document could address the authenticity issue in the truest sense of the term as it defined authenticity as an amalgamation of several aspects. This approach towards restoring authenticity is now literally being practiced in Japan. Keeping the old materials as they are does not define authenticity. Rather, restoring the building or site with the same materials, replacing the old parts that have deteriorated, and using the same techniques and craftsmanship honoring the motives of usage and belief of the community is now practiced. It has been noticed in many cases of restoration in Japan that visible extra reinforcement (extra beams added to the columns at the South Main Gate or poles added to the main hall of Horyu-ji Temple) was implied to make the structure stable, but now the restoration experts want to use hidden reinforcements not making visible changes to the original members (i.e., hidden cantilever beams used for the central gate of Horyu-ji Temple, replacing the visible poles added during a previous restoration of the early 20th century to sustain the eaves). Thus, policies are adjusted to maintain the authenticity for different restoration projects. Again, the foundations of many structures have been reconstructed with concrete, but the original foundation was kept protected beneath the new one after the commencement of proper archeological excavation and documentation. Sometimes due to budget and material constraints the size of the structure is reduced during restoration (i.e., Main Hall of Todai-ji Temple), yet the original foundation of the building is restored properly.
Picture: Painting restoration at Kiyomizu-dera Temple, Kyoto


Picture: Painting restoration at Kiyomizu-dera Temple, Kyoto

In the case of painting restoration, total repainting is now being discouraged in Japan by the experts. At Nagoya Castle, painting is being replicated with traditional colours and techniques. In the case of Zenrin-ji Temple, Kyoto, repainting was done for the Amitabha Hall by keeping the colour of one portion of the hall in its original state to maintain the authenticity of the period. In the case of Kiyomizu-dera Temple, the visible exterior has been repainted; the interior has been kept as it is. Even in some places where the condition of painting is good, the exterior has also been kept untouched. Experts are of the opinion that if the owners of the temples express their desire to repaint the total structure, it is the duty of the experts to convince them to restore the painting as it is. The experts should explain the historic value of the painting to the owners to restore the authenticity. Various prefectures in Japan have different policies and views towards preserving authenticity (i.e., some prefectures prefer to repaint only the visible parts, with the other portions keeping the original, representing the particular period, techniques and historic values).

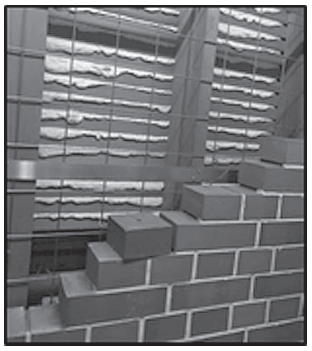
At Kiyomizu-dera Temple, the roofing of the Main Hall is being done with cypress bark following the traditional method. For smaller interventions, it is hardly possible to restore it to its original material state, but when a restoration is done after 100 or 120 years, the experts try to replace all the elements to their original state (i.e., for smaller interventions the roofs are kept with roof tiles done in the previous restoration replacing the cypress bark roofing, but they will again be replaced by cypress bark while large-scale intervention is performed). In order to sustain authenticity, museums

like Takenaka Carpentry Tools Museum play a wonderful role by researching and preserving traditional carpentry tools and knowledge on how they are used for future generations.

Picture: Roofing with cypress bark

Picture: Takenaka Carpentry Tools Museum

Again, the aspect of safety cannot be compromised during restoration. Historic buildings were constructed according to the then building codes. Those buildings have lost strength with time. Moreover, community safety requirements have increased. So, safety cannot be overlooked for authenticity. Both should be attended to with an economical approach. During the restoration of the cultural heritage buildings in Kobe City after the earthquake of 1995, safety was given priority together with authenticity; i.e., construction of brick walls with steel frames inside and bricks attached to the frame by steel wires, and broken chimneys made with steel frame reinforcement in the case of Moegi House and Weathercock House. British craftsmen were invited to repair the damaged foreign residences. Repair of the temples and shrines were done by competent traditional carpenters.



Picture: Wall reinforcement in Weathercock House

**Policy Review**

In Japan, obtaining permission and approval of designs from the central or local (prefecture/city/village) government (according to the recognition of the structure) under all related laws in order to accomplish any restoration process is the prime approach towards authentic restoration. The provision of subsidies (Article 35 of Law for the Protection of Cultural Property, 1950) for the preservation of heritage structures or preservation districts (i.e., Gasso-style houses in Shirakawa-go receive 90% subsidy from the central and prefectural governments) is also considered to be an admirable approach in this regard. The people of Shirakawa Village themselves took the initiative to preserve the district and the government helped them accordingly. Community involvement is playing the most vital role here in sustaining the authenticity of this village.

Picture: Gasso-style houses in Shirakawa Village

Article 15 of the Law on the Protection of Historical and Cultural Properties, 2004 of Afghanistan talks about restoring the authentic features of sacred places or historic buildings. Section 16 of the National Cultural Heritage Act of Philippines emphasizes the documentation of traditional and contemporary arts and crafts, including their processes and makers, and sustaining the sources of their raw materials, which is an interesting approach towards maintaining authenticity.

## Proposal and Discussion

In Japan, the practices involved in restoration are very comprehensive and unique. Since Bangladesh has no such policy still today, there is ample scope to introduce such practices while formulating a policy. The following proposals can be suggested:

1. The Heritage Section under the Ministry of Cultural Affairs should be strengthened with professionals comprising restoration architects, archeologists, historians and sociologists.
2. Traditional techniques should be facilitated by training new apprentices to pass on the techniques from generation to generation.
3. Proper documentation (photographs, sketches, video, written documents, maps, etc.) of the structures and materials, history, values and spirit of the structure should be maintained.
4. Competent craftsman (traditional and local) should be involved in restoration.
5. Management tools and techniques should be incorporated to face the challenges of disaster, both natural and manmade.
6. Authenticity should be attended to with due care while not compromising safety and climate issues through continuous monitoring and survey.
7. The people of local communities should be sensitized to historical values and spirit so that they themselves become interested in maintaining the authenticity of heritage properties.

## Acknowledgments

The author is very much delighted and honoured to express her heartfelt thanks to ACCU, ICCROM and the Agency of Cultural Affairs, Japan for arranging such prestigious and in-depth training. The author offers her humble gratitude to the Secretary, Ministry of Cultural Affairs, Bangladesh for granting me the rare opportunity to enlighten myself with thorough knowledge on Cultural Heritage Protection and Restoration. Last but not least, the author pays warm regards to all the distinguished lecturers for sharing their knowledge and expertise and developing an urge towards authentic restoration of cultural heritage.

## Bhutan

**Jamyang Singye Namgyel**

### Introduction

First of all, I would like to convey my sincere gratitude and appreciation to ACCU Nara Office for organizing this particular training course on "Preservation and Restoration of Wooden Structures". I can only commend the sheer dedication and systematic planning of the organizers in providing the maximum learning experience for the participants in such a short period. I would also like to thank all the funding and support agencies such as the Agency for Cultural Affairs, the Nara prefectural and city governments, ICCROM, TNRICP and NNRICP, without which this wouldn't have been possible. This yearly training course has immensely benefited so many of my senior colleagues in my country. As for me, every single day of these past 30 days with my fellow participants, lecturers and the organizers has been an absolute joy to experience and enabled us to learn from each other.

While we were observing and listening to the experts during the training, I always contemplated the feasibility of adopting certain techniques and approaches in my own country. I realized that despite some differences in the construction typology of our heritage structures, many of the aspects were very similar, particularly in the context of the species of timber used, the challenges in protecting and sustaining the cultural properties/sites, risk management, etc. While I am aware that it would be a bit far-fetched for most of the interventions and approaches to be implemented in a country like Bhutan, with limited financial and human resources at this point in time, I learnt many other things that I can take back and share with my colleagues.

### Conservation approach and principles

By attending this training, I think the most important thing that I have achieved is that my thinking and approach towards my work has broadened immensely. Hearing the experiences and lessons learnt by the international community, especially regarding the approach and principles of conservation, I now feel that Bhutan has approached conservation tactfully in putting the living cultural traditions and beliefs of the people at the forefront rather than to only focus on conservation of the material and the antique aesthetics of our cultural properties. However, there are many things that Bhutan can learn and implement in practical conservation works in order to ensure that our cultural heritage is being protected and passed down to the next generation, just as it has been passed down to us. Japan has a long history of conservation, and there are many things that a country like Bhutan, which has just embarked on conservation, can learn and take from Japan. We have been introduced to the legal system, the various governing bodies and procedures adopted for the protection of cultural heritage in Japan, which has been tried and tested for more than a century and has also contributed immensely towards protection and sustenance of cultural heritage worldwide. As Bhutan is also working towards putting in place a legal framework for the protection of cultural heritage, I am confident that I can now contribute towards achieving it. Moreover, I believe that the privatization of heritage conservation and restoration works is a big step towards making heritage available to the public, not only in terms of its

usage but also towards involving the general public in its protection. Although Bhutan has a long way to go towards achieving this, the framework adopted by the Japanese involving certified conservation professionals and agencies for technical backstopping and monitoring to ensure that the correct conservation methods are implemented is a very good example, in my personal opinion.

During the presentation of my country report, I emphasized the fact that we need to do more to conserve our architectural diversity. I believe that establishing a legal framework and getting the cultural heritage bill endorsed would go a long way to tackling this issue, but until this is done, we have to work in other ways to tackle this issue. Upon hearing some of the experiences of the experts who have worked in unconventional ways under challenging circumstances and how they have managed to overcome problems by making personal sacrifices, it gives me hope that we can also overcome our challenges if we are determined to overcome them. More importantly, this training program has offered me a platform to share my issues and challenges, and although we could only debate and share our personal opinions and probable solutions this time, I am optimistic and hopeful that this network of conservation professionals will help me immensely in my future work.

All of the experts that I listened to had a very important common message. We always talk about authenticity but what we need to understand is that authenticity can apply to many other things rather than just the material of our cultural properties. Authenticity could also apply to a construction technique or an annual community activity. It is important for us to understand what really matters to the people while planning for any conservation activity. For instance, at Todai-ji Temple, members of the public including tourists could enter the Great Buddha Hall with their shoes on and could take photographs freely, while the same was restricted at Hokke-do. There were also stalls and souvenir shops in the Great Buddha Hall. I got the feeling that Hokke-do was a more spiritual place and had more power over me than the Great Buddha Hall. This is an example of how minor rules and regulations have an impact on how people sense a place. Although both these structures are national treasures and both temples are spiritually significant, the justification of this difference in the regulations was that the Great Buddha Hall was more accessible to the public due to its location and the number of visitors was greater. The management system of the Todai-ji Temple complex adopted by the owners is such that they have identified certain temples for tourists and certain temples for worship depending on the location and potential of the temples. A similar type of management system perhaps would not work for Bhutan considering the important spiritual value associated with certain temples for Bhutanese. Therefore, I feel it is very important to understand the context and other associated values while formulating a management plan for such cultural properties which differs from country to country. Simple legislation would not suffice to oversee these complexities, hence it is also our responsibility to advise the stakeholders or owners on how to manage our cultural properties so that none of these associated intangible values are overlooked. It is also very important to protect and sustain the sense of place.

Figure 1: The Great Buddha Hall of Todai-ji Temple complex.

Figure 2: Hokke-do is another temple of the complex located just above the Great Buddha Hall.

The concept of the cultural landscape has become very popular in the last few decades all over the world. Similarly, Bhutan has also embarked on a journey to protect our cultural landscapes. The draft cultural heritage bill of Bhutan states that "Bhutan as a whole is a unique cultural landscape" and this endeavors to bring together government agencies such as the Ministry of Works and Human Settlements, Tourism Council, Ministry of Agriculture and Forests, etc. to work together towards protecting and sustaining the whole geographical area of Bhutan. The demand for improved infrastructure due to increasing population and issues like rural-urban migration has significantly destroyed our landscapes, and the Royal Government of Bhutan is still working to improve our development trends. Our visits to some of the designated preservation districts and designated groups of traditional houses in Takayama City and Ogimachi Village was an opportunity for me to understand the management systems of such designated cultural properties. It was interesting to learn about the challenges and the measures undertaken by the city governments to ensure the survival and sustenance of these important cultural properties. The incentive scheme whereby the city government funds 80% of the restoration works for only the structural components and front façade is very intelligent and provides leverage to encourage people to retain the structures in their original form.

**Practical training**

Apart from understanding the larger general conservation principles and management systems, I also gained a lot of practical knowledge relating to the investigation/assessment of cultural properties being adopted by Japanese experts. For instance, the use of a simple pendulum to check the movement of floors or beams, which was being used at Weathercock House in Kobe City, and checking the condition of a timber component or tiles by its sound were simple and unconventional yet effective ways to check the condition of the cultural properties. These small pieces of knowledge are applicable everywhere and I am glad to have acquired these amongst many other things.

Conservation work demands technical expertise and precision. The three-day practical program at Tanaka Family Residence where we documented the Tanaka house was a very productive session for me. Being an architect, I have documented many structures in my country but I was very impressed

and delighted to have learnt new methods of documentation that are more precise and accurate. The method to determine the correct heights and levels of the members in reference to a straight horizontal line was new knowledge for me and certainly something that I can start to implement in my own country. The documentation of paintings and planning for painting restoration at Jibutsu-do, Todai-ji Temple was also a new experience for me.

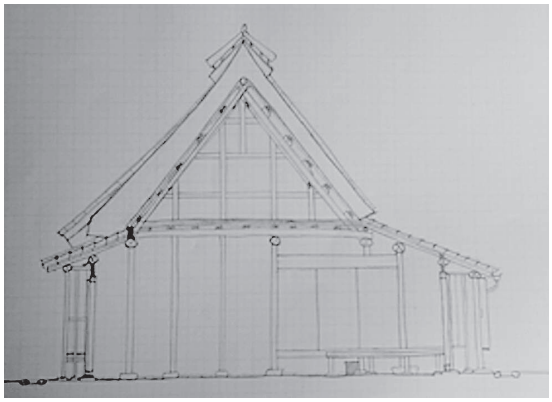


Figure 3: Documentation of the Tanaka Family Residence

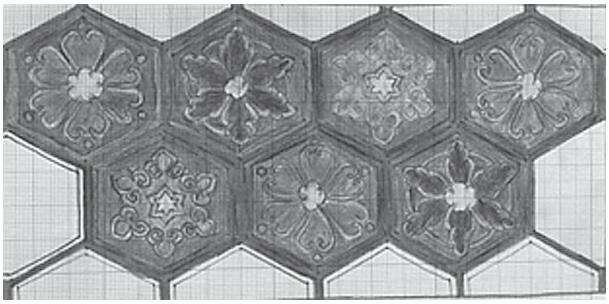


Figure 4: Documentation and survey of painted surfaces at Jibuto-do, Todai-ji Temple.

One of my favorite topics of this training was the lecture given by Dr. Rachael EGERTON on writing "Statements of Significance" and values-led conservation. The whole process of writing the statement of significance of a cultural property is a judicious way to identify and recognize varying values; it is also a great way of communicating these values to the stakeholders and the general public, which in itself is a huge part of the conservation effort. The two-day program working in groups to write the statement of significance of Kofuku-ji Temple was enriching for me as we got the opportunity to debate and discuss how each one of us viewed the values associated with it. Personally, I am grateful that this topic was included in our training program since immediately upon my return to Bhutan, I have to go and work on writing a statement of significance and preparing a management plan for "Gangtey village," which is a small picturesque village in Bhutan.

**Conservation in the Asia-Pacific Region**

During the formal and informal discussions that we had, I learnt a lot about the cultural heritage, issues/challenges, conservation and management works that my friends have been carrying out in their respective countries. The works of my fellow participants are unique and special in their own ways and depict the diversity of cultural heritage in the Asia-Pacific region. It was interesting to learn about the different indigenous vernacular structures and the conservation techniques and traditional knowledge systems of various countries. The Maori houses of New Zealand paying homage to their ancestors, Ruma Gadang houses of Indonesia, Bangaina-bado houses of the Philippines, and the Islamic and Buddhist monuments of Pakistan, Afghanistan and India are all examples of the rich cultural diversity in the Asia-Pacific region. It was also interesting to learn of the use of lacquer as a wood polish or preservative and the use of tobacco for fighting against termite attacks, just to name a few. I have learnt a lot and I hope that my friends have equally learnt from me, which reinforces the need to share

more about our cultural heritage. I believe that sharing knowledge within this network of conservation professionals will help us immensely in our future work.

Acknowledgement and Conclusion

Last but not least, I am immensely grateful for this opportunity to learn and train along with 14 other beautiful friends who share the same love and passion about cultural heritage. I had so much fun experiencing beautiful Nara and Japan with them and the organizers. I would like to thank Director Nishimura Yasushi, Mr. Nakai, Wakiya-san, Suzuki-san and all the other ACCU Nara team members for your consideration and hard work to make this possible for us. I would also like to thank Hata-san for her judicious translations, Sari-san, Nakamura-san and Claudia-san for assisting us in every possible way to make our stay a wonderful one. Their work ethic, dedication towards their responsibilities and the civic values of all Japanese is something that I will take back with me. Thank you all so much. I wish everyone the best in your work and in your daily lives, until we meet again.

**Thank you and Tashi Delek.**

**Cambodia**
**Sovandaroath Ro**

# TRAINING COURSE ON CULTURAL HERITAGE PROTECTION IN THE ASIA-PACIFIC REGION 2017

# PRESERVATION AND RESTORATION OF WOODEN STRUCTURES 29 August - 28 September 2017

## INTRODUCTION

This report focuses on the training in cultural properties protection and the restoration and conservation of wooden structures which was organized by the Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO (ACCU), from 29 August to 28 September 2017 in Nara, Japan. There were 15 participants from 14 countries, namely Afghanistan, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, South Korea, Nepal, New Zealand, Pakistan, Philippines, Thailand and Vietnam.

During the training course I learned a lot about the classification of cultural properties, management methods for the protection of cultural properties, which promote strong links between the national government, the local community, and the population as a whole, the problems affecting cultural properties, joint techniques for wooden structures, the restoration and conservation of wooden structures and the practical work of documentation.

Moreover, this training course provided the participants with the chance to enjoy special visits to World Heritage sites, not only in Nara Prefecture but also some other prefectures such as Gifu (Takayama City), Aichi (Nagoya City), Kyoto (Kyoto City), Hyogo (Kobe City), etc. The participants also had a chance to visit a working site for the restoration and conservation of a wooden temple, which would normally be a prohibited area for tourists.

## CULTURAL PROPERTIES IN JAPAN

During the lectures I noticed that Japan's cultural properties are divided into different categories which are administered by the Japanese government's Agency for Cultural Affairs. Those cultural properties are:

a. Tangible cultural properties
b. Intangible cultural properties
c. Folk cultural properties
d. Monuments
e. Cultural landscapes
f. Groups of historical buildings.

All these cultural properties are protected under national law with a designation system taking into account the unique and special characteristics of each cultural property. Designated cultural properties gain much more support and protection (80% subsidy) for restoration and conservation work by maintaining traditional techniques and the authenticity of the cultural properties. Besides the designation system, there also exists a registration system which guarantees a lower level of protection and support.

I am very interested in this excellent protection system as it benefits not only the local people at each site but also the whole nation and can maintain a property's identity for the next generation to understand its history and the origin. Moreover, I am also very interested in cultural landscapes and groups of historical buildings forming cultural properties; it is a valuable new idea for me to start thinking about this kind of cultural category, as Cambodia also has many cultural properties of this kind which are not yet well protected.

## DISASTER PREVENTION MANAGEMENT FOR CULTURAL PROPERTIES IN JAPAN

Japan is a country which experiences many disasters that can easily damage cultural heritage, such as typhoons, earthquakes, fire, lightning, etc.

Japanese architect conservators who are responsible for the restoration and reconstruction of cultural heritage buildings have very good professional skills to create really fantastic wooden structures, but along with additional modern techniques and materials, and base isolation systems against earthquakes, that is why there is not much damage due to this kind of disaster nowadays. The greatest problem to timber buildings nowadays is fire. For this reason, automatic fire alarm systems, initial firefighting equipment and lightning preventive devices have been installed everywhere at World Heritage sites and also in the designated preservation areas.

During the training I understood that even Japan faces a lot of those kinds of disasters but they are ready for fighting it as they have many experts in creating really effective systems for protecting cultural properties such as by anti-seismic reinforcement, fire resistance, fire fighting systems, devices for preventing lightning, etc. So for cultural protection we not only think about restoration and reconstruction of the buildings but also systems that can protect them from future disasters.

## FIELD TRAINING ON THE RESTORATION AND CONSERVATION OF WOODEN STRUCTURES IN JAPAN

### Observation of restoration and conservation work

Beside the lectures in the ACCU Nara Office, this program also provided the chance for participants to make observations on site at many different World Heritage monuments and preservation areas and

buildings such as Yakushi-ji Temple, Toshodai-ji Temple, Todai-ji Temple, Takayama City, Shirakawa Village, etc.

We already know that most cultural heritage buildings in Japan were constructed as wooden structures with a stone base and clay mortar walls with bamboo, and it is incredible that many of the earliest structures of those buildings and temples still survive after more than a thousand years. The oldest surviving wooden building in the world is found at Horyu-ji Temple, northwest of Nara, which was built in the early 7th century.

During the observation training we learned many things about management of the site work, observation of the cause of damage including natural and artificial factors such rain leakage, insect damage, inclination, deterioration of components, structural defects and missing components. The complicated wooden structure, the technique of building dismantling, jack-up systems and roofing concepts were explained by Japanese experts during the site visit.

Different types of wood have been used with different functions due to the different characteristics of each type of wood. I was really impressed with the technique of wood joints in Japan as this was the first time for me to see this special technique. I admit that the technique is unique in the world and I hope also to learn more about it and apply it to future work.

**Restoration and Conservation work**

The restoration and conservation of cultural properties in Japan started in 1897. The conservation and restoration work for wooden temples is supported by the Japanese government. Through observation and the remaining recorded documents, the architect conservator can start to create a master plan for the restoration and conservation works.

Japan has a long history of repairing timber buildings. The effort to preserve such structures has encouraged the repair of decayed wooden parts by inserting new elements using glue or by replacing a whole part while keeping as much of the original material as possible. Any additional part which was added at a later stage should be respected and are as important as the original parts, while the removed part must also be preserved in restoration work.

Improving technology in Japan has provided significant value for the protection of cultural properties. For example, decayed and deteriorated parts were sometimes too large to be reused in previous restorations, but due to better technology nowadays it is often possible to reuse these parts.

Preservative products are now used to waterproof and fireproof wood to protect the timber from disasters and deterioration.

Some other important restoration work on historical buildings which the participants observed during the site training are the jack-up system for the restoration of foundations and the study of archeological site, reroofing works for the prevention of rain leakage and reducing the load on the whole structure by using cypress bark and tiles, dismantling of the building to address structural balance issues and preparation of the concrete base.

Reconstruction of historical buildings in Japan for the interpretation of historical sites is done using traditional techniques and materials. The craftsmen who know the traditional techniques of chopping wood and using traditional tools have been encouraged in Japan.

**Practical works**

All the participants were involved in practical work on site. First, at the Tanaka Family Residence, a Horen-zukuri style farmhouse that was built in the late 18th century. It was designated as a cultural property in 1982.

We learned how to make an accurate section sketch drawing and measurement of the house with a special instrument from a Japanese expert. Moreover, during the practical work we also received a brief explanation about the differences between a town house (normally has a central pole to support the house structure) and a farmhouse (the earthen floor is normally bigger in houses with a cross beam).

An investigation of the deterioration of the house was done for future restoration. The house was relocated in its original form so the Japanese experts used the traces of the past remaining on the members in order to reassemble the house. Some pillars are original and some are new members so they tried to identify them by trying to find traces of tools using nails (domestic production of round head nails started in Japan in 883) and different colors in the members. They also thought about the purpose of each part and how it was used.

Other practical work was done at Jibutsu-do, Todai-ji Temple; the task was focused on painting. The technique of drawing for reconstructing painting is very useful for interpreting the artistic elements of the original stage of the work. Japanese experts used available photos and painting remaining on other members to reconstruct the deteriorated painting.

Through the explanation from the Japanese painting expert, I think that wood painting in Japan has two important functions: (a) To protect the wood from deterioration by weathering and insects, and (b) To identify the spiritual feeling and the unique perspective of the artist. Urushi lacquer (Toxicodendron vernicifluum) was used as the preservative for painted timber, while another product (Xiladecor) was used for the preservation of unpainted timber which existed before the 16th century.

Total repainting is not the proper approach nowadays for restoration of painting in Japan because the painting remaining on structures or sculptures provides a lot of information and history of the painting.

**Conclusions**

In this training we learned a lot about the restoration and conservation of wooden structures and the cultural properties protection system as well as preventive methods in Japan. The protection of cultural properties in Japan starts from the awareness of the local people because they know their properties well, and that is why the government of Japan tries to encourage the local people to maintain their traditional way of life and traditional techniques, especially related to wood.

I think that even though Japan is a country with very advanced technology, the government of Japan pays strong attention to the maintenance of their traditional techniques and materials as much as they can for future generations.

From my own personal perspective, I think that this training course was very useful because most of the courses were related closely to the work which I am involved in nowadays, so I think that I will keep in mind all these techniques and methods to put into practice, and I will contribute this knowledge to all my colleagues in Cambodia. I am very grateful to have taken part in this training course and I want to say thank you to all the organizers: Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO (ACCU), Agency for Cultural Affairs, Japan and National Research Institute for Cultural Properties [Tokyo and Nara], who provided this chance for me.

Fig.1 Conservation, restoration and maintenance of historical monuments
(Todai-ji Temple, Nara)

Fig.2 Earthen wall reconstruction observation
(Horyu-ji Temple, Nara)

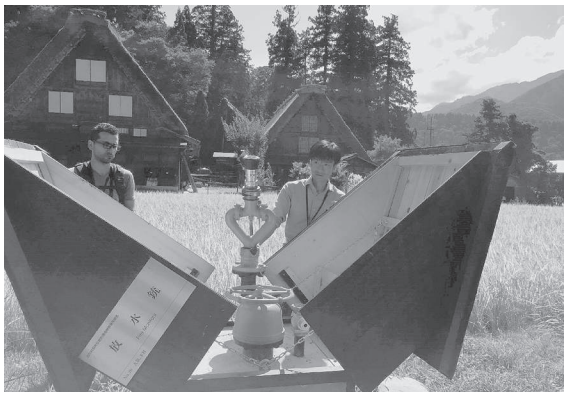


Fig.3 Firefighting system preparation
(Shirakawa Village, Gifu)


Fig.4 Wood joint technique observation
(Nagoya Castle, Aichi)

Fig.5 Practical work in investigation of a traditional farmhouse
(Tanaka Family Residence, Nara)

Fig.6 Practical work in restoration of wood painting
(Jibutsu-do, Todai-ji Temple, Nara)

**China**
**Bi Yi**

# Final Report of Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2017

Over the past month, we had an overall understanding of heritage conservation in Japan through this content-rich course, which included knowledge from multiple layers targeting various types of objects. In this report, I would like to put forward some of the topics that most impressed me, summarize what I learned, compare the situation in Japan to that of China, and think about what improvements we can make by using the experience of Japan.

## 1. Perfect guarantee system of heritage protection

A perfect guarantee system is essential to heritage protection. The legal system, financial guarantee system and technical support system of Japan are fully developed and worth learning from.

### 1.1 Legal system

The legal system of heritage conservation in Japan is mature and thorough, from the top law, the *Fundamental Law for the Promotion of Culture and Arts, to the Law for the Protection of Cultural Properties,* and all sorts of other relevant laws, regulations and schemes on both the national and local level. The laws, regulations and policies complement each other, forming a great support system for heritage conservation. For example, although important cultural properties in Japan don't have buffer zones in terms of the law, local policy can play a role in controlling construction activity in the surrounding area, just like the case of Nara city.

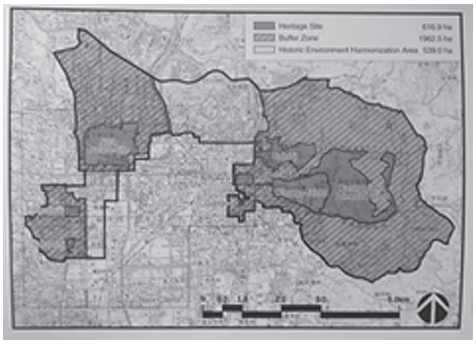


Fig 1. Buffer zone of Nara (cited from the brochure *Historic Monuments of Ancient NARA*).
It can be seen in this image that the buffer zone and even the historic environment harmonization area don't cover the whole of Nara City.

Fig 2. Bird's eye view of Nara City (taken by the author).
From this photo, we can see the whole city is under strict height control due to the policy of the local government.

Furthermore, improving the laws in a timely manner is also very important. Reviewing the history of Japanese laws for heritage protection from 1897, the prompt improvements that have been made in line with new requirements is very impressive. In 1949, Horyu-ji Temple was damaged by fire, and then just one year later, in 1950, *the Law for the Protection of Cultural Properties* was enacted. It is a typical example of the prompt improvement of the relevant Japanese laws.

Compared with Japan, China should make a great effort to improve the laws for heritage protection. Today, we still don't have a fundamental law covering cultural issues. *The National Cultural Relics Protection Law* is to some extent too general; meanwhile, the relevant regulations, norms and policies are insufficient and some of these are outdated. For example, *Guidelines on Protection Techniques of Ancient Wooden Structures,* has never been amended since being promulgated in 1992. So we should learn to improve our laws in a timely manner.

1.2 System of financial guarantee

The financial support system of Japan is also very good. In 2016, the budget for cultural affairs made up more than 0.1% of the total national budget of Japan, of which the budget for protection of cultural properties was over 44%. Moreover, the ways of raising funds are multitudinous, and apart from financial support from the central government, funds also come from local governments, and many corporations, Owners of the heritage buildings also take part in the process. The advantage of this system is that it not only makes sufficient funds available, but also encourages people to become involved in the process of heritage conservation.

The proportion of the budget devoted to protection of cultural properties in China is much less than in Japan, and the funding channels are limited – mainly depending on the central government. In the future, I hope we can learn from the experience of Japan, then enact some efficient policies, make more channels available, and have more people participate in the process.

1.3 Technical support system

Technical support not only includes advanced equipment and methods, but also an advanced process. The appreciation of technicians in the process is remarkable. Organizations such as JACAM, which has a comprehensive training system and strict check-up system, ensure that conservation architects are professional and with sufficient experience. Moreover, individuals who process knowledge of certain traditional techniques, or Intangible Cultural Properties, may be certified as National Living Treasures. This is a very effective method to protect the traditional skills and those craftsmen, and as a consequence, the quality of restoration projects is ensured.

Protecting traditional skills and craftsmen, and ensuring the professional ability of conservation architects are urgent matters that China should pay attention to. Japan has set a very good example for us.

### 2. To develop theory and philosophy based on one's own cultural background

It can be seen that Japan has paid much attention to international experiences and advanced theories, but has never just followed. Japan has its own clear goals on protection of cultural properties, and starting from that, has developed its own theory and philosophy. "Authenticity," "minimum intervention," "reconstruction" and other ideas—all of them are defined based on the Japanese cultural background, then formed into a self-consistent and logical system. On the other hand, Japan is very active in sharing its own theories with other countries, striving for international common understanding on the special cultural background of Japan and east Asia—*The Nara Document on Authenticity 1994* being a typical case. Those theories are also reflected in restoration projects. Take the east pagoda of Yakushi-ji Temple as an example. Some people may think building a concrete platform is a radical treatment, but if you put this treatment into the Japanese context—earthquakes occur frequently—then it is reasonable.

It is nice to see China also making an effort to develop its own theories, and giving more voice to international affairs. For example, in the modern industrial heritage field, China participated in promoting *the Taipei Declaration for Asia Industrial Heritage*, which gave rise to more international attention to Asia's industrial heritages and their own special cultural background. However, this is just a beginning, and we need to accelerate the process.

### 3. Goal orientation and high efficiency

It is obvious that Japan has a clear goal on cultural heritage conservation. The core of the goal is enhancing the cultural quality of the nation, to form a "Nation Based on Culture and the Arts." That means cultural features should be emphasized, and cultural heritage should play an important role in contributing to a spiritually fulfilling life for the nation. That is why utilization and interpretation are emphasized throughout the heritage conservation of Japan, from laws to policies, theories, etc. The goal is then divided into more specific targets—for example, the percentage of people citing culture and arts as the pride of Japan—which are then carried out step by step.

Achieving the goal with high efficiency by using scientific methods is also very impressive. In the work session at Tanaka Family Residence, I was clearly aware of that. Every detail related to the target was observed and recorded elaborately while other irrelevant information was rejected, streamlining the process as much as possible.

### 4. Taking people as the essential element

Exactly as Dr. Gamini said, making a change from "PPP" to "P"—which means paying more attention to people rather than other issues—is very important in heritage conservation, especially for vernacular heritages. From the course, we learned that it is an unalterable trend to accept people as essential, not only in Japan, but also internationally. Taking people as essential means not just judging or satisfying people's requirements but also involving them in the whole process. Japan has really set a good example on this issue, we can tell it from the identification procedure of cultural property in terms of the law. There are several ways for properties to become cultural heritage. Apart from

"designation," there are "registration" and "selection" as well, giving more rights to locals, respecting their understanding of their own heritages and allowing them a certain amount of say over protection decisions. Besides, individuals who represent the highest mastery of techniques can be designated as National Living Treasures, and this also reflects concern about people in the heritage conservation of Japan.

Heritage protection in China is mainly carried out in a "top-down" way, which may have a negative impact on the dynamics of the community, then hinder sustainable development of the heritage. Regarding people as essential to society is one of the national policies of China, but in heritage conservation, this policy hasn't been carried out very well. Thus in the future, we should learn from Japan, pay more attention to people, give more rights to local communities, enhance capacity building, and try to reduce obstacles which keep people from being involved in the process by making some changes to the relevant laws, regulations and policies.

### 5. Respecting history and traditions

Thorough respect for history and traditions—whether in terms of restoration or even reconstruction, like Nagoya Castle—can be seen in all conservation projects in Japan. Almost all the important disassembling projects take over ten years or even several decades, and research is carried out throughout the whole process. Take the east pagoda of Yakushi-ji Temple as an example. In its ten-year restoration period, research lasted for more than six years, and a conservation architect was always there working on site. Moreover, emphasis on traditional skills is also very impressive, and the same materials and techniques were used in the roofing, painting and even scaffold construction. And lots of exhibitions of traditional skills and tools were held.

China should pay more attention to protection of traditional skills, and learn from Japan its careful and respectful attitude towards cultural heritage. Some good ideas are avoiding problems when some unexpected situation emerges after dissembling, dividing the restoration contract into two parts, etc.

### Epilogue

I would like to express my thanks to ACCU for giving me such a good chance to participate in this well-designed course, from which I learned a lot—not only relating to the topics mentioned above, but also all kinds of knowledge that was very helpful for my own professional career and the future of my country. I will bring what I learned here back to China, put the ideas into practice, and spread them as much as I can, especially focusing on the promotion of community capacity building, protection of traditional skills and establishment of a "guarantee system," and devoting myself to the protection of cultural heritages.

**India**
**Anam Sami**

# Use of Traditional Knowledge System and Wood Conservation Practice in Japan

## Introduction to the Cultural Heritage of Japan

Japan has a rich and diverse cultural heritage, both tangible and intangible, spanning millennia of continuous civilization starting from the Kofun period (300-710 AD) to the Showa period (1926-1989). Cultural properties are essential to understanding the history and culture of Japan; they also provide the foundations for its future cultural growth and development. Therefore, Japan has developed a sophisticated and organized system of protection and management of its cultural properties through continuity of its traditional craft skill and knowledge system. One of the main constituents of heritage is the wooden cultural properties of Japan which demonstrate its culture, communities, and the relationship between man and nature over decades. The training course held by ACCU Nara in 2017 provided a common platform for professionals from the Asia-Pacific region to discuss the philosophy, best practices and challenges of preserving vulnerable wooden structures, which are organic and recurring in nature. As a result of having participated in this one month rigorous training course, in this report I will highlight my understanding of vernacular built heritage of Japan. With various issues and challenges faced in my country (India) for protection of vernacular cultural properties, I will draw a caparison of learning through Japan's conservation approach and legal protection system for wooden cultural properties.

## 1. Understanding Vernacular Heritage and the Role of the Community

Vernacular heritage is developed by the people, for the people, without any technical/professional training, with the help of locally available, natural and environmentally friendly construction materials and indigenous construction techniques, which people have learned, developed, and refined over centuries. The community occupies a central place in this sphere and is strongly linked to livelihoods/crafts to suit the occupational needs of the people, local building materials, traditional knowledge for construction and other intangible activities associated with the community. The diagram explains the cyclic process of understanding vernacular heritage and sustaining the continuity of these traditions.


Fig1: Role of the community to sustain the continuity of vernacular heritage

## 2. Bottom-up Approach to Ensuring Communities' Sense of Ownership and Association with Cultural Property

Wooden structures cannot survive without the willingness of the communities themselves to conserve and protect this heritage. Wooden structures are centered on the continued cooperation and care of the people to which they belong. The continuation of specific knowledge systems developed around wooden construction, including regular maintenance, is reliant on the collective efforts of the communities for whom the buildings are important. Therefore, there is a need for a bottom-up approach towards the protection of wooden cultural properties. We can see a similar approach in the protection of wooden cultural property through a community initiative in Sanmachi, Takayama City. In 1966, the people of the Kami-Sannomachi area organized a society to protect and preserve the old streets. In 1977, the municipal government drew up regulations on preservation of the old streets, and designated the area Sanmachi, Takayama City Preservation Districts for Groups of Traditional Buildings.

It was good learning from Japan's approach towards preservation and restoration of wooden heritage, as wooden structures are the central sphere which reflects continuity in traditions, knowledge systems, customs and skills. These customs and skills are still attached to the buildings and make these sites community participatory heritage sites. In my country, India, there are many challenges from a governance and legal point of view to fit in the vernacular heritage. India holds a great opportunity to enhance its identity through its illustrious past, which is captured within these living communities and the cultural properties linked to it.

## 3. Policies and Framework in Japan

Japan has a systematic approach towards identification and protection of its cultural properties with defined categories inclusive of buildings, objects, sites and the intangible aspects that bind these places to traditional expression. The stakeholders for the protection of cultural property involves the national government, local government, administrative organizations and the citizens themselves. The wooden vernacular heritage buildings can be classified as 1) Tangible Cultural Properties, 2) Groups of Traditional Buildings or 3) Conservation Techniques within an extensive system for identifying Important Cultural Properties. The Law for the Protection of Cultural Properties, amended in 1975, identifies traditional techniques or skills that are indispensable for the conservation of significant wooden structures in Japan. This includes repair of architectural structures, woodwork for architectural structures, cypress bark/shingle roofing, Miscanthus thatching and production of clay roof tiles.

In India, the heritage protection law is monument-centric under the Ancient Monuments and Archaeological Sites and Remains Act (AMASR), amended in 1958. AMASR recognizes and protects Monuments and Archaeological Sites with National Importance.

The major shortcoming of the current identification process and resulting list of legally protected heritage in India is that it does not recognize vernacular architecture as a category of heritage worthy of being conserved. A more detailed classification system is required in India to ensure the

continuation of wooden structures important to specific community and tribal groupings. It is good to learn from the case studies of Japan.

**4. Government System of Providing Subsidies to Ensure Community Participation in Sustaining Buildings and Dwellings in Traditional Form.**

Under the designation of Important Cultural Property the government provides subsidies of 50 to 80 percent of the total conservation and repair costs to the owner. Provision of technical advice is also offered in ensuring that the correct procedures and construction methods are followed. The subsidy system encourages owners to retain the authenticity of the cultural property and repair it using traditional materials.

In India, there are no subsidies offered in preserving traditional dwelling units. Within rapidly developing communities, vernacular architecture is suffering and being lost as a result, with little knowledge and value placed on such structures.

**5. Conservation Approach and Use of Traditional Knowledge System**

Japan has a unique repair system for wooden cultural properties known as Kaitai Shuri, which means the dismantling and reassembling of the original structure.

The other types of repair for wooden structures include:

- Partial Repair, with different methods developed according to the characteristics of the architecture
- Major Repair involving dismantling and reassembly
- Conservation of Traditional Craftsmanship
- Reconstruction of the Past

The process of dismantling and reassembly of wooden structures involves detail investigation, recording of wooden members, and reusing original wooden members as much as possible with minimal repairs as necessary, and deciding the restoration policy in accordance with the original or most suitable time period. The dismantling and reassembly of a wooden structure is an extensive and time-consuming process, which lasts for 10-15 years. The process of preservation evolves master craftsmanship and a dedicated conservation architect on site, as well as other suitable professionals also working on site.

In India, the repair process of wooden heritage structures lacks scientific investigation of wood properties, and often the wood is replaced with modern materials. Japan's approach can be applied to buildings in India if there are sufficient funds, skilled craftsmanship and technical assistance.

**6. Recording/Documentation of wooden structures**

Japan has developed a complex and rather systematic method for the documentation and recording of wooden heritage structures while they are being repaired. As mentioned above, it includes

partial repair and major repair by dismantling every structural member and reassembling them. During the course of the conservation process rigorous investigation surveys are conducted, such as investigation of damage, specification investigation such as on joinery details, investigation of traces of previous repair and restoration, member investigation, investigation of written materials and historic records, assessment of seismic capacity and structural study, archaeological investigations, and other kinds of scientific investigations. Four principles when processing, reassembling and repairing a cultural property building based on traditional techniques that were used in the original construction and time period are: Use of the same shapes, and use of the same materials, same specifications and same position. The process is well accepted and followed throughout Japan for developing the nation's restoration policy. The investigation and recording of a wooden structure is done not only for past historic repairs; the present repairs are also dated and inventoried for future base studies, which is a good lesson that can be applied to India's wooden restoration projects.

**Acknowledgement**

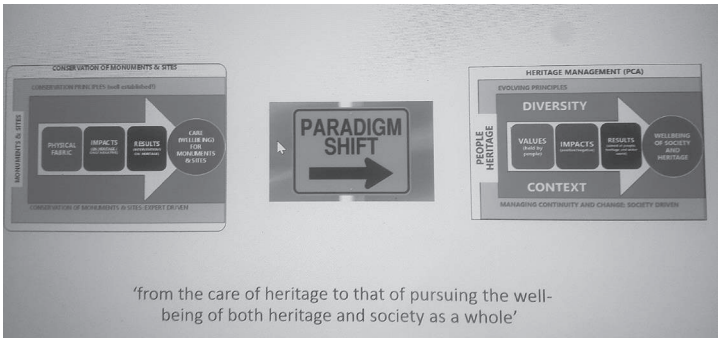
I would like to express my heartiest gratitude to ACCU, ICCROM, Nara Prefectural Government and other affiliated institutions for organizing and accomplishing a successful training course. I thank the whole team of ACCU for giving me this opportunity and sharing diverse cultural experiences. I want to extend my gratitude to Nakai-san, Wakiya-san, Suzuki-san, Sari-San, Claudia-san, and Kosuke-san for their assistance and for guiding us all to reach our highest capabilities. I would specially like to extend my appreciation to Hata-san for interpreting and transferring the knowledge into English. And last but not least, my colleague Ambrosia Crum, for assisting me in creating reports, and all the other participants from the Asia-Pacific region for sharing their knowledge and indulging in useful dialogue during this training course.

**Indonesia**
**Titin Nofita Handa Puteri**

# An Effort to be Better in the Preservation of Cultural Heritage 'Final Report'

Diversity is present in cultural heritage. Variations in cultural heritage can be seen between regions in one country, and indeed between countries around the world. This diversity can be seen from both tangible and intangible aspects, in the many variations of song, dance, traditional clothes, food, traditional houses, objects, buildings, cultural and natural landscapes, etc. The differences make them both unique and interesting. Cultural heritage also experiences different problems, and of course the treatment for preservation is also different according to the problems of the particular cultural heritage. Some problems such as the physical degradation of cultural heritage (e.g., damage, weathering, breakage, porosity, termite attacks, vandalism), disasters (e.g., earthquakes, fires, floods), social factors (e.g., low awareness of cultural heritage and the need for changes to ways of life to achieve modernity), security issues (war and conflict in society), political and policy issues (including budgets), and problems in the actual preservation of cultural heritage (associated with professionals, techniques and methods, good quality materials, cultural heritage management, etc.). All these differences were shown during the presentations and discussions from 14 different countries on the second and third days of this training. However, we all had the same goal—to preserve cultural heritage.

Since Republic of Indonesia Law No. 11 of 2010 on cultural heritage was established, there has been a paradigm shift in cultural heritage preservation. Preservation that previously focused on cultural heritage objects (Republic of Indonesia Law No. 5 of 1992 on cultural heritage objects) now has a wider scope in the cultural heritage landscape. The law also explains an act of preservation in terms of not only protection of cultural heritage, but from the perspective of protection, development, and utilization of cultural heritage. We still need to make improvements in cultural heritage management, from the care of heritage to pursuing the well-being of both heritage and society as a whole (as Dr. Gamini WIJESURIYA said in his presentation).



Paradigm shift in conservation of monuments and sites – heritage management presentation of Dr. Gamini WIJESURIYA (ICCROM)

By participating in this training, I came to know that Japan follows good and systematic cultural heritage management, supported by professionals, high cultural awareness of community and society, good management of documentation, and adequate budgets, so it can be seen that cultural heritage is managed well generally. I hope this can also happen in Indonesia, with more professionals in the field, good cultural resource management, good policies and regulations, high community awareness, and adequate budgets for cultural preservation. To realize all of this, we cannot do it only by ourselves or our office; it needs the awareness and cooperation of many parties, such as local government, the central government, stakeholders, academics, local communities and society in general. It is also important to build good networks and have good communication and meaningful discussions, so that all parties have a good understanding of the preservation of cultural heritage.

Japan has a good cultural heritage documentation system. The documentation provides detailed information on the history and structural style of the building; its restoration history; techniques, methods, and materials used; and photographs, drawings, etc. They have also recorded documentation relating to every action of restoration of cultural heritage consistently up to the present. In this training, we had the opportunity to learn about the recording and documentation of wooden structures at Tanaka Family Residence. This reminded me of an old traditional house in West Sumatra – Rumah Tuo Kampai Nan Panjang. Like the Tanaka Family Residence, I also want this traditional house to have good documentation management with detailed information, so it can be one of the places to learn about Minangkabau culture, Minangkabau traditional house style, Minangkabau traditional house history, traditional techniques, materials, conservation, documentation of traditional houses, etc. Good documentation provides convenience in determining the treatment of cultural heritage preservation and future planning. If we have good documentation, in the case of damage to the building, we can restore or reconstruct it, returning it to the specific state with the highest historical architectural value.

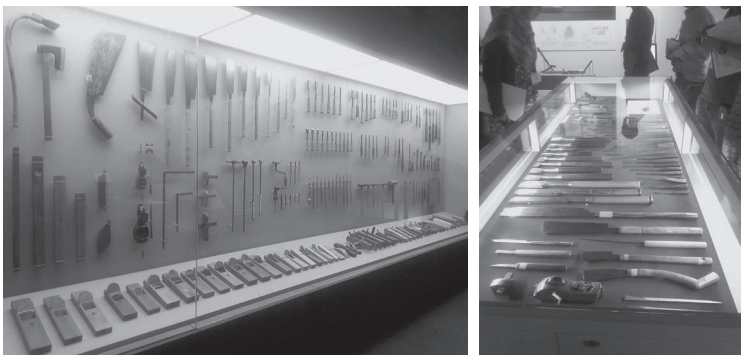
Tanaka Family Residence – old farmhouse
Gojo-cho, Nara City, Japan

Rumah Kampai Nan Panjang – old traditional house
Tanah Datar Regency, West Sumatra, Indonesia

In this training I also recorded and learned to understand again about the relative concept of authenticity. As Dr. Gamini said in his presentation, authenticity should be judged not only from the materials but also from the values, associated process, presence of communities, use, skills of crafts, traditional practices and the management system. This understanding is important because sometimes

there is a debate in determining conservation measures in consideration of the authenticity of the cultural heritage material, especially when that authenticity is associated with wood, which is an organic material vulnerable to degradation. Inevitably at some time change and replacement is required to guarantee the continuity of a wooden structure. Therefore, it is important to understand the value of cultural heritage to facilitate decision making in conservation activities. A values approach should be used in planning for conservation. This is not to say we can replace original material with new material easily. But it is important to identify, analyze, and discuss all aspects of the cultural heritage.

In discussing wooden heritage, we talk about wood as a material, techniques and craftmanship, and the equipment used. Wood is used in many cases: houses, religious buildings, palaces, offices, bridges, furniture, etc. It is also used in almost all building structures: floors, beams, walls, doors, windows, roofs, decorative elements, etc. And there are many variations of wood: tree type, mechanical properties, color, texture, geographical variation, durability, sustainability for different purposes, etc. In Japan, most buildings use hinoki - Japanese cypress (*Chamaecyparis obtusa*), sugi - Japanese cedar (*Cryptomeria japonica*) and Matsu - pine (*Pinus densiflora*). And many carpenters, workers, and conservator architects can identify the type of wood and understand the character of the wood well. Japan also has a forest that serves as a source of timber for heritage buildings. Indonesia uses many types of wood in cultural heritage buildings; however, many of us are not able to identify the type and character of wood well and have no forests specifically prepared for heritage purposes. So, it is sometimes difficult to obtain good quality wood for cultural heritage buildings.
Regarding the techniques and craftsmanship of wooden heritage, there are diverse techniques and skills related to working with wood, from simple to sophisticated techniques, either for wood only or in combination with other materials. Japan has its own style of architecture and building that we can see from the form, design, structure, decorative elements and painting. Buildings utilize wood as the basic element, a joinery system for the beam structure, and a heavy roof using straw, cypress bark, or tiles. One of the Japanese approaches to wooden conservation is traditional conservation techniques and craftsmanship. It is necessary to learn about traditional techniques and equipment used from master carpenters and craftsmen because they are the experts. This is also important for the sustainability of traditional techniques and craftsmanship. Tools are the “spirit” of carpenters, and with tools they can create stronger structures, and create new skills. We had an opportunity to visit Takenaka Carpentry Tools Museum. Various tools of carpentry and their development over time can be seen here.



Takenaka Carpentry Tools Museum

In Indonesia, especially in West Sumatra, we do not have a full awareness that traditional techniques and craftsmanship can be part of a cultural property. We have not carried out identification and documentation of traditional techniques and craftsmanship of *rumah gadang* and its wooden carvings. As in Japan, we are supposed to support and empower carpenters and craftsmen, as they are the experts in this field, create carpentry and craftsman communities who care about cultural heritage, socialize with them and have them understand the importance of preserving traditional techniques and craftsmanship, so that they become more open-minded and play an active role in passing on their knowledge and techniques to the next generation. Their traditional knowledge of wood and their treatment of this building material will contribute to the preservation of wooden heritage significantly. With the cooperation of many parties, we can identify and document traditional techniques and craftsmanship, and the tools of wooden heritage, and I hope we have museums like Takenaka Carpentry Tool Museum one day in the future. Regarding the availability of wood materials, we need to cooperate with the Department of Forestry and seek to explain the importance of forests for cultural heritage, so that Indonesia can also have a forest for heritage purposes.

I would also like to mention local communities. The local community plays an important role in the preservation of cultural heritage because it is part of the heritage; the local people live with the heritage and they can do regular maintenance that ensures the continuity of cultural heritage by keeping it in an ideal state. When we visited Takayama City and Shirakawa Village, we learned that the local community and villagers initiated the preservation of the townscape and the village and then it was followed by the government. Actually, a high level of awareness from the local community and society is needed to ensure continuity of the cultural heritage. From both places, I also learned about risk management relating to wooden heritage. Fire is one of the great risks to wooden heritage. Firefighting equipment in both areas can be a model for firefighting equipment in traditional wooden buildings. Some wooden heritage buildings in Japan also have automatic fire alarm equipment. Disaster risk management covers not only fire, but also floods, lightning, earthquakes, and other disasters. So risk management should also be an important part of cultural heritage management.

Each region has a different culture and different traditional knowledge, and we need to maintain and manage these with good management systems. Japan has its own culture; Indonesia has its own culture. I hope Indonesia will gradually achieve a good system of cultural resource management, so that cultural heritage can be well managed for the welfare of both society and the cultural heritage itself.

Finally, thank you very much to the Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO in Nara, Japan (ACCU Nara Office), for giving me the opportunity to learn many things in Japan. A big thanks should especially go to the committee, which did its best to give us everthing we needed. I truly appreciate it. Hopefully, what we have done and learned during this training can provide benefits for cultural preservation and thus enrich many people's lives.

**Republic of Korea**
**YOO Hyeonok**

# Final Report on the Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2017
# Preservation and Restoration of Wooden Structures

## Introduction

The Preservation and Restoration of Wooden Structures training course was conducted from Aug. 29 to Sep. 28 for educating participants in techniques for analyzing and recording wooden structures, techniques for preserving and restoring them, and measures for utilization and risk management. The training was performed in various ways such as lectures, practice, discussions, presentations, and fieldwork, which were all very effective.

I could see the differences from the repair and restoration sites of Korean wooden cultural heritage and it was a good chance to think about various ways to apply newly obtained information to Korea. I also think about the authenticity of the cultural heritage and the OUV that I thought vaguely. On the other hand, I felt sorry about the reality of the Korean cultural heritage field, which has often been affected by political or social factors, and I was envious of the stable cultural heritage environment and citizen consciousness of Japan based on the thorough surveys and studies.

In Japan, the modern restoration and preservation of wooden cultural heritage (e.g., Horyu-ji Temple) began in earnest with the enactment of the Ancient Shrines and Temples Preservation Law (1897) and National Treasures Preservation Law (1929). In Korea, the Cultural Properties Protection Law was enacted in 1962 and the dismantlement and repair of Sungnyemun Gate, which began in May 1961, was the beginning of the restoration and preservation of cultural heritage by our own hands. I thought that we might be able to find the direction of the restoration and preservation of cultural heritage and reduce the process of trial and error considerably, since there are many similarities between Korean and Japanese wooden cultural heritages in terms of technology, style, and materials from ancient to modern times.

First, I want to review the differences between the restoration and preservation of the wooden cultural heritage of Korea and Japan, and evaluate the possibility of applying my newly gained knowledge from the training course to Korea.

## Differences in the Preservation and Restoration of Wooden Cultural Heritage of Korea and Japan

The first difference is the material reuse rate. In Korea, people do not actively reinforce cultural heritage with foreign materials, i.e., not the same material, to repair it. New materials (e.g., carbon fiber or titanium bars) are used minimally, mainly for adhering or reinforcing a structure rather

than increasing the rigidity of the material. The most extensive use of new materials was for the reinforcement of high pillars during the Sungnyemun Gate restoration, such as carbon steel insertions, resin filling for surface decoration due to surface carbonization, utilization of carbon fiber and aramid fiber. [1] Korea does not actively use or recycle old materials by such methods as inserting steel beams or filling wood with epoxy, which loses the inside and maintains the outer crust. In Korea, people believe that active material recycling, as done in Japan, is considered to decrease the authenticity of the materials. Moreover, Korea also does not have the budget or time to test the function of new materials. Since 2005, old materials which are worth conserving have not been discarded, but rather sent to the Korea Foundation for Traditional Architecture and Technology to be used as study materials or exhibited.

The second difference is the use of traditional materials and traditional techniques. Korea lost the legacy of traditional materials after undergoing the Japanese colonial period (1910-1945) and the Korean War (1950-1953). To make matters worse, wood production was insufficient due to the small land size and urbanization. Consequently, imported wood (mostly Douglas fir) is used in the majority of the field. Additionally, the traditional timber processing techniques are disappearing because people now purchase and use lumber from timber merchants. The biggest problem is the painting material. Traditional materials, except Seokganju minerals, glue, and shell powder, have completely disappeared so now all of them are imported from Japan. In the restoration project for the Sungyemun Gate, which had been destroyed by fire, untested chemical paints were used, and paint peeling occurred within five months after the completion of the project.

The third difference is that blueprints are still manually drawn in Japan. In Korea, the majority of blueprints are scanned by 3D scanner and drawn by AutoCAD. All delivery lists for the archives of the Cultural Heritage Administration are also made by AutoCAD. This is due to tight schedules and budgets. Drawing blueprints by computer is fast and efficient but it also means that people can copy and paste information. In the process, monotonous blueprints can be produced which ignore the unique characteristics of cultural heritage. As a result, it is difficult to carry out construction by following the blueprint and workers have to modify the blueprint frequently during the construction stage. This situation does not allow people to be trained as true experts.

Lastly, Japan has conducted many diverse and separate studies and surveys regarding the origin of traditional carpentry tools and painting over a long time in order to restore wooden structures. Korea allocates 200 billion KRW per year for repairing cultural heritage and approximately 1,000 restoration and preservation projects are conducted per year. Simply put, it amounts to about 200 million KRW per project and this is very tight even just for materials and labor. Consequently, the National Research Institute of Cultural Heritage conducts the minimum number of studies and surveys for restoration and preservation in addition to directly-operated projects.[2] Although these projects are supposed

[1] The reuse rate of old materials during the Sungnyemun Gate restoration was 38.8%

[2] Representative projects are the Mireuksaji Stone Pagoda restoration project and the Gyeongju Seokgatap Pagoda at Bulguksa Temple dismantling and restoration project.

to be thoroughly supervised by local or central government supervisors, it is not done continuously because the person in charge is changed frequently. To make matters worse, the supervisors are usually not experts in the area (general architects or civil engineer majors, not conservation architects). To overcome these shortfalls, the Standard Specification of Architectural Cultural Heritage was created in 1974. However, this caused the restoration and preservation of cultural heritage using general construction methodology while ignoring the diversity and specificity of each cultural heritage and, contrary to the original intention, resulted in harmful effects. Therefore, regulations were established to set up an advisory panel led by the cultural heritage committee for each project to supplement this expertise. Moreover, it is now required to have a conservation architect or cultural heritage repair engineer on-site or off-site to supervise all cultural heritage restoration and preservation projects in accordance with the cultural heritage restoration and preservation supervision system.

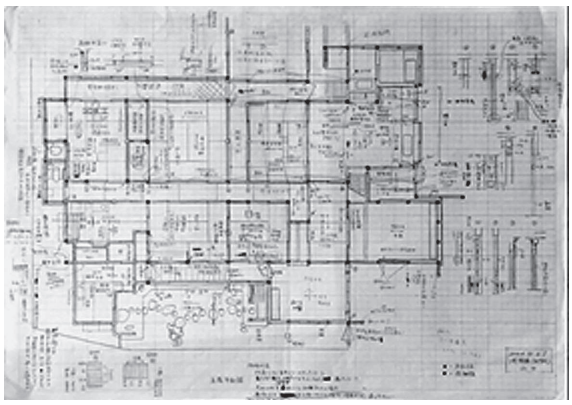


Fig. 1 Example of Japanese field drawing

Fig. 2 Takenaka Carpentry Tools Museum

Next, I came up with several ideas as to how to apply what I had learned from this training course to Korea.

**Evaluating the Applicability of Japanese Cultural Heritage Restoration and Preservation System and Techniques to Korea**

### Training Courses for Conservation Architects

Korea has a cultural heritage restoration and preservation license and a person holding this license can work in cultural heritage restoration and preservation projects. There are several types of licenses: Conservation Architect, Repair Engineer, Conservator, Painter, Landscape Architect, and Plant Protection Engineer. Although it is a good idea that only those who are qualified can work in a cultural heritage restoration and preservation project, people can earn this license by passing a written test and an interview without a degree or practical experience. Therefore, there have been several occasions where people without practical experience had supervised a project merely based on theoretical knowledge. Recently, a system has been established for managing cultural heritage restoration and preservation experience and performance in order to overcome such shortfalls and this is scheduled to be implemented in February 2019. Moreover, the Traditional Culture Training Institute of Korea National University of Cultural Heritage is conducting compulsory training for technicians and skilled

people, but it is superficial, covering only theories and site visits. It is necessary to strength the case studies and add field practicum courses so that practical information can be exchanged during the training, as done in Japan. Moreover, I believe that it would be great if we could make it hands-on practical training by including professors, field technicians, and skilled people in the teaching faculty.

**Strengthening the Ability to Pursue Cultural Heritage Restoration and Preservation Through Participation of Local Communities**

While listening to the lectures of many teachers, I could understand the uniqueness of Japanese officers in charge of cultural heritage and the administration of cultural heritage. First of all, a civil servant can work for Hyogo Prefecture and Kobe City at the same time. A civil servant in charge of cultural heritage cannot take the position unless the person has completed an architecture class. It was also very impressive that Nara and Kyoto, which have many cultural heritages, operate restoration and preservation projects directly. In Korea, civil servants in charge of cultural heritage do not need to pass a special examination, and they work in rotation. Architectural researchers are hired from time to time. However, it is about one every five years and there are only about 10 such people in Korea. Therefore, cultural heritage restoration and preservation supervisors do not have enough expertise and it is difficult to restore cultural heritages directly. Additionally, the residents of Shirakawa Village repair houses and manage disaster prevention facilities directly in cooperation with the authorities. Andong Hahoe Village, a World Heritage site in Korea, has experienced fire four times since it was designated as a World Heritage site in 2010. The village has approximately 220 wooden houses in narrow and winding alleys, which are too narrow for fire trucks to enter. Consequently, a fire in this village can be more dangerous than other historical villages such as Shirakawa Village. In order to get the maximum effect with a limited budget, it is recommended to preserve the village with the direct help of the local community as in Shirakawa Village.

Fig. 3 Shirakawa Village

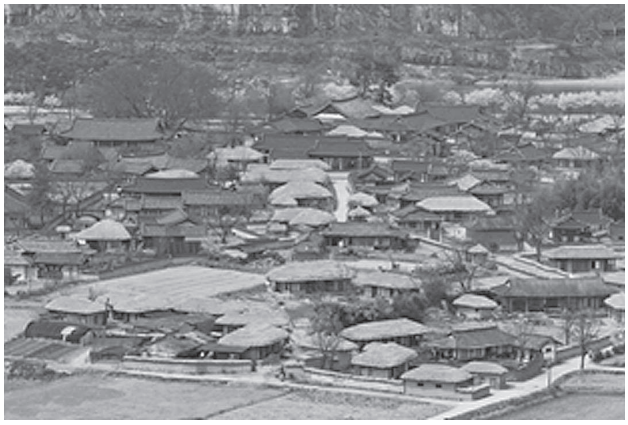


Fig. 4 Andong Hahoe Village (source: www.cha.go.kr)

## Conclusion

There is a saying in Korea that “you can see as much as you know.” I have learned so many things from this one month’s training. I feel like I will be able to see and learn more at the cultural heritage restoration and preservation sites and I am very happy that I have enriched my knowledge of the topics we studied. I would like to deliver my sincere gratitude to ACCU Nara Office and ICCROM

for organizing this excellent training course and inviting me. I truly know how hard it is to organize a training course and how much attention you have had to pay to the details because I am also in charge of training programs at my company. I also would like to express my sincere thanks to all those who took care of the 15 participants for one month. Moreover, I am very grateful to other participants who have broadened my view and stimulated me.

I think that participating in this training course has been one of the best things that has happened in my life. I have a gut feeling that I will come to Nara again to do further study in the near future.

**Nepal**
**Ram Prasad Suwal**

# ACCU Training and its Global Importance in Capacity Building of Human Resources for Future Generations in Safeguarding Cultural Heritage

## 1. Introduction

"Training is teaching, or developing in oneself or others, any skills and knowledge that relate to specific useful competencies. Training has specific goals of improving one's capability, capacity, productivity and performance. People within many professions and occupations may refer to this sort of training as professional development." (Wikipedia, the free encyclopedia, 23 September 2017)

Confidence is another word that brings out all the skills and spreads the seeds of knowledge and wisdom. Really, it only happens after gaining, learning and observing the specific relevant training. This training course on Preservation and Restoration of Wooden Structures by the Asian-Pacific Cultural Centre for UNESCO (ACCU) is such an example of high profile international training which helps in capacity building of human resources for the next generation and developing personal relationships with a global approach. It is the best approach for connecting different thoughts from different worlds in one platform.

2. Training and Achievements

The main theme of the training was preservation and restoration of wooden structures for cultural heritage protection, by providing participants with the latest methods and techniques for the investigation, preservation, restoration and management of wooden structures. For the fulfillment of this aim, training course was divided into three parts: **a. Lectures, b. Work Sessions and c. On-site Study.** The design of the course was very smooth and connected all parts, which helped me to understand clearly. The above diagram shows the inter-connection and integrity of the course to pass on the best practices for cultural heritage protection.

Fig.1. Inter-connection of course

**a. Lectures:** Theories are the foundation of any profession for generating ideas. The country report presentations gave me some broad ideas and enabled me to compare various practices in heritage protection. The lectures delivered by experts (Dr. Gamini WIJESURIYA & Prof. INABA Nobuko) were valuable assets for me to modify, discuss and apply in my profession. The knowledge of the principles and methodologies for protection of wooden structures that I gained through the lecture on architectural heritage in the Asia-Pacific region widened my perspective on how I need to judge heritage in practice. This training also gave me opportunities to share my experience and help me to establish close regional networks.

Lectures on the cultural heritage protection system and conservation and restoration of wooden

structures in Japan opened my mind and theory on orientation for the practical training: the overall repair process again added strong logic and evidence to me, to work in different perspective of technology. The methodologies and techniques applied to the preservation and restoration of wooden structures in Japan are different from the practice in my country. This was a good learning opportunity for me, and I am sure I can apply the knowledge I gained to heritage protection after going back to my country.

Heritage will be heritage when there are users, so the living organism is an essential part of heritage protection. That living organism should feel comfort and emerge with a sense of belonging, a sense of place and essence of place. Only this will create living cultural heritage. Yes, the knowledge I gained on the cultural heritage system in Japan was an important lesson for me. The chain is maintained with different stakeholders' work mechanisms, organization functions and responsibilities, and related laws. Good coordination and collaboration results in a systematic and scientific method of cultural heritage management. The lectures in the training program also gave me ideas on systems for restoration projects and construction planning; and the process of elements repair system. I should apply the incredible knowledge of the lecturers to my profession and my university teaching.

**b. Work Sessions:** There is a saying, "Learn by observing and doing". This session blended in well with my profession. I am actually working in this field but I found differences in the working system, involving observing and perceiving the subject matter. The recording and documentation of the wooden structures of heritage buildings changed my perspective during the work sessions, providing me with knowledge of skills-based techniques for the recording/documentation and analysis of wooden structures.

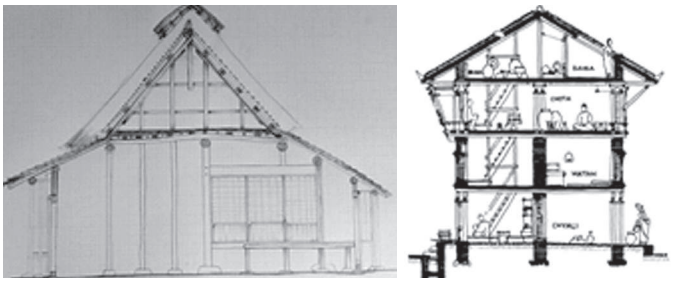


Fig. 2. Section of Tanaka Building (Left), and Newari Building (Right)

Seeing the way Japanese experts think, investigate the elements, detail documentation and recommend their ideas with logical evidence stimulated my mind. Also, I was very impressed with the recording/documentation system of wooden structures that collects minute images. While working at Tanaka Family Residence, I understood the construction technology of Japanese houses, which is very similar to Newari house in Nepal. The building materials used in the thatched roof, timber posts and beams, bamboo rafters, stone foundation, and mud plaster reinforced with bamboo strips were similar to those of vernacular dwellings in Nepal, where some structural timber joints are similar to those used in Japanese construction. The basic materials were the same, the nature of the work also seemed the same, but the technology and techniques varied. The workmen and craftsmen have a high level of engineering that I need to pass on to Nepalese workmen and craftsmen after I return home.

This work session added another dimension to my career. The session taught me about the accuracy of measured drawings with respect to existing sites and how to input all detail data with descriptions.

The three days at Tanaka Family Residence gave me the essence of the conservation of our heritage in a different manner. I learned about the shifting of heritage buildings from one location to another. The system of heritage management done by the Japanese government is a good example for my country as we also have many private culturally important buildings which cost too much to repair, restore and reconstruct. Most of the culturally important buildings in Nepal were damaged by the Gorkha Earthquake in 2015. Nowadays, most private owners are facing problems due to the weak economy and strict government by-laws. I need to learn more about the system of the Japanese government that provides compensation for owners of private heritage buildings, and for successful achievement of better heritage management in Nepal.

Fig. 3. Photos of three places: Left- Takayama, Center- Shirakawa-go, Right- Bhaktapur

**c. On-site Study:** My main concern is how to protect private heritage dwellings. These buildings are highly valuable and precious craft masterpieces and are places of emotional value. As an architect, I am always worried about making sure those buildings are saved for the next generation. And as for reconstruction of heritage buildings, I always focus on fenestration of façades to blend the heritage environment and bring back the essence of place. I also emphasize intangible heritage to integrate the tangible heritage to give life to the neighborhood and the city. The people and buildings around the monuments integrate the sense of belonging. All these characteristics are found in Takayama Traditional Buildings Preservation District and World Heritage: Historic Villages in Shirakawa-go. I am also dreaming about my own Bhaktapur City as being similar to these places.

Heritage maintenance is another integral part of conservation. Regular inspection and restoration makes the national treasure stronger and able to remain standing for new generations. Detail recording and documentation of heritage buildings that are the pride of the nation and leaving this in form book form is the best way, providing the best evidence for future generations. Having restoration sites open to the public is another positive part of heritage management. This will definitely help us to understand visually the process of construction techniques and technologies and add another visionary dimension for younger generations. The on-site study at construction sites like Yakushi-ji Temple, Toshodai-ji Temple, Nagoya Castle, Kiyomizu-dera Temple and Horyu-ji Temple gave me extra clarification to answer my queries, and I should express my appreciation to the experts for their valuable effort and explanations. I could easily visualize the materials used in those buildings. The damaged timber elements were replaced with minimum wastage and stabilized the structure with the latest technology. Yes, heritage should not only stand but also resist all kinds of impacts. Safety and security measures were also applied at all sites. The working system at conservation sites in my country is totally different from that in Japan. The system really impressed me and I hope to implement it back in my

home town. This will increase safety for craftsmen and workmen and also help develop a positive attitude, which will increase working efficiency.

Fig. 4. The different working process: The first two on the left in Nepal and the three on the right in Japan

There are many factors that affect our essence of life, our heritage, and our civilization. Those factors are natural factors like earthquakes, snow, wind, typhoons, rain, fire, thunder, floods, etc., and manmade factors like electric shocks generating fires, and social quarrels such as war, religion discrimination, the migration of people resulting in depopulated settlements, etc. I was surprised when I learned about disaster risk management for cultural heritage sites. It was amazing and all measures were well located to fight against disasters. The architectural design for those elements were harmonized so that they became elements of the heritage site itself. This means that even small things were well organized and maintained. Some of the disaster-fighting measures are shown below. These are missing in my country, and I should request the relevant government department to incorporate these measures into their risk management plans for cultural heritage.

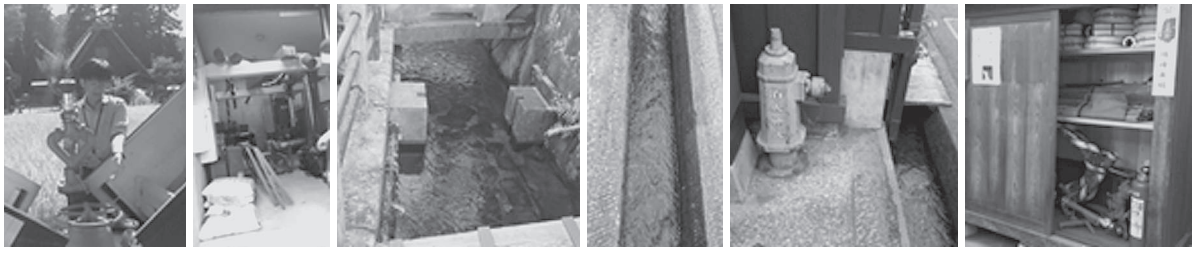


Fig. 5. Different types of disaster-fighting measures for cultural heritage protection in Japan

Every country has its own traditional construction technologies and I am keenly interested in carpentry joints. I tried to understand the carpentry joints at Nagoya Castle too. I respect the way IMAI Keisuke sensei described the architectural history surrounding the reconstruction and utilization of wooden structures at Nagoya Castle Hommaru Palace. Also, I am very grateful to Mr NISHIYAMA Marcelo at Takenaka Carpentry Tools Museum for sharing his knowledge with us. This museum attracted my eye in terms of every element displayed in it. The displays of carpentry tools reflect the field's history and the innocent of carpenters. The units in carpentry used in the past and carpenters' construction skills will guided me to do more research in my country and I feel like setting up carpentry museum too. Real scale models and construction processes were illustrated systematically, which seemed just like an open book. Also, comparisons between the carpentry tools of different countries with visual illustrations enabled me to understand everything clearly. It was not only a museum; it was a lively museum where I felt I was in a carpentry workshop. The architectural design of the building and its space allocation was well blended with its functions. I found different types of joints used in Japan

which I hadn't seen in my country. It was very important to understand the traditional tools and carpentry joints, especially for professionals working on protection of cultural heritage as well as vernacular residential dwellings. Some photographs of carpentry joints are shown below.

Fig. 6. Carpentry joints used in construction, Japan

Fig. 7. Carpentry joints used in construction, Nepal

### 3. Lessons learned and recommendation

I was thinking that Newari construction technology is complicated, especially Malla period architecture. But this training made me clear on this matter: "NO! There are still more complicated elements of architecture which need to be learned." This training widened my vision and way of thinking while working on cultural heritage in my country. The knowledge and skills I received during this ACCU training are listed below.

i. This training not only gave me extra knowledge and skills but also built up my confidence to extend global relationships.
ii. Also, it helped me to understand cultural heritage and cultural landscape heritage with an integrated approach.
iii. Japan has specialized expertise in timber work both in terms of craftsmen and carpentry, a high level of knowledge on storage and conversion of timber, and expertise in carpentry joints with high structural analysis.
iv. The maintenance of national treasures, i.e., heritage buildings, has been done according to certain time intervals so as to safeguard and strengthen the structures as well as to continue authentic traditions in construction technology.
v. Successful construction is only achieved when there is expert manpower. This lesson is also learned from this training, as contractors with good experience and expertise in traditional construction will always give the best result in cultural heritage protection.
vi. Traditional indigenous tools and the associated intangible heritage in the form of skilled craftsmen have been maintained through cultural heritage protection and Takenaka Carpentry Tools Museum. This is what all countries need to learn from Japan.
vii. Defining important values and statements of significance have provided broad ideas for the nomination of heritage sites.

Yes, with many thoughts and ideas, I am going back to my country to do much more. Let's see how

successful I can be in my professional field; one thing I am sure of is that the knowledge and skills I gained from this training will be shared with my students. It is a very essential topic in the syllabus at the university I am affiliated with.

I would also like to recommend one thing to the ACCU family. The training program would have been even better if we had had a work session on the treatment of wooden structures in Japan against environmental factors; for example, insects like termites, etc., and the strengthening of timber. I thought the natural and artificial treatment of wooden members was lacking in this training. I would like to request this for future training.

**4. Conclusion:**

The month I spent in the training course on Cultural Heritage Protection in the Asia-Pacific Region: Preservation and Restoration of Wooden Structures, Nara was a valuable experience in my life. This training not only enriched my professional knowledge and skills but also enhanced and added to my thinking capacity, investigation perspective, global relationships and self confidence. Yes, it was very fruitful and it will definitely help my country, as we are facing the severe challenge of reconstruction and restoration of cultural heritage damaged by the last earthquake. I believe this opportunity to participate in a training course on heritage conservation was of great value and will support my future work in the field of conservation.

This was an excellent chance to learn the techniques and methods practiced in conservation works in Japan, which will also be adopted in Nepal while keeping in mind the contextual setting. Restoration of heritage sites and preservation of historic cities is extremely important, and especially key in the management plan of Bhaktapur city. Now I can apply my knowledge of heritage conservation, and serve Bhaktapur city well. Likewise, I can utilize this knowledge in the field of reconstruction, where Gorkha Earthquake-2015 has had an impact. I will develop plans to share this knowledge with local people and also with students and teachers of different colleges after returning from Nara, Japan.

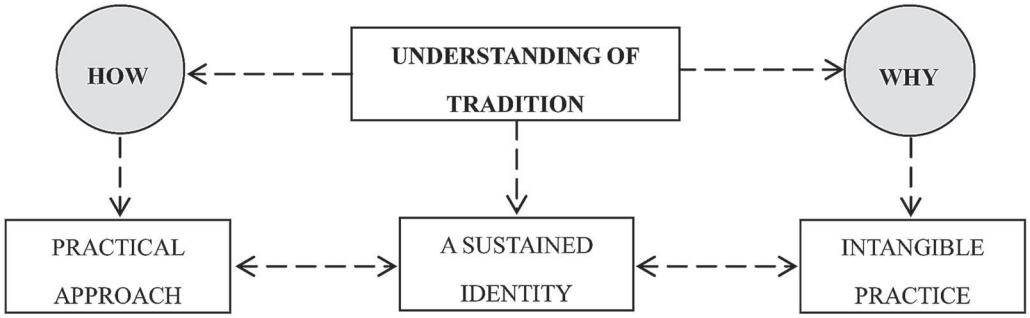
Yes, my mind will always remember the ACCU family for their love and cooperation and incredible hospitality throughout the training course. I should not forget those experts specializing in resources who delivered wonderful lectures and illustrated on site in different locations, as well as the assisting personnel. Finally, I want to extend my thanks to all personnel associated with this training, directly or indirectly.

**New Zealand**
**Ambrosia Crum**

# A traditional knowledge approach to wood conservation in Japan

This title refers to the deep connection between building, place and people. The protection of places with cultural heritage significance should be centred on an understanding of the passing of specific knowledge systems beyond practicality; we must question beyond how and ask why.

This final report is written with an approach based on my own curiosity of traditional practice – seen in my line of questioning throughout the course – through an attempt to gain an understanding of another culture's connection with their history, ancestry and tradition.




Dedicated to a collective sharing of experience, knowledge and skill, this Training Course was an introduction to the extensive management systems established for the care of Japan's wooden structures. Exposed to the practical application of theoretical and technical methodologies, participants were given the opportunity to explore and query ideas; important in identifying opportunities in the management of cultural heritage in their respective countries.

## 1. Overview of the Training Course with understanding/skills gained regarding the Japanese approach

**Introduction to protection listing and classification of cultural heritage**

- i.e. Important Cultural Properties, Cultural Landscapes and National Treasures

**Introduction to policies and framework including Cultural Heritage Law**

- national and local government assistance in protecting and giving importance to places
- management of natural resources for future work
- disaster risk management

**Outline of conservation approach and practice**

- overview of large-scale approach with detailed management systems in place inclusive of long term planning and strategy; i.e., periodical maintenance and provision/allocation of funds
- rationality and process of regular dismantlement and reassembly of large structures

**Implementation of traditional knowledge systems**

- understanding of traditional techniques including timber selection and use, identification of timber

species, joint systems; and tools and techniques in the processing of timbers

- understanding of the rationale and planning of extensive paintwork conservation projects

**Recording and documentation of wooden structures**

- introduction to Japan's architectural history through examples and on site observation
- skills in detailed observation, analysis and survey of wooden structures

## 2. Relevance of the Training Course

### 2.1 Integral ideas and thoughts

***a) Community engagement***

Many sites visited while we were in Japan are of significance to the country in general as well as to the specific communities in which they stand. The importance that these places hold are in the histories and traditions which they carry forward to the future. Ancient histories see these buildings as a physical connection to and representation of the past; a source of memory and account.

Within a conservation project involving living places (places not purely monumental but with current and developing histories) it is essential that the people's needs are at the fore. Collaboration with local people and marae communities is a core principle within the Maori Heritage Team at Heritage New Zealand Pouhere Taonga. Inspiring examples in Japan, such as Takayama City, show the local people taking control in establishing conservation strategies, priorities and targets.

***b) Regeneration, management and procurement of natural resources***

Traditional building practices stem from skills developed from traditional knowledge of resource bases available in nature. The successful preservation of our ancient places and associated traditions is rooted in the safeguarding of these natural resources. Access to traditional natural resources is a key issue within the preservation of Maori Built Heritage with specific plant species diminishing, as seen throughout the Asia-Pacific region. Monitoring systems, allocation of and access to specific timbers/ plant materials for conservation work and use by traditional artists are key concerns I would like to see improved in New Zealand.

In my observation, it seems there are agile sources of native timbers made available to conservation projects in Japan within managed forest areas. Owners of large areas of land are approached by the Agency for Cultural Affairs and offered incentives for use of the land in the production of native timbers. Other plant materials are monitored and also seem to be accessible.

**2.2 Skill relevance –** What are the determining factors considered in sustaining traditional practice and values systems? And how do approaches translate between New Zealand and Japan?

***a) Methodology and practice***

*Multi-generational record*

The form, pattern and narrative present within the ornamentation (carvings, woven latticework panels and painted patterns) of traditional Maori whare (houses) assist in the oral tradition of passing

ancestral knowledge and wisdom through the generations. The presence of these crafts in the places Maori occupy ensures the continuation of identity and are where orators utilise the arts to assist in deciphering and communicating information to others.

Similarly, details of construction methods, traditional techniques and previous building work are recorded in the fabric of traditional Japanese architecture and marked by the stamping of timbers and delicately painted features. Investigation of method and construction theory is recorded through extensive survey and analysis of parts. The practicality of this record is a logical and deeply impressive documentation system for use by future generations.

***b) Intangible heritage***

*Recognition of importance*

Recognition of the skills relevant to the restoration of ancient places and associated traditional building and art practices is essential in the continuation and communication of cultural history.

*Protection of skills and knowledge*

New Zealand: Passing on of Knowledge to Maori Craftsmen – Carvers and weavers play an important role in preserving traditional knowledge through the linkages to the past imbedded in their craft and in the places that carry it. They must therefore be a library of information, have a deep understanding of many levels of communication and uphold the traditional values system. The passing on of this comprehensive knowledge is typically through tribal mentor-based approaches.

Japan: Training Programmes for Conservation Architects and Woodworking Technicians – Systems of ongoing training for construction professionals are centred on the continuation and development of knowledge through regular and varied training. Conservation architects must be aware of all systems of analysis and traditional practice and are based on-site throughout the restoration to ensure systems are managed and fulfilled appropriately. The intangible techniques and knowledge of Japanese craftsman are held in high regard; as exemplified in the specific classification -*Important Intangible Cultural Properties*- added to the Law for the Protection of Cultural Properties in 1950.

## 3. Traditional Living and Function of Architectural Features

In this section I will use specific places visited during the Training Course as references (examples only) to highlight some common issues seen in the conservation of wooden structures in the Asia-Pacific region. These issues can arise as result of modernisation, change in circumstance, loss of knowledge or possibly reluctance to adhere to tradition in favour of other objectives.

### 3.1 Diminished relevance and use of specific traditional building design

***Shirakawa Village***

The Gassho-style house typology was developed as a response to a special set of skills associated with a select group of people living within the Shirakawa village area – silkworm raising. The distinctively steep roof and multi-level attic space was the ‘farmland’ required by each family in producing high

quality silk for supply to the market. The traditional function of the buildings and use of associated knowledge systems are no longer present in Ogimachi Village. The core livelihood of the villagers is now dependent on the successful preservation of the story that drives the current function of the area as a tourist attraction after its inscription on the World Heritage List.

In this realisation and acceptance of development and modernisation, a building typology which was once driven by the activities which took place within it can now be seen as a feature of a past story, with current preservation systems inseparable from the story of what it once was.

### 3.2 Traditional meaning and function of decorative features vs. preservation of material

***Amitabha Hall, Zenrin-ji Temple***

The plan for the restoration of the intricate paintwork of Amitabha Hall was determined with the expertise of many parties inclusive of local government representatives, expert painters and the people of the temple. A restoration plan was created to ensure not only a reinvigoration of the paintworks but also the preservation of sections of original paint material – this approach was designed to give status to several stages of the building's history. A response to the multiple perspectives of individuals in the consultation stage, this approach serves as an example of multi-disciplinary collaboration and explores the consideration of various values held by the different people that engage with the space.

Within this religious space, the vibrant colours, patterns and imagery play the roles of aesthetic enhancement, display of religious messages for reading, protective layers for the wooden members and empowerment of the deities that communicate and connect with this structure's users. The use of this building, with (near to) original colouring and features, allows the space to function as it was designed: as a conduit to the deities it honours.

### Conclusion

The techniques and style developed in places of important cultural heritage (tangible) are expression of important linkages communicated through skillsets maintained through generations. The protection and sharing (passing on) of our intangible heritages associated with these places is where we find clarity and understanding of the influences in the architecture, including symbolism, ancestry and tribal or imperial histories. The successful continuation of these skillsets is the responsibility of many. A heightened understanding of a traditional cultural approach to restoration activities within our built structures is where I see the most value for my future work.

**Pakistan**
**Laiba Sundas**

# Learning Experiences from Cultural Heritage Protection and Restoration Practices in Japan

There is a famous Irish proverb that says: **"A people without the knowledge of their past history, origin and culture is like a tree without roots."** The cultural heritage of a nation strengthens its sense of identity and depicts its historical and cultural development. It can be tangible in the form of historical structures and sites or intangible as in customs, beliefs, languages, music and arts. The need for preservation and protection of cultural heritage is not only limited to one nation or region; it is a responsibility shared by all the people as they collectively make their contribution to the culture of the world. That is why there is a need to respect, collaborate and help each other in safeguarding the very cultural heritage of the world, for the common cause of passing it safely to future generations.

Considering the importance of cooperation and assistance in the protection and restoration of cultural heritage in the region, a comprehensive one-month (29 August - 28 September 2017) training course, titled **"Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2017 for Preservation and Restoration of Wooden Structures"** was held in Nara, Japan.

The course was organized by the Agency for Cultural Affairs, Japan, **ACCU** (Asia-Pacific Cultural Centre for UNESCO), **ICCROM**, and other Japanese cultural organizations with the help of the Nara prefectural and city governments. A total of 15 members from 14 countries from the Asia-Pacific region participated in the training program, with the common objective of learning skill-based techniques for the preservation and restoration of wooden structures from Japanese practices and to be able to implement them in their home countries, and to share their experiences and create their own regional networks.

I am very grateful to have been part of this great learning opportunity as a participant and successfully completing this wonderful training course. The training program consisted of many well-organized and informative class activities, lectures from experts, on site practical training and site visits.

Starting from the country presentations and allowing all the participants to share, discuss and raise questions about the heritage protection status and activities in their home countries, the training covered the following important aspects of cultural heritage protection and preservation specifically related to wooden structures:

- Explanation of the Japanese cultural heritage protection and management systems and policies
- Elaboration of conservation and restoration practices of wooden structures in Japan by experts and on-site lectures
- Practical training in recording/documentation, damage survey and planning of the restoration work of wooden structures (Fig. 1)

- Site visits for learning about the preservation and maintenance of vernacular houses and townscapes (Fig. 2)
- Reconstruction and rehabilitation of cultural heritage buildings
- Practical training on survey and restoration of wooden painted surfaces
- Preservation of traditional craftsmanship and tools
- Devising risk management plans for cultural properties
- Identifying the values and writing the SOS for World Heritage Convention

Fig. 1: Section drawing of Tanaka Family Residence

Fig. 2: Site visit to Takayama Preservation District.

The course answered many questions raised at the beginning by the participants and it has enhanced their skills and knowledge in many ways. All these skills and experience will help them to improve their conservation and restoration practices in their respective countries. The well-organized and well-planned Japanese model for preservation and restoration of cultural heritage can serve as a good example to follow.

The following are the interesting and useful concepts, techniques and practices that I have learned from the training course and the Japanese model of restoration of cultural heritage, and I am very eager to implement these in my home country, Pakistan:

**Japanese organizational framework for the management of cultural heritage**

Japan has a very well-organized and unique framework for the management and protection of the cultural heritage of the country. The establishment of effective comprehensive laws and policies through proper documentation and the inclusion of all tangible and intangible aspects; i.e., artistry, skills and traditional conservation techniques, makes it a unique example and source of inspiration for countries like mine. The cultural heritage of Japan has been listed and segregated on the basis of a number of defined criteria. The prioritization and segregation of cultural heritage as designated, registered and national treasures, and including local governments in an effective management plan for the preservation and restoration of each structure makes it very effective and doable.

In comparison to Japan, a lot of improvement is needed in the management plans and laws related to cultural heritage protection in Pakistan. The absence of involvement by local governments, missing natural cultural properties and the intangible aspects of heritage can be addressed by using Japan as an example.

**The documentation and damage survey of wooden structures**

Another important learning experience was the practical training for documentation and damage survey of wooden structures. As I deal with the documentation of cultural properties back home, it was a very useful exercise to help me review and learn about all the measurement and survey techniques I can incorporate into my practice. (Fig. 4)

Learning about the Japanese traditional method of taking measurements and the traditional unit shaku was an interesting experience. The importance of tatami mats in the measurement of different spaces of traditional buildings was also an interesting phenomenon which helped me to understand the importance of learning traditional units and measuring systems for documentation of traditional buildings and having a better understanding of their proportion and planning.

**Community participation in cultural heritage protection**

The role of community in cultural heritage protection and management is very inspiring and something unique to Japan. The way local people care for their cultural heritage, their efforts and willingness to protect their heritage and to hand it down to their younger generations was very pleasing to see. Involvement of the local community is the key factor in the preservation and protection of the cultural heritage of any country. Learning about the free volunteer guides and information services for tourists like IKARUGA ICES SGG "***Good Will Guide***" was very encouraging and can be considered as an example every country should follow. I would surely like to try to get something like this implemented in Pakistan too.

Similarly, the participation of the local community of Takayama City and Shirakawa Village in owning and protecting their cultural assets was very inspiring. I would like to engage the local communities and people of my country in protecting their cultural assets and will try to follow the same practices.

**Paint restoration techniques**

Learning about the Japanese advanced paint restoration techniques and use of traditional pigments and materials was also a very enlightening experience. The site visits to Kiyomizu-dera Temple and Zenrin-ji Temple were very useful in this regard. The use of reversible intervention in paint restoration was also a very good example of how to preserve original painted surfaces and material fabrics as well as how to reproduce and repaint them (Fig. 3). I would like to promote research into and revival of the traditional paints and pigments used in cultural buildings in Pakistan.

**Preservation of carpentry tools and techniques.**

Visiting the Takenaka Carpentry Tools Museum in Kobe City was another memorable visit. Preservation of both the tangible and intangible heritage of Japanese woodworking tools and traditions is a very nice step by Japan (Fig. 5). I think there is a dire need to introduce this approach in Pakistan too, as traditional skills are gradually diminishing. The carpentry classes for the younger generations and the general public is also an admirable step in terms of protecting traditional craftsmanship, which can be applied in my country too.

Fig. 3: Reversible intervention (paint restoration).

Fig. 4: Lecture at Tanaka Family Residence.

Fig. 5: Carpentry workshop and Takenaka Carpentry Tools Museum.

**Conclusion**

In a nutshell, I would like to say that Japanese cultural heritage protection and restoration methods are very well framed and organized and can serve as an example for other countries. The organization of this training and sharing this useful knowledge and practices with professionals from around the Asia-Pacific region is a very generous step by the Japanese people, government and cultural organizations. The content of the training was very relevant to the current problems being faced by professionals in my country and I am really looking forward to implementing the knowledge I have acquired. I really hope to stay in touch, share and discuss my problems and thoughts with the regional network I have established with my fellow participants.

**Acknowledgements**

I would also like to pay my humble gratitude to all the organizers and the staff members who planned everything flawlessly and who have been really helpful during this whole month, making my stay in Nara a memory to cherish forever!

**Arigato Gozaimasu...!**

**Philippines**
**WILMER Paraguison GODOY**

# Invaluable Lesson and Experience regarding Heritage Conservation in Japan

-A review and analysis of Japan's heritage conservation practice and policies that may be applied to the Philippines-

## I. Rationale

The Asia-Pacific region is unique in many ways, especially in terms of cultural heritage. Most of the heritage structures in this area are mostly made of wood and other traditional materials. The foremost example is Japan, which has introduced effective conservation (i.e., preservation, restoration, protection, management) practices and policies to maintain its large treasury of significant wooden heritage structures. Thus, learning from the Japanese system of conservation is a valuable lesson and an essential experience for every heritage expert in the field of conservation.

A. This paper aims to:

1. Synthesize the Heritage Conservation Policies and Practices of Japan based on the Asia-Pacific Cultural Centre for UNESCO (ACCU) training course entitled, **Cultural Heritage Protection in the Asia-Pacific Region 2017: Preservation and Restoration of Wooden Structures,** held in Nara, Japan from 29 August to 28 September, 2017.
2. Compare the practices of heritage conservation of Japan and the Philippines.
3. Identify the conservation practices and policies of Japan that can be helpful and possibly adopted in the Philippines.

## II. Recollection of Key Points and Valuable Lessons Acquired during the Training:

A.Current Situation of Heritage Conservation in the Asia-Pacific

The training commenced with the fifteen (15) participants sharing the current heritage situation in their respective countries. It was conducive to establishing networks and nurturing cooperation between countries of the Asia-Pacific region. Common challenges identified among the countries were: a) how to deal with post-trauma after heritage destruction; b) addressing the gap in human resources and technical knowledge in conservation; c) proper understanding of traditional structures; d) physical changes in heritage structures; and e) proper care and restoration of heritage structures, among others. It was apparent that some of these are similar to the challenges of heritage conservation in the Philippines, notwithstanding the fact that Filipinos are vigorously continuing to work on addressing these conservation challenges.

B. Identification and Proper Management of Important Cultural Properties, National Treasures and Preservation Districts

Japan has a long history to tell; thus there is a large number of heritage sites and structures within the country. Whether designated or applied, the heritage structures of Japan in general are well maintained. Japan maintains an astounding number of more than a hundred preservation districts, a significant feat in a geographical area where tremors occur regularly and that is frequently visited by storms and typhoons. Compared to Japan, with more than a millennium of existing heritage sites and structures, the Philippines heritage structures were mostly built from the 18th century onwards[1], and the NHCP [2] has declared quaint eight heritage zones [3] or preservation districts! It is also a challenge for the Philippines national and local governments to identify and declare the dwindling number of heritage zones, [4] primarily for protection, before they totally disappear. It is an immense task for heritage workers to culturally map and document all of the remaining preservation districts yet to be declared and to coordinate with the local government and the stakeholders for the possible designation of these potential heritage zones.

C. Indicators of Successful Conservation of Heritage Sites and Structures

Taking a closer look, why is Japan so successful at heritage conservation in almost all cases? The answers are apparent based on my own personal observation, namely:

1. Stable financial support for restoration, basically a government subsidy from the village, town, city, prefectural, and/or central government;
2. Availability of a vast resource of traditional materials, i.e., trees, forests, etc.;
3. State-of-the-art technology, e.g., heritage structures can be moved properly without even being dismantled;
4. Pool of efficient heritage conservation experts and practitioners;
5. Effective policies and guidelines for conservation (preservation, restoration, management)

Japan, with undeniably vast resources (natural and financial) has all the means to preserve most of its heritage sites and structures using the latest state-of-the-art technology and a pool of well-trained heritage conservation practitioners such as architects, engineers, traditional carpenters, painters, etc. As a result, almost all the heritage structures of this country are in good condition in terms of conservation. Thus, given all the abovementioned requisites, we in the Philippines could come up with good preservation and restoration results. It is necessary for us to revisit the present conservation policies and working guidelines of the Philippines and check whether they are still effective or require updates to address the present challenges of conservation.

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[1] With the exception of pre-colonial dwellings and landscapes; e.g., Cordillera houses and rice terraces.
[2] National Historical Commission of the Philippines.
[3] Heritage Zone shall refer to historical, anthropological, archaeological, and artistic geographical areas and settings that are culturally significant to the country… (R.A. 10066).
[4] Gapan City old district, Angeles City old district, Carcar City old district, San Miguel old district, etc.

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From left to right: 1. Kofuku-ji Temple Pagoda, the temple rebuilt many times after various calamities; 2. Todai-ji Temple, the world's biggest wooden structure and shrine of the Great Buddha (Daibutsu Vairocana); and 3. Horyu-ji Temple, Japan's foremost UNESCO World Heritage Site. All of these temples (originally built in the 7th and 8th century), along with other old temples of Japan, clearly show the excellent conservation (preservation/restoration) efforts being made for wooden heritage structures.

D. Underlying Values and Positive Attitude towards Heritage Conservation

Aside from the abovementioned tools necessary for conservation, I would say that the very success of heritage conservation in Japan is due to the good "values" of the people. This positive attitude towards preservation is worthy of emulation in each and every country without exception, including the Philippines. Moreover, the restoration of historical fabric is an external manifestation of the explicit goodwill/desire (intangible heritage) of the people to retain their rich cultural heritage; this is evident in the two preservation districts visited during the course of the training, namely: Takayama City Preservation District (henceforth TCPD) and Shirakawa Farmers Village (henceforth SFV). In the case of the Philippines, education and informing the people of the significant values of conservation should be taught vigorously to the people especially stakeholders. In most cases, after having been informed, the people had a better understanding and appreciated the value of cultural heritage.

E. Local Community Initiative and Involvement as Demonstration of Sustainable Heritage Conservation

The two abovementioned heritage districts are outstanding examples of community-initiated conservation where preservation has proved successful. In the case of TCPD, the preservation of the old sections of the town (northern side and southern side) originated from a local traditional festival of the town (intangible heritage practices); consequently, the people thought of preserving the streets where magnificent and colorful floats paraded during the festival. As mentioned earlier, preservation of historical fabric/structures is a result of underlying "values" of the people. On the other hand, SFV is a collaborative effort by villagers to retain the original form of the farm settlement (outstanding example of Gassho-style houses) including the natural landscape. This little village (a noteworthy UNESCO World Heritage Site) is an outstanding model of preservation for all other

villages around the world (I must say). It is a concrete illustration of how old traditional architecture can be maintained through adaptation along with the modern age.

From the promontory (observatory), my soul lifted in awe and my spirit was delighted as I stood before a scenery that was a sight to behold. The village reminds me of other farming villages in the Philippines, now gutted by modernization. Empowering the local villagers is a must in heritage preservation. A close-knit relationship must be established among the inhabitants to form a homogenous group in order to come up with doable and sustainable conservation policies. Preservation of local traditional communities requires close collaboration between the dwellers and the government.

F. Preservation and Continuity of Local Crafts for Sustainable Conservation

It is crucial in conservation to transfer the traditional crafts and knowledge to the coming generation. This is important to enable them to continue the preservation of our present heritage sites and structures. The legacy (in the form of cultural heritage) that we received from past generations is the same legacy that we are going to pass to the next generation; thus, it is our responsibility to empower the coming generation in handling this legacy. This is explicitly maintained and practiced in Japan, where conservation experts such as architects and craftsmen such as carpenters abound, whether locally or professionally trained. It is evident in the restoration of Yakushi-ji, Todai-ji, Toshodai-ji, Kofuku-ji Temple Complexes, Tanaka Family Residence, and Nagoya Castle. Wooden structural and architectural members such as columns, beams, roofing, floors, partitions, etc. are carefully preserved, and old paintings are painstakingly restored or replicated, excellent proof of proper restoration. It is an urgent call in each country, not least of all the Philippines, to reintroduce academic training in traditional crafts such as carpentry and painting at schools. Modern day curriculums increasingly focus on industrial technology in order to promote modernization, while art-related courses are less favored due to the unavailability of job opportunities after graduation.

G.Risk Prevention/Reduction/Mitigation and Proper Management of Heritage Sites and Structures.

Risk prevention is a key factor in the continued protection of heritage sites and structures. All the efforts of preservation and restoration may be in vain if there is an absence of a feasible and doable risk prevention plan. Something noteworthy to mention is the ingenuity of the people of Takayama City in how they harnessed the available resources from nature to protect their heritage structures. From the river, they tapped a continuous flow of source water following the slope of the area and running along canals around the streets. Thus, they are always ready to extinguish fires. The people themselves organize regular drills to train themselves should fire strike with little notice. Therefore, a risk prevention management plan is part of the overall conservation plan, which is vital to continue the preservation of heritage sites and structures. The Philippines should pay attention to including the protection of heritage sites and structures in the National/Local ‘Framework’ of Risk Reduction Management Plan.

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From left to right: 1. Shirakawa Farmer's Village, a UNESCO World Heritage Site; 2. Takayama City Preservation District; and 3. Kobe City Preservation District. All the aforementioned heritage zones are the result of good cooperation between the local inhabitants and the government, which serves as a good pattern for other heritage settlements needing proper conservation.

## III. Generalization and Conclusion

The one-month training organized by ACCU was a great opportunity to learn about heritage conservation in Japan. It opened a window for Asia-Pacific countries to forge ties, share, and establish networks with one another, especially in terms of cultural and heritage conservation. Moreover, the everyday training sessions and field visits were filled with invaluable lessons regarding the heritage conservation practices and policies of Japan. (I was overwhelmed with the great deal of information and lessons learned.) Although the Philippines is different from Japan in so many ways (i.e., geographical location, climate, heritage components, etc.), the lessons and important "values" learned from the training can be transferred to a Philippine setting. The program gave me renewed enthusiasm to meet future challenges and apply all the lessons I learned vigorously in the field of heritage conservation upon going back to my own country.

## IV. Acknowledgements

My heartfelt gratitude goes to all the ACCU staff: Mr. Nishimura, Mr. Nakai, Ms. Wakiya, Ms. Suzuki and all other staff who accommodated us and made everything go very well; and to Ms. Hata, who served as moderator and translator during the entire training. Special thanks also must go to all the lecturers, resource persons, and experts who shared their valuable knowledge and skills with us; to all my co-participants, for the happy companionship and camaraderie we shared together; and to Ms. Chinen and Mr. Jammo for accompanying us every day. I would also like to thank Mr. Murakami and Ms. Hyeonok for helping me to procure six volumes on Japanese architecture (traditional and modern). The ACCU training was a once-in-a-lifetime experience for me. I really loved everything about Japan: the food, the hospitality, the villages and cities, the temples, the architecture, the heritage—almost everything. I must say, "Japanese are great people and indeed Japan is a beautiful country." I will never forget you and will cherish you all in my heart. Arigato gozaimasu!

*"When you think about heritage, think not just of material value but also think of the people. People are an integral part of heritage."* – Prof. Gamini WIJESURIYA

*"Good observation and understanding of the structure cannot be done by a machine but rather, by the human eye."* – Mr. KONDO Mitsuo

*"Mutual relationships and collaboration among the villagers are an essential part of conservation."* – Mr. MATSUMOTO Keita

*"To protect traditional culture, you need to grow the tree and nurture the people and community."* – Mr. IMAI Keisuke

**Thailand**
**Monthatip Yaempradit**

# Final Report on the Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2017: Preservation and Restoration of Wooden Structures

## Introduction

The training course on Cultural Heritage Protection in the Asia-Pacific Region was conducted by the Agency for Cultural Affairs, Japan (*Bunkacho*), Asia-Pacific Cultural Centre for UNESCO (ACCU), International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), and the National Institute for Cultural Heritage, National Research Institute for Cultural Properties [Tokyo and Nara] from 29th August to 28th September 2017, and was joined by 15 participants from 14 signatory countries. As the representative from Thailand, I was one of the participants who received this opportunity to gather knowledge on the preservation and restoration of cultural heritage. As a general key, the training encouraged participants to share, learn and develop initiatives for preservation and restoration of wooden structures. The organizers provided many experts from Japan and overseas to give lectures, practice sessions, and facilitate discussions among participants to let us exchange ideas among Asia-Pacific countries including Afghanistan, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Korea, Nepal, New Zealand, Pakistan, the Philippines, Thailand, and Vietnam.

The program for this training ranged from basic ideas of preservation and restoration in cultural heritage, practice in documentation, survey and monitoring, determining plans for preservation and lectures on many case studies such as houses, temples, shrines, castles and townscapes, to learning the history of tools and how to use them with wooden structures, and understanding how to adapt risk disaster plans to preservation and restoration in cultural heritage projects. Accordingly, the training program exposed us to many different views of cultural heritage protection from a worldwide perspective. We learned about and compared the Japanese process compared to the process used at our own sites. This gap of ideas on different issues will guide me to do more research and improve the way I help protect cultural heritage in my own country, particularly in regard to the following issues:

## 1. Principles and Policies for Cultural Heritage

Japan has classified “cultural properties” in the Law for the Protection of Cultural Property into six categories as follows: (i) Tangible Cultural properties (ii) Intangible Cultural Properties (iii) Folk Cultural Properties (iv) Monuments/Sites (v) Cultural Landscapes and (vi) Groups of Traditional Buildings. The aim of preservation is to conserve cultural properties, utilize them, and thus contribute to the cultural development of the Japanese nation as well as to the progress of world culture. Under the cultural property protection system of Japan, designated tangible cultural properties are classified into two classes: (i) national treasures and (ii) important cultural properties. Superior important cultural properties are selectively designated as national treasures. Moreover, designation, registration, and nomination of tangible cultural properties are included.

The principles of restoration work in Japan look interesting in the reuse of parts to maintain the authenticity of materials, making decisions to alter the existing state of structures, the study of traditional techniques and the way to document restoration work. These ideas are the reason why many cultural heritage buildings still remain in Japan in a rather complete form.

In Thailand, the Fine Art Department is the main official department that is involved in work related to cultural heritage. Preservation and restoration work is regulated by the Act on Ancient Monuments, Antiques, Objects of Art and National Museums, M.E. 2504 (1961). The Act presents definitions of three important keywords as follows:

(i) Ancient Monument means an immovable property which, by its age or architectural characteristics or historical evidence, is useful in the field of art, history, and archaeology.

(ii) Antique means an archaic movable property, whether produced by man or by nature or being any part of the ancient monument or of human skeleton or animal carcass which, by its age or characteristics of production or historical evidence, is useful in the field of art, history or archaeology.

(iii) Object of Art means a thing produced by craftsmanship which is appreciated as being valuable in the field of art.

The main idea of conservation is maintenance and preservation of remaining value, which includes protection, preservation, restoration, and conservation. Even though the policy regulates those three things in particular, on-field work can include sites and objects that represent the value of national cultural heritage and local cultures. For example, palaces, monuments, temples, shrines, houses, pieces of literature, drama and music, ceremonies, festivals, and so on.

## 2. Documentation in Cultural Heritage Buildings

Surveys can divided into eight categories including (i) surveys of damage (ii) surveys of specifications (iii) surveys of traces/for restoration (iv) surveys of structural components (v) seismic evaluation surveys on structure (vi) surveys on documentary records (vii) excavation surveys and (viii) other surveys. All these aim to record the original dimensions of architecture such as column spans, floor levels, roof levels, angle, types of material, etc.

The work session at Tanaka Family Residence provided knowledge of the history, characteristics, and structure of the Horen-zukuri style farmhouse. We practiced documenting and investigating conditions in the Japanese way. The Japanese system records a range of elements rather than aiming for precision, because the determining reference mark is only one spot. Japanese has recorded by the large scale that running number from the first span until the last span or the end of the measurement tape. This method is completely different from other countries which record span by span. Also, a multi-line laser machine is helpful for marking references for the vertical line measure. Additionally, this work session teaches us how to carefully observe cultural heritage buildings. Measuring the span of pillars and the floor, size of materials and angles is important, because this report may predict the future condition of

each element. The recording format is also useful for notes such as remarks on wood species, quality, preparation process and shape of the used materials. Investigation of the condition of the material is one process related to determination of the preservation plan and calculating the budget. Most of the weaknesses come from damaging factors such as humans, animals, and nature.

The important thing is how to expand the life of the original materials as much as possible. Before starting a project, we must find the damage, contemplate how to fix and repair it, and then draw up a preservation plan. On the other hand, utilization of a building can also preserve its life. Activities in cultural heritage buildings should be included in the preservation plan. For example, a living museum and contemporary workshop could be recreated once a week. Local people would therefore come into part of the cultural heritage building. That building would then become a community site for local people that has both tangible and intangible value.

Figure 1: Tanaka Family Residence

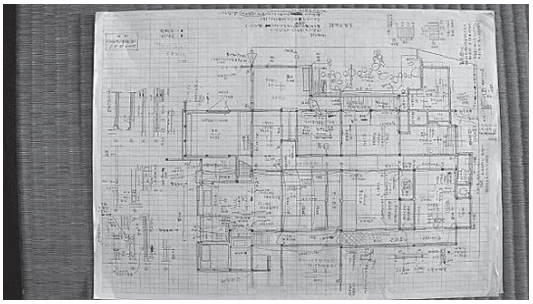

Figure 2: Example of survey drawing

### 3. Preservation, Restoration, Conservation and Reconstruction Projects

The processes of tangible conservation in Thailand are classified into three categories: (i) Preservation means to preserve in the present condition and protect against future damage. (ii) Restoration means to revive old physical elements which have disappeared back in the same place with new materials. (iii) Conservation means to repair old elements and rebuild new elements to be as harmonious as possible, by defining the different periods for the old and new materials. These processes also appear in Japan but are different in many details such as in the use of traditional materials and traditional techniques, with the final design of projects based on the results of the survey and documentation mentioned above. Then the content of the design is determined including the work requirements, an estimate of the cost of the work and clarification of the inspection details/standards implemented by a supervisor. The specifications, breakdown of the cost and notes for the final design follow after that.

Accordingly, as part of the training there were case studies, where we went for lectures and observed many ideas of preservation, restoration, conservation and reconstruction projects of different kinds of architecture such as historic monuments, temples, castles and vernacular houses. Preservation work for cultural heritage buildings in Japan can be separated into two types: once every 10-20 years for reroofing, and once every 100 years to preserve the whole structure. Most of the historical monuments, temples and castles are also archaeological sites. So, excavation work becomes the first process. After being excavated and surveyed, archeological pieces are protected by the concrete foundations of the building above.

The case studies, including Yakushi-ji Temple, Toshodai-ji Temple, Todai-ji Temple, Nagoya Castle, Kiyomizu-dera Temple, Zenrin-ji Temple and Horyu-ji Temple, led me to gather many beneficial preservation ideas. For example:

- The preservation process should be done through research of traditional construction methods and follow the traditional rules for every component.
- Wooden structures should be cleaned using brushes without scraping the original surface.
- Painted parts should be cleaned with Japanese paper, which traps water and absorbs the dust into the paper.
- For rotten wooden parts which need to be removed, the new material which replaces them must be the same kind of wood, mostly cypress, cedar, and pine.
- New technology should be used when traditional reinforcement techniques are not able to resolve the structural problem.
- For some parts that have been preserved more than once, we need to assess which period represents greater value and which techniques benefit the structure.

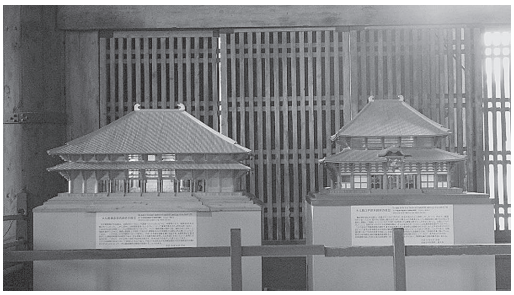

Figure 3: Model of Todai-ji Temple in two different periods
Figure 4: Restoration painting work at Kiyomizu-dera Temple

On the other hand, the major scale of cultural heritage sites enables them to become Preservation Districts for Groups of Traditional Buildings such as the townscape of Takayama City and Shirakawa Village. Both places have been registered by local people and are managed by local people. The government supports them as official facilities through subsidies, grants, and policies. The management of townscapes is an interesting issue. Local people who the owner and head of preserve the town, commute group of people for managing their own area. So, the value of the townscape is passed on from generation to generation, providing what we call sustainable management.

## 4. Disaster Risk Management

The factor of disaster in Japan comes from both humans and nature. The greatest risk for timber is obviously fire. The government of Japan has granted considerable subsidies for fire protection such as fire alarm systems and initial firefighting equipment. The second risk is the impact of typhoons, and the more frequent gale force winds and tornados, followed by floods, landslides and big fallen trees. The third risk, which is relatively rare but causes the most serious damage, is the occurrence of

earthquakes. For example, the Great Hanshin-Awaji Earthquake in Kobe destroyed temples, shrines, vernacular houses, sake breweries, modern buildings, foreign residences, western-style residences, Japanese-style houses, brick-built architecture, arts and crafts and folklore cultural properties. Most of them have been restored with materials to prevent deterioration from the earthquake.

By comparison, in Thailand, flooding is the most severe and frequent hazard affecting this project area. It can also lead to secondary hazards such as landslides/sunken land, soil erosion, electricity leakage, and theft. Thailand is also vulnerable due to its natural setting, i.e., location, monsoons, low pressure weather systems, and climate change and from human interventions, i.e., urbanization, construction, water management mistakes, past intervention, unprepared management, lack of cooperation among involved organizations and changes in architectural styles and building techniques. Meanwhile, necessary elements to help manage the impact of floods need to include flood warnings/alerts, timeframes for preparation, logistics and lines of communication, perimeter protection, interior drainage systems and emergency contacts.

## Conclusion

The experience from this training has been most invaluable. Learning about the Japanese style of preservation and restoration made me look back to my own country, opening a new perspective. I found ways to resolve some problems, and some ideas that I used to think were good led to some concern. The one month ACCU training course, moreover, enabled me to learn about preservation and restoration of wooden structures, but the discussions between the lecturers and overseas participants also provided different viewpoints with which to analyze my own country, and that expanded my perspective.

Other than providing knowledge, the organizers took good care of the participants during both the class time and free time, as we were regarded as family. On weekends and in their free time, participants could study and travel while pursuing interesting issues which were not included in the training curriculum. So, the benefits from this training exceeded my expectations. Finally, I would like to thank Bunkacho, ACCU, ICCROM, the National Institutes for Cultural Heritage, National Research Institute for Cultural Properties [Tokyo and Nara], the Japan Consortium for International Cooperation in Cultural Heritage, Ministry of Foreign Affairs of Japan, Japanese National Commission for UNESCO, Nara Prefectural Government, and Nara City Government for organizing and nominating me for this course.

**Viet Nam**
**Duong Nhat An**

# Final Report of the Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2017

## Introduction

From 29 August to 28 September 2017, I had an opportunity to join the Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2017 with my new friends from 13 other countries in Asia. The topic of the training course was preservation and restoration of wooden structures.

We came to Nara city, Japan with many different political, cultural, and language backgrounds, but we have one thing in common: the passion and desire to study the field of preservation and restoration of World Cultural Heritages, especially wooden architectural monuments. During the past month, we had access to a huge amount of knowledge along with many useful practical trips. We had the opportunity to study, interact and discuss with many leading experts in this field. It was an honor for us to be trained in Japan, one of the most experienced countries in the world in the field of preservation and restoration of World Cultural Heritages.

I believe that I will use all that useful knowledge for the preservation and restoration of monuments in the direction that is the most suited to Vietnam's actual conditions. For example:

## Recording/Documentation of Wooden Structures

I received a great deal of useful and important knowledge on surveying, measuring and evaluating the present condition of wooden structures during the work session at Tanaka Family Residence, especially surveying methods (Fig 01).

Fig 01. Surveying method and equipment (Tanaka Family Residence, Nara, 2017)

Regarding the preservation and restoration of Cultural Heritages, especially wooden structures, surveying, drawing and evaluating the present status of structures play a particularly important role. These are considered to be the decisive factor to the success of a project. All data obtained will be the foundation for subsequent design steps.

For projects on preservation and restoration of the World Cultural Heritages managed by the Hue Monuments Conservation Center, we attach great importance to this issue. However, the process of surveying, measuring and evaluating the current status of the structures has not been standardized so we sometimes encounter difficulties at the project implementation stage.

After three days' work, I improved my skills in surveying, measuring and evaluating the current status of projects with the careful guidance of experts. After I come back to Vietnam, I will apply and share the skills that I learned with colleagues to improve the surveying process, including measuring and evaluating the current state of projects in Vietnam in general, and in particular the Hue monuments.

## Restoration of Wooden Structures

I was deeply impressed with the Japanese wooden restoration process, especially as seen at the construction sites at Yakushi-ji Temple and Toshodai-ji Temple. The construction sites are organized scientifically, with a focus on occupational safety and a high level of discipline. This is exactly what we need to learn from Japan. The most impressive thing for me (probably too simple for many people) was the cover for the whole building during the restoration (Fig 02). Actually, this is a very important item for dismantling, evaluating, preserving and restoring the wooden structures of monuments. However, it is difficult to do in Vietnam for many different reasons. I hope that in the near future we can do something like that.

Fig 02. Construction site of Yakushi-ji Temple (Yakushi-ji Temple, Nara, 2017)

In the wooden restoration process in Japan, I was especially impressed with respect to the attention paid to the historical value, the original value of each timber structure; the originality of the material and the method of recovery. In addition, I felt the enthusiasm, passion and carefulness of the staff in the conservation and restoration of monuments.

## Preservation and Maintenance of Wooden Structures

In Takayama, I was really touched because Takayama City reminded me of Hoi An ancient town in Vietnam. The two cities really have a lot in common, for example, in terms of architecture, space planning, and people's lifestyles. Takayama City and Shirakawa Village deserve to be role models in the conservation, restoration and maintenance of historic monuments for vernacular houses and townscapes.

In addition to the monuments and landscapes protected in good condition, what mattered to me particularly were the fire fighting systems of Takayama City and Shirakawa Village (Fig. 03). This is the first time that I have seen fire fighting systems so well integrated within a community in both places.

Fig 03. Fire fighting systems (Takayama City and Shirakawa Village, Gifu, 2017)

After I come back to Vietnam, the first thing I will do is to research and apply this fire system for Hue imperial city, where there are more than 500 wooden architectural monuments.

**Restoration of Paint**

Lacquer was used in Vietnam around 930-950 AD. At present, lacquer (lacquer, golden lacquer, silver lacquer) is widely used in almost all wooden structures in Hue Royal Architecture monuments. This was also one of my main areas of interest when arriving in Japan.

After researching at Kiyomizu-dera Temple and Zenrin-ji Temple, Kyoto City, I noticed that although the lacquer process is basically the same in Vietnam, China and Japan, there is a difference between Vietnam/China and Japan in terms of technique as well as the materials used.

Besides this, I was also exposed to the new concept (for me) of the restoration of paint for World Cultural Heritage Monuments (Fig. 04). Restoring the paint for parts of the building in the same style as the original has a very good effect on the preservation of historical and cultural values of each

Fig 04. Restoration of paint (Kiyomizu-dera Temple, Kyoto City, 2017)

component of World Cultural Heritages. I will study this issue more thoroughly to see if it can be applicable to similar projects in the future in Vietnam.

## Traditional Craftmanship and Conservation of Tools

The restoration and conservation of wooden architectural monuments in Vietnam today are mainly based on the experience of longtime artisans. Most of these artisans are elderly, and if their traditional skills are not passed down to successive generations, there is the risk of the skills being lost.

This is one of the greatest challenges for Vietnam in general, and Hue in particular, for the preservation and restoration of Cultural Heritages. Despite many efforts in awareness-raising and education for the younger generation, the results have not been as expected.

Therefore, when I came to study at the Takenaka Carpentry Tools Museum, Kobe City, I was very excited to see the development process as well as how to use the tools on display. The processes were reproduced vividly, and were extremely interesting and appealing to the viewer (Fig 05). This is a great model for preserving traditional industries as well as tools; it is a place to inspire people, especially the younger generation, to know, understand and love these traditional techniques.

Fig 05. Conservation of tools (Takenaka Carpentry Tools Museum, Kobe City, 2017)

I am sure that I will return to Takenaka Carpentry Tools Museum to learn more to apply this model in Vietnam successfully.

## In Conclusion

This was a great chance for me to have the opportunity to study, research, and share experiences with other participants as well as leading experts in the field of preservation and restoration of wooden structures. I will use the knowledge learned to improve the process of preserving and restoring the World Cultural Heritages of my country. Finally, I would like to sincerely thank the board of directors and all ACCU staff, lecturers, experts and participants who helped me complete this training.

Cám ơn.

Thank you.

**Viet Nam**
**Tran Thanh Hoang Phuc**

# Final Report on the Training Course on Cultural Heritage Protection in the Asia – Pacific Region 2017 Preservation and Restoration of Wooden Structures

## I. Introduction

The study of traditional wooden architecture has always been an interesting topic for researchers and conservationists in Eastern Asian countries. Understanding the properties of materials, processing methods, type of structures and the factors that affect wooden buildings is important for the conservation and restoration of monuments. Therefore, attending the Training Course on Cultural Heritage Protection organized by ACCU Nara and ICCROM was a great opportunity to learn about traditional wooden architecture restoration in Japan as well as to exchange conservation experiences with other participants.

In this course, we participated in many lectures from conservation experts who work in various research fields. We also went on field trips to a number of heritage sites which are under conservation such as temples, vernacular houses and ancient towns to gain a better understanding of the history, culture, architecture and restoration techniques in Japan.

## II. Lectures and Activities in this Training Course

Through the lectures and field trips, some of the knowledge I gained is as follows:
I was impressed by the policy for the protection of cultural heritage in Japan presented by Prof. INABA Nobuko. The Japanese have made great efforts to preserve their tangible and intangible cultural heritage, which is reflected in the legal framework for the protection of cultural heritage. As early as 1871, there were proclamations by the Imperial Cabinet for the Protection of Antiquities. In 1897, there was the Ancient Shrines and Temples Preservation Law. Subsequent laws for other types of heritage such as Historic Sites, Intangible Cultural Properties, Preservation Districts for Groups of Historic Buildings, etc. continued to be added up to 2004 with the Cultural Landscapes Law. The prefectures of Japan have strongly focused on preservation and restoration of cultural heritage. Many artifacts and heritage sites from the 7th and 8th centuries have been still preserved and restored in perfect condition. Temples, shrines, vernacular houses associated with customs, daily activities and annual festivals of local people, which are all important cultural heritages, are well-classified. These become a strong foundation for conservation work. The training for construction workers, technicians and managers in restoration techniques is also well considered.

In contrast, although attention has been paid to the preservation of cultural heritage in Vietnam, a regulation for the protection and use of historical and cultural sites and scenic spots was only established in 1984 due to the prolonged war. Until 2001, the Law for Cultural Heritage was approved by the 10th National Assembly of Viet Nam. The tangible and intangible cultural heritage is quite well

preserved, but finding and training the next generation of local conservation experts and providing significant remuneration for the workforce have not been properly taken care of.

In the training course, field trips to heritage sites provided the participants with an overview of traditional Japanese wooden architecture. The architecture is harmonized with nature with sophisticated yet elegant design. Wood such as cypress, pine, cedar and camphor and so on as a product of the rich forest environment is well utilized as a basic element in architecture. Traditional roofing materials are made from organic materials such as thatch and wooden shingles. The wooden frames and structures are firmly jointed with a variety of mortise and tenon joints, which not only create stable structures but also withstand the impact of earthquakes. These types of structures can be easily dismantled for repair work. In addition, double layers of rafters create deep overhangs. In temples, white walls and red wooden frames with colorful decorations on wooden elements are well used to create a strong visual impression. Meanwhile, in vernacular houses, neutral colors of natural materials are commonly used and exposed to express simplicity and modest beauty. However, these materials, such as wood, thatch and wooden shingles, are a fire hazard and easily decay. As such, the reconstruction of wooden structures or re-roofing need to be carried out periodically.

Work plans for conservation and repair are carefully implemented. Regardless of the different types, the principles of conservation and repair work must be followed such as reuse of original components, investigation and reproduction of working methods and techniques, rigorously reviewing restoration policy and recording the original details. Restoration works of public and privately-owned buildings which have historical and cultural values must strictly comply with regulations, instructions and evaluations from both national and prefectural governments. Therefore, the inherent features of the architecture in each region and cultural values are kept intact. For traditional vernacular houses, e.g., Takayama historic buildings, Shirakawa-go and so on, the homeowners can seek subsidies from the national and local government for the conservation and renovation work. Disaster risk management at heritage sites is particularly well managed. The conservation works follow a multi-pronged approach, which is to not only strengthen building stability but also enhance environmental sustainability.

The most interesting conservation exercise was to learn about surveying painted surfaces and planning for painting restoration, mentored by Mr. KUBODERA Shigeru. Learning how to observe the traces of decorative patterns painted on the wooden beams in Jibutsu-do, Todai-ji Temple and to sketch and color those patterns on paper enlightened us on another aspect of conservation. An on-site discussion on the evaluation of paint colors undertaken for the Amitabha Hall, Zenrin-ji Temple provided the participants with a better understanding of several methods to repair the paint colors of architectural structures. Various paintings in the same structure have different restoration treatments due to their differing characteristics. The exterior colors of the hall have been fully repainted, but the inside is divided into several sections and the colors were repainted separately depending on the section. Some sections have been fully repainted, some sections have been preserved after being treated by cleaning and preventing delamination of the existing colors, and other sections have been treated by using a

repair method combining the two methods mentioned above. This allows visitors to understand and learn how the original elements and the preserved elements are treated.

The above methods have widened my knowledge on conservation to an extent I have never experienced before. They not only preserve the heritage value but also serve public education and research purposes. In Hoi An ancient town, where I am in charge of its conservation, the various parts of structures are rarely painted except for some Chinese components. Consideration will be given to applying the above methods to similar conservation projects in Hoi An, Vietnam in the future.

Detailed interior and exterior of Amitabha Hall, Zenrin-ji Temple

Moreover, through sketching and measuring structure and elements at the old Tanaka Family Residence, I have learnt how to measure tilt and subsidence in pillars and floors for drawings, to observe structural members and jointing methods more effectively.

## III. Conclusion

From the course, I now have more understanding of wooden conservation. However, adapting these learning points to the context of Hoi An ancient town, Vietnam is something that must be well considered, studied and developed, as each country has its own unique architectural characteristics, historical and cultural values, and fiscal and technological capabilities. However, there are some principles of restoration that can be applied and strengthened to get better results in restoration work in Hoi An:

- Prioritize the use of traditional materials and traditional methods in the preservation and restoration of wooden structures. This will help to better preserve the authenticity of the components rather than the use of machinery, which is commonly used to mass replicate elements and save time.
- Ensure the original shape of the elements through reference to the records.
- Ensure that the original color of retained elements such as coatings and decorative patterns on the wooden structures are part of the architectural and artistic history of the structure.
- Conduct proper investigations so that conservation and preservation methodology can be well proposed, planned and executed.
- Install a scaffolding for the entire structure to ensure an extremely high level of preservation.

It’s difficult to install a scaffolding for restoration of privately-owned houses in Hoi An because the houses are usually close together. Moreover, building a scaffolding would increase the cost of repairs, meaning that the homeowners would have to pay more, and they often do not like this.

## IV. Acknowledgements

I would like to express my gratitude to ACCU Nara and ICCROM, who provided me with the great opportunity to join this high quality training course. The course has equipped me with new and valuable knowledge on preservation and conservation.

Secondly, I would like to thank the other participants in the ACCU Nara 2017 Training Course, who were not only good teammates but also good friends.

Hopefully, ACCU Nara and ICCROM will organize more training courses, so that more conservationists in the Asia–Pacific region can participate in learning and the exchange of experiences. Thank you!

# IV. Appendix

1. List of Participants
2. List of Lecturers
3. Acknowledgements for Cooperation
4. List of Interpreter and Assistants
5. Staff Members, ACCU Nara Office



At Yoshijima Family Residence in Takayama City

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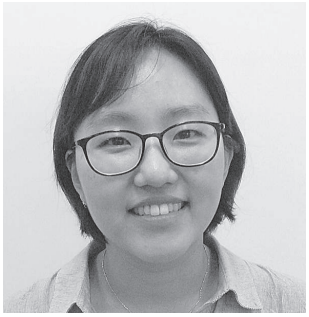

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