Training Course on Cultural Heritage Protection
in the Asia-Pacific Region 2013

Preservation and Restoration of Wooden Structures

3 September - 3 October, 2013, Nara, Japan

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

Agency for Cultural Affairs, Japan

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

International Center for the Study of the Preservation
and Restoration of Cultural Properties(ICCROM)

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Opening Ceremony

Discussion with Prof. Inaba and Dr Chapagain at ACCU Office

Group photo for on-site lecture at Shirakawa village, World Heritage site

On-site lecture at Yakushi-ji Temple, World Heritage site
(at the restoration site, a lecturer giving explanation on model of East Pagoda)

Practical training on Painting Restoration at Jibutsudo of Todai-ji Temple, World Heritage site

Mapping of Measured Drawings on East Pagoda at Yakushi-ji Temple, World Heritage site

Lecture by Mr Mikita at Horyu-ji Temple, World Heritage site

Practical training on photography

Preface

The Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO (ACCU) was established in August 1999 with the purpose of serving as a domestic centre for promoting cooperation in cultural heritage protection in the Asia- Pacific region. Subsequent to its inception, our office has been implementing a variety of programmes to help promote cultural heritage protection activities, 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); National Research Institute for Cultural Properties, Tokyo and Nara; the Nara Prefectural Government; the Nara Municipal Government; universities, and museums.

The ACCU Nara's activities include training programmes in Nara for the human resources development; international conferences and symposia; the regional training workshop; updating website for the dissemination of information relating to cultural heritage protection; the system of "International Correspondents" for promoting information exchange and networking with the countries in the region; and the world heritage lectures in local high schools.

In particular, this training course on cultural heritage protection in the Asia-Pacific region, Group Training Course, has comprised a significant part of our activities for heritage protection, with two themes on alternate year: "Preservation and Restoration of Wooden Structures" and "Research, Analysis, and Preservation of Archaeological Sites and Remains." This was the fourteenth training course on wooden structures and sixteen participants from across the Asia-Pacific region gathered in Nara to join the course.

The areas surrounding Nara are blessed with wealth of wooden structures, some of which have been inscribed on the World Heritage List such as Horyu-ji Temple. These old wooden structures have been preserved, repaired time to time, and handed down to us for more than thousand years. Therefore much information about techniques and materials for the sustainable preservation of wooden structures has been passed down and accumulated. In addition, the philosophy or principle of the preservation and restoration was also developed.

I believe the participants were able to learn not only the techniques and knowledge relating to conservation and restoration of wooden structures but also the important role of local community by visiting the cultural heritage on-site: the way how local people cared for the cultural heritage; their views and willingness to protect heritage and hand it down to posterity; and their daily society-wide efforts. Cultural heritage cannot be protected solely by the efforts of experts or governments. I am sure the participants understood the need and importance of respecting the views and initiative of the local community as well as joining hands with them in the conservation activities.

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. I believe they have established friendship and network of connections in the meantime, which is valuable for their future activities as experts in the cultural heritage protection field. It is also hoped that this publication will benefit those who are making strenuous efforts in the field of cultural heritage protection throughout the region.

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

Contents

I. Introduction

1. General Information
2. Programme Schedule

Himeji-jo Castle with lecturers

Training Course on Cultural Heritage Protection
in the Asia-Pacific Region 2013

-Preservation and Restoration of Wooden Structures-

(3 September – 3 October 2013, Nara, Japan)

General Information

1. Organisers

This course is jointly organised by Agency for Cultural Affairs, Japan (Bunkacho); the Asia-Pacific Cultural Centre for UNESCO (ACCU); the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM); and the National Research Institute for Cultural Properties [Tokyo and Nara], in cooperation with Japanese Association for Conservation of Architectural Monuments (JACAM); Japan Consortium for International Cooperation in Cultural Heritage (JCIC-Heritage); under the auspices of Ministry of Foreign Affairs of Japan; the Japanese National Commission for UNESCO; Nara Prefectural Government; and Nara Municipal Government.

2. Background

In Asia and the Pacific region, there are various forms of cultural heritage including those made of 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 to train heritage professionals for proper investigation, analysis and preservation. ACCU Nara in partnership with ICCROM and Bunkacho has been organising training courses since 2000 on this topic with a view to building the capacities of professionals who have been working on cultural heritage protection in the region. This training course aims to provide participants with the latest methods and techniques for investigation, analysis, preservation, restoration and management of wooden structures.

3. Dates and Venue

Course dates: From 3 September (Tuesday) to 3 October (Thursday) 2013
Venue: Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO [Nara Pref. Nara Branch Office, 757 Horen-cho, Nara, Japan] and related research institutions, etc.

4. Objectives of the Training Course

The objectives of the training course are:

- to provide participants with a knowledge of recording/documentation and analytical methods for wooden structures;
- to provide participants with a knowledge of principles and methodologies for preservation of wooden structures;

- to provide participants with a practical knowledge of technology/techniques and hands-on training for preservation and restoration of wooden structures;
- to provide participants with a knowledge of maintenance, utilisation, and risk management of wooden structures;
- to provide participants with an opportunity to network with colleagues from the region and share experiences.

5. Training Curriculum

Lectures

- Introduction to Asian wooden structures
- Theory and practice on conservation of cultural heritage
- Protection system of cultural heritage in Japan
- Policies on restoration and management of wooden structures in Japan
- Survey method and principles for preservation and restoration
- Survey on painting and plans for painting restoration
- Management and utilisation of wooden structures
- Risk management of cultural heritage

Practical Training and On-site Lectures

- Practical training on survey and documentation of wooden structures
- On-site lectures at the restoration sites of wooden structures
- Fieldwork:case study of conservation/restoration and management/utilisation of wooden structures

Presentations and Discussion

- Presentations on the present status of preservation and restoration of wooden structures in each country followed by exchange of views
- Future issues and views on preservation of wooden structures
- Recapitulation of the training session

6. Participants in the Training Course

Application Procedure and Content

The training course is offered to participants from the following 40 signatory countries of the UNESCO World Heritage Convention (see below). The application form should be submitted no later than 21 June 2013 along with the endorsement of the UNESCO National Commission or the endorsement of the member of Japan Consortium for International Cooperation in Cultural Heritage. The documents necessary for application are the following.

(1) Application Form (Form 1)

Please attach a copy of the passport, if an applicant has a valid passport.

(2) Report Relating to the Applicant's Achievements/Involvements in Conservation of Wooden Structures

This achievement report should be written by the applicant and should be a brief summary of present and previous work related to the theme of preservation and restoration of wooden structures. This report should be no longer than 5 – 7 pages and will be weighted heavily in selection of the participants.

(3) Letter of Recommendation by NATCOM or by the member of Japan Consortium for International Cooperation in Cultural Heritage

(4) Letter of Recommendation by the Head of the Organisation to which the Applicant Belongs (Annex 1)

(5) Documentation Indicating English Proficiency (if obtained)

Completed applications should be sent to the Secretariat of the ACCU Nara Office at the address below. Only complete application with all necessary documents will be considered.

The following are the 40 signatories of the 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, Lao P.D.R., Malaysia, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Palau, Papua New Guinea, Philippines, Rep. of Korea, Samoa, Singapore, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Tonga ,Turkmenistan, Uzbekistan, Vanuatu, and Viet Nam.*

Qualification Requirements

Applicants should be:

1) those who are professionals, 45 years or younger, who are engaged in the preservation and restoration of wooden structures and who can make effective use of the results of the training course upon returning to his/her home country;

2) those who have a good command of English, the working language for all lectures, so that they can deliver presentations and write reports from the training sessions (ACCU Nara Office and ICCROM shall be allowed to utilise all contents of presentations and reports, including drawings and photographs, for future publication and cultural heritage protection programmes);

3) those who can attend the entire training programme;

4) those who submit all of the required documents (listed above) within the deadline outlined;

5) those who will most likely continue exchanging information and interacting with ACCU after returning to their home countries;

6) those who were not previous participants in training courses organised by ACCU Nara Office (however those who have participated in the International Youth Exchange Programs and International Education Exchange Programme can apply for this programme).

7. Notification of Screening Results

After consideration with other organisers, ACCU Nara will select 16 people (one participant per nation, in principle) from among all applicants late in July. Successful applications will be informed of the results along with each National Commission for UNESCO and the Japan Consortium for International Cooperation in Cultural Heritage.

8. Certificate of Completion

Each participant will be awarded a certificate upon completion of the course.

9. Language of the Training Session

English will be the working language throughout the course.

10. Expenses

Expenses during the Training Course shall be borne by ACCU Nara, as follows:

(1) Travelling expenses:

Each of the participants (except those from Australia, Brunei, New Zealand, Republic of Korea, and Singapore) shall be provided with an economy class return air ticket from the nearest international airport from their residence to Kansai International Airport, and transportation fees between Kansai International Airport and Nara.

(2) Living expenses:

Participants shall be provided the basic living expenses incurred during the training course from 2 September (Monday) to 4 October (Friday) 2013 according to ACCU Nara's regulations. Arrangements for accommodations (a room for single occupancy) during the training course will be made by ACCU Nara. In case a participant needs accommodation on the way to and/or from Japan for any inevitable reasons (such as for a visa application and the limited connection of flights), ACCU Nara will cover the accommodation expenses.

11. Secretariat

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

(3 September - 3 October 2013 Nara, Japan)

Course Schedule

Date			Morning (9:30-12:30)	Afternoon (13:30-16:30)	Lecturer		Venue
September	3	Tue.	Opening Ceremony (9:30~)	Orientation Session Lecture: Historic Monuments of Ancient Nara	ACCU Nara		ACCU Nara
	4	Wed.	Introduction to Architectural Heritage in Asia		Neel Kamal CHAPAGAIN (ICCROM)		ACCU Nara
	5	Thu.	Presentation and Discussion: Country Reports by Participants I		Neel Kamal CHAPAGAIN (ICCROM)	INABA Nobuko	ACCU Nara
	6	Fri.					
	7	Sat.					
	8	Sun.					
	9	Mon.	Cultural Heritage Protection System and Current Status of Conservation in Japan	Conservation and Restoration on Wooden Structures in Japan	NAGAO Mitsuru	TOYOKI Hiroyuki	ACCU Nara
	10	Tue.	Prevention of Insect Damage to Wooden Structures	Risk Management of Cultural Heritage	KOMINE Yukio	MURAKAMI Yasumichi	ACCU Nara
	11	Wed.	Value Assessment and Survey and Recording/Documentation of Wooden Structures		HAYASHI Yoshihiko		ACCU Nara
	12	Thu.	On-site Training: "Buddhist Monuments in the Horyu-ji Area"		MIKITA Hideo		Horyu-ji Temple (World Heritage Site) Hokki-ji Temple
	13	Fri.	On-site Training "Restoration of Wooden Structures in Practice I: Restoration of Temple Architecture		NAKAGAWA Tomoyuki	KANEKO Takayuki	Imai Cho Shonen-ji Temple
	14	Sat.					
	15	Sun.					
	16	Mon.					
	17	Tue.	Systems for Restoration Project and Construction Planning	Orientation for the Practical Training: "Overall Process of Restoration	MURAKAMI Jin'ichi	BABA Hiromichi	Yakushi-ji Temple Restoration Office
	18	Wed.	Practical Training: "Survey and Recording/Documentation of Wooden Structures		BABA Hiromichi/ TAKEGUCHI Yasuo/ YAMAGUCHI Isamu		Yakushi-ji Temple (World Heritage Site)
	19	Thu.					
	20	Fri.					
	21	Sat.					
	22	Sun.					
	23	Mon.	On-site Training: "Recording of Wooden Structures (Photography)		SUGIMOTO Kazuki		Nara Museum of Ethnology
	24	Tue.	Practical Training: "Survey on Painting and Plans for Painting Restoration		KUBODERA Shigeru		Todai-ji Temple Jibutsu-do (World Heritage Site)
	25	Wed.	On-site Training "Restoration of Wooden Structures in Practice II: Restoration of Painting		OTA Aki SHIMADA Yutaka		Byodoin Temple Ujigami Shrine (World Heritage Site)
	26	Thu.	Preservation of Cultural Properties (Theory and Practice) I		Gamini WIJESURIYA (ICCROM)		ACCU Nara
	27	Fri.	Preservation of Cultural Properties (Theory and Practice) II		Gamini WIJESURIYA (ICCROM)		ACCU Nara
	28	Sat.					
	29	Sun.	On-site Training: "Preservation and Maintenance of Wooden Structures I: Hikone-jo Castle		Hikone Municipal Board of Education		Hikone-Jo Castle
	30	Mon.	On-site Training:"Preservation and Maintenance of Wooden Structures II: Vernacular Houses and Townscape		MATSUMOTO Keita		Shirakawa Village (World Heritage: Historic Villages in Shirakawa-go)
October	1	Tue.	On-site Training: "Preservation and Maintenance of Wooden Structures III: Vernacular Houses and Townscape		USHIMARU Takehiko/ TANAKA Kyohei		Takayama City
	2	Wed.	Writing Final Report				
	3	Thu.	Submission of Final Reports	Closing Ceremony			ACCU Nara

ACCU Nara: Cultural Heritage Protection Cooperation Office, Asia/-Pacific Cultural Centre for UNESCO

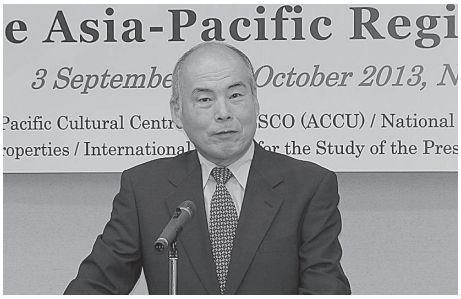
II. Proceedings

1. Opening Ceremony
2. Summary of Training Course

Historical townscape of Imai Town

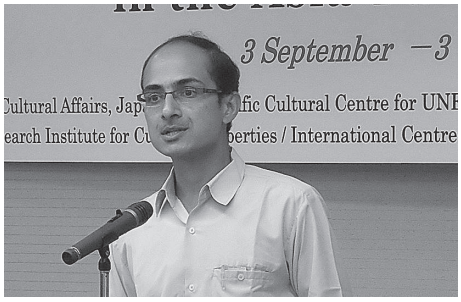
1. Opening Ceremony

Opening ceremony of the 2013 training course was held on 3 September at Kasugano-so Hotel in Nara. Sixteen participants from Asia-Pacific region and honourable guests from International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), Nara National Research Institute for Cultural Properties (NNRICP), Nara Prefectural Government, and Nara Municipal Government.



Mr Nishimura, Director of ACCU Nara Office

Speeches from the honourable guests were given by Dr NISHIMURA Yasushi, Director, ACCU Nara; Dr Neel Kamal CHAPAGAIN from International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM); Mr SUGIYAMA Hiroshi, Head, Department of Planning & Coordination, Nara National Research Institute for Cultural Properties; Mr TAKEDA Naoki, Director, Department of Culture and Education, Nara Prefectural Government; Mr IWASAKA Nanao, Assistant Director, Cultural Property Division, Nara Municipal Board of Education. They delivered speeches of welcome to the participants and wished they would enjoy this training and gain valuable experience during the course. Then, ACCU staff members were introduced and the participants made self-introductions. At the end of the ceremony, they had their group photos with the guests. Aida Abdykanova from the Kyrgyz Republic was interviewed by a news station, and she shared her expectation to learn the principles and skills used in conservation of wooden structures in Japan.



Dr Chapagain from ICCROM

Mr Sugiyama from NNRICP

Mr Takeda from Nara Prefectural Gov.

Mr Iwasaka from Nara Municipal Gov.

After the ceremony, the participants visited Nara Prefectural Government Office Building and met Deputy Governor of Nara Prefecture, Mr MAEDA Tsutomu. He welcomed them and gave a brief overview of Nara, its history and cultural heritage. After that, they went to the rooftop area of the office building and enjoyed a panoramic view of Nara city. In the afternoon, the orientation session was held and explanations of the schedule and matters that require attention in this course were given.

Honourable guests

A participant being interviewed by the press

Meeting with Mr Maeda, Deputy Governor of Nara Prefecture

Orientation at ACCU Nara Office

2. Summary of Training Course

Various experts delivered a series of lectures during this Training Course. The following is a complete list of lectures with a d brief description of their content.

A lecture by Dr Chapagain

4 September (Wed.)

Introduction to Architectural Heritage in Asia

Neel Kamal CHAPAGAIN (ICCROM)

Dr Chapagain gave a lecture on architectural heritage in Asia, starting with a general idea and the definition of heritage and its types. He proceeded with his lecture by active interaction with the participants, so the participants freely shared their ideas on world heritage and its conservation philosophy. As Dr Chapagain showed numbers of pictures of architectural heritage, he shared his view on authenticity. He maintained the necessity of the idea of authenticity, giving the participants some challenging questions such as whether it is acceptable to use steel instead of timber. The participants were encouraged to think through the problems and to come to their own conclusions.

In the afternoon, he showed some video clips to the participants and had a discussion on getting to the world convention to be inscribed as a World Heritage site and its challenges afterwards. The participants seemed to have realised the importance of expanding awareness among the local residents to maintain the sites, instead of one organisation or institution making effort to preserve them.

A lecture by Dr Chapagain and Prof. Inaba

5-6 September (Thur.-Fri.)

Presentation and Discussion / Country Reports

INABA Nobuko (Tsukuba University) Neel Kamal CHAPAGAIN (ICCROM)

Each participant gave a presentation on the present situation and needs for cultural heritage protection in their countries. Since they had gotten used to interacting one another by then, there were several lively questions from participants after each presentation. Most of the questions were about the roles of the government, finance for conservation projects, and laws and regulations related to protection of cultural properties. When participants wondered what they were like in Japan or in the world, Prof. Inaba and Dr Chapagain

Presentation by the participants

stepped into the conversation and shared the global standard or the examples seen in Japan.
In the afternoon, Prof. Inaba gave a lecture on authenticity. She shared the history of the idea of authenticity developed in Europe as well as the contradiction seen in a way it had been applied in Japan. Then, she posed some questions to participants on how to view material and spiritual authenticity. The discussion on authenticity has still been an ongoing discussion in the field of conservation of timber structures, so this seemed to be a great opportunity for all the participants to think through the issue.

With the lecturers, Prof. Inaba and Dr Chapagain

9 September (Mon.)

Cultural Heritage Protection System and Current Status of Conservation in Japan

NAGAO Mitsuru (Agency for Cultural Affairs, Japan)

Mr Nagao shared how the cultural heritage protection system has been established and implemented in Japan. He maintained that cultural properties, including cultural landscape, festivals, and so on, need the involvement of the community for their protection. The participants learned the importance of awareness by the local community of the area. A participant from Bhutan asked several questions since Bhutan is in need of establishing the protection system of cultural heritage.


A lecturer, Mr Nagao

Conservation and Restoration on Wooden Structures in Japan

TOYOKI Hiroyuki (Agency for Cultural Affairs, Japan)

The method Japan has been employing for conservation and restoration project on wooden structure was eye-opening for some of the participants because Japanese experts still rather use the method of actual measurement and drawing for the documentation instead of digitalised data. There was a participant who questioned the efficiency, yet the answer showed how Japan found the value even in the process of drawing and the drawings themselves.

A lecture by Dr Toyoki

10 September (Tue.)

Prevention of Insect Damage to Wooden Structures

KOMINE Yukio (Japan Institute of Insect and Bacteria Damage to Cultural Properties)

Mr Komine brought the sample of termites and other insects, and showed the damage that they cause, the detailed procedure of extermination, and the effectiveness of various types of procedures. It seems that termites have been causing problems in many countries, so the participants were listening to the lecturer with interest.

Mr Komine explained the sample of damage by insects

Risk Management of Cultural Heritage

MURAKAMI Yasumichi (Hyogo Prefectural Board of Education)

There was an explanation from Mr Murakami, using the Great Hanshin earthequake caused by 1994 as a case study, of the damage at the time of a catastrophe, the response, the approach to repair and so forth, and the method of promoting the work, etc.

A lecture on risk management by Mr Murakami

11 September (Wed.)

Value Assessment and Survey and Recording/Documentation of Wooden Structures

HAYASHI Yoshihiko (NNRICP)

In this lecture, the process for designating cultural properties was introduced to the participants. They were interested in the local and national governments' responsibility and the communication between the government and the owner of the property. Especially when it came to the vernacular houses as cultural property, participants asked questions such as who covered what portion of the expenses for restoration, as well as the benefit of the owner of those houses. Also, there was a question about the authenticity when the value assessment was done for cultural property.

Mr Hayashi

12 September (Thur.)

On-site Training: "Buddhist Monuments in the Horyu-ji Area"

MIKITA Hideo (Nara Prefectural Board of Education)

At Horyu-ji Temple, participants walked around Kondo, Lecture Hall, five-story pagoda, Hall of Dreams, listening to the explanation of the conservation/restoration history for each structure. At the moment, Yakushi Monks' Quarters were under restoration, and the participants had a special privilege to enter the restoration site. Inside of the shelter, there were a lot of wooden arches built as frames of the restoration shelter, which is the

A lecture by Mr Hayashi

traditional method. Participants were amazed by the fact that the Japanese professionals were taking not only the structure but even the authentic method into consideration. They also had an opportunity to see the inside of the newly built storage, where different kinds of original members were kept. Though it was a hot summer day, the air inside of the storage was appropriately controlled, and they saw some restoration works being done and kept.

A lecture by Mr Mikita about the restoration work at Horyu-ji Temple, World Heritage site

13 September (Fri.)

On-site Training "Restoration of Wooden Structures in Practice I: Restoration of Temple Architecture"

NAKAGAWA Tomoyuki and HIURA Yasuo (Kashihara Municipal Board of Education)
KANEKO Takayuki, MAMEKOSHI Yuya and IWANAGA Yuichiro (Nara Prefectural Board of Education)

At Hanairaka, which is the resource centre of Imai Town, Mr Nakagawa and Mr Hiura gave a lecture on how the historical townscape had been preserved and restored. The town has been constantly restored and maintained, but there are also challenges such as the increase of vacant houses. Since their policy for conservation of townscape includes the involvement by the inhabitant of the houses, it is crucial to have people in the houses.

Mr Nakagawa


Mr Hiura and Mr Nakagawa, showing around the town

In the afternoon, participants visited Shonen-ji Temple and saw the actual site where the restoration was going on. After observing the restoration at Main Hall, participants experienced how the survey to find out the past restoration activities on mud wall were done as a practical training. A tablet of a part of the sample mud wall was distributed to each participant, and they excavated to find how many layers there were very carefully.


Practical training:
survey of evidence on past restoration activities


A lecture on how to observe the mud wall

17 September (Tue.)

Systems for Restoration Projects and Construction Planning

MURAKAMI Jin'ichi (JACAM)

The training session began with the showing of a video produced by JACAM to introduce the Japanese systems for conservation of architectural monuments. Then, general information was given about traditional Japanese buildings and how they have been restored. The video gave participants a concrete image of traditional buildings before and after restoration and enabled them to ask in-depth questions. Many participants asked questions regarding problems affecting their respective countries, including the extent to which alteration to the historical building is allowed in a restoration project; the position of conservation architects; and how carpentry techniques can be passed down to subsequent generations.

In response to these questions, the lecturer explained the system implemented by the Japanese Agency for Cultural Affairs for granting permission to restoration projects. He also said that conservation architects are specialists in repairs, surveys and measurements, and are also capable of writing technical reports. Also he said that in Japan, efforts to hand down the traditional techniques for restoring and repairing architectural monuments to future generations are undertaken at the initiative of organisations established to conserve these techniques.

A lecture by Mr Murakami

A discussion with the lecturer

Orientation for the Practical Training: "Overall Process of Restoration"

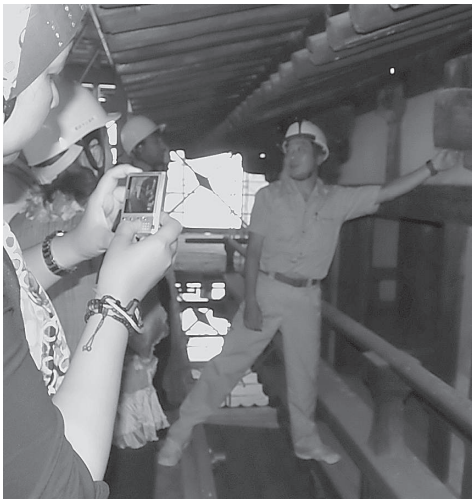
BABA Hiromichi (Nara Prefectural Board of Education)

The lecturer spoke about the East Pagoda of Yakushi-ji Temple where the participants would receive training in measurements and drawing on the following day. He emphasised that the pagoda, which was built in the Nara period, could remain standing for as long as 1,300 years due to proper repair and restoration conducted at the right time through its history, which means that regular restoration would be required to conserve the pagoda into the future.

In the training in measurements, the participants were required to sketch a plan of the first story of the pagoda and complete a drawing from actual measurements. The lecturer gave detailed instructions on each process of the measurements, and then the participants inspected the East Pagoda under restoration, where a lecture was given on a survey that had been conducted to identify the damage, and the ongoing restoration plan.

The participants asked questions about whether the scaffolding structure for restoration would be reused or not, and whether a photograph with dimensions written on it could be used in place of a hand-made drawing. To the first question, the lecturer answered that in general, a scaffolding structure would be dismantled without being reused except when restoration of a building of the same size is scheduled. In response to the second question, he said that it is uncommon to make a drawing from a

A lecture by Mr Baba



A lecture at the restoration site

photograph, and emphasised the significance of making a drawing by directly observing the building subject to restoration on-site, because doing so enables conservation architects to have a deeper understanding of the building and allows easier comparison with other buildings. He also told the participants to be aware of the importance of information obtained through direct observation of the building.

18-20 September (Wed.-Fri.)

Practical Training: "Survey and Recording/Documentation of Wooden Structures"

BABA Hiromichi, TAKEGUCHI Yasuo (Nara Prefectural Board of Education), YAMAGUCHI Isamu (Nara Municipal Board of Education)

At Yakushi-ji Temple, participants were divided into two groups and experienced hands-on practices such as sketching of the floor plan of East Pagoda, actual measurement based on the sketch, and development of measured drawing at Yakushi-ji Temple by groups. They also went on a tour of Yakushi-ji Temple and Toshodai-ji Temple.

Since many of the participants did not have an experience of the process of measured drawing, they were struggling throughout the process. Some commented, however, that this was a good experience to realise what kind of work had been operated in a different branch of the department, which would help them communicate with their colleagues back in their home country. Those who had the experience of

Practical training: Measured Drawing at Yakushi-ji Temple, World Heritage site

this kind of projects pointed out that the traditional method helped them observe more carefully and precisely, so they were able to see the delicate parts that could be missed using a CAD system.

For a tour at Yakushi-ji Temple, the participants had an opportunity to see the special exhibition of ornament that was put on the top of the East Pagoda called “Sui-en.” This was said to be guarding the temple from the fire, and it had been 61 years since it was open to the public during the last restoration. The participants enjoyed observing the design of angels fluttering down from the heaven.

Practical training on actual measurement and review by lecturers






Mapping work


A restoration facility for painted wooden boards (left)
Observing a model of structure used for planning restoration (right)

23 September (Mon.)

On-site Training: "Recording of Wooden Structures (Photography)"

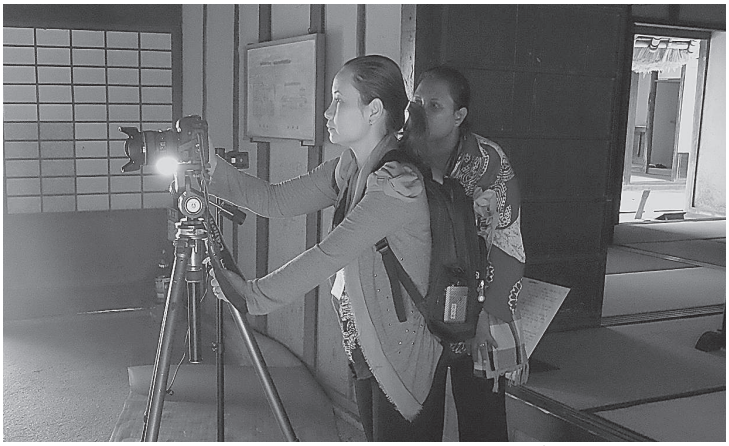
SUGIMOTO Kazuki (Saidaiji Photo), YOKOYAMA Hiroko (Nara Prefectural Museum of Forklore)

At Nara Prefectural Museum of Folklore, Mr Sugimoto began the lecture by the self-introduction of each participant. They were then asked to share the issues and challenges related to photography in the department or in a project that they had been involved. The major challenge was to know the proper way, the angle of taking photos, and the use of the light for the purpose of documentation.

A brief explanation of basic knowledge of photography

Mr Sugimoto

A lecture by Mr Sugimoto on site



A lecture on indoor photography (left)　Observing the details of a photography (right)

Afterwards, the participants learned the basic mechanism of a large format camera and manual operation procedure such as the appropriate aperture and the shutter speed, how to use a light meter, and so on. Then, they went out to take the photographs of the vernacular houses relocated in the area of the museum with the assistance of Ms Jitsukata. The participants did not know how to use the large format cameras at first, but they applied what they learned in the session quickly, and they took very nice photos of the architecture.

24 September (Tue.)

Practical Training: "Survey on Painting and Plans for Painting Restoration"

KUBODERA Shigeru (Historical Research Institute for Architectural Decoration Technology)

At Jibutsu-do of Todai-ji Temple, Mr Kubodera mentioned the approach to painting as one of the major difference between western and Asian restoration. He also introduced the method of investigation which starts with the close observation and sketching, then identifying colours, making record of the conditions, adding colours to the drawing, and then developing a plan for restoration and conservation of the painting. Lecturer picked 6 participants' field notes and then he gave a comment onto each of them. One of the participant's field notes was highly evaluated because she could observe the original colour of the beam through her investigation by her own eyes. There was a big discussion on a topic of authenticity. While some participants thought it would be good to keep the same design as the original

Observation and sketching of painting at Jibutsu-do


Discussion with lecturer

and repaint with new paint, lecturer challenged everyone to think upon the value of what has remained from the very beginning. This gave the participants a time to stop and think, and this discussion will be continued for the rest of their work in this field.

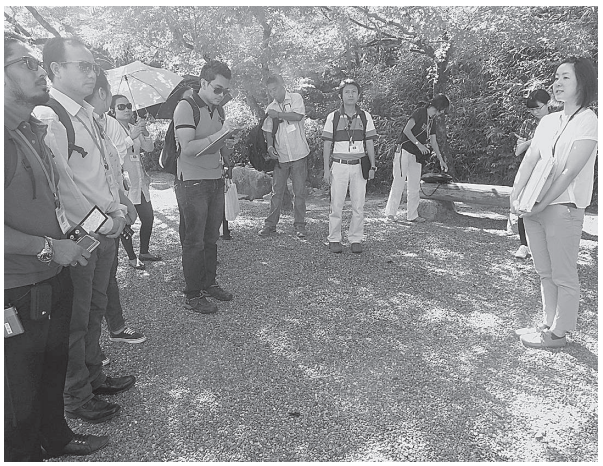
25 September (Wed.)

On-site Training: "Restoration of Wooden Structures in Practice II: Restoration of Painting"

OTA Aki (Byodo-in Museum), SHIMADA Yutaka (Kyoto Prefectural Board of Education)

First, a lecturer explained about Byodo-in Museum which is attached to Byodo-in Temple. The museum was constructed in a natural environment and built into the hillside so that the modern museum building would not be visible from Byodo-in Temple. As the museum was built underground, it is hardly affected by the open air, and its interior temperature is kept stable at all times. The lecturer also emphasised that when building a museum adjacent to a historic site or building, a lot of importance should be placed on keeping in harmony with the surrounding landscape.

The participants then saw the exhibition in the museum guided by the lecturer. In the museum, a life-size replica of the main hall interior of Byodo-in Temple is displayed. The replica is entirely covered with sheets on which the original colourful surface of the main hall has been printed using a large




A lecture by Ms Ota at Byodo-in Museum

printer. Visitors are allowed to touch the replica, and can easily visualise Byodo-in Temple vivid with rich colours in its original state. The participants also watched a video projected on a large screen.

The participants then moved to the site where the restoration work was carried out to reproduce the original colours of the main hall of Byodo-in Temple. They were told that the main purpose of the ongoing restoration project is to repaint the exterior of the main hall using the original pigments. They also learned about a project concerning restoration of the roofing. The participants saw how the restoration work was implemented first-hand, and learned how to exchange the roofing and apply pigments.

After that, the participants went to see Ujigami Shrine and observed a reroofing method. Contrary to Byodo-in Temple, where the reroofing has been done with tiles, Ujigami Shrine has adopted the method of using cypress barks. A couple of participants asked questions on its history and the procedure.

A lecture by Mr Shimada at restoration site

A lecturer showed the materials of roof repairing.

26-27 September (Thur.-Fri.)

Preservation of Cultural Properties (Theory and Practice) I, II

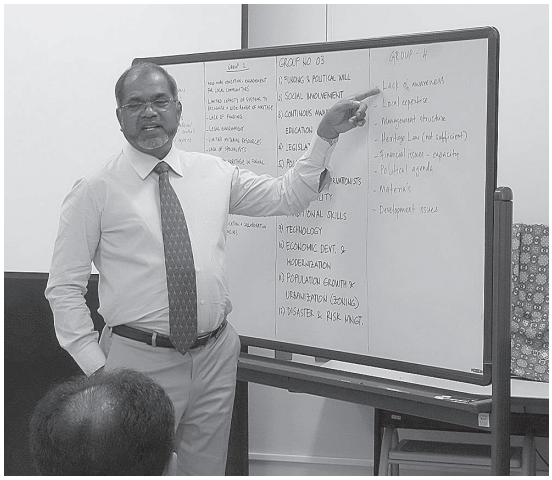
Gamini WIJESURIYA (ICCROM)

Dr Wijesuriya came from ICCROM to share the theory and practice from global point of view. He facilitated active discussion among the participants, where a lot of questions and opinions were exchanged. The two-day lecture was constructed as follows:

-Introduction of ICCROM
-Financial issues in conservation projects
-Topic of authenticity
-Group session (reflection on the lecture, issues and challenges to address)
-Community awareness
-World Heritage sites
-Dissenting views on conservation of cultural properties
-Heritage Management System

As the participants were presenting some issues in their own country, lecturer posed questions to ask

other participants for some suggestions so that each participant had a time to think and come up with their own opinions. It was a good opportunity for them to realise different aspects of a problem. Also, they found out some challenges are more of universal ones than an issue that a certain country is facing, such as the issue of lack of awareness in the local community.



A lecture by Dr Wijesuriya

A group discussion

A discussion with participants

29 September (Sun.)

On-site Training: "Preservation and Maintenance of Wooden Structures I: Hikone-jo Castle"

IKEDA Hayato, KUBO Tatsuhiko, KITAGAWA Kyoko, MITSUO Jiro (Hikone Municipal Board of Education)

Upon arrival at Hikone City, the participants visited Castle Road, a street designed to reproduce a historic castle town in order to attract tourists. After lunch at a Japanese restaurant, they listened to a lecture on the history of Hikone-jo Castle given by a staff member from the Cultural Property Division of the Hikone City Board of Education. Then they toured the castle, visiting a horse stable that is designated as an Important Cultural Property, the *ohorikiri* (large dry moat), the *tenbinyagura* (castle turret) and the site where restoration of stone walls was underway. At the end of the tour, they went up the *tenshukaku* (castle tower). During the tour, they were informed of the ongoing efforts for inclusion of the Hikone-jo Castle in the list of UNESCO World Heritage Sites.

The participants next visited the villa and garden of the castellan of those days adjacent to Hikone-jo Castle -the Rakuraku-en Palace and the Genkyu-en Garden- where they were given a lecture on the restoration of *sukiya*-style (tea-house style) buildings, and on the Japanese garden and its restoration project respectively. The participants asked many questions about budget, restoration systems and management. They were surprised to be told that much of the management and restoration cost is covered by admission fees and showed interest in how costs were managed.

Lastly, they got on a houseboat to tour the moat around the castle, and listened to a lecture on the protection of the landscape around the moat.

A lecture by Mr Mitsuo

Inside of the structure under restoration

A lecture by Mr Ikeda and Mr Kubo at the restoration site

Hikone-jo Castle

30 September (Mon.)

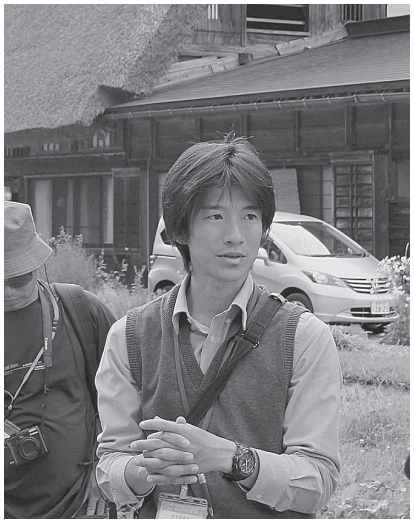
On-site Training: "Preservation and Maintenance of Wooden Structures II: Vernacular Houses and Townscape"

MATSUMOTO Keita (Shirakawa Village Board of Education)

In Shirakawa village, the UNESCO World Heritage, the participants saw Gassho style houses whose roofs are thatched, gabled, and in a triangular shape. These roofs have to be reroofed every 30 years,

and since it is a tremendous task, they have developed the system of mutual support. Lecturer then shared the history of the conservation of the houses as well as its system, and he also introduced how local people are involved in these activities. Participants were deeply interested in the management system, asking questions such as how the Board of Education had given certain initiative to the local people to keep their awareness, the ratio of subsidy, and the local people's merit of covering the 10% of cost for reroofing.

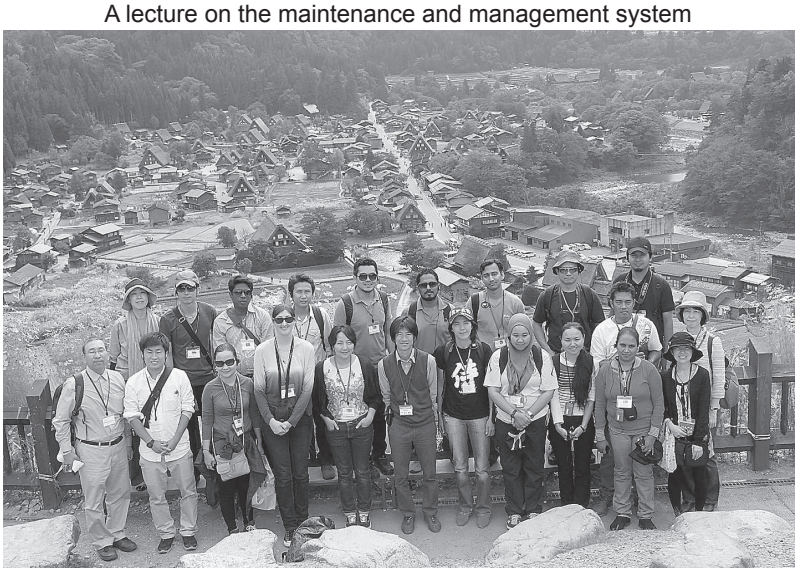
In the afternoon, the party visited the Wada House, which was 300-year-old house designated as the important cultural property in 1995. At present, 2/3 of the house is used for museum, while the rest used for living. The participants had an opportunity to hear opinions directly from the resident.



Mr Matsumoto

A lecture on the maintenance and management system

Deluge gun



With lecturer

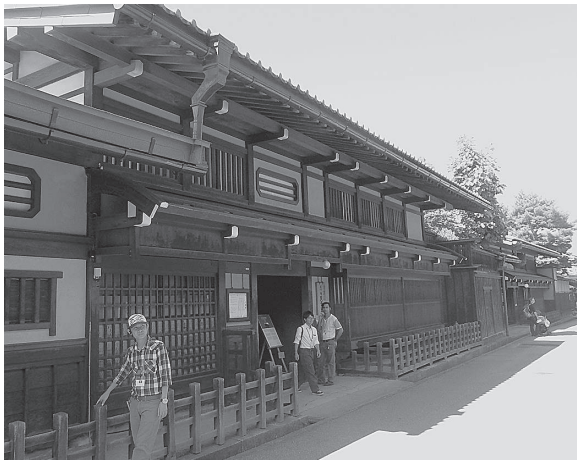
1 October (Tue.)

On-site Training: "Preservation and Maintenance of Wooden Structures III: Vernacular Houses and Townscape"

USHIMARU Takehiko, TANAKA Kyohei (Takayama Municipal Board of Education)

A lecture by Mr Tanaka on disaster-prevention equipment in Takayama city

Group of Historic Buildings at Takayama City



Kusakabe Folk Museum

The participants visited Takayama Museum of History and Art in Takayama City where they listened to a lecture on the history of the city with special focus placed on local fire protection efforts.

The participants then toured the designated historic district guided by Mr Tanaka, who showed them disaster prevention equipment provided in each house in the district. Each house is complete with a firefighting hose, which allows immediate action to be taken if a fire breaks out.

In addition to the disaster prevention equipment in place in individual houses, the participants were also shown disaster prevention facilities provided in the district that are designed to form natural part of the local landscape, and the fire alarm system shared by a group of houses.

Lastly, the participants visited Kusakabe Folk Museum, an Important Cultural Property, which originally was a house of a powerful merchant family, the Kusakabe family. They toured this traditional merchant's house guided by the current head of the Kusakabe family.

2 October (Wed.)

Writing Final reports

The participants wrote final reports of the training course.

3 October (Thur.)

Closing Ceremony

All of the participants gathered at Kasugano-so Hotel for Closing Ceremony. Some of them wore beautiful traditional attire, and everybody greeted Mr Nishimura (Director of ACCU Nara) with a look of satisfaction and accomplishment. Director Nishimura and Mr Sugiyama (NNRICP) gave speeches to congratulate all the participants for their successful completion of the training programme. After that, Mr Sangay Kinga from Bhutan and Ms Siti Norhayatty binti Haji Morni from Brunei Darussalam gave words of gratitude on behalf of all the participants. In the end of Ms Norhayatty's speech, she gave a cue to the other participants and gave Director Nishimura a bouquet of flowers with a nice hand-made message card signed by all of the participants. The ceremony was closed with a heart-warming surprise, where the whole room saw and assured that the training course helped the participants not only to broaden their knowledge and experience but also to establish a good relationship among them as well as with ACCU staff.

Closing Ceremony

Presentation of gifts by participants

Congratulatory address by Director Nishimura (left) and Mr Sugiyama (NNRICP)

Awarding certificates of completion

Mr Sangay Kinga from Bhutan

Ms Siti Norhayatty binti Haji Morni from Brunei Darussalam

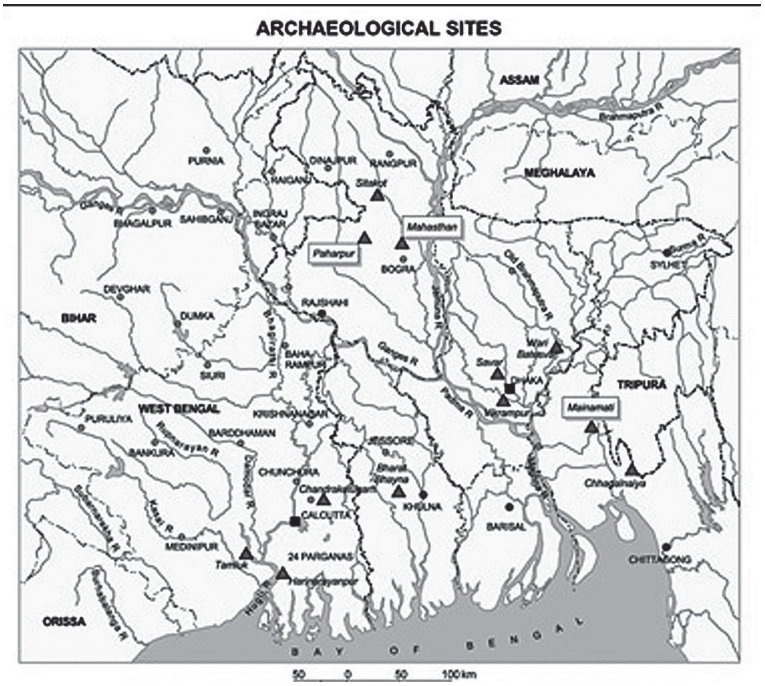
Closing Ceremony

III. Country Reports by Participants

At Shirakawa village, World Heritage site

Bangladesh

Mohammad Mohidul Islam
Custodian
Department of Archaeology



Archaeological Sites of Bangladesh

Bangladesh is a country considerably rich in archaeological wealth, especially of the medieval period both during the time of Muslim and pre-Muslim rule, though most of it is still unexplored and unknown. In archaeological fieldwork and research this area was very much neglected for a long time for various reasons, not the least of which are its difficult geography and climate, and remoteness from the main centres of the subcontinent. With the independence of Bangladesh in 1971 the Government has undertaken a number of field projects including a comprehensive survey and exploration of the hitherto unexplored areas and a fairly ambitious scheme of excavations on selected sites. Though work at present is being carried out on a limited scale, the discoveries already made have been significant, with new information and fresh evidence coming to light gradually. These fresh explorations are likely to add substantially to our knowledge of the history and chronology of ancient Bangladesh and various aspects of her life and culture. The earlier history of Bangladesh reveals that Buddhism received royal patronage from some important ruling dynasties like the great Pala rulers. the Chandras and the Deva Kings. Under their royal patronage numerous well-organized, self-contained monasteries sprang up all over the country.

Heritage Diversities in Bangladesh:

The cultural heritage of Bangladesh is one of the richest in the world. The growth of a nation's

cultural heritage is a continuous and dynamic process. As a product, as well as a mirror of the mind of a people, the cultural heritage of a nation is a unique record of its history and also an integral part of the universal heritage of mankind. This is an outcome of centuries of the political, religious, economic, cultural and social activities of past generations. These activities have been carried out since the early historical periods by the Buddhist, Hindu, Muslim, British, Pakistani and Bangladeshi rulers of the nation and its people. Located at the crossroads of South and South-east Asia, the understanding of the history of Bangladesh as evidenced from the country's innumerable cultural heritage sites is of crucial importance in researching and understanding various people's movements as well as the development of culture in the region. After the advent of Islam in the south Asian subcontinent, the various art forms that flowered in Bangladesh bore the deep imprint of Islam. The cultural heritage of Bangladesh reflecting the creative genius of the people was enriched by the great civilisation that flourished in the region for well over two millennia.

In spite of the richness and significance of the cultural heritage sites of Bangladesh, some of which have already been declared World Heritage Sites, effective protection of their heritage values and delivering social and economic benefits to society at large have not been prioritized in state policies. Hence, funds were not allocated in the amounts that were needed for proper management despite comments by the government and the aspirations of the people of the country. The situation was understandable, as the national resources of Bangladesh, a developing country, were used more for infrastructure building and social safety net projects in order to meet the basic day-to-day needs of the people.

However, with the passing of time both the government and the people realized the necessity of taking care of the cultural heritage sites of the country. Likewise, international agencies were also convinced to come forward with financial and technical assistance to protect and promote the cultural heritages of Bangladesh.

The Department of Archaeology under the Ministry of Cultural Affairs:

The Department of Archaeology is one of the oldest organizations of the sub-continent, devoted to reconstruction of the past human history of the country through archaeological exploration and excavation. Simultaneously, it is equally engaged in the preservation, presentation and promotion of the nation's glorious cultural heritage. At present the department owns 405 heritage sites. Of these two have been inscribed on the World Cultural Heritage List and five on the tentative list. The department also owns 16 site museums, which are the repositories of our moveable cultural heritage of different periods, forms, religions, creeds and culture, ranging from the prehistoric to historical eras. The department is custodian of the national heritage works under the Ministry of Cultural Affairs of the Government of the People's Republic of Bangladesh.

Common Problems and Needs for Cultural Heritage Protection and Restoration in Bangladesh:

Climate Change: Climate change poses significant risks for Bangladesh, yet the core elements of its vulnerability are primarily contextual. Between 30-70% of the country is normally flooded each year. The huge sediment loads brought by three Himalayan rivers, coupled with a negligible flow gradient add to drainage congestion problems and exacerbate the extent of flooding. The societal exposure to such risks is further magnified by Bangladesh's very high population and population density. Many projected climate change impacts including the rise in sea level, higher temperatures (mean temperature increases of 1.4°C and 2.4°C are projected by 2050 and 2100, respectively), evaporation-transpiration losses, enhanced monsoon precipitation and run-off, potentially reduced dry season precipitation, and increases in cyclone intensity would, in fact, reinforce many of these baseline stresses that already pose a serious impediment to the economic development of Bangladesh. Bangladesh is located in the tropical monsoon region and its climate is characterized by high temperature, heavy rainfall, excessive humidity and fairly marked seasonal variation. This type of environment is not suitable for sustaining tangible cultural property in the long run. These environmental factors, several biological activities and human created factors are also responsible for deterioration of tangible cultural properties.

This report basically focuses on the effects of climate change on different human dimensions such as cultural and social phenomena; more specifically, the archaeological heritage and culture of Bangladesh. Being located in the eastern matrix of the Bengal delta, Bangladesh occupies a significant content of the archaeological heritage and historical record of Eastern India, an important part of historical India. The southern part of Bangladesh, the area of the country more likely to be affected by climate change, encompasses numerous archaeological relics and sites upholding the heritage of human settlement since the Early Medieval to British Colonial Period. The abovementioned climatic impacts will certainly intensify the factors causing degeneration of these archaeological records, which will result in a substantial loss of the history, heritage and archaeological research within the country.

Archaeology looks back on the past as a strong point of reference. The past has become a source of inspiration, object of study and foundation for national history and heritage. Theoreticians start the formulation of their theses from the critical analysis of the past. As mentioned above, the southern part of the country is facing the extreme danger of upcoming natural calamities due to climate change. It is therefore necessary to undertake initiatives regarding the archaeological record (both erected and underneath the soil) of the region in a professional way. As the southern part of the country contains a different physical and cultural entity, it has contributed a different profile in history and archaeology through the recovered material culture and cultural process observed throughout time. Different researches conducted so far reveal the south Bengal as a mysterious center of the early medieval period, a glorious spectrum of medieval commerce and a region featuring early Christian occupation. So before it is all submerged, proper documentation of the region's archeology is necessary. Only multidisciplinary efforts can offer systematic documentation of historical records, classification of sites to determine their potential in present-day heritage management and upcoming projects on Cultural

Heritage Management.

So Bangladesh needs multidisciplinary efforts on Settlement Archaeology, Field Archaeology, Historical Architecture and Cultural Heritage Management, Geographical Survey, GIS, Database Management and Computing Archaeology, etc. to reach the goals. The goals are as follows:

- Conduct an intensive survey in areas likely to be affected by climate change in the southern part of Bangladesh; more specifically, in the regional zones of Khulna, Barisal and Chittagong.
- Prepare a detailed database on the distribution of archaeological sites, ancient architectural relics and other relics or records representing the history and heritage of the country.
- Classify each site's potential according to historical values, managerial scope and the necessity or possibility of restoration, renovation, etc.
- Provide general guideline management on heritage sites in southern Bangladesh on the basis of a changing climate and its effects.
- Conduct Community Awareness programs on history, archaeology and heritage management.
- Implement three-dimensional recording in possible and potential areas of heritage management.

Water Logging Problem: Water logging is one of the major degrading factors in the deterioration of the bricks and terracotta ornamentation of the Historic Mosque City Bagerhat. Approximately 20 feet away from the main temple, an artificial channel to remove rainwater from the surrounding areas has been dug to mitigate the water logging after rain; the water drained into the channel accumulates in a ditch. On the roof of the temple, there was a disc shaped vertical water vent in the ancient period, through which rainwater seeps in now, and enters the wall by capillary action. Water logging was found with a wider impact in the north-west corner of the entrance wall.

Harmful Biological and Chemical Agents: Flora and fauna like algae (living and nonliving), moss, lichen, plants, different types of grass, birds, termites, insects, etc. often exert a detrimental effect on the brick and terracotta of monuments. Lichens are a symbiotic association of algae and fungi and sometimes called lichen fungi. A fungus tissue lives in association with an algae and affects brick and stone surfaces. Sometimes moss and lichen are considered as protective, but more often destructive. They grow on buildings and act as humus for supporting the growth of higher plants on monuments. Lichen grows slowly, but this makes it resistant to extreme conditions of humidity and temperature.

Flaking: One of the main causes of deterioration of the bricks and decorated bricks of Bagerhat and other monuments is flaking. The causes of flaking are heavy rainfall, high temperature and humidity, air pollution, chemical reaction from salt, and human impact, etc.

Rising Damp: Most monuments and historic buildings are affected by too much dampness due to lack of sunlight, and thus they absorb water all year round. The historic mosque city has been affected by rising damp.

Problems of Rainwater Disposal and Lichen Growth: Rainwater disposal, both from and around the

buildings, is almost non-existent. The rain that falls onto the domes runs towards the flattish areas above the curvilinear cornice and then dribbles over the face of the building.

Vandalism: The problems of vandalism, or the theft of brickwork and other such available building materials, is very apparent.

Human activity: Man is another agent causing deterioration of cultural heritage. Anthropogenic causes and activities are as follows:

a. Lack of knowledge and skills for proper treatment
b. Lack of scientific display and storage systems and incorrect conservation practices
c. Vandalism, theft and lack of security
d. Lack of funding
e. Lack of proper and scientific digital documentation

Recommendations and Needs:

The Ministry of Cultural Affairs tries to preserve our national heritage. The Bangladeshi government is trying to create some grounds for effective restoration and protection of our cultural resources. It is a fact that managing anything requires funding and a significant, relevant infrastructure. It will be difficult for the heritage management of Bangladesh to retain its prestige if the following remedial measures are not taken immediately. The Department of Archaeology is trying to resolve the following problems as per the citizen's charter:

1. Top priority should be given to the development of human resources. Qualified personnel should be recruited and regular training programs should be organized to refresh their knowledge and to acquaint them with the latest methods of heritage management.

2. Preservation efforts should be well coordinated with those of other departments such as the Department of Archaeology, scholars from various universities, national libraries, research libraries and museums. A nationwide preservation awareness program through workshops, seminars and refresher courses to safeguard the rich cultural and documentary heritage of the country should be arranged.

3. Cultural values related to the original historical and archaeological potential of the sites, cultural values associated with the site (universal significance and setting, legendary and sentimental values, and relative art value).

4. The necessary infrastructure should be built for both the preservation and handling of cultural properties. There should be a modern laboratory equipped with the latest technological facilities required for effective conservation.

5. Policies should be updated and implemented.

6. A comprehensive national inventory of cultural heritage should be compiled by the DOA.

7. International cooperation should be improved.

8. Funds should be increased for carrying out archaeological activities such as excavation, exploration, conservation, restoration, and maintenance of cultural heritage.

9. For the efficient monitoring of archaeological sites, the number of observation posts should be increased at the protected sites.

10. The DOA should be strengthened for more effective management in safeguarding the national cultural heritage. A separate research wing handling activities like exploration, excavation and conservation should be created.

11. Initiate research projects, particularly on the impact of global climate change on cultural heritage and the surrounding landscapes, and evaluate the problems and prospects of heritage management regularly.

Paharpur

Paharpur is a small village 5 km west of Jamalganj in the greater Rajshahi district where the remains of the largest and most important known monastery south of the Himalayas has been excavated. This 7th century archaeological find covers an area of approximately 27 acres. The entire establishment, occupying a quadrangular court measuring more than 900 ft externally on each side, has high enclosure-walls about 16 ft thick and from 12 ft to 15 ft high. There is an elaborate gateway complex on the north side, with 45 cells on that side and 44 on each of the other three sides, with a total of 177 rooms. The architecture of the pyramidal cruciform temple is profoundly influenced by those of South-East Asia, especially Myanmar and Java.

A small site-museum built in 1956-57 houses a representative collection of objects recovered from the area. The excavated findings have also been preserved at the Varendra Research Museum at Rajshahi. The antiquities of the museum include terracotta plaques, images of different gods and goddesses, pottery, coins, inscriptions, ornamental bricks and other minor clay objects.

Mahasthangarh

Mahasthan, the oldest archaeological site in Bangladesh, is on the western bank of the Karatoa River, 18 km north of Bogra town beside Bogra-Rangpur Road. The spectacular site is an imposing landmark in the area, having a fortified, oblong enclosure measuring 5000 ft by 4500 ft with an average height of 15 ft above the surrounding paddy fields. Beyond the fortified area other ancient ruins fan out within a semicircle of about a five mile radius. Several isolated mounds, the local names of which are Govinda Bhita Temple, Khodai Pathar Mound, Mankalir Kunda, Parasuramer Bedi, and Jiyat Kunda, etc., surround the fortified city.

This 8th century archaeological site is still held to be of great sanctity by Hindus. Every year (mid-April) and once every 12 years (December) thousands of Hindu devotees join the ceremony on the bank of the river Karatoa. A visit to the Mahasthangarh site museum will open up for you a wide variety of antiquities, ranging from terracotta objects to gold ornaments and coins recovered from the site.

When visiting Paharpur and Mahasthangarh, visitors may enjoy the hospitality of the Parjatan Motel in Bogra. Mahasthangarh and Paharpur are only 18 km and 75 km respectively from Bogra town.

Rajshahi is famous for pure silk. The silk processing industry of the Sericulture Board is just ten minutes' walk from the Parjatan Motel in Rajshahi. Besides the Sericulture Board, a visit to Varendra Research Museum in the heart of the city to view archaeological finds would be most rewarding.

Mainamati

An isolated, low dimpled range of hills dotted with more than 50 ancient Buddhist settlements from the 8th to 12th century AD, known as the Mainamati-Lalmai hill range, extends through the centre of the district of Comilla.

Salban Vihara, located almost in the middle of the Mainamati-Lalmai hill range, consists of 115 cells built around a spacious courtyard, with a cruciform temple in the centre facing its only gateway complex to the north, resembling that of the Paharpur Monastery.

Kotila Mura, situated on a flattened hillock about 5 km north of Salban Vihara inside the Comilla

Cantonment area, is a picturesque Buddhist establishment. Here three stupas are found side by side representing the Buddhist "Trinity" or three jewels, i.e., the Buddha, Dharma and Sangha. Charpatra Mura is an isolated small oblong shrine situated about 2.5 km. north-west of the Kotila Mura stupas. The only approach to the shrine is from the east through a gateway that leads to a spacious hall.

The Mainamati Museum has a rich and varied collection of copper plates, gold and silver coins and 86 bronze objects. Over 150 bronze statues have been recovered mostly from the monastic cells, bronze stupas, stone sculptures and hundreds of terracotta plaques, each measuring, on average, 9" high and 8" to 12" wide. All doors, windows, pillars, and beams of the museum are made of wood, but today they have been damaged by evolution. If the world's archaeological community helps to preserve these materials, tourists will also be able to enjoy them.

Lalbagh Fort

The capital city, Dhaka, was predominantly a city of the Mughals. In the hundred years of their vigorous rule, successive Governors and princely Viceroys who ruled the province adorned it with many noble monuments in the shape of magnificent palaces, mosques, tombs, fortifications and 'Katras', often surrounded with beautifully laid out gardens and pavilions. Among these, few have survived the ravages of time, aggressive tropical climate and vandalism of man.

The finest specimen of this period is Aurangabad Fort, commonly known as Lalbagh Fort, which in fact represents the unfulfilled dream of a Mughal prince. It occupies the south-western part of the old city, overlooking the Buriganga, on whose northern bank it stands as a silent sentinel of the old city. Rectangular in shape, it encloses an area of 1082 by 800 ft and in addition to its graceful lofty gateways on the south-east and north-east corners and a subsidiary small unpretentious gateway on the northern side, it also contains within its fortified perimeter a number of splendid monuments, surrounded by attractive gardens.

Shait-Gumbad Mosque, Bagherhat

Khan Jahan adorned his city with numerous mosques, water tanks, roads and other public buildings, the spectacular ruins of which are focussed around the most imposing and largest multi-domed mosques in Bangladesh, known as the Shait-Gumbad Masjid (160' x 108'). The stately fabric of the monument, serene and

imposing, stands on the eastern bank of an unusually vast sweet-water tank, surrounded by the heavy foliage of the low-lying countryside, characteristic of a seacoast landscape.

The mosque is roofed over with 77 squat domes. including 7 chauchala or four-sided pitched Bengali domes in the middle row. The vast prayer hall, although provided with 11 arched doorways on the eastern side and 7 each on the northern and southern sides for ventilation and light, presents a dark and sombre appearance inside. It is divided into 7 longitudinal aisles and 11 deep bays by a forest of slender stone columns, from which springs rows of endless arches supporting the domes. Six-foot-thick slightly tapered walls, and hollow, round and almost detached corner towers, resembling the bastions of a fortress, each capped by small rounded cupolas, recall the Tughlaq architecture of Delhi. The general appearance of this noble monument with its stark simplicity but massive character reflects the strength and simplicity of the builder.

Sonargaon

About 27 km from Dhaka, Sonargaon is one of the oldest capitals of Bengal. It was the seat of the Deva Dynasty until the 13th century. From then onward till the advent of the Mughals, Sonargaon was subsidiary capital of the Sultanate of Bengal. Among the ancient monuments still intact are the Tomb of Sultan Ghiasuddin (1399-l409 AD). the shrines of the Panjpirs and Shah Abdul Alla and a beautiful mosque in Goaldi village.

Kantanagar Temple, Dinajpur

The most ornate among the late medieval temples of Bangladesh is the Kantanagar Temple near Dinajpur town, which was built in 1752 by Maharaja Pran Nath of Dinajpur. The temple, a 50-square-foot three-storey edifice, rests on a slightly curved raised plinth of sandstone blocks, believed to have been quarried from the ruins of the ancient city of Bangarh near Gangarampur in West Bengal. It was originally a Navaratna temple, crowned with four richly ornamental corner towers on two floors and a central tower over the third floor. Unfortunately, these ornate towers collapsed during an earthquake towards the end of the 19th century. In spite of this, the monument rightly claims to be the finest extant example of its type in brick and terracotta built by Bengali artisans. The central cella is surrounded on all sides by a covered verandah. each pierced by three entrances, which are separated by equally ornate dwarf brick pillars. Corresponding to the three delicately constructed entrances of the balcony, the sanctum also has three richly decorated arched openings on each face. Every inch of the temple surface is beautifully embellished with exquisite terracotta plaques, representing flora, fauna, geometric motifs, mythological scenes and an astonishing array of contemporary social scenes and favourite pastimes.

Rabinda Kuthibari, Kushtia

This beautiful mansion carries the memory of Nobel laureate poet Rabindranath Tagore (1861-1941), who made frequent visits to this place and used to stay here, in connection with the administration of his zamindari, and who enriched Bengali literature through his writings during that time. It is located about 20 km from Kushtia town.

Rabinda Kuthibari

M.M. Datta Bari Museum

M.M. Datta Bari Museum, Jessore

This beautiful mansion carries the memory of Nobel laureate poet MICEL MODHUSUDHON DUTTA. It is located about 45 km from Jessore town.

The Raising of an Ancient Boat at Kuakata Beach

Recently we found an ancient boat through an excavation in the Potuakhali district of Kuakata at a beach. The dimensions of the boat are 72 x 24 x 10.6 feet, and many people think that it was made by Rakhain 200 years ago. Locally it is called "Sonar Nowka" or "Sowdagor Nowka" used by Portugese boat. Boat specialist Mr. Ives Mare thinks that it was built from an oak tree. Local people think that the boat was made with "gorjon" or "shall wood."

I would like to thank ACCU Nara and other organisations in taking timely and creative action to protect archaeological structures by arranging this type of training programme. As you know, wooden structures are very commonly seen at archaeological sites, and most of the doors and windows and other decorations of some structures were made with wood, as seen in our country's museums. While working, I have seen that the condition of some wooden structures is deteriorating day by day. If we do not apply the latest modern methods and techniques for investigation, preservation and management of wooden structures, we may fail to protect our cultural heritage. We will also fail to introduce this cultural heritage to future generations. I believe this training on the preservation and restoration of wooden structures will help us to protect our country's cultural heritage and keep it in good condition.

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"PROBLEMS AND NEEDS FOR CULTURAL HERITAGE PROTECTION AND RESTORATION ACTIVITIES IN BHUTAN"

1. INTRODUCTION

Bhutan is a small developing country located between India and China with its border extending from the southern foothills of India to the greater northern Himalayas. A mountainous country, Bhutan ranges from an altitude of 200 m above mean sea level to 7000 m from south to north. Altitude is a key factor that contributes to marking the differences in climate among the different regions in Bhutan.

The typical cultural heritage of Bhutan forms an essential core of the country's rich and ancient heritage and traditions, which play a vital role in the daily lives of the Bhutanese people. Bhutan is widely known to the outside world for its unique and beautiful cultural heritage. The major aspects of Bhutan's rich culture are the ancient traditions and customs that are still vibrantly alive, as well as the rich traditions seen in the architecture elaborately displayed at cultural heritage sites, which are still an important part of daily life. In addition to their architectural, aesthetic, historic, and archaeological significance, most cultural heritage sites in Bhutan have a deep spiritual and cultural significance and were built as wooden structures. Furthermore, cultural heritage sites in Bhutan are known for being "Living Heritage Sites". 'Cultural diversity and resilience' is one of the nine domains of 'Gross National Happiness' the development philosophy of the nation.

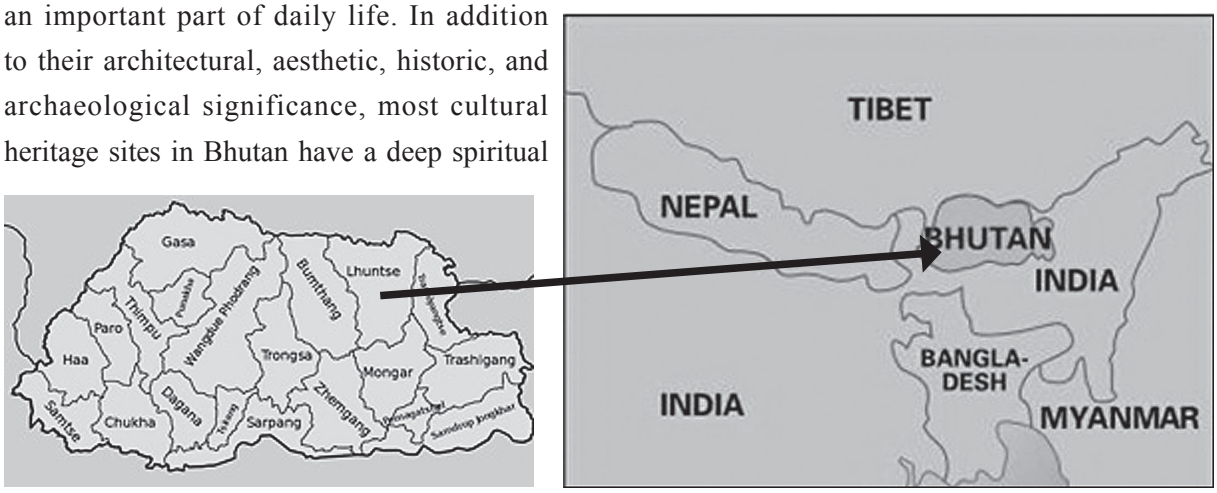

Fig. 1 Gasa Dzong. Photo DCHS

Architectural heritage sites in Bhutan range

from simple farmhouses, monasteries and temples, archaeological remains, Dzongs, (living fortresses, refer to Figs. 01 & 02) Choeten (stupas), wooden cantilever bridges, etc. Timber is one of the oldest and most common building materials used from centuries past till today in Bhutan. With almost two-thirds of the country's area covered by forest, timber is intimately associated with traditional Bhutanese culture. Besides the extensive resources, it is out of necessity that timber forms a major part of Bhutanese architecture. In traditional Bhutanese architecture, the space, form, texture and identity of the buildings are largely governed by the method, design and extent to which timber has been used. Windows of different styles and sizes are constructed corresponding to the type, size and height of the building. Dzongs and temples are usually characterized by multi-tiered rabseys or bay windows (Fig. 03). Aside from the masonry walls, traditional buildings are heavily loaded with wooden components.


Fig. 02 Richenpung Dzong (Paro). Photo DCHS

Another prominent feature of traditional buildings is the timber pitched roof. The different roof types represent status in the building hierarchy. Some roof types are permissible only for important types of buildings such as temples, monasteries, palaces or government buildings. Traditional roofs make use of extremely heavy timber members (Fig. 04). It is common practice to create a wide attic, with the space being used for drying and storing crops and meats.


Fig. 03 Multi-tiered rabseys or bay windows. Photo DCHS


Fig. 04 Traditional roofing components. Photo DCHS

A traditional roof uses layers of shingles for the roofing, which are laid down with stone boulders. Traditional Bhutanese bridges are either wooden cantilever bridges known as bazams (Fig. 05) or chain suspension bridges. Traditional bridges not only represent an exquisite architectural heritage but also an engineering feat that has never failed to fascinate foreign visitors. A bazam is a wooden cantilevered bridge with or without roof over it and usually with bridge houses, which are tower-like structures at each end.

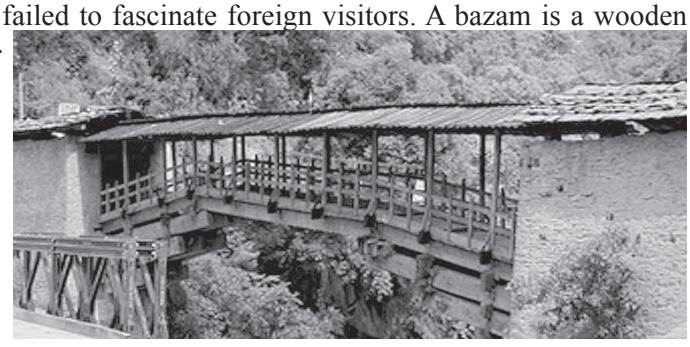
Fig. 05 Traditional wooden cantilever bridge. Photo DCHS

Wood, as an abundant resource throughout most of the world, has been used for thousands of years as a building material.

The vast majority of historic buildings in Bhutan have been built primarily of wood, and with the rammed earth walls and stone masonry walls generally including wooden elements. The preservation of wood as a common historic building material is therefore critical to historic preservation practitioners. As a biological material, wood is both incredibly complex and yet generally durable if properly used and maintained.

Wood is the most used material in traditional Bhutanese heritage buildings, and some of them have survived more than 100 years. They have also proved efficient in resisting earthquakes and other forces of nature. However, with wood being an organic material, it is easily perishable when exposed to weathering and tends to deteriorate over time. It is also highly combustible. The latter is a major challenge as Bhutanese traditional buildings abound in timber usage, but the concept and techniques of fire safety are little known to society.

A structure built with wood components is also considered safe, energy efficient, dependable, affordable and environmentally superior. Wood is probably the only renewable building material and can also be recycled. Different wood species have their own beauty, fragrance, colour and texture. As it is widely available and easy to work with, wood is used from the simplest and most basic structures to the most elaborate and intricate architecture. The tapering wooden columns used in traditional buildings are quite interesting, and are a typical example of Bhutanese architecture. They include brackets called kachens that are decorated to varying degrees depending on the nature of the building. These columns support the principal beams *(dung)* and joists for achieving a larger space inside. The most remarkable thing about these structures is that they have withstood numerous earthquakes and other natural calamities over a long period of time. However, there is no evident record that these have been designed to resist earthquakes.

Timber is broadly categorized as either hard or soft wood. Some of the types of hard wood available in Bhutan include oak, teak, sal, walnut, cypress, willow, mahogany and sandalwood. Soft woods include blue pine, spruce, chir pine, juniper, fir, cedar, poplar and hemlock. Construction with hard wood is sturdy and durable but soft wood is easier to work with. Different types of timber species are used to construct the various buildings and to renovate heritage buildings depending on the resources available in the region.

Most of the cultural heritage sites in Bhutan are already at the stage of heavily deterioration due to natural disasters, and human-induced, continuous occupancy and renovations to adapt to the modern needs of the residents. This report mainly focuses on the problems and needs to protect cultural heritage sites in Bhutan, as well as the restoration of heritage in general, particularly wooden structures.

2. GENERAL PROBLEMS AND NEEDS FOR CULTURAL HERITAGE PROTECTION

The Division for Conservation of Heritage Sites (DCHS), which is the main agency under the Department of Culture mandated for the protection of heritage sites, is faced with the great challenge of preserving and promoting the cultural heritage sites in Bhutan. Below is a discussion on some of the main problems and needs for the preservation of heritage sites in Bhutan.

i. Lack of awareness on the importance of heritage sites

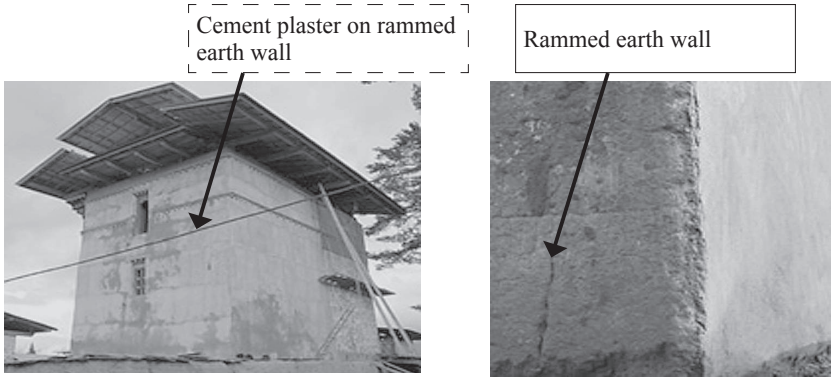

Fig. 06 Use of cement plaster on the top of traditionally rammed earth wall. Chhungney Goenpa in 2013. Photo DCHS

The modern concept of heritage conservation in Bhutan is new, and the understanding of heritage sites and the ability to judge their embodied values is low or insufficient among the public, stakeholders and users of heritage sites. Although the government has increasingly placed priority on the establishment of awareness programs on the importance of protection and preservation of heritage sites, this is still significantly inadequate. Due to lack of such mechanisms and initiatives, the public does not understand or realize the values of the old fabric of the heritage sites, and the public is always inclined to dismantle valuable heritage pieces and replace them with new materials and elements (Fig. 06). This creates many challenges for the conservationist carrying out restoration work. Therefore, awareness programs on the importance of the values and fabric of heritage need to be strengthened and developed for both the younger and older generations.

ii. Lack of law and policies to protect heritage sites

The Division for Conservation of Heritage Sites (DCHS) under the Department of Culture, Ministry of Home and Cultural Affairs published 'Basic Guidelines for the Conservation of Heritage Sites in Bhutan' in 2008. These are the only guidelines so far that provide certain rules, standards and procedures for conservation of heritage sites in the country. Although the guidelines have been of immensely useful, they have many shortcomings. Technically, it is not a legal document and consists of only minimum basic information. For example, it does not clearly define what a heritage site is (which would reflect the scope of the Division's mandate), and there is no guidance for prioritising or approaching a conservation problem within the Bhutanese social, cultural and economic context.
However, the DCHS office is now in the process of drafting a heritage site bill, which is aimed to be introduced to the spring Parliament Session 2014 for debate and possible enactment. It is hoped that the resulting Act will contribute substantially to the protection and promotion of heritage sites in the country.

iii. Shortage of human resources

One of the primary problems currently being faced in the effort to protect heritage sites in Bhutan is the lack of professional human capacity in the field of conservation and management of heritage sites. Due to inadequate human resources in the DCHS office, we are not able to meet the technical demands of assessing, guiding and monitoring the conservation work in all corners of the country, which is often being carried out by monasteries, local community groups and individuals. Therefore, in the process of execution, due to lack of conservation knowledge and skills, many ancient and valuable historic buildings are being dismantled and destroyed instead of being conserved, thus causing a depletion and loss of heritage resources forever. The development of human resources capacity in the field of conservation in the DCHS office and at the district level is very important and necessary in order to facilitate proper restoration and management of heritage sites.

iv. Inadequate funds to provide protection measures

Conservation projects for heritage sites in Bhutan are normally expensive. The Royal Government of Bhutan does not allocate sufficient funds to maintain all heritage sites annually or regularly. The funds for major conservation projects under the Five Year Plan is normally provided through multilateral assistance and bilateral relationships with neighbouring countries. In order to protect and make the sites safe from further deterioration, the securing of a minimal annual budget from the government would enable basic repair and maintenance work on the heritage sites that would save millions of dollars in the future for major renovation works.

v. Natural disasters

The heritage sites in Bhutan are subjected to natural hazards like earthquakes, lake outburst floods, lightning and fire. Punakha Dzong *(fortress)* was damaged by a glacial lake outburst flood in 1994 *(Fig. 07)*, which also resulted in the deaths of 21 local people. There was no risk management plan and early warning system at the Dzong before 1994. The 16th century Wangduephodrang Dzong built in 1638,

Fig. 07 Punakha Dzong in 1994. Photo BBS

Fig. 08 Wangduephodrang Dzong. Photo DCHS

Fig. 09 Paga Thubten Lekshey Choeling Monastery. Photo Paga Lam

which was listed on the UNESCO Tentative List in August 2012, was completely damaged by fire on 24th June 2012 *(Fig. 08)*. The three-storied Paga Thubten Lekshey Choeling Monastery, built in the 16th century, was totally destroyed by fire in 2012 (Fig. 09). The investigation report confirmed that the fire had been caused by a human-induced hazard (from an electric short circuit). A disaster risk management plan and related measures had not built into those heritage buildings, and as a result the emergency response team could not fight the fire. A proper study of electrification including the materials and methods used for wiring is very much required. In general, it is very necessary to assess and develop a map of heritage sites and identify those in hazard zones. The plan should incorporate a risk mitigation plan and also emergency preparedness. The entire exercise, including development of the risk mitigation plan and related measures, needs the involvement of all stakeholders from the very beginning.

vi. New construction and replication of architectural design

The construction of new religious and cultural buildings has increased over a long period of time, regardless of the effort by the government to discourage new construction. Such new construction often neglects an existing temple in the area/village that is historically and spiritually more significant. This is a matter of concern to the government in terms of their future management and the cost of maintenance services. The other issue being faced at present is the beautification through replication of elaborate architectural designs at all the heritage sites undergoing renovation/reconstruction, as well as in new religious buildings regardless of their original unique architecture. Every individual and community desires their heritage building to look grander and more prominent. This leads to loss of the architectural uniqueness of individual heritage sites in the region. Therefore, it is important to set a strategy to control the practice of such replication of architectural designs in all regions and to inform the public with regard to the value of uniqueness of individual heritage sites.

vii. Vandalism of heritage sites

Vandalism of heritage sites, especially related to attempts of burglary of relics from stupa (choeten) and temples is one of the major issues pertaining to protection of heritage sites. The vast number of stupas spread out in every corner and cranny of the country makes it very difficult to put in place sufficient protection mechanisms. Therefore, it is very necessary to set up new mechanisms to train the local community to police and guard the heritage site from vandalism.

viii. Lack of zoning and management plans

With modernisation, construction of huge concrete buildings is increasing rapidly. These constructions are allowed by municipalities and other statutory authorities without proper impact studies, planning, or zoning in and around heritage areas. Due to the absence of zoning plans and control, or management plans for the individual heritage sites, it provides leeway for the public to encroach with undesirable

development.

ix. Lack of skilled labour and knowledge about restoration activities

Due to fast social and cultural transformation, and economic development in Bhutan, local artisans increasingly choose work involving the construction of modern buildings and other infrastructure development because of the higher wages they can earn compared to the restoration of heritage sites. Working in new building construction is much easier than working in the restoration field because of the new technology and equipment available. Local artisans are not very keen to work on the restoration of heritage buildings or to learn traditional techniques and use local equipment and tools for the restoration activities. As the result, restoration projects are faced with a shortage of skilled artisans. Therefore, it is of concern to the government to adopt the right policies and practices to maintain the learning of traditional methods of construction, and use indigenous knowledge and tools. It is also equally important to train the artisans in new restoration technology and knowledge complementing the traditional methods of restoration and use of new equipment.

x. Traditional belief in gaining merit

In Bhutan, it is believed that making an offering to a religious site earns merit, which encourages many Bhutanese people to help improve the religious heritage sites. They either demolish and reconstruct them in a larger size and with improved design and decorations, or add new elements such as a new secondary roof *(jamtog)*, install a new 'sertog' (gold plated pinnacle) on top of the roof, repaint the timber components and other parts of the structures, or apply gold paint to the faces of statues. Therefore, it is a big challenge to restrict people from doing what is an integral part of their spiritual beliefs.

xi. Improper inventory system of heritage sites

We consider that an inventory is a fundamental tool for identification, preservation and promotion of the heritage sites and their associated values. The documentation and recording of heritage sites is also a key element in their conservation and management. Inventory and documentation records help us to understand the values of a heritage site, which in turn helps us to determine a management plan, and restoration and rebuilding measures or methods. The DCHS office started preliminary work on developing an inventory of cultural heritage sites in early 2001, which was further improved and updated in 2011. However, the inventory system is still not very well developed and lacks sufficient information on heritage sites. Therefore, the DCHS office is working hard to further strengthen the inventory system.

xii. Lack of proper monitoring & implementation systems

Maintaining traditional architectural façades, reusing functional old timber components and using old traditional techniques during the restoration of heritage buildings is declining due to the lack of monitoring mechanisms among others. The lack of technical capacity both in the DCHS and in the district offices is a major challenge to overcome. *Fig. 10* on the previous page clearly indicates the lack of monitoring during the restoration process and lack of awareness of heritage values, as a result of which the heritage building is observed as an *ancient-modern* building. Therefore, establishment of a monitoring mechanism is crucial at this point of time to protect the heritage sites.

3. PROBLEMS AND NEEDS FOR PROTECTION OF WOODEN STRUCTURES

The most widespread and severe problems that exist among heritage buildings in Bhutan today is the decay of timber. In certain cases, the stability of the whole structure is put at risk due to decay of key timber structural members and due to improper structural designs whose deficiencies reveal themselves over time. For example, there are situations where wooden beams and columns are placed under stress with an excessive load, as the result of which beams sag and columns sink into the floor, bringing the whole superimposed structure down with them.

The causes of decay are insects, micro-organisms, dampness and weathering agents. Dampness, one of the most common causes of timber decay in Bhutan, is also aggravated or promoted by poor planning, construction faults and poor management. However, it is noted that different species have different capacities in particular situations. Apart from natural seasoning, there is no other treatment applied on timber in Bhutan. One can easily determine whether the timbers are well seasoned or not. Timbers that are not seasoned well are extremely vulnerable to insect attack and decay and also start to shrink or warp under pressure. Although chemicals and preservatives are not used, the traditional painting done on wood has contributed a great deal to protecting timber for a long time.

i. Insect attack

The issue of insect attack is more prevalent in heritage buildings located in the southern and other humid regions of the country. Although insect attack is generally a minor agent that causes dry wood to deteriorate, most of insects seek out wood that has already been compromised by high moisture levels. However, a number of wood-boring insect species cause significant damage to wooden heritage buildings and are of concern to preservationists in the areas where wood-damag¬ing insects are present. Insect attack by termites or other wood borers weakens the wooden joinery of wooden members by either

Fig. 10 Insects have caused damage to the interior wooden members. Photo DCHS

digesting or tunneling through the wood *(Fig. 10)*. In this context, we need to make use of wood preservatives such as linseed oil or natural tar as well as easily available chemical preservatives such as waste engine oil from automobile workshops.

ii. Weathering damage

Weathering is one of the primary modes of deterioration of exterior wood in Bhutanese heritage buildings such as shingle roofing, roof trusses, and external doors and windows that are typically exposed to precipitation, direct ultraviolet light and seepage of rain from the roof. Weathering damage is apparent from the grey and brown surfaces of the wood and the small splits that have developed in the weathering process. Weathering of wood is the result of the action of cyclic wetting and dry¬ing, exposure to ultraviolet light, and erosion of the wood through wind-blown debris. Initially, the wood greys or darkens and small seasoning checks and splits begin to develop on the wood surface that allow moisture penetration. These turn into longer splits due to cyclic wetting and drying of the wood or freeze–thaw action *(Fig. 11)*. With modern materials available on the market and easy to construct, people tend to use galvanized sheeting to re-roof heritage buildings. However, they are not skilled in working with these new materials and normally leave gaps around the screws, which leads to seepage of rain water.

Fig. 11 Weathering has caused cracking and loosened the fibres on the surface of the roof truss member. Photo DCHS

iii. Moisture/wood decay

Deterioration of wood by moisture content occurs particularly on the ground floors of buildings. The thick, wide wooden flooring boards are normally fixed on the timber joists that are directly placed on the rammed earth or on the ground. The lack of ventilation and improper drainage systems around the buildings cause heavy dampness and high moisture content, leading to decay of the wooden components. In traditional Bhutanese buildings the wooden joists are inserted into the rammed earth walls or masonry walls without applying any wood preservative. Thus, a portion of the wood inserted and in contact with the walls often rots, especially if the wall has a high moisture content or if the timber has not been seasoned well.

The degree of damage caused by wood-decay fungi is due to their ubiquitous presence at all sites. Wood-decay fungi excrete enzymes that break down wood fibres, which lose their strength and the ability to perform their intend¬ed function. Soft-rot fungi generally occur in wood with high water and nitro¬gen content and are commonly found in

Fig. 12 Soft-rot fungi damage on flooring boards. Photo DCHS

flooring boards, foundation posts and also in joist members that are in contact with the ground (Fig. 12). Although historic buildings are equipped with excellent ventilation in the basement and even on the ground floor, later on, without knowing the function of ventilation, people have covered and blocked the ventilation of almost every heritage building has been blocked with stone and mud blocks. Therefore, it is essential to reopen and maintain the ventilation in every necessary portion of each building and to use wood preservative on joists to protect them from dampness.

iv. Continued occupancy and alteration

Living heritage sites in Bhutan face major deterioration and damage from continuous living inside the heritage building. Continued occupancy leads to regular alteration of the heritage building by the user. Users normally undertake regular maintenance of , and make alterations to the interior of the building without prior notice and approval from the authority, whereby work of poor quality and against conservation norms ensue. Modern needs and changes demanded by the user often take precedence, such as good sewerage and water supply facilities in the heritage building. Improper installation of these new services leads to leakage and damage of timber and other structural components (Fig.13). It is important to prevent work inside the heritage building without proper technical guidance and prior structural assessment of the building.

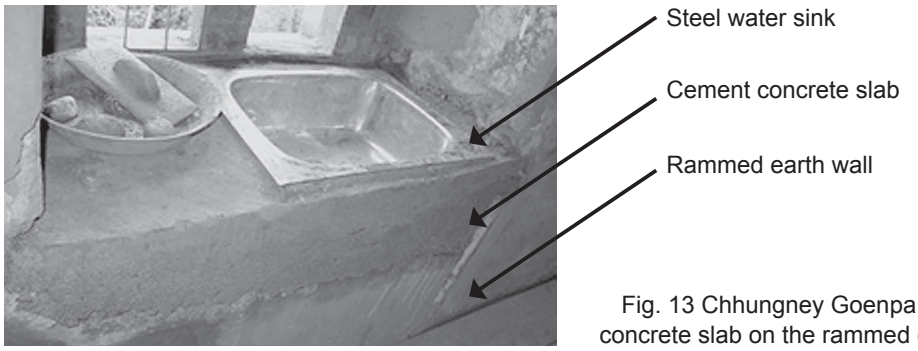

Fig. 13 Chhungney Goenpa, water sink in cement concrete slab on the rammed earth wall. Photo DCHS

v. Use of improper wooden joinery systems

Improper wooden joinery was mainly observed as a result of an ongoing study of indigenous practices that exist in Bhutan, particularly the damage pattern observed in composite timber construction following the 18th September 2011 earthquake in Bhutan. Improper wooden joinery was the main cause of the major damage to Bhutanese wooden structures. The three critical factors that cause damage in wooden construction are:

a. Inappropriate connections:
   - Inappropriate connection or insufficient insertion of wooden members *(chams/dungs)* in the walls caused the chams/dungs to fall out, leading to destruction of the wall. Therefore, it is recommended to insert chams/dungs of

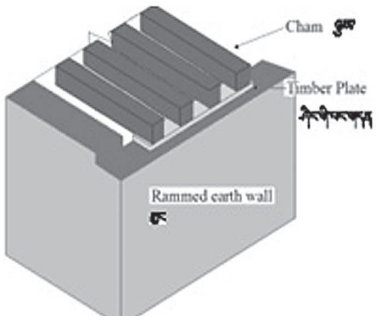

Fig. 14 Appropriate & sufficient insertion

adequate length into the wall and to insert a timber plate below the chams *(Fig.14)*

- Lack of connection between the timber frame *(rabsel)* causes dislocation of the frame. Therefore, proper framing of rabsel components is recommended for appropriate connection *(Fig. 15)*.

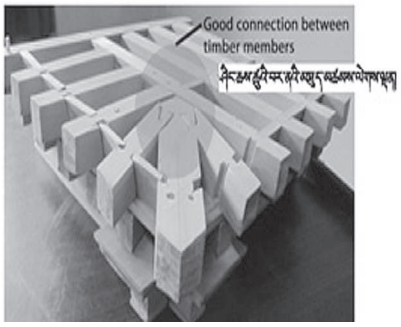

Fig. 15 Proper framing

b. Inappropriate location of joints in the structural timber:

- The cause of displacement or collapse of timber components is due to the inappropriate location of joints in the timber structure. It is recommended to avoid joints in the mid-span of structural timber members and provide proper anchorage to cantilever the timber members. *(Fig.16)*.

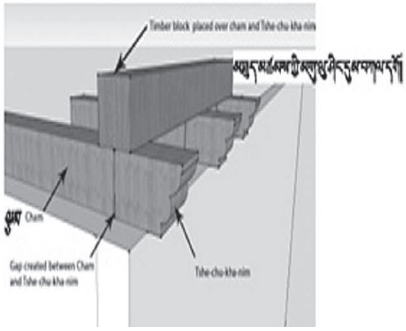

Fig. 16 Appropriate location of joint

c. Inappropriate timber joinery:

- The cause of dislocation of timber components is due to inappropriate timber joinery. Therefore, it is recommended to avoid bad joinery. *(Fig.17)*

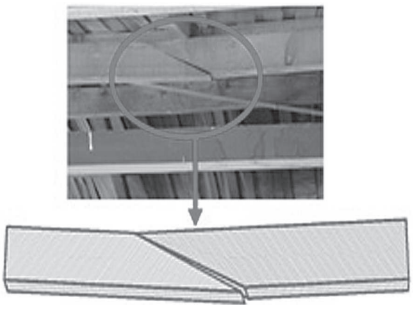
Fig. 17 Bad Joinery

vi. Inadequate seasoning of timber

For the restoration of heritage buildings and also for the new construction of religious structures, it is necessary to use well seasoned timber, as well as timber without dead knots, especially for the structural members. The method of seasoning and stacking is one of the major factors that make the timber highly resilient to damage and provide good finishing of the timber components (Fig. 18). Apart from natural seasoning, there is no other treatment applied to the timber. Timber that is well seasoned

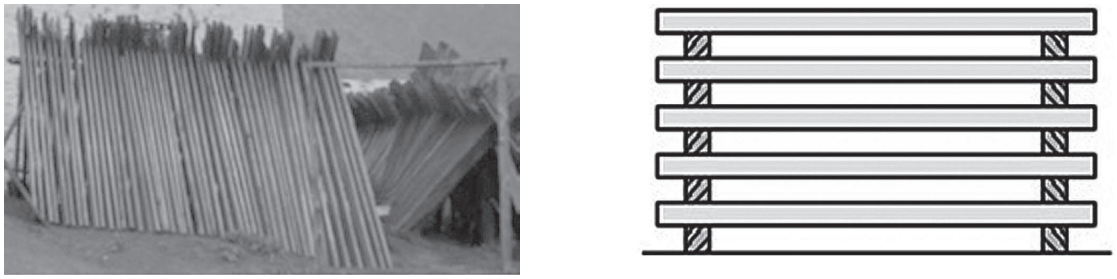
Fig. 18 Proper seasoning and stacking method of timbers

can easily be distinguished from timber that is not. Timber that is not seasoned well is extremely vulnerable to insect attack and decay and also starts to shrink or warp under pressure. Although chemicals and preservatives are not used, the painting done on wood has contributed a great deal to protecting timber for a long time. So it is very necessary to season the timber to avoid such problems in the future.

4. CONCLUSION

Cultural heritage sites in Bhutan are an integral part of our national identity, unity and continuity, and form an indisputable physical record of the historical, artistic and technical achievements of the Bhutanese through many centuries. Although the concept of conservation in Bhutan is fairly new and we encounter many difficulties during conservation and management of heritage sites, any effort of conservation of heritage sites greatly contributes to the preservation and promotion of our rich tradition, 'Cultural diversity and resilience', one of the domains of 'Gross National Happiness', the development philosophy of Bhutan.

Thus, with the beginning of modernization over the last decade and increasing development, the number of heritage sites that are being renovated and changed has increased immensely. Therefore, the threat and negative impact of the contemporary approach and frequent natural and human-induced disasters affecting our heritage sites has to be recognized by each and every Bhutanese citizen, and thus we need to put in a joint effort to overcome these threats, issues and challenges.

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Brunei Darussalam
Siti Norhayatty binti Haji Morni
Scientific Officer
Museum Department
Ministry of Culture, Youth and Sport

Problems and needs for cultural heritage protection and restoration activities (mainly for wooden structures)

Introduction

The Brunei Museums Department is responsible for protecting and conserving cultural heritage in Brunei Darussalam. It has been promoting research and disseminating knowledge to the public and acting as a collection reference throughout the nation. As part of its activities in trying to safeguard and preserve cultural heritage, Brunei had developed national legislation in the form of the Antiquities and Treasure Trove Act 1967 (revised 1984, 1991 and 2002). The Act aims at controlling and preserving ancient and historical monuments, archaeological sites and conserving antiquities and anything related to treasure troves or any matters connected therewith. In addition, a Museum Board was established to make decisions in relationship to whether a monument or site should be listed under the Antiquities and Treasure Trove Act. The Museum Board is appointed for a four-year term and subject to direction by the Ministry of Culture, Youth and Sport.

In accordance with the Act, any ancient monuments or historical sites that have been gazetted and approved by the Museum Board are not allowed to be dug, excavated, built on, have trees planted on site, demolished, altered or have buildings or walls erected upon them [Section 18 (a, b, c, d)]. Ancient monuments and historical sites are selected and considered through four criteria, namely:

(a) of historical importance and aged 50 years or older
(b) with unique infrastructure
(c) of importance to education
(d) of importance and significance to the economic, social and political life of the nation

Conservation Plan

Through a conservation plan, a number of factors are considered in restoring and preserving a property. The building structure itself is important, especially in keeping and protecting collections, and should be sheltered from any natural and human pressure. Therefore, a preventive conservation plan is established as this helps in the management of the property. The plan involves allocating responsibilities to relevant stakeholders in protecting the cultural heritage. This includes the establishment of administrative arrangements, regular inspections, acquisition of minor equipment, modifications to the structure if needed, and training. All these activities will be documented in the conservation section. This aims at extending the life expectancy of the property and safeguarding it for

present and future generations.

Case study: Labu Estate Rubber Industrial Site

History of Labu Estate, Labu, Temburong

In the 1890s, the demand for rubber increased significantly due to its use in the production of modern cars (Rozan, 2008). Therefore, during the period of the British Resident Administration in Brunei, the British decided to plant rubber trees, with rubber playing a major role in agricultural production, bringing in large profits and supporting the Brunei economy until the 1960s. The first rubber plantation was established in 1908 in Labu by Abrahamson, and this agricultural area was named Labu Estate. At that time, Labu Estate was run by the British 'Borneo' Rubber and Land Company in Labu, Temburong (Matzin & Malek, 2003). In 1914, rubber was first exported to Europe. Production started to rise and exceeded 1000 tonnes a year during the mid 1920s to before the outbreak of World War II (Rozan, 2008).

However the export of rubber and rubber products started to decline in the 1960s, with the volume in 1968 at 170.6 tonnes. This decline was due to a number of factors. Firstly, as a result of the economic recession caused by the outbreak of World War II, the price of rubber started to drop from $2.70 to 0.50 per catty. Secondly, the old rubber trees could no longer produce high quality latex. Thirdly was the increase in jobs and salaries in new development sectors, especially in the oil and gas industry, which encouraged the locals to migrate, resulting in a decline in rubber production as an agricultural activity (Matzin & Malek 2003).

Latest research

Labu Estate is approximately 9 acres, located about 16 kilometres from Bangar Town, Temburong District. The selection of this site was due to its significant historical, economic and cultural value. Through its historical value, the site incorporates evidence that commercial plantations existed and agricultural activity took place in the past, and that this site helped contribute to the country's economy. In addition, this site is the only evidence left that a rubber plantation used to operate in the past, because the other two sites, namely, Gadong Estate and Berakas Estate, have been demolished due to development. Labu Estate has been preserved due to the awareness of the local community that they wanted to preserve what has been left from the past. Secondly, its economic value is seen in the way tourists can enjoy the surrounding natural environment combined with agricultural activity, which creates a harmonious society within the village, hence assisting the government in promoting and developing the tourism industry. Thirdly, through its cultural and educational value, the younger generation will be able to understand, see up close and experience what was practiced in the past and the economic activity that took place at that time. Using these criteria, the site was chosen because it was one of the earliest rubber plantations and the most successful and largest agricultural area during

that period.

The research and conservation project at Labu Estate started in 2003. With the consent of his Royal Highness the Sultan of Brunei, Labu Estate was gazetted in 2006 under the Antiquities and Treasure Trove Act. Since then, conservation projects have been actively carried out, including conservation and restoration works, especially on the remnants of the artefacts found on the site, documentation and cataloging, which covers maintenance and repairing the old buildings based on its original location and design. Currently, Labu Estate is monitored by the Brunei Museums Department, the Museums Board and the Labu Estate Consultative Council.

Structure of buildings

Labu Estate comprises a manager's house, a manager's office, a generator house, a dry and wet godown, a rubber drying site, a smokehouse site, and generator house (Brunei Museums Department, 2003). The structure of the buildings is wood with zinc roofs, while the ground floor walls are covered with building on the property. The construction of the buildings on the property is mainly wood, surrounded by a wooden fence.

Conservation project:

As part of the selection as stipulated under the Antiquities and Treasure Trove Act, conservation and restoration efforts at the site have been launched. Preservation work includes restoration, monitoring, examination, documentation, treatment and collections care so that the site and collections will not be exposed to the risk of damage or destruction, and with the use of systematic scientific technology methods if possible. The restoration and conservation efforts will involve any methods which are made at conservation sites, and any changes made should be minimal, and being as close to the original state as possible.

Action taken during restoration:

In 2003, a preliminary assessment was made at Labu Estate site. From the assessment, a few plans and continuation conservation projects were considered in trying to protect the site. All restoration works were to be paid for by the government of Brunei Darussalam.

Significance of threats and outline of the damage

The buildings were located near a secondary forest. In addition, the structure of the buildings was wood, therefore the buildings were more susceptible to wood threats such as wood termites. Sometimes it is difficult to calculate the exact extent of the infestation. Therefore at certain times, some building structures such as walls need to be removed to detect termite infestation in the building structure.

Restoration project Site I: Wet and Dry Godown Building

A research and conservation project under phase I was launched in 2007, with conservation works being concentrated towards the wet and dry godown sites. Visual observations of the on-site structures focussed on biotic attacks by insects and fungi on the wooden structure. This visual observation found evidence of marks, holes and termite moulds on the concrete, leading to the assessment that there have been active attacks and infestation on the wooden structure and objects. Analysis of the holes, frass tunnels and termite moulds shows evidence of termite and post beetle attacks.

The building structure of the wet and dry godown was restored using the same material as the original. The wood replacement method was used to treat the infested wood structure of the building.

Restoration project Site II: Generator house, rubber drying site, smokehouse site, manager's office

The same technique of visual observation was used on the on-site structures. Observations focussed on biotic attacks through insect infestation. This observation found evidence of marks, holes and termite moulds on the concrete., leading to the assessment that there have been active attacks and infestation on the wooden structure. Analysis of the holes, frass tunnels and termite moulds shows evidence of termite and post beetle attacks. Major damage was seen on the wooden walls and wooden gates of the wood structure, which means that the building structure needed to be treated. Some walls and part of the wooden structure were required to be removed as the damage caused by termites was devastating. The wood replacement method was also used to treat the infested wood structures. The restoration project was launched in 2010, where conservation and restoration works have been continuing under phase II.

Under phase II, restoration works also include building walkways, rest huts, signage, open-site museums which include mini exhibitions of artefacts in the generator house, a dry and wet godown, rubber drying site, smokehouse site and manager's office. This site has become an-open air museum and has a high potential of attracting eco-tourism.

Future plan:

The only task left is restoration of the manager's house since the whole building structure needed a complete restoration. This is due to attacks by wood termites destroying almost all of the wooden structure, which made the whole building structurally unsound. It was learned that a continuation plan for restoration is being considered in the future plan.

The work of dealing with pest infestation has been outsourced to a private pest contractor on a long term basis. Spot treatments such as chemical spraying on the wood surface and liquid injections

through concrete have been used to treat termite infestation. For these treatments to be effective, the termite should touch or digest the chemicals used by the pest contractor. Although all buildings have been treated to control infestation, it is difficult to treat complete infestation because re-infestation or a new colony could also appear. There are a number of factors that could lead to re-infestation. First, is the difficulty in locating the colony and determining the right dosage or techniques for treatment; secondly, a lack of residual 'long-term protection' could also be a factor if this is not well monitored.

Action taken on artefacts

In protecting artefacts, action has been taken in three stages.

Stage 1

Collecting all collections and artefacts found inside the property. The next step was to document all movable artefacts found on the site. All collections that were collected were packed in a systematic way so that all collections were brought to the conservation laboratory section for better restoration and preservation, since most of the artefacts had deteriorated from exposure to the environment and insect attacks. However some artefacts that were found to be large and heavy needed to be placed in a safe place near the sites. A call for urgent conservation work was made as soon as possible. Urgent action was needed due to a number of factors:

- The condition of the artefacts would cause more deterioration if no action was taken. This is due to exposure to the environment and insect attacks. The exposure to the environment was from the sun's 'natural light' and rain since the weather in Brunei is hot and wet throughout the year. The high temperature and relative humidity would cause artefacts to deteriorate. Therefore the collections needed to be safely protected.
- Urgent action was needed because it needs considerable investment to carry out conservation works
- Once documentation and acquisition has been completed, conservation works can be continuously carried out in phases to protect and safeguard the artefacts collection

Stage 2

This stage involved 'in situ' conservation. It was convenient to conserve a few large and heavy objects made of wood and iron in situ on the site. For this action, one of the buildings was used and renovations were carried out so that conservation works could be conducted inside the building. As for the few large and heavy objects, these needed to be placed *in situ*. Some dark wood material had become lighter due to exposure to the light, and this object became brittle. On the other hand, some light wood material had become darker due to exposure to oxygen and water, and as a result fungal spores had germinated on some of the objects.

Controlling the relative humidity and temperature is not an easy task, however, certain actions can help to minimise the deterioration of wood and organic structures caused by fungal problems. Therefore, a decision was made to built roofs to protect the objects from direct exposure to sunlight and rain. This is very important because wooden or organic artefacts respond to changes in relative humidity and temperature.

Stage 3

This stage involved carrying out conservation activities continuously to protect the objects and sites, with regular inspections taking place regularly for better monitoring. The deterioration of buildings as well needed to be addressed, with the buildings conserved and maintained using original materials as much as possible. Objects that were convenient to carry were brought to the conservation laboratory for further treatment.

Conservation of wood and organic material

Conservation of organic material and wooden structures needs extra attention since this action needs to be revised carefully before a decision can be made. These materials are susceptible to deterioration from pests and environmental factors when exposed. The following conservation techniques are used:

- Cleaning all dust or 'frass' from the materials, which is done manually using the museum's vacuum cleaner and bristle brushes. The use of water is prohibited because it may cause condensation on the artefacts or collection
- Once the dust is removed, the object is cleaned and waxed sparingly by a trained conservator using chemicals or applying a wax such as "Magtoxin" over the worn parts. Depending on the size of the object, some objects were brought to the conservation laboratory for further treatment. A number of methods are used. Firstly, the object is treated using the zero oxygen method or by adding nitrogen gas using sealed transparent plastic specially used for conservation purposes. Some oxygen scavengers are placed inside the plastic. Alternatively, the hot temperature method is also used. The object is first pre-sealed using a black plastic bag before final sealing with transparent plastic. The object is then exposed outside at a temperature above 40oC for approximately 4 hours to kill any infested pests. If re-infestation occurs, the object is then treated using insecticides such as 'Timberlife' by spraying inside the burrows and applying a coating to the surface of the object.

- For better monitoring and routine inspection, thorough observations of the objects should be carried out. For cases of severe deterioration, certain objects need to be altered using original materials. If any parts of the object have seriously deteriorated and could cause serious infestation, they need to be altered using a similar material, which should be compatible and of the same size so that the altered parts look similar to the original.

- All objects that have been conserved and restored should be treated with pesticides to avoid future infestation by pests.

Conclusion

Fungus could cause serious impact to historic buildings or artefacts if it is not treated correctly. Identifying fungal problems is important because not all fungi are destructive. Some fungal infestation may not be active or may even be dead as the fungi stain could represent an infestation from the past. Controlling the relative humidity and temperature is not an easy task. However, relative humidity and temperature in buildings has always been a threat in causing collections to deteriorate. Therefore, environmental monitoring needs to be carried out so that the temperature will not cause any harm to the collections in the future. Building roofs and adding airing to the building structure has helped to reduce the temperature and direct exposure to the cultural collections.

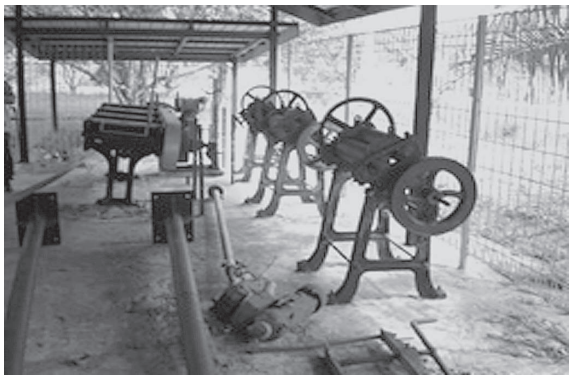
Secondly is the invasion of termites, which has been a major threat to the wooden structure. After the preliminary assessment was made, a routine inspection was performed on a regular basis. This routine inspection involved proper monitoring in response to pest problems on the wooden structure or any fungal growth. Besides implementing a pest management programme, work has also been outsourced to an experienced pest-control contractor.

Thirdly, is the possible involvement of a rescue committee team such as the National Disaster Management Center in facing any possible threat from natural disasters. This should involve important authorities from the government and non-government agencies in understanding the standard operational guidelines in tackling any possible threat.

There is room for improvement, especially in conservation techniques for wood treatment. Techniques for identifying species of wood or fungi through scientific technology would be beneficial in finding the best information and solutions for the rehabilitation of wooden structures or any cultural wood collections. In addition, more experimental research should be conducted with the use of modern technologies such as fiber optics, borescopes and movement sensitive devices to try to reveal wood threats. In addition, more research should be conducted, especially using a combination of chemical and non-chemical treatments. These experiments will lead to effective use of best practice in the field.

Mini exhibition at Wet Godown

Dry Godown



Large artefacts being displayed

Some artefacts containing wooden objects

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Restoration and Preservation of Wooden Structures in Yogyakarta, Indonesia: Case Study on The Royal Mosque of Mataram Kotagede

A. Background

1. History

Kotagede is an ancient Javanese city that used a planning principle called *Catur Gatra Tunggal* (four components in one). These four components are karaton (palace), royal mosque, town square, and market. The karaton, as the center of the city, was surrounded by the fortress wall and jagang (moat). The components of the city were built in stages starting with the establishment of residential areas and the karaton. After that, other main components were built sequentially: the fortress wall and the moat, the royal mosque, and the royal cemetery. The archaeological remains of Kotagede are evidence of the greatness of the past, some of which can still be seen even today.

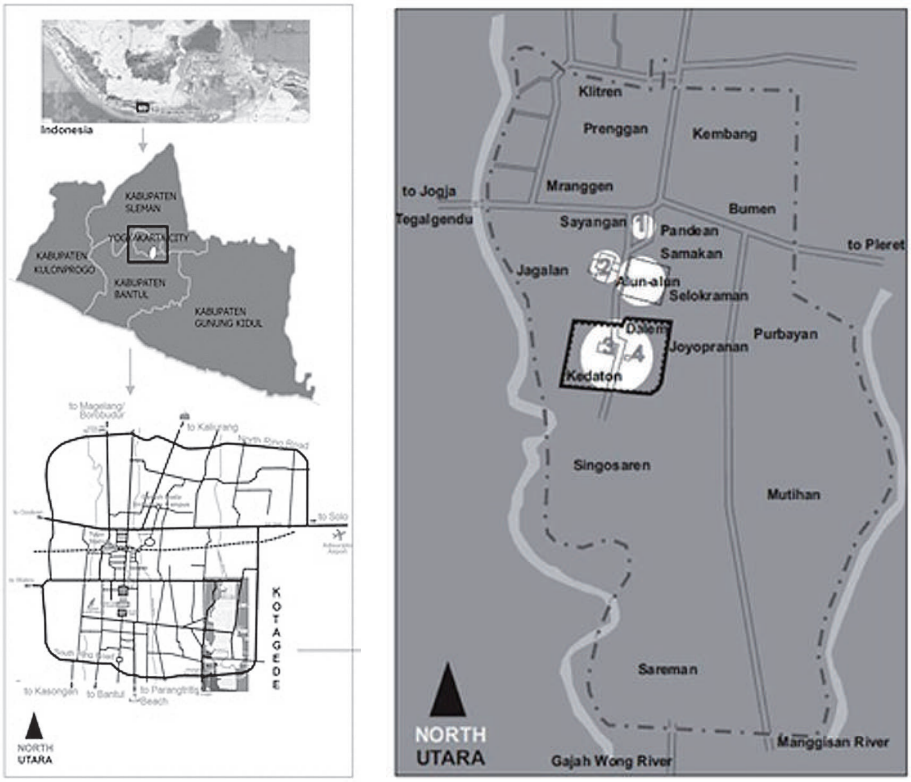

Fig. 1: Map of Kotagede. (1) Kotagede Market (2) The Royal Mosque of Mataram Kotagede (3) The Royal Cemetery of Hastarengga (4) Watu Gilang (throne stone).
(Jogja Heritage Society, 2007)

The royal mosque complex is one of the components of the old city in the Islamic period. It is divided into several yards and surrounded by high walls made from brick and tuff stone with a gapura (gate) as the main entrance. The other part of the mosque complex was the royal cemetery for the king and his family. In the southern part of the royal cemetery there was the Sendang Seliran (royal pool).

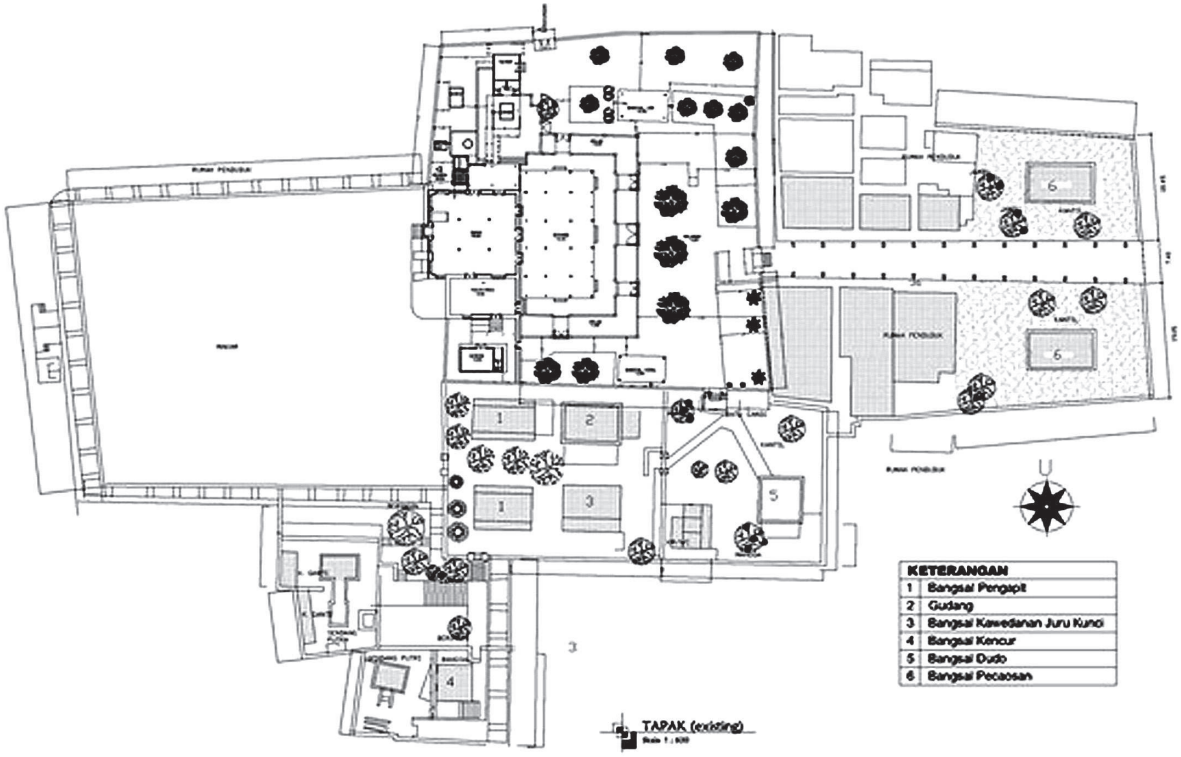

Fig. 2: Situation Map of The Royal Mosque of Mataram Kotagede Complex.
(Cultural Service Office of Yogyakarta Special Region, 2012)

Ever since it was built in the 16th century, The Royal Mosque of Mataram Kotagede has been renovated several times. This is because the building has had an important value related to the preservation of cultural heritage in Yogyakarta Special Region. As a living monument, the royal mosque has had the same function as a sacred place for prayers from its establishment up to the present.

The restoration and revitalization of the royal mosque cannot be separated from the mosque buildings as living cultural heritage. Changing the building depends on the activities of users of the mosque. As a living monument that has been used by various people and communities, it cannot be denied there have been modifications made to the architecture of the building and its utilization. Adaptation and revitalization of the mosque always go together and parallel with the changing activities of the jamaah (user) and the takmir (mosque management).

Fig. 3: The royal mosque. Left: outside; Right: inside.
(Private collection of Rully Andriadi, 2012)

The existence of the royal mosque is closely related to the history of the Kingdom of Mataram-Islam. The history of the kingdom is mostly sourced from traditions, folklore, and babad (local chronicles). The royal mosque of Mataram Kotagede as one of the main components in the city still exists today on the western part of the ¬alun-alun (town square), which was turned into a settlement for local people a long time ago. Now the alun-alun is recorded as a toponym of the *kampung* (village). *The Babad Momana* mentioned that the royal mosque was built in circa 1589. After it was finished, the royal cemetery in its back yard began to be built by order of the King of Panembahan Senapati.

In the first stage construction, there was a langgar (small mosque) built by Ki Ageng Pemanahan (father of the first king of Mataram, Panembahan Senapati). The size of the *langgar* was smaller than that existing today. After Ki Ageng Ngenis, the mother of Ki Ageng Pemanahan, passed away, the wood used for construction of the langgar was reused for a cungkup (a building that covers a graveyard). Furthermore, before Ki Ageng Pemanahan died, he told his son, Panembahan Senapati, to built the mosque on the former location of the langgar. In the first stage there was the liwan (main hall), the most sacred place for prayer, and then the other part of the mosque.

After the Kingdom of Mataram-Islam was replaced by Karaton Ngayogyakarta and Karaton Surakarta (established 18th century), the Kotagede area became an enclave under the authority of both kingdoms. Management of The Royal Mosque of Mataram Kotagede was also held by them as part of the ancestry of the old Kingdom of Mataram-Islam (established 16th century). This situation has continued until today. Attached to the royal mosque are abdi dalem (royal servants) who live in the front yard with the daily task of maintaining and safeguarding the royal mosque and the royal cemetery, although there is a government institution that is responsible for preservation of the royal mosque as a cultural heritage.

Since the old city of Kotagede is no longer the royal capital city, the royal mosque still retains the same function as it had originally. The existence of the royal mosque and cemetery complex became a major aspect of the development of the Kotagede district in later periods.

The role of both kingdoms (before establishment of the Republic of Indonesia) also appear in the restoration and rehabilitation of the royal mosque and cemetery, in other words, activities

based on orders from the kings. Unfortunately, not all activities in the more than 500 years' history of the kingdoms were recorded and documented. The limited information becomes the main problem regarding the aspect of authenticity in the present period.

2. Architecture

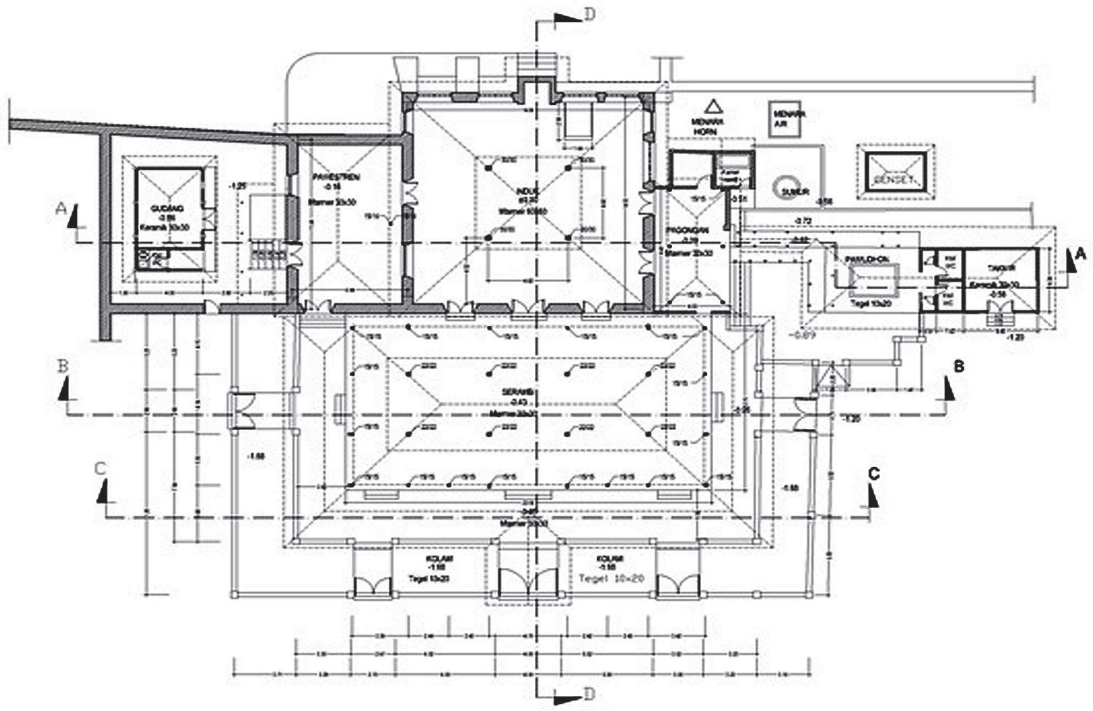

Fig. 4: Ground Plan of The Royal Mosque of Mataram Kotagede.
(Cultural Service Office of Yogyakarta Special Region, 2012)

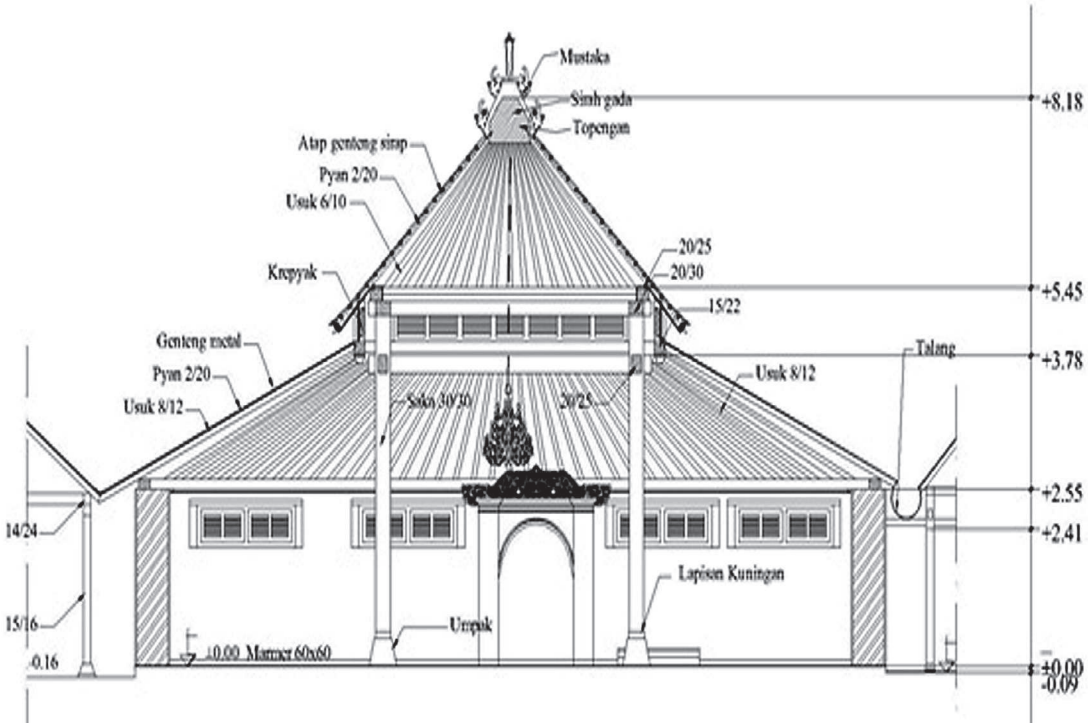

Fig. 5: Section of the main hall.

The layout and architecture of The Royal Mosque of Kotagede runs from west to east, starting with the Dhondongan (house of *abdi dalem*) in the entrance yard. Through this part there was the gapura (main gate to the mosque yard) and kelir (wall fence). In general the architecture of the royal mosque was the same as for other old mosques in Java. But there was a specific uniqueness in the building, e.g. influences from previous periods (Hindu traditions) on the kelir, gapura, and bangsal (open wall building).

The layout of the mosque consists of three parts, i.e. the main hall, left and right terraces, and front terrace. The square main hall is 14.55 m x 14.55 m with two layers of a *tajug* roof and with the roof framework supported by four saka guru (main columns) made from solid teakwood 30 x 30 x 500 cm above *umpak* (column bases) made from natural stone and walls 70 cm thick made from bricks.

The uniqueness of the wooden structure in this mosque was seen in application of the Tajug Lambang Gantung traditional roof type. Lambang Gantung basically means a wooden beam into which rafters are inserted and which in turn is inserted into a hanging bentung beam. The lower rafters are not superimposed with *lar-laran* beams, but with *lumajang* beams hanging on the bentung beam at the end of the *saka guru* (main column), which is superimposed with a *jurai* roof. For strength the *lumajang* beams are reinforced with steel hanging down from the rafters.

The main hall is surrounded by a 70-cm-thick brick wall with three doors in the east, two doors and one window in the north, one door and one window in the south, and four vent holes. All doors and windows are made from teak wood and some of them are carved with ornaments. Near the mihrab (place for the imam) there is a *mimbar* (podium) with carved ornaments on all elements. The rectangle front terrace is 22.05 m x 12.15 m with a *limasan* roof supported by eight main columns and 16 side columns made from teak wood. This part consists of open space without any walls, which is different to the main hall. On the southern side of the main hall there is the pawestren or left terrace (praying room only for women), which has a layout rectangle of 11.64 m x 6.94 m with a kampung roof supported by a brick wall surrounding the terrace.

Fig. 6: Plafond of the main hall (left), front terrace (right).
(Private collection of Rully Andriadi, 2012)

B. Important Values

The history and culture of Kotagede are important and must be conserved so that the next generation can understand and appreciate their origin and culture. The following important values are associated with The Royal Mosque of Mataram Kotagede:

1. Historical Value: The Royal Mosque of Mataram Kotagede was the first royal mosque built in Kingdom of Mataram-Islam in the 16th century. It also became the center of Islam in that period.
2. Archaeological Value: The Royal Mosque of Mataram Kotagede is one of the few components of the city from the Kotagede period that still exist.
3. Architectural Value: The Royal Mosque of Mataram Kotagede with its high quality traditional Javanese architecture is evidence of the development of architecture in the 16th century.
4. Social Value: The Royal Mosque of Mataram Kotagede is also witness to the communities and societies that have lived in Kotagede from time to time, even though sometimes the activities were not closely related to religion at all.

C. Problems

The preservation of the royal mosque faces many problems that are required to be solved immediately. The problems can be divided into four main categories, i.e. regulation, conservation, restoration, and revitalization. Each category represents a number of preservation problems that have been found as follows:

1. Regulation
   a. Preservation activities undertaken by several government institutions tend not to be well coordinated. This is related to the overlapping authority of each institution.
   b. There are conflicts of interest between preservation by government and development by management.
   c. There are no regulations specifically related to the preservation of wooden living monument structures. Existing regulations are related to preservation in general.
2. Conservation
   a. Several parts of the wooden component framework have been damaged due to weathering. Parts of the roof framework and columns have also been damaged due to leakage from the

Fig. 6: Cracked beam (left), stains due to leakage (right).
(Cultural Service Office of Yogyakarta Special Region, 2012)

gutters and roof covers. These are closely related to the structure of the building.

b. Limited research on eco-friendly traditional conservation material.

c. The management of the mosque faced difficulties in preserving the building due to limited skills and knowledge. There were also problems related to activities to improve the capacity, skills and knowledge of the management.

3. Restoration

a. The traditional roof type of Tajug Lambang Gantung on this mosque has never been completely documented or recorded.

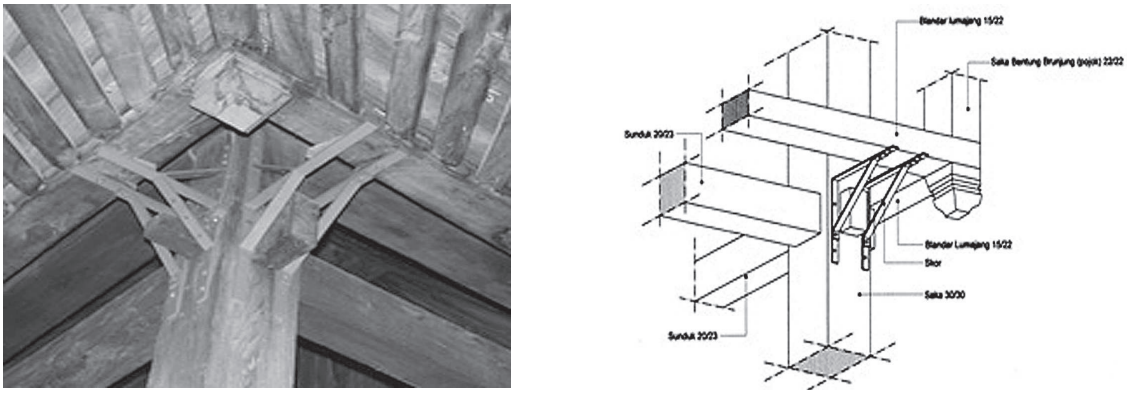

Fig. 7: Part of the existing Lambang Gantung roof with new steel reinforcement.
(Cultural Service Office of Yogyakarta Special Region, 2012)

b. The existing Tajug Lambang Gantung is different from the original Tajug Lambang Gantung due to consolidation and steel reinforcement in previous restorations. This is related to issues of philosophy.

c. Difficulties in determining authenticity and problems for timeline reconstructions due to limited documentation on previous restorations.

d. As a result of previous restorations, the authenticity of the existing structure began to be disputed by experts.

e. It is difficult to find wood of the same quality as the original wood materials.

f. Part of the wooden components had been seriously damaged.

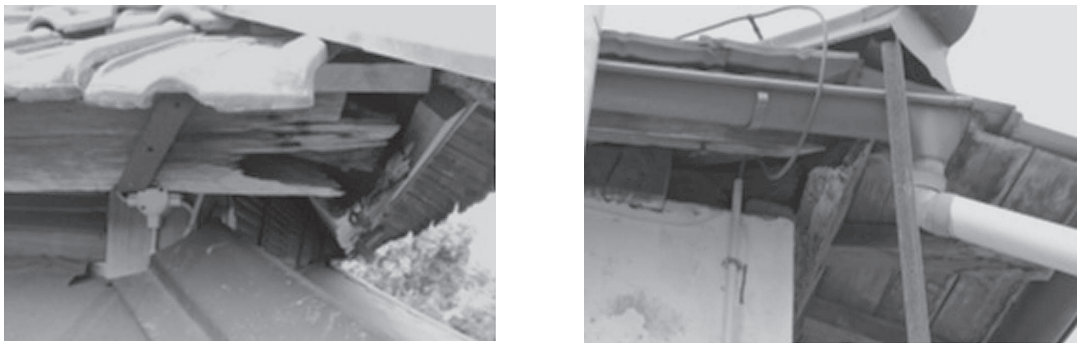

Fig. 8: Damaged wooden structures in the roof.
(Cultural Service Office of Yogyakarta Special Region, 2012)

g. The strength of each part of the wooden component framework was neither measured nor analyzed.

h. The original material of the roof covering was wooden shingle. There was an idea to change the roof covering to metal due to the following reasons:
   1) Lighter than teak wood.
   2) Cheaper than teak wood.
   3) Less risk from fire.
   4) Easy to obtain. High quality teak wood shingles are difficult to find.

Fig. 9: Mixed roof coverings.
(Cultural Service Office of Yogyakarta Special Region, 2012)

4. Revitalization
   a. Installation of facilities for *jamaah* (users) e.g. electrical system on the surface of wooden elements disturbing the appearance and esthetics of interior building.
   b. Utilization of the building to reach a balance between preservation and religion.
   c. Facilities and new buildings not in harmony with the mosque itself.
   d. Hydrants and firefighting equipment were in a bad condition. This can endanger the building and users.

Fig. 10: Broken firefighting equipment (left), existing electrical installation (right).
(Cultural Service Office of Yogyakarta Special Region, 2012)

D. Needs

The preservation problems that have been found need to be solved with the best solutions. Some special needs identified for these problems are as follows:

1. Regulation
   a. Need to arrange an integrated and comprehensive management plan for the preservation of

the royal mosque that will be obeyed by all stakeholders.

b. Need to arrange specific regulations related to preservation of the wooden living monument structures.

2. Conservation

a. Need to start conservation of the wooden component framework, especially the framework structure. The building's condition is now endangered.

b. Need to intensively research local knowledge related to traditional conservation methods and materials.

c. Need to arrange manuals and guidelines for conservation for the building owners. Need to prepare a conservation training course for the building owners and management.

3. Restoration

a. Need to arrange some comprehensive scientific research from a multidisciplinary perspective on the Tajug Lambang Gantung.

b. Need to dismantle the reinforcement and move this to places that are hidden from view.

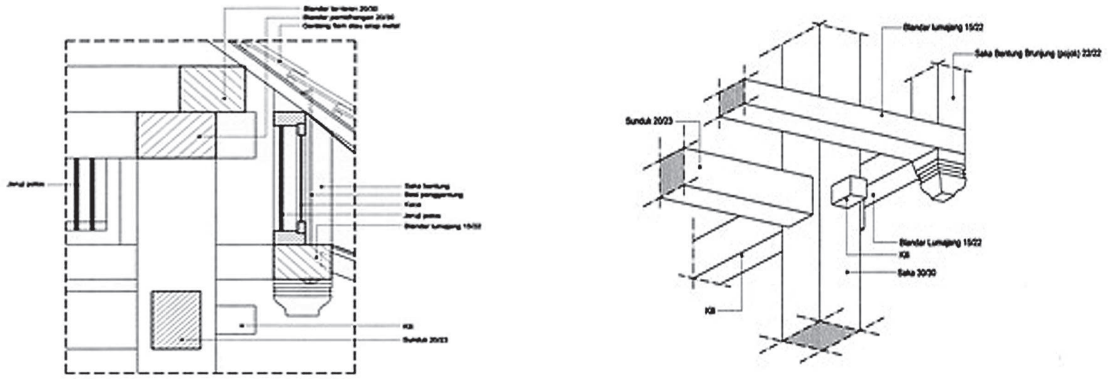

Fig. 11: The traditional roof type of Lambang Gantung (without steel reinforcement)

c. Need to arrange integrated research on reconstructing structural elements that have been changing over time until the time line of authenticity of the building is completely identified.

d. For long-term preparations, need to build a "cultural" forest for wood that can be used for restoration projects in the future.

e. Need for new methods and technology to measure each wooden component.

4. Revitalization

a. Guidelines for installation of facilities on site.

b. Need to arrange activities or programs to raise awareness for jamaah (users) and management.

c. Need to arrange a Standard Operating Procedure for fire emergencies on site. Need to improve the skills and knowledge of management regarding fire emergencies on site.

d. Need to create a revitalization master plan.

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Report Relating to the Applicant's Achievements and Involvement in Conservation of Wooden Structures

For the period 2003 to 2013 I have been participating in and managing numerous excavations within the territory of the Republic of Kazakhstan at the Karaganda State University, at the Institute of Archaeology named after A. Kh. Margulan, the non-governmental, non-profit organization Kazarchaeology LLP. In my work there have been excavations of remarkable monuments referring to the Bronze Era, the Tsarist Tombs of Savromats, and the necropolis of Saka, all located within the territory of Kazakhstan.

During the archaeological excavations with my participation and leadership, wooden structures were discovered at the following monuments:

1. Necropolis Kyryk-Oba II, located in the Burlinsk district of the Western Kazakhstan region.
2. The Necropolis of Karauyltobe, located near the village of Taldy in the Almaty region
3. Karatau necropolis, located in the Satinsk rural district of the Almaty region

And some wooden artifacts of antiquity were found as well:

1. The necropolis of Kokkoz Auliye, Kurgan No. 5, located in the Zhambyl region – wooden tray for sacrifice.
2. Dyn Molasy Mausoleum, located in the Ulytaus district of the Karaganda region of the RoK – wooden composite saddle.

These excavations are famous not just for their treasures that have enriched the museums. They also reveal the cultural values of the ancient architecture as well.

If, for the purposes of conservation and restoration of artifacts, archeological finds can be taken out to or conserved in a thermal chamber, wooden tomb structures, unearthed in different areas of the country, cannot be dealt with in this way. They require immediate conservation after excavation, which obliges a specialist in the field of archeology to be competent in this specialty. And only as a result of successful conservation will the next stage, the object museumification of historical and cultural heritage, be reached.

In the course of excavations at the necropolis Kyryk-Oba II in 2005 at the level of the ancient surface a carbonized complex wooden structure like a type of tent was unearthed by our team. The central part of the structure had been destroyed by predatory excavations. The preserved part of the structure was a concentric structure, thus creating the illusion of logs and reed fiber shields being laid in a circular manner. However, despite the destruction in sectors A and D, some preserved in situ

logs were unearthed, diverging radially from the structural center. The logs with good ogival ends were documented, suggesting they were used in the conservation of the structure.

In the view of the need to preserve and restore this structure, I have developed and introduced a special technique of conservation of antiquities. Basic methods implied the use of real and natural resources that do not damage the tomb structure.

Description of the work performed:

1. Cleaning the surface of dirt was executed
2. Irrigation was carried out in order to strengthen the wooden structure with 20-30% of prepolymer solution of isocyanyte with polyoxyethylene glycol
3. Fixation for prevention of deformation
4. Eradcation of wood-destroying fungi and insects.
5. In situ restoration of fallen logs
6. A complex of survey works for defining coordinates and altimetry points.
7. Coverage of the entire area of the tomb structure with straw for further preservation.
8. Development of a plan for reconstruction of the tomb structure in the new material.

Thus, we used straw for filling and coverage of the wooden structure to protect it from external climatic impacts and mechanical damage. As part of this work an action plan was carried out for the fixation of deformation, and eradication wood-destroying fungi and insects. Due to the field studies, renewed in 2007, in the course of the excavation of the wooden structure, the integrity and good preservation of the structure was revealed, which allowed the application of this method in the preservation of one more necropolis – Karauyltobe. In the field season of 2013 excavation of the tumuli necropolis of Karauyltobe was recommenced which required the acquisition of new knowledge in the field of restoration of wooden structures. A very important factor in searching for extended knowledge are the differences in these necropolises according to certain parameters: the wood species, the degree of preservation, climatic conditions, construction method of the tomb structure, applied consumables, proximity of the latter to settlements and the water reservoir, which raise some concerns about preservation of this structure.

It is therefore appropriate to develop a plan of activities for the preservation of this monument of historical and cultural heritage, including a complex of measures for preservation of the tomb structure with subsequent museumification.

An important phase of the integrated activities of our organization is the restoration of artifacts. Artifacts of wood found during excavations are delivered to the laboratory of Kazarchaeology LLP, where the conservation work begins.

The **wooden tray** for sacrifices was discovered in 2012 by an archaeological expedition under my management from tumulus no. 5 of Kokkoz Auliye necropolis. The wooden tray for sacrifices dates back to the 16th-15th centuries B.C.

Description of the wood condition: The tray is made by means of a shaping technique and consists of solid wood. It appears as an oval-shaped dish. Dimensions: 45 cm x 25 cm, height 13 cm. State of preservation: The wood fibers are partly dispersed, and there are cracks and chips on the sides

of the dish. On the surface of the wood there are scuffs, and the dish is covered with a thin mixed dust-like layer with a thickness of 0.1 mm, which had gone into the cracks. On the side of the dish there are spherical-shaped blisters with a height of 0.4 mm, length of 100 mm and width of 56 mm.

Description of the works performed:

1. Surface cleaning was carried out
2. Complete dehydration of water was carried out
3. Distribution of water-soluble antiseptics
4. Deep infusion of tree structures with wax
5. Priority conservation works were undertaken, with further destruction of the archaeological artifact having been suspended.
6. Sent to a thermal chamber for further preservation
7. A plan to reconstruct the dish shape in new material was developed.

The **saddle** was found in 2011 by an archaeological expedition under my management from the complex of Dyn Molasy. The saddle dates back to the 11-12th centuries B.C. The saddle is made from wood with a piece of leather in the location of the seat.

Description of wood condition: The saddle is made by means of shaping multiple parts, i.e., pommel, sidewall. In the place of the seat are remnants of the leather. The saddle is rimmed with iron at the edges. Dimensions: length: 651mm, width: 325 mm, height: 332 mm.

State of preservation: Tree fibers are partly dispersed, there are cracks and chips. On the surface of the wood there are scuffs.

Description of the works performed:

1. Surface cleaning was carried out
2. Complete dehydration of water was carried out
3. Distribution of water-soluble antiseptics
4. Deep infusion of tree structures with wax
5. Priority conservation works were undertaken, with further destruction of the archaeological artifact having been suspended.
6. A plan to reconstruct the saddle in new material was developed.
7. Sent to the freezer for further storage to acquire new knowledge in the field of preservation of these artifacts.

Burial ground Karatau. Burial mound № 48

Burial ground Karatau. Burial mound № 51

Burial ground Kyryk-Oba II. Burial mound № 1(05)

Burial ground Karatau. Burial mound № 48

Burial ground Karatau. Burial mound № 42.

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Problems and needs for cultural heritage protection and restoration activities in the Kyrgyz Republic

Introduction

The Kyrgyz Republic has a very rich and varied cultural heritage which has to be preserved for future generations. State management of cultural heritage is realized by the Kyrgyz Republic through the Ministry of Culture Information and Tourism, local government administrations and local self-government. To this effect, the Ministry operates a special department known as the Republican Inspectorate for Registration of Historical and Cultural Heritage. The National Academy of Sciences, research and educational institutions, and museums may conduct research at sites of historical and cultural heritage, and to carry out expert evaluation of their scientific value. Public organizations and associations, and enterprises of different ownership and membership, in cooperation with government agencies and academic institutions, as well as local authorities have to help in the protection and preservation of historical and cultural heritage, organize and take public control of protection of historical and cultural monuments, and carry out awareness-raising and outreach work among the population.

The concept of historical and cultural heritage in the Kyrgyz Republic began to be introduced from the 18th to 19th centuries in line with the limited archaeological science of the Russian Empire and later the Soviet Union.

The history of the investigation of archaeological monuments, their preservation, conservation and documentation can be divided into the following stages:

- Accumulation of fragmented information about antiquities (until the 1880s)
- Start of classification of archaeological monuments (until the 1930s)
- Start of conservation and restoration works (from 1936 to the 1980s) with the help of invited specialists and specialists from local restoration workshops, which appeared at the end of the 1960s.

The first work on the preservation and restoration of archaeological monuments in the country was carried out within the framework of archaeological research in 1927 and 1928. The Soviet era saw the restoration and conservation of such historical and architectural monuments as the Ak-Beshim Buddhist temples (I,II), Burana Tower (medieval city of Balasagyn), the caravanserai Tash-Rabat, the Uzgen complex, the Buddhist temple of Krasnorechenskoe city, and the gumbez (mausoleum) of Manas (Kolchenko, 2005, pp. 132-133; Peregudova, 1989). As a result, most of the restored objects have lost their historical authenticity (for example, about 50% of the Uzgen complex was reconstructed), but at the same time they were preserved for future generations and now can be used as tourist attractions.

Since independence from the Soviet Union, three projects on conservation of cultural heritage have been completed, with funding from different international organizations (Jansen, 2008). These are the Cholpon-Ata Rock Art complex (2002), the Mausoleum of Shah-Fazil, Rock Art Complex of Sulaiman-Too (1998-2000) and the complex of the cities of Krasnaya Rechka, Ak-Beshim and Burana (2004-2007). Currently being undertaken are restoration works of the mausoleum Asaf-Ibn-Burhia in Osh city, which was partially restored in 1999-2000. The restoration and conservation works have been undertaken by the Kyrgyz scientific, research and project bureau Kyrgyzrestavraziya (nauchno-issledovatelskoe proektnoe byuro). The Kyrgyzrestavraziya is under the jurisdiction of the Ministry of Culture and Information and Tourism and was founded in 1990 (Karymshakova, 2010:29-30). Unfortunately, recent expert evaluations of the results of these projects, both local and international, have not been positive.

Legal regulations

After the collapse of the Soviet Union, the Kyrgyz Republic inherited a strong legal basis for the preservation, conservation, restoration and use of historical and cultural heritage. Since independence, the Law on Protection and Use of Historical and Cultural Heritage has been extended. This law was adopted by the Jogorku Kenesh (Parliament of KR) in June 29, 1999, with amendments and additions introduced in 2006 (Karymshakova, 2010:29). The law satisfies the fundamental requirements of the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage.

Article 3 of the law defines historical and cultural heritage as all historical and cultural monuments associated with historical events in the life of the people, the development of society and state, and material and spiritual works of art, and having historical, scientific, artistic or other value. Under Article 4, archaeological monuments are considered as a kind of historical and cultural heritage and viewed as historical and cultural sites, regardless of who owns them.

Article 34 of the law is devoted to restoration, conservation, regeneration and repair of objects of historical and cultural heritage. According this article, only state bodies on protection of monuments may sanction special organizations to carry out restoration works on any historical or cultural heritage object.

The system of registration and documentation

According to the state accounting and classification system, archaeological sites are divided into sites of local, national and international significance. Lists of historical sites of local significance must be approved by local governments on the basis of their presentation by territorial bodies for the protection of sites, in coordination with the state body for the protection of sites. Lists of historical and cultural sites of national significance are established by the Kyrgyz government on the basis of reports from the state body for the protection of sites. Sites of international significance are represented by sites which already are sites of national significance and included on the list of sites under UNESCO protection. Lists of historical and cultural sites of international significance are made public by the authority for the protection of monuments according to international standards. On official recommendation following a competent scientific evaluation, a list of sites nominated for inclusion on the World Heritage List will be submitted by the Government of the Kyrgyz Republic to the World Heritage Committee and other international organizations.

There is also a category of newly identified sites, a list of sites that is constantly replenished through the discovery and recording of new historical and cultural heritage sites. Before making the list, monuments in this category of sites also are still considered under Article 21 to be under state protection as objects of historical and cultural heritage. There is a separate list of monuments of historical and cultural heritage under threat.

Currently, the database of the Republican Inspectorate has registered 583 monuments of national significance and 1269 monuments of local significance. Among them are 335 archaeological monuments. This list was compiled and approved by the Government in the form of a resolution (Resolution of the Government of KR on August 20, 2002, No. 568). In reality, however, there are no archaeological monuments which are actually distinguished and protected by preservation measures. Most sites, even well-known ones included on the list of monuments of national significance, have been privatized and are located in economic and business zones (Kolchenko, 2005:142). Usually this has happened because most officials simply do not know about the historical and cultural significance of these places. No archaeological site has its own protective "passport" and no archaeological site is registered in the database of the State Registry.

Government programs

Since the 1990s, the Kyrgyz Ministry of Culture and Information has announced several programs for the protection and preservation of historical and cultural heritage. In 2004 a plan titled "About Protection and Use of Historical and Cultural Heritage" was approved by the Ministry until 2010. The most recent one, titled "The Culture of Kyrgyzstan," was prepared for the period 2011-2013.

UNESCO

The National Commission for UNESCO has a connection with the main office of UNESCO. The Commission has prepared a list of monuments for UNESCO and monitors sites which are already under UNESCO protection. The museum complex "Sulaiman-Too" was the first monument in the Kyrgyz Republic to be entered onto the World Heritage List in 2009. In 2011, several projects in Osh Oblast (one of the regions of the Kyrgyz Republic) were realized under the aegis of UNESCO. The main goal of these projects is to inform local administrations and state bodies of the objects of historical and cultural heritage in their districts (Bostonbaeva, 2011:7).

Preservation and restoration of artifacts

During the Soviet era, all restoration works were conducted mostly by invited specialists from the Hermitage in St. Petersburg. For example, the famous wooden coffin of the Karabulak mummy was preserved by these specialists.

In general, the process of restoration consisted of the following stages:

1. Mechanical cleaning (by using wooden sticks, vacuum cleaner)
2. Fixing of the artifact form with epoxy glue
3. Partial restoration of the most damaged parts by using small crumbs of wood and epoxy glue.

Some artifacts were preserved by local restores, but most of the museum objects were very well preserved in natural condition and were successfully revealed by archeologists during the excavation process. But all of them now need further conservation and restoration work to preserve them for

future generations. In case of poor preservation of artifacts, an archaeologist often took a photo or drawing of the artifact to aid in its possible reconstruction. But often these reconstruction attempts were not successful.

Wooden artifacts

Starting from the Bronze Age through the Saka Epoch or Scythian Era (around 8th-6th centuries BC) until the Middle Ages (Turkic Era (6th-12th centuries AD), Mongolian invasions, Late Middle Ages) archaeologists have found wooden artifacts to be an essential part of the archaeological record. The wooden objects are represented by sacrificial tables, dishes, household and kitchen tools, saddles, decorative parts of horse harnesses, cradles, coffins, beds, quivers, shafts of spears and arrows, and art objects. Since the territory of the Kyrgyz Republic is characterized as an arid zone, wooden objects are often not very well preserved, and after excavating such objects, archaeologists are usually unable to conserve them. As a result these objects are lost to archaeology. In the recent exhibition of the State Historical Museum are the most representative collections ever exhibited of wooden artifacts belonging to the Kenkol and Karabulak cultures. These cultures date back to the period of the Great Migration (line of our era).

My experience of working with wooden artifacts

My first experience of finding wooden objects was not successful. In 2001, during the excavation of a burial mound dating back to the Turkic Epoch (6th-12th centuries AD), close to the buried remains of a Turkic warrior I unearthed a small wooden cup that was covered with blue paint. I tried to clean the soil very accurately, but because the artifact was exposed to the air, and because I did not have any experience working with wooden objects, the cup disintegrated within a few minutes. Later in 2008 I had the experience of excavating burial mounds in the Issykkul region dating back to the Great Migration or Hunnic Era, which are represented in the territory of Kyrgyzstan today by the Kenkol and Karabulak cultures and the culture of burial mounds with angular stones. The latter is found only in the Issykkul region. Evidence of a similar culture was discovered before in the territory of Mongolia. Wooden structures (e.g. overlaps or ceilings of graves, coffins, beds or underlays) and wooden artifacts (e.g. vessels, plates, tables, fragments of bows and quivers, tablets with engraved pictures or decorations) are typical of this epoch. In the process of excavation and cleaning of these wooden objects we used water (to prevent disintegration) and a liquid polaroid (to fix the shape of the artifacts or structure).

Nevertheless still need knowledge and professional guidance in the sphere of conservation and preservation of wooden objects. There are no many archaeologists (about 10), no specialists in restoration and conservation with updated educational background in the country.

Problems and needs

Despite progress since independence, many problems remain in the protection and preservation of Kyrgyz historical and cultural heritage. Potential solutions to these problems depend on many factors. The first problem is a lack of funding, which affects the organization of research, monitoring sites, special equipment for preservation and restoration and other essential matters. Without support from the state, almost all financial problems related to the preservation of cultural heritage have been put onto the shoulders of experts. Their sources of funding include private universities, museums

(mostly state historical institutions), private organizations, and grants from international organizations. Recent financing, or rather its absence, means heritage management efforts fall short in current socio-economic conditions, as such efforts been traditionally relied on state financial support, which is now offered only on a residual basis. Since funding for archaeological sites stopped in the late 1980s, many sites are under the threat of destruction. This has been compounded by the disbanding of the Society for the Protection of Monuments of History and Culture and the dismissal of regional inspectors and managers of heritage, resulting in a lack of monitoring and preservation of sites and artifacts.

Another essential problem is the training of specialists in the field of historical and cultural heritage. There is no clear government strategy for training young researchers and specialists. Poor financial support for science in general also strongly impacts upon this issue, as the nation's young people choose to study what, from their point of view, are more promising specialties. As a result, the staff of the Republican Inspectorate for Registration of Historical and Cultural Heritage – the key state agency regulating the issues of conservation – is represented by one person. In the whole country there are no more than ten archaeologists, and no professional restorers. The *Kyrgyzrestavraziya* – a key organization responsible for preservation and restoration – consists of only one person. There are no other personnel able to realize preservation and restoration works on a professional level. Therefore, two specialists participated in workshops on conservation and preservation of archaeological objects in Japan. Starting from 2011 a series of workshops on conservation and preservation of archaeological objects for young specialists was organized by the National Research Institute for Cultural Properties in Tokyo and UNESCO. As a result, the National Academy of Sciences was able to open a small lab on preservation and restoration of archaeological findings on the basis of equipment received and in order to educate young people.

The most important problem is the lack of coordination among organizations concerned with the protection and management of cultural heritage (Amanbaeva, 2011, p. 93). Despite the availability of government programs designed to create effective mechanisms for management of cultural heritage, the painful process of gradual loss of cultural heritage continues. There is no agreed scheme that is based on legal regulations or traditions that clearly identify the competencies and responsibilities of each interested party, such as the National Institute of History and Cultural Heritage, the Kyrgyzrestavraziya in charge of the Republican Inspectorate for registration of Historical and Cultural Heritage, State Historical Museum and the National Commission for UNESCO. These organizations have to colloborate more effectively. Their colloboration must be based on clear regulation of the work so that each body understands its role in the larger process. Adding to this situation is the fact that many sites and monuments are on private land and not available to archaeological inquiry. To prevent such a situation in the future, a final list of historical and cultural heritage properties, after improvements have been made by the government, should be sent to the State Registry to register them as state property. Because of the weak coordination and consequent lack of knowledge of relevant legislation, available artifacts are sold within the context of an illicit form archaeology, which of course is not archaeology at all.

The government cannot solve all these problems alone. Mechanisms to ensure the preservation of cultural heritage for future generations needs radical reform, in a context in which cultural heritage

management will at least partially have to justify itself economically. To achieve the change required, government bodies, heritage specialists, tourist agencies and local people will have to unite in an effort to protect our common heritage.

When we get the big problems more under control, we will be better able to address the many more minor problems needing attention, such as updating cultural heritage lists, conducting salvage excavations, supporting the organization of museums by local communities and popularizing archaeological monuments among local people and potential tourists, amongst many others.

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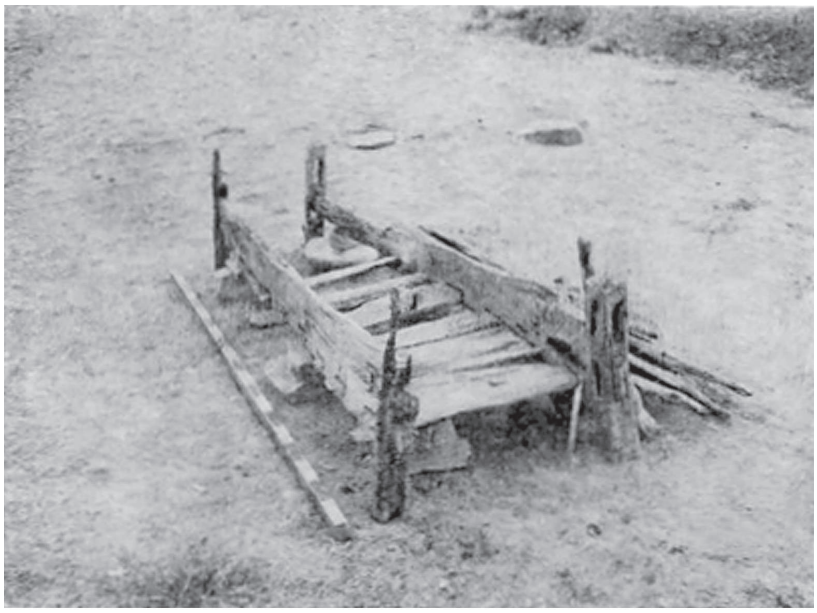
Appendix

Деревянный столик для изготовления мучной пищи.

Figure 1. Wooden table for milled food. Katacomba 10, Kenkol culture. (Photo from A.N. Bernshtam Kenkolski mogilnik (Kenkol cemetery) / Archaeological expeditions of the Hermitage // Leningrad, 1940. 35 p. + 36 tables)



Деревянный гроб.
Раскопки 1938 г.

Figure 2. Wooden coffin. Kenkol culture. (Photo from A.N. Bernshtam Kenkolski mogilnik (Kenkol cemetery) / Archaeological expeditions of the Hermitage // Leningrad, 1940. 35 p. + 36 tables)

Figure 3. Wooden plate. Kenkol culture. (Photo from A.N. Bernshtam Kenkolski mogilnik (Kenkol cemetery) / Archaeological expeditions of the Hermitage // Leningrad, 1940. 35 p. + 36 tables)

Figure 4. Wooden dishes of Karabulak culture. (Photo from the archive of the State Historical Museum, Bishkek, Kyrgyzstan)

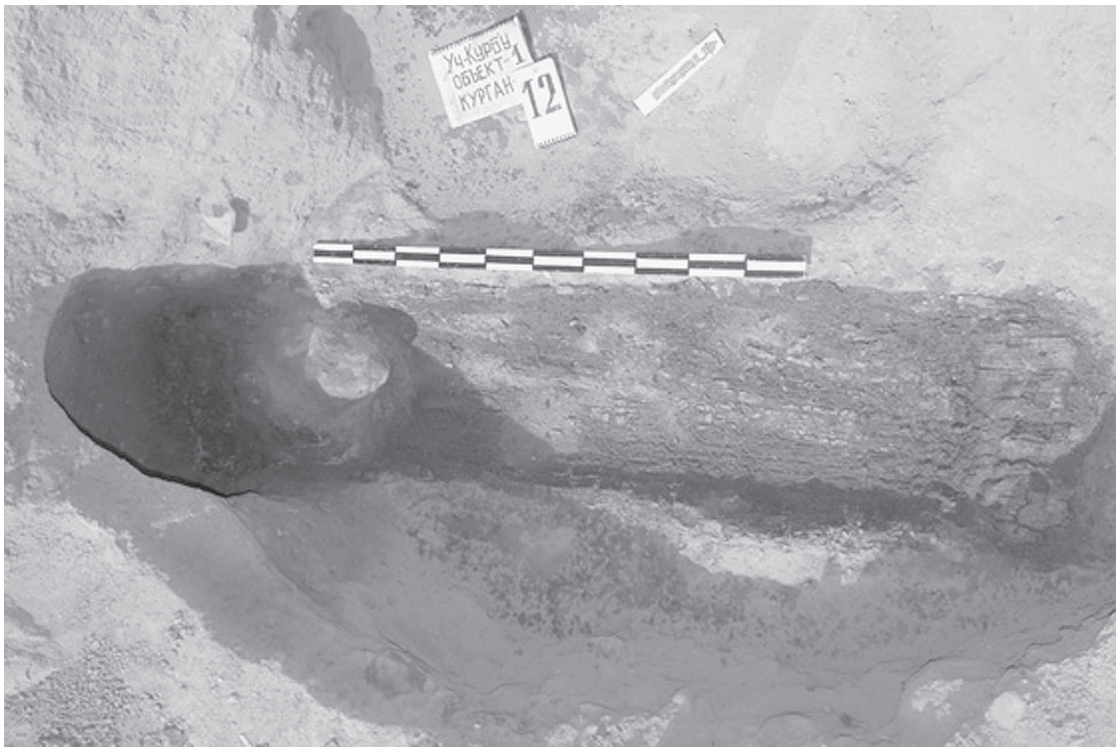


Figure 5. Remains of a wooden bed in a grave, kurgan 12, Uch-Kurbu cemetery, Tosor, Issyk-Kul region, Kyrgyzstan. (Photo by Kubat Tabaldiev)

Figure 6. Wooden table with the remains of sacrificial food. Kurgan 9, Uch-Kurbu, Tosor, Issyk-Kul region, Kyrgyzstan. (Photo by A. Abdykanova)

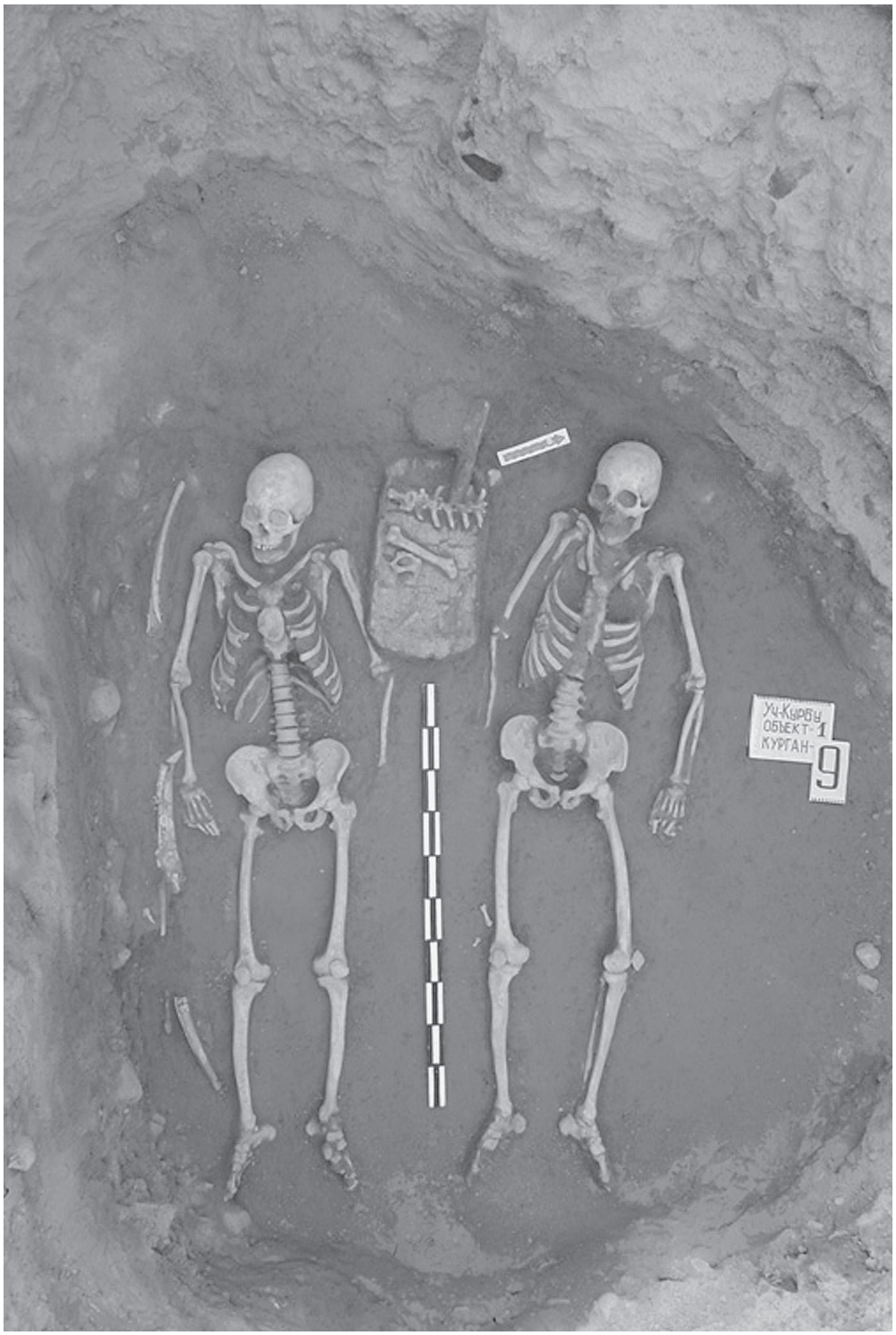
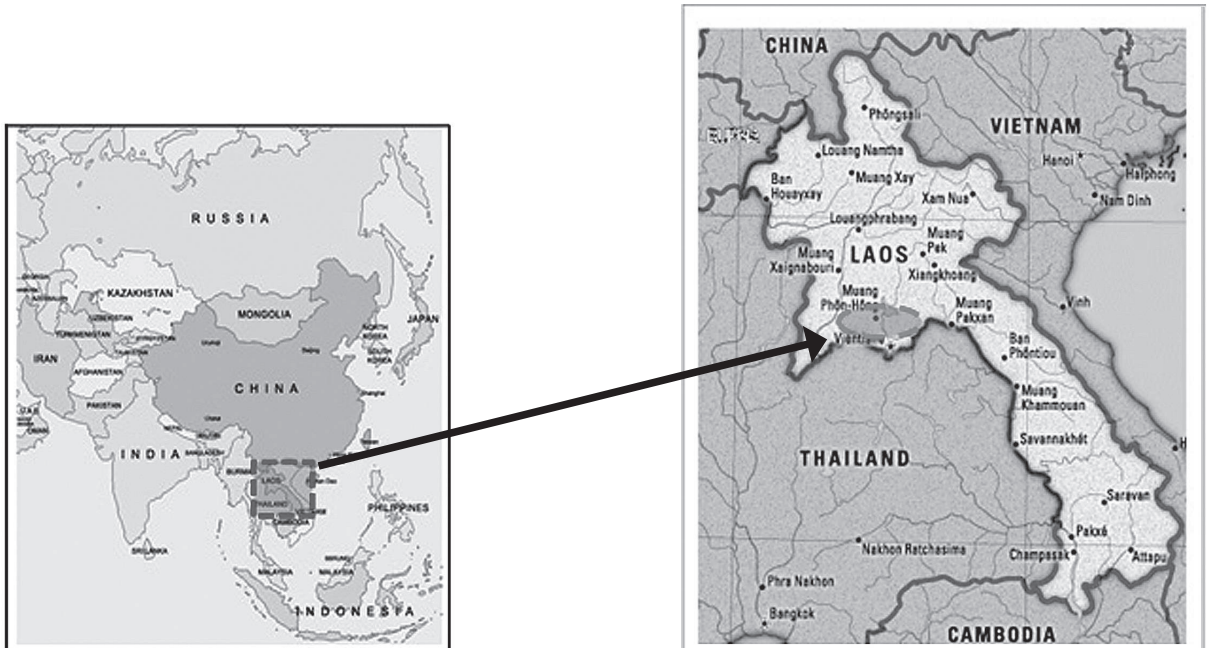


Figure 7. Top view of grave. Kurgan 9, Uch-Kurbu, Tosor, Issyk-Kul region, Kyrgyzstan. (Photo by A. Abdykanova).

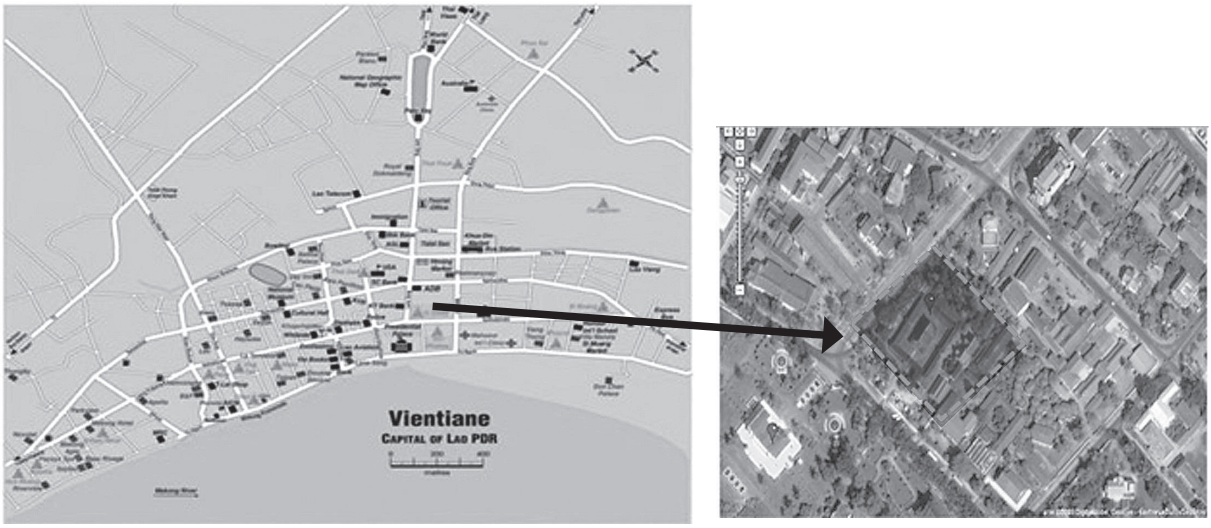
Lao P.D.R.
Thammavong Siviengkham Vieng
Technical Staff
Vientiane Capital Department of Information Culture and Tourism

Vat Sisaket

Location of the site



Summary of analysis

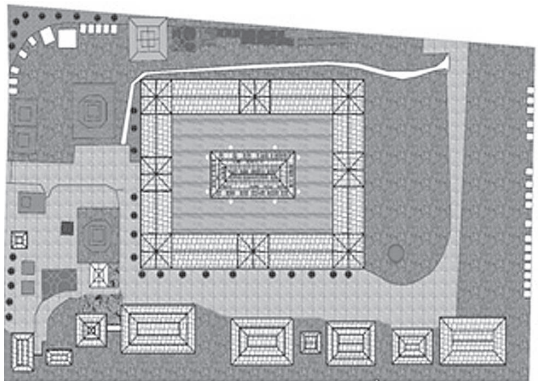


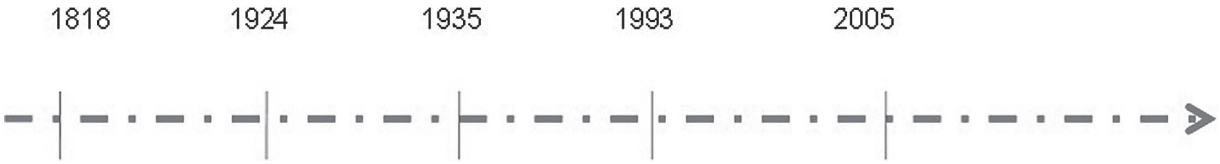
Vat Sisaket is historically important, having survived the Siamese destruction, and has beautiful architecture, with decorations of colored glass, gold, and silver leaf. It offers important evidence for historical research. The government is interested in the preservation of this site as it is a tourist destination for both domestic and overseas visitors. Vat Sisaket has survived for 190 years, but is in need of restoration to preserve it in the future.

Brief history of Sisaket Museum of the ancient site

Vat Sisaket Museum was built in 1818 A.D. by King Anouvong, the last king of the Vientiane Kingdom. After construction was completed 10 years later, between 1827 -1828, the Siamese killed all people across the Mekong river and destroyed all temples in Vientiane except for Vat Sisaket. Even though Vat Sisaket wasn't destroyed, it was robbed of all its palm leaf manuscripts, and even today there is an empty book cabinet which used to display the manuscripts.

Preservation and restoration in 1929



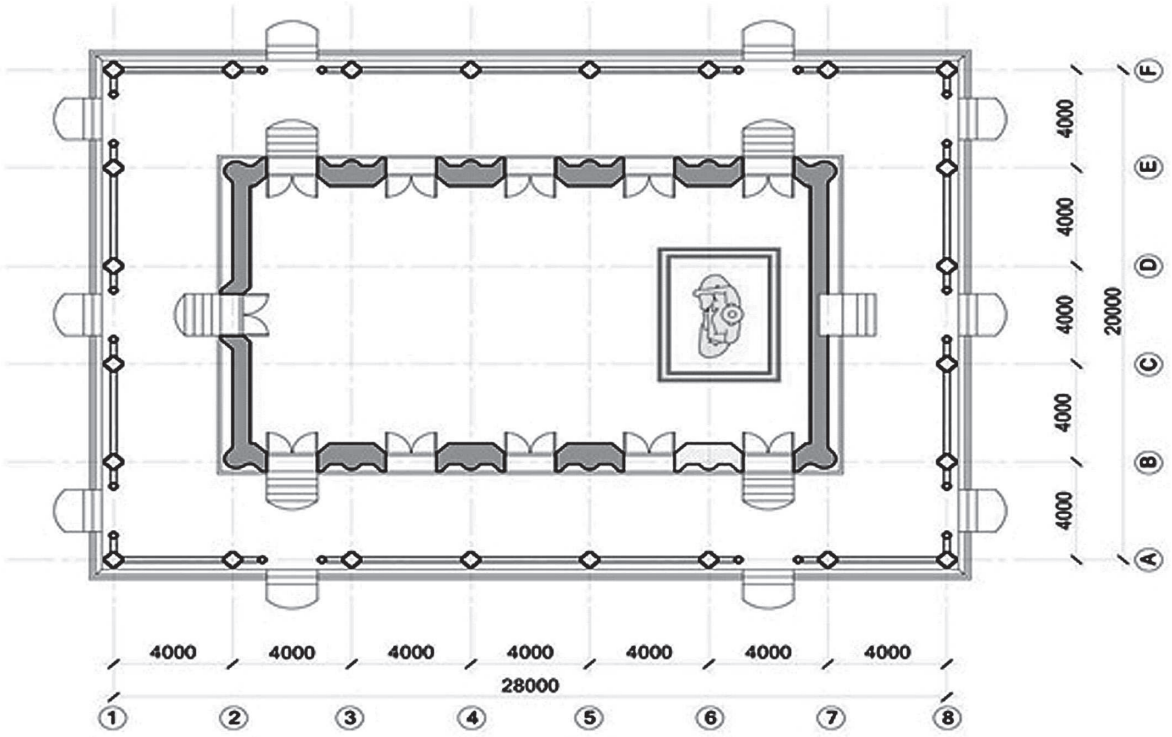


- In 1818 Vat Sisaket was built and included a sim, altar, two Buddha images made of bronze, and a mural painting

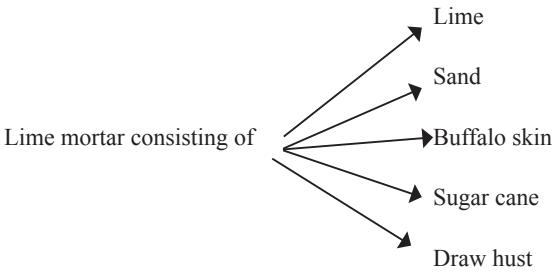
- The original name of Vat Sisaket was Vat Satasahasaram, which means Vat saen, but King Anou changed it to Vat Sisaket.

- 1924: restoration of the sim structure and cloister by Prince Phetsarat.
- 1935: restoration of the structure of the sim, cloister.
- 1993: restoration of the structure of the sim, cloister and the hotay.

Summary of Materials



The entire structure of the monument is made of lime mortar (as below) and hard wood.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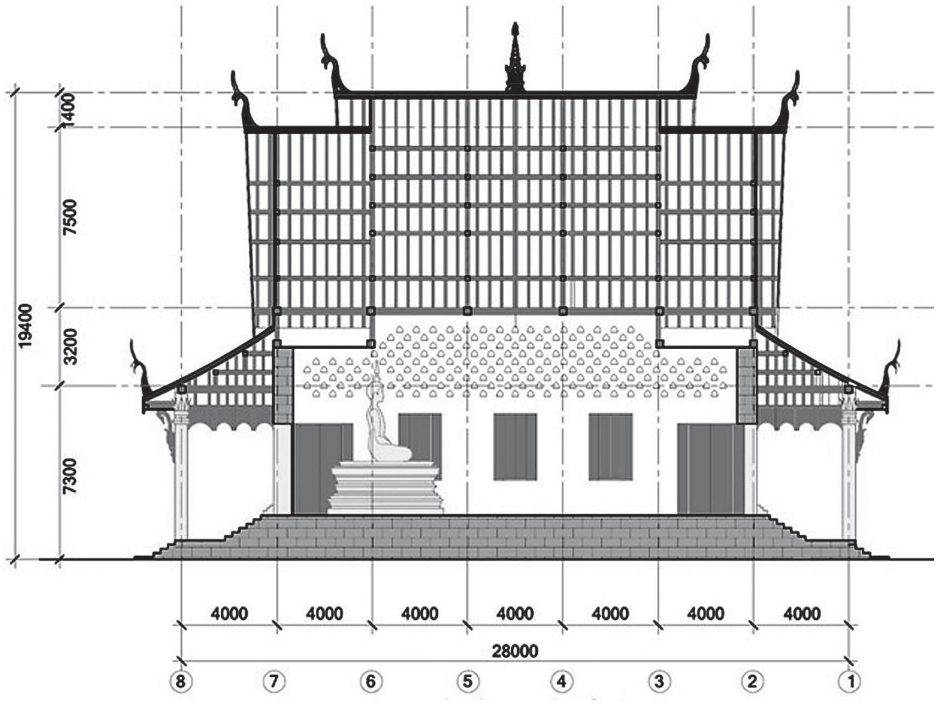
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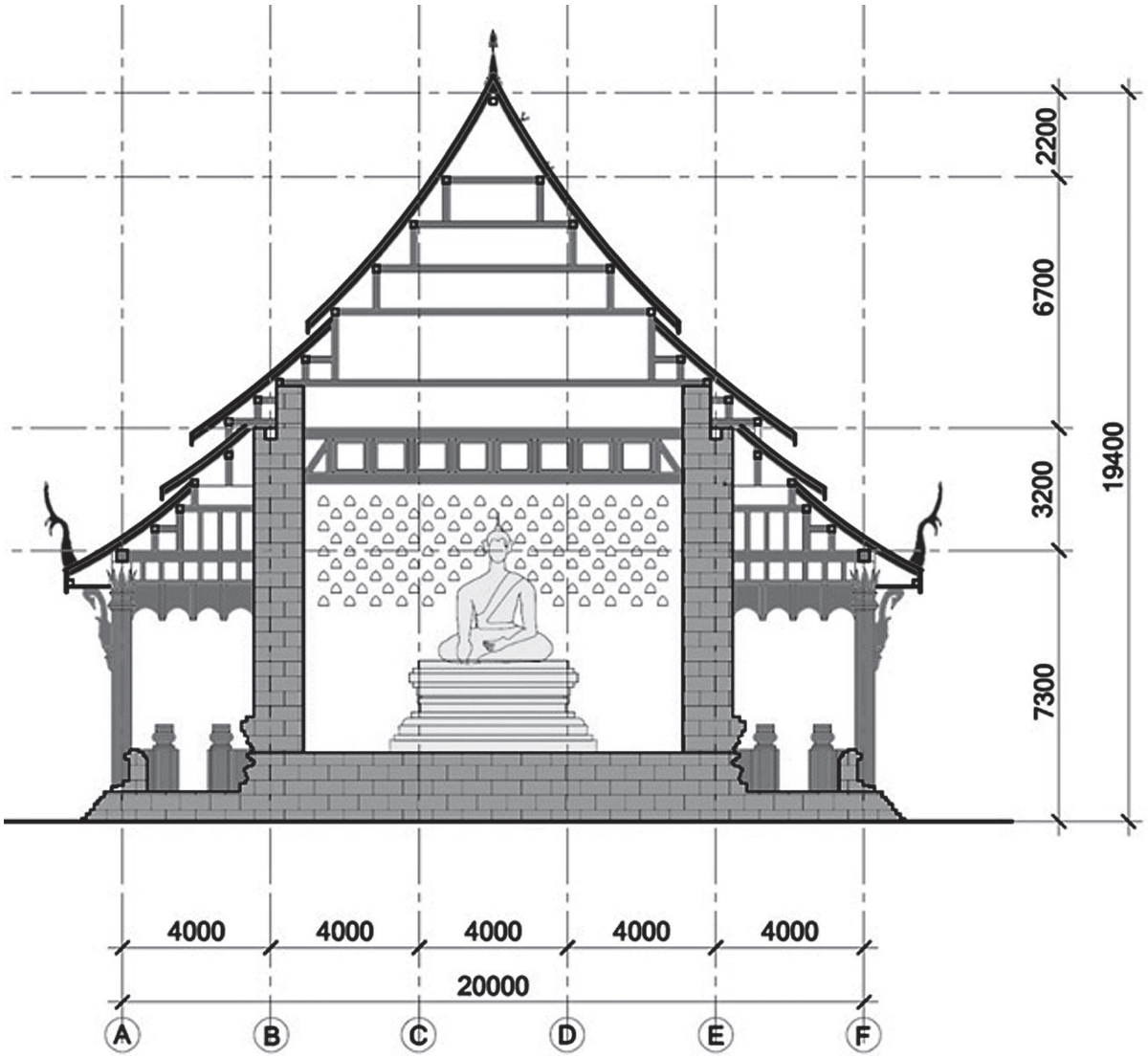
Section A-A



Section B-B

Legend

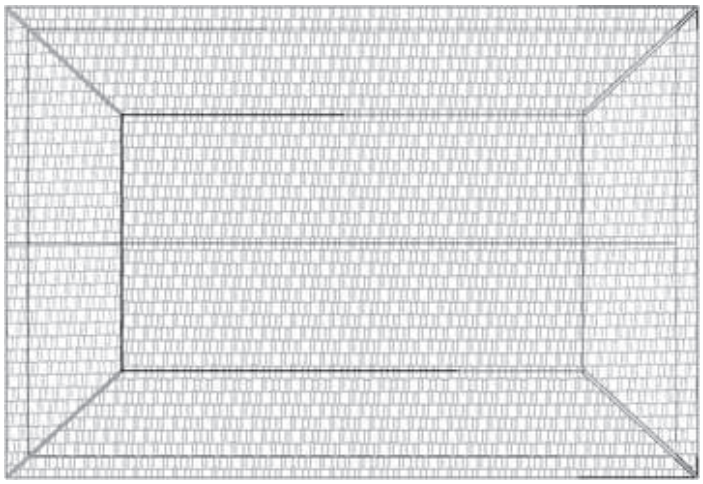
Wood

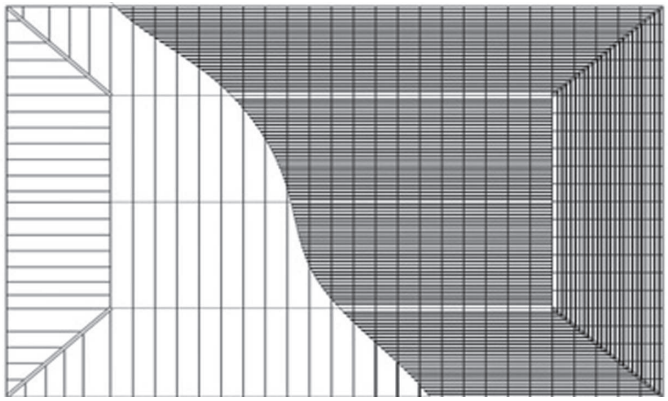
Roof made of concret and coveedr by tile s

Buddha made of mortar

Foundation and stand pillar made of brick

Summary of structure on roof

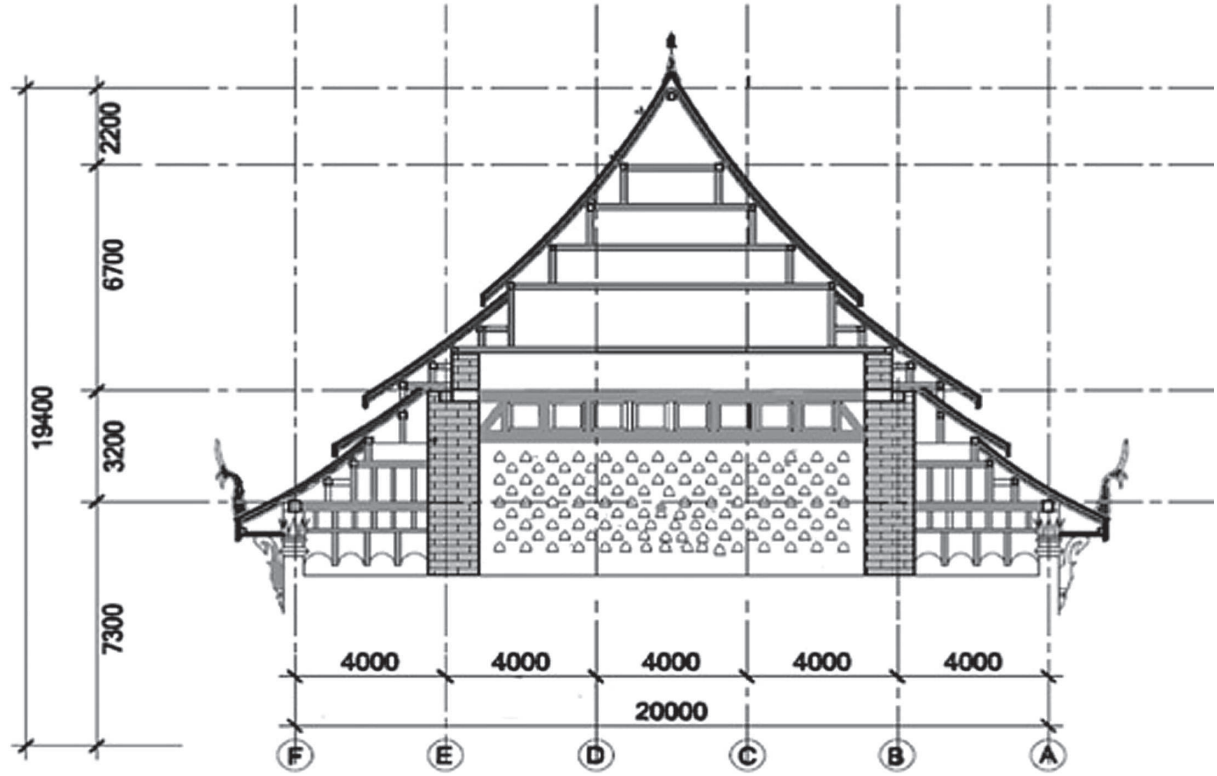




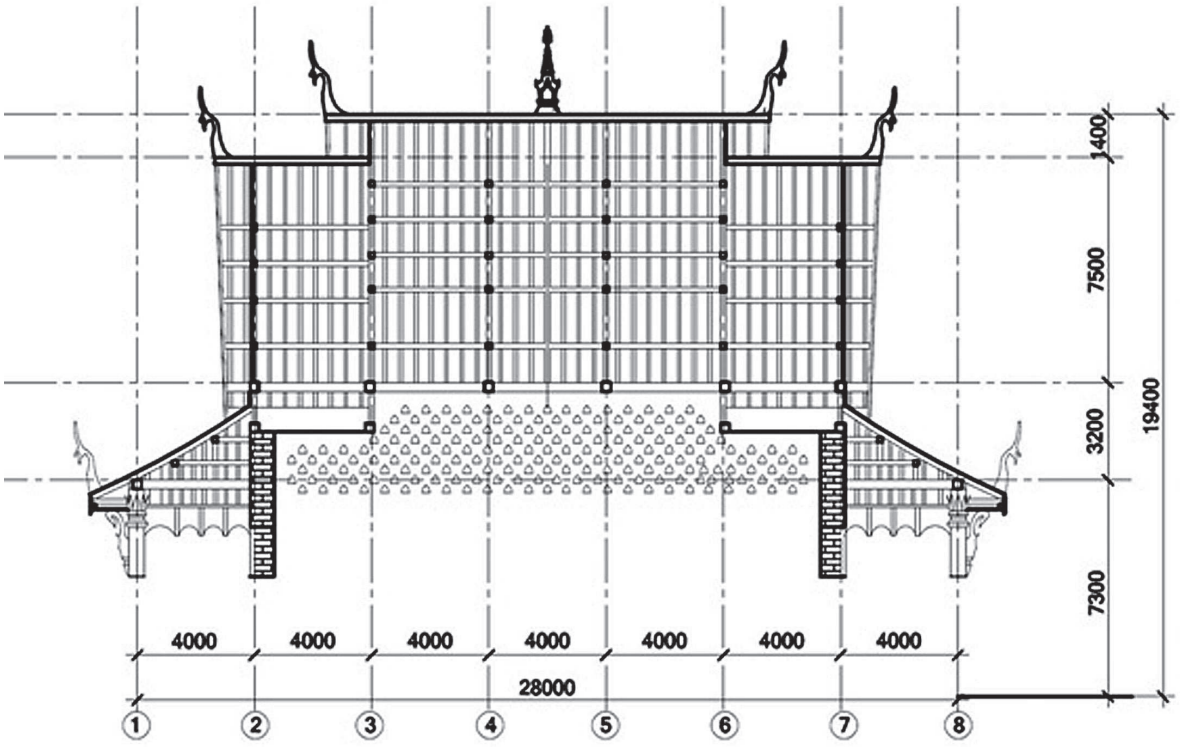
Roof tiles that are covered by earthenware

Closer view of roof tiles

Summary of structure on roof



Section B-B



Section A-A

Natural causes

- Because the site is located in an area with hot and humid weather, the site is exposed to a lot of humidity and water during the rainy season

- Insects/animals: several species of coleopterae, ants, termites, etc. burrow tunnels inside the structure, causing damage. Bat droppings deposit oxalates on the surfaces. Bird droppings, which are acidic, cause chemical changes on stands, pillars and the structure itself, and droppings that become extremely hard can cause obliteration, detachment, loss, etc. of parts of the structure.

- Plants: growth of plants, both inferior (mosses) and superior (trees), cause breakage and cause structures to break down of structures.
- Dust: soil particulates moved by the wind are deposited on protruding parts, especially in the upper areas
- Smoke: produced by the combustion of oil, wax, fatty substances, hydrocarbons, etc.
- Grime: dirt/dust mixed with smoke or greasy substances.
- Damage cause by water:
- Infiltration: rainwater percolating down from upper parts.
- Driving rain: water infiltrating through walls due to rain driven by strong winds.
- Capillary rise: due to rise of the water table level in the subsoil.
- Dispersed water: defective drainage systems, rainwater, or other sources of water that stagnate in horizontal areas and find their way inside the structures.
- Erosion: partial loss of constitutive material washed away (water runoff) over surfaces from upper portions, mostly found in the lower or exposed areas of walls.
- Mud deposits: water infiltration dissolving and carrying dust/mud deposits accumulating along the way and in lower areas.

Structural causes

- Settlement of foundations: the subsoil subsides irregularly under the building, provoking differences in levels and forming structural cracks.
- Earthquakes and tremors: movements of continental plates or separation of geological faults.
- Load: the weight of superstructures exerted on walls that exceed their bearing capacity.
- Composite: masonry structure (walls, floors and roofs) made out of the combined construction materials placed dry or bound with mortar.
- Wood: all of the structure of the monument was made of wood and covered with earthenware tiles so it was affected by the sun and rainwater.
- Accidental causes
- Tourists: At the beginning of September to April there are a lot of tourists and they like to touch the ancient materials, and sometimes parts break off.

Emergency measures

1. Use the wooden support of the structure
2. Change the broken roof tiles
3. Clean the surface of the Mural painting
4. Inject glue into suitable places on the surface of paintings
5. Change some soft wooden parts
6. Urgent intervention (urgently propping up the structure)

Republic of Maldives
Ismail Nasru
Assistant Research Officer
Department of Heritage

Cultural Heritage Protection and Restoration activities in Maldives

Introduction

Located in the middle of the Indian Ocean to the southwest of India and Sri Lanka, Maldives is a group of islands spread over an area of about 90,000 square kilometers (35,000 square miles), making this one of the world's most dispersed countries. Maldives consists of 26 geographical atolls with more than 1,190 coral islands grouped in a double chain. Maldives is the lowest country in the world, with a maximum natural ground level of only 2.4 meters (7 ft 10 in), with the average being only 1.5 meters (4 ft 11 in) above sea level. The Maldives is famous for its palm fringed islands with white sandy beaches, turquoise lagoons, clear warm waters and coral reefs with abundant varieties of marine flora and fauna.

It is believed that the Maldives' islands have been inhabited for over 2,500 years. This has been indicated in historical and archaeological records found in the Maldives. The earliest known history of Maldives is recorded on copper plates known as *loamaafaanu*. Further indications show that these islands have been settled by people from different parts of the world. The main evidence supporting this fact is that Maldives has been and still lies in the center of an important trade route. According to archaeological evidence, Hinduism and Buddhism existed on the islands before Maldives embraced Islam in 1153 A.D.

"Dhivehi," the official language of the country, is a mixture of the languages spoken by the first settlers in Maldives, who were from different races and countries. Historical records show that the first settlers were Indo-Aryans.

Problems and needs for cultural heritage protection and restoration

As a person who has been working in the field for over nine years, I am intensely aware of the need for protection and restoration of cultural heritage, and of the numerous problems associated with this difficult task. Today, current living cultures as well as those of the past are equally vital to the heritage of a nation. The need to preserve these cultures is of great importance to a developing country like Maldives. In today's technologically advanced world, documentation and digital heritage is rapidly becoming part of the world's cultural heritage. In most nations, including the developing countries, cultural and educational resources are being produced and accessed in digital form rather than on

paper. The problems associated with cultural heritage protection and restoration are huge.

This paper deals more with conservation and restoration of wooden heritage structures that are an integral part of any nation's cultural heritage. As archaeological sites, these places are also associated with ideas or beliefs of a past civilization. In Maldives with the conversion to Islam, there was no total destruction of Buddhist temples. Many in the capital Male' would have been destroyed, but other sites all over the archipelago were merely covered up and abandoned. Later some of the sites were excavated and investigated but no restoration or preservation work on them was ever undertaken. This has resulted in the loss or theft of these important discoveries.

As the islands of the Maldives are far flung and isolated, the heritage sites are also on different islands and access to them is somewhat difficult. As the vast ocean separates one island from another, transport between them is difficult and expensive.

The first reference to some of the wooden heritage structures (probably the first mosques) in the Maldives were first made by early travellers who were either shipwrecked or stopped at some islands during their travels. On seeing the structures on these islands, they described them as a beauty they had never seen before. They said that they had never seen craftsmanship like that anywhere else. Unfortunately few of the sites have remained intact on these islands until the present day.

In Maldives most wooden structures are on the islands. There are about twelve to fifteen sites in the capital, with most of them being mosques and shrines. The structures are not fully constructed with wood. As coral stone and wood were the only building materials available locally, they have been used as building materials in Maldives since early times. The main problem we face today is that resources available in the field are very scarce. There is no skilled manpower, materials or finance to carry out the conservation and restoration process in a technical or scientific way. The terrain and the climatic conditions of the Maldives are adverse factors affecting the sites.

As development took place, old houses and other establishments were demolished and reconstructed with new material. However, the old mosques were not changed much other than with occasional repairs and the replacement of thatched roofs with corrugated asbestos / metal sheets, and a number of old mosques still exist even today. There are approximately 70 coral stone mosques with wooden roof structures in the Maldives.

Walls of important mosques are made of beautifully carved coral stone blocks, and wood has been used for pillars and multi-tier domed ceilings. In these structures most wooden parts are carved or turned and decorated with lacquer work, and the beams are painted with floral designs and verses from the Holy Quran. (Figures 1 & 2)

Figure 1: Exterior of Hukuru Mosque in Male' City

Figure 2: Interior of Hukuru Mosque in Male' City

Most of these mosques are in a bad state of preservation, and during the past 30 years or so a lot of work has been done to protect and preserve our historical and cultural heritage. In 1985, the National Research Laboratory for Conservation of Cultural Property, Lucknow (NRLC), an institution of the Ministry of Culture, Government of India, stepped in to help conserve the coral stone mosques of Maldives. Problems regarding the conservation of the coral stone and wood used in the mosques were studied and methods for their conservation treatment were developed and standardized, and conservation work on the most important mosque of Maldives, the *Hukuru* Mosque of Male' City, was carried out in 1986-1987. Subsequently, work on another very important mosque, the Friday Mosque of *Fenfushi* Island, was carried out in 2000-2001.

***Hukuru* (Friday) Mosque of Male' City**: Conservation work of different quality has been carried out at the Hukuru Mosque of Male' City, at various times in its history. In 1912 the mosque was renovated and the thatched roofing was replaced with corrugated iron. In 1964 the rafters were replaced with teak and the roofing replaced with corrugated aluminum sheets.

Although the roof structure and the roof had been renewed, by 1986 a large part of the rest of the building needed repairs. There were places where the color had faded and some of the drawings and writing on the beams were almost unrecognizable. The edges of the "*Qibla* plank" (which shows the direction of Mecca) had been chipped away, and the gilt and varnish on the plank were peeling off. The door into the "*Mihraab*" (from where the sermon is preached) was in such a state of despair that there were big holes in it.

The ceiling was made of wood on top of wooden frames, and some of the wooden frames were broken or missing.

The artwork on the rafters in the middle and back part of the mosque had faded. The wooden pillars were rotting and being eaten away by woodworm.

The ornamental lacquered boards under the gutters were missing and needed to be installed.

All the above mentioned examples of decay have now been corrected. The discolored and peeling varnish on the wooden beams and the pillars were chemically removed. The timbers were then re-varnished and painted using the original colors. The cracked and crumbling walls were strengthened using teak buttresses. The woodworm holes and cracks in the wood were filled up using a mixture of sawdust, glue, kaolin and insecticides. Then all the woodwork was sprayed with a chemical to protect it from pests.

Conservation of the *Hukuru* (Friday) Mosque on Fenfushi Island was carried out in the same manner as the Hukuru Mosque of Male' City.

Following the success achieved by NRLC in the conservation of these two mosques, the government of Maldives made a request for the conservation of the oldest mosque, the *Dharumavantha Rasgefaanu* Mosque in Male'. The mosque was examined by two experts from NRLC, Lucknow in February 2003, and a plan for its conservation was prepared accordingly. The conservation materials, tools, etc. required for the project were procured in India, and the conservation work was started in May 2004.

Dharmavantha Rasgefaanu Mosque is a one-room structure measuring approximately 13 x 6.6 meters with a 1.8-meter-wide covered verandah in the front. The walls of the mosque are made of stone which have been plastered and whitewashed. The ceiling of the mosque is made of wood, which is supported by wooden pillars. The ceiling has one central dome and four smaller domes; one on each corner of the central dome. Parts of the pillars and some other supports placed on the beams are turned, while several other parts are carved. Most of the turned components apart from the pillars are decorated with lacquer work, and painted with verses from the Holy Quran. As the structure has been assembled from the base, each successive component has been fixed to the lower one with a groove and pinion arrangement or wooden dowels. Nowhere have nails been used in the structure. (Figures 3 & 4).

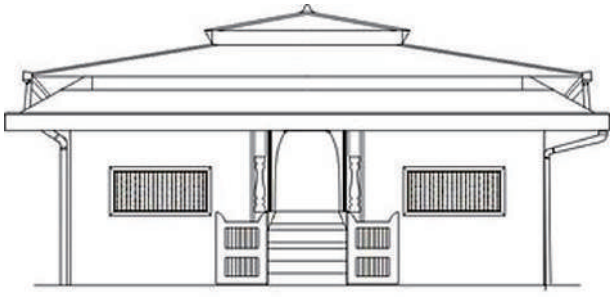


Figure 3: Front elevation of Dharumavantha Rasgefaanu Mosque

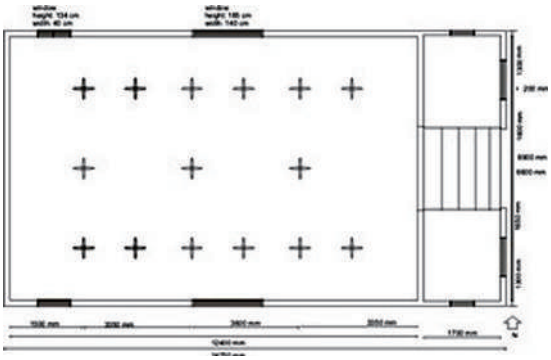


Figure 4: Floor plan of Dharumavantha Rasgefaanu Mosque showing the location of the 15 pillars.

It is natural that renovation of the mosque might have been carried out several times over the centuries. A metal plaque fixed to one of the beams at the entrance gives the date of a large scale renovation carried out in 1925. However, most of the original features of the interior of the mosque have been retained even after such renovations.

The main factor in the deterioration of the mosque has been insect attacks. Most of the wooden members were badly eaten by insects from the inner side and only a thin outer layer was left remaining. Load bearing beams, which had become hollow, had become de-shaped and big cracks had formed on them. (Figures 5 & 6).

Figure 5: Cracks formed on a beam due to de-shaping

Figure 6: Insect attacks on a beam.

Some other components, although appearing in sound condition from the outside, were found to be hollow after they were dismantled. Insects had generally not eaten the painted surfaces, however, paintings on some of the beams and panels were damaged.

Repeated application of oil had obscured the paintings and made the bare wood blackish. The practice of burning oil lamps for illumination inside the mosque might have also contributed to the darkening of the wood surface. Paintings on the beams near the window on the southern side had developed a chalkiness and had suffered extensive deterioration of the paint layer.

The frame of the painted panels, supposedly originally placed on the inner wall at the far end of the hall, was supported by iron poles painted green with modern paint. Due to replacement of the wall with iron poles, the downward force per unit area had become very high, which might lead to stress failure in the future. At the same time, the material and its green color were not in unison with the old structure of historical importance. Wooden window frames and grills and two pillars at the outer entrance were also painted similarly. Electric lines running on the wooden beams etc. were a potential fire hazard and tube lights were fixed directly onto the beams.

Conservation of the Mosque: The main conservation work to be carried out on the mosque was to strengthen the structure and clean the painted areas and bare wood surfaces. The mosque was to be subsequently made presentable and fit for performing prayers. It was noticed that most of the wooden members were in a very bad state of preservation. Therefore, first the ceiling was firmly supported by several jacks, which were placed under the beams and some of the sturdy rafters. The structure was evenly supported by putting wooden planks between the jack head and beams or rafters. A sheet of felt was also placed between the plank and the beam/rafter so as to avoid any chance of jacks slipping

from their position or abrasion of the painted surfaces. The electric wiring and fittings laid on the wood structure were removed.

Although no live insects were found, there had been intense insect activity in the wooden structure of the mosque in the past. Therefore, the wooden structure was thoroughly sprayed with commercially available insecticide, *termicide*, which is a 20% aqueous solution of *cyclophyriphos*. There was a lot of dust accumulated on the planks was taken down, and this was swept away when the planks were taken down.. The structure was strengthened part by part and reassembled. The painted and other bare wooden members were cleaned and a protective coating was applied. The floor was treated with insecticide and made even, and finally a carpet was laid. The treatments are detailed below.

Consolidation and reinforcement: First of all, the painted panels, frames of the painted panels and rafters were consolidated with sawdust and PVA putty, and the final layer was a PVA emulsion and whiting so that its texture matched that of the wood and also better display the earth colors needed for reintegration. The missing elements were reconstructed to make them bear the load of the structure. (Figures 7 & 8).

Figure 7: Painted panels and frames before conservation.

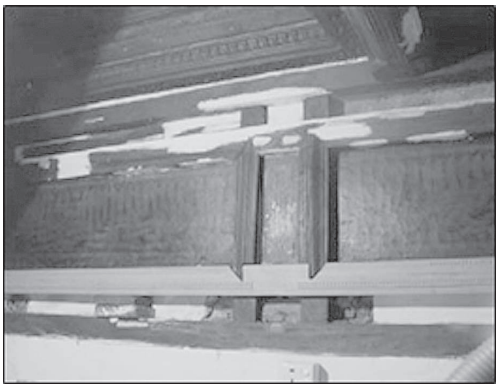


Figure 8: Painted panels and frames after conservation.

Then the beams and other load bearing members were taken up for strengthening. The painted beam located on the right hand side at the far end of the hall was taken up first for strengthening, as the extent of damage was most serious in the beam. Insects had eaten the core of the beam, and with the result, the beam was not having any load bearing capacity. It was decided to reinforce the beam by providing a new core of new seasoned wood, and then place back in its original position. (Figures 9 & 10)

Figure 9: Load bearing beam before conservation.

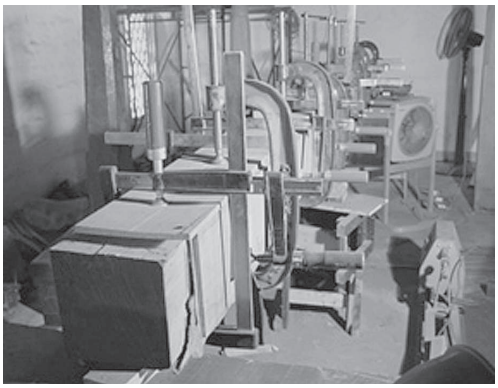


Figure 10: Load bearing beam after conservation.

Other than historical and cultural monuments, artifacts in the National Museum are all part of our cultural heritage, which needs urgent protection and restoration.

Preservation and conservation are serious problems due to lack of professional expertise. Cultural heritage protection is still a new and young discipline in the Maldives. We still have no qualified conservators of wood. As a result of awareness programs conducted by the NCLHR, the populace of the Maldives is gradually waking up to the fact that it is of vital importance to preserve our cultural heritage as a legacy for future generations. Only then can we understand our past. It is of utmost importance for the future to learn from the past.

Financial problems: Scientific methods of conservation require a lot of money in terms of labor and equipment. Also, Maldives is geographically divided into several islands, making it somewhat difficult to access the heritage sites, due to transportation costs.

Lack of professionals: There is no skilled manpower to carry out the work at these places. It has become necessary to invite foreign experts to get the job done. (**Note:** There are only a few with practical training learned from foreign experts in the conservation and preservation work needed to be carried out in Maldives, including myself. Very recently one of the staff from the Department completed a three month training course on stone conservation in Rome, Italy, organized by ICCROM. Another received higher education [First Degree] in the field of archaeology in Australia).

Natural problems: Maldives is a low lying country (an average of about 1.5 meters above sea level), causing a major problem for places near beach areas.

Land problems: Due to increasing population and rapid infrastructural development, more land is needed.

Public awareness: Due to lack of awareness, people of the islands have the idea of destroying the old structures and replacing them with new ones. Now with programs to create awareness among the

people, especially students, positive results are being seen.

Law: The heritage law enacted in Maldives is not strong enough to maintain these sites and structures in relation to excavation, conservation and preservation.

Personal Experience
Conservation of Male' Eid Mosque (2006) and Kalhuvakaru Mosque (2008)

Male' *Kalhuvakaru* mosque and *Eid* mosque are extant examples of structures built from white coral and wood in the past. *Kalhuvakaru* mosque was built during Sultan *Hassan Nooradhdheen Iskandhar'*s reign (1779–1799 AD), and Eid mosque was built during the reign of Sultan *Mohamed Mueenudhdheen Iskandhar* (1799–1835 AD).

Typical of the layout of Maldivian mosques, the main structure of both Eid mosque and Kalhuvakaru mosque stands on a raised coral stone plinth with steps leading up to the entrance in the center. The walls of the mosques are made of white coral stone blocks, and the windows and doors of finely carved wood. The ceiling and the roof structure is made of wood. There are two types of wood used in these mosques: hardwood and softwood. The roofs of the mosques were originally thatched, but these were replaced with corrugated iron sheets, providing an adequate extension to protect the exterior walls from rain.

The ceiling of the central bay is dome shaped and decorated with lacquer work, whereas the ceilings of the other bays are flat. Most of the wooden members used in the mosques are painted with verses from the Holy Quran. (Figures 11 & 12)

Figure 11: Male' Kalhuvakaru Mosque, (1779–1799 AD).

Figure 12: Beautifully carved wooden door of Male' Eid Mosque, (1799-1835 AD)

Led by the National Centre for Linguistic and Historical Research, conservation of *Eid* mosque was carried out in 2006, and *Kalhuvakaru* mosque in 2008. Being part of both projects with experienced people allowed me to gain some knowledge and skill in methods of preservation and restoration.

The wooden parts of both mosques were in a very bad condition. Lacquer on the beams and boards were covered with dust that was impossible to simply wipe off, thus making it difficult to identify the verses written on the beams and boards. This dust stuck to the beams and boards had to be cleaned off using a mixture of ethanol and turpentine (in a ratio of 1:3). The solution was applied very smoothly using cotton, just enough to remove only the dust, as this solution is strong enough to remove the lacquer as well. After all the dust had been cleared and removed, a very thin layer of picture varnish was applied to the surface of the lacquered wooden parts, protecting it from the dust or any other material. The layer of picture varnish makes it easy to clean off the dust by simply wiping with a soft cloth.

Degradation of wood was high in both mosques. This was mainly due to physical action, insect attacks and fungal decay. The parts of the doors where insect attacks were visible were treated with chemicals to eliminate any existing infestation and prevent further attacks, before filling up the holes with wood putty. Commercial termicides such as Solignum were used for termite treatment, and custom made wood putty was used for filling. This putty is made by mixing fine saw dust with water based white glue.

Before filling up the holes in the wood, they were cleared carefully to remove anything left inside that might be harmful in the long run. This was done after chemical treatment. (*Termicide treatment will be explained in more detail in the latter part of the paper*).

Doors with carvings on them were covered with thick paint, which was removed using paint remover. This process also had to be carried out very carefully, as direct contact of paint remover with the human body is harmful. Compared to what had to be done to remove the dust from the lacquered wooden boards, removing the paint was not that difficult.

Conservation and Preservation of
***Kan'dhuvalu* mosque and *Utheemu* Palace (2012)**

Conservation of these two places was carried out like a training programme for the staff assigned to the protection of the Palace and mosque on the island. Utheemu *Kan'dhuvalu* mosque and the Palace are believed to be more than 400 years old. The Palace was the residence of the National Hero of the Maldives.

The training was carried out for a period of 20 days led by Mr. Ahmed Zameer (former trainee of the

ACCU programme in 2006). Though with less experience and professional training, I assisted Mr. Zameer with few practical demonstrations as instructed by him during the training.

Kan'dhuvaru mosque

The mosque (Figure 13) on this island is very similar to the two mosques mentioned earlier. The only difference is that instead of coral stone, this mosque has been partly built using sandstone. The rest is all wood, and the training conservation process was pretty much the same as with Kalhuvakaru mosque and Eid mosque, except that a large part of the mosque ceiling was removed during the process. This was done for the convenience of explanation and demonstration. The ceiling was put back the way it was, without any damaged or missing parts.

Figure 13: *Kan'dhuvalu* Mosque on *Utheemu* Island. The walls of the mosque are made of sandstone and the roof structure is made of wood with beautiful designs and calligraphy with lacquer.

The Palace

There are four different structures (main house, small swing house, visitors and travellers hall and the godown) inside the Palace compound, excluding the three coral stone wells. More than 90% of the first three structures are made of wood. The godown is made of sandstone with a wooden roof structure. The main house and the swing house include many wooden items such as chairs, swings, beds, etc. from the early period. All the items and structures were severely degraded due to insect attacks and physical action. (Figures 14 & 15).

Figure 14: *Utheemu* Palace on *Utheemu* Island. (Photo: www.asseyri-inn.com)

Figure 15: Visitors and travellers hall or house in the south-eastern corner of the *Utheemu* Palace compound. This whole structure is made of wood, dried palm leaves and rope.

This was the first ever conservation work carried out on the Palace. A condition assessment was made in January 2012, by me.

The visitors and travellers hall inside the Palace compound was in very bad condition. The four columns and the beams had large holes due to insect attacks. The roof and the walls of this hall were made of wooden frames and covered with thatch, where fungal decay was high.

The other two wooden structures containing wooden items were in bad condition too. Almost 30% of the wooden items were highly degraded due to insect attacks. The beams running across the ceiling were also in bad condition.

The same procedure was carried out here as with the conservation of the mosques. First, commercially available termicide (Solignum) was applied, which penetrated deeply into the wood, protecting it against wood rot, fungi and wood boring insects. Before application, the wood was made dry and free from bark, paint, varnish, polish, dirt, dust, mould, lichen and algae, the presence of which would prevent penetration of the preservative.

All electrical circuits passing through the treatment areas were switched off during treatment, and for 48 hours following treatment, to ensure that lighting and electrical equipment were not a source of ignition.

Rubber insulated electrical wiring was protected from contact with the preservative (eg., wrapped in polythene), to avoid solvent dissolution of the rubber.

In roof areas, sarking membranes were removed during treatment to avoid solvent dissolution. Roof insulation was removed and only replaced when the preservative treatment was thoroughly dry, to avoid solvent retention in the roof insulation becoming a fire hazard.

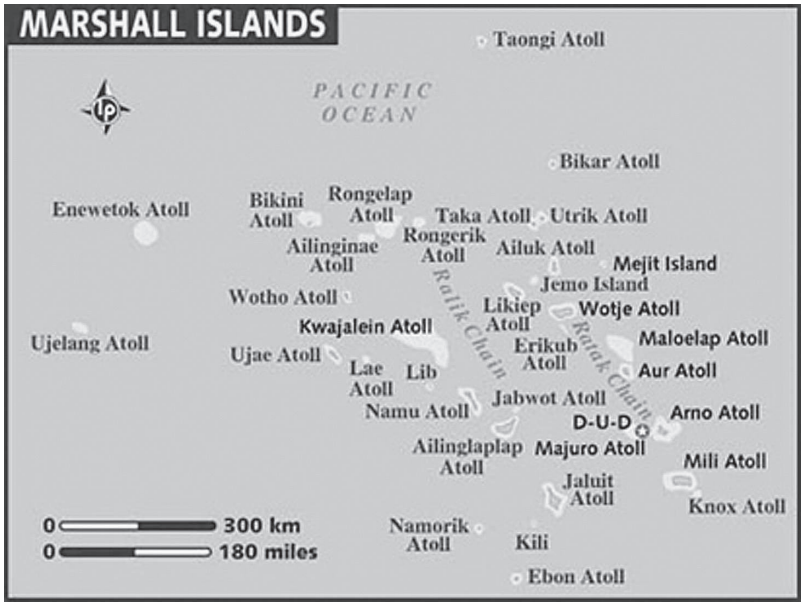
Water storage tanks (wells near the structures) were covered to avoid contamination by the preservative treatment.

Excess preservative was wiped from the surface of the plastic insulation on electrical cables, so as to avoid solvent absorption and long-term breakdown of the insulation. Maximum ventilation was provided to allow evaporation of the solvents.

Conclusion

Conservation of these structures was a huge task. Of the various structures, we carried out conservation work on five sites. The other two sites where we weren't able to take part are Male' *Hukuru* mosque and *Dharumavantha Rasgefaanu* mosque. Conservation of these two sites was carried out by foreign experts from India.

Republic of the Marshall Islands
Stevens R. Titiml
Historian
Historic Preservation Office
Ministry of Internal Affairs



Country Report: Republic of the Marshall Islands

Introduction:
Geography Overview

The Republic of the Marshall Islands consists of 29 atolls, each made up of many islets, and five islands in the central Pacific located 4 to 14 degrees North and 160 to 173 degrees East. The atolls and islands are situated in two parallel chain-like formations known as the Ratak (sunrise) group and the Ralik (sunset) group. The total number of islands and islet in the whole Republic is approximately 1,225, spreading across a sea area of over 750,000 square miles. The total land area is about 70 square miles (181 square kilometers). The mean height of the land is about 7 feet above sea level (2 meters).

Climate

The weather in the Marshall Islands is tropical — hot and humid, but tempered by trade winds which prevail throughout the year. The average temperature hovers around 80 degrees Fahrenheit and rarely fluctuates. This is one of the most outstanding features of the climate; in fact, the range between the

coolest and the warmest months averages less than 1 degree Fahrenheit. Also interesting is the fact that nights, although they feel cooler, are actually 2-4 degrees warmer than the average daily minimum. This is because the lowest temperatures usually occur during heavy showers in the daytime. Like elsewhere in the Pacific, the skies are quite cloudy. Cumuliform clouds are predominant but anostratus-altocumulus and cirriform clouds are also present most of the time. Tropical storms are very rare; although in the last three years there have been three major cyclones. Much more common are minor storms of the easterly wave type, especially from March to April and October to November.

Natural Resources

The people of the Marshalls share with all the people of the Pacific a deep and abiding respect for the land and the sea, elements which have provided them daily sustenance for thousands of years. This fragile natural environment has been well-tended in customary practice, providing a basis for subsistence living and for social, economic and cultural well-being. The RMI now faces threats to this natural resource base, including a rapidly increasing population, rising material expectations, demands for economic growth and the depletion or degradation of natural resources.

RMI-Historic Preservation Work:

The Republic of the Marshall Islands (RMI) is a country characterized as having the most dispersed set of islands in the Pacific Region. The RMI Historic Preservation Office (HPO) is responsible for preserving and managing the endangered cultural heritage (ECH), which spans nearly two million square kilometers (km^2) of ocean. While the task is daunting, we realize that other Pacific island nations face similar challenges. We are a small island office with limited resources, but part of a larger community of countries whose interconnectedness can be traced to prehistory. The Micronesian Endowment for Historic Preservation (MEHP) meets annually to report back to the National Parks Service (NPS) on what each individual office has accomplished the previous year. It is a prime time for showcasing each office's achievements and projects that have proved to be difficult in both time and resources for numerous reasons, and of course the most universal issue that we all have in common is the lack of funding available for all offices. We can all agree that we can all use a little, if not a lot, more funding from NPS or outside grants to be able to contribute quality work on sites that are spread so far apart and hardly accessed by either our staff or tourists alike.

Our affiliated offices throughout Micronesia are wholly funded by the NPS under the Compact of Free Association (COFA). With the limited amount of funding we receive from NPS through the Department of Interior, it continually proves to be the most problematic issue for the Marshall Islands HPO, as stated earlier, due to the relative size and make-up of the atolls and the funding amount we receive.

Generally we are required by law under the **Use of Cultural and Historical Properties** to preserve

all sites which include both terrestrial and underwater sites in all of the Marshall Islands atolls. (***RMI-Historic Preservation Legislation, 1992.***)

With so many sites and a limited number of resources, we are spread thinly, and even more so with little funding set aside for outer island travel to be able to conduct surveys. This is equally more compounded by the fact that inter island travel is reduced to slow moving charters, which can drain our office's resources quickly, and the unreliable domestic air service.

Despite financial issues, we have been able to accomplish several cultural heritage undertakings with the help of UNESCO, the National Parks Service (NPS), donors, private organizations, and the Secretariat of the Pacific Community with assistance from European Union (EU) funding to hold conferences and attend Cultural Heritage training abroad. The following are the activities conducted for the year FY2011-12.

Conferences Held:

NATIONAL WORKSHOP ON THE SAFEGUARDING OF THE INTANGIBLE CULTURAL HERITAGE IN THE REPUBLIC OF THE MARSHALL ISLANDS, June 14-16, 2011.

Outcome:

A better understanding of the role the community plays in safeguarding the intellectual knowledge of traditions passed on by leaders of the community.

Identifying the stakeholders and resource persons involved and their views on the subject of "safeguarding culture heritage".

What the stakeholders need to do to ensure that our cultural heritage is preserved for future generations.

What the community leaders and local experts must do to ensure that not only knowledge but practices are passed on.

Policy planning that is in the works to ensure that our Intangible Cultural Heritage is put into legislation, to preserve and protect the information not only from being lost, but also to safeguard that information from outside sources.

How to incorporate a Marshallese Studies program into the education system to ensure that this is being taught alongside the standard curriculum (the Ministry of Education has already started the process).

Establish Culture Resource Officers (CRO) for all of the atolls in the Marshall Islands to assist the Historic Preservation Office in compliance with preservation of cultural and historical properties.

Conferences/Training Attended:

- UNESCO Pacific World Heritage Workshop, Apia Samoa, September 5-9, 2011

Deputy Officer Josepha Maddison attended the conference as representative of the Republic of the Marshall Islands.

- Sub-Regional Meeting on Endangered Cultural Heritage Mapping
- October 17-21, 2011, Singatoka, Fiji

Historian Stevens Titiml attended the workshop.

A Culture Mapping Project in the works for Traditional Navigation in the Marshall Islands, with funding from the European Union (EU) through partnership with the Secretariat of the Pacific (SPC).

- Asia-Pacific Regional Conference on Underwater Cultural Heritage
- November 8-12, 2011, Manila, Philippines www.apconf.org
- (Historian, Stevens Titiml)

- Cultural Landscape Training
- March 7-9, 2012, Guam, USA

Assistant archaeologist Kazutoyo Wase and historian Stevens Titiml attended the workshop.

The workshop highlighted the use of landscape mapping for cultural and historical sites to identify markers in the surrounding terrain, to be able to depict the story of certain landmarks or sites such as

ww2 fortifications and/or cultural sites in order to be able to determine why an area was chosen, was it the layout that provided good defense perimeters or was the village compound put up because of the terrain or close proximity to water for both food and drinking, etc. It is these values that determine a site's significance and to be able to use it now as a point of reference to retell a story long forgotten or obscured by the changing landscape due to development and natural foliage growth.

- Pacific Islands Forum Regional UXO Strategy
- 24-26 October, 2012. Korror, Palau
- Pacific Regional ERW Workshop
- 27-28 June, 2013, Brisbane, Australia

The Geneva International Centre for Humanitarian Demining (GICHD), together with the Government of Palau and the Pacific Islands Forum Secretariat (PIF), organized a workshop entitled 'Addressing ERW Contamination in the Pacific'. It follows a number of workshops and meetings held in the last few years on ERW contamination in the Pacific, notably the Pacific Regional ERW Workshop held in Brisbane, Australia, from 27 to 28 June, 2013 and the Meeting on the Implementation of the Pacific Islands Forum Regional UXO Strategy, held in Palau from 24 to 26 October, 2012. Both events brought together a number of Pacific island states, donor countries and representatives and experts from various organizations. The upcoming workshop addresses important issues raised at these meetings, and will elaborate on them in a more technical and operational manner as recommended in the report on the workshop held in Brisbane.

The main objective of the workshop is to develop and promote technical and operational solutions for the challenges related to ERW contamination in the Pacific region, both on land and underwater. The workshop will focus on:

- The relevance of International Mine Action Standards (IMAS) in the Pacific
- The draft IMAS on underwater demining
- Appropriate methods and techniques in demining operations
- National capacity development support
- Information management as a key feature of an efficient and effective mine action program
- The use of IMSMA (Information Management System for Mine Action) in the Pacific context

The RMI Historic Preservation Office has been working in recent years to try to rebuild what was once a prominent home and museum for the late Joachim deBrum on Likiep Atoll. This is the only wood structure of its kind still in existence that dates back to the mid to late 1800s in the Marshall Islands, and quite possibly even in Western Micronesia, due to the harsh salt environment.

History:

The Joachim de Brum House is located on Likiep Atoll in the Republic of the Marshall Islands. The atoll consists of 65 islands in the Pacific Ocean and is part of the Marshalls' Ratak Chain. The total land area is only 3.96 square miles, but this is enclosed by a lagoon of roughly 163 square miles. The Joachim de Brum House on Likiep Atoll is the only surviving wooden structure dating to the beginning of the twentieth century in Micronesia.

- This house is the first site in Micronesia to have been placed on the National Register of Historic Places. The following description is based largely on the work of Jelks and Jelks (1978). Built in circa 1900 using redwood from California and other materials imported from Australia and New Guinea, it is of German architectural influence. It is a one story house consisting of a 19 ft x 19½ ft central parlor, and two 13 ft x 19 ft bedrooms on either side of the parlor. A 10 ft wide veranda surrounds the entire building. All three rooms are sealed, as is the veranda. Originally it stood about 18 inches high on small concrete pillars and had a thatch roof. The thatch was eventually replaced with metal roofing.

The Joachim de Brum House is a museum privately owned by the descendants of Joachim de Brum, consisting of a board of trustees. The RMI Historic Preservation Office along with the US National Parks Service has worked in collaboration with the de Brum board of trustees in the past for restoration projects of the structure itself, as well as cataloging the contents of the house. However, the de Brum Board of Trustees itself operates as a type of NGO, with its own by-laws dedicated to the management of the museum. The Historic Preservation Office's role is to advise and ensure that restoration projects are kept within the standards pertaining to the Historic Preservation Act of 1992 and the US National Parks Service.

b. Description of the current management system and problems observed

Although the site is listed on the RMI National Registry for Historic Places and the US Registry of Historic Places, management of the Joachim de Brum House and its contents has been minimal at best over the last several years. There is currently nothing being done to curtail the rampant decay of the structures due to lack of a management plan by the board of trustees, and extreme weather conditions (tropical cyclones, drought) have devastated some outlying structures, with environmental decay being a daily occurrence.

Development and human neglect, from the ever-changing demands on housing and urbanization, are also taking a heavy toll given the size of the atoll and the close contact they have to the site. Tangible and intangible cultural property will disappear with the current state of the house crumbling daily because the necessary processes for its preservation will not be managed effectively at a time when preservation funds are limited.

c. Suggestion for a project

The Historic Preservation Office has met with the Board of Trustees and discussed several key issues

regarding conservation methods for restoration. One suggestion is that the HPO should set up a field school for the restoration project. With the limited capacity of our office, we would bring in qualified people to conduct the restoration project itself, but include all HPO staff from all the Micronesia HPO Offices for capacity building, so we not only get to restore a very important site for the Marshall Islands, but also give useful training to HPO staff members who are in that particular field. Several contractors that specialize in architectural wood engineering and assessment of wooden structures have been out to The Joachim de Brum House in the last couple of years, but staff and funding constraints have prevented this much needed project from going forward, and there is also a need to brief the de Brum Trustee Board on what needs to be done.

With all that is known regarding The Joachim de Brum House and Museum, it is clear that something should be done as the house is currently in a state of critical need for restoration with heavy exposure to the raw elements of an atoll environment. The longer it waits to be restored the more expensive the restoration will be, and considering the structure's current state the restoration might prove to be a challenge even for the most experienced wood preservation experts.

East Veranda, looking north (Likiep Survey 01)

East Veranda, circa 1900 (Likiep Survey 01)

The house built by Joachim de Brum dwarfs all others on Likiep. Originally built on low concrete supports, it was later raised onto tall timber supports giving almost 2 metres headroom under the house. View from the south west. (Photograph © 1999 Jon G. O'Neill)

Visual observations were made during a site visit taking place between May 7, 2010 and May 17, 2010. During the evaluation the following items were noted: locations of light, medium, and heavy termite damage to floor deck, floor girders, floor joists and post supports. A general assessment of the existing roof damage was photographically documented. Special attention was made to document existing and damaged timber framing systems and joinery. (Steve Baldridge Assessment Report 2010)

NARA Cultural Training

RMIHPO and the staff are limited in terms of capacity and numbers to be able to receive this type of training and it is beneficial for our staff that this is made available to us at no cost to our organization other than having one less person manning the offices. What we hope to obtain from this is the skill and knowledge of the methodology that goes into the detail of preserving wooden structures. The Marshall Islands have a storied canoe building history and a long tradition that is still practiced of canoe building which requires the skills of an expert canoe builder; however, we do not possess experts on the preservation of already existing wooden structures. We do not have a lot wooden structures but have been struggling to maintain the only one in existence that is worth preserving, and it would be a blessing if the knowledge gained here could be concentrated in one particular project.

We not only intend to learn about the preservation styles of wooden structures in Japan, but also hope to be able to adapt these to our environment and customize them to the particular needs of a small island atoll.

Issues of Preservation

- The Marshall Islands has a great deal of unexploded ordnance/munitions scattered throughout all of its 29 atolls and this has remained for the most part untouched. Despite its close proximity to residential areas, people have gotten used to living and working next to this ordnance that it has become a part of their daily life.
- Lack of sustainable or committed long term programs for preservation or plans once a project is completed by donors and government
- The general lack of awareness government-wide on the issues surrounding cultural affairs
- Lack of detailed reports of previous works or historical data and for previous undertakings
- Lack of resources and logistical difficulties within the country
- Stakeholder involvement from the community
- Agreement on the parcels of land to be used (all land in the Marshall Islands is privately owned)
- Endorsement by local and national government.
- Community interest in cultural programs on a sustainable level
- FUNDING ISSUES
- Working on issues dealing with the cultural landscape in a culturally sensitive region which has certain boundaries and taboos relating to cultural identity, practice and knowledge.
- Land Owners
- Climate change issues and the impact of sea level rises on small low-lying atolls
- Urbanization of areas where there are culturally sensitive sites

Conclusion

With Organizations within the UNESCO family such as the Asia/Pacific Cultural Centre for UNESCO (ACCU), United Nations Institute for Training and Research (UNITAR) and many others such as the Secretariat for the Pacific Community and Donor Countries, private donors and NGOs, we are able to attend and participate in workshops and meetings to build our in-country capacity to be able to deal with these issues as they come.

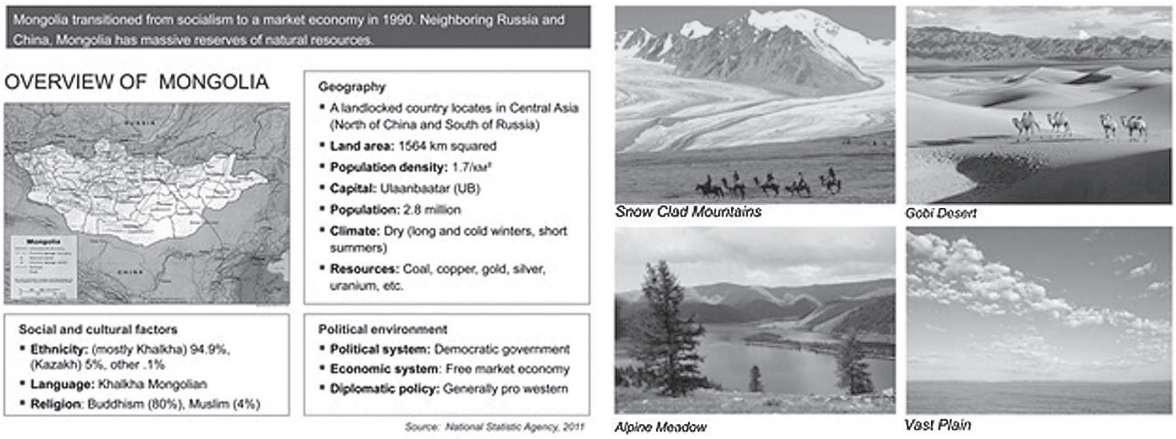
The Historic Preservation Office is working hard with community leaders and other organizations that parallel our work to preserve and conserve our cultural practices, to ensure that future generations are able to enjoy the same traditions that the past and present generations currently enjoy.

We continue to look for avenues to educate the public through local media outlets to promote the unique culture of the Republic of the Marshall Islands and enhance public awareness and interest in revitalizing the vast wealth of tradition, culture and way of life that has been present in the islands for thousands of years.

Mongolia
Enkh-Amgalan Ariunnyam
Officer in charge of urban redevelopment
Ministry of Construction and Urban Development

"Problems and Needs for Cultural Heritage Protection and Restoration Activities in Mongolia"

Mongolia is located in Central Asia and has a harsh climate. It covers a wide area made up of a combination of mountains, a vast plain, and the Gobi Desert. Since ancient times, Mongolia has been sparsely populated, with the main industry of its population being livestock husbandry.



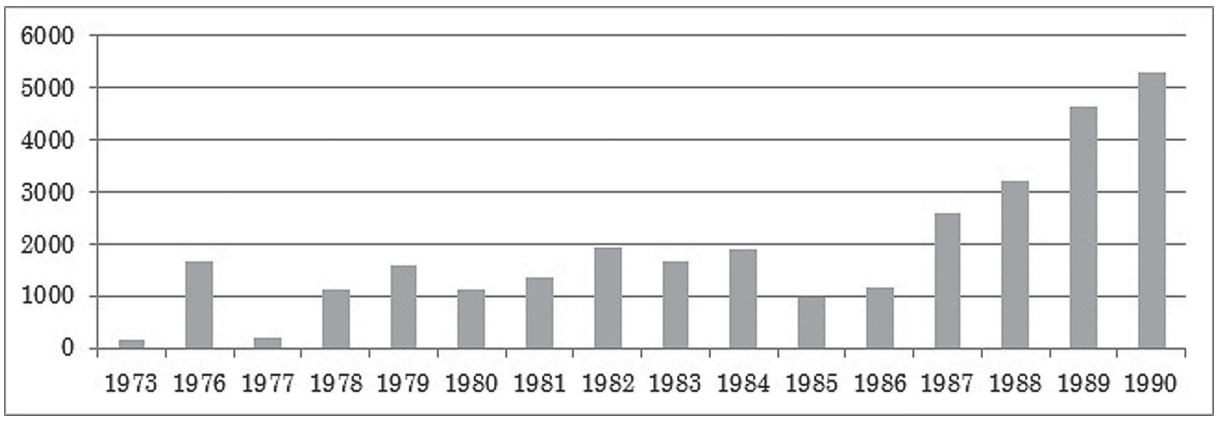
The land of Mongolia is the birthplace of a nomadic nation. Thus it has a wealth of archaeological, historical and cultural remains and memorials. For instance, according to the research, in the territory of our country there are more than 1000 homesteads, almost 600 human rocks, about 600 stone monuments, nearly 300 ruins of sites of ancient towns, more than 200 examples of rock painting, more than 500 tombs and cemeteries, more than 110 sacrifice sites, more than 200 memorials with types of scriptures and 941 residual ruins of temples and remains.

Monumental buildings of temples and monasteries in Mongolia resemble Chinese, Tibetan, and Indian ancient architecture. The architects of early Mongolia utilized the forms and methods used for traditional temple buildings and made these coherent with the national characteristics, developing a unique building style. We also have a historical tradition, which dates back to the time of the Khunnu Empire, of keeping and protecting our pristine nature, land, history, and culture. For example, Mongolia passed laws called "Ikh Zasag" (the Great Government) at the time of Genghis Khan and protected some special places by making them national reserves under this law.

In 1970, "The Law on Protecting Cultural Heritage of the People's Republic of Mongolia" was approved. It was the first legal document to regulate relationships such as classifying, protecting, advertising, possessing, and using monuments, doing research on them, and making law breakers

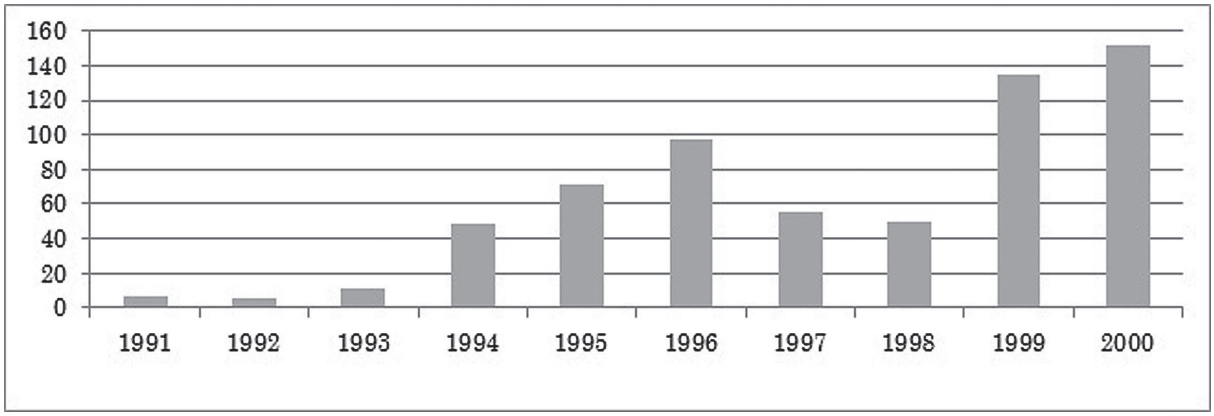
accountable. In 1971, the "Authority for Restoring Historical and Cultural Heritages" and the "Drawing and Scientific Research Bureau of Historical and Cultural Heritage" were established. From that time, the government started to finance keeping, protecting, researching, and advertising activities for temples and architectural buildings. Moreover, it supported the work of restoring temples. Such things were included as part of government policy, and thus was a big success.

Total capital for work reconstructing cultural and historical monuments
/by thousand MNT/ (1973 – 1990)



Also in 1973, a Mongolian independent professional institution called "Authority for Restoring Historical and Cultural Heritages" was founded. The institution was involved in work on Erdene Zuu, Amarbayasgalant, Gandantegchilen Monastry, Zayan Khuree Complex, Green Palace of Bogd Khan, Temple of Choijin Lama, Palace of Tsetsen Khan, Temple of Khachin Lama, House of Chin Van Khanddorj, and Historical Monument Building in Altanbulag, which are all immovable historical and cultural heritages of Mongolia, including measurement, research, and the development of restoration plans and actual restoration from 1976 to 1995.

Total capital for work reconstructing cultural and historical monuments
/by million MNT/ (1991 – 2000)



At the end of the ’80s and early ’90s, the “Authority for Restoring Historical and Cultural Heritages” was privatized when Mongolia was converted to a market economy.

Currently, only “Suld Uul” LLC has been running operations restoring historical and cultural buildings since 1997. Although the Fund of Culture and Art declares that the annual budget for restoring historical and cultural buildings can be increased, there are still deficiencies in personnel, equipment, and facilities to implement bigger restoration projects. In particular, restoring temple buildings requires high standard wood. Additionally, establishing a small producer of roof tiles and wooden materials that is equipped with advanced technologies is very important today.

One of the biggest steps in developing the legal environment for intensifying the protection, research, and reconstruction of items of historical and cultural values was the “Mongolian Constitution” (1992) approved in 1992. The constitution states that “cultural and historical monuments and scientific and intellectual heritages shall be under state protection”.

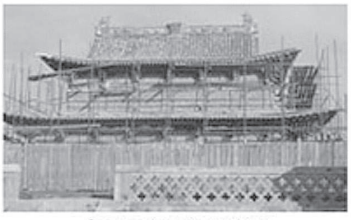
In 1994, the “Law of Mongolia on Protection of Historical and Cultural Monuments” was reapproved. In determining the concept of “historical and cultural monuments” specifically for the fields of science, art and law, this law regulates all the issues including research and registration, classification, maintenance and protection, archeological excavation and publicity, reconstruction, and possession of the historical and cultural monuments, as well as other relationships referring to the crossing of the frontier.

Эрдэнэ зуу хийдийн гол зуугийн барилгыг сэргээн засварлахаар дээврийг буулгасан

Ялзарч муудсан дам нурууг буулгасан

Нийт хэсгийг буулган гол багана сольсон

Ялзарч муудсан хэсгүүдийг солисны дараа бүшаан босгосон



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However, although the legal environment for the protection of historical and cultural monuments has been set, the protection work as a whole is still facing problems due to matters including lack of investment, poor organization in terms of providing knowledge to the public on protection of historical and cultural monuments, failure of employees of state administration authorities in local areas to carry out the duties that have been given to them, the isolation and sparse population of some areas, and the poor condition of the roads and pathways.

Mongolia acceded to the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage in 1990 and to the Convention on Stolen or Illegally Exported Cultural Objects in 1991. Since this time, our country has begun implementation of protection work as projecting the ideas, main principles and requirements of these conventions.

In 2008, The Government of Mongolia approved a new list of immovable heritages to be protected by the state, the provinces, or the capital city. The table below shows the number of temple buildings from that list:

Description	Protected by the state	Protected by the capital city or provinces
Monumental buildings of temples	15	24

However, there has been a number of negative effects due to social and economic changes, as well as the inadequate implementation of "the Law on Protecting Cultural Heritages," with some of the provisions of the law still being violated.

For instance, the law specifies that prior to issuing land for any activity such as urban development, construction, road building, establishing hydroelectric power stations, and mining exploration and utilization, the land shall be examined by professional institutions of history and archeology for approval of the use. But many historical and cultural heritages are damaged during the activities of urban development, construction, road building, establishing hydroelectric power stations, and mining exploration and utilization.

Moreover, "The Law on Urban Development" specifies that urban development and construction work shall not be executed near areas of cultural and historical heritage, and the decree in 2001 by the Mongolian Government assigned protection zones for immovable monuments. However, these regulations have not been observed, and the protection zones around the Monastery of Gandantegchilen, Temple Geser, Green Palace of Bogd Khan, Monastery of Dambadarjaalin, and the Temple Museum of Choijin Lama have been reduced. The following graphics provide more information about these cases.

Monastery of Gandantegchilen

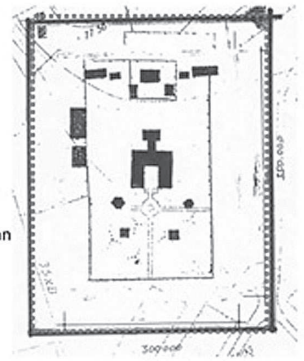
Location	Ulaanbaatar
Founded by	Yong zheng Emperor
Founded	1727
Date renovated	State protection in 1994
Type	Tibetan Buddhist
Sect	Gelug
Architecture	Chinese, Mongol and Tibetan influnces features a 26.5-meter high statue of Migjid Janraisig
Protection zone	58 hectare



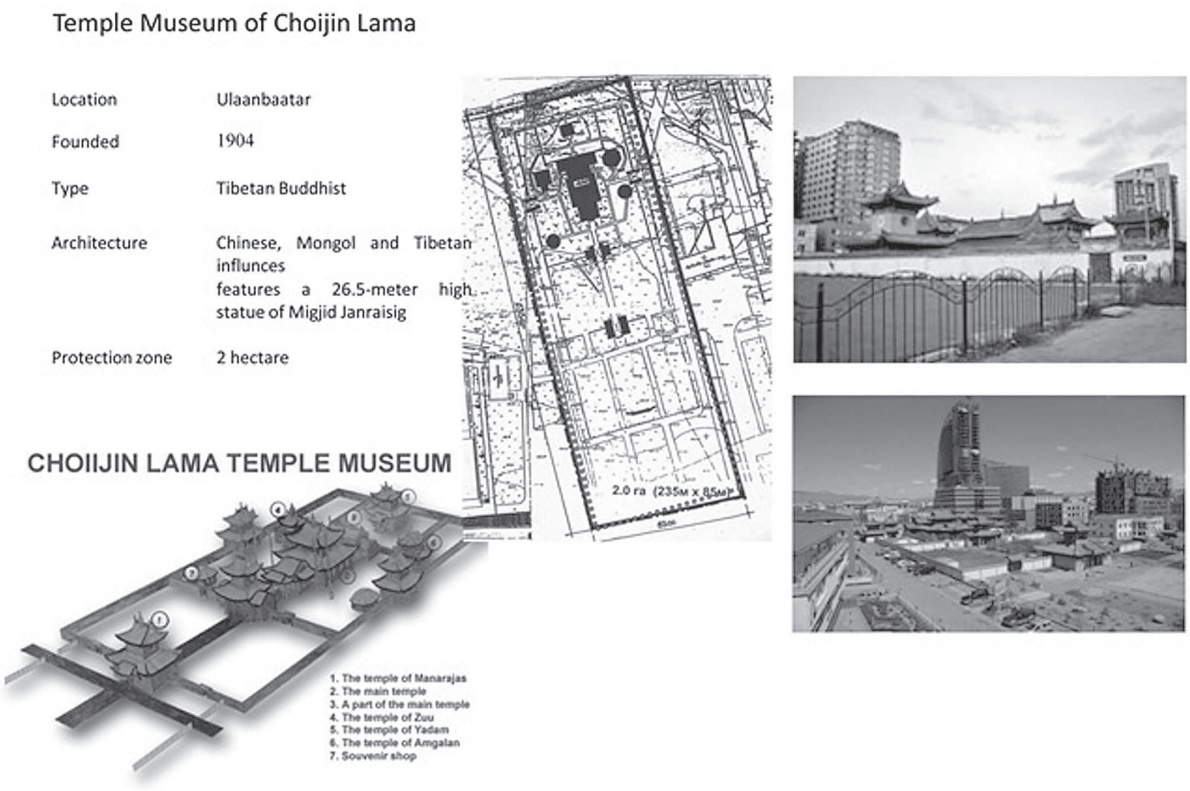


Monastery of Dambadarjaalin

Location	Ulaanbaatar
Founded	1761
Date renovated	State protection in 1994
Type	Tibetan Buddhist
Architecture	Chinese, Mongol and Tibetan influnces
Protection zone	10.5 hectare







In considering this issue in particular, there has been a tendency in the capital city to build constructions that block the entries and to populate the protection zone so as to keep the cultural and historical heritages in a whole and safe condition.

In order to create a legal environment for protecting the cultural heritages due to those reasons and changes in society as well as the current problems, some amendments are being made to laws such as the "Law on Protection of Cultural Heritages" under the Ministry of Culture, Sport and Tourism, and the "Law on Urban Development" and "Land Law" under the Ministry of Construction and Urban Development, as well as new legislation on redevelopment of the city. In doing so, issues regarding space planning, organization of territories and the creation of favorable economic and ecological conditions, as well infrastructure, re-planning of constructed sections and public property in the city can be solved in order to improve the benefits of land utilization. Besides the solution of such issues, other measures may include clarifying the responsibilities of lawbreakers and to encourage or to improve the rewards to be given to those who have done research and discovered cultural heritages or those (any organization or other entity or individual) who have made some contribution to the protection and reconstruction of cultural heritages.

In recent years, the increase in the population of Ulaanbaatar city has been creating environmental pollution and over centralization. Due to this situation, the "Master Plan on the Development of Ulaanbaatar City Until the Year 2030," which determines the direction of development for Ulaanbaatar city until 2030, has been approved. This plan is designed to make the city into one with a unique national style and image in keeping with the unique features of Mongolian cultural heritages. As well,

additional measures have been set to create a system for controlling land utilization in determining the urban development region within the territory and limits of the city. There are different types of cultural buildings and other monuments in the city, therefore some other measures have been set in order protect and restore them.

In order to protect and restore the historical buildings and monuments in the local areas and in the cities and complexes further out, geophysical and land research should be carried out. Also, the responsibilities of the administrative authorities in the local areas regarding protection of heritages shall be improved. As well as this, a complete management plan is needed for conservation and protection of historical temples.

The following measures shall be taken in the future:

- To improve the legal environment and institutions for protecting cultural heritages;
- To develop management skills for protecting cultural heritages;
    - Since immovable cultural and historical monuments are protected by the government, a professional institution to carry out restoration work for historical and cultural buildings and architectural monuments, and a national program approved by the government shall be established;
    - To train personnel;
    - To increase public participation in controlling cultural heritage;
    - To provide a mechanism for supplying the required materials for restoration work of temples and monasteries.

New Zealand
Blyss Wagstaff
Heritage Advisor
New Zealand Historic Places Trust Pouhere Taonga

Risks and issues for cultural heritage protection and restoration activities in New Zealand

Introduction

This report has been prepared for the 2013 Training Course on Preservation and Restoration of Wooden Structures in Nara, run by the Asia-Pacific Cultural Centre for UNESCO (ACCU Nara).
The report will cover the historical and regulatory context for cultural heritage in New Zealand, and typical threats and factors that endanger the retention and protection of the timber cultural heritage resource, illustrated by examples of wooden heritage structures in New Zealand.

1. Historical context

Located in the southwestern Pacific Ocean, New Zealand/Aotearoa is a nation comprising two main landmasses (the North Island/Te Ika-a-Maui, and the South Island/Te Waipounamu) and numerous smaller islands. The isolation of its location - 1,500 kilometres east of Australia and 1,000 kilometres south of the Pacific nations of Tonga, Fiji and New Caledonia - meant that New Zealand was one of the last major landmasses to be settled by people. While research into the exact date continues, it is generally accepted that the earliest permanent human settlement of New Zealand occurred around 1250-1300 AD. Polynesian migrants sailed from East Polynesia and on landing in New Zealand encountered landscapes, climates, flora and fauna significantly different from the tropical Pacific islands they had sailed from. A distinctive Maori culture developed over the ensuing centuries. Physical remains of early Maori structures that date from the Maori settlement of New Zealand are rare, due to the perishable nature of their materials (often raupo/reed thatching on a timber frame).

The first European known to have reached New Zealand was Dutch explorer Abel Tasman, who sighted the country in 1642. In 1769 British explorer Captain James Cook mapped almost the entire coastline, forging New Zealand's later link with Britain and paving the way for visits by numerous whaling, sealing and trading ships from Europe, North America and Australia. Christian missionaries arrived in the country from 1814 onwards.

Organised European settlement began in 1839 with the British colonisation scheme facilitated by the New Zealand Company, which made Wellington (now the capital city) its first settlement. The Treaty of Waitangi – an agreement between the British Crown and 540 Maori chiefs from around the country – was signed in 1840 and became New Zealand's founding document, proclaiming British sovereignty over the country. Colonial settlement in the ensuing years was enabled by the purchase (often by devious means) of large tracts of Maori land, which not all Maori sold willingly, resulting in

the New Zealand land wars of 1860-1872. By 1858 the non-Maori population outnumbered the Maori population and the cultural practices and customs of the colonists became prevalent, although Maori cultural renaissances in the twentieth century have fostered awareness of the bicultural nature of New Zealand society. In 2013 New Zealand's population is just under 4.5 million people.

Types of Timber Heritage Structures

Wooden cultural heritage structures in New Zealand largely consist of traditional Maori cultural heritage structures and built heritage that has been influenced by overseas trends. There are many types of timber heritage structures in New Zealand, some which are introduced below in a very brief survey.

Traditional Maori buildings are often found within a marae, which is a complex of buildings, structures and landscape that functions as a community meeting place, and is of great cultural and spiritual importance. Maori society has traditionally been based on family lineage and genealogy (*whakapapa*), and marae are central places to each whanau (*family*), *hapu* (sub-tribe) and *iwi* (tribe).

Fig. 1: Wharenui/meeting house. G. Sheehan, 2001 © NZHPT

The main building within the marae is the carved meeting house or ***wharenui*** (Fig. 1). These buildings are named after an ancestor significant to the tribe, who the building symbolises with its structural elements relating to parts of the body. Single gabled structures with a porch at the front, wharenui are decorated with carvings or paintings and woven panels (*tuktuku*) representing the group's ancestral heritage.

The ***Pataka*** (Fig. 2), or raised food storehouse, was once common on marae but very few of these buildings remain in situ today. They are typically small and can be ornately decorated with carvings, and are raised on heavy stilts to protect the food from rats and other scavenging animals.

Reflecting the influence of the colonial missionaries, many marae have associated churches, or wharekarakia (prayerhouses), which may be built within the marae precinct or on land nearby. Some church interiors blend Maori motifs with traditional religious symbolism.

Fig. 2: McManaway's Pataka. J. Wylie, 2004 © NZHPT

European settlers brought with them the desire to construct the familiar building types they had left behind, but these building types were gradually adapted to the local environment. For example, where stone, brick or masonry may have been the material of choice in England, New Zealand's ready supply of hardwood coniferous trees such as kauri, rimu, totara and miro, and lack of stone in many areas, suggested an ideal building material. Consequently, New Zealand has a large stock of timber heritage buildings – the proportion of wooden houses is particularly high. However, sod, cob, brick, clay or stone were prevalent building materials in some parts of the country.

Residential buildings

Fig. 3: Kerikeri Mission House. NZHPT Register Online © NZHPT

New Zealand's oldest standing building is the **Kerikeri Mission House** (Fig. 3), a timber structure erected in 1821-1822 for the Reverend John Butler of the Church Missionary Society. It is two storeyed, of Georgian style, with a hipped roof and symmetrical façade. Lean-tos were added in 1830s, and the originally enclosed verandah opened. The NZHPT was gifted the property in 1974, and it remains open to the public as a popular visitor site of national and international heritage significance.

The **Pilot's House** (Fig. 4), Marlborough, constructed around 1870, is typical of the 'saltbox' design of many early residences – simple single-gabled weatherboarded structures, originally roofed in timber shingles. These houses often grew from an initial single room, extended by lean-to additions.

Fig. 4: Pilot's House, Marlborough. 2007, A. Dangerfield © NZHPT

Fig. 5: Oruawharo Homestead. 2012, A. Dangerfield. © NZHPT

Oruawharo, Hawke's Bay (Fig. 6) is a representative, intact example of a grand Victorian rural homestead. Constructed of native timbers in 1879 for an important wealthy settler family, the Johnstons, the homestead complex includes various outbuildings such as stables, a coachhouse, farm workers' residences and storage sheds, set within extensive grounds. The NZHPT assisted in the conservation of this property by registering it as a Category 1 historic place, providing conservation advice and guidance, granting heritage incentive funding towards the preparation of a conservation plan, registering a covenant for protection on the certificate of title, and resource consent and building consent advocacy for the conservation works.

Civic buildings

Fig 6: Government Buildings, Wellington. G. Mew, 2001. © NZHPT

The former Government Buildings (Fig. 7), completed in 1876, is one of New Zealand's most important historic buildings. Designed in the Italian Renaissance style by the country's Colonial Architect, William Clayton, it was constructed from wood when the cost of concrete proved prohibitive. The 143-roomed building, with its 126 fireplaces, 22 chimneys, 64 toilets, eight verandahs and seven porticos, is one of the largest wooden buildings in the southern hemisphere. Its 1994-96 restoration was a landmark in government heritage conservation.

A recent registration has recognised the important heritage values of a more modern building, the former **Te Urewera National Park Headquarters Visitor Centre.** Celebrated Maori architect John Scott designed the timber framed building in the 1970s, and it is notable for the cultural sensitivity of its design, which blends Maori and international influences to produce an innovative and reflective building based on the elements of Maori marae complexes. The architect's experimental design detailing, and the moisture-laden environment of its bush location, mean that the building is at risk from deterioration.

Churches

Old St Pauls Cathedral (Fig. 8) in Wellington, dating from 1866, is a fine example of architect Frederick Thatcher's response to the prevalence of timber as a building material. Wood has been used to beautiful effect in an adaptation of the Gothic Revival style, resulting in a specific vernacular 'antipodean gothic' style that became used for many of the country's timber churches.

Fig. 7: Old St Paul's Cathedral, Wellington. G. Sheehan, 2001 © NZHPT

Military buildings

This **blockhouse** (Fig. 9, left) in Upper Hutt, Wellington, is one of the very few of its type remaining in New Zealand. Built in 1860 from fear of conflict between the settlers and Maori during the time of unrest over land for colonisation, the double-skin timber-clad frame is infilled with shingle to protect against rifle fire, and also features loopholes for defenders to return fire. The building is also special as one of the first recorded examples of statutory protection for heritage in New Zealand, as it was designated a Historic Reserve in 1980.

Fig. 8: Blockhouse, Upper Hutt. H. McCracken, 2001. © NZHPT

Agricultural buildings

The primacy of agriculture in the economy has also resulted in a range of heritage structures relating to New Zealand's history of pastoralism and agriculture. The **Maraekakaho Station Woolshed** in the Hawke's Bay area is an example of the scale of New Zealand's wool industry. Capable of holding 5,000 sheep under cover, this building was constructed in 1883 and is part of a complex of station buildings, including stables, a dairy, shearer's quarters, a privy, a slaughterhouse and dog kennels, on what was once the largest sheep station in the area.

Fig. 9: Woolshed, Maraekakaho Station. J. Gatley, 1989. © NZHPT

2. Risks and Issues for the Conservation of Cultural Heritage in New Zealand

Heritage recognition and protection in New Zealand

The New Zealand Historic Places Trust Pouhere Taonga (NZHPT) is New Zealand's leading national historic heritage agency and guardian of Aotearoa/New Zealand's national heritage. The NZHPT is a crown entity supported by the Government and funded via the Ministry for Culture and Heritage along with bequests, donations and third party funders. Its work, powers and functions are prescribed by the *Historic Places Act 1993* (HPA). The NZHPT's work includes identifying New Zealand's heritage places, seeking to ensure they survive for appreciation by current and future generations, and fostering that appreciation by recording and sharing their stories.

The NZHPT compiles the Register of Historic Places, Historic Areas, Wahi Tapu and Wahi Tapu Areas, established under the *Historic Places* Act 1993. The Register is the national list of New Zealand's heritage places, and Registration means that a place or area is included on the Register. The Register identifies and informs owners, the public, community organisations, government agencies and local authorities about significant heritage; and assists heritage to be protected and conserved, although protection is not automatic or guaranteed.

The Register has around 5,600 entries and is divided into four parts:

- *Historic Places* include bridges, memorials, pa, archaeological sites, buildings, mining sites, cemeteries, gardens, shipwrecks, and many other types of places. Historic places are further categorised as Category 1 (special or outstanding significance) or Category 2.
- *Historic Areas* are groups of related historic places such as a geographical area with a number of properties or sites, or a cultural landscape. Emphasis is on the significance of the group.
- *Wahi* Tapu are places sacred to Maori in the traditional, spiritual, religious, ritual or mythological sense.
- *Wahi Tapu* Areas are groups of wahi tapu.

Most protective mechanisms for land-based historic heritage are administered by local authorities through their District Plan policies and heritage listings under the *Resource Management Act 1991* (RMA) (although the NZHPT retains regulatory responsibilities regarding archaeological sites). Local authorities have the statutory responsibility to recognise and provide for the protection of historic heritage from inappropriate subdivision, use and development within the context of sustainable management. Responsibilities for managing adverse effects on heritage arise as part of policy and plan preparation, and resource consent processes.

As the degree of attention taken by local authorities to identify and protect the heritage in their district varies, the NZHPT has an advisory role in providing guidance for local authorities on best practice heritage policy. This is set out through publications such as the Sustainable Management of Historic Heritage Guidelines series, and through making submissions on plan changes. The NZHPT Register is a key identification source for local authorities when preparing the heritage protection schedules of their district plans. Historic heritage on Crown-owned land is also managed under

the *Reserves Act* 1977 and largely administered by the Department of Conservation, which has the challenge of allocating reduced government funding between the numerous important sites in its care.

Alteration and Development

The NZHPT has an advocacy role for registered historic places and provides advice to owners and local authorities on alterations, additions, repairs and maintenance works that require a resource or building consent under the RMA or *Building* Act 2004. For heritage buildings to retain liveability and utility, regular maintenance and upkeep are essential and encouraged, and a degree of change is often necessary to update a building for modern use and lifestyles. Where proposals involve a considerable degree of change to the fabric, layout, appearance or location of a significant historic structure in order to adapt it for a new use, the NZHPT encourages owners and stakeholders such as local authorities to accommodate heritage conservation principles. However, as the local authority is the ultimate decision maker, NZHPT advice is not always followed, leading to loss of heritage. There are also no regulations to enforce the maintenance of heritage buildings and few financial incentives to support conservation, and gradual deterioration and 'demolition by neglect' are very real threats to cultural heritage.

Heritage properties are also affected by development projects that propose the demolition or relocation of historic heritage. Enquiries about relocation or demolition of historic heritage have increased dramatically in the last three years, now comprising around a quarter of the NZHPT Central Region office's advocacy workload; and the current political and economic environment in New Zealand favours private property rights and economic development. The NZHPT normally considers the relocation of heritage a poor heritage outcome as it removes a place from its historic context, and demolition means a total loss of heritage value. Options for the retention of places in their original location are explored and encouraged, however are not always successful. The NZHPT was recently unable to negotiate the retention of the registered wooden Albert Hotel in Hastings, despite it being listed for protection in the district plan and being the oldest remaining building in the town centre – especially significant as a rare survivor of the 1931 Hawke's Bay earthquake and ensuing fire. It is scheduled for demolition and redevelopment.

As timber structures are often viewed as being easier to relocate than brick or masonry buildings, they are more vulnerable to this type of activity. For example, consent applications for the relocation or alteration of registered historic churches for reuse as residences, restaurants or shops are becoming more frequent, as congregations dwindle and are faced with mounting maintenance costs as the buildings age. Many church organisations simply cannot afford to repair and meet current seismic strengthening requirements for buildings that may only be used by a small number of people once a month, and see the only solution to be a choice between demolishing the building or preserving it by selling it for reuse. The NZHPT is faced with difficult decisions in these cases, needing to carefully balance the loss of heritage value arising from a building divorced from its historic context against the otherwise total loss from its demolition.

When assessing the impact of proposed changes, the NZHPT's advice is guided by the principles of the *Historic Places Act:*

- That historic places have lasting value in their own right and provide evidence of the origins

of New Zealand's distinct society;

- That the identification, protection, preservation and conservation of New Zealand's historical and cultural heritage should:
  - take account of all relevant cultural values, knowledge and disciplines;
  - take account of material of cultural heritage value and involve the least possible alteration or loss of it;
  - safeguard the options of present and future generations;
  - be fully researched, documented and recorded, where culturally appropriate; and
  - recognise the relationship of Maori and their culture and their culture and traditions with their ancestral lands, water, sites, wahi tapu, and other taonga (treasures).

The NZHPT is also guided by the conservation principles of the ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value (2010). The NZHPT's 'Repairs and Maintenance to Historic Places and Historic Areas' Information Sheet recommends that:

- Repairs should be achieved by the use of compatible materials, and the use of incompatible materials should be avoided
- The evidence of history should be respected
- Restoration and reconstruction should generally only take place where there is clear evidence of original form and detail
- New work should be kept to a minimum retaining as much original fabric as possible and be compatible with the long-term conservation of the place
- Any art work, special fabric or heritage objects situated at the place and that contribute to the significance of the building or structure, should be cared for in accordance with sound conservation practice
- New work should be appropriately recorded.

Seismic issues

The most urgent and prominent threat to New Zealand's timber cultural heritage at present is seismicity and its related issues. Recent focus on the earthquake proneness of all buildings since the devastating Canterbury earthquakes of 2010-2011, in which 185 people lost their lives, has had a particular focus on the safety or perceived danger of heritage buildings. There has also been a huge impact on the insurance industry, with many owners now facing higher premiums and struggling to obtain adequate property insurance.

Fig. 10: Christchurch, February 2011. A. Dangerfield © NZHPT

Although timber buildings generally perform better than other building types in seismic events (for example 21% of Christchurch's timber heritage buildings were damaged in the Canterbury earthquakes, compared to 67% of the city's unreinforced masonry building stock), New Zealand's unstable seismic location on the convergence of the Pacific and Australian plates has resulted in numerous earthquakes throughout its history. Timber was favoured

as a building material since the early days of colonial settlement, not only because of its abundance and cost-effectiveness, but because its resilience was proven through the two earthquakes greater than magnitude 8 that shook the fledgling settlement of Wellington in 1848 and 1855. However, the threat of fire saw the popularity of masonry and brick construction rise in the ensuing decades, especially for civic and commercial buildings. The 1931 Hawke's Bay magnitude 7.8 earthquake, which killed 286 people and largely destroyed the towns of Napier and Hastings, resulted in improved building code standards across the country; however, lack of maintenance and further strengthening saw many masonry buildings fail in the Canterbury earthquakes with harm to human life. Although the majority of lives lost were due to the failure of two modern buildings, scenes of crumbled brick walls and collapsed façades and parapets, for example in Fig. 11, have understandably contributed to the public perception that heritage buildings are dangerous.

The aftermath of the disaster, in which many damaged buildings were rapidly demolished, has had a devastating impact on Christchurch's built heritage. As many as 37% of the central city's registered historic buildings have been lost, along with a large proportion of unregistered and unlisted heritage buildings, irrevocably altering the character of a city internationally famous for the integrity of its largely Gothic architecture. The effects of the earthquakes continue to be felt around the country, as a central government policy on earthquake-prone buildings released in August 2013 heralds legislation that will require local authorities to assess all non-residential and multi-unit, multi-storey residential buildings in their areas within five years, and imposes a 15-year timeframe for owners to either strengthen or demolish earthquake-prone buildings. Although a further ten-year extension will be available for Category 1 registered buildings, no financial incentives to assist owners have so far been offered by the central government, and the funding available from local authorities is minimal. The government estimates there are 15,000-25,000 earthquake-prone buildings nationwide, so the potential impact on the country's heritage stock is large.

Fig 11: Chester Street Houses, Christchurch, February 2011. A. Dangerfield © NZHPT

Some owners are actively seeking to improve the public safety of their investment by planning for seismic strengthening works. The NZHPT is being approached for comment on a number of strengthening schemes and is seeing a wide variety of approaches, not all of which respect the heritage values of the place as well as they could.

The NZHPT owns and cares for a large number of heritage properties, and is taking a proactive approach to minimising earthquake damage. Brick chimneys have been braced and tied, or strengthened through the insertion of a metal sleeve within the structure, as these masonry elements have been demonstrated to pose a significant threat in otherwise structurally sound timber buildings, such as the historic 1905 wooden homestead Antrim House, which is used as the NZHPT's national office. An interesting situation is arising at the Blockhouse in Upper Hutt mentioned above (Fig. 9), as the rubble core between the two timber layers of each wall is gradually being shaken down and causing the lower walls to bulge.

Erosion, Storms and Floods

As an island nation with a large amount of coastline and many rivers, New Zealand's heritage places have always been susceptible to damage from storms, landslips and flooding. Much of New Zealand's settlement and infrastructure is located in coastal areas or around water. With the changing weather patterns of climate change, the coastal erosion margins are increasing and New Zealanders can expect more frequent weather-based hazards to occur. In recent years two historic bridges were destroyed by flooding, and a large historic woolshed at Aramoana Station on the east coast of the North Island was shunted off its foundations from the force of a huge landslip on the hill behind it.

A storm in July 2013 hit the Wellington region hard, causing an estimated $4 million of damage, including the likely loss of the registered Category 2 coastal residence that was the historic holiday home of one of New Zealand's most celebrated authors, Katherine Mansfield. High seas obliterated the sea-facing walls of the building and washed through the house, forcing the side walls outwards and displacing the kitchen bench out on to the street.

Fire

Fire is an ever-present threat to wooden cultural heritage – whether from natural causes (lightning), deliberate arson, electrical faults or carelessness. The relative isolation of some rural heritage buildings can exacerbate the risk due to the time taken for fire response units to reach the scene. The NZHPT considers that all heritage buildings should have basic fire safety measures, such as evacuation and escape plans, smoke detectors and alarm systems, sprinkler systems and fire extinguishers. Insurance and adequate security measures are also recommended. The registered Category 2 Gear Homestead in Porirua is an example where the NZHPT worked to ensure the design and installation of a sprinkler system did not adversely impact the heritage values of the fabric, negotiating a redesign of the scheme to avoid non-reversible damage to the original kauri timbers. In 2013 the historic Albion Hotel in Shannon, a registered Category 2 historic place, will be demolished due to extensive damage from fire, thought to be caused by an electrical fault.

Conclusion

New Zealand is rich in cultural heritage, and the many types of wooden heritage structures present are susceptible to a range of risks and issues, including development and unsympathetic modification, fire and weather-related natural disasters, and the policy environment for the protection of historic heritage. Most prominent in the heritage environment at present is the risk to heritage from earthquakes and the ensuing policy for the strengthening or demolition of earthquake-prone buildings. The limited financial incentives on offer to assist the owners – who are providing a social benefit through the care of heritage – to strengthen and retain their heritage properties could result in many feeling that demolition is the more feasible option.

Acknowledgements

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Pakistan

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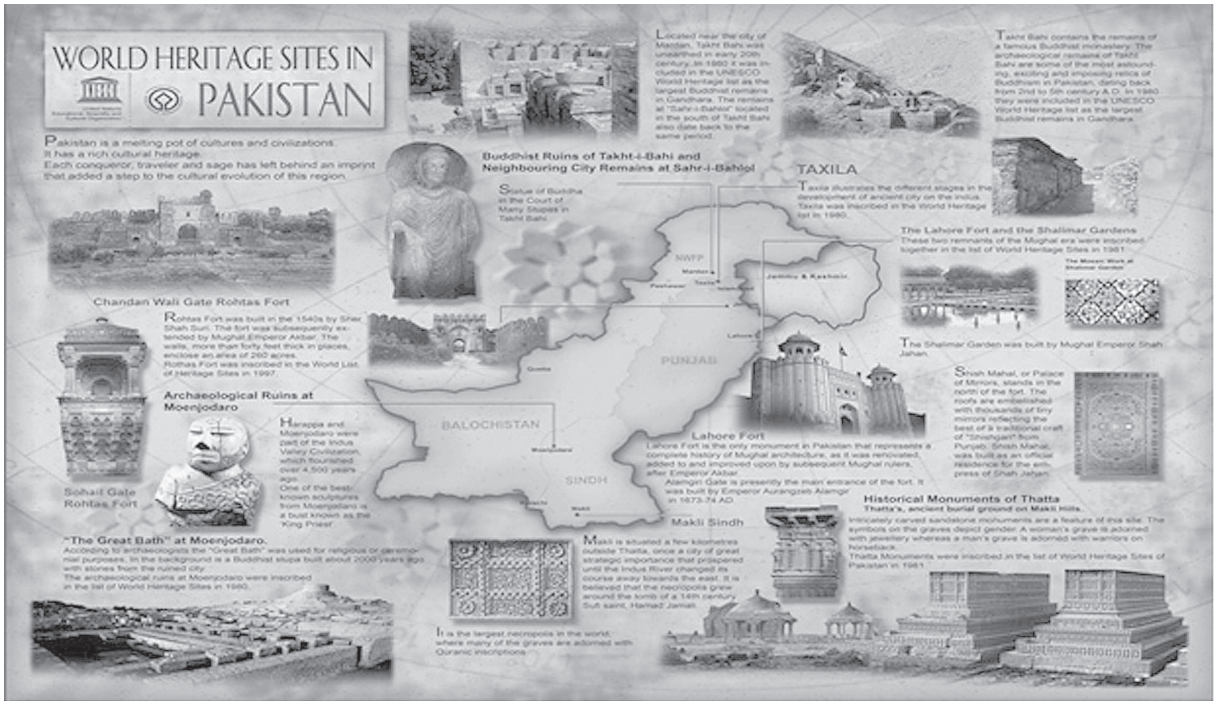
After the 18th Amendment in 2010, archaeology became a provincial responsibility. Although the Directorate General of Archaeology looked after the conservation and preservation of Lahore Fort and Shalimar Garden, which are on the UNESCO World Heritage List, two more World Heritage Sites were handed over to the Directorate. The Directorate started as a conservation cell in 1971 in the Auqaf Department, Government of the Punjab, and became a separate department in 1987. Initially, it was attached to the Ministry of Information, Culture, and Youth Affairs. In October 2011, the Directorate General was attached to the newly created Youth Affairs, Sports, Archaeology & Tourism Department.



The vision of the Directorate is clear and simple: "**To highlight the archaeological heritage of Punjab, in all its dimensions, through archaeological explorations, recoveries, documentation, analysis, interpretation, preservation, restoration and exhibition of material remains & artifacts and their conservation**". A number of conservation projects including protection of three World Heritage sites are underway in different parts of Punjab under the supervision of the Directorate General of Archaeology. The conservation projects include: conservation and preservation of Shalimar Garden Lahore; conservation and preservation of Lahore Fort, Jahangir's Tomb, Hiran Minar, Rohtas Fort, Taxila, and Katas Raj; establishment of a museum in Kallar Kahar; and establishment of an art gallery in the Gujarat District.

Problems in Conservation/Preservation of World Heritage Sites

1. Quality of Materials
2. Encroachment
3. Pollution
4. Lack of Public Awareness about Heritage Sites
5. Inadequate Budgets
6. Unskilled Labour
7. Insufficient Manpower to Protect Monuments
8. Non-Development Sector

1. Quality of Materials

In the construction of forts, palaces, gardens and temples, the Mughal and Hindu Kings used superior quality materials. The Historic Monuments are unique because of the dexterity in the architecture and wooden work with which these were constructed. However, with the passage of time and due to the ignorance of government organizations, these Monuments are now in miserable condition.

In Shalimar Garden, Lahore, special Deodar wood brought from outside the country is being used to preserve the Moor Craft Building. (Fig. 1 and Fig. 2)

Fig. 1 Wooden roof of the Moor Craft building before conservation

Fig. 2 Wooden roof of the Moor Craft building after conservation

2. Encroachment

An emerging issue in recent years is the threat to cultural heritage, particularly historic cities, posed by inappropriate residential, industrial, and tourism development. Rising levels of urbanization in the developing countries of Asia are transforming large rural societies into predominantly urban regions.

Encroachment is a burning issue in the historical city of Rohtas Fort, Maqbara Jahangir, Lahore, and in the historical city of Taxila, and the walled city of Gujarat. During the time of neglect, besides government schools and dispensaries, more than 450 houses have been built within the walls of Rohtas Fort (Fig. 3, Fig. 4).

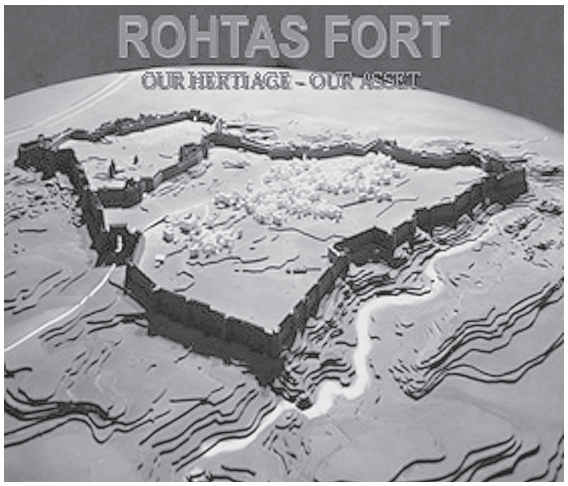


Fig. 3 Model showing encroachment inside Rohtas Fort

Fig. 4 Map showing yearly increase in encroachment

According to the Federal Antiquities Act 1975 (Antiquities Amended Act 2012) of the Government of Pakistan, a 200 feet buffer zone should be maintained around the major sites of cultural heritage. In 2009-2010, an endeavour to save the global heritage of Rohtas Fort, the local administration and Directorate General of Archaeology jointly cracked down on encroachments that had sprung up along the walls of Rohtas Fort, and removed more than two dozen illegally constructed buildings, mostly houses. (Fig. 5, Fig. 6)

Fig. 5 Demolishing illegally erected structures inside Rohtas Fort (2009-2010)

Fig. 6 Demolishing illegally erected houses inside Rohtas Fort (2009-2010)

Again, in 2011-2012, with the help of the district authorities, half a dozen illegally built structures, houses were demolished (Fig. 7, Fig. 8). Resistance from the locals was observed. They threatened watch and ward staff and tried to harm them. In Shalimar Garden and Lahore Fort, uncontrolled encroachment has also been observed. Many attempts have been made to clear these sites of encroachments. However, due to political pressure it is very difficult to remove encroachments from these sites.

Fig. 7 Demolishing a haveli inside a historical graveyard (2011-2012)

Fig. 8 Demolishing an illegally erected house (2011-2012)

3. Pollution

Pollution is a serious threat to the Monuments in Pakistan. Lahore is home to many industries, specifically the energy, oil refining, chemical, fertilizer, machine tool and pharmaceutical industries. The by-products of these operations (particulates, oxides of carbon, nitrogen and sulphur) have been emitted into the atmosphere in enormous quantities. According to a rough estimate, over 900 industrial units, a major chunk of which includes steel-related facilities, are causing serious environmental hazards, especially noise and air pollution in various localities of Northern Lahore. Besides residential areas, a good number of industrial and commercial ventures are operating around historical monuments i.e. Shalimar Garden, Lahore Fort and Badshahi Mosque. Garbage waste and encroachments along the boundary wall of Shalimar Gardens have not only damaged this historical place but also marred the beauty of the already decaying building of the Garden. Heaps of garbage have turned the different parts of the garden into dumping sites, with residents and shopkeepers from the surrounding localities throwing their waste along the boundary wall and into the galleries of the garden. The pathetic aspect of throwing or dumping garbage along the boundary wall is that the citizens have no idea of the importance of the Garden (Fig. 9 and Fig. 10)

Fig. 9 Eastern side of Naqqar Khana (Shalimar Garden)

Fig. 10 Northern periphery of the Garden

The presence of steel rolling mills, foundries and furnaces in the surrounding areas and vehicular traffic are the major factors contributing to the decay of Pakistan's landmark buildings. Unplanned housing schemes around the monuments are damaging the foundation and structure. As these schemes are not approved by the government, they don't have the basic requirements of modern housing schemes. For example, they don't have proper drainage or sewerage systems. This problem arises particularly around the Shalimar Garden Lahore. The Directorate General of Archaeology is working with different departments to overcome this problem and to protect the Garden from further damage. (Fig. 11 and Fig. 12)

Fig. 11 Rainwater - outer side of northern periphery of Gardens

Fig. 12 Unplanned housing and raised road level around eastern periphery of Gardens

The industrial dust contains lead compounds and asbestos, manganese, beryllium, arsenic, copper and zinc, depending on the quality of the industrial facilities that cause the dust, and as motor fuel (gasoline) contains 3 to 4 cm3 of lead per gallon. The climate of Lahore is constantly affected by dust, and archaeological sites are continuously subject to this kind of influence, which leads to changes in the colour of masonry and distortion. The colour of wooden beams, chajjas and carved wood in (the Moor Craft Building) Shalimar Garden and (Shesh Mahal) Lahore has changed. Continuous exposure to auto and industrial emissions has affected the outer surface of these structures. (Fig. 13 and 14).

Fig. 13 Signs of decay and deterioration due to vehicle smoke and air pollution

Fig. 14 Signs of decay and deterioration due to vehicle smoke and air pollution

Failure to shift the Badami Bagh General Bus Stand out from the provincial capital, Lahore, is seriously affecting the structure and beauty of Historical Monuments like Lahore Fort and Badshai Mosque. This resulted in air pollution increasing day by day in the vicinity. A large number of vehicles are always parked around the monuments while traffic jams are always seen at Azadi Chowk, resulting in vibrations and air pollution.

Pollution does not only affect the historical buildings in Lahore but also other parts of the country. In Rohtas Fort, a road passes through the middle of the fort, causing serious structural damage to the Fort. Trucks loaded with tons of coal passing through the Fort, causing immense vibration, which not only affects the foundation of the Fort but is also gradually destroying the wooden gates of the Fort. (Fig 15, 16).

Fig. 15 Vehicular traffic around the Garden

Fig. 16 Vehicular traffic in Rohtas Fort

Pollution, dust, and vibration caused by heavy traffic affects the Fort, especially its outer walls and wooden gates. At the Katas Raj Temples in Chakwal, the cultural heritage is subject to numerous pressures. Modern construction including the construction of factories, residential blocks for workers and construction of roads from the middle of the complex seriously affects the wooden roofs, beams and doors of the complex.

4. Lack of Awareness about Heritage Sites

Pakistan is endowed with a rich cultural heritage, but the people of Pakistan are not aware of the cultural and historical importance of the Monuments. Instead, they have treated them as picnic and recreational spots. According to a survey, 85 percent of people in Pakistan have no idea what archaeology, heritage and culture are, and most of them have never been to a museum in their whole life. The results of this survey are shocking because the research sample included bureaucrats, administrators and custodians of archaeological heritage. Some of the historical places in Pakistan are being used for other purposes than to preserve them. Historical Shadullal Gate is one example of how we treat our cultural sites. The Gate is one of eight gates built by King Akhbar. At present, a police post is established in it, and banners and hordings hang in front of it (Fig. 19). In August 2013, due to heavy rains, the north wall of the Gate collapsed (Fig. 20). This shows how much importance our people attach to our heritage.

Fig.19 Banners hanging in front of Historical Shadullah Gate

Fig. 20 Damaged wall of Shadullah Gate

People have no love for heritage sites. Instead, they spread garbage, and write on walls, doors and anything in the structure on which writing is possible. This is not only destroying the beauty of the Monuments but more importantly, affecting the historical evidence. It is pity to see graffiti of different kinds on the walls of heritage sites like Rohtas Fort, Katas Raj, etc.

5. Inadequate Budgets

The conservation of Historic Monuments is a means of continuity of history as it keeps alive the cultural scene of that historic period to which it belongs. Pakistan is rich in a variety of built heritage and a large proportion of the valuable Heritage is the monuments built with stone. As wooden Historical Buildings and sites, need special attention and special material are required for their conservation and preservation therefore adequate budget is required for proper Conservation.

6. Unskilled Labour

The Muslim emperors were fond of palaces, gardens and forts. The Muslim emperors built many monuments, especially in Shahjahan, including the UNESCO World Heritage Site the Taj Mahal, Humayun's Tomb, Fatehpur Sikri, Red Fort, Agra Fort, Lahore Fort, Anarkali's Tomb, Moti Masjid, and Shalimar Garden. They brought engineers, skilled labourers, and masons from all over the sub-continent and Afghanistan. These craftsmen were expert in the traditional crafts of glazed tile work, wood carving, and terracotta, and the structures erected by them are an amalgam of Islamic, Persian, Turkish, Byzantine and Indian architecture.

With the passage of time, these skills dried up and at present, it is difficult to find anyone who is fully trained for conservation work. In Pakistan especially, the government provides very limited funds. Due to the low level of funding, conservation-trained craftsmen are not interested in transferring their expertise to the next generation. Craft institutions in Pakistan are required to educate craftsmen about traditional works and methods, like frescoes, brick imitation, Kankar lime, glazed lime plaster and glazed enameled tiles, and for this purpose adequate funding is required.

Reference:

http://www.google.com.pk/search?hl=en&site=imghp&tbm=isch&source=hp&biw=1366&bih=624&q=map+of+world+heritage+sites+in+pakistan&oq=map+of+world+heritage+sites+in+pakistan&gs_l=img.3...1300.14299.0.14561.41.10.1.30.31.0.930.2606.3j4j1j6-2.10.0....0...1ac.1

Philippines
Crisanto B. Lustre II
ARCHITECT II/ Restoration Architect
National Historical Commission

"PROBLEMS AND NEEDS FOR CULTURAL HERITAGE PROTECTION AND RESTORATION ACTIVITIES"

I. RESTORATION OF SAN ISIDRO LABRADOR PARISH CHURCH HISTORICAL LANDMARK

Catamboan, Lazi, Siquijor, Central Visayas – Region VII

Background on the Preservation of the Cathedral

The Lazi Church did not escape the damage brought about by natural calamities, constant exposure to weather and the elements, and old age. Based on local interviews from parish officials, heritage groups and old photographs, the church has already undergone several emergency repairs, aside from this restoration project by the NHCP.

Some of the repairs include structural wood supports at the main entrance of the church, wood plank fillers on deteriorated roof pediments and the church flooring, patching of minor cracks on its massive walls, and replacement of some deteriorated roof sheets.

Though the intervention works are temporary in nature, this is necessary in order to prevent further deterioration of the materials used to build the Lazi Church.

Figure 01. FAÇADE OF LAZI CHURCH. The church walls are made of hewn coral stones and traditional coral bed corals mixed with limestone and egg whites as binding agent. From afar, the pink wall of the façade looks natural, but actually, the pink pigments on the coral stone were due to the melting of the red paint of the pediment.

Project Impact, Targets and Goals

The goal of the restoration shall be to continue the process of protecting this historic building from further deterioration and damage from a long-term perspective. Part of the restoration process includes using the same or compatible building materials to repair the damage or replace deteriorated material. The short-term intervention to be discussed in this study shall be cleaning, refinishing and regeneration of the surrounding elements in the church area.

Significance of Conservation

The San Isidro Labrador Parish Church is a declared National Cultural Treasure, which, together with its convent and grounds, stands as an outstanding example of Spanish ecclesiastical design in planning, architecture and landscape. Preserving this historic structure from a macro perspective shall not only protect its cultural heritage value but also promote a guided path towards its local development. Restoration of the roof and roof framing system of the Lazi Church shall be the first step in its preservation.

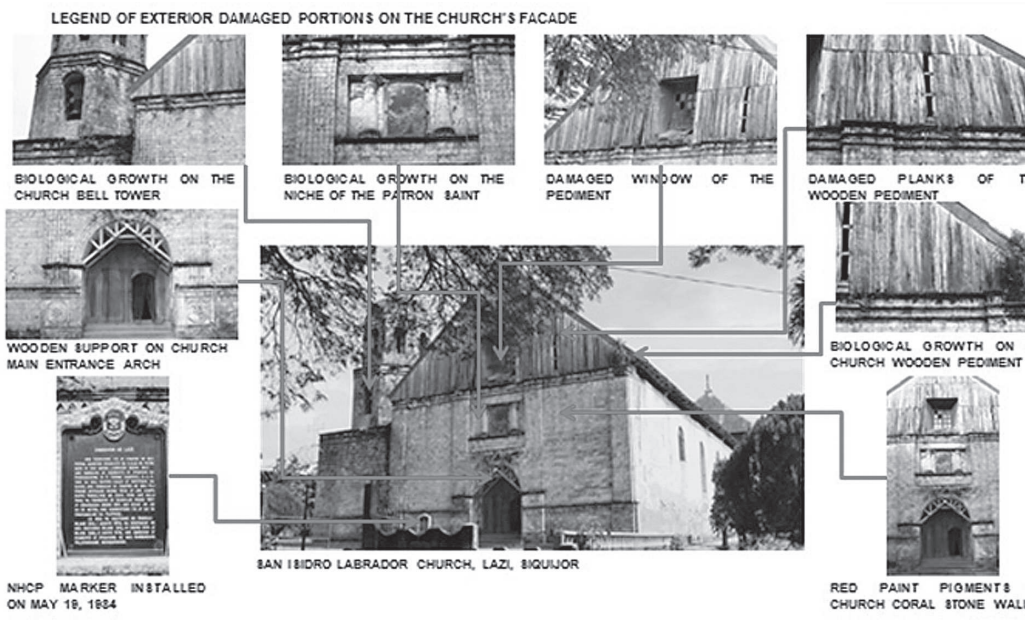


Figure 02. Legend of exterior damaged portions on the Church's façade.

EXTERIOR DAMAGED PORTIONS ON THE CHURCH'S FACADE

• DAMAGED PLANKS OF THE WOODEN PEDIMENT OF THE CHURCH FACADE INCLUDING THE CENTRAL WINDOW

Figure 03. Damaged planks of the wooden pediment of the church façade including the central window.

• DAMAGED PLANKS OF THE WOODEN PEDIMENT LOCATED AT THE REAR PART OF THE CHURCH

Figure 04. Damaged planks of the wooden pediment located at the rear part of the church.

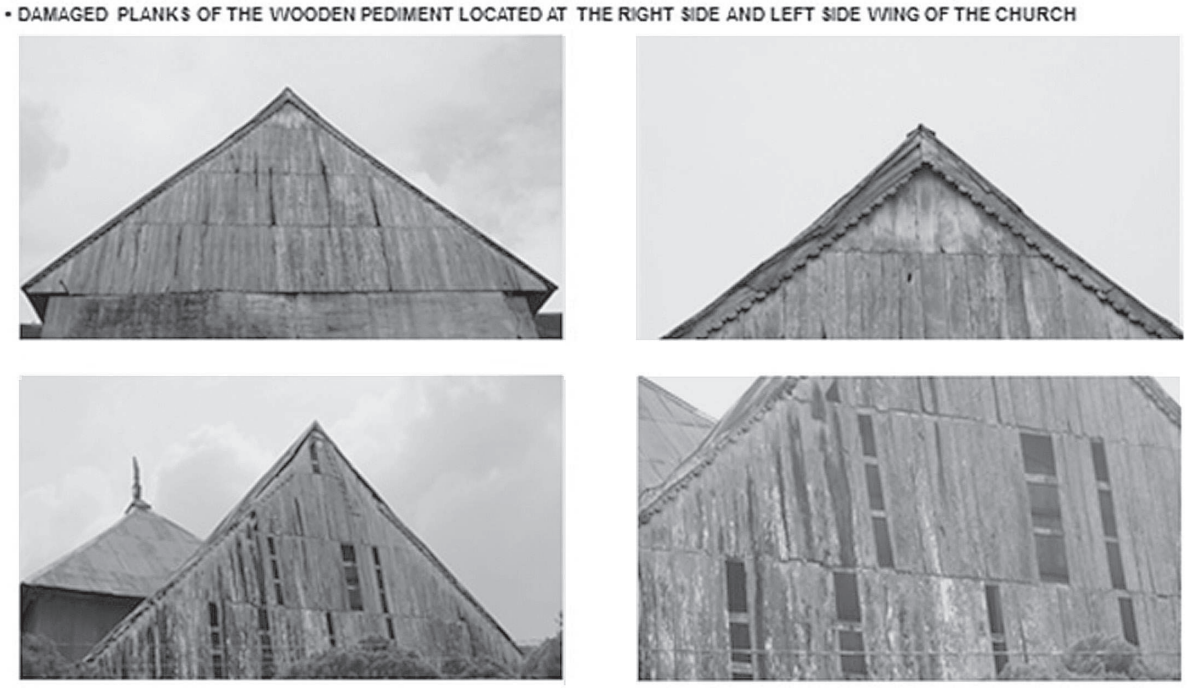


Figure 05. Damaged planks of the wooden pediment located at the right side and left side wing of the church.

The Church Wooden Pediment

The four pediments of the church, which are covered with hardwood planks, have sustained more damage, and some wooden planks that were made of tugas (local term) or molave, are already missing. Rainwater enters the gaps and open spaces between the remaining planks.

Restoration Methodology

RESTORATION PROGRAM OF WORK AND SPECIFICATIONS

1. PROJECT DOCUMENTATION AND PREPARATION WORKS

1.1 Project/Technical Documentation:

Photograph key parts of the structure before, during and after restoration with description and labels. Provide/submit digital photographs in:

1. jpg/jpeg format, minimum of 5 megapixels per photograph
2. 4” x 6” prints, no borders

1.2 Temporary Structures

Temporary structures such as storage and barracks for workers shall be constructed in the assigned area and shall not cause any obstruction or be an eyesore to visitors.

Steel scaffolding shall be provided by the Contractor for the restoration project.

Steel scaffolding shall have the following specifications:

H-Frames: Prefabricated 1 5/8” diam. pipe, 1200 mm x 1700 mm

Cross braces: Prefabricated 1 5/8” diam. pipe, 1800 mm

Joint pin connector: 160 mm length, 1 5/8”

Adjustable base plate

Catwalk: 1800 mm x 400 mm

Bamboo scaffolding:

Scaffolding shall be constructed so that it is rigid and safe, with 3 to 4 inches diameter. Bamboo poles and rattan ties.

2. REHABILITATION OF ROOFING SYSTEM

2.1 Dismantling of deteriorated existing corrugated roofing sheets with the outmost care to prevent damage to other roofing components;

2.2 Install 0.60 mm x 8' pre-painted corrugated G. I. roofing sheets in replacement of deteriorated G.I. roofing sheets.

Surfaces shall be thoroughly dry and clean, painted with protective coatings and free from any defect that might affect the metal work.

2.3 Repainting of existing corrugated G. I. roofing sheets;

First apply turco rust converter to all roofing sheets then apply epoxy primer for the primary coatings.

2.4 Final coating of old and new installed corrugated roofing sheets with three (3) coats of chlorinated rubber paint as protective coating;

2.5 Apply two (2) coats of solignum, clear to all wooden roof components/framing.

3. CARPENTRY WORKS

Lumber shall be of approved quality and of the respective kinds required for the various parts of the work, well-seasoned, thoroughly dry and free from large, loose or unsound knots, sap, shakes or other imperfections impairing its strength, durability or appearance. Molave lumber shall be used unless otherwise specified by the project engineer for replacement.

Unless otherwise shown on the drawings, the contractor shall use the following lumber in accordance with the schedule below:

a) Molave joist, plank, railings, wood plates, cross bracings, etc. (unless otherwise specified or approved for replacement by the Engineer)

b) Coco lumber for scaffoldings, shoring and bracings only.

4. CLEARING AND CLEANING WORKS.

After all activities are completed, the site must be cleaned and free from all debris, and all temporary structures must be removed.

The Restoration of San Isidro Labrador Parish Church Historical Landmark

The Project entitled "Restoration of San Isidro Labrador Parish Church Historical Landmark in Lazi, Siquijor" covers the restoration/rehabilitation works of the church's roof trusses and framing. It is proposed by the NHCP and was approved by the NCCA Board of Commissioners under Resolution Number 2011-217 dated 20 December 2011 in the amount of PHP 1,500,000.00.

The four wooden pediments of the church were replaced with approved quality planks that were

available in the local area. Hardwood with the local term "***Langin***" was used to replace the deteriorated planks. Some of the existing and original planks (which are still in good condition) were thoroughly cleaned and prepared for the application of solignum for termite treatment for all four pediments of the church. The four pediments were painted with white paint to act as a protective coating instead of red paint, which stains the façade over time due to the paint melting.

The deteriorated galvanized iron parts of the roof of the church were dismantled with the utmost care and replaced with good quality G.I. sheets. The surfaces of the roof were thoroughly cleaned, then turco rust converter and epoxy primer were applied as primary coatings. Three coats of chlorinated rubber paint were applied to the old and newly installed corrugated roofing sheets. For the roof frame and members, two coats of solignum were applied for its protection from termite infestation.

The project started on December 14, 2011 per a kick-off meeting with Parish Priest Rev. Fr. Leonardo L. Tan and Mr. Jayson Noay, contractor R.A. Lacanlale, Mr. Flitcher Gumahad, President of San Isidro Labrador Parish Pastoral Council (SILPPC), and Mr. Lydio Ligutom, President of Siquijor Heritage Foundation Incorporated (SHFI). It was completed on 18 January 2012.

II. PRESERVATION AND RESTORATION OF THE PARISH CHURCH OF LA IMMACULADA CONCEPCION

Teresita Street, Upper Jasaan, Misamis Oriental, Northern Mindanao-Region X

Background of the Project

NHCP received a request from Archt. Rajelyn Busmente of the NCCA Cultural Heritage Section, on March 2, 2012, for a joint inspection and assessment of the ongoing Preservation and Restoration of the Parish Church of La Immaculada Concepcion Project.

The church was declared a national historical treasure by the National Museum pursuant to Presidential Decree No. 374 dated January 10, 1974.

The project was proposed by the Jasaan Parish Restoration and Development Committee, Inc. (JPRDC), a non-governmental body with no political or commercial interests composed of Jasaan parishioners, with its principal address at Jasaan Parish Convent, Teresita Street, Upper Jasaan, Misamis Oriental.

NHCP technical representative Archt. Crisanto B. Lustre II of the Historic Preservation Division (HPD), together with Archt. Raj Busmente of the NCCA and technical representatives from the JPRDC, conducted an ocular inspection, assessment and photo documentation of the church, located at Teresita Street, Upper Jasaan, Misamis Oriental.

The first church was built on top of a hill in a place called Cotta. The Jesuits probably relocated it to its present site (still an elevated area in the municipality) and built the Church of the Immaculate

Conception — said to be a replica of their majestic San Ignacio Church in Intramuros, Manila — late in the 19th century. The church's façade was replaced during renovation work but most of its original parts remained intact, including the original stonework for walls made of brick and the convent that now also serves as a museum of parochial relics.

The church also reflects the late 19th century innovations in architecture, art and construction, a fusion of European church design and local construction techniques and decorations. It was declared a pilgrimage church in 1998 and a National Cultural Treasure by the National Museum pursuant to Presidential Decree No. 374.

Figure 06. The church façade showing the twin bell tower signifying symmetrical balance, though the pediment implies lack of proportion with the overall design. This current photo showing the right tower already has tugas wood installed on the upper part.

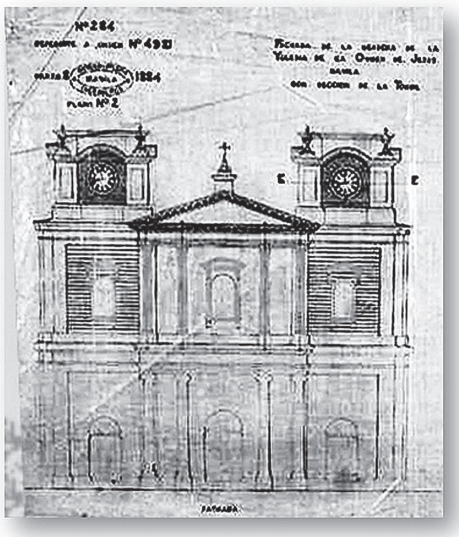


Figure 07-08. Archival elevation plan of San Ignacio Church in Intramuros, Manila. Designed by first Filipino architect Felix Roxas, Sr. Neo-classical in style with two towers. Believed to be the pattern used by the Jesuits in replicating the architectural design for Jasaan Church. San Ignacio Church, Intramuros, Manila.

Observations and Recommendations

1. The Project entitled "Preservation and Restoration of the Parish Church of La Immaculada Concepcion" in Teresita Street, Upper Jasaan, Misamis Oriental, was proposed by the Jasaan Parish Restoration and Development Committee, Inc. (JPRDC), a non-governmental body body with no political or commercial interests composed of Jasaan parishioners, with its principal address at Jasaan Parish Convent, Teresita Street, Upper Jasaan, Misamis Oriental;
2. The total approved cost of the project is Eight Hundred Fifty Thousand Pesos (P850,000.00) solely for the restoration of the bell tower/belfry with the following scope of work:
    1. Replacement of G.I. sheets walling; and
    2. Treatment of wooden posts and framing.

Figure 09. Right belfry of Jasaan curch. Tugas (molave) wood has already been installed on the topmost part of the tower. Pieces of hard wood called battens are installed in the gap between the planks of wood.

3. At a stakeholders meeting that was held, the following matters were discussed:
    1. Recovery of the missing bell from the museum of a nearby school located at Cagayan De Oro;
    2. Restoration of the original communion rail. Some five (5) pieces of the original rail are still available at Xavier University-Cagayan De Oro;
    3. Request DENR for an exemption to allow the transport of Tugas (Molave) from a supplier. Because of EO No. 23, a hardwood equivalent to Tugas can be used;
    4. A local ordinance jointly with JPRDC and support from the local people of Jasaan in the form of a signature campaign, requesting an exemption to transport Tugas solely for the

Jasaan Church Project, to be submitted to DENR Provincial and Region 10;

5. NCCA to facilitate a MOA extension due to difficulties in purchasing the raw materials needed;
6. Suggestion to plant Molave trees for future use.

4. It is therefore recommended to use an equivalent hardwood similar to Tugas (Molave) in case the DENR declines the request for exemption, to avoid further delay in the completion of the project;
5. Based on the ocular inspection, it is recommended to proceed with the restoration of walls, foundation and roofing of the church immediately due to its alarming condition.
6. The Jasaan Church (La Immaculada Concepcion Parish) was declared a National Historical Treasure (NCT) by the National Museum pursuant to Presidential Decree No. 374 dated January 10, 1974, and is considered an Important Cultural Property. Any future developments must be properly coordinated with the concerned cultural agency, which shall supervise the same.

III. PROBLEMS AND NEEDS FOR CULTURAL HERITAGE PROTECTION AND RESTORATION ACTIVITIES

Based on the two restorations and preservation works of the two churches I have handled, and which have been declared as National Cultural Treasures by the National Museum of the Philippines, the following problems and needs have been observed:

1. President Benigno S. Aquino III signed Executive Order No. 23 series of 2011 or the anti-logging order on 1 February 2011, declaring a moratorium on the cutting and harvesting of timber in natural and residual forests, and creating an anti-illegal logging task force. The Chief Executive directed to prohibit the Department of Environment and Natural Resources (DENR) from issuing logging contracts/agreements in all natural and residual forests and other agreements/contracts with logging components in all natural and residual forests in the country. Because of this executive order (EO), we are not allowed to use Molave in the restoration of the wooden components of the church. Molave (locally known as *Tugas*) is one of the Philippine hardwoods that was used in building colonial churches and covered by this EO. An alternative hardwood like Langin has been used in the restoration process.
2. Technical and scientific evaluation and assessment of the deterioration of wooden components. We are mostly only evaluating the physical characteristics of wood and its deterioration based on what we see but not scientifically. We need a more scientific and technical process of examining the cause of deterioration as a long term solution.
3. Modern equipment and state of the art facilities for material testing of the structural integrity of each wooden component. Some equipment is portable and can be brought on site.

Sri Lanka
Singappulige Nayana Dharshani Hewa
Assistant Secretary
Ministry of National Heritage

Problems and Needs for Cultural Heritage on Protection and Restoration Activities in His / Her Country.

Introduction

The island of Sri Lanka, formerly called Ceylon, is located in Southern Asia, southeast of India (5-10° N latitude and 79-82° E longitude), in a strategic location near major Indian Ocean sea lanes. It has a total area of 65,610 km², consisting of 64,740 km² of land and 870 km² of water. Its coastline is 1,340 km long. Sri Lanka's climate includes tropical monsoons: the northeast monsoon (December to March), and the southwest monsoon (June to October). Its terrain is mostly low, flat to rolling plains, with mountains in the south-central interior. The highest point is Pidurutalagala at 2,524.13 m. Natural resources include limestone, graphite, mineral sands, gems, phosphates, clay, and hydropower.

Map of Sri Lanka

Sri Lanka is an island nation with an ancient cultural heritage that dates back over 2,500 years. Ruins of ancient kingdoms and archeological findings provide fascinating insights into a sophisticated ancient society which possessed advanced knowledge of science and technology, town planning and

design, and valued the aesthetic beauty of the arts. A significant event in the history of Sri Lanka was the introduction of Buddhism in the 3rd century B.C., which then became an integral part of Sinhalese culture and civilization on the island. The many natural resources of this tropical island along with its natural harbours and strategic location has attracted many nations in the past. As early as the 5th century, ships from Egypt, Persia, Arabia, and China docked at the ports to barter their goods for treasures from this island including precious gems, pearls, spices, and scented woods. The Portuguese colonized the island in the 16th century followed by the Dutch and the British, changing the course of history. In 1948 Ceylon, as it was then called, gained independence from Britain. Today, Sri Lanka is a kaleidoscope of religions and ethnicities with deep-rooted traditions influenced by its past history. The majority of the population is Sinhalese but there are significant communities of Tamils, Muslims, Burghers (descendants of the Dutch), and Malays, all of whom contribute to make this a colourful and vibrant society.

History

Mahavamsa attests that the ancestors of the Sinhalese came from Sihapura (Sinhapura) located in Lata Rattha (Lata Rashtra). Prince Sihabahu had left his maternal grandfather's kingdom in Vanga and founded a Sihapura in Lata Rashtra. He married Sihasivali and there were born Vijaya and Sumitta and thirty more sons to her. With time, Sihabahu consecrated Vijaya as prince-regent, but due to some misdemeanor of prince Vijaya, the king had to banish him and his 700 followers from Sinhapura. The story says that the king had caused their heads to be shaved (aradh-mundak) before putting them on a ship and driving them away into the sea. The exiles sailed past Bharukachcha and Soparaka and finally landed at Tambapanni (Ceylon) near Puttalama on the day of Parinibhana (death) of Buddha (542 BCE or 486 BCE). The exiles permanently settled on the island, took local wives and established their kingdom, which, in succeeding generations, assumed the name of Sinhala, said to have been named after Sinhapura, the ancestral city of the exiles. Sri Lankan written history begins with the arrival of Vijaya and his 700 followers. Vijaya is a semi-legendary figure. He is the first recorded king of Sri Lanka. His reign is traditionally dated as 543 BC - 505 BC. The primary source for his life-story is the Mahavamsa. It is inevitably difficult, given the dearth of sources, to separate fact from legend in Vijaya's life.

The earliest archaeological evidence of human colonization in Sri Lanka appears at the site of Balangoda. Balangoda Man arrived on the island about 34,000 years ago and has been identified as Mesolithic hunter gatherers who lived in caves. Several of these caves, including the well-known Batadombalena and the Fa-Hien Rock cave, have yielded many artifacts from these people, who are currently the first known inhabitants of the island.
Balangoda Man probably created Horton Plains, in the central hills, by burning the trees in order to catch game. However, the discovery of oats and barley on the plains at about 15,000 BC suggests that agriculture had already developed at this early date.[1]

Several minute granite tools (about 4 centimetres in length), earthenware, remnants of charred timber, and clay burial pots date to the Mesolithic Stone Age. Human remains dating to 6,000 BC have been discovered during recent excavations around a cave at Varana Raja Maha vihara and in the Kalatuwawa area.

The protohistoric Early Iron Age appears to have established itself in South India by at least as early as 1200 BC, if not earlier (Deraniyagala 1992:734)[(2)]. The earliest manifestation of this in Sri Lanka is radiocarbon-dated to c. 1000-800 BC at Anuradhapura and Aligala shelter in Sigiriya (Deraniyagala 1992:709-29). It is very likely that further investigations will push back the Sri Lankan lower boundary to match that of South India.[3]

Archaeological evidence for the beginnings of the Iron Age in Sri Lanka is found at Anuradhapura, where a large city–settlement was founded before 900 BC. The settlement was about 15 hectares in 900 BC, but by 700 BC it had expanded to 50 hectares. A similar site from the same period has also been discovered near Aligala in Sigiriya.[4]

Around 500 BC, Sri Lankans developed a unique hydraulic civilization. Achievements include the construction of the largest reservoirs and dams of the ancient world as well as enormous pyramid-like stupa (dagoba) architecture. This phase of Sri Lankan culture was profoundly influenced by early Buddhism.

Buddhist scriptures note three visits by the Lord Buddha to the island to see Naga Kings, who are said to be snakes that can take the form of humans at will. Snake transformations of the kings are thought to be symbolic and not based on historical fact.

The earliest surviving chronicles from the island, the Dipavamsa and the Mahavamsa, say that tribes of Yakkhas, Nagas (cobra worshippers) and Devas (god worshippers) inhabited the island prior to the migration of Vijaya.

Pottery has been found at Anuradhapura bearing Brahmi script and non-Brahmi writing and date back to 600 BC – one of the oldest examples of the script.[5]

Buddhism

Inarguably the factor which has played the lead part in contributing to Sri Lankan culture along with everything traditional, is the presence of Buddhism. The ancient rulers of Sri Lanka built monuments and established institutions to honor the philosophy of Buddhism. In turn this led to lesser folks following the principles advocated by Buddhism. This could be described as a way of life or a pattern of thinking, which led to a self-sufficient society that engaged in agriculture as the means of living.

The most valuable source of knowledge for scholars interested in the legends and historical heritage of Sri Lanka is still the Mahavamsa (Great Genealogy or Dynasty), a record compiled in Pali, the language of Theravada Buddhism, in the 6th century by Buddhist monks.

Buddhism was introduced to Sri Lanka in the third century B.C. from India, where it had been established by Siddhartha Gautama three centuries earlier. The powerful Indian monarch, Asoka, nurtured the new comprehensive religio-philosophical system in the third century B.C. Asoka's conversion to Buddhism marks one of the turning points in religious history because at that time, Buddhism was elevated from a minor sect to an official religion enjoying all the advantages of royal patronage. Asoka's empire, which extended over most of India, supported one of the most vigorous missionary enterprises in history.

Devanampiya Tissa, a mighty king, was said to have received Buddha's right collarbone and his revered alms bowl from Asoka, and to have built the Thuparama Dagoba, or stupa (Buddhist shrine), to honor these highly revered relics.

King Devanampiya Tissa founded the first capital city of Sri Lanka, Anuradhapura. This ancient kingdom survived for more than 1,200 years amidst many foreign invasions and was ruled by more than 100 Sinhala Kings. It was during this period that the Sri Maha Bodiya - a sapling of the sacred Bo Tree, under which the Lord Buddha attained enlightenment, was brought to Sri Lanka. Many other spectacular creations such as the Sigiriya Rock Fortress, Dambulla Cave Temples, Ruwanweli Maha Stupa and many other stupas, palaces and monasteries were built. Ruins of this architectural legacy still remain.

After Anuradhapura was destroyed by the South Indian Cholas, the kingdom was established in Polonnarawa in 1073 AD by King Vijayabahu. Polonnaruwa was the capital of Sri Lanka for more than 200 years. Many temples, palaces and a large number of irrigation tanks were built by the great Kings of Polonnaruwa. These ancient irrigational tanks continue to provide water to the rural areas. The Kingdom of Polonnaruwa ended following an invasion by Magha, the ruthless Kalinga Prince from India in 1213 AD. This resulted in a shift of capitals and the population to the central and south-western parts of the island, where it was considered safer and more appropriate for defending against invading forces. As a result the kingdom was moved from Polonnaruwa to Dambadeniya and then to Yapahuwa, Kurunegala, Gampola, Kotte and finally, to Kandy.

Since the 13th century AD, many invaders from southern India followed by the Portuguese, Dutch and the English invaded and captured certain parts of the island, mainly the coastal area, which was important for sea trade. But the Sinhalese kings retaliated and won back power on many occasions. However, in 1815 AD, the British, who were controlling the coastal areas of the country at the time through an agreement, defeated Kandy, the last Kingdom of Sri Lanka, becoming the first foreign nation to rule the entire island. Sri Lanka was a British colony from 1815 until February 1948 when Sri Lanka, or Ceylon as it was then known, became an independent member of the British Commonwealth.

Arts and crafts

Many forms of Sri Lankan arts and crafts take inspiration from the island's long and lasting Buddhist culture, which in turn has absorbed and adopted countless regional and local traditions. In most instances Sri Lankan art originates from religious beliefs, and are represented in many forms such as painting, sculpture and architecture. One of the most notable aspects of Sri Lankan art are caves and temple paintings, such as the frescoes found in Sigiriya, and religious paintings found in temples in Dambulla and the Temple of the Tooth Relic in Kandy.

Other popular forms of art have been influenced by both natives as well as outside settlers. For example, traditional wooden handicrafts and clay pottery are found around the hill country while Portuguese-inspired lacework and Indonesian-inspired Batik have also become notable.

Architecture

The architecture of Sri Lanka displays a rich variety of architectural forms and styles. Buddhism has had a significant influence on Sri Lankan architecture since it was introduced to the island in the 3rd century BCE.[6] However, techniques and styles developed in Europe and Asia have also played a major role in the architecture of Sri Lanka.

Builders worked with a variety of materials, such as brick, stone and wood. Corbelled and circular brick arches, vaults and domes were constructed. Rock faces were used as supporting walls for buildings. The platform carrying the mirror wall at Sigiriya and the brick flight of steps stands on steep rock. Around the 6th century, the builders had moved from limestone to the harder gneiss. The Vatadage in Polonnaruwa had walls that were constructed of stone to the height of the upper storey. The lowest step of an imposing granite stairway that led to the upper storey of Parakramabahu's palace can still be seen. Meticulous detailing was done in the leaf huts used by the forest monks of the 5th century.

Timber

It is important to note, however, that the ancient architecture was not stone architecture. The stone remains seen today are misleading. It was primarily timber architecture, with mud or masonry walls. There were sophisticated wooden buildings in the 3rd century. Sigiriya had an elaborate gatehouse made of timber and brick masonry with multiple tiled roofs. The massive timber doorposts remaining today indicate this.

The tradition of wood construction in Sri Lanka is seen in the pre- and post-historic periods, especially in association with cave shelters. Timber construction was used in the front portion with wooden doorways and window openings and wattle and daub partitioning.

Timber construction developed and gradually became more sophisticated. The original concept of timber posts developed into square or eight-sided patterns, but they were still buried in the brick walls of buildings. Nevertheless, as time went on, the post and beam style developed to a highly decorative form of architecture.

Historical evidence reveals the existence of sophisticated wooden buildings dating from the 3rd century. The massive timber doorposts at Sigiriya are all that remains of an elaborate gatehouse made of timber and brick masonry with multiple tiled roofs.

In structures like the timber gatehouse at the eastern entrance to Anuradhapura built in the 4th century BC frames made out of whole trunks of trees carried the entire weight of the building. The vertical crevices in the brickwork, where such wooden columns carried the load of the upper floors and roof, can be seen in the remains of the palaces at Polonnaruwa and Panduwasnuwara. These openings still retain the spur stones upon which the wooden column once stood.

Ancient records reveal the strict traditions that were observed during the cutting and seasoning of wood in earlier periods. Mature trees were selected and cut during the new moon when the sugar content in the timber was lower, so that destructive wood boring insects were not attracted to the timber. The stone remains indicate that the axe, adze and chisel were the common tools used in timber work. The Saddharma Ratnavali mentions two carpentry practices where oil was applied to timber to prevent decay, and where timber was heated to straighten it. The timber selected for decorative purposes and carvings often had the properties of durability and easy workmanship. Gammalu (Pterocarpus marsupium) and Halmilla (Berrya cordifolia) were commonly used for structural components and are also found in the beautifully decorated buildings of the Kandyan period.

The excellence of timber architecture in Sri Lanka is well expressed in many building forms. Among the masterpieces of timber architecture preserved to this day are the simple Ambalamas (wayside resting places), the storied shrine rooms and also the wooden bridges such as the Bogoda Bridge across a stream near the upcountry railway line.

Timber sections such as wooden beams, brackets and pillars were heavy, large and bulky. In Kandyan timber architecture these have been made aesthetically appealing and lighter through beautiful and elaborate wood carvings and decorations. Kandyan timber architecture, which has a distinctive character of its own, dates from the Gampola period (1341-1415 AD).

The timber architecture of the period reveals the extensive range of timber joinery that was developed. These include dove-tailing, mortise and tenon, and halved joints for large beams. In the simple rest hall or *ambalama*, the pillars are fixed with crossing timber beams with halved joints. The large beams are joined by a sort of scarf joint and are cleverly engineered.

In some buildings, timber was used extravagantly. Large sized and whole tree trunks were left round, untrimmed and roughly cut. An example is found in the Bogoda Wooden Bridge, which has three trunks and beams and supported in mid-stream by two large tree trunks, which act as a pier.

The Drumming Hall in the Ambekke Devale, the Audience Hall and the Temple of the Tooth in Kandy, Degaldoruwa Temple in Malwatte and the Panavitiya and Mangalagama Ambalamas are well preserved examples of the wood carver's craftsmanship and art.

The structural frame of the Ambekke Devale (God Temple) consists of two pillars on either side connected by beams and capitals and connected on top again with a series of large beams. These structures, beams and the rafters of the simple gable roof have been richly carved. The ridge plate ends in a king post to take the corner rafter of the front end and the giant pin or the Madol Kurupawa.

Some of the finest examples of the wood carving of medievel Sri Lanka can be seen in the Ambekke Devalaya. The exquisite craftsmanship can be seen in the carvings on the medial panels of the pillars and also the cross brackets, with their drooping lotuses forming the capitals of three pillars.

The Audience Hall is built on a raised stone plinth that is in two levels. The timber columns are arranged in four rows, two on either side, with a total of 64 carved columns. The rafters are carved and deeply notched. The capital or the *pekadas* are carved with inverted lotuses. The dominant roof structure consists of elegantly carved beams and rafters forming a hipped roof. The wall plates are elaborately carved and the supports are carved at the terminals.

Many of the multi-storied Buddhist shrines are from the Kandyan period and have a general timber framed structure with a considerable amount of masonry or wattle and daub walls. The Temple of the Tooth Relic, Kandy is the finest example of this type.

In most buildings of the medieval period the doors and windows were of timber as well. They were fitted and pegged together and built into the walls. Door jambs were often carved intricately. Door sashes were secured with beautifully designed timber locks. The windows of the medieval buildings were of two types. They were either the exact version of the timber doors but to a smaller scale or fitted with lacquered wooden bars.

The designs used for the carvings in medieval buildings are generally common to all Sinhalese art. But special care has been taken to treat them in a practical manner suited to the material. High relief is seen on the *liya wela* ornament of door jambs, and the carving of pillars, capitals and bolts. A characteristic feature is the emphasis of the outline of stems or interlaced works with an incised line next to the margin on each side. However, wood carvings that are completely round are rare in medieval buildings.

The decorated motifs used in the carvings found in medieval buildings take many forms such as geometrical designs. Carvings on the panels of wood pillars of Kandyan buildings have a geometrical layout. The lotus is the most common floral pattern used in wood carving, with a great deal of variation. The most characteristic of the simple lotus forms are the "rosettes" used to fill the space between the main elements of the carving.

Both male and female figures have been depicted in scenes from daily life in wooden carvings. Singers, drummers, soldiers, dancers and wrestlers are among some of the depicted figures .

Among the animal motifs are elephants, lions, horses and bulls. The peacock and the swan are the most commonly found birds in wood carvings. A mythical bird in the form of double headed eagle (*berunda pakshiya*) is also seen.

The *sarapendiya* and kihibi muhuna are both mythical motifs, while the *vakadea* motif consists of two simple curves, which in many combinations make up a pattern. The *lanu gataya* motif depicts a knotted rope. It is generally used for borders or as a filling in the centres of square panels.

The craftsmen of the period also used several other techniques to decorate the timber buildings during the medieval period. Painting, lac-work, inlaying of timber with metal, carved ivory and different colours of timber and guiding were some of them.

Both structural and non-structural materials were decorated by painting. Painting often not only complemented, but also acted as a protecting layer for the timber. It was a common practice to leave the carvings on the columns, brackets, beams and rafters unpainted while decorative icons — especially the ceiling and balustrade — were painted in many traditional designs. In the Sinhalese tradition before painting was done on a carved decoration or icon, a thin layer of kaolin mixed with vegetable glue was applied as a primer.

The timber constructional tradition has been developed and perfected for over 2,000 years. It shows the contribution to our culture made by the genius of the ordinary and anonymous carpenters, joiners and wood carvers during the medieval period. These well preserved masterpieces of wooden architecture prove that timber is one of the most suitable building materials for Sri Lanka. Even though it is no longer so freely and abundantly available for total timber construction, a sensitive incorporation of it is still possible.

Responsibility for carrying out activities related to the protection of national heritage has been vested with the Ministry of National Heritage and

1. The Department of Archaeology
2. The Department of National Museums
3. The Department of National Archives

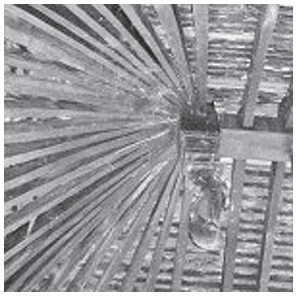
4. The Folk Arts Center
5. Galle Heritage Foundation

under the supervision of the Ministry.

Bogoda Bridge

A wayside ambalama

Different carvings in medial panels of the pillars at Ambekke Devale



The Audience Hall, Kandy Madol Kurupawa with 26 rafters at Ambekke Devale

Problems and Needs for Protection and Restoration

Protection

Protection and Restoration from Natural Threats

As most wooden structures are exposed to the natural environment it should be expected for them to decay quickly. However, ancient workers selected mature wood and they also decided when to cut down trees. As indicated earlier, they cut mature trees during the new moon when the sugar content in the timber was lower, so that destructive wood boring insects were not attracted to the timber. This shows the great care they took when using timber for construction. However, as time goes by there is a tendency for timber to perish if proper maintenance work is not undertaken. Therefore, it is necessary to maintain these wooden structures so as to keep them as long as possible.

Early inscriptions indicate that ancient people took the greatest care during these constructions. This traditional knowledge most probably is still available in the country. Therefore, it is necessary to collect and collate data and make available information from the ancient methods in order to protect

and restore these wooden structures.

It is also necessary to acquire new technology available throughout the world in this field so as to achieve synergy with the traditional methods of wood preservation and restoration.

Protection and Restoration from human threats

Although it is very unfortunate, humans also damage these structures even though they have nothing to gain by doing so. Therefore, law enforcement measures for the protection of these structures are also a necessity.
Most of the harm caused by humans involves the destruction of parts of some important structures, much to the annoyance of the heritage managers. Restoration in some cases is very difficult due to the nature of the damage caused. It is therefore very important to make the public aware of the importance of cultural heritage structures and the value it creates for society as well as to the country as a whole.

Conclusion

Cultural heritage management is not an easy task by any means, as the origin of heritage structure is often not known to present day managers. However, it is necessary to develop management plans for the protection and restoration of these structures.

It is also very much important to obtain the support of all stakeholders in managing these structures. Since timber is the main factor in the management of heritage structures, the help of timber managers in the country is very important. Also, traditional workers and their prescriptions for similar works are worth considering when undertaking such activities.

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Problems and Needs for Cultural Heritage Protection and Restoration Activities in Thailand (Mainly on Wooden Structures)

Introduction

Previous studies of archaeology indicate that wooden structure construction in Thailand has been occurring at least since the late prehistory period. Wood is the basic material for construction in tropical areas where there is a variety of hardwood and softwood with different properties. Although wooden structure patterns vary according to the various cultures, they are used for a few specific purposes: religious buildings, public utilities, and residences. At present, Thailand is losing its wooden heritage faster than it can be documented. Human-caused disasters, such as uncontrolled development etc., are a major culprit. Natural disasters, abandonment, and inappropriate conservation are also among the reasons why this heritage disappears suddenly and completely. While we should attempt to preserve our tangible cultural heritage as much as possible, we cannot save everything. One of the options available to cultural heritage managers is to document this heritage before it is lost. There are very many different ways of documenting a site for conservation. The challenge is to select the most suitable technologies and to integrate the results into a complete record for younger generations. Therefore, proper documentation is necessary and is probably the best way to conserve wooden structures. This study involves cultural heritage protection and wooden structure restoration activities in Thailand and a case study of digital documentation for wooden religious heritage.

Our objective is to study the problem and requirements for the protection of cultural heritage and restoration activities of wooden structures in Thailand and to recommend effective tools for heritage documentation. This study will be of value to scholars and local people. The broad impact of this work: stakeholders in cultural heritage management can understand the issues and constraints in the protection and restoration of cultural heritage, which is beneficial for developing appropriate and effective guidelines for wooden structure management in the future. This report is divided into four parts including the introduction, scope of wooden heritage protection of the Fine Arts Department, problems and needs for cultural heritage protection and restoration activities, and conclusion.

Scope of wooden heritage protection of the Fine Arts Department.

The Fine Arts Department (FAD), which is an agency that handles the preservation of cultural heritage

in Thailand, defines tangible cultural heritage as ancient man-made buildings or ancient remains that are useful for art or history or archaeology. This also includes places or mounds with historical significance or remains of human activities. With this definition, our scope of wooden heritage management implicitly focuses on religious buildings and public utilities more than habitations. For formal cultural heritage protection and restoration, FAD prescribes a policy that focuses on the principles of conservation and development of the ancient monuments, contained in the Fine Arts Department's Regulations for Ancient Remains Conservation (1985), as the following steps: Preservation, Restoration, Reconstruction, and Consolidation. These principles have continually been applied to our tangible cultural heritage up to the present.

Early on, these wooden structures were often located in small villages or ancient communities located apart. Next, when transportation and travel routes changed gradually from peregrinating or caravanning along trails, and rafting or sailing down streams to railroad travel and cars, settlement patterns and growth of communities along the routes were also changed. Then, the early structures, houses and temple, were first built as wooden buildings (Figure 1). A total of 40,717 Buddhist temples ("รายชื่อวัดพุทธในประเทศไทย", 2013) are located in temple compounds and consist of a number of buildings with different architecture, functions and importance. They include a number of important wooden structures (Figure 2) such as the Ubosot or ordination hall, Sala or open-sided pavilion, Ho Trai or Tripitaka Hall or library, *Ho Rakang* or belfry and *Kuti* or monk quarters — all of which were related to the historical period when the temple compounds were built. Although wooden religious structures were usually made of durable hardwood with more careful construction techniques than for wooden habitations, most wooden religious buildings were located diffusely in ancient communities, and those that date back to the 14th century AD were abandoned or destroyed.

Problem and needs for cultural heritage protection and restoration activities

Decay

Wooden structures in Thailand are confronted with decay, caused by time, deterioration of the material, climate fluctuations, and human activities. Therefore, studies of the deterioration of wooden ancient remains in various areas and conditions are important for determining the principles and guidelines for heritage preservation. The causes of heritage deterioration may be classified into natural causes, plants, animals, and human beings. In tropical areas, climatic conditions such as the amount of moisture from rainfall, and material expansion and compression from fluctuating temperatures weaken the heritage property. However, most wooden structures degenerate due to climate fluctuations and natural disasters. Therefore, plants can crack the building structure where humidity is causing the growth of microbes, fungi, lichens and moss. Besides, there are many kinds of animals and insects that can damage wooden heritage such as rats, termites, etc. However, human beings are the most important and serious cause of decay of wooden structures. For example, the illegal movement of elements of ancient remains affects their authentic value and stability, pollution causes deterioration

of historic building materials and depreciation of the aesthetic value, and restoration not based on academic principles by local people, institutions, temples, or the faithful without any control can destroy the values and authenticity of the structure.

Decline in transmission of traditional craftsmanship skills

Monks have played a role as cultural heritage conservators since the 13th century AD. They often repaired all structures in temple compounds based on their belief that Buddhism should be inherited by future generation. In addition, these temples were also the center of art study with instruction given to monks is the nine craftsmanship skills: lacquerworking, carpentry, plastering, carving, sculpting, stained glassworking, artistry, braziering, and painting. As a result, they had the technical knowledge to maintain the valuable artifacts as well as the ability to create magnificent fine arts in their temples themselves. In fact, the monks who maintain any temple's properties often have an attachment to their temple, so destruction or abandonment of the building rarely occurs. Thus, wooden structures in temples have continuously been preserved. However, the role of the monks as the craftsmen began to decline in the late 19th century when the Royal craftsmen began to replace the monks, who lacked the opportunity to use their skills. Then, craftsmanship skill training gradually faded away. Finally, all restoration activities became the duty of government officials.

Misconceptions about heritage management

Some common problems of heritage management can be stated as follows: First, abandonment and ignorance of existing ancient remains begin with the public's misconception that repair or restoration is not possible, due to the misconception that restoration of ancient remains can only be conducted by FAD, and that the related regulations are too complex to be followed by local people and monks. Next, they understand that restoration of ancient remains needs a certain amount of funds, so the budget may not be large enough. Sometimes, they believe that new large-scale buildings are more useful more than old buildings. Finally, in terms of doing good deeds, some of the faithful believe that new building construction is preferable to repairing an old building, which was dedicated to others. For this problem, we recommend that the monks focus on basic prevention and control the damage by treatment cleaning and weeding instead of abandoning the heritage.

Lack of original materials and traditional restoration techniques

The use of non-original materials and non-traditional restoration techniques, which decreases the value of heritage, is caused by the lack of transmission of knowledge and skills. Original materials are also usually quite difficult to find. In the case of wooden structures, when the Thai government closed a logging concession area in 1989 ("ทรัพยากรป่าไม้", 2007), it was hard to find hardwood, which is more resistant to decay than softwood, so we began to use hardwood that varied from the original material. Unfortunately, FAD does not currently have a database of source materials for restoration, or taken the

initiative to establish hardwood farms or conduct research into substitute wood materials in any way. A craftsman's experience is the only tool used for wood type identification and wood durability; scientific methods are not used for this process. Ancient wooden buildings with large amounts of hardwood or rare wood like teak, Iron wood, and Xylia xylocarpa Taub (Leguminosae) often use imported wood from neighboring countries, which directly affects the budget. In addition, the contract restoration operator must comply with the requests of the employer, who often sets the restoration principles based on the budget, which is often different from the project and based on a private budget or donation without any explicit terms regarding time and resources.

Effective documentation requirement

Since the beginning of the 20th century, the work of FAD has included the recording, documentation, and information management of built cultural heritage. For base recording and condition assessment, Thai architects or conservators went to the building to take measurements by using manual survey techniques, or hand survey. After conducting the fieldwork, a drawing was drafted in pencil then ruled in ink. Although survey methods have developed in the last 30 years, most of them still use old style documentation. Hand survey is the process of measurement of architectural detail where physical contact is made with the feature being measured. A surveyor will most likely use a measuring rod or tape measure with a plumb bob or level and write down an accurate measurement of length on a sketch. This method is a necessary add-on to other survey methods of. It needs a few tools and training; however, it should be made clear that high quality skills are essential to produce accurate drawings. The tools required may seem simple, but a well-done hand survey that is efficient and correct, is highly skilled work. Mainly, it is best suited to small areas, where it is easy to maintain accuracy. Today, the data collected from hand survey will most likely be converted directly into digital data on a computer as a CAD file.

Case study of digital documentation for wooden structure

In fact, our main conservation problem is determining how a heritage site can be fully documented and rapidly recorded in order to safeguard the knowledge it contains for future generations. After we had success in applying Close-Range Photogrammetry (CPR) for human remains documentation in 2012 ("Close-Range Photogrammetry for 3D Archaeological Documentation Digital Human Remains," 2012), we decided to apply this technique for the documentation component of built heritage and the physical characteristics of a site. Our case study is one of the important wooden heritage sites of Northeast Thailand, Tripitaka Hall of Wat Na Pha That.

Tripitaka Hall of Wat Na Pha That is situated in Takhu Sub-district, Pakthongchai District, Nakhon Ratchasima Province. This temple is near the ancient outpost of Nakhon Ratchasima city in the south (Figure 3). It is place for keeping sacred Buddhist scriptures, as a symbol of Triple Gem, reading, and for monks to copy the scriptures (Jansuebsri, 2013). This small wooden structure is the masterpiece

of the nine craftsmanship skills in this region. It is located in a pond with a temporary wooden bridge for preventing insects and termites from destroying the scriptures, which are written on paper made from the bark of the Streblus asper tree. In addition, this building has a gambrel roof or "Zong Rong," which is similar to Tripitaka Hall of Wat Tung Sri Muang, Ubon Ratchathani Province. The walls of this building are in two layers (Figure 4). The outer layer was decorated with painted and stained glass while the inner wall was decorated with gilded depictions of the Kakati Jataka tale, one of the stories of the previous births of the Bodhisattva (Figure 5). Although the temple can be dated to the 18th or 19th century, we assumed that Tripitaka Hall was built in the reign of King Rama III by descendents of ethnic Lao who had emigrated from Vientiane.

In 2013, we launched a research effort to develop an integrated digital record of the site and carefully document its condition before it suffered any more damage. We created an extensive digital record of the building and its decorations. Accurate measurements are very important for the preservation process, but Tripitaka Hall of Wat Na Pha That is surrounded by water and it has only a single narrow entrance to enter the room. Its architectural elements are hard to measure, so we need an effective way to acquite data remotely with Close-Range Photogrammetry (CRP), a survey technique by which a 2D or 3D object may be measured from photographs taken from distances that are less than 300 m and slightly different positions. Measurements are extracted from the stereographs and 3D information is reconstructed using computer software.

In this project, the CRP software Agisoft Photoscan was used as the main tool for acquiring data of 3D objects. This software uses photography to capture the shape of three-dimensional objects and re-create them in a virtual workspace. The data is collected as points, and the resulting file is called a point cloud. Then we used 3D computer modeling using software for XYZ coordinate points storage. This connects the points, creating triangular planes that can be assembled to form different shapes that represent architectural elements. Images of the actual architectural elements can be draped over the surface of these triangular planes. All this can be displayed on computers or mobile devices and rotated to be visualized from different view points. Finally, we selected hand survey for 3D model accuracy assessment.

AgiSoft Photoscan has been tested using a set of overlapping images. Forty-six photographs of the building were taken to test its ability to model the surface of the wooden structure. All of the details were recorded by a Canon DIGITAL IXUS 80 IS 8 MP hand camera without a mounting tripod (Figure 6).

By using the medium quality setting, processing time was very quick and generally produced agreeable results. However, some gaps were found in the model because the software had an interpolation problem (Figures. 7-8).

This study confirmed that CRP is an effective tool for heritage documentation. The project focused

only on Agisoft Photoscan and used this selected tool creatively. The result shows the potential of CRP to provide both photo-realistic outputs and accurate digital surface models. This processed data can be used to systematically improve wooden heritage documentation and to demonstrate new approaches and techniques for archiving and digital conservation.

Conclusion

Wooden heritages in Thailand consist of wooden habitation and wooden religious structures with differences in architecture, function, and importance depending on their cultural role. Today they face uncontrolled degradation, less transmission of traditional craftsmanship skills, doubts about heritage management, lack of original materials and restoration techniques, and stricter documentation requirements. Thus, they need appropriate cultural heritage management including documentation, work plans, preventive maintenance and better trained personnel. For documentation, we found that CRP is a fast and effective tool, which is probably the best way to conserve wooden structures.

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Figures

a) Old marketplace of Klang City, Rayong Province
Source: http://www.coloroftheeast.com/index.php?page= humantourism_detail&cid=5&id=195

b) Traditional waterfront marketplace of Amphawa, Samunsongkham Province
Source: http://www.hamanan.com/tour/samutsongkham/ amphawa market.html

Figure 1 Example of wooden residence

a)Tripitaka Hall of Wat Tung Sri Muang, Ubon RatchaThani Province
Source: http://www.dhammathai.org/watthai/northeast/ watthoongsrimuang.php

b)Ho Rakang or belfry of Wat Yai, Samunphakan Province Source: http://travel.thaiza.com/เมืองโบราณ-สมุทรปราการ-ตอนที่1-ภาคใต้/127397/

Figure 2 Example of wooden religious structure

Figure 3 The front view of Tripitaka Hall of Wat Na Pha That.

Figure 4 The walls of this building have two layers.

Figure 5 The inner wall was decorated with gilded depictions of the Kakati Jataka tale.

Figure 6 Forty-six photographs of the building for 3D modeling.

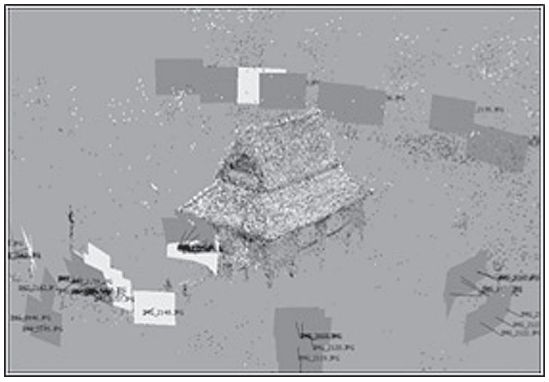

Figure 7 Camera positions.

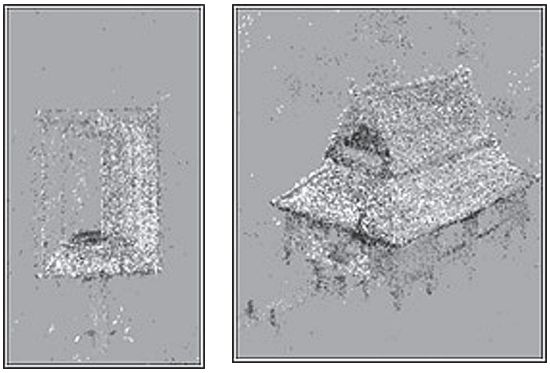

Figure 8 A point cloud of the building from various angles.

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Problems and needs for wooden heritage protection and restoration activities in the Project of survey and evaluation of traditional architectural heritage in Viet Nam

I. An overview of the architectural monuments of the wooden architectural heritage of Vietnam.

Architectural heritage accounts for 40% of all sites have been ranked, of which 90% are wooden architectural monuments.

The wooden architecture category:

1. Residential architectural monuments

Only a limited number of wooden houses in the Hoi An ancient town and Ha Noi Old Quarter are listed as relics. Most other wooden houses, which are scattered around rural villages, were determined to have historical value, but were not listed as relics. However, the preservation and maintainance of those houses is very urgent.

Houses made of wood can be divided into the following groups:

- House in the city (*Fig-1; Fig-2*)

Fig- 1. Old house in Ha Noi

Fig-2. Old house in Hoi An

- Houses in the countryside (*Fig-3; Fig-4*)

Fig- 3. Old house in Duong Lam village - Ha Noi

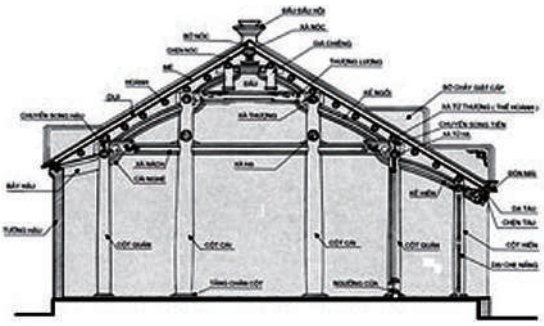

Fig- 4. Wooden structure of traditional housing

2. Royal Architectural Monuments

Of the architectural heritage of Vietnam in general and wooden architectural heritage in particular, the only remaining example in the royal architecture category is the royal palace of the Hue Nguyen Dynasty, part of the Complex of Hue Monuments, including:

- Palace: where the King and the receptionists worked
- Imperial House *(Fig-5)*:, the residence of the King's family
- Service building for imperial life: for reading books, watching dance performances *(Fig-5)*, places for storage.
- Temple, pagoda
- Tomb

Fig-5. King Tu Duc's House - Hue

Fig-6. Place for King Tu Duc to read books - Hue

3. Religious architectural heritage and beliefs:

This type of architectural monument includes the largest number of wooden monuments in particular, and relics in general. Architectural heritage and religious beliefs include:

- Communal House *(Fig-7)*: The village's tutelary worship and community activities of the villagers. Communal House is the largest wooden building in the village.
- Temple *(Fig-8)*: the memorial was built to worship legendary objects, saints, and the historic character of the state.
- Pagoda (Fig-9, Fig-10): the place for worshiping Buddha. These wooden structures have unique architectural styles and decorated plentifully with art work. Usually, a pagoda has the master of

architecture and landscape is complete.

Fig-7. Mong Phu Communal house - Son Tay - Ha Noi

Fig-8. Bach ma Temple - Ha Noi

Fig-9. Huong Trai Pagoda - Ha Tay - Ha Noi

Fig-10. Wooden roof structure

4. Monuments of public and civil architecture: "nha tho ho", "hoi quan" (Fig-11), "Diem", roofed wooden bridge (Fig-12).

Fig-11. Hoi quan Phuc Kien – Hoi An

Fig-12. "Chua cau" – Hoi An

5. Other types of architectural monuments.

II. Problems and needs for wooden heritage protection and restoration activities of wooden architectural monuments in Vietnam.

II.1. Problem of dating

Almost all of the wooden architectural monuments Vietnam were built by the experience of the carpenter and not drawn or documented on paper. So, when considering wooden architectural heritage from the perspective of conservation and restoration, Vietnamese researchers often make the following distinctions in the dating of monuments:

1. Chronology constructor: based on bibliographical references, or the physical evidence at the site.
2. Major dating: based on the existence of the monuments and architectural characteristics.
3. Optimal dating: the stage at which monuments have perfect condition and architectural aesthetics.
4. Dating of actual monument: based on the components or structures existing at the monument.

II.2. Change of wooden architectural monuments

Wooden architectural monuments in Vietnam have experienced many changes during their existence, with two main reasons being identified: *the impact of the natural environment and social factors; the impact of the repaired period.*

a. Transformation of wooden architectural monuments due to the impact of the natural environment, fungi and insects, and social factors.

* Destruction caused by the material itself:

Mostly, wooden material used in the construction of monuments is very hard like ironwood. But the availability of such wood is limited.

There are still hundreds of wooden monuments and traditional houses in Vietnam with the age of structural components being from 200 to 300 years old.

In particular, Tay Dang Communal House (an ancient communal house in Ha Tay, Northern Vietnam –*Fig-13*). Researchers at the Institute of Archaeology using the carbon dating C14 method have identified the age of components of this communal house at about 500 years old.

* Impact of the natural environment:

- *Influence of geological conditions*: This is a complex problem directly affecting the wooden structure. Most of the buildings have wooden foundations built by manual methods, and the weight of the building and uneven distribution causes subsidence, and deformation of the structure, which makes the wooden components break down (*Fig-14*).

Therefore, projects located next to rivers and lakes often have problems with parts of the building falling, and sinking foundations.

Fig-13. Tay Dang Communal House – Ha Tay

Fig-14. “Ta tung tu” Minh Mang’s Tomb - Hue

- *Effect of temperature:* The average temperature in Vietnam is high, especially in the summer.
According to temperature statistics, in the north the amplitude difference in temperature from January to July is 12.2oC. The sudden change in temperature and extreme temperature difference every month of the year deforms the wood and leads to severe damage of the wooden components, especially the smaller and thinner structures.
- *Influence of humidity:* The general characteristic of the climate in Viet Nam is very high humidity, especially during the rainy season. The impact of water vapor and temperature directly affects the surface of the wood, causing the reduction the bearing capacity of wooden structures. In addition, a high humidity environment causes fungi and microorganisms to live and grow.
- *Effect of rainfall:* Every year, the entire country experiences heavy rains that cause frequent floods, especially in the lowland areas, with flood erosion in the midland mountains. This leads to subsidence and cracking of foundations, affecting the column and beam structure of wooden architecture.
The average rainfall in Viet Nam is about 2000 mm, which is a relatively large amount of rainfall.
* The impact of mold and insects:
Wooden structures often have common characteristics:
- Use over a long time.
- The areas around construction sites often have lakes, ponds and many trees,
- Ventilation in buildings is not good; lack of sunlight.
In conditions of high humidity and other natural conditions, this is a favorable environment for mold and termites. The development of insect parasites on wooden components varies. Each insect has a unique character. The food of insects consists mostly of organic ingredients in the timber, so there is a great amount of insect infestation in wooden components in architectural monuments.
Termites are the most dangerous insect species for wooden architectural elements. The common termites are dry wood termites, wet wood termites and ground termites. The column is the component in wooden structures most often attacked by temites. In conditions of high humidity, bad ventilation, other components such as wooden planks, bulkheads and thin components which are exposed to the elements are targets for termites.

High humidity, lack of sunlight and minimal fresh air are favorable conditions for mold growth. Mildew growth on wooden components creates moisture on the compnents. As a result, the wood cells rot, the wooden structure becomes spongier and lighter, and the mechanical properties of the structure decrease.

The combination of termites and fungus damage is the main cause of rotting of the central part of wooden column and beam (Fig-15, Fig-16).

Fig-15. Rotted beam in Ngoc Son Temple - Ha Noi

Fig-16. Rotted Column in Ngoc Son Temple - Ha Noi

* The impact of social factors:

Throughout its long history, Vietnam has gone through many wars. Many valuable historical monuments, mostly wooden monuments, have been devastated. Very few of the wooden monuments are intact; some of them are, in fact, badly damaged. Architectural heritage in general and wooden architecture in particular can be destroyed or modified depending on social factors, as below:

- Change of dynasty or regime;
- Change of owner;
- Change of function, demand or use;
-Social behavior towards monuments

b. Remodeling - the main factor leading to major changes.

Considering the whole panorama of changes in wooden architectural heritage in the past, these can be attributed to two main types: changes in architectural style and scale; changes due to maintenance and repairs.

* Change in architectural style and scale: change of one building and master plan

* Changes due to maintenance and repair: These changes occur due to the remodeling of buildings on the verge of collapse. There are two types of remodeling:

- Utilize the old wooden component to reduce costs and preserve as much of the original as possible.
- Replace structures and components damaged by similar materials, or even replaced with different materials (such as columns changed to brick pillars) – (*Fig-17, Fig-18*)

Fig-17. Remodeling of “Tram Gian” Pagoda – Ha Tay

Fig-18. Replaced structures of “Tram Gian” Pagoda – Ha Tay

III. Conclusion:

Vietnam has a large number of wooden architectural monuments in terms of historical and cultural value. Recently, conservation restoration of wooden architectural monuments has received attention from the state as well as from local authorities and citizens. However, in Viet Nam there are few experts who are knowledgeable and trained in this field.

In order to best preserve our wooden architectural heritage, we need to identify the causes and effects of variations in wooden architectural monuments, to find and apply appropriate measures in line with the characteristics of the status of the monument and its link to the socio-economic conditions of Vietnam.

Reference:

1. “Project of survey and evaluation of traditional architectural heritage in Viet Nam” - VIAP
2. Institute of Monuments Repair - Ministry of Culture, Sports and Tourism

IV. Final Reports by Participants

At Kusakabe Folk Museum, Takayama City

Bangladesh

Mohammad Mohidul Islam

As a Specialist

Data collection work requires exploration of the site in the following way.

As wooden architecture in Bangladesh appears in different areas with different climatic conditions, and uses different woods as the raw material, there are different kinds of damage. To identify the type of damage and understand its relationship with environmental conditions, knowledge of the usage and botanical properties of the wood is vital as the basis of a conservation strategy.

The responsible officials concerned should be mindful of the historical and cultural background as well as the regional, functional, social and educational values. Site training should be conducted at the site or monuments. And analysis of the problem should be done thoroughly in terms of what affects these sites the most, and how and when this occurs. The creation of detailed documentation such as photography, measurements filming and sketching should be carefully carried out. Special consideration and priority should be given to the worst affected parts so as to protect the cultural heritage from further deformation and prevent it from losing its value forever. After detailed surveys and documentation have been completed, a well-planned work schedule must be drawn up for the whole work, each and every part of the member should be marked where necessary, and every member that needs to be replaced and restored should be carefully recorded when dismantling the structures. A detailed explanation of the job has to be given to the carpenters at the site using written drawings and orders before actual work starts. During actual execution of the work, careful and timely supervision at the site should be carried out, and in the event the head of the office is away from the site for some reason, either the head carpenter or any other person with experience in the same field should be given responsibility for ensuring the successful completion of the work.

The Most Difficult Part of the Job

Wood conservation work is really a challenging and tiring job as it needs to take into account factors such as finances, international standards, laws and regulations, ecological and cultural sustainability, and identifying and ensuring the future availability of authentic materials. However, the most difficult part of the job is to convince the higher authorities and face the public with words that will make them understand the value of our own cultural heritage and stimulate them to make a collective effort to preserve this heritage. Then we must match our intervention and decisions with the living cultural heritage and traditions. In particular, my country, Bangladesh, lacks professionals in the field of conservation with legal experience and training, and we therefore have difficulty undertaking conservation work efficiently and in accordance with international standards.

My Main Interests in This Training

Learn the knowledge, techniques and skills associated with the conservation of wooden structures in Japan through a series of lectures, practical training and visits to many world heritages and important cultural heritage sites, such as Horyu-ji Temple, Shonen-ji Temple, Imai-cho, Nara National Museum, Yakushi-ji Temple, Todai-ji Temple, Byodoin Temple, Ujigami Shrine, Hikone-jo Castle, Shirakawa Village and Takayama City, as Japan has been the leading country in the protection of wooden architectural heritages in the Asia Pacific region for a very long time, and has highly developed skills for conserving wooden structures in connection with international standards; and learn the ideology and methodology of conservation of wooden structures in different part of the world from the lecturers.

The Most Impressive Points during This Training

Having landed in Japan, I expanded my reach and saw a great number of timber structures, ranging from massive castles to mystical temples and simple dwellings, which demonstrates the high value attached to unique cultural heritages in this country.

Furthermore, we could observe high professional skills and technologies in the well-maintained and systemic arrangement of their cultural heritage sites, which was really impressive, such as the installation of fire security systems. It was also impressive to note that apart from the availability of funds, the people in this region have a highly developed knowledge and a strong understanding of the preservation of their own cultural heritage.

What I Learned from This Training

With the hope and aspiration to learn a great deal from this training I learned lot of things. The lectures gave details of the cultural heritage protection system in Japan, such as the history of cultural properties, laws for protection of both tangible and intangible cultural properties, designation and selection of structures at various levels, incentives for owners who promote the protection of cultural heritage, and the concept of Japanese architecture in general. Also covered by the lectures were the various ideologies, methodologies and approaches to conservation and restoration work in Japan, such as complete replacement, half replacement and partial replacement of all types of timber structures; the method of structural analysis that determines the age of a building and whether any restorations or alterations have been done; the use of different methods of analysis such as carbon dating of roof tiles and wooden members; studies of style and design for the roof, façade, layout of beams and columns, and frames; and how to provide protection from insects.

Utilization of This Training in My Country

My day-to-day responsibility back in my country is dealing with wooden structures and their problems, so what I learned from this training program is very relevant to my job of saving the life and cultural heritage of my country. The things I learned will be shared with my colleagues working in the same field, through workshops, meetings, reports, etc. Although some methods cannot be directly implemented, in the long run and for sustainable use, they are very important.

Conclusion

The training program was planned very thoughtfully, embracing a wide range of problems related to the protection and preservation of cultural heritages in Japan, with reference to international concepts and experiences. Rather than practical training in traditional and modern techniques of wood conservation, this training course aimed to show a clear picture of the complicated system of historic preservation in the context of a wood culture country, as a bright example of the organic unity of culture and national heritage and its tangible and intangible values, of traditional and modern development, of past and present. Japan is indeed a country with a historic preservation culture. To develop this culture, it took ages of a continuous tradition in construction, reconstruction, restoration, and maintenance and care of architectural monuments and their natural environment.

I think the training program, which offered theory, practical work, site visits and study tours to different places in the country, provided a great chance to enhance oneself in many ways. Coordination of the whole program was very systematic and efficient in the arrangement of lectures and transportation, and during the study tour especially, the arrangements to meet with the lecturers were marvelous. The duration was just right, which means not too short and not too long, so this training should be helpful to me and my country's activities. At present, we are closely considering that it will be most useful for the next generation.

Bhutan

Sangay Kinga

1. General Background of the Training

The training covers the various forms of cultural heritage monuments including those built from wood and other traditional materials, which comprise significant values from a social and global point of view in Asia and the Pacific region. The Asia-Pacific Cultural Centre for UNESCO (ACCU) Nara in partnership with ICCROM and Bunkacho (the Agency for Cultural Affairs) has endeavoured to organise similar training programs since 2000. The 2013 training on "Preservation and Restoration of Wooden Structures" started with 16 participants, all heritage professionals from the Asia-Pacific region, who were trained on the proper investigation, analysis, preservation and restoration of cultural heritage monuments in Japan. The main objective of organising such training was to enhance and strengthen the capacity of heritage professionals through the latest Japanese methods and techniques in the investigation, analysis, preservation, restoration and management of wooden structures.

The training utilised several methods to develop the participants' knowledge and skills, such as classroom lectures by ICCROM experts and national experts from Japanese institutions, followed by practical training and on-site lectures at ongoing high intensity conservation projects in Nara prefecture, and the presentation, discussion and exchange of views among participants on preservation and restoration issues, and challenges involving wooden heritage structures in the respective countries.

2. Cultural Heritage Protection and Conservation System in Bhutan

The Division for Conservation of Heritage (DCHS) under the Department of Culture of the Ministry of Home and Cultural Affairs, Royal Government of Bhutan is the central organisation mandated to conserve, protect and promote cultural heritage sites including traditional villages and vernacular houses. The key challenge for the DCHS in the conservation and management of heritage sites, especially in planning and execution is the lack of a heritage law.

The DCHS carries out the conservation and management of nationally important cultural heritage sites, as well as the research, inventory and documentation, reconstruction and construction of new religious structures. The DCHS also carries out the research and inventory of archaeological sites, and scientific and rescue excavation in collaboration with international organisations and universities. Besides project execution, we also publish an annual architectural journal, which includes our recording, information sharing and outcome reports. Beside execution of conservation projects, we also provide technical assistance to 20 districts and to relevant agencies in the field of preservation, restoration and management of cultural heritage sites.

The enormous workload and responsibility handled by the DCHS is a big challenge due to a lack

of human resources in the form of professionals in the field of preservation and restoration. The opportunity to enroll in this training was valuable for me, and indeed, it was one of the most eye-opening training programmes that I had ever experienced. I was able to update my skills and knowledge from observing the Japanese methods of protection and preservation, as well as the traditional and indigenous techniques of continuity that are being executed during the restoration of cultural heritage buildings. The protection of heritage through means of comprehensive legislation and regulation is one of the major measures that sustain the life of heritage buildings and values associated with Japanese heritage monuments.

3. Understanding Asian Architectural Heritage and Protection Measures

The training started with an introduction to the Architectural Heritage of the Asia and Pacific Region by ICCROM expert Dr. Neel Kamal Chapagain, in the context of understanding heritage concepts, values, forms and design, and the diversity of Asia-Pacific cultural heritage, with a few examples from individual countries. I came to understand that the Asia-Pacific region shares similar architectural designs and forms in wooden structures with different methods, techniques and approaches for preservation and conservation of architectural heritage, especially through the exchange of information among participants and country report presentations.

There is benefit in building a network as part of information sharing efforts in the regional or sub-regional contexts amongst conservation practitioners, as one of the key tools to strengthen existing skills and knowledge. The opening speech presented by Dr NISHIMURA Yasushi, Director of ACCU Nara, on the first day of the training program was on the interaction and sharing of information among participants being very important, and one of the main reasons for organising such training. He said that sharing of human knowledge is also important, together with technical training, and the very useful information given in this short speech really inspired me on the very first day.

Identification of gaps within the Asia-Pacific region and challenges regarding the preservation and protection of cultural heritage sites are well known and simple to address, but the difficulty in building links and networking between practitioners in the Asia-Pacific region is another major challenge to overcome, and also to apply multidisciplinary conservation practices. Such a training program is one of the right platforms for me to address these issues and to strengthen the network among working professionals in the field of preservation and restoration. Educating ourselves before we come up with new plans to study heritage sites is essential to draw the framework on the approach of context, concern and prospects. The development of self-confident capacity is also one of the major factors in strengthening capacity in the field of preservation and protection. Self-confident capacity building not only refers to me but also sharing and informing the building strategy as outreach into the community and on an individual level.

Dr. Gamini WIJESURIYA from ICCROM, in his introduction of his earlier career, was very educating and provided good encouragement. The introduction of ICCROM's 'International Centre for the

Study of the Preservation and Restoration of Cultural Property' on the various aspects of objects and mandates explained key issues that one should be acquainted with, particularly 'Information sharing on Conservation & Management' of wooden architectural heritage monuments. The presentation on basic re-assessment of conservation of wooden heritage in the context of the Asia-Pacific region suggested that we should consider the large number of monuments, and above all, the great manifestation of ancestral wisdom.

The re-assessment of conservation of wooden heritage is a form of contemporary discourse, and we, as conservation practitioners, should review the study of wooden heritage from the people's perspective. The lecture on 'Characterising and Understanding Wooden Heritage' explained that the focus is normally only on the big PPPs (Priests' Princes' and Politicians' heritage) and ignored the little p's (heritage of people), which also shared valuable significant information within society. The re-assessment of conservation of wooden structures and the heritage values that exist in society should be done whether or not the heritage instigated from the big 'P's' or smaller 'p's'.

The assessment of heritage management systems with the three approaches of Conventional, Values-based and People-centred 'living heritage', which are associated with objectives, values and a focus on people, was one of the main themes of Dr Gamini WIJESURIYA's lecture. 'Living Heritage' assessment in Bhutan will be my major role in planning and executing a management system on a micro level, through review of the draft heritage acts and other important legal instruments. The purpose of review of the act is to find the right definition of heritage in the Bhutanese living heritage context, and to encourage discourse with stakeholders such as members of the local community and users of the heritage. The other major task to undertake after receiving training from this program is Disaster and Risk Management system planning and execution in ongoing conservation projects and other works. Heritage in Bhutan is very much subject to human induced disasters like fire from electrical short circuits and butter lamp offerings. Therefore, the procurement of user-friendly and durable fire hydrant equipment and fire alarm systems, as well as awareness programs for users living in heritage buildings in handling such equipment during an incident will be part of my review program.

4. Cultural Heritage Protection System

Professor INABA Nobuko from Tsukuba University delivered a lecture on the various legislation and guidelines for tangible and intangible cultural heritage protection in Japan, which date back to the late 19th century, well before the 1964 Venice Charter. The preservation and restoration of heritage buildings in Japan are subject to strict laws that are jointly upheld by relevant institutions such as municipalities, prefectures, other local government agencies and the Ministry of Education, Culture, Sports, Science and Technology.

The protection of cultural heritage through a proper legislative system is an important tool that enhances and sustains the life of heritage. The integration of international laws with national legislation is also equally important for the protection of heritage. As the training was on the preservation and

restoration of wooden structures, the lecture was more likely focussed on the values and authenticity of wooden materials. The Nara Document on Authenticity was conceived in the spirit of the Charter of Venice 1964, and builds on it and extends it in response to the expanding scope of cultural heritage concerns and interests in our contemporary world.

Cultural heritage structures built from wood face a 'diversity' that exists in time and space, where cultural diversity demands acknowledgment of the legitimacy of the cultural values of various parties. The values and authenticity of cultural heritage in Japan is considered in conservation and restoration planning in that way, and affirmed in the contexts of the Venice Charter 1964, which qualified and constituted the fundamental role of scientific studies, conservation and restoration of wooden cultural heritage sites and also for the purpose of inscription under the UNESCO World Heritage Convention. Thus the Nara Document plays a vital role in Japan for preservation and restoration of wooden heritage.

Japanese legislation for protection of cultural heritage is complex, but Japan has had very comprehensive legal instruments since 1871. The changing of the protection system of cultural heritage in Japan began in 593 AD during the Asuka period, and has continued right up to the modern Heisei period, from 1989, which is a very impressive record in the history of Japan. The first law, "Decree for the Preservation of Ancient Artefacts" (1871), was established to protect cultural heritage, and this was followed by other laws such as the "Ancient Temples and Shrines Preservation Law" (1897), which provided for the designation of historic buildings and treasures, formation of a committee for the preservation of ancient temples and shrines, subsides for repair and maintenance, and a council for means to repair heritage buildings.

Having established effective laws, Japan started to preserve heritage buildings through proper documentation, conservation and management planning. The 1929 "National Treasures Preservation Law" expanded the preservation of objects, buildings/fine arts and crafts, established the concept of National Treasures, set up the Committee for the Preservation of National Treasures, and created the Regulation on Alterations to Current State and Duty to make it open to the public. This was a well enforced law and promoted the protection of cultural heritage, but unfortunately 65 buildings out of 202 designated as National Treasures were burnt down during World War II, which was great loss to Japan. The Japanese legislation and guidelines are well integrated with various national laws that truly sustain the life of cultural heritage properties.

The "Cultural Heritage Acts" (Preservation of Cultural Landscape of Bhutan) is in the process of being drafted, to be submitted to the 2014 spring Parliament Session. The act clearly defines the meaning of heritage site and also reflects the scope of the Division's mandate with proper guidance as to priorities and the easiest way to approach protection, preservation and conservation problems in the Bhutanese social, cultural and economic context. With our understanding of Japanese laws and the fact that we share similarities in wooden heritage form and design, we are fortunate to collaborate with a legal

expert from Kyushu University in Japan in drafting this heritage act. As a result of my experiment, observing the existing conservation and management system in Japan, I look forward to seeing the successful endorsement of the 'Cultural Heritage Acts', and more importantly, that Bhutanese living heritage will enjoy a long history of values with minimal intervention and diversity in Bhutanese society.

5. Conservation and Management of Wooden Architectural Heritage

The ancient wooden heritage in Japan still exists because of proper maintenance and repairs performed at appropriate intervals, as part of a high-quality conservation and management system. Peripheral repair work is done at intervals of thirty years, and major conservation intervals are from one hundred to two hundred years. Traditional Japanese wooden buildings were mostly assembled through various wooden joinery mechanisms with minimal metal nails and fittings. Structures using such traditional techniques are easy to dismantle and assemble, making it easy to replace damaged pieces during the restoration process. In Japan, the dismantling of damaged wooden parts is the best process for recording damaged and usable wood members, and also for identifying the techniques used in the previous restoration, which is very important to find the historical and ancient values of heritage during investigation. The promotion, presentation and utilization of heritage values even for disabled/handicapped persons are equally important to inform them properly. The diversity of wooden architectural heritage in Japan has continued according to the Nara Document on materials authenticity and provides a different perspective on heritage values.

The other interesting point with regard to conservation and management in Japan is that the owners of the heritage sites are responsible for maintaining and managing the sites in their possession. However, in case of extremely high cost, the national government may provide assistance only if the heritage is designated as an Important Cultural Property, in which case the Council for Cultural Affairs would decide the assistance provided. So while knowing about Japanese methods of conservation and restoration planning, as well as techniques and materials authenticity, this Japanese perspective is another angle that I should re-think in regard to conservation and management planning approaches in the Bhutanese architectural heritage context. I could explore the implementation of similar methods and techniques on wooden heritage buildings and also review the cultural heritage acts and draft a clause on registration of heritage buildings for future benefit.

Kashihara, once known as the formal capital of Japan, is the second largest city in Nara Prefecture, and well known for its historical value and architectural heritage sites, with 104 preserved districts and 504 traditional buildings. Most of these are in Imai-cho area which had nine gates for access to the town for self defence. The living Imai-cho townscape is well preserved and managed in a friendly way through proper legal guidelines and an efficient management system, but at the same time the town management team faces some difficulties when the owner of a building vacates the premises to settle in the city for a better lifestyle. I could relate to this planning and management system through my experience in developing the management master plan for preserving the 'Rinchengang Traditional

Village' (*old traditional settlement*) in the Wangduephodrang District, which is in the process of being surveyed for designation of traditional living heritage.

6. Restoration and Reconstruction System

Study of the repair process for wooden structures that were constructed with mud plaster walls has provided me with a useful learning experience, especially in the field of research and data analysis for restoration planning. In particular, the practical training on the removal of mud plaster from different surfaces, which indicates the renovation period and use of materials, was a good example of research and restoration planning, and which has helped build my confidence for exploring how to plan for similar work in the above mentioned village.

Fig. 01 Method of replacing damaged parts. Horyu-ji temple area. Photo: Sangay Kinga

Horyu-ji temple, which was originally built in the 6th century, was destroyed by fire and rebuilt in the 17th century in the same form and design, which has very interesting associated historical values. The historical value of the main entrance gate is that it was used only by monks/contributors and high ranking personnel during that period, but this system did not continue due to evolution of society and cultural diversity. The incredible historical value is that in the ground floor of the oldest pagoda building is said to be enshrined a fragment of one of Buddha's bones, thus the pagoda is well managed and protected. It is my good experience to learn that the reconstruction of the temple was done in the original form and design apart from changing the wooden components through proper investigation, survey and documentation of the temple's history.

Fig. 02 Method of protection during the restoration process, Horyu-ji temple. Photo: Sangay Kinga

The nonfunctional wooden members from the 8th century building were well preserved and carefully numbered for scientific research analysis. The functional wooden components from the 17th century were amazing to observe with very less revolution through proper conservation techniques (*Fig. 01*). The ongoing restoration work at Horyu-ji temple is one of the very good examples I have experienced on conservation techniques, management and protection of undamaged wood components during restoration of roof structures (*Fig. 02*).

7. Prevention Measures for Wooden Structures against Insect Damage

Prevention measures on wooden architectural heritage structures against insect damage and also against other factors such as termites and natural weathering were presented. This is the first time for me to know about the one million different insects around the world and 30,000 different insects in

Japan. Japan has suffered major damage to wooden structures through insects, dry wood termites and also from weathering. The identification of insects and damage to wooden components are important to study and analyse. Prevention methods involving use of chemicals is likely to pose a higher risk to humans than soil treatment and the wood injection method, which is one of the most benign methods for preventing damage. The report on the different kinds of insects displayed during the lecture was based on the comprehensive scientific studies and analysis done by Dr. KOMINE Yukio, and provided a good example for future reference, since we are also facing similar problems in Bhutan as I have already mentioned in my country report.

8. Value Assessment and Recording/Documentation of Wooden Structures

Tangible cultural properties and groups of traditional buildings in Japan are one of the main focuses of surveys, as these heritages enjoy high respect and value, and are considered to be part of the national heritage and national treasure of Japan. These heritages have different degrees of importance and receive various government subsidies for conservation and management of the sites. Nara prefecture has the maximum number of National Treasures. The new system for registration of cultural properties is strict in maintaining the architectural design of the old façade, and the identification of restoration is important to present the original and alternative façade. The categorization of heritage properties depending on the value of the heritage sites is very important for evaluation of values and for recording the heritage sites.

Environmental investigation, studies on land formation, style of living/settlement in the area is another important context for assessment of heritage values. The investigation of wooden materials through finding/studying written text on wooden pieces (*historical record of construction/renovation of the heritage building*) is a very significant method of surveying scientific studies. Documenting an existing heritage building is not new for me, either in terms of study or restoration plan preparation, but Japanese methods involve a different approach with very precise measurement, careful observation of buildings and comparison with recorded measured drawings. Photograph documentation and construction of building models is another very important concept that would supplement the restoration of buildings and provide an easy reference for future researchers.

Therefore, I have widened my skills and knowledge in the way of value assessment, recording and documentation of traditional/historical buildings, which I should be able to apply to my work at the DCHS, rather than depending only on oral historical values and heritage site settings.

9. Conclusion

I would like to conclude by saying that this training program no doubt helps to develop and strengthen individual capacity in the field of preservation, conservation and management of cultural heritage monuments. My learning experience is not only in the context of conservation of tangible and intangible heritages, but also the multi-social culture and living of contemporary life in this present era through cultural diversity. I end here with some quotes: "*Culture and Heritage is all around us*," and

"*Culture is a not a luxury, but a necessity*." Therefore, I say: "*The value of Heritage is how you value yourself, not how it values others*."

My hearty acknowledgments to one and all in the ACCU family Nara: Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO, NNRICP: Nara National Research Institute for Cultural Properties, JACAM: the Japanese Association for Conservation of Architectural Monuments, relevant stakeholders, individuals and fellow participants. I sincerely thank you all for your kind efforts, support and contribution to making this training programme successful. 'Buddha Bless You and All'.

Thank you, Tashi Delek and Arigato Gozaimasu

Brunei Darussalam

Siti Norhayatty binti Haji Morni

Training Course on Cultural Property Protection in the Asia-Pacific Region 2013 – Preservation and Restoration of Wooden Structures

An Experience in the Training Course

Firstly, I would like to take this opportunity to thank the organizers for organizing this course, as it has been a successful and fruitful training. This workshop brought together participants from 16 countries from the Asia-Pacific region and provided a unique opportunity for the participants to share their experience, not only with wooden structures but also their experience and findings through their work with excavation sites. A lot of knowledge was gained through participating in this training course. Personally, I have learned a lot by hearing about the experience of Japan and through the sharing of knowledge from all the Asia-Pacific countries participating in the workshop. The experience gained from this training will help me to promote cultural and property protection and preservation in an appropriate manner in Brunei Darussalam.

Training on Pest Investigation

Pest infestation of wooden structures is a major threat for all wooden materials and structures. This has always been one of the greatest challenges in conservation, not only in the Asia-Pacific region but all over the world. Japan utilizes comprehensive methods for the detection of pests; after that, control and management of the pest attacks are outlined, with appropriate control strategies for appropriate action. Brunei has no comprehensive method of detection of pest infestation, however, detection of pests is a very important factor before considering and carrying out treatment on objects and buildings. Brunei conducts visual observations and compares pest infestation species with museum collections and conducts conservation treatment through manual cleaning, application of high temperatures, freezing, and zero oxygen. Treatment methods such as fumigation are not advisable as these can be a threat to the environment and humans.

However in certain cases, we outsource the work to experienced contractors if the pest infestation is serious and continues to persist. In some locations, especially when the wooden building is located near a forest, the building experiences re-infestation or occurrence from a new colony, especially from subterranean termites because this is the particular habitat of these pests. This means building wooden structures is a great challenge if the habitat of the pests is located near the building.

The use of traditional conservation methods is yet another alternative, and as far as I am concerned, these methods have been practiced since ancient time and yet have become an effective tool to control pests, as long as the methods are practiced correctly. It is difficult to achieve complete eradication and when the problem of pest infestation still persists, this highlights the need for improvement

in the methods of detection, prevention and management. This can be done by reviewing our pest management efforts according to the origins and types of pests. In addition, more research should be conducted and shared, especially using a combination of chemical and non-chemical treatments, which will lead us to an effective best practice.

Preservation of Wooden Structures against Pest Infestation

Most wooden structures experience infestation from pests such as termites, or a new colony is likely to occur due to the location and habitat of the pest. Brunei is no exception. One traditional method that is still practiced in Japan, outlined in 'case study at Nara Prefectural Museum of Forklore,' is by starting a fire with sticks so that it will produce smoke in the interior of the building, and as a result will scare away all pests; this is one of the most effective traditional methods. This method not only avoids pests but also gives visitors, especially the younger generation, a close look at traditional methods of cooking using traditional cooking utensils.

This method is still practiced in Brunei, especially in traditional houses of various ethnic groups. However this method is only suitable for traditional houses as it produces soot in the interior of the building.

Authenticity

The issue of authenticity has become a hot topic for debate among signatory countries of the World Heritage Convention in trying to decide each country's listings as World Heritage Sites. Something struck in my mind: Is there any building or site in existence that is 100% authentic? I would venture that the concept of authenticity varies between western and eastern cultures or regions.

In Japan, wooden cultural properties and structures have been experiencing dismantling, rebuilding, repair and re-assembling ever since ancient times from the Nara period. These practices did not meet the Operational Guidelines of the World Heritage Conventions in the Venice Charter document. Therefore Japan took the initiative to place more emphasis on the term 'progressive authenticity' due to the practices that acquired properties have been subjected throughout history, which have been well documented.

Obtaining material is yet another big challenge in Japan as the building materials used mostly consist of wood and other plant-based materials. In this century, getting mature wood is one of the greatest challenges because in producing high yield wood we would need to wait thousands of years for the tree to mature. Therefore, consideration should be given to using alternative materials. As the case study on Ujigami Shrine shows, there is a need to have the option of changing the cypress tree bark for the restoration of the roof to something else, as cypress bark is very difficult to obtain, and cost is yet another issue. In a case study on Yakushi-ji temple, Japan needs to import wood for restoration from Taiwan. This proves that obtaining material is a challenge.

Brunei is experiencing the same problem, and choosing another option is an alternative for restoration as long as the original design is retained. In Brunei, some building materials are being changed due to factors such as risk from re-infestation from biotic attacks, risks from the environment through unstable temperatures and relative humidity throughout the year. Obtaining material is also another issue since some materials used for building wooden structures have been categorized and listed as endangered; therefore, the use of these materials is limited and they are difficult to obtain. I believe that reassessment of the international convention into regional aspects should be reviewed if we are thinking about and putting into practice the preservation of cultural properties on a sustainable basis. Gamini agreed with this, stating: 'A formula is required to judge the authenticity based on a variety of aspects'. (G.Wijesuriya, ICCROM 2013).

In Japan, all cultural building properties have been well recorded and documented through various methods such as writing, drawings, picture drawings, verbal descriptions, photographing and mapping. In cases where a building is experiencing changes during reconstruction, the government or the owner of the cultural property will take measures to reconstruct the building according to its origin structure. In addition, thousands of these documents have been copied and distributed to the government and educational organizations for educational purposes and as a future reference for the generations to come. This is a good practice that should be implemented when Brunei experiences changes to its building structures. The most important factor is recording and taking accurate information to be documented, as this can be used as a future reference if any of the buildings experience changes during restoration. This practice also acts as a back-up, which shows good risk management in case any of the documents are destroyed for any reason.

Risk Management from Natural Disaster

Since Japan is located on a number of tectonic plate boundaries in an area with high seismicity, the country has a history of earthquakes and seismic activity. One case study that attracts my attention is the Great Hanshin Earthquake. Through this experience, a lot of knowledge was gained, especially for regions that are facing the same situation. Although Brunei has not experienced such a large disaster, the actions that were taken as a result of the Great Hanshin earthquake shows a good example that should be implemented when facing a range of possibilities in terms of natural disasters.

At the moment, Brunei is in the process of setting up a rescue committee team, the National Disaster Management Center. The involvement of important authorities from government and non-government agencies in understanding the standard operational guidelines in tackling any possibility are under consideration. The help and guidance from the Great Hanshin Earthquake experience will assist in the future management of a possible natural disaster in the future.

Survey and Recording/ Documentation of Wooden Structures

Ancient wooden structures in Japan are still in existence due to proper maintenance and repairs at appropriate times, and these skills and techniques have been passed down through many generations

so that restorations can be easily carried out even today. In a case where documentation is lacking on a certain building, it is necessary to dismantle the building in order to know how the building is built for proper detailed documentation. This does not only involve dismantling it but also taking photographs of the current state, and conducting surveys and research on similar buildings to identify the techniques used. I believe that detailed documentation is important for future reference, and this should be passed on to the younger generations so that restoration can be carried out easily.

As for Brunei, there is no comprehensive documentation in place for wooden or any other building structure, and Brunei is currently creating building plans through the use of computer technology. This proves that there is a gap where the techniques and skills for building traditional housing are lacking, especially for traditional 'ethnic housing'. Therefore, there is a need to fill this gap so that the cultural value will not become extinct in the future. In the Japanese experience, these skills are held by conservation engineers and the younger generations are taught and exposed to the skills and techniques of the traditional crafts and craftsmanship, with these skills being well practiced and well documented. In Brunei, the skills of crafts and craftsmanship for traditional housing is now lacking among the younger generation as these skills are only practiced by the elderly. However, Brunei is in the midst of trying to tackle this issue, and this needs to be addressed using the Japanese system as a guide. I believe a few recommendations should be considered to fill this gap. One recommendation is government planning in tackling these issues, with serious discussions among stakeholders from government and non-government agencies. Secondly, expand the audiences to include participation of the local community, and with the media providing updates on the various activities.

The role of the local community is very important because convincing the community to become involved will turn tangible and intangible cultural properties into a living heritage. The participation of the community will also help in capacity building to develop traditional skills among the younger generation, through educational curriculums or youth development as an example. Besides capacity building, community participation also plays an important role in increasing economic value through tourism. Community involvement may include tour guide packages such as entrance fees, home-stay facilities, experiencing traditional food inside their traditional houses, performing traditional dances or selling their craft work through miniature traditional buildings. These activities could also help to develop their income. The above recommendations have been proven to be effective by the case study of Shirakawa Village, Gifu Prefecture in Japan. This case study shows an example of community participation, in which the residents heavily rely on the tourism industry for their income.

Photography

Photography plays an important role in preparing proper documentation and as a future reference. In Japan, photographs of cultural properties are taken by professional photographers, taking into account the fundamental principle of producing a high quality outcome so that the storage material has an extended life. This training included the various types of camera and some basic knowledge before taking any pictures for documentation. During this training, the experience of using a light meter was

new to me.

In the Brunei Museum context, photographs are usually taken by the exhibition section. However in certain cases, requests will not be able to be fulfilled for all field work, therefore individual cameras are also being used. Through this training I have learned some basic knowledge regarding the use of lenses, resolution and light sensitivity. This useful knowledge will be shared in my department during our training sharing sessions in Brunei.

Conclusion

We are aware that the trading traditions of ancient Southeast Asia still continue today, not only through goods or materials but also in knowledge. All participants agreed to form an informal network through internet technology as this will lead to the sharing of knowledge, findings and new techniques. However, sharing knowledge through the network would also be limited due to copyright issues. I believe that training courses such as this are useful for bringing together countries from the Asia-Pacific region to contribute information and freely share knowledge about their respective heritage and solutions.

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Indonesia

Rully Andriadi

Final Report of the Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2013: Comparison and Challenges from the Indonesian Perspective

A. Training Course in General

ACCU Nara and its related offices organizes training courses with the aim of providing all participants with the latest methods and techniques for investigation, analysis, preservation, restoration, and management of wooden cultural properties. With many kinds of methods of learning, i.e., in-class lectures, on-site lectures, practical training, and on-site training, the training course I attended provided complete ideas, information, skills, and knowledge about the preservation and restoration of wooden structures to all participants. The training program is arranged in such way so that each participant could gain some new perspectives on current issues of wooden cultural heritage management in the international context and current practices in Japan.

Each lecture covered a different type of expertise and provided new skills and knowledge about how to preserve and restore wooden structures in the Japanese way to all participants. The most important thing learned from all lectures was the need for leadership in preservation and restoration. In other words, achieving a successful result in a preservation and restoration project depends on the person behind the project itself. Each lecture involved many examples of preservation and restoration projects and the lecturers were willing to share all their experiences with the participants.

B. Comparison and Challenges of Implementation in Indonesia

All participants from the different countries had the opportunity to learn about the preservation and restoration of wooden structures in Japan. This training course was also a good place for the participants to share and discuss their experiences about conservation with other participants from different countries. The problems faced by various countries are often related, and should be discussed together. With discussion there were transfers of knowledge among participants, with new ideas that are applicable in Indonesia.

The participants from the various countries also faced similar problems in preservation and restoration of wooden cultural properties. These problems will also be important issues in the future in cultural heritage protection, not only on the national level but also on the international level. Although each country had many individual problems it was a good challenge for

participants to adopt a global way of thinking for cultural heritage protection and preservation.

Not all of the training course curriculum was suitable to be applied to every country. However, the Japanese way of preservation and restoration will become a source of new ideas for the participants to arrange methods and strategies for preservation of wooden cultural properties.

1. Wooden Cultural Properties in Asia-Pacific and Indonesia

Wooden cultural heritage properties in each country in the Asia-Pacific region tend to have their own unique characteristics. The kind of heritage found in the Asia-Pacific region varies in the types, as well as in the techniques and skills applied to both the construction and dating of properties. However, countries in the Asia-Pacific region also share some common elements in their wooden heritage as a result of the long history of relationships from the ancient period.

It is interesting to know about the wooden cultural heritage from different countries in the Asia-Pacific region. In Indonesia, there are many different types of wooden cultural properties, as each island has different characteristics. It is a challenge for the future that all wooden cultural properties in Indonesia be completely documented and registered. With complete documentation in the future, the types of wooden cultural properties in Indonesia and other countries will become better known as part of the wooden cultural heritage of the Asia-Pacific region.

2. Protection System of Cultural Properties

Japanese cultural properties have been created, developed, and preserved throughout Japan's long history. They have been passed down from one generation to another and today have become the precious assets of the Japanese people.

Under the Law for the Protection of Cultural Properties, these cultural properties are categorized as follows: Tangible Cultural Properties, Intangible Cultural Properties, Folk Cultural Properties, Monuments, Cultural Landscapes, and Groups of Traditional Buildings. Out of these cultural properties, the government designates, selects and registers important items in respective categories as Important Cultural Properties, Important Intangible Cultural Properties, Important Tangible/ Intangible Folk Cultural Properties, Historic Sites, Places of Scenic Beauty and Natural Monuments. The government gives high priority to their protection. Also protected are (a) underground cultural properties (Buried Cultural Properties), and (b) traditional skills and techniques that are necessary for the restoration and preservation of cultural properties (Conservation Techniques for Cultural Properties).

The system of protection for cultural properties in Japan appears optimal for the purpose of preservation and conservation. Japan has a good legal system for protection of cultural properties and the various objects that need to be protected.

Indonesia also has legislation related to cultural heritage; the most recent legislation is Republic of Indonesian Law Number 11 Year 2010 about Protected Cultural Heritage (cagar budaya). For almost three years since its establishment there have been no government regulations introduced as implementation guidelines. This is a big problem regarding preservation of cultural heritage in Indonesia because each area and province was waiting for the guidelines, and on the other hand, problems on the protection of cultural properties have been increasing day by day.

Different to Japan, in the most recent legislation, Indonesia has divided Protected Cultural Properties (cagar budaya) into five categories, i.e., Buildings, Objects, Structures, Sites, and Regions. The categories mentioned are only for tangible cultural properties and it is challenge for the future for Indonesia to focus not only on tangible but also on intangible cultural properties and natural monuments.

3. Conservation and Restoration of Wooden Structures

The system of preservation and restoration of wooden cultural heritage in Japan developed hundreds of years ago, and this has continually been changed and enhanced over time. Japan was therefore the best place for learning about restoration of wooden cultural properties.

More than 50% of the land area of Japan was covered with forests in ancient times, and the country has relied heavily on wood for its architecture. Wood is highly vulnerable to rotting, insect damage, and fire. Without appropriate maintenance and management, it cannot last for long. The ancient wooden buildings remaining in Japan are still in existence because of proper maintenance and repairs performed at appropriate intervals. The skills and techniques for building maintenance and repair have been handed down through many generations.

Most of]the buildings listed as cultural properties are made from wood with various forms, e.g., shrines, temples, castles, houses, and many more. Japan began to establish a system for preserving architectural buildings a few hundred years ago. This is why Japan is further ahead in the preservation and restoration of wooden structures than other countries.

In contrast with Japan, Indonesia started to preserve wooden cultural properties in the Dutch colonial period, with only on a minor scale, due to greater focus being placed on cultural heritage made from stones, e.g., candi (temples).
Restoration of cultural heritage in Japan is closely related to the owners of the building itself. Especially when it is a living cultural property, elements of the building can be changed from time to time by the owners.

Similar cases also happen in Indonesia when it is related to the government conservation of a living monument being untilised by the owner. One of the challenges in the future will be to establish systems to preserve cultural properties that can deal with revitalization of properties.

The most interesting is how the Japanese government is trying to replicate the ancient landscape by moving modern electricity facilities on the surface to underground. With many cases of cultural regions in Indonesia being disturbed by modern installations and equipment, it is a challenge to replicate the ancient landscape with similar methods.

4. Prevention of Insect Damage to Wooden Structures

Many cultural properties in Japan are made from wood. The climate in Japan is mild with high humidity, with an insect population that is active for much of the year, constantly exposing cultural properties to insect damage.

Its location on the equator has made Indonesia subject to high humidity, which the best habitat for many kinds of insects. Similar to Japan, insects have also become a problem in Indonesia, with many cases of cultural properties being damaged by insect attacks. Harmful insects are numerous both in terms of number of species and size of populations, resulting in tremendous damage.

Conservation of wooden structures is carried out in some parts of Indonesia with the use of traditional methods and materials. Documentation of traditional methods for wood treatment includes the use of natural materials such as tobacco, banana tree bark, and cloves. From laboratory research it is known that those kinds of materials are very effective for prevention and extermination of insects, especially termites. But in many cases of wood treatment, chemical agents are used, which causes a number of adverse effects not only on the environment but also on the conservators themselves. It is a challenge in the future for Indonesia and other countries to return to ancient methods of wood treatment by using traditional and natural materials.

5. Risk Management of Cultural Heritage

Natural disasters, e.g., earthquakes, tsunamis, fire, landslides, volcano eruptions, and floods affect not only human life but also cultural heritage properties. Japan is trying many methods to reduce the risk of damage to cultural properties using both traditional and contemporary methods of risk reduction.

Located in the Ring of Fire, Indonesia experiences similar types of natural disasters as Japan. From ancient times until today, cultural properties have been destroyed and buried by natural disasters. This is why Indonesia is starting to establish national systems and methods for disaster management in order to reduce the risk to cultural properties. In general, the concepts adopted from one disaster risk reduction system and can be applied to all types of natural disasters and all types of cultural properties. But on the small scale of local cultural properties there was a standard operating procedure for post-disaster handling of cultural properties, although it was not integrated properly.

Japan has a very efficient method of risk preparedness and mitigation in order to ensure protection of cultural heritages related to fire disaster mitigation. One of the weaknesses of wooden

buildings is that they are easily damaged by fire. It is important to implement measures to prevent fire, not only from inside but from outside sources as well.

Indonesia also has a similar cultural heritage, with groups of traditional wooden buildings, for instance, in Kotagede Protected Cultural Heritage Region, with a high proportion of traditional buildings made from wood materials. The difference is that they don't have a system of fire extinguishers as Japan does. An important issue is protection of wooden cultural properties in Kotagede and reduction of the risk of disaster.

It is a big challenge for Indonesia to establish methods of reducing the risk of disaster on wooden cultural heritage, specifically related to fire disasters, because of the many groups of traditional buildings made from wood without a system of fire extinguishers or proper risk management.

6. Documentation of Wooden Structures

In ancient times people adopted and absorbed some elements of cultures brought from other countries, which then experienced transformation over time to adapt to the local natural and social environment.

Japan has various types of wooden structures, and all of those cultural properties have been documented and properly recorded. It is a challenge for Indonesia to document wooden cultural properties with comprehensive and detailed recording. It is also important to know the history of restoration from historical data related to the authenticity of each element.

7. System for Restoration Projects and Construction Planning

In general, the restoration of cultural heritage buildings in Indonesia is usually carried out when the structure of the building is in critical condition. This is because of the limited budget, with the preservation office focusing on buildings at risk of collapse.

In Japan, the responsibility for maintaining and managing wooden cultural properties lies with the owner. The owners must strive to protect the building in their possession, but in a case where the expenditure for repairs is very large, the national government may provide assistance to cover part of the cost of repairs of buildings nationally designated as Important Cultural Properties.

Nowadays, especially in local government projects (e.g. Government of Yogyakarta Special Region), the restoration of cultural properties is carried out by private contractors via a bidding system. All the experts, technicians, and workers related to the restoration are provided by contractors. The government takes a part as the supervisor from the planning stage to the final construction. All the planning has to be approved by the Preservation Council (a council under the Governor that is related to the preservation of heritage in Yogyakarta Special Region).

It is a problem for contactors to recruit professional archaeologists and architects as restoration

experts because most of professional archaeologists with competence in restoration methods work as government officers and are not allowed to act as experts for private companies in cultural heritage restoration.

It is a challenge for Indonesia to establish a system of recruitment of professional workers for cultural heritage restoration, as well as a system to build capacity in terms of human resources related to restoration. It is also a challenge for universities in Indonesia to provide fresh graduates who are prepared to work as professionals on cultural heritage conservation and restoration.

It is good practice that in Japan, professionals and organizations involved in preservation and restoration of historic buildings have to be certified. And it is also useful that Japan has research institutes and associations focused specifically on preservation and restoration of cultural heritage.

8. Management of Cultural Heritage

Issues in heritage management in the international context were presented clearly. It was explained that heritage conservation and management has a long history around the world. The paradigms of conservation and heritage management also change from time to time. Conservation varies in different contexts, changing and developing from an emphasis on materials, on values, and now on the contemporary lives of various communities.

The paradigms and approaches of preservation and restoration in Indonesia are also improving from time to time, and nowadays the preservation office uses many preservation approaches depending on the characteristics of the cultural property and its environment.

C. New Ideas For the Next Training Course

It is impossible to provide a detailed and complete curriculum on preservation and restoration within a limited time. New ideas for the next training from the Indonesian perspective are as follows:

1. Role of Local Communities and NGOs in Japan on the Preservation and Restoration of Wooden Cultural Properties.
2. Capacity Building Related to the Preservation and Restoration of Wooden Cultural Properties.
3. Utilization of Archaeological Sites with Wooden Structures.
4. Methods of Reconstruction for Wooden Cultural Properties

Kazakhstan

Gulnaz Kulmaganbetova

Final Report

During the period from September 3 to October 3, 2013, I participated in the "Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2013: Preservation and Restoration of Wooden Structures," consisting of 16 members from Asia-Pacific region states. The training course was organized by the Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO (ACCU Nara, Japan). The aim of the course is to provide the training participants with knowledge and techniques of protection, analysis, restoration and documentation of wooden structures. The training included lectures on the following:

- Introduction to Asian wooden structures;
- Theory and practice on conservation of cultural heritage;
- Protection system of cultural heritage in Japan;
- Policies on restoration and management of wooden structures in Japan;
- Survey method and principles for preservation and restoration;
- Survey on painting and plans for painting restoration management and utilization of wooden structures;
- Risk management of cultural heritage.

This training also included a practical course on preservation and documentation of wooden structures, with the lectures being held directly at a restored monument, as well as field work at wooden structures that had been preserved or were under restoration as examples.

This training helped us familiarize ourselves with the methods existing in Japan and the technology of protection and preservation of wooden structures through practical exercises. We are also planning to apply this knowledge at archaeological sites next year.

Currently, Kazakhstan is carrying out a set of measures for preservation and further development of our centuries-old traditions through the discovery of new historical and cultural monuments, intensification of works on preservation and restoration of tombs, ancient mosques, ancient cities, and thus creation of new reserves for historical and cultural museums reserves. These days, Kazakhstan has more than 25,000 immovable monuments of archeology, architecture and art, 11,000 libraries, 147 museums, and eight historical-cultural reserve museums. These objects of historical and cultural heritage are protected by the law "On protection and use of historical and cultural heritage" (Law of the Republic of Kazakhstan dated July 2, 1992 No. 1488-XII). The objectives of this law are:

- Determination of objects of historical and cultural heritage, their protection and use;
- Consolidation of the status of historical and cultural monuments for historical and cultural

heritage objects;
- Regulation of the rights and obligations of natural and legal persons in preservation of historical and cultural heritage objects;
- Distinetion of the competence among the state bodies in protection of historical and cultural heritage;
- Establishment of measures of responsibility for endamaging objects of historical and cultural heritage.

Kazakhstan has also adopted the International Charter for the Conservation and Restoration of Monuments and Sites (the Venice Charter). The realization of the third stage of the State program "Cultural heritage," which was successfully launched in 2004, was completed in 2011. All these activities are focused on preservation of cultural heritage, which was created over a long time by the efforts of our ancestors. The Law of the Republic of Kazakhstan "On protection and use of historical and cultural heritage objects" allows us to fully ensure protection of the cultural heritage of our country.

To date the problem of popularization of intangible cultural heritage requires special attention. Intangible cultural heritage is a basic component of heritage, the strengthening of the spiritual bond between generations.

Kazakhstan ratified the Convention for Safeguarding of Intangible Cultural Heritage, adopted in Paris on October 17, 2003. (The Law dated October 21, 2011 No. 517-IV), and approved the concept of protection and promotion of intangible cultural heritage of the Republic of Kazakhstan.

In order to strengthen the state and our national identity the government planned to put the traditions related to the "as-beru" funeral feast onto the list of intangible cultural heritage. This custom is a kind of Commemoration of the Departed, a Pagan and Muslim feast that includes traditional games and dances. In the archaeological excavations of monuments beginning from the Bronze Age and earlier are the remains of sacrificial offerings and funeral feasts to the memory of ancestors. The number and scale of performed funeral feasts depended largely on the social status of the departed and the financial standing of the descendants.

With changes in terms of commissioning and frequency, this tradition has retained its general model and purpose. Thus, we would be able to save and keep one more element of our intangible cultural heritage.

Archaeological sites with ancient wooden structures also require special attention. A comprehensive study of archaeological sites carried out since 1975 by M. K. Kadyrbaev who managed the laboratory of archaeological technology at the Institute of History, Archaeology and Ethnography, named after Ch. Ch. Valikhanov of the AH of Kazakh SSR.

Frequently in archaeological practice in Kazakhstan the wooden structures were only reconstructed. Expert archaeologists set themselves the task of preserving only the most important architectural design. After graphic fixing, the wooden structures remained under the open sky, turning into ruins, becoming eroded, and over time, disappearing from the face of the earth.

To date, the team of Kazarchaeology LLP has introduced comprehensive studies of archaeological sites, the aim of which is to obtain the most information possible about the country's cultural heritage, with preservation of this monument for the next generation of researchers. This is by far the most relevant step towards retaining the cultural values of our country.

The reconstruction method of preservation of cultural heritage is appropriate for such monuments where the original structure is not suitable for use, and preservation of the monument is urgent. Such timely reconstruction would allow us to obtain a genuine model of an existing object of historical and cultural heritage and preserve it for further researches. It is planned to use the reconstruction and practical skills acquired during the practical lessons at the following archaeological sites:

Burial ground Kyryk-Oba II. Burial mound 1(05) – 5th to 4th centuries B.C.

Burial ground Kyryk-Oba is located in the Burlin area of the West Kazakhstan region and contains about 40 mounds. The excavation of mound 1 (05) of this burial ground allowed us to obtain an insight into the architectural construction hidden under the mound.

Burial ground Karatau.

Burial ground Karatau is located in the Raiymbek district of the Almaty region. The mound includes more than 178 burial grounds created at different times, ranging from the Bronze Age to the Hunnic times.

During 2012-2013 a team from Kazarchaeology LLP performed archaeological studies of this burial ground. During the excavation of those mounds, rectangular and square wooden buildings made of a pine tree species were discovered.

Burial ground Karatau. Burial mound № 42. 8th to 3rd centuries B.C.

This construction has a very interesting design including two chambers adjacent to each other. Construction is oriented in a NE-SW line; the northern part of the chamber is smaller than the southern part. There was a hardwood floor on top of the construction, which collapsed inward with time and under the pressure of the soil above it. The height of the wooden structure is 2.2 m. The dimensions of the northern room are 2.1 x 1.5 m; the southern room is 4.5 x 5 m.

Burial ground Karatau. Burial mound № 48 8th to 3rd centuries B.C.

Dimensions: 3 x 3 m. It is a square structure made of logs laid horizontally. The top of structure was covered with a hardwood lift slab, on which a backing of small sized boulders was fixed. The height of the wooden structure at this moment is 1.2 meters. Preservation of the structure is good. The entrance to the building faces the south-west.

Burial ground Karatau. Burial mound No51. 8th to 3rd centuries B.C.

Height: 3.5 meters. The wooden beams of the lift slab are preserved from the building.

To date, the integrated archaeological surveys are continuing at these monuments, after which measures for the preservation of the wooden structures are planned.

Great interest was aroused by the lecture addressing the preservation and restoration of wooden architecture in Japan. Mr. Toyoki Hiroyuki talked about the history of architecture in Japan, about the features of construction techniques of wooden structures, of existing methods and the types of preservation of cultural property, as well as the phased progress (procedure) with wooden structures. This lecture was reinforced by an on-site lecture, "Buddhist monuments in the Horyu-ji Area" by Mr Mikita Hideo, where with my own eyes I saw the earliest constructions of the Asuka era – the Kondo (Golden Hall), Goju-no-to (Five-Story Pagoda), and Chumon (inner Gate), which are national treasures of Japan. Long-term use of wood has contributed to the development of the skills of Japanese carpenters, and the fundamental features of Japanese architecture.

The "convertible" system of building structures is the foundation of architecture in Japan. The features of this principle include the ability to dismantle and re-assemble the structure without any damage to the wood. This was adopted mainly due to the climatic conditions of the country.

A similar principle is observed in the technique of mounting the "yurt," the mobile homes of a nomadic society adapted to the conditions of nature and life. In the yurt and its decorations were focused all the achievements of home trades and crafts.

The word "yurt," like the word "Horde," is derived from the Kazakh word "Jurt" - "a place where people reside".

This architectural style originated in the round stationary dwellings (toshchala) of wood and stone, known in Kazakhstan since the end of the 2nd millennium B.C. (settlements of Bougoula, Shagalyly). Image of a hip roof yurt is shown in rock paintings near the village of Alybay in the Katon-Karagay district of East Kazakhstan. Images of yurts of the epoch of early nomads were found in the gorge of Dolanaly in the Kurchum district of the East Kazakhstan region.

The earliest surviving records of demountable dwellings date back to the time of Herodotus.

The centuries-old evolution of nomadic dwellings has led to the development of clear proportions and rules for installation and dismantling of the yurts. In Kazakhstan the most common type of yurt was the so-called Kipchak, characterized by a spherical dome.

The interior and exterior of the yurt varied depending on its functionality. The largest and most luxurious were ceremonial yurt (ak-ui, ak-orda, boz-ui). In addition to the main living yurts and ceremonial buildings, there were other types of demountable buildings, characterized by simplicity

of design and interior decoration, for example, military camp yurts. The special yurts stood out as the kitchens and the storage facilities.

However, it should be noted that wood was not always used in the construction of buildings. The availability of alternative natural materials such as stone and wash made it possible to move past the use of wood. However, this does not affect the significance of wooden architecture, and the issue of preservation of wooden structures remains relevant. That is why the objective will be to use a deep knowledge gained from ancient times for the protection of wooden structures in Japan, which will significantly reduce the number of lost cultural objects of our country.

At this stage, I plan to apply the method of "reversibility" at the archaeological mausoleum of the 3rd complex of Aksu Ayuly II. The mausoleum refers to the Nura culture of the Middle Bronze Age – 15th to 13th centuries B.C.

Mausoleum No. 3 of this complex was originally investigated as early as 1952 by academician A. H. Margulan. He discovered the later burial, placed in a box from the Bronze Age. The excavation results were published in 1966 in the famous monograph "The Ancient Culture of Central Kazakhstan," which is a reference book used by every archaeologist in Kazakhstan.

In 2002 study of the mound continued with the Expedition of the KarNU. Previously unknown architectural features were discovered - another stone wall and inner ring-type ditches. In the central box the remains of cremation and the fragments of ceramic vessels were found.

The main value of mound No. 3 of the Aksu Ayuly II complex is that it is the largest and most complex site among the studied sites of the Nura Culture of Kazakhstan according to its construction. It is obvious that it belonged to a member of the aristocracy of the Bronze Age, and was built much earlier than Begazin mausoleums (10-8 cc. BCE). This suggests that the social structure of this ancient society was much more complex than we imagined before.

From 2009 to the present, the Aksu Ayuly complex has been investigated by Kazarchaeology LLP in the framework of the state program "Cultural Heritage." The main difference between this complex and the monuments of Japan is the construction material - stone. The choice of this monument is due to the previous studies and the need to conduct further maintenance of the structure. To preserve this structure, a series of events can be planned, using the knowledge gained from the lectures "Survey and Recording / Documentation of Wooden Structures," "Recording of Wooden Structures (Photography)" "Survey on Painting and Plans for Painting Restoration" "Restoration of Wooden Structures in Practice I: Repair of Temple Architecture":

1. Photo and drawing graphic works
2. Analysis (if necessary) of the dismantling of stones
3. Drainage system installation

4. Fixing flagstones
5. Landscape planning activities and consolidation of security zones
6. Improvement works within the complex
7. Installation of security panels

Next to the archaeological sites, Kazakhstan has a number of buildings of architectural artistic merit from the 19th to early 20th centuries. About 15 buildings have been renovated in Almaty alone. The artistically stylistic facades of the buildings are mainly based on a combination of common trends in wooden architectural art of houses: the house of the Officers' Assembly, which is now the museum of folk musical instruments in the name of Yhlasa, the Verny gymnasium with three classes of education, house of the merchant Gabdualiev - fabric store "Kyzyl-Tan," house of Asfendiyarov, house of the scientist gardener Baum, house of the merchant Shahvorostov, house of the merchant Gavrilov, house of the merchant Filippov, and the Complex of Hhan's headquarters of the Bukeyev Horde from the 19th century in West Kazakhstan Province.

The archaeological and scientific restoration works of these sites of cultural heritage are funded by the state.

During this period I had the opportunity to learn a large volume of interesting information on the protection and preservation of cultural heritage and about the system of protection of the cultural heritage of Japan itself, and I was able to communicate with the participants of the training and to learn about the situation and existing problems in the protection and preservation of the cultural heritage of their respective countries. The knowledge of historical and cultural heritage I have obtained will be used for the protection of the cultural values of my country. I hope for further cooperation from all those concerned.

Kyrgyz Republic

Abdykanova Aida Kalydaevna

Final Evaluation Report on Training Course on Cultural Heritage Protection in the Asia Pacific Region 2013: Preservation and Restoration of Wooden Structures

INTRODUCTION

Thanks to the initiative of ACCU Nara, the Agency for Cultural Affairs of Japan, ICCROM, the National Institutes for Cultural Properties in Tokyo and Nara, in cooperation with JACAM and JCIC-Heritage, I had a great opportunity to participate in the Training Course on Cultural Heritage Protection in the Asia Pacific Region 2013: Preservation and Restoration of Wooden Structures. This training course took place from 3 September to 3 October 2013 in the Cultural Heritage Protection Office, ACCU Nara, Japan. The whole month I was involved in a series of interesting and useful presentations and practical work on important cultural heritage sites, some of which were included on the UNESCO World Heritage List. The time spent in Japan has stimulated my thinking and allowed me to take a fresh look at the challenges and problems of cultural heritage conservation in my home country. Some basic concepts and practical applications which might be realized in the Kyrgyz Republic are presented in this report.

EXPECTATIONS

As a participant in the training course I was expecting to improve and broaden my education and professional skills in the sphere of Cultural Heritage Studies, which is relatively new for me, and particularly to get experience in the following areas:

- Theoretical part (Cultural Heritage Studies as a whole is a comparatively new field which is still not well known for people in my country who work every day with cultural properties, such as architects, archaeologists, museum workers, etc.);
- Experience in conservation, preservation and restoration of wooden structures, including practical work with wooden objects.
- Specifics of the Japanese approach to conservation, preservation and restoration of wooden objects. The wooden heritage of Central Asia and the Asia Pacific are quite different. There is a lot of unique wooden cultural heritage in Japan. The country's long history and rich experience of preservation of wooden cultural properties should contribute a great deal to cultural heritage preservation, not only in my home country, but throughout the world.

Also, I realized that my participation in the training course will significantly expand my collegial networks, will help me keep in contact with specialists from different countries of the region, to obtain access to their experience, and to share specific knowledge and techniques in my home country.

In general, I can say without reservation that I was not disappointed in my expectations. Actually,

I have gained a rich and memorable experience, which will greatly contribute to my professional background and growth.

LEARNING OUTCOMES

Some outcomes of the workshop were broad, others were quite specific. First of all, I have become acquainted with the theoretical framework of developing and undertaking Cultural Heritage Studies and the challenges it has faced recently as a result of the presentations by Dr Neel Chapagain and Dr Gamini Wijesuriya. A detailed explanation of the system of protection and preservation of Cultural Heritage in Japan was kindly provided by Dr Inaba Nobuko and Dr Nagao Mitsuru. The wide range and richness of the various wooden heritage objects in Japan were ably represented by Dr Toyoki Hiroyuki. The lecture by Mr Komine Yukio gave essential information about the prevention of damage to wooden structures from insects. Another presentation, on Risk Management of Cultural Heritage, was given by Mr Murakami Yasumichi, which was very useful because the content of the lecture was based on his own experience after an earthquake in Hyogo prefecture. Due to practical training at sites such as Shonen-ji Temple, Yakushi-ji Temple, Todai-ji Temple and Ujigami Shrine, I had a great opportunity to observe preservation and restoration work in practice, which made the experience so unforgettable. All presented topics were given by professional, high-level specialists in the chosen area, which helped us to have a deep and more detailed understanding of the specifics of each area. Site visits and the possibility to have direct contact with owners and other people who are personally involved with cultural properties allowed us to value their personal admiration for and attitudes toward cultural heritage objects, which helped us to understand their way of thinking and to obtain information about the methods they used for the successful preservation of cultural heritage objects.

Theoretical part (Aspects of Legislation and Education)

In addition to the theoretical framework of Cultural Heritage Studies, which was mostly represented by the ideas, different approaches, and implementation of conservation projects in different regions within various cultural and political contexts, I also obtained a lot of information about legislation in the sphere of Cultural Heritage Protection. My thoughts relating to improvement of the legal system in the Kyrgyz Republic were enriched significantly during this training. It may be possible to implement some aspects of the Japanese legal system in the sphere of Cultural Heritage Protection in the Kyrgyz Republic. Firstly, assigning responsibility to local government bodies for sites which are located within the territory of these local regions or areas. According to the legal system of the Kyrgyz Republic, local government bodies are responsible for sites which are on a list of local significance. But because of the absence of specific additional regulations to support the main law, local offices do not, in fact, care about these sites. The absence of specific regulations, inertness of superior authorities, lack of funding and lack of special staff members have meant that representatives of local government bodies often have not known, or have not cared about local cultural properties. Strengthening both superior and local authority, developing special regulations, and ensuring a sufficient budget allocation will have an influence on building an effective system of control and monitoring by governmental bodies. Secondly, it is recommended to create and implement specific guidelines for restorers and architects

who are responsible for the preservation and restoration of cultural objects. All restoration works are controlled by the Ministry of Culture, Information and Tourism. Actually, almost all restoration works are realized on the basis of restoration plans, which were designed according to outdated standards left over from the Soviet Era, and where the budget looks more important than other aspects. In the light of these facts, the development and implementation of new guidelines or instructions and regulations is very important to protect our cultural heritage.

Also, it is very important for us to have a full database of objects of Cultural Heritage in the territory of the Kyrgyz Republic. Updating and registering a previous list of cultural properties might help to solve many problems of ownership and urban planning. This is possible only in case of all-round collaboration of all interested parties: government bodies, UNESCO and ICOMOS offices, scientific centers and institutions, NGOs, tourism agencies, museums, experts and local people, and everybody who is potentially able to guard cultural heritage objects. By having such information we will be able to avoid conflicts which may cause the legal system to collapse.

We have another significant gap related with the sphere of education. There are no courses or workshops, either for specialists and representatives of government bodies, or for students or other interested persons. We need to develop special courses at universities and to provide professional advanced training to representatives of government bodies. Of course, this is a result of the absence of a clear government strategy in human resources policy in the sphere of Cultural Heritage protection. Nowadays many such initiatives are supported by local offices of UNESCO, ICOMOS, the National Research Institute for Cultural Properties in Tokyo, Japan, IPinCH, and the efforts of local and foreign experts. The teaching of introductory courses devoted to Cultural Heritage protection and management in appropriate departments, faculties and programs of universities might contribute a great deal to the spread of information among young people who will be involved with cultural heritage in their future careers.

Practical applications

In this part of the report I have gathered more practical learning outcomes which might be successfully realized in my home country. They are given below in the form of examples.

Example #1

Due to this workshop, I realized that in most countries in the Asia Pacific region, including Japan, there are plenty of wooden buildings. In comparison, in my country there are not so many wooden structures, although we do have a few wooden buildings which were built in the 19th century. Therefore, there are a lot of archaeological wooden objects and structures unearthed in the process of archaeological excavation. And in those cases we need to conduct a very careful exploration and documentation of discovered objects. My experience in Todai-ji Temple, where each of us made an individual detailed drawing of paintings dating back 1300 years, helped me to understand that visual and direct observation of an object by the researcher is much more important than photography or any

other kind of documentation.

Example #2

Next are the practical applications in Japan that might be successfully adopted in my home country. Here in Japan I observed the work of many organizations such as the Japanese Association for Conservation of Architectural Monuments, the Japanese Association for the Preservation of Techniques for Traditional Tiles, National Association for the Conservation of Roofing Techniques for Temples and Shrines and many others. This means that the professionals are not alone. They can meet each other at meetings, share their knowledge and experience, discuss any challenges they face, and create more effective and well-balanced solutions. Another good case is the Association of local people in Shirakawa village, where only their initiative was the first step in preserving this unique area for future generations; now local and national government bodies are also involved in this important process of preservation of the site. Of course, in my country there are not so many specialists in the field of preservation of cultural property, but we can start to work in this direction. We really need to unite our efforts to be more effective in the protection of our cultural heritage.

Example #3

During the practical on-site training I observed that one of walls of Horyu-ji Temple was supported by use of a special wooden structure. About 10 wooden beams 1 meter apart were fixed on the ground, and were pushing against the wall to support it (Photo #1). This way of supporting a wall can be used in my country to support the walls of temples and buildings made from mud bricks, or mud structures which are revealed in the process of archaeological excavation. The recent practice of preservation of the remains of these buildings is represented by construction of the roof and fixing walls with modern clay bricks. But in this case, the difference between ancient and modern walls is often not clear, and sometimes a modern wall completely covers an ancient one. At the same time, mud brick preservation structures change the original structure of the walls. Wooden structures to support these walls would be the best solution.

Photo #1. Wooden structure supporting a wall in Horyu-ji Temple area, Japan (Photo by A. Abdykanova).

Example #4

There are many nominations of intangible heritage including 'living heritage' from Japan to the UNESCO World Heritage List. Kyrgyz people have a very rich and varied collection of cultural and traditional skills, rituals, elements of art, poetry and genres of music, which are unique not only to Kyrgyz people, but also important to a number of other nomadic societies. It would be great to prepare a series of nominations to the list of intangible cultural heritage from the Kyrgyz Republic. The great cultural tradition of rebuilding Shinto shrines every 20 years in Japan is certainly one of the greatest examples of 'living heritage' in the world.

CONCLUDING REMARKS

In general, I would like to say that this workshop was very helpful for the development of my professional background and my future career. I obtained a lot of material about the specifics of Cultural Heritage Studies in the Asia Pacific region, and particularly in Japan. I was very impressed by the hard work that is being done in the sphere of Cultural Heritage preservation in Japan. The Japanese style of Cultural Heritage preservation once again confirms the uniqueness of each region, and its potential to contribute to World Cultural Heritage—we are the same yet we are unique. Thanks to them I have broadened my understanding of the meaning of Cultural Heritage and the methods of preservation taking into account specific regional differences. I would like to wish my Japanese colleagues further success in this sphere.

ACKNOWLEDGEMENTS

At the end of my report I would like to express my gratitude to the excellent staff members of ACCU Nara for organizing this training, to the Agency for Cultural Affairs of Japan, ICCROM, and National Institutes for Cultural Properties in Tokyo and Nara, JACAM, JCIC-Heritage for supporting this event and providing outstanding classroom lectures and on-site workshops, and to the Ministry of Foreign Affairs of Japan, the Japanese National Commission for UNESCO, Nara Prefectural Government and Nara City Government for their kind patronage and great hospitality. At the same time I really appreciate the great efforts and high professional level of all our lecturers, I wish all of them success in their future activities.

Also, I would like to point out that my participation in this training became possible thanks to the members of the National Commission for UNESCO in the Kyrgyz Republic, the National Institute of History and Cultural Heritage and American University of Central Asia.

USED MATERIALS

My evaluation report is based on materials of the **Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2013: Preservation and Restoration of Wooden Structures** given by lecturers and ACCU members.

Lao P.D.R.

Thammavong Siviengkham Vieng

Final Report: Training Course 2013, Nara

1. Introduction

"Natural heritage" forms an important part of any culture, encompassing the countryside and natural environment, including flora and fauna, scientifically known as biodiversity. These kinds of heritage sites often serve as an important component in a country's tourist industry, attracting many visitors from abroad as well as locally.

What I experienced during my one month stay in Japan was not only participation in lectures and site visits, but also the opportunity to observe Japan's architecture, lifestyle, culture, religion and ceremonies, and above all, to perceive and compare Japan's method of conservation with that of my country. It is very useful to perceive the methods of other countries, as in this training course in Japan, with participants from 16 countries adding their knowledge of different conditions, cultures, and methods of preservation and restoration of historic buildings.

What do we do about preservation and restoration of wooden structures in Lao PDR, and what is done in Japan and the 15 other countries? What are the similarities and differences between wooden structures and the conservation methods in different countries? What is the purpose? All of us have a common purpose: the preservation of cultural and historic buildings (in this case, wooden structures). What is our wooden heritage? Why should we preserve it? How can we do it?

If we are able to find the answers to these questions, we can preserve our heritage, our culture, our history. We can transfer it to future generations. This is our duty. When we look at our cultural buildings we feel pleasure and admiration for our ancestors, because of their knowledge and culture.

Japan has a long, rich and splendid cultural heritage, which reflects its civilization and national history inherited from the past. There are numerous wooden structures remaining from the 7th century, many of which have been well preserved due to proper maintenance activities, and restoration projects undertaken in a timely fashion, because the Japanese government has a very good system for the protection and preservation of cultural properties, and Japan is highly experienced in the science and techniques in this field. So the wealth of knowledge and techniques thus accumulated in Japan should be shared with other nations of the world, especially in the Asia-Pacific region.

2. Training program

The training program was well organized by its sponsors. It was very stimulating and covered many important aspects of preservation and restoration of cultural properties, mainly wooden structures in

Japan, with other lectures presented by ICCROM representatives concerned with cultural heritage protection in the Asia-Pacific region as well as all around the world.

After the Opening Ceremony was inaugurated at the ACCU office at Nara by the Director of ACCU, we participated in the following lectures in the training course.

• Lectures



- Introduction to Architectural Heritage in Asia
- Presentation and Discussion: Country Reports by Participants I
- Cultural Heritage Protection System and Current Status of Conservation in Japan
- Conservation and Restoration on Wooden Structures in Japan
- Prevention of Insect Damage to Wooden Structures
- Risk Management of Cultural Heritage
- Value Assessment and Survey and Recording/Documentation of Wooden Structures
- Preservation of Cultural Properties (Theory and Practice) I, II

• Site visits and on-site lectures



- On-site Lecture: “Buddhist Monuments in the Horyu-ji Area”
- On-site Training “Restoration of Wooden Structures in Practice I: Repairs of Temple Architecture”
- Systems for Restoration Project and Construction Planning
- Orientation for the Practical Training: “Overall Process of Repairs”
- On-site Lecture: “Recording of Wooden Structures (Photography)”
- On-site Lecture “Restoration of Wooden Structures in Practice II: Repairs of Painting”
- On-site Training: “Preservation and Maintenance of Wooden Structures I: Citadel-Hikone-Jo

Castle”

- On-site Training: “Preservation and Maintenance of Wooden Structures II: Vernacular Houses and Townscape”
- On-site Training: “Preservation and Maintenance of Wooden Structures III: Vernacular Houses and Townscape”

• Practical training

- Practical Training: “Survey and Recording/Documentation of Wooden Structures”
- Practical Training: “Survey on Painting and Plans for Painting Restoration”


• Participant presentations and discussion



- Presentation and Discussion: Country Reports by Participants I
- Submission of Final Reports

I studied the importance of wooden cultural heritage structures, with every lecture impressing me, as a member of the policy planning committee, with the value of such buildings to the beliefs and social interests of the community in the past and continuing into the future. I hope to implement methods for conserving and preserving vernacular wooden structures as important cultural properties, together with their natural landscaping. The participants discussed many issues related to the content of each lecture, both among themselves and also with the lecturers. It was very kind to give us the respect of equal status with skillful persons in each field.

3. Evaluation of the relevance of this training program to conservation work in our country

- In our country, the central government always considers our people as a force in term of

national defense and development, and while cultural heritage protection activities have been carried out since ancient times, the first legal regulation was instituted just forty years ago. Obviously this idea is practically limited to the conservators and technicians who are in charge of the cultural heritage protection framework, and is still not commonly recognized by the general public, this being a big problem to be solved in the future. Even though the law on national heritage, adopted by the National Assembly and declared by the government a few years ago, has been enacted, it needs time to be enforced for people around the country.

Human resources: In keeping with the enormous number of cultural objects in Japan, and the country's long history of experience in cultural heritage protection activities, the Japanese are also experienced in applying scientific methods to the preservation and restoration of cultural properties. Thousands of experts in charge of cultural heritage protection, including conservation architects, conservators, skilled craftsmen and so on, specialize in their own specific fields, and carry out their activities throughout the country.

In my country, however, there is a deficiency of experts who are specialized in these fields, and while the limited number of officers in charge of cultural heritage protection, who belong to government agencies dealing with cultural affairs, are extending fieldwork activities over the entire country, at present many cultural objects are still not classified or described as cultural heritage as they should be, meaning that many of them are not yet properly protected from damage and disasters which might emerge at any time in the future.

Preservation and restoration activities of wooden architecture

In Japan, many items of cultural property have been classified and registered on the list of National Treasures and Important Cultural Properties, and most of them have been protected and preserved in the proper manner. These preservation and restoration activities have been applied to individual objects including wooden artifacts and wooden structures, some of which still survive from the 7th century. Their condition as shown to us during the site visits is incredibly perfect, as if they had been built just fifty years ago.

Some preservation and restoration activities for cultural heritage in my country are successfully carried out in areas where the idea of heritage protection has become established, for instance, the town of Luang Prabang, the capital Vientiane, and Vat Phou and Associated Ancient Settlements within the Champasak Cultural Landscape, where all historic building are classified and listed for protection and maintenance under national and international rules.

- Some ideas and practices gained from the training course would be most useful in our country, and some of the most valuable knowledge and experiences from this training course could possibly be applied and integrated into our work process in Lao PDR.

The concept of cultural heritage protection: Currently, the basic concept of cultural heritage protection in my country is imprecise in comparison with the Japanese system. But of course we have to make it more detailed in various areas, such as civil engineering works, groups of vernacular ethnic houses, properties built with superior design and techniques, and heritage possessing high academic value, etc. These changes must be carried out in the classification and registration process as soon as possible, as well as being applied to the management rules that will cover all these areas.

Preservation and restoration techniques for wooden architecture: Each nation has its own methods and techniques for the protection, preservation and restoration of its cultural properties, which should be shared with other countries as well. As I mentioned before, Japan has a rich and splendid cultural heritage, and has numerous wooden structures remaining from the past, many of which have been well preserved due to proper maintenance activities, and restoration projects that have been applied in a timely fashion, because the Japanese government has a very good system for the protection and preservation of its cultural properties. Japan is also highly experienced in the science and techniques in this field. So the wealth of knowledge and techniques thus accumulated in Japan should be shared with other nations in the world, especially in the Asia-Pacific region. As conservation architects, we should learn how others have succeeded in this field, and select the best examples to apply to our own situation.

4. Conclusion

During the 2013 ACCU training course in Nara. I acquired many skills and new information on the conservation and restoration of cultural heritage. The various sessions and practical training will be helpful in my work. In Japan, the level of preservation and restoration of cultural properties is higher than in most other countries. Through the training course I gained new ideas and advanced knowledge with which I will be able to expand my current scope and attitudes towards the preservation and restoration of cultural properties, which will be helpful for my country. I will most certainly share my experiences with other conservators in my department back home.

5. Acknowledgments

I learned about the survey of painting, the history of wooden architecture in Japan, architectural heritage in Asia, dendrochronology, and conservation science for wooden materials. I also visited restored sites, towns and wooden buildings in Japan, from which I learned a lot. I will try to apply everything I learned in the training course to hopefully do similar work. It will take some time to organize all that I have learned and apply the experience in the best way.

The training course in Nara was very beneficial for me for improving my knowledge and learning about preservation, restoration and conservation, and it was also a great pleasure for me to participate in the 2013 training course.

I would like to express my gratitude to the government of Japan, ACCU, ICCROM, Nara prefectural government and other organizations for giving me the opportunity to participate in this training course, and to all the lecturers and experts for sharing their information, all of which was beneficial.

Maldives

Ismail Nasru

FINAL REPORT
Training Course on Preservation and Restoration of Cultural Heritage in the Asia-Pacific Region, 3rd SEP – 3rd OCT 2013

Introduction

I have been working in the field for over nine years, and have participated in several seminars and workshops on several topics in different countries, from which I have gained lots of information related to my field of work.

The Department of Heritage under the Ministry of Tourism, Arts and Culture has the main mandate concerning the protection of all kinds of heritage in the country; specifically, tangible and intangible heritage, and everything that comes under these two main categories. The department came into existence as a separate body for the protection of heritage in 2010, due the abolition of the National Centre for Linguistic and Historical Research after the change of government in 2008. Before its abolition, this centre had responsibility for heritage protection along with many other mandates such as historical and linguistic research etc.

I had the chance of working on both sides until I got myself transferred to the Department of Heritage in October 2011. Since then I have been working towards the protection of heritage in the Maldives with my colleagues on different levels. However, I have had few opportunities for hands-on experience in the documentation, conservation, restoration and preservation of sites and structures.

This training programme on preservation and restoration of wooden structures in the Asia-Pacific (3rd September – 3rd October), has given me more in-depth information and experience in the documentation, conservation, restoration and preservation of wooden structures. As far as documentation is concerned, I could apply it to other areas than wooden structures as well. This training was a great opportunity for a small island nation like the Maldives, and especially for me, to gain information, knowledge and experience as well as to understand the status of cultural heritage protection in the Asia-Pacific region.

The training was organised in order to safeguard important cultural heritage for future generations, and to train heritage professionals for proper investigation, analysis and preservation, with a view to building the capacities of professionals who have been working on cultural heritage protection in the region. This training course aimed to provide participants with the latest methods and techniques for investigation, analysis, preservation, restoration and management of wooden structures. The objectives of this training course were as follows:

- Providing knowledge of recording/documentation and analytical methods for wooden structures;
- Providing knowledge of principles and methodologies for preservation of wooden structures;
- providing practical knowledge of technology/techniques and hands-on training for preservation and restoration of wooden structures;
- Providing knowledge of maintenance, utilisation and risk management of wooden structures;
- Providing an opportunity to network with colleagues from the region and share experiences.

I would like to briefly highlight the status of heritage protection and management in the Maldives. We have a variety of cultural properties in the country, most of which consist of coral stone and wood, with some including metal and other materials. The problem though, is that despite the enormous number of sites and properties, we have relatively few options towards the protection and management of these places. There are several factors that have posed challenges for us in the protection of cultural heritage. Our legal system lacks proper protection of heritage, and due to the lack of experts in the field of heritage in the country, we have had very few studies done, and we lack proper guidelines and strategies for looking after them. Another challenge in the protection of our cultural heritage is the lack of resources, especially in the area of finance and materials (i.e. equipment and machinery).

Being a developing country, which places much more focus on spending money on important aspects of daily life such as housing, education, health care and so on, our department receives almost the lowest priority in the country's annual budget. Despite the fact that tourism is the main source of income, heritage plays a relatively minor role in this sector, as the natural beauty of our islands – the blue sea and sandy beaches and multi-colored reef fish – gain much more attention. As mentioned in last year's (2012) final report from the Maldives by Ms Shiura Jaufar, we have been discussing with the tourism sector the possibility of including heritage sites in the tourism strategic plan and introducing and promoting cultural tourism in the country. We are still working on this. We are working to inscribe five coral stone mosques in the World Heritage List, and this would be a good way to start promoting our heritage sites to the cultural tourism industry, which will attract more tourists to the country if we promote it to the local public and international community. We believe that this will also increase the department's priority in the country's annual budget and also target more funding opportunities towards their protection. This will thus increase the status of cultural heritage in the Maldives. Referring to the problems above, I would like to highlight what I learnt from this course, and which could be applied to the situation in my country.

Lectures

The topics covered in the course were very broad and diverse, including architectural heritage, cultural heritage protection systems, measured drawings of cultural heritages, conservation and restoration practices, prevention of insect damage to wood, general and risk management of cultural properties, documentation and value assessment through the survey and recording of wooden structures, and

proper ways to photograph cultural properties for documentation. Information given in the form of lectures, workshops and site visits encouraged a better understanding of how cultural properties were looked after in Japan. Although most of the information was familiar and useful, some of it would be a little difficult to apply in the Maldives due to difference in policies in our country.

For instance, the lecture on how cultural properties are classified in Japan (Cultural Heritage Protection and Current Status of Conservation in Japan, 9th September 2013), was very interesting, and the system appeared unique compared to some of the other systems used around the world. The inclusion of many different categories in the cultural properties register of Japan is an impressive way to ensure that the best conservation methods are applied for every cultural property. Although it works effectively in Japan, it would be very hard to make it work in the Maldives due to differences between the Japanese system and the current system used in the Maldives. We currently have one inventory detailing all the heritage sites in the country, and a national heritage registry of sites has not even been created yet. During the past year we began to revise and update the list, and this process is still ongoing. As mentioned above, we lack proper laws and guidelines on how to look after and protect our sites. However, I obtained a lot of information and knowledge on many methods for improving the system in the Maldives, and to try to make it better and more effective over time.

It was very surprising to learn about the mutual understanding between developers, the local public and the government regarding the protection of cultural properties. I fully support the concept of the Japanese that cultural heritage belongs to everyone in the country, and it is the role of everyone to protect this heritage. To successfully implement that ideology in the Maldives may take longer than in Japan, but working to promote this concept to the local public and the higher authorities in the government will be one of the priorities of my work in the future.

Though not as advanced as in Japan or some other countries, some of the conservation and management practices we were taught are being practiced in our country. Methods such as reconstruction, restoration and reburial are widely used in the Maldives.

One of the most interesting and important lectures was given by Yukio KOMINE sensei, on the "Prevention of Insect Damage to Wooden Structures" (10th September 2013). Damage caused by insect attacks is one of the major problems in the Maldives, and this lecture covered a lot about the problems caused by insects. Fortunately, some of the most important methods are already being applied in the conservation process in the Maldives. I believe that if time permitted we would have been given a lot more information on the topic. One month is too short to go into much detail with many other topics to cover.

As I have a very keen interest in photography, the lecture given by Kazuki SUGIMOTO sensei on "Recording of Wooden Structures – Photography" (23rd September 2013) was highly interesting. This was the first time to touch a "REAL" still camera. As I have been involved in photography for quite a

long time, most of the topics weren't new, though learning how to use the still camera with film was amazing.

Lectures by Dr. Neel Kamal Champagain and Dr. Gamini Wijesuriya from ICCROM were very useful in getting more insight on the protection of cultural heritage internationally. Many of the doubts I had were alleviated.

The programme started with the sharing of information on cultural heritage protection systems in the Asia-Pacific region among participants, and interestingly, it helped a lot. Most of the countries have many things in common, and the issues they all face are similar, which is also true of the Maldives. This made me think more about how certain things can be done for the betterment of the cultural heritage protection system in the Maldives.

Workshops

Practical training was one of the most important parts of the whole programme. The practical training at the Shonen-ji Temple (13th September 2013) was my first hands-on experience in that particular kind of work as we don't have these kinds of plastered walls. Although we don't have these in the Maldives, it was a very good experience knowing how the work was done successfully in Japan. It was amazing how they were able to identify the different layers of the plastered wall.

"Survey and Recording / Documentation of Wooden Structures" (18th-20th September 2013) was another interesting practical session. As I have been involved in drawing sketched drawings of structures, this practical work was easy, but I didn't take it too lightly because from the past lectures I knew that the Japanese way would be different at some point. And so it was when it came to the manual scale drawings, which I have no experience of. This was a completely new thing for me, as back in the Maldives, once the sketches are done, scale drawings will be done using a computer (AutoCAD).

As I have a very keen interest in photography, the practical training on "Recording of Wooden Structures – Photography" (23rd September 2013) was very helpful. I came to know more about a number of things, especially using the "Film Still Camera." It was a new and interesting experience.

The practical training on restoration of paintings was also extremely interesting. The way it is done in Japan is amazing. Like the recording of wooden structures using drawings, the paintings are documented in a similar way. This is not how it is done in the Maldives. But as I received a hands-on experience with this, I learnt a lot. Technology may become advanced and easy to use, but it is not smart enough to look into certain details such as the human mind and eyesdo. This was the most important lesson I received through this practical training. The words may sound poetic and simple, but it is much broader than that.

Site visits

The field visits to different temples, castles, museums in Nara, and other places elsewhere were another successful method to understand what was taught in the training programme. Through these visits we were able to see how the sites were managed and utilised in Japan. For instance, our visit to Ogimachi area in Shirakawa Village in Gifu was surprisingly interesting. The local community plays a major role in the protection of their cultural heritage. But in the case of the Maldives, this role has always been played by the main government. This has to change. The involvement of the local community is very important in protecting the cultural heritage of the country, although there are many other factors as well.

Through site visits I was able to obtain some techniques on how to protect the cultural heritage of the country. It may be hard initially, but once started, efforts can be made to achieve the goal. Nothing is impossible with hard work and effort. The site visits played a major role in giving more insight on the topic of maintenance, management and utilisation of the cultural properties within the country.
Conclusion

Heritage sites are always hard to protect and maintain anywhere, especially when we lack professionals in the field. We have many challenges in terms of protection, from very simple ones to very serious issues. This training organised by UNESCO, ICCROM, ACCU Nara and other affiliated organisations in Japan has helped a lot in building our technical capacity in the field. I was able to learn many new methods and approaches on better conservation, restoration, preservation, management and presentation of cultural heritage for future generations. It was a very fruitful course, and the lectures, workshops and site visits greatly helped me to understand many of the best practices carried out in Japan. Though some of the methods may be difficult to adopt in the Maldives, the methods that are possible to apply are very important and valuable for achieving success in the protection of cultural heritage in the Maldives.

Acknowledgements

I would like to thank all of the staff in the ACCU Nara Office in organising such a fruitful training course, and especially Aya-san and Wakiya-san for the wonderful communication via email. I would like to thank UNESCO, ICCROM and all the other organisations in Japan that contributed to the training programme in many ways. Everything during our stay in Japan was very well organised, and made it feel like a home away from home. Thank you very much for the wonderful arrangements by ACCU Nara. I would like to specially thank Ms Moto'oka Hazuki (Hazuki-san) and Mr Yuki Otabi (Yuki-san) for the wonderful company they provided during most of our stay, as well as Ms Hata Chiyako (Hata-san) for being the most important person throughout the training. Without you we might never have understood what was taught. Thank you.

I would also like to thank all the participants from other countries for their wonderful company in making my days spent in Japan unforgettable and memorable. Thank you all.

Marshall Islands

Titiml Stevens R.

Cultural Heritage Protection in the Asia-Pacific Region 2013
PRESERVATION AND RESTORATION OF WOODEN STRUCTURES
3 September to 3 October, 2013.
ASIA-PACIFIC CULTURAL CENTRE FOR UNESCO (ACCU)
NARA PREFECTURE, JAPAN

Geographic Overview

The Republic of the Marshall Islands consists of 29 atolls each made up of many islets and 5 islands in the central Pacific between 4 degrees and 14 degrees north and 160 degrees and 173 degrees east. The atolls and islands are situated in two parallel chain-like formations known as the Ratak (sunrise) group and the Ralik (sunset) group. The total number of islands and islets in the whole Republic is approximately 1,225 spreading across a sea area of over 750,000 square miles. The total land area is about 70 square miles (181 square kilometers). The mean height of the land is about 7 feet above sea level (2 meters).

ACCU Training

In the Asia-Pacific region there are several forms of cultural heritage, all with their own unique values that makes them culturally unique. Participants from 16 different countries came together from all over the Asia-Pacific region to participate in the **Training Course on Cultural Heritage Protection for Preservation and Restoration of Wooden Structures.** The training course was held from September 3, 2013 to October 3, 2013 and included participants from Pakistan, Brunei, the Kyrgyz Republic, Kazakhstan, the Philippines, Laos, Thailand, New Zealand, Vietnam, Mongolia, Bangladesh, Bhutan, Maldives, Sri Lanka, Indonesia, and the Marshall Islands. The venue was the Cultural Heritage Protection Cooperation Office, Nara General Office, 757 Horen-Cho, Nara, Japan.

Defining Heritage

Over the past several weeks I have been listening to lectures from experts with various backgrounds in the fields of conservation and preservation with tremendous knowledge in their chosen fields, and I have come to wonder if everything is heritage, or heritage is something else that only a select few possess given their status in life, much like specific sites or objects that are considered as heritage due to age, general viewpoint or simply because it has withstood the test of time throughout its history. During the past few years since I started working for the Republic of the Marshall Islands Historic Preservation Office, I have had to explain to scholars, professionals, friends and others exactly what heritage is. I have had to think about the term heritage so many times, and in almost every case my definition has varied according to the situation, I have developed a theory, which I would like to share, although I might be completely off base, in which case I would really need to re-evaluate the whole meaning of the word heritage yet again. To put it in simple terms, I theorize that heritage is whatever each of us individually or perhaps collectively wish to preserve in one's own lifetime and pass on to the next generation. You can multiply that exponentially in a broader sense if you are looking at defining it on a national or regional scale for preservation or conservation work. The simple answer is that if I want to preserve something so I may pass it on to my children, and their children after that, and so on, then it is my heritage and theirs as well. This, of course, varies quite a bit because heritage is such a broad term, however simple the meaning is at first thought, and I have found that putting an actual meaning has proved to be a very difficult task, depending on the person or the group expressing their own meanings and its interests. To make it clearer, I am including a universal definition of Heritage, as used by UNESCO and based on the World Heritage Convention:

What is Heritage in the larger context as defined by UNESCO? Simply put…

Definition of World Heritage *Source: Operational Guidelines for the Implementation of the World Heritage Convention, II.A* Cultural and Natural Heritage: Cultural and natural heritage are defined in Articles 1 and 2 of the World Heritage Convention.

Article 1

For the purposes of this Convention, the following shall be considered as "cultural heritage":

monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;

groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;

sites: works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view.

Article 2

For the purposes of this Convention, the following shall be considered as "natural heritage":

natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;

geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;

natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.

Mixed Cultural and Natural Heritage

Properties shall be considered as "mixed cultural and natural heritage" if they satisfy a part or the whole of the definitions of both cultural and natural heritage laid out in Articles 1 and 2 of the Convention.

Cultural Landscapes

Cultural landscapes are cultural properties and represent the "combined works of nature and of man" designated in Article 1 of the Convention. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and

internal.

Movable Heritage

Nominations of immovable heritage which are likely to become movable will not be considered.

Outstanding Universal Value

Outstanding universal value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole.

The Committee defines the criteria for the inscription of properties on the World Heritage List. States Parties are invited to submit nominations of properties of cultural and/or natural value considered to be of "outstanding universal value" for inscription on the World Heritage List.

At the time of inscription of a property on the World Heritage List, the Committee adopts a Statement of Outstanding Universal Value (see paragraph 154) which will be the key reference for the future effective protection and management of the property. The Convention is not intended to ensure the protection of all properties of great interest, importance or value, but only for a select list of the most outstanding of these from an international viewpoint. It is not to be assumed that a property of national and/or regional importance will automatically be inscribed on the World Heritage List.

Nominations presented to the Committee shall demonstrate the full commitment of the State Party to preserve the heritage concerned, within its means. Such commitment shall take the Operational Guidelines for the form of appropriate policy, legal, scientific, technical, administrative and financial measures adopted and proposed to protect the property and its outstanding universal value".

Evaluation of Course

The objectives of the course were very straightforward; however. the lectures and practical exercises that were followed up with study tours proved to be very intense over a one month period. I believe that it is impossible to retain all of the information given, and the large amount of material covered during the course in such a short amount of time. It is also true that not all of the information you will receive will benefit your agency or country. So it is wise to consider that Japanese methods, although extensive, might not suit your country's agenda given that heritage is such a broad term as previously explained.

During the course I listened to the lectures and participated in the discussions, did practical exercises,

and had one-to-one discussions on the train, while walking, etc. on the course material and how it affected not only the Marshalls but also other countries, and how these other countries would apply it. I could see that different topics in the course material may have interested certain individuals more than others due to different geographical regions and/or similar cultural sites and religious backgrounds (for example, mosques are quite common in Southeast Asia) as opposed to the North and South Pacific (Marshalls and New Zealand); and therefore discussions may be useful in gaining necessary information on other parts of the region and the type of work that has been done. A practical approach may not be as useful in that there may be no such sites (temples/mosques) and information and practical exercises may only benefit in helping others understand a particular region instead of promoting the application of measures. This also works both ways in that knowledge of the wooden structures that are in the Marshalls may provide useful insight into the conservation work being done in the Marshalls; as opposed to a country such as the Maldives other than informational. I use the Maldives in this example because the Maldives and the Marshalls are similar in that they are both low lying coral atolls with similar weather, topography, environmental issues caused by rising sea levels yet they are quite different in terms of geographical region and religion. So while the Maldives has similar issues in conservation work due to environmental similarities, the types of work are different in that the Maldives has mosques that reflected the majority religion in the region than the Marshalls, which is predominantly Christian and has no such temples.

Management Structure

Japan's unique structures and designs have allowed them to pave the way forward in wooden structural design and management systems, and their sustainable use and longevity has proven that these work.

The many temple visits allowed me to see the hands-on approach to preserving these important cultural properties in several prefectures, and although each site is under its own management system within each prefecture, the common denominator for these sites that have allowed them to stand the test of time is the mindset of the preservation managers and specialists in their approach to maintaining these important cultural heritage sites. They all follow the same principles set forth on a national level but they also work in cooperation with the local governments and their stakeholders as well. Everybody is very mindful of the goal of these sites, which is to maintain authenticity in structural design, the management approach to materials, workers' skills, and integrity of the structural designs to preserve these important cultural sites, not only internally but for everyone to see and follow as examples of good management systems for wood conservation.

Not only did I see this in the design and approach to structures and sites, but also in the preventive management as well. The water guns are one of many things that I found to be useful to the Marshalls. Although the actual use and practicality may not be something the Marshalls can use, it is the general preparedness and proactive approach rather than waiting for something to go wrong before addressing it. The general planning and utilization of practices is what I can hope I can incorporate into the general

planning phase of a project. It is not only proved to be a well thought out plan, but the implementation of the plan in sorting out the logistics and making sure that such countermeasures against disasters are also aesthetically pleasing and are well placed and disguised. Such an approach would be beneficial to our office as we have a limited land area and can utilize some of the creative ways of hiding such important safety measures within reach but not so visible and make them blend in more with their surroundings.

One approach that I found very interesting and probably the most useful to the Marshalls, and therefore possibly worth looking into further, is the government subsidy program. I think this approach can be most useful because in the Marshalls, land is privately owned. There is no government land and everything is built on private land and leased with the consent of the landowners and traditional chiefs.

It is an interesting approach and I would like to see such a plan or system proposed to Cabinet for its consideration. It would be interesting to gauge how such a system can be used for cultural sites and push heritage for tourism to the forefront rather than regarding it as an afterthought when planning for economic development. I would also be interested to see how the landowners react to such a proposal or system, in that they would also be gaining financial support to undertake cultural site improvements and to plan and implement sound management systems for sites and properties that are important to the heritage of the Marshalls.

Would these areas that I have highlighted be of any use in the Marshalls? I don't really know; that would require a little more thought and research. We would need to gauge the general interest, government/political interest, viability, the views of the private landowners and traditional chiefs, and the conservation and economic implications to even consider such a program or programs.

These would be key to addressing some of the issues that we have, as the Marshalls is not a financially rich entity, but putting these or similar programs in place would help not only the local communities but also rejuvenate interest in the younger generation regarding the importance of cultural heritage.

I have spent the last month learning about the culture of Japan and Japan's methods of conservation. Although I found almost all of the approaches and related philosophies very useful, I believe that these few criteria I have chosen could be something to start with on a small scale, as we are very limited in terms of budget, capacity, and logistical constraints to venture out on a larger scale. I have found that all the approaches can be utilized and this is something I will be sharing with my colleagues. I believe that it is at that time that we can discuss all the materials I will be taking back with me. Japan has such a beautiful culture and the willingness of the Japanese to share that culture and approaches to conservation and heritage management is greatly appreciated, not only by me personally, but by everybody who has attended similar training programs in the past. The passion and dedication to your cultural heritage is seen not only in the structures themselves, but in the many individuals I have met that are constantly working hard every day to maintain Japan's past for future generations. I see this in

the practical exercises and the presentations, and the amount of work that was put into the scale models speaks volumes about what is done on the larger scale.

Mongolia

Enkh-Amgalan Ariunnyam

Mongolia has a long history and a large area covered by cultural heritage. Unfortunately, there is much evidence showing that historic and cultural heritages inherited hundreds of years are being destroyed and damaged due to improper treatment by various people. In the last couple of years, the Government of Mongolia has been putting in place several arrangements to preserve, support and develop the legal environment covering cultural heritage.
However, implementation of the Law on Protecting Cultural Heritage is insufficient, and provisions of the law are changed from time to time. The difficulty is a lack of monitoring and supervision of the protection of cultural heritage. Mongolia has a population of only about 2.8 million people (2012) and a large territory (1.5 million sq. km) that is rich in historical and cultural heritage. Therefore, its is very difficult to control the protection process of cultural heritage in isolated or distant areas. Accordingly, we believe that Japan is the best country to serve as our model as we attract the public's attention and get local people involved in preserving and protecting cultural heritage, by training them and improving local community management.

Japan has many wooden structures, historic buildings, monasteries, and temples, with very specific traditional preservation and conservation methods. When Japanese conservators undertake conservation of historic buildings, they prefer to keep to the original form. Likewise, the most important requirement for restoration work in our country is to preserve the original design without losing its artistic characteristics, by maintaining traditional methods as far as possible. Wooden structures require the best techniques while maintaining traditional methods as far as possible, and dry wood is usually used. However, the restoration costs are increasing due to a lack of professional carpenters to prepare the timber, and a lack of proper tools, equipment and dedicated workshops. In addition, it has been hard to obtain appropriate roofing materials in the form of fired clay tiles.
Nowadays, this roof tile problem has been eliminated thanks to the import of roof tiles from China. But the use of unseasoned wood for restoration still occurs.

In Japan, prior to the restoration of a wooden structure, the basic elements of the whole structure are assessed and then the most critical parts of the columns and beams are restored and replaced if needed. The way that the traditional structure is always preserved while implementing this procedure seemed to be similar to what we try to do as well in our country. Another practice – spraying (strongly and weakly) the monastery building against dryness and fire hazard is a very smart and practical method for a country with a harsh climate like ours.

In Japan, the difficulty of balancing the land use is often shown, that is to maintain the landscape intace while developing the are. The zoning controls that have been applied over the cultural landscape

appear to be effective in maintaining the values of the area while also allowing the town to remain and tourism to flourish.

The Japanese system also reminded us of the importance of the relationship between conservation professionals and conservation practitioners. The processes that are in place to secure timber for conservation were a good example of a system that can sustain itself. There were many occasions where we could see this relationship in practice, with an explanation of how it had been developed.

I am an officer in charge of urban redevelopment in the Department of Urban Development and Land Affairs Policy Implementation and Coordination, Ministry of Construction and Urban Development in Mongolia. Policies related to cultural heritage are carried out by the Ministry of Culture, Sport and Tourism. However, we have been making a contribution in the field of preservation and protection management of historic facilities in urban and suburban areas.

I graduated from the Mongolian University of Science and Technology in 2010 as an architect, participated in training arranged by the Ministry of Education, Culture, and Science of Mongolia and Tokyo National Research Institute for Cultural Properties, and learned research and measuring methods for wooden structures through practical training at Amarbayasgalan Monastery in Selenge Province. That was my first time to experience and gain knowledge of the Japanese methods and techniques used for protection and conservation of wooden structures.

I also shared the experiences, approaches and problem-solving activities of participants from different countries in the Asia-Pacific region with different interpretations of cultural values, climate conditions, and traditions. It was very helpful and useful for me to improve my knowledge.

The most interesting and useful lectures for me were:

1. The cultural heritage protection system in Japan, particularly the system of preservation districts for groups of historic buildings.
2. Survey and Recording/Documentation of Wooden Structures
3. Restoration work on architectural and historical heritage in Japan, especially the conservation work at Yakushi-ji Temple.
4. Observation
5. Risk Management of Cultural Heritage

In general, I learned the following points in the training course:

1. The cultural heritage protection system, policies, concepts and project planning in Japan;
2. The concept of cultural heritage properties and the designation system for protection;
3. How preservation and protection of cultural heritage is done in Japan;
4. Conservation and restoration of cultural and historical buildings (especially restoration work of wooden structures)

5. Traditional carpentry techniques in Japanese architecture.

I am extremely happy to have been provided the opportunity to participate in this valuable program in order to gain new information, knowledge, and ideas. Also, I hope this training course was useful for other participants to learn about other countries' experiences in related sectors.

New Zealand

Blyss Wagstaff

Evaluation Report

2013 Training Course on Cultural Heritage Protection in the Asia-Pacific Region: Preservation and Restoration of Wooden Structures

This report evaluates my experience of the training course on the Preservation and Restoration of Wooden Structures, based in Nara, Japan from 3 September – 3 October 2013. I will discuss the relevance of the course to conservation work in New Zealand, compare current practices in New Zealand and those in Japan, and comment on aspects of the training that I found particularly useful.

Learning objectives

My objectives in applying for this course were as follows:

- To gain understanding of the Japanese system of heritage identification and protection
- To gain practical conservation skills, including recording, documentation, restoration planning and management strategies
- To increase my knowledge and understanding of Japanese history, culture and architectural heritage
- To gain experience in the theory and practice of the conservation of wooden structures in an international context.

I can wholeheartedly report that the training course has allowed me to fulfil all of these learning objectives, plus providing many additional educational benefits and opportunities, as discussed below. I cannot thank the organisers enough for enabling my participation.

1. Understanding of the Japanese system of heritage identification and protection

My current role for the New Zealand Historic Places Trust is that of a heritage advisor for the area of Registration: the formulation and upkeep of the national list of New Zealand's cultural heritage places. As New Zealand is currently facing the challenge of developing a policy and process for the implementation of a new National Heritage Landmarks List in addition to the existing system of the Register, I received all information on the Japanese system of heritage identification and protection with great interest.

As Dr Nagao explained in his lecture, Japan's impressively comprehensive classification system has evolved from the original law for the protection of moveable cultural properties in 1871, and the

present Law for the Protection of Cultural Properties now provides for the recognition and protection of many diverse forms of cultural heritage. These include tangible cultural properties (including structures, fine arts and applied crafts); folk cultural properties (tangible and intangible); intangible cultural heritage such as drama, music, craft techniques; monuments; cultural landscapes; groups of traditional buildings; the conservation techniques for cultural properties; and buried cultural properties (archaeology). Structures, fine arts and applied crafts can be designated as Important Cultural Property or National Treasures (the elite level), or registered, which provides for a lower level of protection and promotes the utilisation of the heritage as well as its preservation. New Zealand's heritage classification system seems limited in comparison, as it does not automatically provide for the protection of heritage sites and does not have the capacity to protect and preserve traditional skills and techniques for conservation, for example. However, I believe there are benefits to having no minimum age limit for a place to be recognised as heritage.

Japan and East Asian countries were ahead of the rest of the world in recognising intangible heritage: honouring the wisdom/knowledge that people possess as living treasures. It was interesting to note that there are still some conflicts or grey areas within the system for cultural heritage buildings, however. For example, the complete reconstruction of Ise Jingu Shrine every 20 years according to Shinto rites – and the subsequent absence of any original fabric – makes it ineligible for designation as a cultural property under the Law for the Protection of Cultural Properties. In contrast, Kasuga-Taisha Grand Shrine in Nara, which is also a Shinto structure but which has stopped the reconstruction ritual and now is conserved according to conventional methods, is designated as heritage at National Treasure level. As was introduced by Dr Chapagain's lecture and repeatedly illustrated with examples we encountered throughout the course, tangible and intangible heritage are often intertwined, and for wooden heritage – the nature of which requires regular repair and replacement of materials – a different formula for recognising authenticity must be established.

Sites like Ise Jingu, where the balance of the authenticity lies with the place's function and the unbroken practice of the reconstruction ritual and its processes and techniques, rather than with the fabric of the building, provide an important opportunity to explore this. There are sites in New Zealand, such as Rangiatea Church in Otaki (rebuilt after total destruction by fire), where the material authenticity is secondary to the remaining important social and historical significance, but which are not currently recognised by our heritage classification system. I will continue to explore these issues in New Zealand.

One aspect of the preservation and protection system in Japan that really made an impression on me was the commitment of owners to the restoration and preservation of the heritage in their care. The support (financial and expert) of central and local government is a crucial element in facilitating this. The research surveys and thematic studies organised by the Agency for Cultural Affairs also illustrate the commitment to ensuring that a range of cultural heritage is identified and provided for. In these studies and many other restoration projects we learnt about, the coordination between government

departments and different cultural agencies was remarkable. The Japanese prioritisation of cultural heritage preservation is an impressive international model.

An aspect of the curriculum I would have liked to have learnt more about is the Japanese system of Disaster Risk Management, however this was interrupted by the unfortunate illness of Mr Murakami. As I believe Japan's experiences have much to offer the world, and in particular New Zealand as we deal with the threat to heritage posed by seismicity and its related social and political issues, I will retain the final point made by Mr Murakami before he was taken ill: that the social, cultural and economic benefits of cultural heritage should not be sacrificed for short-term solutions in a disaster recovery plan. I wish Mr Murakami a swift recovery and lasting good health.

2. To gain practical conservation skills, including recording, documentation, restoration planning and management strategies

In my current role at the New Zealand Historic Places Trust I undertake research on the histories of cultural heritage sites in order to assess the significance of their heritage values. An important part of this process is a visit to the site, including observation and recording of the physical characteristics of the place. While this process is by no means as comprehensive as the detail of the investigations undertaken in Japanese conservation projects, the skills that we were introduced to through our practical training workshops will be directly applicable to my work in New Zealand, and I'm extremely grateful for the experience gained.

Preparing the drawings of the East Pagoda at Yakushi-ji Temple was a particularly useful element of the training course for me. From having no previous experience of measuring, recording and preparing a floorplan drawing to scale, I will now be able to attempt recording of simple structures and prepare this kind of valuable documentation for places where no other such basic plans exist. I sometimes need to visit sites that are in reasonably remote rural areas that members of my team do not often have the opportunity to visit, and it is not always possible for an architectural specialist to accompany me due to their own workload. It will be beneficial to be able to complete basic recording of a place myself, and in a single site visit. This efficiency will mean there is less of an imposition on the owners, and the basic floorplans will be a valuable addition to my heritage assessment reports.

The other workshops all provided a very useful experience for me as well. The processes of attempting a section drawing of the East Pagoda at Yakushi-ji, a restoration plan for the paintings at Jibutsu-do at Todai-ji Temple, and the earthen-wall investigations at Shonen-ji Temple all involved detailed observation, and this is a skill which is always valuable to refine. The workshops all served to emphasise the detail and care that goes into conservation projects in Japan. I particularly appreciated the way that these practical exercises each offered insights into the issues encountered, for example the decisions that need to be made about which height to restore the foundation platform of the East Pagoda at Yakushi-ji to, or the difficulties in balancing an owner's wishes to reconstruct the 'living

heritage' paintings of a religious building with the desire to preserve the information of the original paintings. The experience of attempting to reconstruct the deteriorated patterns of the Jibutsu-do shrine paintings from the remains, which seemed so limited at first glance, emphasised what can be achieved from careful study. I would like to learn in more detail about the use of technology and scientific investigation to gather additional information on such paintings.

The photography workshop was one that I was particularly anticipating, as the recording of historic sites through photography is a vital element of all modern identification and conservation work, and the digital recording of buildings can be challenging. I have often been disappointed by the results of some of my photography, and on a site visit it is important to capture the required visual information as there are limited opportunities to return and re-take the images. Thanks to Mr Sugimoto I now have more of an understanding of basic photographic principles, and I am inspired to continue learning about the technicalities of manual photography.

3. To increase my knowledge and understanding of Japanese history, culture and architectural heritage

The Japanese system of regular cyclical maintenance (the repair or replacement of consumable exterior parts such as roofs and exterior parts subjected to weathering) every 30-50 years, and full restoration (documentation and analysis, dismantling, repair and reassembly) every 150-200 years has enabled the preservation not only of the buildings but also of the techniques and knowledge associated with their construction. Coming from a country with such a relatively young history, it was a thrill for me to visit sites such as Horyu-ji Temple, with the world's oldest wooden building. Its survival is testament to the foresight of the Japanese and their long history of care for their cultural heritage.

I was interested to observe, at many sites we visited in Japan, that restoration projects often aim to return a place to the form, appearance and condition of the period of its greatest historical significance. This has parallels with some restoration projects in New Zealand, for example Hurworth Cottage and the Rai Valley Cottage, two dwellings associated with the early colonial period of New Zealand's history. These New Zealand restoration projects, undertaken by the New Zealand Historic Places Trust (which cares for both buildings) in the 1960s and 1970s, removed later additions such as lean-tos, outbuildings and improvements, leaving the buildings in their simplest and original forms. That approach has subsequently been met with some criticism, as although it allows visitors to easily understand the building as it might have been at a point in time, it has also removed the layers of history associated with the changes, which had value in showing how people used the building over the years. The ICOMOS New Zealand Charter 2010, which sets out the principles for conservation in New Zealand, expresses: "Conservation recognises the evidence of time and the contributions of all periods … without unwarranted emphasis on any one value at the expense of others … The fabric of a particular period or activity may be obscured or removed if assessment shows that its removal would not diminish the cultural heritage value of the place."

In Japan, such restoration decisions are also not easy to make, but an advantage of the system we observed here is the careful documentation of the reasoning that led to each decision. The publication of the record of each restoration project is an aspect of the Japanese system that has really impressed me. This has created a publically accessible archive of immense value. In New Zealand, best practice is also to record and document all restoration works, but the system does not include publication and dissemination of these results as a standard practice. This has the potential for incomplete or scattered records.

I was also struck by the beauty of the *Hozon-zu* preservation drawings that form an important part of the Japanese restoration records. With the transition to digital recording methods, I hope that the practice of preparing these large-scale ink drawings on traditional paper can be maintained as a tradition with artistic value in its own right.

Each of the designated preservation districts that we visited also had many relevant learning opportunities for me. While each had a different character and history, they share the common challenges brought about by changing ways of life. I was interested to note the contrast between the way many buildings in the Takayama and Ogimachi (Shirakawa) preservation districts had been adapted for tourism, whereas in Imai-cho there was less evidence of tourism and the motivation for preservation seemed to be focused more on the identity of the residents. It became clear that community buy-in is essential to the success of preservation districts, and the comprehensive and active engagement of the local residents in initiating and maintaining their historic neighbourhoods provides an inspirational model for social involvement.

I was surprised to learn that property asset values in Imai-cho have dropped since the heritage designation, perhaps because of the restrictions imposed by the planning regulations. Other international examples suggest that such preservation district designations can increase the valuation of real estate, as people are willing to pay for the guaranteed historic character of a neighbourhood that is subject to regulations on appearance, for example. We saw examples of the relative flexibility and understanding of the need to adapt buildings for modern needs in Japan, however this approach can only stretch so far when faced with less easily changeable factors such as narrow laneways.

4. To gain experience in the theory and practice of the conservation of wooden structures in an international context

From the opening lecture by Dr Chapagain, through our country reports, the ensuing lectures, and the everyday discussions between the participants and teachers, the opportunities for cross-cultural learning have been numerous. This has been one of the most successful elements of this training course, in my opinion. It was clear that many of us from around the world face similar challenges and issues, and that there are a range of approaches and methods that can be shared and adapted to each cultural situation.

The design of the course – starting with the international exchange and overview provided by Dr Chapagain, Professor Inaba, and our country reports; then moving on to the detail of the Japanese system; and benefiting again from ICCROM's broad international experience with Dr Wijesuriya's classes towards the end – allowed for constant application and reference to our own experiences. One of the simplest but most valuable benefits of this international context is the perspective it has given me on the New Zealand system: both the wider cultural heritage protection system in my country and my own role in the process. New Zealand utilises the values-based approach for much of our cultural heritage protection, with a 'living heritage' approach adapted for Maori heritage, and I have been pleased to recognise the strengths in these approaches, and some opportunities for further development.

Conclusion

This training course has been a fantastic experience for me. My professional development and personal growth has been significant, and I feel very honoured and privileged to have attended. The way that the protection and preservation of cultural heritage has been prioritised in Japan is an inspirational model for the international heritage community, and I'm extremely grateful to have had the opportunity to learn from so many experts, meet so many great people, and visit so many amazing sites. The ability to experience modern Japanese culture was also very much appreciated.

I would like to thank all of the sensei, and all of their assistants, for their generosity in sharing their expertise with us. I would also like to thank the owners of all of the cultural heritage sites we visited, for allowing us to learn from the incredible and inspirational sites in their care. To the Director, Mr Nishimura, and all of the ACCU staff, as well as the other contributing agencies, I would like to offer my huge appreciation of your extensive efforts and very generous support in providing this training course – it is difficult to convey how much this opportunity has meant to me, and I will benefit from it for many years to come. Finally, to my fellow participants, thank you for sharing your experiences, knowledge, cultures and good humour. I wish you all the best for the future.

Pakistan

Muhammad Imran Zahid

Final Report on the Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2013
Preservation and Restoration of Wooden Structures

The culture and heritage of any country is source of inspiration and pride for its people. The land where Pakistan is situated today has been a seat of the world's leading civilizations from time immemorial. Pakistan has been a cradle of civilization that dates back more than five millennia. Over the centuries, through successive waves of migration from the northwest as well as by the internal migration through the subcontinent, Aryans, Persians, Arabs, Pathan and Mughal came and settled in the region and left behind traces as cultural heritage.
Pakistan's heritage is among the country's best kept secrets. The country has several World Heritage sites as well as countless sites of national and local importance.

For ease of safeguarding, the tangible heritage of Pakistan is considered in the following categories:

a. Archaeological sites
b. Historic Monuments
c. Urban historic architecture

Pakistan possesses remains of several ancient civilizations. The most famous is the Indus Valley Civilization which dates to 3,000 BC. However, due to investigations in Balochistan, the remains of Mehergarh have stretched antiquity even further back in time to 5,000 BC. The most famous sites of the Indus Valley Civilization are Moenjoaro (Sindh) and Harrappa (Punjab). The other famous ancient sites are evidence of the Buddhist civilization that flourished in this land. There are several of these and they are found in the northern part of Pakistan. They are situated in Taxila (Punjab) and Takht-e-Bahi (NWFP).

The Directorate General of Archaeology, Government of the Punjab was established in 1987. Initially it was an Attached Department of Information, Culture, and Youth Affairs. In October 2011, the Directorate General was attached to the newly created Department of Youth Affairs, Sports, Archaeology & Tourism. The objective of the Directorate is to retain the cultural authenticity, aesthetic beauty, and historic, scientific and cultural values of our monuments / historical buildings for future generations; training and encouragement of craftsmen and other artisans for conservation works; and survey, research and documentation of archaeological sites and historical monuments. As a conservation engineer, the protection and conservation of Heritage sites in Punjab is my main responsibility. The planning and management of restoration sites, supervision, and retaining the values

of the old structures are part of my work.

Each country in the Asia-Pacific region has its own unique characteristics in terms of heritage comprised of wooden structures. Wooden structures in Asia-Pacific are of different types, with different techniques, and skills applied to its construction. Although each country in the region has its own unique heritage and cultural identity, the problems they are facing are almost identical. However, countries in the Asia-Pacific region also share some common elements in their heritage as a result of a long history of relationships going back even to prehistoric times. The training course organized by ACCU Nara in partnership with ICCROM and the Agency for Cultural Affairs, Japan on the theme "Preservation and Restoration of Wooden Structures" was aimed at increasing the experience of young professionals working in the field of preservation of wooden structures. I feel very privileged to be one of the participants in the training course, as it is closely related to the kind of work I am undertaking in my country.

The first and most important thing I learnt from this course was the meaning of the words "heritage" and "authenticity". During the course these words came in front of me again and again, and every time I picked up a new meaning for these words. In the first session of country report presentations, Dr Inaba Nobuko and Dr Neel Kamal Chapagain presented their opinions on heritage and authenticity, and it was interesting to discover that they have different points of view. After their informative lectures, I picked up a new meaning for these words, and I am very thankful that they were able to broaden my viewpoint and make me start looking at cultural properties with a new understanding.

Another very impressive thing I noticed is the effective system of management of cultural properties. The system of protection of cultural properties appears optimal for the purpose of conservation. They have a very good system for conservation and preservation of cultural properties. The Japanese system is governed by strict preservation and maintenance laws. The division of cultural properties between the municipal, prefectural and national levels and between National Treasures and Important Cultural Properties helps to take care all of them under different states of management. A proper national policy not based on political influence is a remarkable thing. The training of professionals and experts, and adequate funding are also other important features of the Japanese management system. Pakistan also has a very good system of management but coordination between other Departments is missing. I think this is very important point in the handling of cultural properties, that the cultural properties should be managed on the district, provincial and national levels so that they can be maintained and conserved in a proper way. So I would like to take this idea with me and try to implement this method in my country.

Risks related to disasters within heritage sites are a function of their vulnerability to different potential hazards. The natural disaster in the Old Fort of Galle in Sri Lanka is a high profile example of the vulnerability of cultural heritage worldwide, as discussed by Dr. WIJESURIYA Gamini from ICCROM. Natural heritage can also be threatened, in exceptional circumstances, by natural disasters.

Hazards, however, may be also human-made, such as fire, explosions, etc. Accidental forest fires, conflicts, massive refugee movements, the bursting of tailing pond dams as in Doñana (Spain), are certainly a concern for natural WH sites. If natural disasters are difficult to prevent or control, hazards resulting from human activities can be avoided, and the vulnerability of heritage sites to both natural and human-made disasters can be reduced, thus lowering the overall risk threatening a property. World Heritage properties, as with all heritage properties, are exposed to natural and man-made disasters which threaten their integrity and may compromise their values. The loss or deterioration of these outstanding properties would negatively impact local and national communities; both for their cultural importance as a source of information on the past and a symbol of identity, and for their socio-economic value. The problem is that disasters can't be predicted beforehand, so we must know how to protect our heritage from them. The Japanese are working hard to reduce the effect of damage, not only to people but also to cultural properties. They are using traditional methods to reduce the risk against disasters. To cope with disasters within the existing building bylaws and planning framework in a historic environment, as well as retrofitting traditional and historic buildings, is yet another area that lacks sufficient attention in Pakistan. JACAM (Japan Association for the Conservation of Architectural Monuments) is one of the organisations responsible for the planning and protection of cultural heritage structures in Japan. An organization with such mission is lacking in Pakistan. There are no such studies going on in Pakistan on how to protect cultural properties from disasters. As a result of the experience I have had in Japan learning about Japan's system of disaster risk management, I would like to create awareness about disaster risk management of cultural properties in my own country and share my experience with my colleagues and also within my department so that we can come up with new plans and new strategies.

Mr. Komine Yukio from the Japan Institute of Insect Damage to Cultural Properties presented an introduction to the system of insect damage control and discussed the different techniques and methods used by his department to reduce the effect of insect damage to cultural properties. Prevention of insect damage to wooden structures is one of the significant aspects of the Japanese conservation system. Many of Japan's cultural properties (buildings, Buddhist statues, folding screens) are made of wood. The Japanese climate is mild with high humidity, and this is a very good environment for the growth of insects. These insects are very dangerous to wooden structures in terms of both species and population. There are different types of chemicals and methods used by the Japan Institute of Insect Damage to Cultural Properties for prevention of insect damage. Fumigation with methyl bromide has regularly been carried out at cultural properties without regard to the presence or absence of insect damage. Insect damage to wooden structures is a common problem in Pakistan, but unfortunately it is not treated as a major problem, so there is a need to think about insect damage as a major problem. There is a need to undertake a systematic and detailed study of this in the context of historic buildings. This session broadened my vision and helped me to better understand how to treat wood.

As I am involved in the establishment of two museums in my country, the visit to the museum in Byodoin Temple in Kyoto was quite interesting and informative for me. The museum is very

beautifully constructed, and in order to protect the authenticity of the site, the museum building is constructed behind a small hill. The museum is constructed in a small area but beautifully managed. The video documentation is nicely managed and it was a good experience to know the history of the site in an interesting way. The displays of replicas are meant to attract the attention of visitors, and they were quite interesting to me. The display of light was amazing, and I would like to take this experience with me to make our museums more attractive.

One of the most important aspects of the course was the introduction of the legal framework existing in Japan for the protection and conservation of cultural properties. The Japanese Law for the Protection of Cultural Property protects a wide range of cultural properties under the categories of Tangible Cultural Properties, Intangible Cultural Properties, Folk Cultural Properties, Monuments, Cultural Landscapes, and Groups of Traditional Buildings. It also protects Historic Sites, Places of Scenic Beauty and Natural Monuments, and individuals/groups as holders of selected conservation techniques under the umbrella category of Designated and Registered Cultural Properties. Tangible and Intangible Folk Cultural Properties are protected as well. This is a very interesting and impressive aspect of Japan's conservation system. The law that protects historic monuments and archaeological sites in Pakistan is known as the Antiquities Act 1975, as the primary custodian and protector of heritage sites in the country. After the 18th Amendment to the Pakistani constitution was passed, jurisdiction over heritage sites was handed over to provincial governments, and now they have become a provincial responsibility. The national law was adopted by the provinces verbatim by changing the name only, and adopted as the Antiquities (Amended) Act 2012. There is a need to make some amendments to the existing Act to cope with local problems and empower the site managers. I would like to take the experience of the Japanese system with me and try to make the legal system of my country better.

Documentation is one of the most important aspects of the conservation and preservation of heritage sites. In Japan, both traditional as well as modern techniques are being used for documentation. Photography is one of the methods used for documentation. It is very important to know how to take pictures of cultural properties and which angle should be used. If cultural properties are photographed without understanding, the photograph might not fulfill its purpose. The lecture given by Mr. Sugimoto Kazuki about photography was one of the most important lectures, and the one that I liked the most. After this lecture, I now understand how to use a camera properly. As a conservation engineer, documentation is part of my job, and this lecture and training will help me a lot in the future.

Practical training always plays an important role in learning. During the course we did three types of practical training. First, we visited Shonenji Temple Hondo Main Hall, which is an Important Cultural Property. In the temple, conservation and repair work was underway. From the practical training in the temple, I learned how carefully we should treat cultural properties. From the other two types of training I came to know about the traditional methods of Japanese conservation that they have been using for decades in documentation and paintings. We practiced drawing plans and sections and became familiar with various tools and the technical processing of wood. I understand the importance

of these traditional methods and will try to revive traditional methods in my country also.

The concept of conservation of Historic Districts as groups of traditional buildings has been established in Japan since 1975 and efforts have continuously been made to protect the authenticity of such groups of buildings. The visit to Shirakawa and Takayama was an amazing experience for me. I was surprised to see the love and attitude of the community towards the heritage. The way that gassho-style houses are conserved is quite interesting. It is the community that took the initiative and then the government came to help the community. These villages bear a close resemblance to many historic towns in the Northern Areas of Pakistan. The lessons learned by visiting Shirakawa and Takayama could also be implemented in Pakistan. If a village becomes a World Heritage Site, this can have a negative effect on the social lives of villagers. Local residents who are engaged in tourism-related jobs become busier and compete with each other, and everybody wants to reroof their house using professionals and not the traditional method of U-E, which suggests there are intangible negative changes in local culture. There is also an increase in tourists, which, in my point of view, disturbs the feel and spirit of the local neighbourhood.

Conclusion:

The ACCU Training Course on "Preservation and Conservation of Wooden Structures" was very useful as I learned about Japanese conservation methodology and Japanese culture. Although the course was very short, the information and knowledge I received was immense. We visited many temples and shrines, such as Yakushiji Temple, Horyuji Temple, Toshodiaji Temple and the preservation districts of traditional buildings, etc. I acquired many skills and new information on the conservation and restoration of cultural heritage. I gained new ideas and more advanced knowledge, with which I have been revising my current understanding of concepts regarding the preservation and restoration of cultural properties, which will be helpful for my country in the field. I will use all the knowledge gained from this training after going back to my country and adapt it to our particular context as much as possible.

Acknowledgements:

I would like to thank the Asia/Pacific Cultural Centre for UNESCO, Nara and the International Centre for the Study of the Preservation and Restoration of Cultural Property for organizing this educational and informative course. I have benefited from the excellent programme of lectures, field trips and practical exercises, but my experience has also been enriched by my spending time with heritage specialists from a range of Asian and Pacific nations. I would like to thank our course coordinator, lecturers and assistants for their assistance and guidance throughout the course. Finally, I would like to thank the Directorate General of Archaeology, Government of the Punjab, Pakistan for nominating me to participate in this course.

Philippines

Crisanto B. Lustre II

TRAINING REPORT 2013
"Giving Value to Traditional Customs: Japan's Secret Success in Cultural Heritage Protection Unveiled"

"It is important to realize that age in itself is not the only parameter for whether a structure or man-made environment is important and interesting. There are ancient structures that have very limited interest, and there are recent structures that must be protected as exponents for important contemporary historic, cultural, artistic, or social developments."

-Hans Carl Jacobsen

I. BACKGROUND

This international training course entitled "Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2013" was organized by the Agency for Cultural Affairs of Japan (*Bunkacho*) through the Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Center for UNESCO (ACCU), in close coordination with the International Center for the Study of the Preservation and Restoration of Cultural Property (ICCROM); and the National Research Institute for Cultural Properties in both Nara (NNRICP) and Tokyo, in cooperation with the Japanese Association for Conservation of Architectural Monuments (JACAM); Japan Consortium for International Cooperation in Cultural Heritage (JCIC-Heritage); Ministry of Foreign Affairs of Japan; the Japanese National Commission for UNESCO; Nara Prefectural Government; and Nara Municipal Government.

The course concentrated on the topic of "Preservation and Restoration of Wooden Structures". Since 2000, ACCU-Nara in partnership with ICCROM and *Bunkacho* has been organizing courses on this topic with a view to building the capacities of professionals who have been working in the area of cultural heritage protection in the Asia-Pacific region. This course aimed to provide participants with the latest methods and techniques for investigation, analysis, preservation, restoration and management of heritage structures, especially those made

Figure 01: Representatives from the organizers of the International Training: (from left) Director NISHIMURA Yasushi (ACCU-Nara), Mr. Neel Kamal Chapagain (ICCROM) and Mr. SUGIYAMA Hiroshi (Nara-NRICP) during the formal opening ceremony of the training program. Photo taken 3 September 2013.

of wood. Objectives of the course included: to provide participants with knowledge of recording/ documentation and analytical methods for wooden structures; principles and methodologies for preservation of wooden structures; practical knowledge of technology/techniques and hands-on training for preservation and restoration of wooden structures; maintenance, utilization and risk management of historical wooden structures; and providing participants with an opportunity to network with colleagues in the region and share their experiences.

II. Networking with Colleagues from the Asia-Pacific Region and Sharing Experiences

Figure 02: Photo showing the 16 qualified participants as representative of each country, together with Mr. Neel Kamal Chapagain (ICCROM) and Professor INABA Nobuko, during the presentation of Country Reports. Photo taken 6 September 2013.

The International Training course is only offered to participants of the 40 signatory countries of the UNESCO World Heritage Convention from Asia and the Pacific. This year's qualified participants were representatives from 16 countries, namely, Bangladesh, Bhutan, Brunei Darussalam, Indonesia, Kazakhstan, Kyrgyz Republic, Lao P.D.R., Maldives, Marshall Islands, Mongolia, New Zealand, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam.

Each country representative presented their own country report concentrating on one main topic: "Problems and needs for cultural heritage protection and restoration activities in his/her country (mainly of wooden structures)." Various forms of cultural heritage including those made of wooden structures and artifacts which are of great value from a global point of view were presented. Different approaches regarding proper investigation, analysis, and preservation of this important cultural heritage were also discussed by each heritage professional in various fields of conservation (architects, engineers, archeologists, researchers and cultural workers) as a requirement in order to safeguard this treasured heritage for future generations. During this activity, everyone was able to share the different problems and needs that each participant faced relating to his/her job and own experience, and also post some solutions to those problems. Mr. Chapagain and Professor Nobuko also commented on each presentation and gave helpful suggestions which were also based on their own experiences. Through an interactive exchange of ideas and comments were shared among the groups, and all the presentations featured a common denominator of problems and needs, mainly concerning politics, funding, awareness and involvement of the community.

III. Principles and Methodologies

The lecture series of the training course started with defining HERITAGE. Together with the other

participants, we enumerated different components relating to heritage that first came to mind when we were asked to define heritage. Identity, inherited from the past, traditions, customs, value, masterpieces, etc. were some components that were listed during the discussion. According to Mr. Chapagain, heritage is not always in the past, but also in the present. It depends on the culture and traditions of each country. For example, in China, they have recent buildings, but they are thinking of building new structures for their identity. India, on the other hand, destroys old buildings because they need to move forward. For scholars, heritage cannot be defined. He also emphasizes that the two types of heritage, tangible and intangible, cannot be separated and are interconnected. Different charters and conventions (Venice Charter 1964, Nara Document of Authenticity 1994), including their history, were also discussed during the lecture. With regard to the guidelines of heritage conservation, we can learn from European countries (as the forerunner of drafting the guidelines for heritage conservation), but these can serve as a model for the guidelines to be applied to each country, with the specific context of the country in mind. Introduction of new elements to the existing heritage structure is welcome, but we must see to it that some guidelines should be followed to preserve the full authenticity of the edifice. According to Professor Inaba, AUTHENTICITY is inherent in the process but not in material. A heritage structure is not just architecture, but something that connects to the people through their skills. The policy of conservation is to faithfully maintain the original state; additions must be removed if they damage the original building. There should always be a balance between heritage and people's needs. As heritage workers, he emphasized that we should always work together with the community, and have more of a personal relationship with them. He said we should identify gaps concerning the conservation of heritage in our respective countries and focus on those we can address in our own capacity, in order to contribute to the success of cultural heritage protection.

Figure 03: Mr. Chapagain during his lecture on Introduction to Architectural Heritage in Asia, emphasizing the country of Nepal as example. According to him "heritage" is how you define it, and how you perceive it. Awareness on its significance should start from ourselves. Photo taken 4 September 2013.

IV. Maintenance, Utilization, and Risk Management

Aside from weathering, fire and human-induced damage, wood is also highly vulnerable to insect and termite damage. In the lecture by Mr. Komine, we learned that 22 species of termites inhabit Japan, and four of these species cause damage. Usually, the hard part of the wood is left and the soft part is damaged by these termites. Pest control methods include: visual inspection, trapping, using a vacuum cleaner to collect specimens and using chemical agents (applied only by pest control experts). Extermination is also divided into two types: non-chemical treatment and chemical treatment. In Japan, there are only three types of chemicals and these are carefully studied to be able to minimize the environmental impact and also should not be flammable. For the protection of cultural property

and national treasures, the government of Japan extends subsidies for the restoration of wooden structures damaged by termites including scientific studies of the type of termites at a conservation laboratory.

Wooden structures, especially temples and vernacular houses, are restored by replacing the damaged part and retaining the original, using traditional carpentry tools. Relocation of some buildings which cannot be repaired on site will be brought to other places for repair. Any necessary construction to enhance and clarify their historical and cultural value is allowed. Changes in the current state such as the installation of an elevator for disabled persons is acceptable for the purposes of enhancing the heritage structure's utilization; protection for preservation, the other is utilization. Therefore, it should be noticeable in the design that the elevator, for example, is an additional structure.

Figure 04-05: Close interaction with different kinds of termites and insects is one of the major causes of deterioration of the historical wooden structures of Japan. Examination using a magnifying glass reveals the true saying, "small but terrible." Photo taken 10 September 2013.

V. Technology/Techniques and Hand-On Training

The hands-on training highlighted the exquisite skills of Japanese artisans in building their temples and other heritage structures. The layering of the typical wall for their religious architecture (temple architecture in this case), which is composed of five layers of mud/soil mixed with strips of rice straw alternating on top of the other, before the final lattice bamboo frame, shows how they perfectly mastered the necessary skills to make sure that the temple would stand for a long period of time. This training helped us realize the importance of scientific analysis and careful understanding of these

Figure 06-07: Hands-on training in discovering the number of layers of a wall at Shonen-ji Temple. The wall consists of five layers of mixed mud and strips of rice straw as a binder, carefully laid out on top of each other up to the bamboo lattice frame, showcasing the traditional skills of Japanese artisans. Photo taken 13 September 2013

traditional methods during restoration work. The hands-on training was very challenging and quite difficult for all of us participants because we were not all architects and engineers, but on the positive side, we were able to learn the proper way of handling this process of restoration which will make us better professionals in the future.

Carpenters play a very important role in the restoration work because most of the temples are made of wood, from the preparation of new members to be added in the traditional way using ancient methods of construction, to the use of traditional tools and wood species that need to be identified. The dismantled members were once again reassembled, without using nails but mortise and tenon joinery, because of the traditional bracketing system. Old good members are retained and used as much as possible. Inspection of every single component, one by one, is the Japanese way of conservation.

VI. Recording/Documentation and Analytical Methods

The process of doing as-built plans and sections on the actual site is important for finding out the accuracy of the floor plans and architectural drawings. This is to compare the as-built plan to the original plans. In this process sometimes you will find out that the carpenters have actually made some errors. Deformation or unevenness on plans is sometimes caused by disasters. In creating the original design, you will be able to explain to others the original features and significant character of the building. Deep analysis of the current state is needed, and t o measure as many sections as possible.

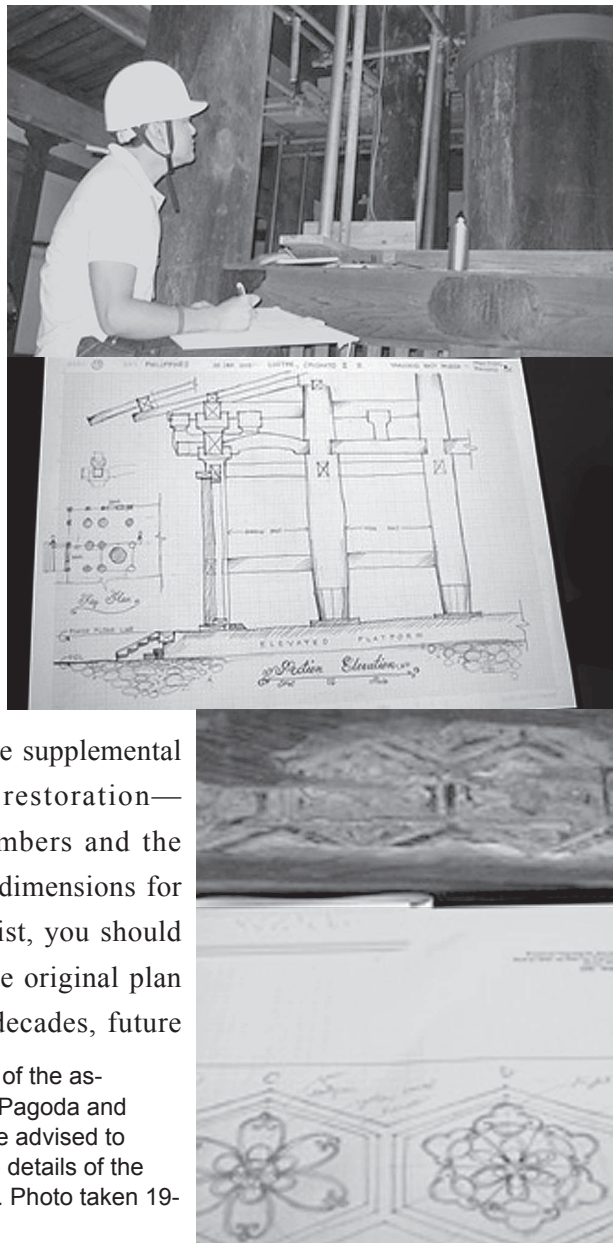

Figure 08-10: Actual sketching and drawing of the as-built plan and section of the Yakushi-ji East Pagoda and wall paintings of Jibutu-do. Participants were advised to make careful observations, especially of the details of the connection of members and measurements. Photo taken 19-20, 24 September 2013.

Through careful observation and with the help of the generated as-built plans, you will know the supplemental materials that you need for the process of restoration—for example, replacement of deteriorated members and the purchase of bigger ones—and finally know the dimensions for the restoration process. As a restoration specialist, you should always keep in mind that there's no way that the original plan can be matched 100%, and after a number of decades, future

generations will repeat the process and refer to the original plan. That's the importance of precise and proper documentation of the building, to serve as a future reference for future restoration professionals.

The significance of cultural property photography is to keep a more permanent record, and as a method of retaining information. The objective is still to hand down to future generations the information in the photo. In this practical training we were very privileged to see, touch and use vintage cameras that were used and are still being used to document the heritage structures of Japan. We also learned the specifications of each camera and how to use each one depending on the situation.

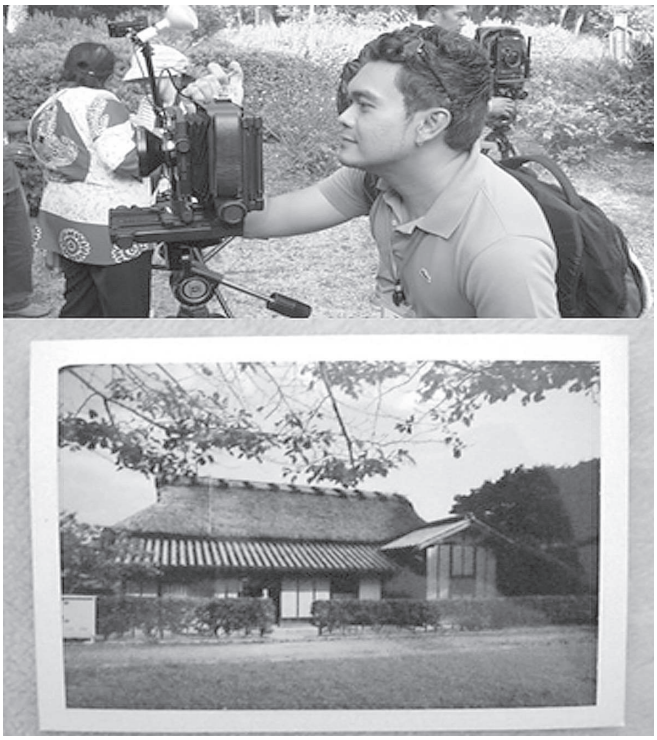

Figure 11-12. Photo showing our hands-on training in photographic documentation, using both vintage and modern cameras. This camera uses 5"x4" film, which can be developed on site (bottom photo). Photo taken 23 September 2013

VII. Significance of the Training Course, Problems and Comparisons

The National Historical Commission of the Philippines, as an active national government agency, is mandated with the preservation and promotion of historic sites and immovable important cultural properties. This training course was essential for the Commission in its project cases involving the conservation, restoration and maintenance of historic structures made of wood and operated as national museums. The majority of historic structures maintained by the Commission are of stone and wood construction. This training course shall contribute to our research and conservation programs. The information learned and shared in this study program shall be a channel for achieving a modern approach in creating effective conservation management for the protection and monitoring of the Philippines's significant built heritage, especially those made of wood.

I will be very glad to share my training and workshop experiences here with my colleagues, and of course, in our future restoration projects. For me, both wood and stone conservation are very challenging tasks which require technical expertise and high level techniques to be able to execute the process correctly. Because of the different principles in conservation approaches and strategies practiced in Japan that I obtained from this training course, I shall be able to perform the work correctly and implement the conservation solutions in the right way without leaving the environment in a compromised state. Of course, restoration of built heritage is important, but it is equally important

that our approach is always a balanced solution and that we always find a sustainable approach through the modern technologies and techniques available without forgetting the traditional customs as well, and giving value to it.

Being one of the **Restoration Architects (Architect II)** of the Historic Preservation Division (HPD) under the Architectural Section, I am tasked with providing recommendations and decisions in preservation projects conducted by the Commission. From the process of inventory, research and assessment, to the actual restoration intervention, my job requires technical knowledge in terms of methodology and techniques involving recording and documentation, stone and wood conservation. This training course on Restoration and Preservation of Wooden Structures allowed me to grow professionally and utilize my skills in the field of restoration and conservation. It also provided me an opportunity to interact efficiently with other conservation professionals of the Asia-Pacific region, and with the restoration specialists of Japan, through hands-on training and exchange of actual experiences on the various restoration fields throughout the duration of the program. Once again, thank you very much!

"A City without old buildings, is like a Man without a memory"

-NHCP Basic Conservation Principles

Figure 13: In the background is one of the gassho style houses (farmer's house) in Shirakawa Village, a UNESCO World Heritage Site. Notice the annex structure attached to the house which is intentionally different, but still harmonizes with house, so as to distinguish what is old and what is new. Photo taken 30 September 2013.

Sri Lanka

Singappulige Nayana Dharshani Hewa

Final Report: Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2013

Introduction

The Training Course on Cultural Heritage Protection in the Asia-Pacific Region was held in Nara, Japan from 3rd Sep. to 3rd October 2013 with the participation of 16 members from different countries in Asia and Oceania. During the course we were able to obtain knowledge of wood preservation methods and to discuss the drawbacks of those methods. We also listened with great interest to the other participants in general discussions, and the way those discussions were conducted was also exemplary and praiseworthy, as it was possible for all participants to express their ideas and knowledge freely. We were able to understand the different laws applying in Japan in relation to preservation of wooden structures and the interest taken by UNESCO regarding these valuable efforts. In this regard, the laws enacted in 1185, 1573, and 1868 are exemplary. Then we were taught the various methodologies that Japan uses for the restoration work. This was very interesting because they contain similarities as well as dissimilarities with our methods. Pest control methods, fire alerts and firefighting, and disaster mitigation for the protection of those cultural heritages are at a high standard compared to ours, and hence there is a lot to learn and practice in my country.

The island of Sri Lanka, formerly called *Ceylon*, is an island in the Indian Ocean located in Southern Asia, southeast of India, in a strategic location near major Indian Ocean sea lanes (5-10^0 N latitude and 79-82^0 E longitude). It has a total area of 65,610 km², with 64,740 km² of land and 870 km² of water. Its coastline is 1,340 km long. Sri Lanka's climate includes tropical monsoons: the northeast monsoon (December to March), and the southwest monsoon (June to October). Its terrain is mostly low, flat to rolling plains, with mountains in the south-central interior. The highest point is Pidurutalagala at 2,524 m. Natural resources include limestone, graphite, mineral sands, gems, phosphates, clay, and hydropower.

Methodology of Conservation

The remains of a large number of extraordinary wooden buildings can be found that date back to the 3rd century. As an example, one of the World Heritage properties in the country called Sigiriya had an elaborate gatehouse made of timber and brick masonry with multiple tiled roofs. The massive timber doorposts remaining today indicate this. The tradition of wood construction in Sri Lanka is seen in the pre- and post-historic periods, especially in association with cave shelters. Timber construction was used in the front portion, with wooden doorways and window openings and wattle and daub partitioning.

Timber construction developed and gradually reached a state of sophistication. The original concept of timber posts developed into four or eight sides, but these were still buried in the brick walls of the building. Nevertheless, as time went on, the post and beam style developed into a highly decorative form of architecture.

Historical evidence reveals the existence of sophisticated wooden buildings dating from the 3rd century. The massive timber doorposts at Sigiriya are all that remain of an elaborate gatehouse made of timber and brick masonry with multiple tiled roofs. In structures like the timber gatehouse at the eastern entrance to Anuradhapura built in the 4th century BC, frames made out of whole tree trunks carried the entire weight of the building. The vertical crevices in the brickwork, where such wooden columns carried the load of the upper floors and roof, can be seen in the remains of the palaces at Polonnaruwa and Panduwasnuwara. These openings still retain the spur stones upon which the wooden column once stood.

The most interesting thing to consider is the reasons why such wooden structures remain unspoilt even today. According to the ancient records, strict traditions were observed during the cutting and seasoning of wood in earlier periods. Mature trees were selected and cut in the new moon when the sugar content in the timber was lower, so that destructive wood boring insects were not attracted to the timber.

The Saddharma Ratnavali, a noteworthy book on Buddhist literature, mentions two carpentry practices where oil was applied to timber to prevent decay, with the timber then heated to straighten it. The timber selected for decorative purposes and carvings often had the properties of durability and easy workmanship. Gammalu (*Pterocarpus marsupium*) and Halmilla (*Berrya cordifolia*) were commonly used for structural components and these are also found in the beautifully decorated buildings of the Kandyan period. This also shows the traditional methods used by early Sri Lankans to prevent rather than cure wood decay. As in the well known saying, we can say that “prevention is better than cure”.

These prevention methods are exemplified by the excellence of timber architecture in Sri Lanka, which is well expressed in many building forms. Among the masterpieces of timber architecture preserved to this day through prevention methods are the simple Ambalamas (wayside resting places),

the storied shrine rooms and also the wooden bridges such as the Bogoda Bridge across a stream near an upcountry railway line. Kandyan timber architecture, which has a distinctive character of its own, dates from the Gampola period (1341-1415 AD).

In some buildings, timber was used extravagantly. Large sized and whole tree trunks were left round, untrimmed and roughly cut. An example is found in the Bogoda Wooden Bridge, which has three trunks and beams and is supported in mid-stream by two large tree trunks that act as a pier.
The Drumming Hall in the Ambekke Devale, The Audience Hall and the Temple of the Tooth in Kandy, Degaldoruwa temple in Malwatte, and the Panavitiya and Mangalagama Ambalamas are well preserved examples of the wood carver's craftsmanship and art. The structural frame of the Ambekke Devale (a God Temple) consists of two pillars on either side connected by beams and capitals and connected on top again with a series of large beams. These structures, beams and the rafters of the simple gable roof have been richly carved. The ridge plate ends in a king post to take the corner rafter of the front end and the giant pin or the Madol Kurupawa. All these wooden structures are very good examples of prevention methods that were applied by the early carpenters.

One of the other methods that they adapted was the selection of wood for different works. For example, they chose *Mesua ferrea (Ironwood)* in the construction of Buddha shrines and god temples. Ironwood is a very, very hard wood that is impossible for insects to pierce. This is also a prevention method.

Many Japanese cultural properties (buildings, Buddhist statues, folk furnishings, folding screens) are made of wood. The Japanese climate is mild with high humidity, with an active insect population during much of the year, constantly exposing cultural properties to insect damage. In Sri Lanka we also have problems with insects. The methods that I learnt during the training will be very helpful to us in preserving our wooden cultural heritage. In Sri Lanka, chemicals are applied to guard against insects, but these have a number of shortcomings. The new techniques that I came across during the course will be very useful for implementation in our work as well.

Repair with Total Dismantlement

Although most of the old buildings are composed of hardy woods and various traditional methods have been adapted to prevent the decay of these buildings, some structures such as roadside Ambalama (Wayside Resting Places) have deteriorated mainly because of lack of regular maintenance of the wooden structures. In such situations the Department of Archeology repairs such structures while keeping the old architecture after totally dismantling the structure. During the new construction, hardwood treated with chemicals is chosen to prevent both insect damage and natural climatic damage.

The knowledge that I could gather during this training will be of great help for deciding how repairs should be done after totally dismantling an ancient building. I will pass this knowledge on to other relevant officials in the country so as to undertake good reconstruction work in the future.

Structural Reconstruction in Heritage Site Development

In Japan we have learnt that all cultural properties that are more than 50 years old are protected by the Japanese government. In our country this time period is 100 years. No one can change the architectural structure of buildings that are located in heritage sites, irrespective of whether the owner is private or the state. Total dismantlement is not allowed and repairs need permission from the Director General of Archeology of Sri Lanka.

Not only does the architectural structure of ancient buildings need to be retained, even the construction of new buildings need to match the ancient architecture. This approval must be obtained from the local authority of the area concerned. Therefore, we also have the same kind of laws and regulations as in Japan. However, there are some shortcomings in implementation. Therefore it is necessary to have a strict law enforcement procedure as practiced in Japan.

Conservation of Vernacular Settlements

In fact, we do not have vernacular settlements as such. Old structures are temporary and they are gradually changing nowadays. However, it is necessary to look into this aspect and preserve vernacular settlements before they completely fade away. If the government wanted to preserve such buildings it would become the responsibility of the state. Financial constraints might hinder the preservation of such settlements, though.

Management and Preservation of Historic Sites

Management of historic sites is a priority of the country, though financial and technical resources are inadequate. Although no fire damage has occurred to important historic buildings, we cannot predict that it will never happen. However, at present, there are no supplementary fire prevention facilities at these sites. Since these sites are located in places somewhat far away from town areas, it is necessary to provide such facilities to these sites as is done in Japan. I will make a proposal with the knowledge I gathered during this training to provide these facilities and to train relevant officials in relevant authorities so as to ensure protection against fire.

We are somewhat lucky not to have earthquakes in the country, at least not on a scale that causes damage. Therefore, there are no preventive measures against earthquakes in the country. However, we experienced a great deal of tsunami damage in 2004, and afterwards the government took steps to protect structures against tsunamis if another one comes at any time in the future, although they are not as frequent as in Japan.

No cyclones or large tornados have occurred in the country and therefore little attention is paid to wind damage.

Provision of Financial Assistance

The government provides some money from the budget for these works, although it is inadequate. However, the country maintains a fund from the funds generated through tourism to these sites. This is managed by a board. Some expenditure can be met with money from this fund. However, not all expenditure for the necessary work can be met from these two sources which leads to inadequate preservation and restoration of heritage sites.

Application of Knowledge Gathered during the Training

As the leader of a Ministry under whose purview comes both the Archeological Department and the Department of Museums, our Minister has a crucial role to play in the future with the knowledge I gathered during the training programme. Not only officers of the state but also civilians have to work hard to develop an integrated mechanism to conserve, preserve and restore the cultural heritage of the country.

1. Educate the People

As was done in Japan, it is necessary to conduct an effective programme to make the general public aware of the importance of the preservation of cultural sites. It is also necessary to keep the public abreast of happenings in the sector. The communities around the historical sites should remain vigilant to protect these places against crime in relation to cultural heritage. In these efforts, modern communication techniques should be used to educate children and youth especially, as they are the future custodians of these resources.

2. Enter the Subject into the School Curriculum

Since children are the most important creators of the future in the country, it is necessary to keep children well aware of cultural heritage and its protection, preservation and restoration. Therefore, I will make arrangements to enter this knowledge into the school curriculum.

3. Training Craftsmen

Under the Ministry of National Heritage in Sri Lanka, there is a folk art centre. In this place, folk arts are taught to the younger generation. One such art is wood crafting. While teaching wood crafting to such students, I will make arrangements to teach them wood preservation and craft preservation as well, in addition to the normal training that they receive now.

4. Collection and Collation of Traditional Methods of Wood Preservation

As explained earlier, there are several traditional methods to prevent wood from decay. There may be large number of such methods hidden in traditional villages. Therefore, I have made arrangements to collect and collate such data and make a database so as to enable future workers to use such methods along with modern techniques, such as those taught during this course.

5. Establish a Board of Experts on Wood Preservation

I also intend to propose to the Secretary of the Ministry to establish a board of experts on Woos preservation so as to gather all the expertise from around the country, especially from the Forest Department, which has a long experience in the field, and contains experts on timber preservation. This may also include traditional wood carvers and workers who have the knowledge required for the preservation of historic sites.

6. Establish Wood Preservation Portfolio in the Ministry

I will also suggest to the Secretary of the Ministry to create a wood preservation portfolio at a higher rank, as I felt that this was a very important subject in the context of the large number of wooden structures we have in the country.

7. Marketing of Sites with Greater Care

It is also very important to carefully think about and design more appropriate mechanisms to sell the intangible benefits of these structures, in order to earn money for the better protection of these structures and so that the Ministry can enter into a sustainable preservation mechanism in the future.

Conclusion

This training course was noteworthy and very helpful to me because I learnt a lot during the course. One such thing is the modern systems and mechanisms used in the work of preserving and protection cultural heritage. Also, we have paid less attention to fire prevention in the country, and during this course I came to understand that it is more important than we thought before. It is a fact that the Japanese people take a great deal of care in the preservation of their historical cultural heritage than we do. That also made me interested in the subject of preservation, since if a treasure has been demolished, it is gone forever. That is one of the feelings I had during the course, which alone is praiseworthy and invaluable. Since we have a large amount of wooden cultural heritage in the country I feel this course was a gem in my life-long training, and I therefore salute everybody who provided us with knowledge to share.

Acknowledgements

I am deeply indebted to our interpreter, Mrs. Hata, for her valuable assistance during this training course.

I am also thankful to: Course Coordinators Mrs. Wakiya and Ms. Midorikawa Aya, Course Assistant Ms. Hazuki and all the staff members who assisted us in gaining knowledge during the course.

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Thailand

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Introduction

Wooden structures are significant cultural heritages that need safeguarding for the next generation, so ACCU and their associated organizations offered this course, "Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2013: Preservation and Restoration of Wooden Structures". This report will focus on comparing problems and solutions of wooden structure preservation and restoration based on the general idea of the Japanese and Thai cultural context, and the probable application for cultural property management in Thailand.

General Idea of the Japanese and Thai Cultural Context

For a clear understanding of the Thai and Japanese cultural context, the study of the relationship between environment, life, society, and culture, including the historical background of Japanese and Thai peasant societies, are the most important issues. Truly, the relationship between environment and culture, or the geographical landscape, relates to settlement patterns of local people, which are composed of the cultural landscape, cultural ecology, and way of life. Basically, social structure is in the form of three dynamic social relationships: the relationship between humans and humans, humans and nature, and humans and the supernatural, which all create a sense of coexistence within the same cultural area. The social relationship, especially involving the supernatural, reflects the cosmology in the background of the cultural landscape and a symbol of the holiness of local society, which can link local people from different communities and ethnic groups for smooth coexistence. Its authority seems to be over the local people, their resources and environment, leading to traditions and rituals that local people must obey and follow (Fig.1).

A variety of climatic zones is a critical factor for wood resources with different physical properties. In the case of Japan, the island country stretches a long distance from north to south and covers a wide range of climatic zones. This results in a great diversity of fauna, flora and natural habitats despite Japan's isolation from the mainland of Asia. A change in vegetation can also be observed with altitude changes from coastal areas to the highland zones. Japan has a great variety of species because of its many isolated areas and separate mountainous regions. Outside of the settlements and cultivated areas in the lowland, most of the remaining areas from north to south are occupied by different forests including broadleaf evergreen, broadleaf deciduous, and coniferous evergreen woodlands, which have become the main construction material resources for Japanese building. As the same time, on mainland Southeast Asia, Thailand is a tropical country teeming with diverse flora and vegetation. However, the vegetation of Thailand can be classified into evergreen and deciduous forest types, which are basically based on varying moisture gradients, temperatures and altitudes. These forests are composed of hardwood and softwood species, which are the construction materials for Thai wooden structures. Therefore, it is important to know about the wood resources and the physical characteristics of each

wood species, including its limitations, because these directly affect the pattern of use and durability of the buildings.

In addition to construction of wooden dwellings and public utilities, wooden structures in Japan and Thailand are often created as part of a belief system or religion. Shinto and Buddhism have a great influence on Japanese culture. Shinto is an ancient belief system consisting of a fusion of nature worship, animism, foretelling techniques, and the worship of spirits, being made the state religion during the 1860s, while Buddhism was first introduced into the country for the Imperial household and the ruling classes in the 6th century. As with many views of Japanese culture that have been accepted, adjusted, and integrated with aspects of the Shinto religion over the years, Buddhism first entered the country from Korea and China. Similar to Japan, Thai society has been closely related to the ordering principles of Buddhism and kingship since at least the 6th century. The king has always been seen as the mainstay of moral Buddhist values who holds the order of Thailand in place. The king's role as upmost core of social power fits with the Thai hierarchical model of the universe. Thai Buddhism is combined with elements of Hinduism, animism, and spirit worship. Thus, representation of cosmology can be found in a large quantity of cultural heritage such as fine arts, crafts, architecture, and cultural traditions.

Problems are Opportunities

Cultural heritage management has traditionally been concerned with the identification, interpretation, maintenance, and preservation of significant cultural sites and physical heritage assets, although intangible heritage, such as traditional skills, cultures and languages, are also considered. Although the cultural heritage management of each country is different, depending on the cultural context, transmission to the next generation has become the most important goal. In Thailand, we are fully aware of the diversity of cultural heritage, thus we need more understanding of proper management that focuses on the original function of the heritages, the perspective of dynamic value, the role of stakeholders, and the possible management scenarios. Moreover, we need to think about the continuity of heritage buildings in term of usage, maintenance, expressions, and community connection. But first, our conservation approaches need to be rethought. Official experts not from the local community assess the value of heritage properties. So we ignore the original value of our heritage and bring about uncontrolled management problems. From several case studies in Japan, the level of conservation participation is an important issue. They organize their heritage with a scholarly approach integrated with local wisdom, and then share the outcome, whether through the benefits of economic and cultural value or the effects of lifestyle and the cultural landscape. Unfortunately, the development of infrastructure for tourism seems to be more important than cultural management and legal issues, which shows that the original values of heritage are changing.

I think that deep understanding of the environment and natural disasters, including material properties, causes the Japanese cultural heritage management system to be different from Thailand's. Similar to Japan, we preserve the original value in the architectural elements by the re-use of old components,

then investigate and reproduce the working method and techniques. Next, the buildings are restored with recommendations by experts that focus on their original construction, cultural value, and usage and then keep and manage all detailed information.

Although Japanese and Thai wooden structure conservation starts with the same method, information acquired regarding the historical background, conservation history, and investigation, we face a lack of ancient documentation. Most Thai wooden heritage structures have unclear information on the construction process, the builders, resources, etc., and this affects our preservation and restoration efforts. The periodical conservation of wooden buildings in Japan, both peripheral parts and core framework parts, provides an advantage in terms of the amount of simple and systematic documentation such as hand drawings, and attaching labels to wooden members.

Like Japanese wooden structures, Thai wooden structures are at risk from decay and need proper maintenance and management, especially periodic maintenance and restoration. Although, our wooden structures are assembled by jointing mechanisms with a few using metal nails and fittings, it's hard to replace and reassemble elements because of a lack of craftsmen and the fact that traditional woodworking techniques have not been passed on down the generations. In the past, monks often repaired all structures in temple compounds based on their belief in inheriting Buddhism. In addition, these temples were also the center of the study of art by teaching the monks. However, the role of the monks as craftsmen began to decline in the late 19th century, and craftsmanship skill training gradually melted away. Finally, all restoration activities became the duty of government officials. Unlike Japan, we never have had associations of craftsmen or formal training courses for wooden structure preservation and restoration. Besides the lack of craftsmen, hardwood for restoration is usually quite difficult to find when the Thai government canceled logging concession in 1989. Ancient wooden buildings with large hardwood members or rare wood often use imported wood from neighbouring countries. However, in Japan this problem does not exist and wood resources are prepared for periodic restoration by law. This policy can guarantee enough wood resources for restoration and reduce imported material.

Wooden structures in Japan are made from various local materials including pine wood, along with other materials such as soil and stone for walls, metal supports and decorations. In addition to the deterioration caused by animals and plants in Japan, there is also the risk of fire, earthquakes, floods and landslides. While all wooden heritage structures in Japan are bound by strict rules on disaster prevention, ignorance of disaster monitoring and protection systems are our main constraints for reducing the effect of disasters. Thus, we need to revisit our disaster prevention plans for reducing disasters, for the benefit of both heritage and people.

In Japan, maintaining and managing architectural buildings is the responsibility of the owner, but in case of Important Cultural Properties, the government provides support to cover part of the repair expenses. Similarly, if the buildings are regarded as part of the national heritage, the Thai government

can provide whole or part of the restoration subsidy. Nowadays, however, we do not have a formal subsidy policy, and local people understand that heritage restoration needs a certain amount of money. So the budget may not be enough and they don't know how to obtain more money for maintaining and managing their buildings, and finally, they abandon the heritage building, hoping to replace it with a new building.

Conclusion

Japanese and Thai wooden heritages consist of wooden structures with differences in architecture, function, and importance. For solving cultural heritage protection and restoration problems, they need an appropriate cultural management base on their own cultural context. Re-defining heritage, re-thinking conservation approaches, a broader range of beneficiaries, and an improvement management system are all necessary for the preservation of cultural properties.

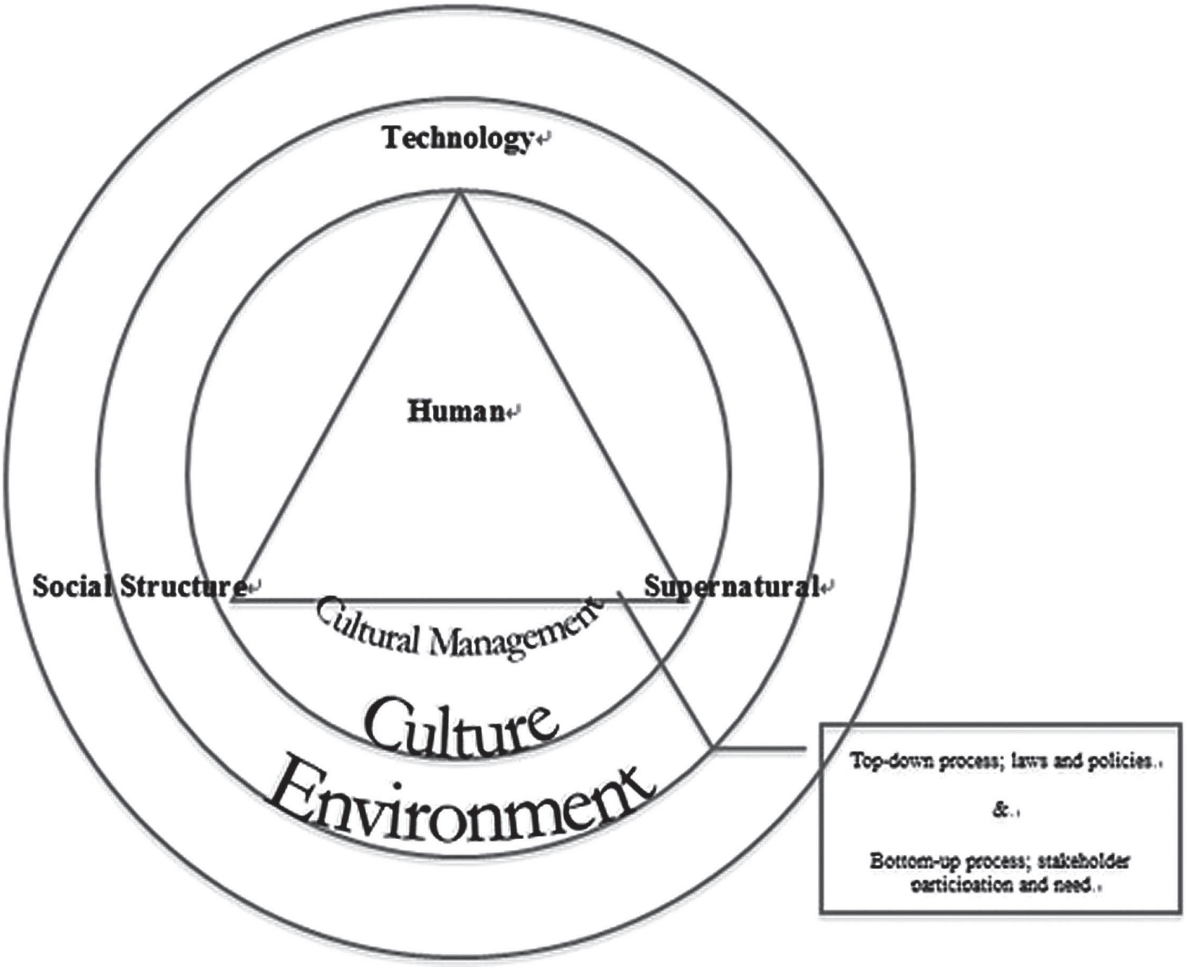


Figure 1
The relationship between environment, culture and cultural management

Acknowledgement

I would like to express my utmost gratitude to ACCU and their associated organizations, who have given me their support throughout this practical training course. Also, I would like to express my appreciation to all lecturers and especially to all ACCU staff and my friends for their help and friendship in this training course.

Viet Nam

Do Thi Thu Van

Final report of the ACCU Training Course 2013 "Preservation and Restoration of Wooden Structures"

The conservation and restoration of cultural heritage, both tangible and intangible, is an important task. It contributes to affirming the historical existence and development of each country in the context of the world. Japan is a country that early on realized the importance of preservation and restoration of cultural heritage. In this course, Preservation and Restoration of Wooden Structures, the participants welcomed the enthusiastic help and support of our Japanese hosts, and we were able to share our experience of conservation and restoration of cultural heritage with participants from other countries around the world. This is something I admire immensely and appreciate about the course. And I would like to express my gratitude to ACCU for organizing and inviting me to attend the course.

This was really an extremely valuable opportunity for me. During the month attending the course, I obtained a lot of useful information about the conservation and restoration of historical culture in general, and particularly on the conservation, restoration and promotion of the values of wooden structures. At the same time, I learned about and discussed various problems regarding the conservation and restoration wooden structures with other participants. The course really gave me new knowledge and a deeper understanding of the history, culture and traditional wooden architecture of Japan.

Below, I would like to present the basic understanding that I received from attending the 2013 Training Course on Cultural Heritage Protection in the Asia-Pacific Region "Preservation and Restoration of Wooden Structures," organized by ACCU:

1. Understanding of the History of Laws for the Protection of Cultural Heritage in Japan

From the last decade of the 19th century to the first half of the 20th century, Japan established laws relating to conservation of cultural heritage objects:

1871 Decree for the Preservation of Ancient Artifacts

1897 Ancient Temple and Shrines Preservation Law

1919 Historical Sites, Palaces of Scenic Beauty, and Natural Monuments Preservation Law

1929 National Treasure Preservation Law

1933 Law Regarding the Preservation of Important Works of Fine Art

1950 Enactment of the Law for the Protection of Cultural Properties.

Then Amendments to the Law for the Protection of Cultural Properties were passed in 1954, 1968, 1975, 1996, 1999, and 2004, related to the following: Intangible Cultural Properties, Buried Cultural Properties, Folk Cultural Properties, Preservation Districts for Groups of Traditional Buildings,

Conservation of Techniques for Cultural Properties, Registered Cultural Properties, Protection of Cultural Landscapes.

The Japanese legal system recognized cultural heritage conservation a century earlier than Viet Nam. In 2001, the Law on Cultural Heritage of Viet Nam was officially enacted. As Japan was interested in heritage conservation much earlier than Viet Nam, we can learn about the conservation of heritage from the Japanese experience in this field.

2. Method of Survey and Recording/Documentation of Wooden Buildings

The records of a relics database are very important for appropriate proposal of conservation and restoration measures. So it is necessary to learn methods for collecting data in order to create profiles of the most authentic relics and to evaluate the current status and characteristics of relics.

In the third week of this course, I participated in practicing drawing records of parts of the East Pagoda, Yakushiji Temple. This is not the first time I had done this kind of work, however, but under the guidance of the teacher, I was able to do it more carefully and meticulously. Through this hand-drawing I also understood more about the architectural structure of Yakushiji Temple, and the main work being done in the conservation and restoration of Yakushiji Temple:

(1) Surveying and evaluating the present situation
(2) Drawing after measurement
(3) Identifying the material
(4) Deciding the dimension of the restoration

Then, I practiced drawing and recording paintings in Todaiji Temple. This lesson, Survey on Painting and Restoration Plans for Painting Restoration, was very interesting for me. The record drawings are made from visual observations, not with a camera. The discussion, which revolved around conservation issues, made me well aware of the methods that can be applied:

(1) Repair to maintain the present state: A method adopted when the painting is in good condition, with high artistic and cultural values.

(2) Partial repainting (partial repair): A method of maintaining the present state is often applied when the deteriorated portion on the painting is small, or when maintenance restoration is needed after a complete repainting has been undertaken for restoration.

(3) Complete repainting: A method adopted mainly when the entire area of painting is exfoliated and has deteriorated. The repainted area is limited to the exterior or extends to the interior.

In the fourth week, the lecture of practical photography, “Recording of Wooden Structures,” was also very useful and gave me new knowledge in this field. The lecture give me information on the appropriate equipment for photography, basic usage, and the creation of image data for architectural monuments. The contents of this practice session gave me some suggestions for further exploring the implementation of image work for my job, such as:

(1) How we can pass of the details the building to the next generation

(2) How to save the photos

(3) How to take photos

3. Authenticity

In Viet Nam, in the projects of conservation and restoration of monuments, retaining "authenticity" is always a top priority. However, the original perception of a lack of bases, argues and fundamental criteria. Thus, many projects of restoration of monuments were carried out by a method called morphing, which entails making monuments seem older than they really are. For example, in order to create a sense that the monument was ancient, after the conservation and restoration work was done, the surface of the wall was swept with "porridge," or starch was added to the mortar to quickly achieve a mossy effect.

To avoid repeating the mistakes we have encountered, there is a need to refer to and consider the following criteria about authenticity:

- Form and design
- Material and substance
- Use and function
- Traditions, techniques and management systems
- Location and setting
- Language and other forms of intangible heritage
- Spirit and filling, and other internal and external factors.

4. Understanding Conservation and Restoration of Wooden Architecture in Japan

In Viet Nam, many projects of conservation and restoration have been done in recent years. However, the practice of conservation still has a lot of flaws. The main problem in the conservation and restoration of wooden heritage in Vietnam is the lack of expertise and professionalism.

Therefore, studying the professional and practice experience in the conservation and restoration of wooden architecture in Japan is extremely useful for Vietnam:

Basic principles of conservation and repair of architectural monuments in Japan:

(1) Re-use of components as much as possible

(2) Investigation and reproduction of working methods and techniques

(3) Rigorous review of restoration policy

(4) Detailed record-keeping

In Japan there are four avenues for restoration:

(1) National government support: National Treasures

(2) Protection of the outside of buildings; interiors can be done by local contractors

(3) Group building, street: taken by municipality

(4) Cultural properties

Management of insect damage to wooden architecture and disaster risk in Japan:
Viet Nam has some similarities with Japan on the current state of cultural properties:

- Much of the cultural architecture is made of wood
- Humid climate
- Floods and storms occur every year

So there is a lot of knowledge and experience in Japan on such issues that may apply to Vietnam: pest control, prevention, visual inspection, increasing awareness for disaster prevention by promoting a system for reducing damage. Besides this, in the lecture of Mr.Yasumichi Murakami, we heard the story of what Japanese people do with heritage after surviving disasters, and so we learned about personal responsibility in regard to cultural properties.

5. Develop the values of historic sites among the present generation

Together with the conservation and restoration of architectural monuments, how to promote the values of heritage is also very important. This is the basic element of incorporating monuments into the life and longevity of the next generation.

During the practice at Yakushi-ji Temple, I realized that there were many activities to promote the site's values in society and also to obtain funding for the conservation and restoration sites.

- Organizing musical performances in order to attract young people and increase the number of people visiting the temple is a groundbreaking idea.
- Giving people the opportunity to ask monks to pray daily for their wishes.
- Selling souvenir items within the space of the architectural monuments.
- Exhibiting antique architectural components of the building for people to visit.

Besides promoting the values of monuments on a national scope, in order to have monuments be recognized as world cultural heritage, Japan constantly strives to promote, demonstrate the outstanding values of the monuments to the world. Hikone-Jo Castle is a good example, with over 20 years of perseverance, study and discovering the unique value of the site, to have the site be included on the list of the world's cultural heritage.

6. Similarities between Vietnamese and Japanese traditional buildings

While visiting, and during practice at the monuments, I found that there were similarities in materials and wooden decorations between Japan and Vietnam.

In the practice at Shonen-ji temple, I was really interested when I noticed the similarity in the use of bamboo material and soil to make walls in structures (Figs.1-2), through which we can glimpse the cultural exchange within the region.

Fig. 1: Soil wall in a traditional house in Vietnam

Fig. 2: Soil wall in Shonen-ji Temple

7. Creating opportunities to exchange experiences and identify the challenges of preserving cultural heritage in general and wooden architecture in particular in the Asia-Pacific Region

Attending the course not only gives each participant the opportunity to learn about and experience the preservation and restoration of wooden architecture from Japanese experts and lecturers from ICCROM, but also to expand exchanges with participants from 16 countries in the Asia-Pacific Region. The course created the conditions for participants to establish friendly relationships, which should lead to further exchanges in the field of conservation heritage in the future. Also through the course, the students became aware of the common challenges for conservation heritage throughout the entire Asia-Pacific region, including:

- Funding for conservation
- Economic development, moderation, adaptation, reuse
- Capacity building
- Management structure / planning
- Disaster / risk management
- Conservation – approached principle
- Traditional skills
- Politics
- International conventions

Through this awareness, conservation of a nation's heritage becomes not only an issue for one country alone; it is the common task of the whole of the Asia-Pacific region.

8. Acknowledgements

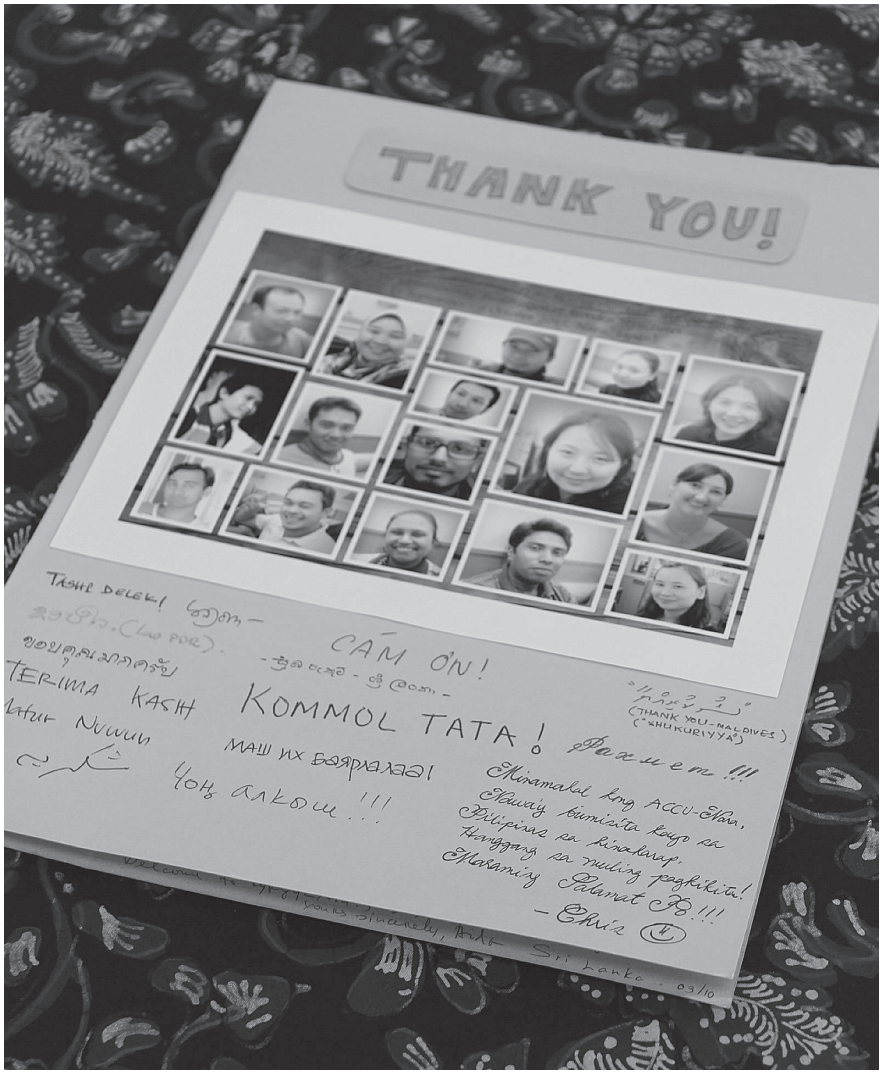
I would like to express my gratitude to the Government of Japan, the Nara Prefectural government, ACCU and ICCROM for organizing the course for all participants. Once again, I would like to thank Dr. NISHIMURA Yasushi (director of ACCU) and all staff members of ACCU—you have put a lot of effort into successfully organizing the Training Course on Cultural Heritage Protection, the Asia-Pacific Region 2013 "Preservation and Restoration of Wooden Structures."

I would also like to thank the professors, other experts and on-site lecturers involved in teaching the course, who transferred their experience in conservation and restoration of heritage, and who enthusiastically answered all questions from participants.

I would also like to thank the participants from the other 15 countries—now, we are friends. I hope to see you again and to cooperate in projects on preservation and restoration of wooden architecture in the Asia-Pacific region.
Good luck to all of you and SAYONARA.

V. Appendix

1. List of Participants
2. List of Lecturers
3. Acknowledgements for Cooperation
4. List of Interpreter and Assistant
5. Staff Members, ACCU Nara



Warm message from participants to ACCU Nara

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