

Training Course on Cultural Heritage Protection
in the Asia-Pacific Region 2011

**Preservation and Restoration of
Wooden Structures**

30 August - 29 September, 2011, 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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The opening ceremony



Practical training in Tanaka Family Residence



Inspection in Takayama Preservation District



The closing ceremony

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, the training courses on cultural heritage protection in the Asia-Pacific region have 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 twelfth training course on wooden structures and fifteen 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 in a 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.

Thus in the Nara region, there survives a large number of ancient wooden structures which are unique in the world; there are ample human resources working on a daily basis to carry out conservation; and the philosophy of restoration has been cultivated through year's experience and is widely accepted by the local community. So, ACCU Nara has chosen "Nara" as the training venue because we can take full advantage of its environment.

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 as well as to all participants who actively took part in the programme and helped each other in a friendly atmosphere to acquire latest knowledge and techniques in a 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)*

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I. Introduction

1. General Information
2. Programme Schedule

1. General Information

Training Course on Cultural Heritage Protection in the Asia and the Pacific Region 2011 - Preservation and Restoration of Wooden Structures -

(30 August - 29 September 2011, Nara)

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 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.

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. Proper investigation, analysis, and preservation of this important cultural heritage are required by heritage professionals, in order to safeguard them for future generations. 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. Date and Venues

Course dates: From 30 August (Tue.) to 29 September (Thur.) 2011

Venue: Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO [Nara Prefectural Government North Branch Office, 12 Noborioji-cho, Nara, Japan]

4. Objectives

The objectives of the training course are:

- to provide participants with a knowledge of recording/documentation and analytical methods for wooden architecture;
- 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, utilization, and risk management of historical wooden structures;
- to provide participants with an opportunity to network with colleagues from the region and share experiences.

5. Training Curriculum

● Lectures

- Introduction to wooden architecture in Japan
- Introduction to Asian wooden architecture
- Protection system of cultural heritage in Japan
- International context of conservation and related conventions and charters
- Survey methods on conservation of vernacular houses and historic towns
- Principles for preservation and restoration
- Design and implementation of conservation projects
- Management and utilisation of wooden structures
- Risk management of cultural heritage

● Practical Training and On-site Lectures

- Practical training on research and documentation of wooden structures
- On-site lectures at the conservation sites of wooden structures
- Fieldwork: restoration and utilisation of architectural heritage (a three-day study tour)

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 and restoration of wooden structures
- Recapitulation of the training session

6. Participants in the Training Course

● Application Procedure

The training course is offered to participants from the following 37 signatory countries of the UNESCO World Heritage Convention (see below). The application form should arrive at ACCU Nara no later than 31 May 2011 along with the endorsement of the UNESCO National Commission or UNESCO Liaison Office in the country concerned 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 in Archaeological Heritage Conservation.

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 archaeological heritage conservation. 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 by post or/and e-mail. Only complete application with all necessary documents will be considered.

The following are the 37 signatories of the World Heritage Convention from Asia and the Pacific: Afghanistan, Australia, Bangladesh, Bhutan, Cambodia, China, 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, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Tonga, Turkmenistan, Uzbekistan, Vanuatu, and Vietnam.

● **Qualification Requirements**

Applicants should be:

- 1) those who are professionals, 45 years old or younger, who are engaged in the conservation, preservation, restoration or management of archaeological sites and who can make effective use of the results of the training course upon returning to his or 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 deadlines 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 International Youth Exchange Programme and International Education Exchange Programme can apply for this programme).

7. Notification of Screening Results

After consulting with other organisers, ACCU Nara will select 16 people (one participant per nation, in principle) from among all applicants around the early 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, Republic of Korea, and New Zealand) 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 29 August (Mon.) to 30 September (Fri.) 2011 according to ACCU Nara's regulations. Arrangements for accommodations (a room for single occupancy) will be made by ACCU Nara.

11. Secretariat

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2. Programme Schedule

Month	Date	Morning (9:00-12:00) (Lecturer / Venue)	Afternoon (13:00-16:00) (Lecturer / Venue)
August	30 Tue.	Opening Ceremony (Nara Pref. Women's Hall)	Orientation Session / Lecture: Historic Monuments of Ancient Nara (NAKAI Isao / (Nara Pref. Women's Hall)
	31 Wed.	Introduction to Architectural Heritage in Asia (Gamini WIJESURIYA / Nara Pref. Women's Hall)	
September	1 Thu.	Presentation and Discussion: Country Reports by Participants I (INABA Nobuko & Gamini WIJESURIYA / Nara Pref. Women's Hall)	
	2 Fri.	Presentation and Discussion: Country Reports by Participants II (INABA Nobuko & Gamini WIJESURIYA / Nara Pref. Women's Hall)	
	3 Sat.		
	4 Sun.		
	5 Mon.	History of Wooden Architecture in Japan / Cultural Heritage Protection System and Current Status of Conservation in Japan (KANAI Ken / Nara Pref. Women's Hall)	
	6 Tue.	Restoration Systems and Project Planning for Wooden Structures (MURAKAMI Jin'ichi / Nara Pref. Women's Hall)	Orientation for the Practical Training: Overall Process of Repairs (AOKI Koji / Nara Pref. Women's Hall)
	7 Wed.	Practical Training: Recording/Documentation of Tanaka Family Residence (AOKI, NAKAMURA, TAKAMIYA and YAMAGUCHI / Tanaka Family Residence, Nara City)	
	8 Thu.	Practical Training: Damage/Deterioration Survey and Planning for Restoration (AOKI, NAKAMURA, TAKAMIYA and YAMAGUCHI / Tanaka Family Residence, Nara City)	
	9 Fri.	Practical Training: Materials Survey for Sustainable Conservation and Planning a Management Policy (AOKI, NAKAMURA, TAKAMIYA and YAMAGUCHI / Tanaka Family Residence, Nara City)	
	10 Sat.		
	11 Sun.		
	12 Mon.	Buddhist Monuments in the Horyu-ji Area (World Heritage Site) (Horyu-ji Temple)	On-site Lecture: Preservation of Vernacular Houses and Historic Townscape in Practice I (UEDAI Akira/ Gojo City)
	13 Tue.	Introduction to Townscape Survey and Planning for Preservation (Guidance for Group Work) (MASUI Masaya / Imai-cho)	On-site Lecture: Preservation of Vernacular Houses and Historic Townscape in Practice II (MATSUNAGA Nobuo / Imai-cho)
	14 Wed.	Practical Training: Townscape Survey and Planning for Preservation (Group Work) (MASUI / Imai-cho)	
	15 Thu.	Practical Training: Townscape Survey and Planning for Preservation (Presentation by Each Group) (MASUI / Imai-cho)	
	16 Fri.	On-site Lecture: Citadel Preservation in Practice (KOBAYASHI Masahiro / Himeji City)	On-site Lecture: Risk Management of Cultural Heritage (MURAKAMI Yasumichi / Kobe City)
	17 Sat.		
	18 Sun.		
	19 Mon.	Practical Training: Recording of Wooden Structures (Photography) (SUGIMOTO Kazuki / Imai-cho)	
	20 Tue.	Prevention of Insect Damage to Wooden Structures (KOMINE Yukio / NNRICP)	Introduction to Dendrochronology (MITSUTANI Takumi / NNRICP)
	21 Wed.	Study Tour: Preservation of Modern Architecture in Practice (ISHIKAWA Shintaro / The Museum Meiji-mura)	
	22 Thu.	Study Tour: Preservation of Vernacular Houses and Townscape III - Takayama (USHIMARU Takehiko and TANAKA Kyohei / Takayama, Gifu Pref.)	
	23 Fri.	Study Tour: Preservation of Vernacular Houses and Townscape IV- Shirakawa (ASO Miki / Shirakawa, Gifu Pref.)	
	24 Sat.		
	25 Sun.		
	26 Mon.	On-site Lecture: Survey on Painting and Plans for Painting Restoration (KUBODERA Shigeru / Todai-ji Temple)	
	27 Tue.	Future Tasks in the Preservation of Cultural Properties (Theory and Practice) I (Joseph KING / Nara Pref. Women's Hall)	
	28 Wed.	Future Tasks in the Preservation of Cultural Properties (Theory and Practice) II (Joseph KING / Nara Pref. Women's Hall)	Writing Final Report
	29 Mon.	Submission of Final Report (Nara Pref. Women's Hall)	Closing Ceremony (Nara Pref. Women's Hall)

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

NNRICP: Nara National Research Institute for Cultural Properties

II. Proceedings

1. Opening Ceremony
2. Summary of Training Course

1. Opening Ceremony

The opening ceremony of the 2011 training course was held on August 30th at the Nara Pref. Women's Hall in Nara. The members who attended this year were the 15 participants from Asia-Pacific region and honorable guests from the Agency for Cultural Affairs, Japan (*Bunkacho*), 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.

Speeches from the honorable guests were given by Ms SASAKI Mariko, Director, International Exchange Division, Asia-Pacific Cultural Centre for UNESCO (ACCU), on behalf of the Secretary-General; Mr NISHIMURA Yasushi, Director, ACCU Nara; Mr MINAMI Shimpei, Director, Office for International Cooperation on Cultural Properties, Cultural Properties Department (*Bunkacho*); Mr Gamini WIJESURIYA, Project Manager, International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM); Mr NAMBA Yozo, Head, Department of Planning & Coordination, Nara National Research Institute for Cultural Properties; Mr FUKUI Yoshinao, Director, Department of Culture and Education, Nara Prefectural Government; Mr FUKUOKA Yoshio, Chief, General Affairs Department, Nara Municipal Board of Education. These guests delivered speeches of welcome to the participants, and wished all of the participants would enjoy this training and gain valuable experience through it. Then, ACCU staff members were introduced and the participants made self-introductions. At the end of the ceremony, a group photograph was taken with the guests.



Ms SASAKI,
on behalf of the Secretary-
General of ACCU



Mr NISHIMURA,
Director of ACCU Nara



Mr WIJESURIYA,
Project Manager of ICCROM



Mr MINAMI from Agency
for Cultural Affairs, Japan



Mr NAMBA
from NNRIICP



Mr FUKUI from Nara
Prefectural Government



Mr FUKUOKA from Nara
Municipal Government

After the ceremony, the participants visited the Nara Prefectural Government Office Building and met the Deputy Governor of Nara Prefecture, Mr INAYAMA Kazuya. He welcomed them and explained Nara's history and cultural heritage. Then 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.



2. Summary of Training Course

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

■ Historic Monuments of Ancient Nara (30 Aug.) NAKAI Isao (Nara Municipal Board of Education)

Introduction to traditional wooden monuments and cultural heritage in Nara

- Lecture on classification of cultural heritage, and conditions for historical monuments being registered as World Heritage
- As reference for how they could succeed in registering an ancient palace site, an introduction to the Nara Capital site (*Heijokyo*) and ancient wooden structures in Nara



Lecture by Mr Nakai

■ Introduction to Architectural Heritage in Asia (31 Aug.) Gamini WIJESURIYA (ICCROM)

Introduction to ICCROM, formation and activities of ICCROM

- Introduction to wooden architectural heritage in the Asia-Pacific Region
- Explanation of features of wooden architectures such as materials, structure, techniques, and traditional context
- Explanation of conservation issues for wooden architectures such as preservation and maintenance
- Reference to charters about architectural heritage



Lecture by Mr Wijesuriya

■ Presentation and Discussion / Country Report (1-2 Sep.)

INABA Nobuko (Tsukuba University) and Gamini WIJESURIYA (ICCROM)

Participants gave presentations about traditional architecture and heritage in their home countries. Through these presentations, they referred to local conservation issues and their activities in dealing with them. After each presentation, other participants, along with Mr Wijesuriya and Ms Inaba, asked the presenter many questions, such as the following.

- What kind of problems do they have regarding preservation?
- What are the features of traditional architecture?
- Should local craftsmen be used or not for conservation activities?
- Should local or imported materials be used?
- What organisation supervises conservation?
- How should architecture be evaluated?
- What criteria should be used to judge architecture as heritage?

Following this, Ms Inaba gave a lecture about conservation related to authenticity in Japan. Through this lecture, she encouraged participants to consider what the meanings of “authenticity” and “value”.



Presentation by participants

Mr Wijesuriya and Prof. Inaba

■ History of Wooden Architecture in Japan / Cultural Heritage Protection System and Current Status of Conservation in Japan (5 Sep.)

KANAI Ken (Agency for Cultural Affairs, Japan)

Introduction to Japanese traditional architecture chronologically and the protection system of wooden structures as cultural properties in Japan

- Explanation of how to construct each type of architecture
- Reference to the historical backgrounds of structures
- Explanation of architectural conservation under the Law for the Protection of Cultural Properties
- Explanation of the procedure for restoration work



Lecture by Mr Kanai

■ Restoration Systems and Project Planning for Wooden Structures (6 Sep. Morning)

MURAKAMI Jin'ichi (JACAM)

Introduction to restoration and the history of cultural properties in Japan

- Explanation of the system of repair projects, such as the legal system for the protection of architecture, associations in charge of the conservation of architecture, training programs for conservation architects
- Explanation of work plans, including the procedure for restoration, and how owners of traditional architecture can apply for subsidies

After the lecture, participants asked the lecturer some questions, as follows;

- What is the organisation in charge of deciding which pieces of architecture should be important cultural properties?
- What kind of plans did people in ancient times devise?
- Do local people object to plans for designating preservation districts?

■ **Orientation for the Practical Training: Overall Process of Repairs** (6 Sep. Afternoon)
AOKI Koji (JACAM)

Explanation of the procedure of renovation work using the Nishioka family residence as an example was given, participants asked the lecturer some questions as follows;

- When can owners of traditional architecture receive subsidy payments?
- Should new timbers used for restoration be painted to match the old ones?
- Are chemicals used to protect materials from termites?
- How can architecture be used after restoration?



Lecture by Mr Murakami



Lecture by Mr Aoki



■ **Practical Training: Recording/Documentation of Tanaka Family Residence** (7 Sep.)
AOKI, NAKAMURA, TAKAMIYA and YAMAGUCHI

- Explanation of the Japanese drawing instructions for each part of the structure
- Drawing a floor plan in accordance with these instructions



Lecture and practical training at Tanaka Family Residence

■ **Practical Training: Damage/Deterioration Survey and Planning for Restoration** (8 Sep.) AOKI, NAKAMURA, TAKAMIYA and YAMAGUCHI

- Drawing a floor plan in accordance with the instructions and taking measurements of the Tanaka residence house in groups

- Receiving comments on the floor plan and measurements from the lecturers
- Visit to Tōshōdaiji Temple with Mr NAKAMURA's lecture of its history and a distinctive architectural feature while observing how the restoration was done *kondo* (main hall) and other structures



■ **Practical Training: Materials Survey for Sustainable Conservation and Planning a Management Policy** (9 Sep.) AOKI, NAKAMURA, TAKAMIYA and YAMAGUCHI

Draw a section plan in accordance with the instructions and take measurements in groups

- Explanation of how to survey the type and condition of wooden materials
- Explanation and demonstration of traditional Japanese carpentry tools
- Discussion about sustainable conservation and planning for the Tanaka Family Residence in groups, with each group making a presentation



■ Buddhist Monuments in the Horyu-ji Area, World Heritage Site

On-site Lecture: Preservation of Vernacular Houses and Historic Townscape in Practice I (12 Sep.) UEDAI Akira (Gojo Municipal Board of Education)

After arrival at Hōryūji, participants divided into groups of two, with each pair getting an explanation from a Hōryūji temple volunteer guide. Inspected the five-storied pagoda, main hall, etc.



Inspection at Hōryūji

After lunch, went by bus to Gojō Shin-machi, where the participants were given a tour of the Important Preservation Districts for Groups of Traditional Buildings, led by Mr Uedai of the city government. The Kuriyama Family Residence, Machinami Dentō Hall were visited, and explanations were given of the efforts made by the city of Gojō, and the policy being carried out in the preservation district. Afterwards, a visit was made to a townhouse, prior to construction work there which is said to be for renovating it as a French restaurant.



On-site lecture in Gojō by Mr Uedai

■ Introduction to Townscape Survey and Planning for Preservation (Guidance for Group Work) (13 Sep. Morning) MASUI Masaya (National Nara Women's University)

Prof. Masui introduced the method of investigating private houses and urban streetscapes and rural landscapes, using as examples the districts of Imai-chō, Nara pref. and Ochiai, Tokushima pref.

- Purpose of the survey
- Explanation of the method of investigation and research procedure
- Kinds of conservation for historic townscapes: restoration for traditional buildings, and façade enhancement for other buildings



Lecture by Prof. Masui

■ On-site Lecture: Preservation of Vernacular Houses and Historic Townscape in Practice II (13 Sep. Afternoon)

MATSUNAGA Nobuo (Imai Townscape Scenery Preservation Office)

At first, Mr Matsunaga explained aspects of the history of Imai-chō, such as the time when this area was registered as an Important Preservation Districts for Groups of Traditional Buildings. Then the participants went around Imai-chō and observed the interiors and exteriors of traditional houses such as the Imanishi and Toyoda family residences. The topics of the on-site lectures are as follows.

- History of each traditional houses
- The structural features of each house
- How people in former times lived in and used the houses

Then Prof. Masui explained the contents of the group task that is to make plan for a community facility that utilizes the Imai-chō district. Each group selected the plot of land as the object for this design which were prepared for the purpose of the training.



On-site lecture in Imai-chō by Mr Matsunaga

■ Practical Training: Townscape Survey and Planning for Preservation (Group Work) (14 Sep.) MASUI Masaya (National Nara Women's University)

At the Kauntei guesthouse in the preservation district, renovation of a traditional town house *machiya*, the participants immediately split into the following groups and began work.

Group A: Namgay DORJI, Vicheasachara PHIN, Kunkumadevi SIVARAMAN, Ilyasov RUSTEM,
Poon KHWANSUWAN

Group B: She WONG, Mahirta, Ar-bi ARCIAGA, Soungwon KANG, Ram SHRESTHA

Group C: Htun Htun Win, Nicola JACKSON, Rupika RANASINGHE, VO Trung, Yulianto Prihatmaji

Each group gathered information on Imai-chō's history, demographic changes, and on the plot of land they were working on plus the surrounding buildings through old maps and photographs, and exchanged ideas about their group's plan. They subsequently made an on-site inspection, walking the neighbourhood of their plot and investigating shops, heritage buildings, and open spaces, and interviewing the residents.

In the afternoon, each group held discussions to develop their restoration plan. They debated the utilization, using floor plans, façade design sketches, and perspective drawings. Concrete preparations were made for the purpose of the following day's presentation. After the training was over, these preparations were apparently continued late into the night by the participants back in their hotel rooms.

■ **Practical Training: Townscape Survey and Planning for Preservation (Presentation by Each Group)** (15 Sep.) MASUI Masaya (National Nara Women's University)

Yesterday's activities were continued at Kauntei and Hanairaka. Each group put together their PowerPoint slides, plans and sketches, as the final preparations for their presentations.

At Hanairaka, each group presented its plan. They conveyed their analysis of their plot of land, their concept for the plan, and concrete details about its utilization. These were debated among the participants, and comments and questions were given from the host of Kauntei, Mr Sugimura. At the end of the presentations, Prof. Masui summarised the group work by giving the comments for participant's plan and future tasks of preservation of townscapes.



Groupwork in Imai-chō and presentation

■ **On-site Lecture: Citadel Preservation in Practice / Risk Management of Cultural Heritage** (16Sep.) KOBAYASHI Masahiro (Himeji Municipality) / MURAKAMI Yasumichi (Hyogo Prefectural Board of Education)

At Himeji Castle, currently undergoing repair, explanations were received of the outline of the current repair, and on materials used for the plaster and roof tiles, while walking through the castle site. As work is being done on the main keep, a temporary building has been put up, but underneath is a facility for viewing the repairs which is open to the public, making it possible to observe the repair of the roof and walls from up close. This is to avoid driving tourists away during the repairs, by providing access to the interior. The participants were deeply absorbed in their observations, on this valuable opportunity to observe repairs of Japanese castle architecture in progress.



On-site lecture at Himeji Castle by Mr Kobayashi

At the Sawanotsuru Museum, after a brief explanation from Mr Murakami about the earthquake damage and the seismic isolation system, the participants went in groups of several persons each to inspect the system in the basement. The others viewed the displays in the museum, such as *Funaba Ato*, the unique remains of sake-brewing and archives of the restoration work of this building.



On-site lecture at Sawanotsuru Museum by Mr Murakami

■ Practical Training: Recording of Wooden Structures (Photography) (19 Sep.) SUGIMOTO Kazuki (Saidaiji Photo)

At Hanairaka in Imai-chō, at first asking the participants to introduce the opportunities each has to take photographs for their work or personal interest. Afterwards, there was a lecture on the relation between the adjustments of the ISO, aperture, and shutter speed when taking a photo of the cultural properties. Practice training was conducted outdoors using analogue cameras. After everyone received an explanation at first about the procedure for taking photos, they divided into three groups, each taking photos at places of their choice. Despite considerable confusion about the procedure, they took photos with some help from Mr Sugimoto and Ms Jitsukata. Subsequently, returning to Hanairaka, there was a lecture on the processing of data when using a digital camera. There were many questions about how to utilize unprocessed data, and about saving in TIFF or JPEG formats.



■ **Preservation of Insect Damage to Wooden Structures** (20 Sep. Morning) KOMINE Yukio (Japan Institute of Insect Damage to Cultural Properties)

The types of insects like termites which damage wood, and their distributions and characteristics were explained, along with how to find insect damage through means such as visual inspection, and about countermeasures. Afterwards, while examining pieces of wood, cord, old documents and newspapers that had actually been damaged, plus samples of insects and excrement, explanations were given about each type of damage.

■ **Introduction to Dendrochronology** (20 Sep. Afternoon) MITSUTANI Takumi (NNRICP)

The types of wooden materials used in dendrochronological research at the Nara National Research Institute for Cultural Properties were explained, along with related academic disciplines. For each wood species a long master chronology is developed, which is used in helping determine the age of heritage materials. Afterwards, for the actual examples of Hōryūji and Tōshōdaiji, there were explanations of how the age was determined with reference to other data such as documentary sources. As timber is used in architecture several years after it is felled, dendrochronology is an effective means of determining the age of construction.



Lecture by Mr Komine



Lecture by Mr Mitsutani



■ **Study Tour: Preservation of Modern Architecture in Practice** (21 Sep.)

ISHIKAWA Shintaro (The Museum Meiji-mura)

Departure was made by bus to Gifu, but the study tour of The Museum Meiji-mura, Inuyama city, Aichi pref. was cancelled because of a typhoon, and the group checked in the hotel early to await its passing.

■ **Study Tour: Preservation of Vernacular Houses and Townscape III – Takayama** (22 Sep.) USHIMARU Takehiko, TANAKA Kyohei (Takayama City Board of Education)

A lecture was given by Mr Ushimaru at the Kyōdōkan in the city of Takayama. Explanations were heard on the development of Takayama, its current preservation district and association for preservation of the townscape, the Takayama Festival and *yataigumi*, which safeguard its floats, and the firefighting equipment in the preservation district. There were questions about the involvement of *yataigumi*, float-safeguarding associates in local preservation, and about the owners and users (inhabitants and tenants) of traditional buildings.

Afterwards Mr Ushimaru and Mr Tanaka guided a tour of the *Takayama Jinya Ato*, the Takayama Local Agency of the Tokugawa Shogunate, the former town hall of Takayama, the Sanmachi and Shimo Ninomachi and Ōshinmachi preservation districts, and the Yoshijima Family Residence. At the preservation districts explanations were heard of the firefighting equipment discussed earlier, and the separate methods taken by the two districts for eliminating telegraph poles.



On-site lecture in Takayama preservation districts by Mr Ushimaru

■ **Study Tour: Preservation of Vernacular Houses and Townscape IV – Shirakawa (23 Sep.)** ASO Miki (Shirakawa Village Board of Education)

There were explanations of the Important Preservation District for Groups of Traditional Buildings of Shirakawa Village, its inscription on the World Heritage List, the local preservation group, The Association for the Protection of the Natural Environment of Shirakawa-go Ogimachi Village and the Residential Charter, and environmental features, etc. It was noted that for the goals set by the master plan of preserving heritage, maintaining the livelihood of the residents, and developing tourism in agreeable fashion, there is a pressing need to develop human resources. Subsequently, after climbing to the observation deck and hearing an explanation, they moved on to the Wada residence, Important Cultural Property. After hearing explanations from the owner of this house, Mr Wada on the structure of *gasshō* style houses and silkworm cultivation, there was free time for strolling around.



On-site lecture in Shirakawa Village by Ms Aso and Mr Wada

■ **On-site Lecture: Survey on Painting and Plans for Painting Restoration (26 Sep.)** KUBODERA Shigeru (Historical Research Institute for Architectural Decoration Technology)

At the Jibutsudō of Tōdaiji, the lecturer Mr Kubodera was asked about the points of caution when making a survey on painting. As the deterioration and peeling of the paint were severe, it was affirmed that meticulous attention was needed when making a survey.

Each participant began sketching their assigned portions. As the painting was peeling badly, there were places where the original appearance was hard to discern, but the participants made their sketches by using ladders and flashlights to access hard to see areas. The sketches finished in the morning

were then coloured in with pencils. These were finished with supplementary filling using the original colours, and not just colouring the surviving portions only. This is because since the base coat is greenish, areas where the painting deteriorates tend to turn green. Each participant then worked on a restoration plan. These plans were then presented to all, and Mr Kubodera and the participants engaged in lively discussions.

- Nicola (NZ) suggested two plans, based on consideration for the religious significance of the painting: (1) maintain the present state, and preserve the surface to prevent further peeling, (2) re-colour using the original techniques, but leave one portion only in the present state.
- Poon (Thailand) suggested investigating the process of painting, and re-colouring only one portion of the painting.

Mr Kubodera recommended keeping the original shape, maintaining it in its present condition with no overlay of painting, out of consideration for its value which has been fostered through history, and because of the need to think about the goals of the building's utilization and preservation.



Practical training and lecture at the Jibutsudō of Tōdaiji by Mr Kubodera

■ Future Tasks in the Preservation of Cultural Properties: Theory and Practice I (27 Sep.) Joseph KING (ICCROM)

- International organizations such as UNESCO, ICCROM, and ICOMOS, for cooperation in preserving the world's natural and cultural heritage
- ICCROM's philosophy and its activities
- The conventions, recommendations, declarations, and charters of the various organisations
- The World Heritage Convention
- On the value, authenticity, and integrity of cultural heritage
- The difficulty of defining value universally, as the value of an item (cultural heritage) varies with the position and perspective of the person making the assessment
- The principles for the evaluation of authenticity (form and design, materials and substance, use and function, traditions and techniques, location and setting, spirit and feeling) proposed by the 1994 Nara Document

■ Future Tasks in the Preservation of Cultural Properties: Theory and Practice (28 Sep. Morning) Joseph KING (ICCROM)

- With regard to the monitoring of heritage, the need for: defining the scope of the object and the period; simplifying the preparation, data gathering, and analysis; continuing the monitoring
- With regard in particular to the gathering of data, it is necessary to continue monitoring of various elements, and to renew and systematize the data

- Touching on the situation of cultural heritage preservation in the districts of Takayama, Shirakawa, and Imai-chō that were visited by the participants, there was discussion on situations of local residents being strongly favourable to maintenance and preservation.



Lecture by Mr King

■ Closing Ceremony (29 Sep.)

After submitting their reports, each participant had Japanese tea prepared by the translator Ms. Hata, was photographed in ethnic dress, and all having an enjoyable time, regretted the final parting. At the Closing Ceremony, Mr Nishimura (Director of ACCU Nara), Mr Joseph King (ICCROM), and Mr Namba (NNRICP) gave remarks on the completion of the program. Next, as representatives of the participants, Ms Ah Ken-Eteuati Ailini from Samoa, Mr Poon Khwansuwan from Thailand gave words of greetings, looking back over the month of training and expressing their thanks.



Mr NISHIMURA
Director of ACCU Nara



Mr KING
from ICCROM



Mr NAMBA
from NNRICP



Ms Ailini AH KEN-ETEUATI
from Samoa



Mr Poon KHWANSUWAN
from Thailand



Awarding certificates of completion



III. Country Reports by Participants

Bhutan

Namgay DORJI

Project Engineer

Division of Conservation of Heritage Site

Department of Culture, Ministry of Home and Cultural Affairs

Structural Heritage of Bhutan

1. Introduction



Bhutan is a small developing country situated between China and India with its border extending from the southern foothills of India to the greater northern Himalayas. The country is mountainous with an altitude ranging from 200 to 7000 m above mean sea level, going from south to north. Altitude is a key factor that contributes to the marked differences in climate among different regions of the country. Bhutan is also characterized by dense forest growth with the coverage estimated at about 70 percent.

In the present day, Bhutan is known to the outside world for its unique and time-tested cultural heritage. The government of Bhutan has in turn laid immense importance on the preservation and promotion of cultural heritage, which now forms one of the central main streams in Bhutan's development planning.

This report mainly focuses on the conservation of heritage buildings of Bhutan, and on wooden components in particular. Conservation includes survey and documentation, intervention, legal

protection, and a continuous process of monitoring and maintenance.

It should be noted however that conservation techniques in Bhutan are still traditional and rudimentary. The idea of modern conservation is at its developing stage and has yet to realize fully its benefit. Bhutan is today carrying out renovation works extensively, with statistics showing 70 renovations every year.

2. Architectural heritage in Bhutan

The architectural heritage of Bhutan ranges from simple farmhouses to monasteries and temples, and magnificent palaces and dzongs (fortresses). Bhutanese architecture also includes chortens (stupas) and bridges.

The earlier settlements have mostly been in the inner Himalayan regions rather than the southern foothills where the climate is hot and humid. Thus, thick vegetation, temperate climate, geology and even topography, besides religion and socioeconomic conditions of the region, have hugely influenced the development of Bhutanese architecture. Dzongs or fortresses have been built principally for military purposes such as defense. These towering structures are built at strategic locations—on hilltops overlooking the valley or surrounded by rivers providing a vantage point over the advancing army of the enemy. With the transformation of the political situation, these structures later became centers of religion and civil administration.



(Fig. 2.1) Lhunsi Dzong



(Fig. 2.2) Trashigana Dzong

Temples (lhakhangs) and monasteries are found scattered all over the country by the thousands. They were built mainly for spiritual reasons but also served political functions. Temples and monasteries are built through the collective effort of the community, or voluntarily by patrons. Monasteries and temples are built on rocky cliffs where great saints have meditated in caves or hermitages.



(Fig. 2.3) Taksang monastery



(Fig. 2.4) Chari monastery

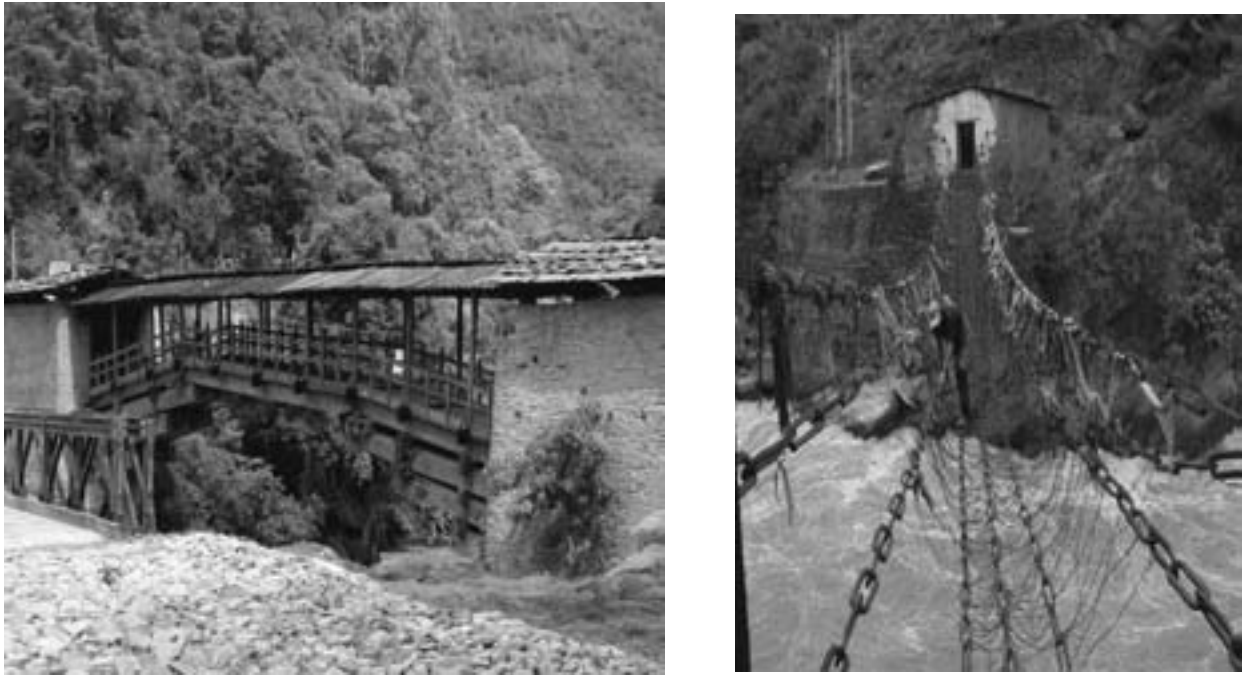
Chortens are one of the most symbolic items of Buddhist architecture. These are built to commemorate a great feat or event, usually religious, or in memory of eminent saints or personages. The shape or form of a chorten is usually inspired by a mandala (Buddhist depiction of the cosmos). Traditionally, chortens are chiefly built of stones or mud with little or no use of timber.



(Fig. 2.5) Stupas (chorten)



Traditional Bhutanese bridges can be grouped under two types: chain suspension, and a wooden cantilever known as bazam. The former type is normally adopted for wider rivers and the latter for narrower ones. Traditional bridges not only represent exquisite architectural pieces but also feats of engineering which have never failed to fascinate foreign visitors. Bazam is a wooden cantilevered bridge with or without a roof over it, and usually with bridge houses which are tower-like structures on each end.



(Fig. 2.6) Traditional Bhutanese bridges

A unique and most interesting fact about temples, monasteries, chortens or even dzongs is that there has been little digression from the functions for which they were originally intended some centuries back, and still form an integral part of the day-to-day lives of the Bhutanese people.

3. Traditional wooden architecture in Bhutan.

Timber is one of the oldest and most common building materials used from centuries past till today in Bhutan. With almost two thirds of 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. It is no exaggeration to say that Bhutanese architecture is largely defined by the wooden components of the structures. Timber is used starting from finishing material to extremely complex structural complexes. This can be understood from the non-availability of alternative materials, and at the same time the natural abundance of timber.

In traditional Bhutanese architecture, space, form, texture and the 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 (bay windows). Aside from the masonry walls, traditional buildings are heavily laden with wooden components.

The way wooden columns are used in traditional buildings is quite interesting to know. Tapering wooden columns with brackets called kachens, decorated to various degrees depending on the nature of the building, are typical of Bhutanese architecture. These columns are introduced to support the principal beams (dung) and joists for achieving more space inside. The most remarkable aspect of these structures is that they have withstood numerous earthquakes and other natural calamities over a long period of time. However, there is no record in evidence that these were designed to resist earthquakes.

Another striking feature of traditional architecture is the pitched roof, made of timber. The different roof types represent the status in the building hierarchy. Some of the roof types are permissible only for important buildings such as temples, monasteries, palaces, or government buildings. Traditional roofs make use of extremely heavy timber members. It is common practice to create a wide attic, and the space is used for drying and storing crops and meat. Traditional roofs use layers of shingles for roofing, which are kept down with stone boulders.



(Fig. 3.1) Typical Bhutanese architecture

4. Wood as a building material

Wooden construction is considered safe, energy efficient, dependable, affordable and environmentally superior. Wood forms one of the most versatile and abundant materials in many parts of the world. It is probably the only renewable building material, and can also be recycled. Different species of wood bear their own beauty, fragrance, color, and texture. As it is widely available and easy to work with, wood is used from the simple and basic to the most elaborate and intricate types of architecture. Wood is obviously the most widely used material in traditional Bhutanese architecture, and some examples have survived more than 100 years. These structures have also proved efficient in resisting earthquakes and other forces of nature. However, wood being an organic material, it is easily perishable when exposed to weathering and deteriorating agents and is highly combustible. The latter is a major challenge as Bhutan's traditional buildings abound in timber usage, but the ideas and techniques of fire safety are little known to Bhutanese society.

Timber is broadly categorized under hard and soft woods. Some of the hard woods available in Bhutan are oak, teak, sal, walnut, cypress, willow, mahogany and sandalwood. Soft woods are 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.

5. Problems with wooden architecture

The most widespread and severe problem that persists for 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 shortfalls reveal themselves over time. For example, there are situations where wooden beams and columns are strained under excessive load, as the result of which beams sag and columns sink, bringing the whole overlying structure down with them.

The causes of decay are insects, microorganisms, dampness and weathering agents. Dampness, one of the most common causes of timber decay in Bhutan, is also aggravated or promoted by poor planning and construction faults. However, it is noted that different species have different capacities to fare in particular situations.

Apart from natural seasoning, there is no other treatment applied to timbers. One can easily make out whether timber is well seasoned or 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 paintings done on wood have contributed a great deal to protecting timber for a long time.



(Fig.5.1) Timber decay



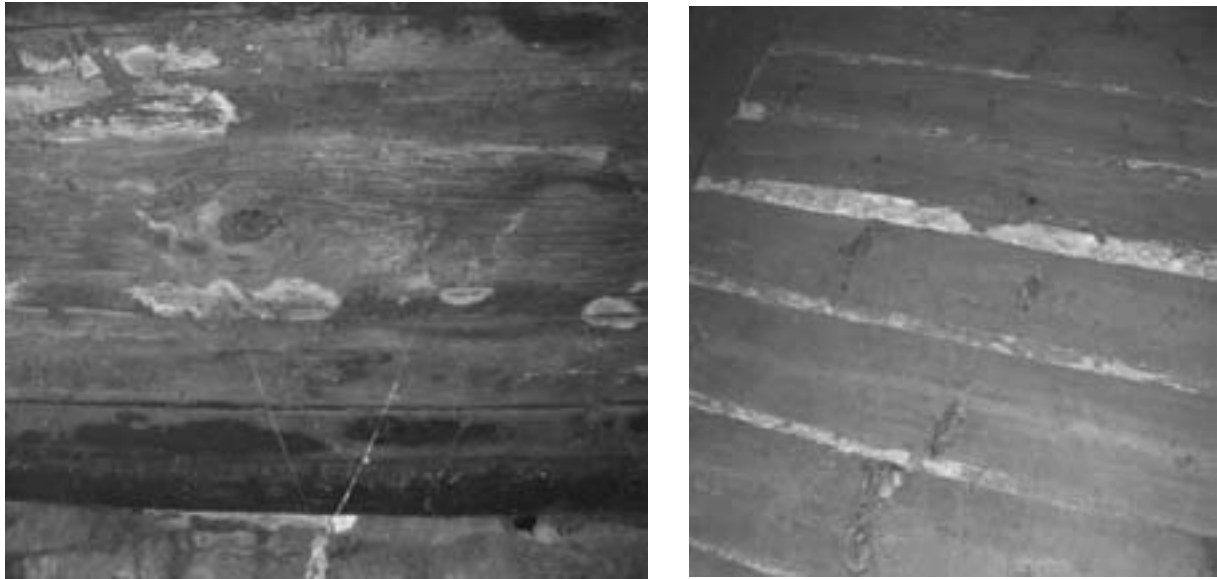
(Fig. 5.2) Traditional way of seasoning timber in Bhutan



(Fig. 5.3) Poor bonding and bulging



(Fig. 5.4) Erosion due to weathering



(Fig. 5.5) Fungal and insect attack

6. Difficulties encountered during execution of restoration

Difficulties in analyzing traditional buildings structurally comprise one of the biggest problems related to heritage sites in Bhutan. The characteristics, and problem areas, of restoration are as follows.

- Almost all work on traditional buildings is done using indigenous knowledge and materials.
- No factual calculation is done to determine the stability of the building.
- Almost all the massive structures have no foundation, but are built directly on the underlying stone or ground.
- Bhutan suffers from an acute shortage of professionals qualified in the structural analysis of monuments. It is therefore difficult to convince people of the degree of stability of monuments.
- Accordingly, renovation proposals often seek to stabilize the building with modern materials.
- Installation of electrical and sanitary fittings.
- Hazards, especially fire, for which there is insufficient water supply and lack of proper fire extinguishers.
- Attitude of the people towards monuments. Many want elaborate monuments, and because of this attitude most of the local monuments are considered dilapidated or weak.
- Lack of appropriate legislation and guidelines.
- Slow erosion of communal sentiments and responsibility.
- Collision of heritage with external influences and modern development.
- Insufficient funds.
- Remote locations of heritage structures.

7. Protection and restoration activities

Under this heading, I intend to discuss as far as possible my views based on the experience I have gained over time working for the only agency in the country that handles the conservation, restoration, maintenance and rehabilitation of Bhutan's architectural heritage.

Although conservation of timber in heritage buildings is widely carried out in Bhutan, the techniques and materials used are mostly traditional even today. The conservation activities are explained below in sequence.

NATURE OF THE TIMBER COMPONENT

It is important to establish first the significance of the timber component. One should ascertain the worth in terms of age, use, material and other relevant aspects. Knowledge of the type of construction and timber species aids in conservation work.

EXTENT AND CAUSES OF TIMBER PROBLEMS

For conservation, the causes and extent of damage should be ascertained. These findings are keys to the right choice of conservation method.

(a) Decay and insect attacks. Timber is usually the most worn out and affected component in historic buildings. The members are affected by termites, dampness rising from below, fire, and wear and tear. For example, timber floors in historic buildings are completely deprived of ventilation, causing decay. The dampness from below, and poor ventilation which limits air circulation, create a favorable environment for insects and microorganisms that feed on timber.

(b) Structural issues. Besides causes of damage or decay, understanding the extent of damage and structural implications is essential for determining the course of repair. Timber floor joists and beams on the upper floor spans of the room are closely studied and only those in critical condition are replaced. These members are often found to be sagging under the weight. Examination is made whether this is due to inadequate size of the timber, sinking of the support structure, or excessive point load.

REPAIR OR CONSERVATION WORK

It is necessary to take great precautions in repairing structural members. At the time of replacing floor joists, beams, lintels or columns, the horizontal members are jacked up. The removal and replacement of each member is done in succession from a suitable point. The outright replacement of joists or other similar members is refrained from unless it is extremely necessary. It is necessary to study the original timber species and also assess the strength required for the timber.

Total replacement of a unit is carried out mainly for structural components where structural safety cannot be compromised. However, other non-structural timber elements can be corrected through consolidation, repair or replacement of damaged parts, etc. In conservation, every attempt is made to preserve the original material and existing conditions to retain the intrinsic cultural values.

No chemicals or preservatives are used for conservation of timber in Bhutan. Firstly, Bhutan was introduced to modern conservation just recently and these chemicals were made available only a few years back. Secondly, since the chemicals are toxic and not environmentally friendly, the government discourages their use.

Good seasoning and painting after construction are two major activities that helped protect and preserve timber in Bhutanese heritage buildings. The painting however weathers over time, leaving timber exposed to agents of decay.

The concept of conservation in Bhutan is still largely traditional and very basic. Though it has proved to work relatively well enough, it is very urgent for Bhutan to become fully aware of modern ideas and techniques for conservation. There is not even any legislation in place to protect heritage buildings and sites against various destructive forces that come hand in hand with urbanization. The need for legislation is increasingly more pressing now than ever before to protect, conserve, promote and develop.





(Fig. 6.1) Restoration techniques

8. Conclusions

- Conservation techniques in Bhutan are still traditional and rudimentary.
- The idea of modern conservation is at its developing stage and it is very urgent for Bhutan to become fully aware of modern ideas and techniques for conservation.
- At present Bhutan is carrying out renovation works extensively, with statistics showing 70 renovations every year. But even at this rate there is every danger of losing the authenticity of the architectural heritage of Bhutan.
- With real estate and other infrastructure developing at an exhilarating pace, the need to protect, conserve, develop and streamline conservation work is felt more than ever before.

Cambodia

PHIN Vicheasachara

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Department of Conservation of Monuments in Angkor Park and Preventive Archaeology

APSARA Authority

Wooden Architecture (Problems and Needs for Cultural Heritage Conservation and Restoration Activities)

I. INTRODUCTION

Since 1935, domestic and international researchers have focused on and documented traditional Cambodian wooden architecture. This research has ascertained wooden structures of the pre-Angkorian and Angkorian periods; wood was blended in the temples with sandstone, laterite, and bricks. Other research (based on the bas-reliefs of Bayon temple, for instance, or Cambodian paintings of the late nineteenth and early twentieth centuries) has shown that for ancient wooden houses, and buildings for worship and other religious activities, wood was the preferred material for construction and ornamentation, etc.

II. WOODEN STRUCTURES

Wood was probably used in the construction of the earliest buildings. During the pre-Angkorian period, it was used to make beams in joinery. The wood used in the buildings and palaces of Angkor has been completely lost. Only in a few temples can fragments still be found of wooden beams and planks used as lintels over door frames, as is the case in Bakong, Lo Lei and Prasat Suor Prat (Fig. 1, 2). Often the wooden beams were placed inside blocks of stone, carefully carved in a U shape. In these cases the wood has been destroyed by termites or rot, with the consequent collapse of the weakened lintels. Where the wooden beams were placed outside, under a stone lintel, they are still in good condition.

Wooden lintel over doorway: These timbers support the upper load of the doors



Fig. 1 Wooden lintel at Bakong temple

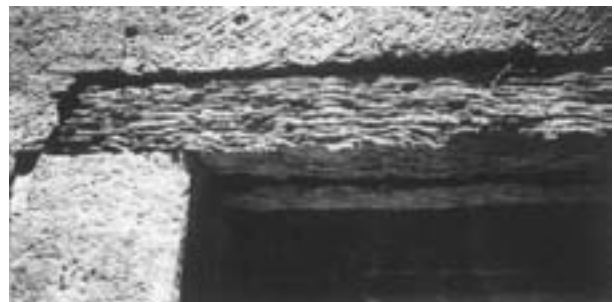


Fig. 2 Wooden lintel at Suor Prat temple



Fig. 3 Wooden lintel, Northern Khleang temple

At Northern Khleang temple located in the Angkor Thom compound, researchers found wooden beams still in their original locations at two places on the doorways of the central temple tower. The function of the beams is to support the stone over the door lintel (Fig. 3). According to several researchers, the age of the beams is perhaps several hundred years old. At present, they are in bad condition and decaying steadily, and they have neither been repaired nor conserved. In spite of influences from India, where numerous wood construction techniques are employed, the Khmers

only used one type of wooden roof, known as “sagging beamwork,” in which the qualities of the wood are poorly exploited. This technique is based on the observation of the following fact: when supporting an overly heavy weight, a horizontal beam does not give way near its points of support or at its middle, but at points located at a fifth of its length, known as the shearing points. The sagging beamwork technique consists of bringing all the weight of the roof between the points of support and the shearing points of the tie-beams (the horizontal beams, Fig. 4).

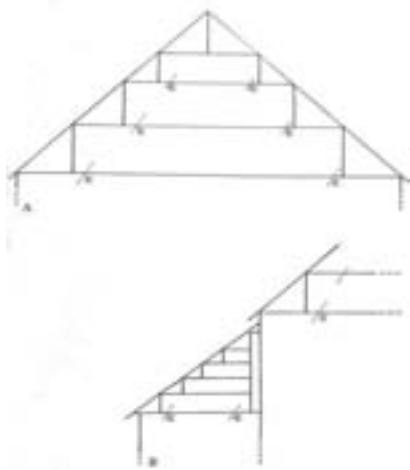


Fig. 4 A: Schema showing Khmer sagging beamwork. B: Illustration of sagging beamwork on a side aisle in the Chiangmai region. (“C” indicates the shearing points.)

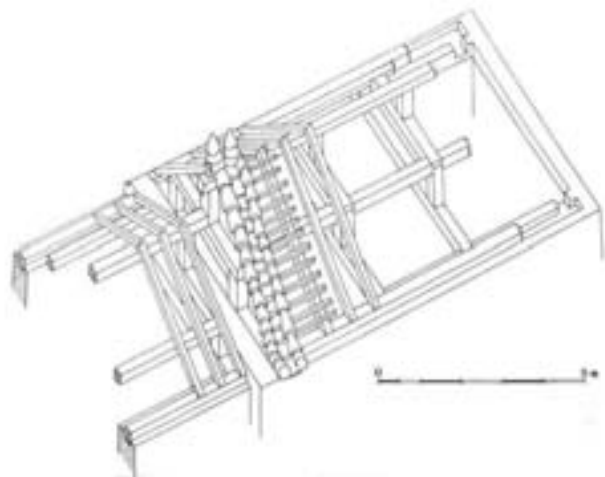


Fig. 5 Eastern Mebon: Construction of a roof covering on one of the long buildings in the second enclosure

Jacques Dumarçay and Pascal Royère have three sources of information about early beamwork: buildings shown in carved reliefs, tiles discovered near ancient structures, and beams embedded in stone structures. Some monuments, in particular those of the tenth century, comprise stone buildings covered with a tile roof supported by beamwork

For one of these constructions, on the Eastern Mebon at Angkor, they have reconstructed the beamwork (Fig. 5). This reconstructed form is relatively simple, but it is a different matter when it is a question of covering a building with a cruciform plan such as very frequently shown in the reliefs. The entrance pavilions of the second and third enclosures of Banteay Srei have this, and their roof recovering must be reconstructed with purlins inserted in the gables. These insertions are very similar to those of a building covered by a roof in two sections. There is some difficulty in reconstructing the crossing of the two perpendicular elements. The solution proposed is but a probability based on the following observation: often from the twelfth century, the plan of cruciform shrines has in the outer

corners an inserted projection which has the characteristic, in its roofing, of having a convex tile placed over the corner (Fig. 6).

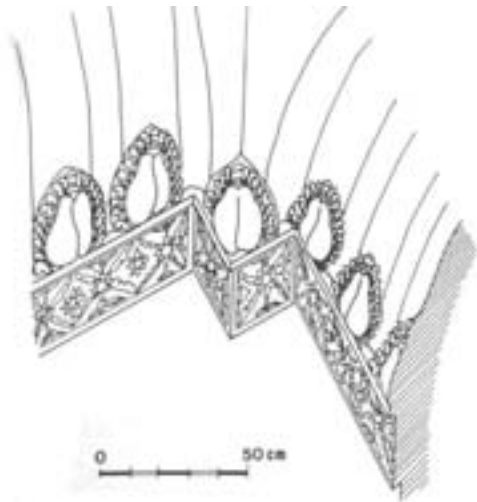


Fig. 6 Chrei Temple: external corner of the cornice of the north entrance pavilion

This supposes that concave troughs run along both sides of the beam forming the reflex angle. From this it can be reconstructed that four beams rest against each other at the top, and on the corner projection at the base, and that the beam is hidden under convex tiles with the troughs placed on each side (Fig. 7, 8).

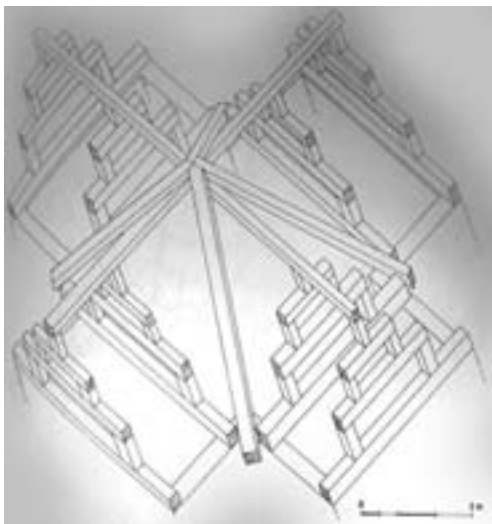


Fig. 7 Reconstruction of the beamwork covering a building of cruciform plan

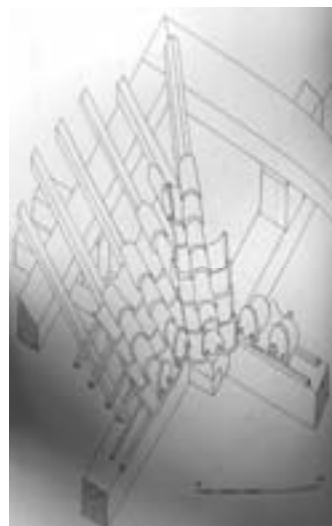


Fig. 8 Placing a tiled roof on a building of cruciform plan

Sometimes terracotta tiles were not used in the roof covering, but stone elements or bricks were employed, supported by traditional wooden beamwork (for example in the Bakong or the North Kleang at Angkor), doubtless to allow for the development of a more elaborate model (Fig. 9).

This is the case at the palace of Wat Phu, in Laos, where the main buildings were covered with a roofing comprising two sections of concave tiles, while the entrance porches were covered with a roof for which the extrados was re-carved in the shape of a covering resting on hoops, which is almost certainly one of the very early uses in a Khmer monument of this form.

Due to Indian influences on Khmer monumental architecture, Cambodian master craftsmen produced, from the eleventh century, a form of roof covering without completely understanding the techniques involved, known as hooped roofs (models of such roof covering are frequently found in the carvings in India, particularly in Mahabalipuram).

Given this ignorance, these roof coverings were reproduced in Cambodia with considerable incoherence; for example, the roof seems to have been covered by concave tiles which are in practice very difficult to place on a curved surface.

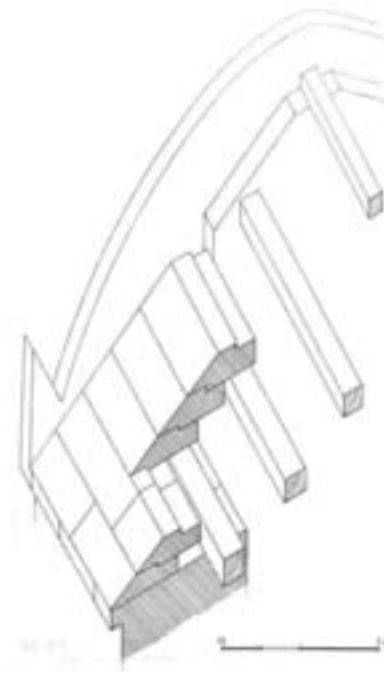


Fig. 9 Reconstruction of a roof covering one of the entrances of the Bakong pyramid



Fig. 10 Bayon, internal gallery, example of a carving showing a building with a cruciform plan

The buildings appearing in the great reliefs at Angkor Wat, the Bayon or Banteay Chmar almost always seem to be made of wood. Although the elevation can be reconstructed with some degree of probability, it is not the same for the plans. However, given the location of the gables on the elevations, it is certain that the cruciform plan was very common (Fig. 10). The techniques of construction of these buildings will doubtless be more easily re-established when the results of recent research on the site of the royal palace are published. Nevertheless there are indications of an unusual building, given its situation and significance, in the pavilion which appeared at the top of the terrace known as that of the Leper King.

When B. P. Groslier excavated the fill of the terrace, he discovered the base of very

substantial pillars which rested on a wooden crossing, the whole concealed in the fill. As can be seen, the Khmers only used wood in compression and never in traction, which avoided the necessity of having ties other than simple impaction which were held in place by their considerable weight.

III. HOUSES AND RELIGIOUS BUILDINGS OF WOOD

1. Ancient house characteristics

Cambodian vernacular dwellings differ from one another by their roof shapes. A field survey, made by APSARA in three provinces (Battambang, Kampong Cham and Katie), identified five different types whose house models were presented by Mr. UONG Vorn, former director of the Department of Culture of Angkor Conservation. Those houses date approximately from the early twentieth century to the mid-1940s (based on information provided by the houses' occupants). They are divided in two categories: houses of the elite and those of commoners.

The following are the five different house types surveyed.

Phteah keung. The roof shape structure is like a *kuti* (residence for monks). The two central rows of pillars of the house are partially relieved of their load-bearing function by two lean-tos on both sides. The roof is divided into two sections, the upper part with two slopes and the lower part with four. This hipped and gabled roof is particularly distinctive and shares many similarities with palatial architecture developed during Angkorian times.

This type of house was reserved for high-ranking individuals, as Zhou Daguan mentioned.

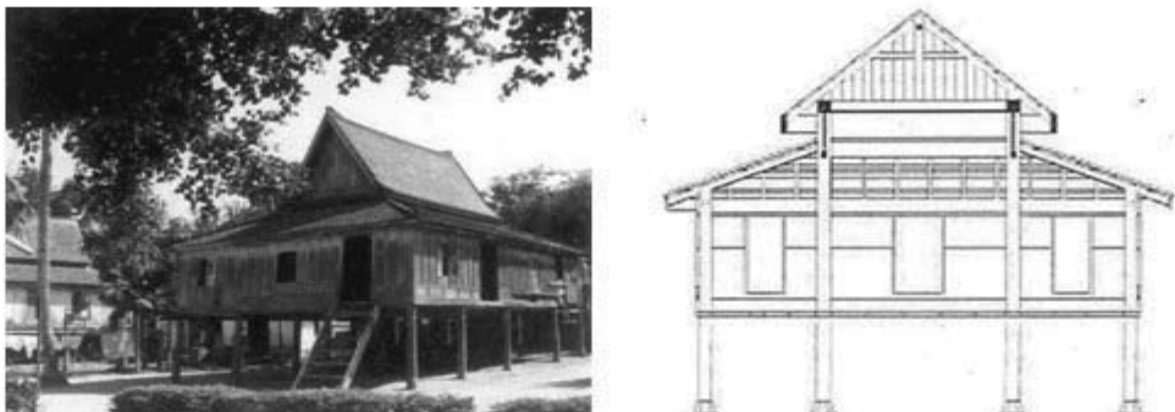


Fig. 11 Photo and cross-section of a *phteah keung*

Phteah rông daol. The term *rông daol* seems to derive from the expression *ronphdon tol* meaning “house whose roof plates expand,” which may then have been shortened to *ron tol*. It refers to the roof plates extending on one of the two small sides of the roof and resulting in an awning; their final length is more important than the ridge purlin's length.

The *phteah rông daol* features a wooden structure much less elaborate than the *phteah keung*: it has no tiered roof, and only the extended awning, *hâp*, at the front of the house, leaving the upper part of the roof plain save for a small gable. The back of the house is left vacant, usually with loosely fixed wood paneling allowing for possible extensions. In the mid-twentieth century, *rông daol* houses seem to have been closely associated with Cham communities. That is why it was always the type of house inhabited by Islamic Khmer. Regarding interviews conducted with their descendants, most of the original house owners were farmers who supplemented their income with activities such as silkworm breeding, tobacco production, or cotton and silk weaving. None of the original owners seem to have had any official title.

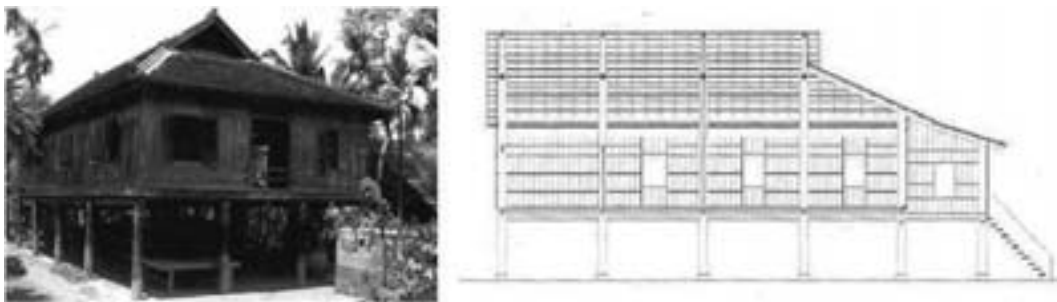


Fig. 12 Photo and cross-section of a *phteah rông daol*

Phteah rông doeung. The term *rông doeung* may derive from *thbal kdoeung*, a rice mill that was stored at the back of the house under a second awning. This would suggest that the *rông doeung* house was closely associated with farming activities. In three cases, the house was referred to as *rông daol*, in other cases, as *dâmrey krap* (kneeling elephant), and *krachom* (a term derived from the Thai language, whose meaning remains unclear). Like *rông daol* houses, *rông doeung* houses are oblong in plan, with one of the two small sides serving as the main façade. While *rông daol* houses have only one awning, located at this façade, *rông doeung* houses have two awnings and two gables, one at the front and the other at the back. A kitchen was either built adjacent to or at the back of the *rông doeung* house, which contained the reception area and sleeping spaces.

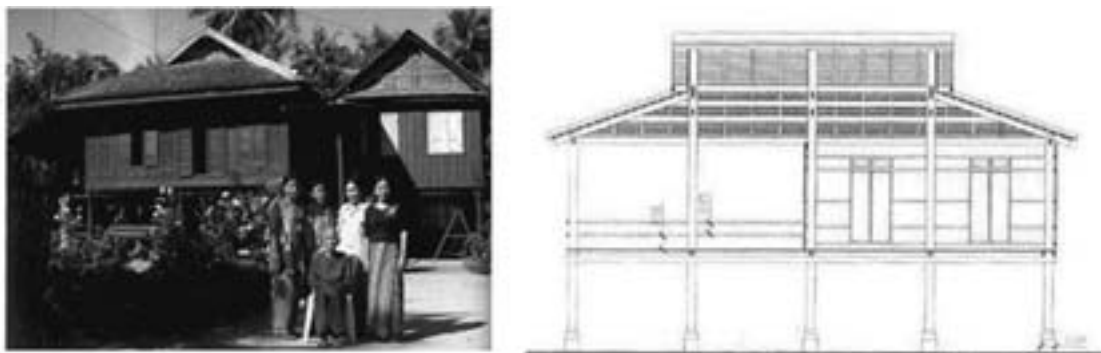


Fig. 13 Photo and cross-section of a *phteah rông doeung*

Phteah pét. The term *pét*, meaning “oblique,” refers to the hipped roof. Outstanding *pét* houses have four panels of roof with the same slope. The *pét* house seen in this picture is two buildings built one after the other. So it is called “two buildings *pét* house.” There has also been a “five buildings *pét* house.”

Normally, this house does not have any pediments on both sides in the manner of *rông doeung* or *keung* houses.

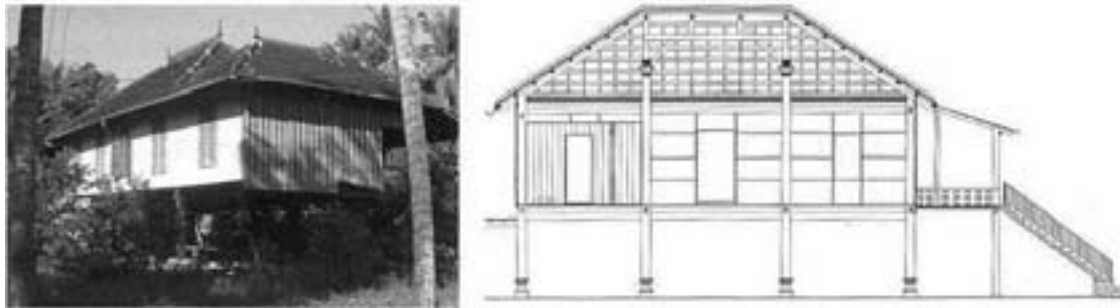


Fig. 14 Photo and cross-section of a *phteah pét*

Phteah kântaing. The term *kântaing* is associated with migrants originating from China, particularly from Guangzhou, who brought this type of house to Cambodia via Vietnam making some adaptations for the local climate.

The *kântaing* house is similar to the *rông* house in terms of roof shape, but they are distinct from each other in terms of internal spatial arrangement. While the *rông* house has no internal partition, the *kântaing* house has a mezzanine which accommodates the younger children and is then converted into a storage space. As in the other types of houses, the kitchen is always at the back or adjacent to the main structure.

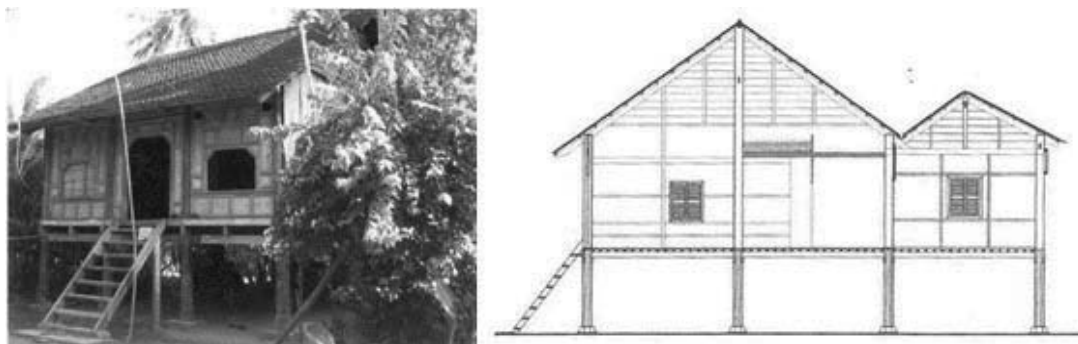


Fig. 15 Photo and cross-section of a *phteah kântaing*

2. Religious buildings

These are buildings that are used for religious purposes and venerating the principal gods. These buildings may include the following.

Vihàra, uposothàgàr. These are built with four or six lines of columns that divide the space as follows: the central section is called the foundation (*krüh*), the bordering sections on the sides are called the corridors (*ròbieng*), and beyond are the porches (*baing sach*). In this type of building, most examples have two levels of roof and possess at least four roof finials.

An *uposothàgàra* must have *sìmà* boundary stones encircling the building. This building is used for monks to perform the *uposotha* ceremony and other rites. As for the *vihàra*, it is a large building to display the primary Buddha image. Traditionally, this building never had *sìmà* stones. However, recently villagers commonly build *uposothàgàra* and *vihàra* together as a single combined building, so *sìmà* stones can be seen at many modern *vihàra*.



Fig. 16 Ancient prayer hall with a roof structure of wood and core of bricks

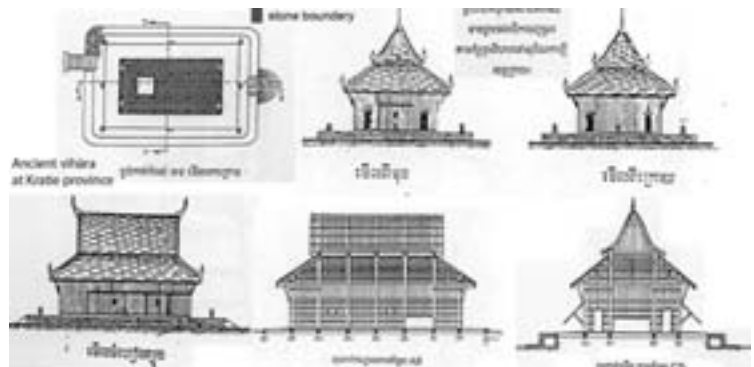


Fig. 17 Ancient prayer hall in wood surrounded by a stone boundary



Fig. 18 *Salà chhan*

Sàlà. These are less important buildings than the *vihàra* and the *uposothàgàra* in a wat compound. A *sàlà* also has four or six lines of columns and a central foundation area (*krüh*), corridors (*ròbieng*), and porches (*baing sach*). These buildings are used as the places where monks eat, study chanting, and conduct various ceremonies. The different types of *sàlà* are the study hall, *sàlà bâriyat*, for reading; the dining hall, *sàlà chhan*, for male and female lay members of the local community to congregate and offer food; and the kitchen, *sàlà kamroeun*, for cooking.

Kuti. This is a residence for monks. A *kuti* has a shape similar to that of an ordinary Khmer house (bottom left photograph) but contains some special characteristics of the two roofed house types (*keung*) (Fig. 20).



Fig. 19 *Kuti*



Fig. 20 *Kuti*

In a larger structure it is usually completely open to the central colonnade in order to perform sacred rites. Normally sacred architecture is built on an open plan with central space for the deity and no central pillar or support column. The multi-level roof (*keung*) is sometimes surmounted by a spire roof (*mondop*), supported by a sub-column (*choeng kòk*) and cross beam. The tiered roof may have many levels depending on the status of the building.

IV. DIAGNOSIS

A diagnosis is presented here of houses in protected zones and elsewhere. Angkor Archaeological Park of Siem Reap province is divided in five protected zones.

Zone I: Monumental sites

Zone II: Protected archaeological reserves

Zone III: Protected cultural landscapes

Zone IV: Sites of archaeological, anthropological or historic interest

Zone V: Socio-economic and cultural development zones of Angkor/Siem Reap province

The royal decree preserving protected cultural zones stated that Zones I and II need to be protected from harmful land use practices and the consequences of inappropriate development, and that new settlements are absolutely prohibited, but these actions have occurred considerably within these zones. The decree allows the original villagers to rebuild or renovate their present dwellings to the same scale and size, but with no extensions. So far, other problems have been arising in every village in the archaeological park, but here I focus only on problems dealing with dwellings.

1. House painting

According to observations *in situ* on color use of most of the houses in the protected zones, it does not conform to APSARA's recommendations. One house was painted in yellow and grey tones on the

walls and windows. Visibly, the upstairs and downstairs (additional construction) are distinct from each other (Fig. 21).



Fig. 21 House situated in the protected zone of Angkor Archaeological Park



Fig. 22 House in Battambang province

Another house, situated in Battambang province, with new construction at the ground floor which looks recently built or repaired, is totally done in brick, in contrast to the old part of the building (Fig. 22).

2. Materials

This ancient prayer hall is situated in Siem Reap province. The walls were recently removed and replaced with new wooden planks with grills. The walls were completely painted and covered with an additional layer of zinc. The building as a whole visibly divides into two parts, the roof which maintains its authenticity, and the main body of the wooden structure which reduces the building's historic value.



Fig. 23 One of the ancient pagodas in Siem Reap province

3. Additional construction

These are examples of houses surveyed in Battambang province. In the first one, a verandah has been added adjacent to the main porch, and in the second, an additional building stands in front of the house, with architectural characteristics contrasting strongly with the old building located to the rear. Though

differing in degree, both houses illustrate negative historic impact caused by lack of adherence to Khmer architectural style.



Fig. 24 Houses surveyed in Battambang province

V. PROPOSAL FOR SAFEGARDING

Responding to the problems examined above, I propose the following process for conservation and restoration.

1. Painting the exterior surface

In order to maintain the ancient architectural forms and landscapes in the parks, we need to take into account the painting of houses. Materials on the roof (tiles, fibro-cement, and zinc) must be in red, green or light grey tones; white is prohibited. Walls and windows must be coated in brown or should be kept in the natural color of the wood. In case there is additional construction at the ground floor, it must be in the same color of the main building or light grey, but pink and white tones are prohibited. Below are a model house and water color patterns built and produced by the APSARA authority, which should serve as models for those requesting permission for construction.



Fig. 25 Model house in the protected zone of Angkor park

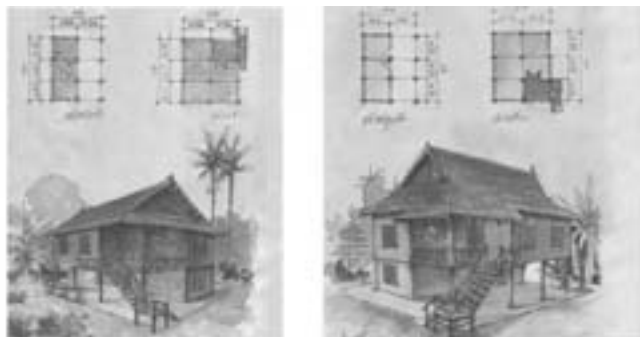


Fig. 26 Water paintings in a brochure by the APSARA authority

The recommendation adopted by the APSARA authority is used to safeguard the ancient dwellings in the protected zones and elsewhere in Cambodia.

2. Substitution of new materials

It is important to study preliminarily new materials before any intervention. Destruction of old materials threatens the authenticity of the building, and for this reason, to protect the building from manmade disaster I recommend, in the case of restoration or renovation of old buildings, to use materials of the same species. In the example given above, the prayer hall's walls were originally in brick, for which zinc-plated wooden planks and grills were substituted; the wooden wall and zinc plating must be dismantled. Regarding Khmer houses, morphologically any inappropriate intervention such as modification of the building shape (by which I mean transforming the building to another architectural style) is absolutely prohibited. All additional construction must be completely removed so that the ancient building emerges.

3. Architectural decorative elements

The houses surveyed in three different provinces, Battambang, Kratie and Kampong Cham, allowed me to observe decorative elements that are always present on the roof, and sometimes also sculpted on internal wooden structures such as joists, etc. These fantastic elements used anciently are rarely found at present on the roofs of buildings.

They should be recorded and designated properly as architectural archives.

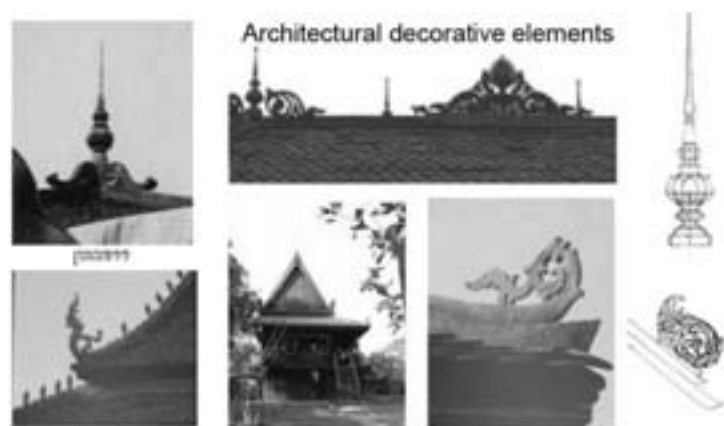


Fig. 27 Ancient decorative elements

VI. CONCLUSION

Day by day, due to lack of conservation and restoration measures, the wooden architecture of Cambodia is in a dangerous situation, caused by nature and by humans who make interventions without proper knowledge of its value. Preserving this outstanding wooden architecture has become a national interest. The issue is particularly sensitive for present examples of living heritage buildings that still have a use and function and should be preserved that way. Raising awareness of their value as

architectural heritage should be greatly encouraged, with the families and local communities, and at different levels of the administration. The inventory of outstanding wooden buildings was a first initiative towards the identification and recognition of this architectural and living heritage. From now on, the APSARA authority should play a major role to ensure the survival of wooden heritage in Cambodia for future generations.

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Opportunities and Challenges for Heritage Conservation in Hong Kong: The Case Study of Tsing Shan Monastery

In contrast to Europe, Japan or Australia, popular awareness of the value of conservation of the built heritage is a rather young phenomenon in Hong Kong. Although there is now widespread public appreciation of our surviving architectural heritage, it is always difficult to encourage the retention of historic buildings, especially by way of private participation. As at June 2011, there are a total of 99 Declared Monuments and 154 Grade I historic buildings in Hong Kong (AMO 2011). Less than one-third of these are Chinese temples, ancestral halls and study halls, and only few of them dating from the Qing Dynasty. Many of the best preserved traditional Chinese buildings in Hong Kong are temples, mostly Buddhist and Daoist, and their preservation owes much to their constant heavy usage.

Located on eastern slope of the Castle Peak (青山) in Tuen Mun (屯門), Tsing Shan Monastery (青山寺) is the home of the oldest Buddhist site established in Hong Kong, surviving from the fifth century. In the 1920s, shortly after the monastery was last rebuilt, there used to be 100 monks (Savidge 1977). Today, the monastery is still used as a place of worship by the Buddhist community, and is one of the best hiking spots in the territory. Though the site has been degraded over time, most of its building elements survive largely intact and the form is still preserved. Through a process of repeated consultation with the Managing Trustees of the Charitable Trust of Tsing Shan Monastery, a restoration plan was formulated. It is one of the largest and most exciting conservation projects to occur in Hong Kong for many years. The project has not only prioritized work to be done, but also helped to understand the monastic site further. Through our modern inquiry into traditional Chinese architecture, the physical structures surviving from the period became more clearly tied to their religious functions and building history. This project identifies the significance of the built heritage of the monastery when this sacred place was revitalized in the early twentieth century, which in turn informs us of the layers of history and memories embedded in the site, place, and space, inextricably interwoven with the material aspects of the architecture.

History and Ownership

According to descriptions from various local gazettes and writings by esteemed historical poets and officials, Master Pei Tu (杯渡), a legendary Buddhist monk from South Asia, arrived in Tuen Mun harbour at the Pearl River entrance around mid-fifth century. He was welcomed by the local garrison

and resided in a cave at mid-level of a local mountain near the harbour, which is believed to be the Pei Tu Cave in the Tsing Shan Monastery today. The monastery is therefore regarded as one of the earliest points of entry of Buddhism into China via the ancient Sea Silk Road. Later, a nunnery was built on the mountain in front of the cave according to records dating back to the seventeenth century. The local To clan began to build a Daoist temple (Tsing Wun Koon 青雲觀) on the site around the early nineteenth century and embraced the cave site. In 1914, the To clan appointed Chan Chun-Ting as the Daoist temple head. However, as Chan converted into Buddhism in 1918, he started to acquire land around the cave to build Buddhist buildings, cleverly using the cave, the existing Daoist complex, and the natural topography to compose a vast formal Buddhist compound. His death in 1932 started a dispute over land ownership between the interweaving Daoist and Buddhist complexes, until the court settled it in 1998 by setting up the Managing Trustees of the Charitable Trust of Tsing Shan Monastery.

In 2004, the Trustees commissioned consultancy research on the care and condition of all early monastic buildings contained within the site. This was completed with cooperative assistance from the village representatives, the District Council, consultants from the Architectural Services Department, and the Hong Kong Institute of Architects. The consultancy research highlighted thirteen significant monastic buildings, dating from the 1910s, which had been established on the site. As the Trustees own only the footprints of the Buddhist buildings except the courtyards and the paths around them, comprehensive repairs had been hindered. In recent years negotiations finally enabled the commencement of restoration work. A team of architects, engineers, conservation consultants and contractors was then appointed by the Trustees to carry out the restoration work from September 2009 to January 2011. As land and resources in Hong Kong are at premium, many owners of private historic buildings have tended to overlook issues of conservation, especially when pitted against short-term economic incentives. Although the Tsing Shan Monastery is a privately-owned historic property built on private land, and it is a great challenge for the owner to bear the additional costs of having the repair work done using traditional materials and techniques, by virtue of its inherent value and its status as an important landmark, the Managing Trustees considered it worthwhile to restore this cultural resource to be enjoyed by the public at large and protected for future generations to appreciate.

Legislation and Grading System

Conservation of the built heritage is never an easy task and by no means an inexpensive exercise, especially when the historic building is located in a heavily developed city like Hong Kong. Hong Kong has enjoyed rapid economic growth over the past five decades at the cost of losing the cultural fabric of its cityscape. In Hong Kong, a monument declaration system was only first introduced when the Antiquities and Monuments Ordinance was enacted in 1971. Additionally, a grading system, as an internal administrative mechanism with no statutory authority, was first introduced by the Antiquities Advisory Board in 1980.

Despite the limited land ownership of the Trustees, the terrain that makes up the Tsing Shan Monastery as a complete Buddhist compound spans an extensive cultural landscape, embracing government land and including woodlands, fields, streams, rocks, paths, and also other private lands like the Tsing Wun Koon complex and graveyards, however, none of the buildings or land features are Declared Monuments protected under the current Antiquities and Monuments Ordinance. Nevertheless, up to ten buildings are on the current “proposed list of graded historic buildings” announced by the Antiquities and Monuments Office by June 2010. Among those, five buildings, namely the Ceremonial Arch, Mountain Gateway, Bodhisattva and Ksitigarbha Hall, Hall of Dhamapalas, and Main Grand Hall are proposed as Grade I (AMO 2011). As such a cultural landscape is extremely rare in highly urbanized Hong Kong, the monastery should in fact be treated comprehensively rather than as a series of individual historic buildings.

Deterioration Factors

Hong Kong lies within the tropics but unlike other tropical places, it experiences distinct seasonal changes in weather (HKO 2011). The average annual rainfall in Hong Kong is about 2,200 mm, compared with 620 mm in Beijing and 1,580 mm in Nara. Heavy rain means that historic buildings need to drain water away quickly. Tropical typhoons are most common from July to September. In an average year, about five of them can be expected to cause damage such as landslides. The location of the monastery is of prime concern, as it has steep hills and is exposed to wind, rains and mist, and sustained neglect in recent years has caused leakage and thus progressive rotting of timber members, threatening partial collapse and potential complete failure. Besides, the monastery also suffered from past unsupervised repair works which unfortunately concealed and casually altered the originally intended form and expressions having ritual or artistic significance.

Restoration Work Examples

Each piece of intervention throughout this restoration project was decided on evidence and research. In all cases, traditional materials and techniques compatible with the existing fabric and historical craftsmanship were chosen wherever possible, but in case of unsafe or unsustainable past practices, improvised modified methods using strictly traditional materials borrowed from similar Lingnan practices or well-tried Hong Kong experience were adopted. Below are a few examples.

Main Timber Frame and Overhang Frame, Main Grand Hall 大雄寶殿之主木樑架及外簷樑架

The Main Grand Hall of the monastery displays a very standard form of timber roof construction for the Lingnan (嶺南) Region, meaning the cultural region south of the Five Ranges, located in modern day Guangdong and Guangxi provinces, and part of southern Fujian province. The timber roof is probably the largest and oldest authentic example of a large-scale traditional Chinese building in Hong Kong with a timber hipped and gabled (歇山頂) roof form. The two existing main sets of

timber truss frame, which arise from the four Golden Columns and support the roof of the Main Grand Hall, are a Lingnan style lifting-beam with strut-column timber frame (Fig. 1). The form of this extensive cross section is known as the “nine-purlin, double front-rear aisle, six-column section” (九架前後雙廊用六柱) in traditional Chinese architecture.

CONDITION

The existing round purlins, probably of Chinese fir, were supported by the beams of the main truss frames. Due to their direct contact with leaking roof tiles, the purlins suffered the most deterioration. Thus rotting of fibre and peeling off of paint were serious. By comparison, the beams and strut-columns appeared to be in a better state, except at locations where the roof had mostly collapsed.

INVESTIGATIONS

Fragments of the existing timber purlins with painted surfaces were sent to the test centre of Huazhong University in Wuhan, for testing the nature of both its existing fabric and paint. When the spectrum of its fabric was tested under infrared analysis, and compared with results for common timber fabric, it was confirmed to be Chinese Fir. Existing timber beams and purlins appear homogenous dark brown or black, which could have been the general protective surface paint. Analysis of the paint specimen excluded the possibility of lacquer, with the result matching that of tung oil (桐油), a common traditional anti-rot treatment.

TECHNICAL CHALLENGES

The seriously rotted rafter battens needed complete replacement. The sustained leakage in recent years had also seriously rotted and fractured the tops of most purlins. It appeared impossible to repair the purlins *in situ*. It was decided to take each down carefully and examine it for damage. Those with minor damage were repaired (Fig. 2), while those which have lost structural capability were replaced by matching timber poles using compatible techniques (Fig. 3).

Techniques of repairing timber. After taking down all purlins for inspection, about half could be repaired and reused, while the rest need to be replaced. Timber purlins were repaired by: (A) scrapping away and thoroughly cleaning away all rotten debris, and letting dry; (b) treating all reused purlins with traditional tung oil for protection against mould and insects and drying thoroughly; (C) filling up the hollow parts and gaps with wood blocks and chips mixed with resin (Fig. 4); (D) painting with two coats of raw tung oil until soaked wet just like the traditional Lingnan construction practice, and letting dry (Fig. 5); (E) installing the purlins into position on the roof frame.

Techniques of preparing replacement timber. For structural timber members deteriorated beyond repair by minor filling, there was an established method of replacing part of the structural member by traditional carved jointing (Fig. 6). Any complete replacement by new timber members was also prepared under traditional methods. The process includes: (A) sourcing Chinese fir poles of matching lengths and diameters (these should usually be trees already felled and dried for a long time, and

already ground or sanded into broadly straight and even profiles); (B) painting with insect and mould repellent, and letting dry; (C) painting with two layers of raw tung oil until soaked wet just like the traditional method, and letting dry; (D) installing the purlins into position on the roof frame.

Techniques of final paint finishes. The testing by Huazhong University reported that traditional lacquer was not found on the surviving surfaces. This is understandable since full proper application of lacquer to structural members was an extremely labour intensive method. Application of raw tung oil as the predominant surface protection is a common practice. Nevertheless, the final surface may traditionally be painted over with a thin hard layer that shines, sheds moisture, and retains the wood grain. It may be either: (A) cooked tung oil, (B) lacquer diluted with tung oil, or (C) in later eras, water-based enamel paints. The first two have short life spans and may have peeled off later. All of the above are sacrificial if applied as a thin semi-transparent layer, meaning they can be removed later without damaging the wood fabric which is already well protected by the raw tung oil impregnation. Considering that the first two methods require well trained workers for a sophisticated technique no longer practiced in Hong Kong, it was decided that the third method is acceptable, as long as the enamel paint is water-based, breathable, semi-transparent, dark-brownish colour, thinly applied, and thus reversible. This is considered the least interventional method that retains the original design intent and appearance.

***Tou-kong* and Structural Timber Frame, Hall of Dhamapalas 護法殿之斗拱及木結構樑架**

The hipped and gabled roof of the Hall of Dhamapalas is in the recessed-gable style (Shou-shan 收山, Fig. 7), and is rare in buildings of this small a scale (Fig. 8). The *tou-kong* of this hall are decorated with incised carving (陰刻) (Fig. 9), where thin lines are carved into a flat surface, then normally gilded or painted dark. The carvings here show patterns of lotus and “colour-clouds” (祥雲) (Fig. 10), both Buddhist features, testifying further that the building decorations of this monastery are uniquely tailored to Buddhist philosophy, and indeed very different from almost all other Chinese temples and ancestral halls in Hong Kong, which display customary vernacular auspicious themes only.

CONDITION

Compared with all other buildings in the monastery, the timber roof frame of this hall, including the beams, purlins and *tou-kong*, are in a relatively good condition without any major rotting or signs of collapse. A fracture was found in the gable purlins, and occasional sections of overhanging purlins were found to have rotted (Fig. 11). All the *tou-kong* are in very good condition without any signs of rot or collapse. The purlins were painted in dark brown apparently with oil-based enamel paint to imitate a traditional tung oil treated surface.

INVESTIGATIONS

Ridge purlin. At start of the project, a main fracture at the middle of the ridge decoration was found and suspected to be a sign of potential failure of the main ridge purlin (Fig. 12). Fortunately, later

removal of the tiles found it was only caused by inadequate bedding of the decoration assembly itself, and the ridge purlin is in fact in good condition, thus not needing replacement.

Gable beams. Fractures in two gable beams would not cause immediate collapse, but they needed to be strengthened. It was decided to take advantage of modern engineering intervention, and use small steel channels spanning the existing steel lintels to give support from below, and allow the weakened existing timber gable purlins to rest on such new steel channels by gravity, thus eliminating any intervention to the timber fabric.

Eave purlins. Local sections of rotted purlins under the eaves were replaced only locally with new timber (Fig. 13), and fitted back to the main member by traditional crafted joints (Fig. 14).

Tou-kong. There is no need for replacement due to their good condition. Removal of later indiscriminately applied enamel paint reveals more clearly the carving details and faint traces of dark green. The only sensible decision was to carefully remove all paint without damaging the carving details, and repainting the *tou-kong* in red with water-based paint, and with carvings highlighted by dark green paint as in the original design (Fig. 15).

TECHNICAL CHALLENGES

The biggest challenge was the need to preserve the elegant plaster mouldings on the ridge and the gable, which precluded dismantling the timber structure. The restoration of the roof of this hall adopted a “no dismantling” method, i.e. to re-lay the roof tiles and replace battens without prior dismantling and reassembly of all beams and purlins. Fortunately, most of the purlins are in relatively good condition and do not need replacement except at certain sections of the eaves corners. The beams supporting the gable walls were found resting on I-section steel lintels between the brick piers (Fig. 16), which indicated a major restoration in past decades replacing that member while reusing other structural timber members. As mentioned above, the beam that carried the brick gable was most heavily loaded, which led to visible fracture. Although not leading to immediate collapse, it should be strengthened in this project.

Tiled Roof, Main Grand Hall 大雄寶殿之瓦作屋頂

The roof of the Main Grand Hall is in the traditional Lingnan style “single roll, single pan” (單板單筒) tile construction, supported by timber rafter battens, in turn supported by timber purlins and beams below (Fig. 17).

CONDITION

Most of the timber rafter batten pieces were already badly rotted, often reduced to less than a quarter of the original dimension, and thus impossible to repair. The cement mortar joints were mostly cracked and the tiles were only loosely resting in place by gravity, subject to imminent slipping off and thus breakage. It was imperative that such a roof be completely re-laid while reusing the most salvageable tiles.

INVESTIGATIONS

In Chinese building restoration projects, it is common to have around half of the pan tiles salvaged and reused, while the rest need to be replaced by new matching ones. Each pan tile was found to overlap the one below by 70% and expose only 30%, in a technique known as “overlap by 7, expose by 3” (搭七留三). In the Lingnan region, the practice is to use continuous rows of interlocking convex cylindrical-shaped roll tiles to cover the joint between rows of pan tiles (Fig. 18). The roll tiles were plastered over as a ridge, using a thick layer of lime mortar mixed with black soot, known as “black-smoke plaster” (烏煙灰). This plaster ridge holds the tiles in position and fills up the gaps between tiles. Traditionally, the soot is often obtained from the bottoms of the domestic Chinese cooking wok. Thus the oil-based plaster achieves high water-shedding, dirt resistant, and insect repellent characteristics. The problem here was the cement mortar applied to the roll tiles in earlier restorations was extremely difficult to remove. Manual removal with extra care was needed to salvage such tiles for the reuse (Fig. 19).

TECHNICAL CHALLENGES

The laying of single pan, single roll tile roofs and the application of dark-smoke plaster are still techniques processed by workers repairing Chinese temples in Hong Kong, and hence the technical challenge is manageable. From experience, tight quality control on site to ensure strict adherence to traditional standards of care in tile laying and thoroughness of lime plaster application is probably most important for ensuring beauty and durability. However, the conservation team has decided to further improve the technique by reintroducing some traditional techniques which are now rarely practiced in Hong Kong.

Use of bamboo strip reinforcements. Plastered roll tile ridges are often cracked by slight movement, causing potential leakage. One traditional Lingnan technique is the addition of bamboo strips as reinforcements buried within the plaster layer (Fig. 20). It was decided to reintroduce this method in the restoration here.

Use of bamboo nails. Another common failure of Chinese roofs is the collapse of rafter battens that support the tiles. Modern workers in Hong Kong often use iron nails to fix the rafter battens onto the purlins below. This non-traditional method creates potential rusting and eventual deterioration of the timber members. Again, the team reintroduced a Lingnan traditional technique of fixing the components with bamboo nails (Fig. 21). Workers cleverly made their own bamboo nails by cutting domestic chopsticks (Fig. 22). These need to be dried and then dipped in raw tung oil according to traditional practice to repel insects and mould, and improve moisture resistance.

Preparation of salvaged pan tiles. The salvaged pan tiles were selected and thoroughly cleaned of bird droppings and mould (Fig. 23). They were then soaked in lime water for up to three times until they appeared white (Fig. 24). The lime will improve the water shedding properties, repel and prevent insects and mould, and also prevent plants from growing on the tiles' surface.

Replacement roll tiles. The profile of roll tiles may vary considerable in the degree of tapering and the diameter of the interlocking dovetail. In this restoration, the profile for replacement roll tiles was tested by several mock-ups until it was found to match the majority of salvaged ones.

Decorated Eave Boards and Lintel Frames, Hall of Dhamapalas 護法殿之封簷板及門頭花罩

The incised groove technique of the eave board is one of the representational wood carving crafts in the monastery. Patterns are not easily identified in shallow incised groove carvings (陰刻), hence contrasting colour is normally painted into the grooves. However, multiple layers of paint applied in the past have made finding such colour impossible on the existing eave boards.

CONDITION

The existing eave boards were covered with dirt and mould at the start of the project (Fig. 25). Only shallow incised groove carvings similar to those on the *tou-kong* were seen, but were blurred by later applications of thick paint. The cloud profiles at the edge corners of the eave boards were unfortunately badly rotted. The carvings on the door head lintel frames across columns have a combination of relief and openwork carving (淺浮雕, 通雕) (Fig. 26). Apart from two thin layers of paint and a fracture in the middle, the condition is acceptable without damage to the carving details.

INVESTIGATIONS

Normal shallow carvings will not be treated with a base of plaster, but only given thin paint to reveal the carved patterns. The restoration needs to exemplify such characteristics in order to match the original appearance and maintain the principle of an integrated style. Both boards with shallow groove and with openwork carving were cleaned to reveal the wood grain, with no application of new colour.

TECHNICAL CHALLENGES

Careless handling by workers at the start caused falling and loss of the rotted corners of one of the eave boards. The construction team brought craftsmen from China in an attempt to remake them, but the remade pattern turned out to be mismatched with the original. Repeated trial resulted in the decision to repair *in situ* (Fig. 27). By referring to the offering table under the Sutra Protector Statue inside the hall, guild incised groove carvings were painted in the traditional Ciozhou (潮州) style of “gilt thread drawing” (金線畫) (Fig. 28). In the absence of any other evidence, it is reasonably assumed that the carvings of the eave boards might have been carried out in a similar technique. Hence it was decided to restore with such grooves painted with this traditional method.

Carved Wooden Doors, Main Grand Hall 大雄寶殿之雕花木門

The twelve leafs of timber door panels of the Main Grand Hall are carved with elaborated open lattice patterns of Buddhist icons. The Middle Bay has six operable leafs grouped in three pairs, hinged at

top and bottom, in line with the formal design of a Harmony-of-Six Door set (六合門).

CONDITION

The bodies of the existing timber doors are generally in good shape, with little sign of fracture or rotting (Fig. 29). The surfaces, including the lattice patterns, appearing in bright polychrome, were obviously painted over many times.

INVESTIGATIONS

The site supervisor carefully scrapped and recorded each pattern layer by layer. It appeared that past workers did not always repaint with the exact colour scheme as existed at that time. Hence it is difficult to determine which scheme was more culturally significant. Nevertheless the combination of red and blue and green was predominant, and also matched a photo record of the doors taken in 1985. This was the colour scheme adopted for the restoration work.

TECHNICAL CHALLENGES

There is no substantial technical challenge in repairing the fabric, except for minor repairs of cracks and chipped off corners by traditional filling with wood dust mixed with mortar (Fig. 30). The main challenge of the restoration was the colour and texture of the open lattice patterns. It is important that the restored colours appear not brand new, nor should it be deliberately made old to falsify historic evidence. It was decided in the end that the middle main feature patterns be painted in the original bright colours, while the surrounding vine decorative patterns be made slightly dull. Workers applied diluted chemical paint remover to the wood surfaces (Fig. 31). It removes all later oil-based or synthetic paints except the bottommost layer, which is probably half soaked into the wood fabric. It was decided to leave such faint traces of old paints untouched since further chemical or manual treatment may risk damaging the wood grain or craftsmanship. Traces of the very bright later colours left over from when the project started still remain at the edges and corners of these lattice patterns, and are difficult to remove without risk of damage. It was decided to leave these traces alone, to allow visitors to see such evidence. All the door leafs were repainted with mineral dye to the original colours, except one leaf at the far edge, which was deliberately left untouched and remains in the state before the restoration (Fig. 32). It allows visitors to see the authentic historic evidence.

Ridge Ceramic Ornaments 正脊陶瓷

The main ridges of the Main Grand Hall and Hall of Dhamapalas have elaborate decorative Si-wan glazed ceramic ornaments (石灣釉彩陶瓷) on both the front and rear. The authentic Foshan (佛山) ridge ceramics, dating from the 1920s, are two of the most valuable examples of traditional crafts in the monastery.

CONDITION

Despite occasional cracks and loss of features, the general condition is good and thus illustrates a good quality firing process when originally made. However, the entire composition showed sagging, with vertical fractures caused by failing timber ridge purlins and frameworks below (Fig. 33).

INVESTIGATIONS AND CHALLENGES

Initial trial samples of ceramics bought from Foshan were found to be far inferior in terms of colour rendering and material quality. The original ridge ceramics were fired in traditional wood-fueled kilns (傳統柴窯), nowadays considered to consume far too much time and natural wood, but produce fine quality ceramics with a subtle blending of colour. The team found one in Guangdong, probably among the extremely few surviving examples in China. Missing portions, limited to those parts with evidence of the original form (e.g., by replicating a symmetrical part), were made from this authentic wood-fueled kiln (as opposed to modern electric ones commonly used nowadays).

Lime Plaster and Lime Painted Wall 外牆石灰漿

The wall finishes found on most buildings were synthetic paints which prevented breathing, trapping mineral deposits and deteriorating the brick.

INVESTIGATIONS

On-site investigation revealed the bottom layer to be traditional lime paint applied directly to the bare brick surface, which permits the penetration of vapour. But bare lime paint on a brick surface is easily washed off by rain and needs to be repainted every two or three years, as was the case for most traditional buildings. This frequency of extensive repair is considered unsustainable in modern Hong Kong. Exposing the brick face is also not feasible due to the poor quality of the brick surface beneath.

TECHNICAL CHALLENGES

After research, a type of traditional plaster common in Lingnan vernacular construction, hemp fibre lime plaster, was found and was it decided to introduce it here. Similar to the local paper pulp plaster technique commonly used in Hong Kong until the 1970s, it is basically a lime based plaster reinforced by the fibre of hemp, thus allowing a layer as thin as 10 mm to properly adhere to a rough brick surface. The final lime colour paint was applied on the plaster while damp, and the resultant plaster is strong (due to the hemp fibre reinforcement), permits natural breathing for the bricks (hence they last longer), and sustains the desired colour of coating. The supply of hemp fibre was readily secured by cutting hemp ropes into small pieces (Fig. 34). This hemp fibre is then added into a wet lime mixture and mixed well by mechanical cement mixers. After trial on site, it was considered an appropriate treatment to address all the various issues of material durability, practical workability, and aesthetic interpretation at the same time. No modern techniques are needed to resolve this challenge.

The Need for Skilled Craftsmen

In Hong Kong, where traditional repair methods do not predominate, the work of craftsmen is not well respected. At the same time, the need to use modern materials in repair work also results from the lack of competent craftsmen. Construction workers in Hong Kong possess no independent attitude, are not very well trained and relatively low paid, though they work quickly but with no ambition and sometimes without willingness to learn. Every member of the conservation team should in fact have a thorough knowledge of traditional materials, design methods and construction techniques. However it is an accepted fact that in today's Hong Kong society it is extremely difficult to fulfill all these conditions, or even a few of them.

Documentation

Investigations and research have shown that many repairs had been carried out without sufficient insight into the need for continual monitoring and maintenance of the cultural landscape in the past. It is also very difficult to collect enough information of past alterations from surviving documents, as there are only limited records and photos that describe the changes. Throughout the conservation project, the diverse group of conservationists and experts has developed a very conscientious approach to the recording of details on the monastery before, during and after repair work. The conservation project for the monastery was carried out with great sensitivity, carefully chosen traditional materials and conservation techniques, deliberate choices for minimal intervention, and many of the techniques and materials employed are targeted to address particular challenges for heritage buildings in Hong Kong of similar construction. It is hoped that such experience can serve as reference and be shared with professionals and stakeholders for possible advancement of know-how in the future.

Education and Local Interest

In keeping with the restoration objectives, the project has also been of immense educational benefit to a far wider community. The project has been successful in raising the interest and involvement of the general public in conservation matters, and in increasing cultural and historical awareness. Over the past five years, conservation and study have been ongoing at the monastery with strong local community involvement. The Guest Hall building is now improved with circulation and fire-safety facilities, and is intended to be managed as an Interpretation Centre to explain the significance of this Monastery and the Restoration Project. It will hopefully continue to be a place of interest for its inherent and exhibited cultural value, historical significance, landscape and architectural beauty, and opportunities for spiritual enrichment.

Acknowledgments

Grateful acknowledgment is made to the Conservation Advisers for the Tsing Shan Monastery: Mr. Edward LEUNG Yee Wah (Academic Director of HKU SPACE Cultural Heritage Management) and Ms. ZENG Hung, for their permission to use the restoration work examples and illustrations excerpted from the unpublished Entry Materials for application for the UNESCO Asia-Pacific Heritage Award, 2011, for Culture Heritage Conservation of the Tsing Shan Monastery.

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Illustrations



Fig. 1 Supporting the roof of the Main Grand Hall is a Lingnan style lifting-beam with strut-column timber frame



Fig. 2 Timber frame with minor damage was repaired while remaining in place



Fig. 3 Timber frame components with of loss structural capability were replaced by matching timber poles



Fig. 4 Filling up the gaps with wood blocks and chips mixed with resin



Fig. 5 Timber frame painted with two layers of raw tung oil until soaked wet just like the traditional method



Fig. 6 Replacing part of the timber structure with new members using traditional carved jointing



Fig. 7 The gable above roof is incised from the exterior wall under the eaves



Fig. 8 Hipped and gabled roof is rare in buildings of this small a scale



Fig. 9 Incised carving



Fig. 10 *Tou-kong* painted in red with faint incised groove carvings of patterns in lotus and clouds



Fig. 11 Occasional sections of overhanging purlins are found to have rotted



Fig. 12 A major fracture at the middle of the ridge decoration



Fig. 13 Local section of rotted purlins replaced by new timber



Fig. 14 Local section of rotted purlins fitted back to the main member by traditional crafted joints



Fig. 15 Repainting *tou-kong* in red with water-based paints



Fig. 16 I-section steel lintels between the brick piers



Fig. 17 The roof is the traditional Lingnan "single roll, single pan" tile construction



Fig. 18 Using continuous rows of interlocking cylindrical tiles to cover the joint between rows of pan tiles



Fig. 19 Cement mortar previously adhering to the roll tiles was carefully chipped off by hand

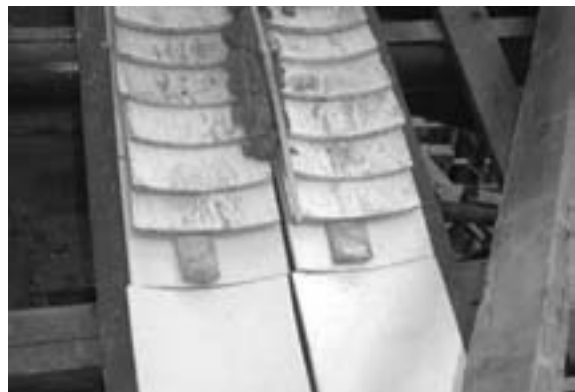


Fig. 20 Traditional Lingnan technique of adding bamboo strips as reinforcements was introduced



Fig. 21 The team re-introduced a Lingnan traditional technique of fixing with bamboo nails



Fig. 22 Workers cleverly make their own bamboo nails by cutting domestic chopsticks



Fig. 23 The salvaged pan tiles were selected, and then thoroughly cleaned of bird droppings and mould



Fig. 24 The salvaged pan tiles were soaked in lime water for up to three times until they appeared white



Fig. 25 The existing eave board was covered with dirt and mould at the start of project



Fig. 26 Combination of relief and openwork carving on the door head lintel frames



Fig. 27 The rotted corners of the eaves board were repaired *in situ*



Fig. 28 Restoring grooves painted in "gilt thread drawing"



Fig. 29 The existing timber doors with lattice patterns are in good shape with little sign of fracture or rotting



Fig. 30 Cracks and chipped-off corners to be repaired by traditional filling of wood dust mixed with mortar



Fig. 31 Workers applied diluted chemical paint remover on the wood surfaces



Fig. 32 One leaf of the doors at the far edge was deliberately left untouched



Fig. 33 A major fracture is found in the middle of the group of Si-wan glazed ceramic



Fig. 34 The method of hemp-mixed lime plaster was eventually tested and applied

India

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Conservation Architect

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for Nature, Arts and Heritage (DRONAH)

Cultural Heritage and Its Protection: Restoration Activities in India

India is the cradle of the human race, the birthplace of human speech, the mother of history, the grandmother of legend, and the great grandmother of tradition. Our most valuable and most instructive materials in the history of man are treasured up in India only!

——Mark Twain

The cultural heritage of India is an amalgamation of diverse castes, communities, languages, cuisines, religions, dance, music, art and architectural forms, all of which have evolved over a period of more than five thousand years of known history. It is beyond the scope of this paper to list each of the subdivisions under any of the above genres for the sheer number they would come to! With a physical area of 3,287,263 square kilometers and a population of 1.21 billion, it would be easier to assimilate many of the features to be discussed here if the country were broadly divided into north, south, west, east and northeast, based largely on the fact that the Tropic of Cancer almost divides India into two halves, and several natural features also contribute to such a division by creating different climatic and environmental zones. Add to these there are also similarities in race, languages spoken, costumes worn and the food eaten.

India was originally divided into several kingdoms that coincided largely with the above subdivisions, and except for a few occasions that spanned several decades, they were physically united with one another to form a larger territory only after the fifteenth and sixteenth centuries AD, when the empire began to be expanded by the Islamic emperors who conquered India and ruled from Delhi as their capital. This was further expanded during British rule from the nineteenth century onwards and by the mid-twentieth century the Indian empire extended from Pakistan in the west to Bangladesh in the east, Kashmir in the north to the southern tip of the Indian peninsula, only to be divided into three in 1947, while achieving independence.



Fig. 1 Map of India showing various geographic zones

Source: www.wikipedia.org

The era of Aryans and Dravidians as the two dominant races that occupied India before the Christian era, the birth of the two ancient religions Jainism and Buddhism and the later emergence of Sikhism, the arrival of Christian missionaries, and several invasions and conquests by the Greeks (BC), Mongols, Persians, Turks, Afghans, Portuguese, Dutch, and the British, all predominantly falling within a period of two thousand years, result in a very complex and rich matrix of historical layers that together through mutual interaction, and simultaneous and constant internal evolution, today present a land of myriad colors, yet there are several factors that have constantly governed and even today provide unity to such diversity, contributing to the magic of the single nation that is India.

It is beyond the scope of this paper, and almost an impossible task, to draw from a milieu as complex as this the sheer number of entities that emerge as cultural heritage through these myriad interactions and as products of such enchanting times! This complexity often presents tough challenges to a conservation architect like myself, who specializes in the preservation, conservation and restoration of

heritage buildings (and their premises) and of historic urban/rural areas where tangible and intangible heritage are both present, enmeshed in the various layers of history, and embodying in their form the different religions, cultural beliefs and practices, rulers and ruling dynasties, as well as innumerable kingdoms and several princely states. The Hindu population comprising eighty percent of India is divided into numerous castes and communities that follow different customs and traditions, reflected in traditional architecture in both urban and rural areas. It is hardly sufficient just knowing the history of India to intervene in such significant areas, rather, it is more essential to research in great depth the history and culture of the particular territory under consideration, in order to understand which layer to restore and how, and what to preserve for the posterity, and if several significant layers are present how to preserve and interpret them all to the user or the visitor. It has mostly been a top down approach that is followed, where the national, provincial, regional as well as the local history and culture and their cross influences are studied thoroughly prior to any interventions.

India is one of the fastest growing nations in the world today and with such speedy growth comes a major threat to all the different components of its culture. Being a conservation architect I shall limit this paper largely to the cultural heritage that manifests itself in the form of architecture, as a stand-alone entity as well as entire settlements (urban or rural). I have lived and worked in the northern, western and southern parts of India, and my knowledge of the east and northeast are mostly from books, documentaries and peers who have worked there. Most of the historic cities in India have existed for at least seven hundred to a thousand years as urban centers, and many of them, such as Varanasi and Madurai, are much older. There is increasing urban decay in the historic cores of these cities, especially due to a lack of infrastructure facilities that can support the exploding populations there. These cities now house people as well as functions that are far above their original carrying capacity. This inability to support expansion due to area restrictions, the lack of funds to undertake restoration works (the decades of negligence and lack of maintenance have caused partial collapse and need for extensive repairs), abandoning of heritage properties, family disputes, lack of knowledge needed to restore, out-migration of owners and in-migration of functions that attract large volumes of traffic and people, are all major causes of inner core blight in all historic cities of India, regardless of their scale and significance. The past few decades have seen totally unplanned growth in these cities, as the sole focus of development organizations has been to provide facilities for a growing population, in a manner serving immediate purposes and exhausting the funds allotted, rather than utilizing them in a sensitive manner within the existing historic system. It was simply not considered necessary or important to preserve the past, when the national market was flooded with construction materials and technology that was cheaper and required less time for implementation. It has been observed that Master Plans for some cities have been drawn carefully, allotting specific zones as sensitive and specially protected, but while charting out development plans for the same the authorities fail to intervene in a sensitive manner. This is largely due to the absence of officers who are suitably trained.

There is an increasing awareness of the loopholes in the existing planning and development frameworks, and efforts are being undertaken to rectify them.



Fig. 2 British Residency, Hyderabad – a British colonial building from the early nineteenth century



Fig. 3 Entrance gateway to a Hindu temple with stone sculptures, in south India

It has always occurred to me that there is an effort, almost frantic even, to break from ties with a past that is looked upon as a hindrance to getting richer and attaining a higher status. This phenomenon may also have something to do with the colonial subjugation of the masses: once freedom was achieved it became highly important as a nation to imitate the West and be at par with its latest inventions, so as to avoid the possibility of being caught unaware and colonized once again.

Those pages of history where every dynasty that conquered and subjugated India fell in love with its past, and created a new order by marrying the best of the existing with the best of that which was brought in, were either lost, or read and forgotten. While I fully agree that we have to maintain pace with advances in technology and the trends of the world, I also feel strongly that it is equally important to adapt these to what suits us best while not losing our cultural values, and in this particular context of discussion, not to lose our native and technically sound architectural heritage to insensitive modern constructions. To draw a balance between the two remains one of the greatest challenges for a nation where there is tremendous land pressure, exponential growth in population, a fast growing economy, and an increasing lack of sensitivity among urban and rural development organizations.

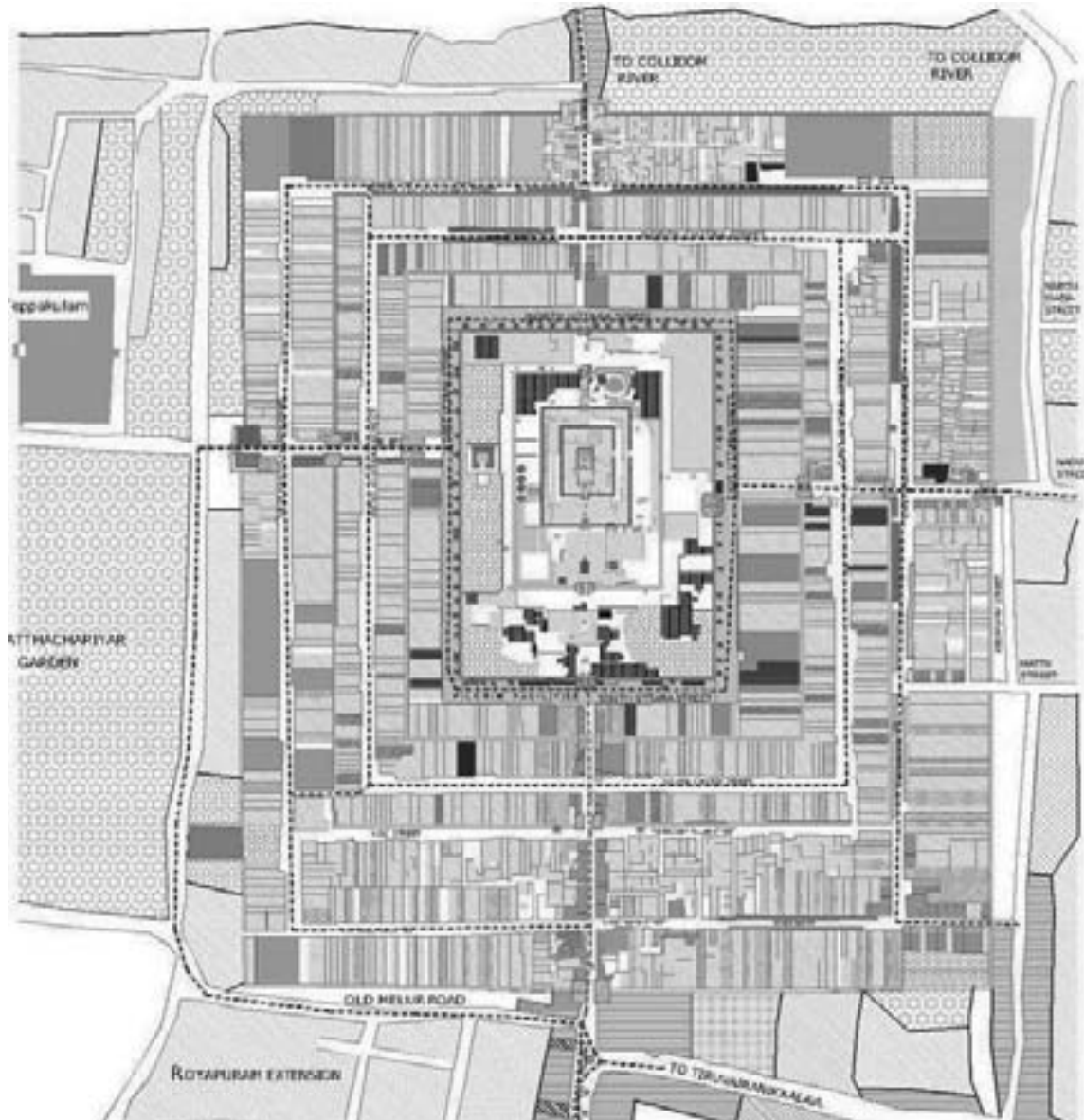


Fig. 4 Plan of a historic temple town (Srirangam, south India) dating from at least the seventh century AD, which took its final urban form in the sixteenth and seventeenth centuries

Traditionally, undertaking renovation and restoration of buildings was a part of regular maintenance (whitewashing/cow dung flooring/re-thatching etc.). The concept of *jeernodharan* (to give new life or to revive) has always been in existence. Kings would undertake restoration works of public buildings, caves, temples and so forth during times of peace, to generate employment and promote love of art and architecture through public works. Repairs of major historic monuments like the Taj Mahal and Akbar's Tomb were carried out in the early 1800s by keenly interested British officers. The Asiatic Society was established in 1784 in Calcutta by Sir William Jones to make the public aware of the antiquarian wealth of India. The early nineteenth century cultural renaissance witnessed the first antiquarian legislation in India, known as Bengal Regulation XIX of 1810. Together with the Madras Regulation VII of 1817, this legislation empowered the government to intervene whenever public buildings were under threat of misuse. Act XX of 1863 enabled the government to prevent injury to

and preserve buildings remarkable for their antiquity or for their historical or architectural value. The Indian Treasure Trove Act of 1878 was introduced to protect and preserve treasure found accidentally, but which had archaeological and historical value. The Archaeological Survey of India (ASI) was established in 1861, followed by various stages of development under able British officers such as Alexander Cunningham, Sir John Marshall, and R. E. M. Wheeler. In 1886 the government forbade any person or agency to undertake excavation without prior consent of the Archaeological Survey, and debarred officers from disposing of antiquities found or acquired without the permission of the government.



Fig. 5 Jama Masjid, the largest mosque in India, was constructed in the early sixteenth century at the peak of Islamic (Mughal) architecture, in sandstone and marble



Fig. 6 Golden Temple at Amritsar in northern India – the religious seat of Sikhism in India

The Ancient Monuments Preservation Act, 1904, and the Ancient and Historical Monuments and Archaeological Sites and Remains Act (Declaration of National Importance), 1951, helped declare those monuments and archaeological sites of national importance as protected. The Ancient Monuments and Archaeological Sites and Remains Act, 1958, is the most important act today that provides for the preservation of ancient and historical monuments and archaeological sites and remains of national importance, for the regulation of archaeological excavations and for the protection of sculptures, carvings and other similar items. Legislation has also been adopted in some states and cities of India that safeguards heritage buildings of significance and specific urban zones declared as protected, such as in the union territory of Pondicherry, the fort area of Mumbai, and so forth. Due to pressure from conservation professionals and non-governmental organizations, initiatives are being taken by the governments of different states to pass bills and acts that can provide better protection to historic buildings and precincts. Such undertakings are very slow, however, due to departmental callousness and sometimes even from being overshadowed by other portfolios of greater importance, such as poverty, shelter, education and infrastructure development, in a nation where the population is exploding and political corruption is increasing daily.

The Archaeological Survey of India, functioning under the purview of the Ministry of Tourism and Culture, is the primary custodian of historic monuments of national significance in India. It operates through 24 Circles spread across all the states of India, with a highly capable team of experts including archaeologists, conservators, epigraphers, architects, chemists and other scientists. The ASI is also the state party responsible for sending nominations for sites of universal outstanding value to be declared as World Heritage by UNESCO. While the ASI operates at the central level, the State Department of Archeology and Museums (SDA) operates at the state level and protects historic monuments of state and regional significance. The monuments protected by the central government are marked with blue sign boards, while those protected by the state governments have green signs. The ASI protects about 3,650 ancient monuments and archaeological sites, while the SDA protects more. Although there is no doubt that the ASI has come a long way in conserving historic monuments and their precincts, there has also been criticism from conservation professionals about the archaeological and stereotypic approach of the ASI towards the historic monuments and precincts across the country. Although it has a very capable team of experts (who specialize in chemistry and archaeology primarily) that has even helped countries like Cambodia and Afghanistan protect their historic monuments, there is still a dearth of trained conservation architects on the team. The presence of conservation professionals like myself should help the ASI carry out in-depth research on traditional materials and construction technologies adopted in each region under purview, and more importantly help prepare holistic management and conservation plans for historic precincts that will facilitate better channelization of limited funds, as well as undertake restoration work according to international standards while maintaining the principles of authenticity and minimum intervention.



Fig. 7 Ripon building (Chennai, south India) is a classic example of Indo-Sarcenic architecture, which is colonial architecture influenced and enhanced by historic Indian architectural elements

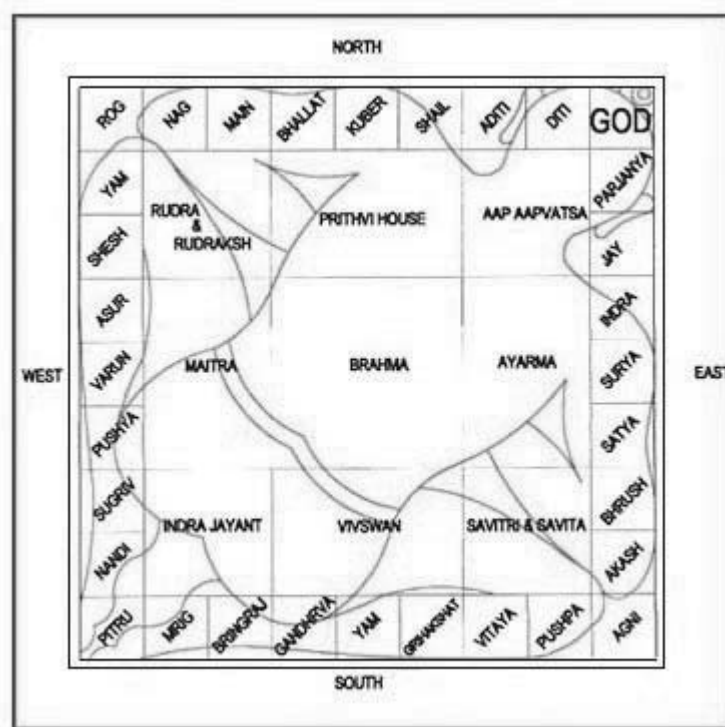
The Indian National Trust for Arts and Cultural Heritage (INTACH) is a very active organization that was set up in 1984 as a registered society and a nationwide nonprofit membership organization, with over 150 chapters across the world. Ever since its establishment INTACH has been hugely proactive in bringing into the limelight and restoring several hundreds of historic properties of all types and typologies, sizes, and levels of significance. They have been forerunners in not only restoring built heritage but also in documenting, restoring, as well as reviving several associated tangible and intangible components of cultural heritage. Other organizations such as the Urban Arts Commission, the Conservation Society of Delhi, and many private organizations headed by practicing conservation professionals are also actively involved in the protection of architecture as well as other cultural heritage components. Apart from these organizations, there are several individuals who support the protection of built heritage, who are either formally trained or are simply passionate and concerned about the rich heritage they have inherited.

In spite of all these joint efforts there still remains so much to be protected in this ancient nation of plenty. In my opinion the past two decades have seen a revival of lost arts and crafts and the promotion of Indian cultural heritage through various channels, especially tourism. However, protection and restoration of the built heritage remains one of the greatest challenges. Apart from the other obvious reasons that have been mentioned above, there is also a lack of a multidisciplinary approach. The list of stakeholders for any built heritage and historic urban/rural precinct is very exhaustive, and in a growing nation like India where the amount of discrepancy seen between the ideologies, approaches, attitudes and financial status of different individuals is greater than ever before, it is quite a mammoth task to bring them collectively under one roof and urge them as a community and one force to actively take pride in their inherited past, and participate in its protection for posterity. Like every other country, a serious lack of funds is a major issue as well. There are always several buildings competing with one another for funds for restoration, but thankfully today a number of private organizations are making significant efforts towards tapping funding from national and international organizations like the World Monuments Fund Britain (for the Residency, Hyderabad), Global Heritage Fund (Hamper, Indus valley civilization-Gujarat), Aga Khan Foundation (Humayun's Tomb and environs, Delhi), Ambassador's Fund for Cultural Preservation (USA-YMCA buildings, Mumbai), the Asian Development Bank (socioeconomic studies/surveys), the British Association for the Preservation of Cemeteries of South Asia (Col. Bailey's Tomb, Srirangapatna), to name a few. It still would be no exaggeration to write that several projects remain as mere conservation reports due to the lack of funds to undertake restoration work in this nation of immensely rich and numerous heritage buildings and precincts.

The need to conserve these arises from their role as testimony to the many layers of complex history of a very diverse and ancient country. While the times have changed and the people who made history

have long gone, these remain as silent witnesses to various political, social and cultural events of the past, which have yet to be interpreted, researched and recorded. The architectural heritage of any country or region can be classified broadly based on the following divisions:

- Defense
- Administrative/Political
- Residential
- Religious
- Infrastructure (water facilities, bridges, roadways, cemeteries)
- Recreation
- Open spaces



North- Kubera- Ruled by lord of wealth (Finance)
 South- Yama- Ruled by lord of death - Yama (Damaging)
 East- Indra- Ruled by the solar deity- Aditya (Seeing the world)
 West- Varuna- Ruled by lord of water (Physical) Northeast {Eshanya} - uled by Shiva
 Southeast- Agni- Ruled by the fire deity – Agni (Energy Generating)
 Northwest- Vayu- ruled by the god of winds (Advertisement)
 Southwest- Pitru/Nairutya, Niruthi- Ruled by ancestors (History)
 Center- Brahma- Ruled by the creator of the universe (Desire)

The Vastu Purusha is the presiding deity of any site. Usually he is depicted as lying on it with the head in the northeast and legs in the southwest but he keeps changing position throughout the year.

Fig. 8 The figure of Vastu Purusha or Mayan determines the principles of Vastu Shashtra (Source: www.wikipedia.org)

In India several historic buildings from each of the above categories can still be found quite intact, and each of them have been strongly influenced by either religious, social, mythological or supernatural beliefs, as well as the then prevailing political system. The need to preserve these

reflections of the many glorious centuries of India's past also rises from the fact that they are treasure houses of a fading traditional knowledge system that is constituted by the above beliefs and practices. One of the most important and ancient practices of Hindu architecture (starting from a simple dwelling unit to an entire town) is the incorporation of Vastu Shashtra, a treatise on the best principles and practices of design, planning and construction. There are several other sacred texts that find their origin in the Vedic period and developed over the succeeding centuries, sometimes forgotten only to be rediscovered later, that detail traditional principles of planning an entire town as well as every single structure within it. My Master's thesis was based on one such town that thrived as a religious urban center, and it was quite an enlightening experience to discover layers of exemplary traditional planning principles hidden behind modern constructions. It is already an established fact that traditional planning and design principles were always a manifestation of a necessary sensitivity to local climatic conditions, natural construction materials, as well as communal customs, identity and beliefs, all governed by principles of sustainability. Every community, irrespective of caste, creed or religion, had a set of planning principles, which while catering to the components of aesthetics and human comfort also took into consideration future expansion as well as sustainability. It is not sufficient only to conserve these heritage components, but what is equally important is to study, understand and preserve the planning principles in order to incorporate them in our contemporary designs, to achieve the goal of sustainability today.



Fig. 9 A stepwell made of sandstone and quartzite in the arid region of western India, in the state of Rajasthan



Fig. 10 Exquisitely carved architectural elements of a palace complex, made in red sandstone



Fig. 11 Stone sculptures of Hindu gods and goddesses in soapstone in a Hindu temple in south India



Fig. 12 Interiors of a Chettinadu mansion (<http://scretlover.blogspot.com/2010/04/my-chettinad-trip.html>)



Fig. 13 A wooden ceiling of a pavilion in teakwood within a Hindu temple, originally not painted



Fig. 14 Collecting samples of paint from a wooden sculpture to test the date and constituents

The most widely used construction materials in the past were stone, brick, wood and lime. India being a vast country with different climatic and geographical zones (coast, plains, uplands, hills, valleys, desert and central lands) and several natural features spread well across its length and breadth, has a huge variety of stone and wood to supply as different components of a building. The most commonly used stones in the northern and western part of the country were several varieties of marble, quartzite and sandstone, while granite was used most widely in the south. Other kinds of local stones such as *shahbad*, *cudappah*, *kota* and soapstone were also used according to availability and need. Stone was used on the roof, walls and floors extensively. While the northern, western and eastern parts of the

country experience extreme hot and cold conditions, the temperature in southern part of the country is usually on the higher side and it is very important to note that this factor was given great consideration when selecting the right kind of stone, as well as determining the thickness of the walls and ceiling, and size of the openings

The tropical forests of India are the source of a huge variety of hard and soft woods used for different components of a building. Traditionally the most common types of wood that were and are still used widely for construction purposes are teak, sal, sandalwood, rosewood, *batak*, *iruli*, jackfruit, bamboo, neem wood, mahogany, walnut, etc. The most common woods used in the northernmost states on the foothills of the Himalayas are coniferous in nature. Wood is still a principal construction material in these areas.

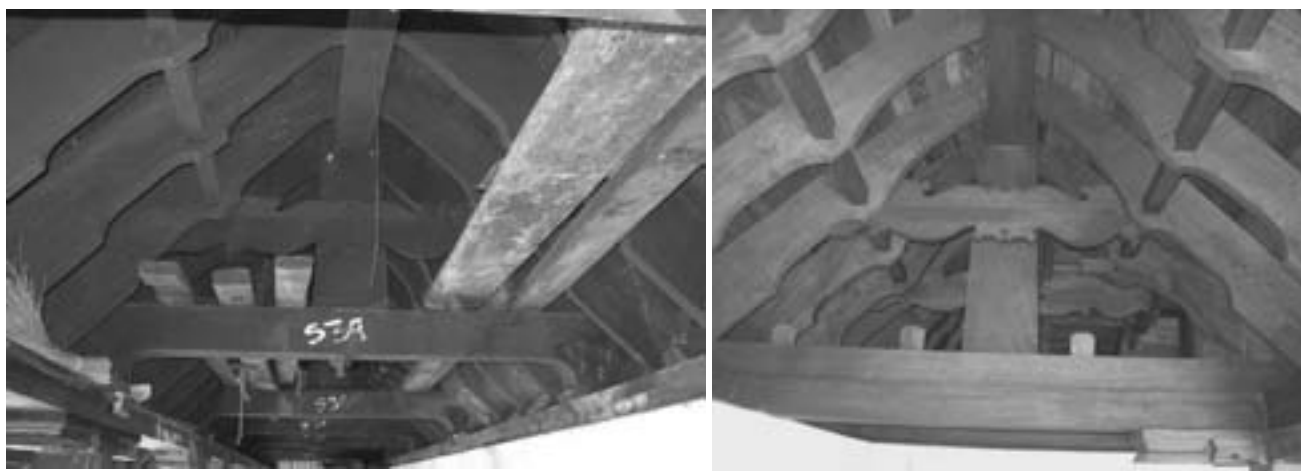
During my five years of work experience I have also noticed that traditionally wood has been more abundantly used in the south and northeast of India, as well as in the hilly areas. All over the country wood has been extensively used for the frames and shutters of doors and windows, in the altars and ceiling of churches, as well as for all kinds of furniture. Wood as an important construction material in mainland India was more popular during colonial rule. The hill stations as a concept were developed largely by the British, although natives have always occupied these regions and a deep knowledge about wood and its strength is highly reflected in the vernacular architecture, and care has been specially taken to protect against natural disasters by measures such as reinforcing walls with wooden logs, applying principles of construction on piles, etc. The vernacular architecture here uses wood as a primary material for all major components of a building, such as walls, doors, windows, ceilings, roofs and flooring. Even today these construction materials and techniques continue to be used, although severely threatened. These hill stations saw a number of churches, bungalows and houses that borrowed their primary architectural styles from England (especially due to the similarities in the climatic conditions, as well as in the availability of coniferous wood, between the Indian hill stations and the United Kingdom), which sprang up between the late eighteenth to the mid-twentieth centuries. In parts of the country where wood has been used more liberally, it is observed mostly in the roofs, ceilings, columns, and in many colonial buildings, as the flooring as well.

Kerala, the southernmost state of India, which is more popularly known as “Gods’ own country” and rightly so, due to its bountiful greenery and profuse rains, was an important kingdom in the early and medieval period, and part of the princely state of Madras during the colonial era. I was born and brought up in this part of the world and nowhere else in the country have I seen wood used more abundantly than here. All the traditional buildings have a wooden pitched roof with gable walls varying from simple to extremely complex, based on their size and functions. These pitched roofs gave rise to a mezzanine level, created with wooden boards and beams that acted as the ceiling for the floor below and flooring for the space above. As for many other pitched and gabled roofs that one

may find in different parts of the world, the joineries and nailing of the purlins and rafters, as well as the primary and secondary beams and their alignments, are all meticulous. Only a very skilled carpenter can dismantle and then reassemble them after a restoration. In India we try and follow the minimum intervention technique, and a decision to dismantle all the members is taken only when it is absolutely necessary.

It is also important to mention at this juncture that ignorance has promoted a great amount of dismantling and auctioning of top quality wood used in traditional buildings, and replacement with new wood that may not match the original species. Where trained conservation professionals are not hired this is still the practice, and poses a huge threat to the authenticity of some significant buildings. Wooden ceilings, beautifully carved columns, robust beams and perforated screens as a substitute for walls are common features in historic palaces, temples and palatial houses of Kerala. Wood was used extensively in all the primary buildings and annexes within a compound. Some of the most skilled carpenters come from Kerala and are also being trained to adhere to the principles of conservation. The western coast of the country, constituting approximately 850 kilometers, also follows a similar type of architectural tradition. Temples along the western coast have used wood expansively, with most decorative components (which also serve structural purposes) carved with great finesse and extravagance. Teak is the most preferred wood in a sacred premise, and one that lasts for centuries with careful maintenance and takes on carving elegantly. The pillared pavilions and verandahs around the inner sanctum are often a combination of wood, brick and lime.

The Chettinadu region in central Tamilnadu, an adjoining state to Kerala, is also a treasure trove of exceptionally beautiful woodwork, mostly concentrated along the doors and windows and their frames and jambs, the columns and beams, as well as the ceiling.



Figs. 15-16 Rafters and purlins of a sloped roof made of well-seasoned and good quality jungle wood, replaced entirely by new wood in an old temple in south India, due to a lack of knowledge of condition assessment and restoration

Lack of maintenance and the pulling down of many of these traditional houses has resulted in these wooden masterpieces finding their way to the antique market over the past few decades. Similar treatment of wooden architectural elements is seen in the state of Gujarat as well, where traditional courtyard houses are equally historic.

The Madras terrace roof is a very common traditional roof construction system across India, with greater concentration in southern India. This system of construction used robust wooden beams to span large spaces, above which were placed smaller wooden beams (sizes varying between 8-10 cm in width and 15 cm in depth) at a regular center-to-center distance of 30 cm, or one foot, over which were placed 2-3 layers of bricks in a diagonal manner with lime mortar. A brick bat coba roof tops this entire ensemble and acts as water proofing for the ceiling below. I have been involved in restoring these roofs that had deteriorated to various degrees, especially due to the heavy rainfall that is witnessed in southern India. Some of these roofs have collapsed due to severe termite attack and/or due to failure of the primary beams.



Fig. 17 Madras terrace roof with wooden secondary beams and bricks laid at an angle, partially deteriorated due to water seepage



Fig. 18 Wooden columns, carved brackets and beams, in a historic house

Wood has also been extensively used in India to make exquisitely carved Hindu temple chariots whose sizes vary according to the importance of the temple in the region and the festivals celebrated. The chariot circumambulates through the streets with a statue of the presiding deity, symbolically representing an act of the king visiting his subjects on special occasions to honor their services. The chariot is an important element of the shrine especially in south India, and standing alongside it all through the year, visually forms an integral part of the architectural skyline of the temple as well as the surrounding settlement.

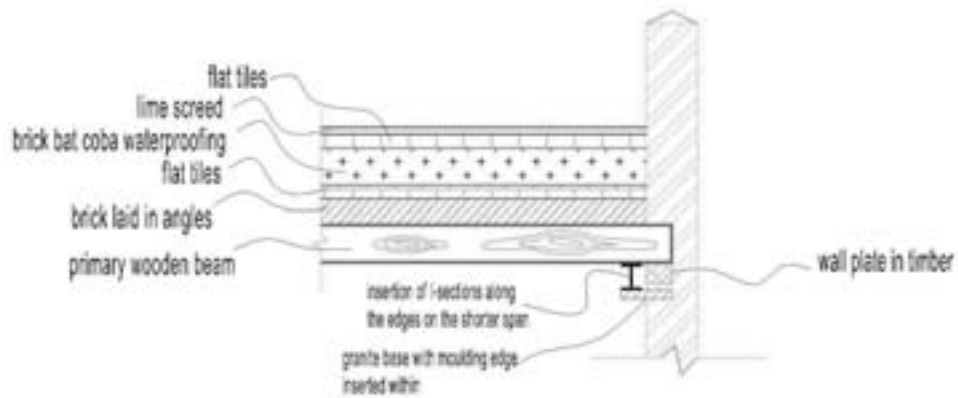


Fig. 19 Typical section of a Madras terrace roof with insertion of I-sections along the ends to prevent sagging, and further support the primary wooden beam that has deteriorated due to water seepage and lack of renewal of the water proofing layers above

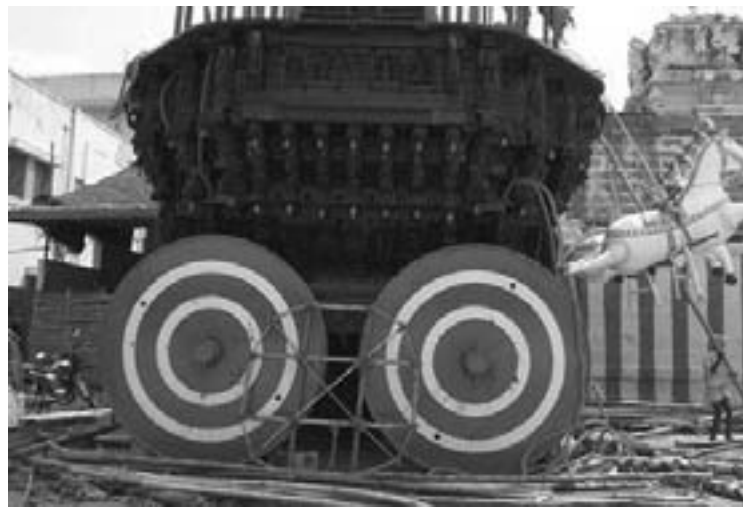


Fig. 20 An exquisitely carved wooden temple chariot base that is used during festivals to drive the presiding deity around the settlement

Lime and lime products are also one of the most important traditional construction materials, especially because of the extensive use of brick and stone in India. Preparation and usage of lime mortar and lime plastering are a dying knowledge system in India today. Every building until the early twentieth century in India was constructed using lime and its products, and until the 1970s it was still widely used in small towns and villages. With the increasing popularity of cement, it has become very difficult even to find skilled masons today who know the technique of applying lime mortar and plaster, let alone achieving the final fine mirror-polished finish on the walls. Different regions of the country used different types of lime, based on the availability of the raw material and the quarry where it was procured, and the organic and inorganic additives also varied (casein, egg white, animal glue, gum from trees, jaggery water, etc.).



Fig. 21-22 Hindu iconography hidden behind layers of lime-wash (*left*), before careful restoration was undertaken by skilled conservators removing the lime-wash layers with gentle instruments (*right*)

The final finishes achieved were however impeccable, be it the *araish* finish in Rajasthan (western India) or Chettinad plaster in Tamilnadu (southern India). The Archeological Survey of India, State Department of Archeology, and other individual organizations involved in restoration works of heritage buildings have now sensitized the masons, and skilled and semiskilled labor, towards the concepts of conservation and working with traditional materials.



Fig. 23-25 Restoration consisting of vegetation removal, masonry reconstruction/consolidations, lime plastering in coarse and fine lime mortar, restoring lime plaster embellishments and stone plaques for 300 tombs in a cemetery

The unity in diversity of India often reminds me of a colorful Matryoshka. Having been born and brought up on its western coast in the state of Kerala, studied in a historic town in the state of Tamilnadu on the eastern coast and the historic capital city of Delhi, traveled and worked across different parts of the country I have personally witnessed and fallen in love with the culture of a nation that speaks languages that change in their dialect, eats food that varies in its taste and built buildings that changed their architectural diction almost every few hundred kilometers! As an obsessive traveler what fascinates

me the most is the way these changes take a new dimension across the stretch of a transition zone. The complexity of Indian architectural heritage is enhanced by these subtle variations in the culture of the people and it is obvious that architecture is one of the biggest and most priceless expressions of any culture. It is one of the most well preserved by-products of a culture, and it becomes the responsibility of every individual to ensure that it is passed on to future generations in its original condition as a symbol of cultural identity.



Fig. 26 Palace of a royal family on the western coast of southern India, on the shore of the Arabian Sea, fully restored under a public/private partnership

If the vast amount of historic housing stock that India has inherited today is restored, invested and promoted wisely and sensitively, many problems related to land pressure can be solved. The attitude of the majority of Indians towards the built heritage has to be changed while the government must be made to realize the long term advantage of such measures, as well as be trained to make policies and legislation favoring protection and sensitive development of historic precincts. In my opinion India has come a long way in its protection of historic monuments, however, concepts of heritage towns and precincts, historic landscapes, urban and rural settlements, urban redevelopment in historic contexts, dealing with inner blight and urban decay, community and stakeholder participation, etc., that are newer concepts posing greater challenges, have only been introduced recently. Remarkable efforts are being undertaken by a small but dedicated group of professionals and individuals to emphasize the need to protect our heritage and gradually remove the hurdles to doing so. Several mistakes have been made in the past and still continue to be made, however many lessons are learned from these mistakes and efforts are being made to understand the models adopted by other countries to tackle similar problems. There is tremendous pressure on the environment and natural resources, and in my personal opinion the one promising way to ensure its long survival is to learn from the remnants of our ancestors how to transform eco- and bio-sensitivity into reality, so as to devise sustainable methods of living. Now is our best and perhaps last chance to conserve our rich cultural heritage, lest our posterity will have only a “loss” to inherit.

Indonesia

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Protection of *Rumah Pencu* in Kudus (Northern Central Java, Indonesia)

Background

Apart from being well known as a city where one of the nine Sunan (those who spread Islam in Java) are buried, and thus attracting many pilgrims who come to the city, Kudus in Northern Central Java (see map) is also famous for its unique traditional wooden houses, called *rumah pencu*. This is one among several types of traditional Javanese wooden houses. The number of this type is quite small compared with traditional wooden houses in other cities in Java, as most of the houses have been converted into brick.

The report presented here is the result of a preliminary survey on traditional conservation practices to maintain wooden architecture that have been carried out so far by the local community, plus some problems of *rumah pencu* protection in relation to the protection of West Kudus as a cultural district, and some historic context significant for this unique wooden house. The preliminary research was carried out as part of a proposed plan for a collaborative heritage revitalization project in Kudus, especially in West Kudus. Discussion about possible collaboration had been initiated between representatives of the Archaeology Department, Gadjah Mada University and the staff of Balai Pelestarian Peninggalan Purbakala (BP3), Central Java. This wooden conservation training program inspired me to plan the collaborative revitalization project for West Kudus, which is well known as a historic old town. It will involve the local community in Kudus to think about this planning more seriously, so that the revitalization can also benefit the local people.

There are plenty of reports and articles that illustrate the uniqueness and beautify of the architectural heritage of Kudus, but action to protect and revitalize the district as a special historic city that also involves these wooden structures is very limited. An early report by J. E. Jasper with detailed descriptions of *rumah pencu* was already available in *Nederlandsch Indie Oud & Nieuw*, 1922-1923. This shows that this type of architecture has been considered to have outstanding beauty ever since the colonial era in Indonesia. Unfortunately, the numbers of this unique architectural building have reduce over time, because local people sell the houses to other cities in Indonesia and even to places abroad, far from their original context. If this continues to take place, the heritage significance of West Kudus district will also be reduced. No revitalization program has yet been planned for West Kudus that takes up its potential as a cultural heritage district. However, the Kudus government has suggested that six

villages in the West Kudus district, namely, the four villages in the complex of Menara Kudus (Langgardalem, Kauman, Damaran, and Janggalan), and two other villages, Kajeksan and Singocandi around the Sunan Kudus burial yard, be designated as a conservation area for Kudus traditional houses to prevent further reduction from acts of selling. The suggestion is based on a letter of recommendation from the head of BP3, Central Java, No. 988/988/102.SP/ BP3/P.IX/2005. As a consequence for the conservation district, the owners are supposed to refrain from selling the *gebyok* (wooden walls) and have to maintain them ([www. cetak.kompas.com](http://www.cetak.kompas.com), June 2010).



Location of Kudus city (source:Google map)

Purpose

The preliminary survey was carried out as an early fact-finding action to collect data so that further preparation for the planned collaborative project can meet the ideal standard for the community and government. The result of this preliminary survey will be discussed together among the participants for further action. This is important, because under the new heritage law in Indonesia, it is explicitly stated that the maintenance of heritage is a responsibility shared between the government, the private sector, and local communities (Balai Pelestarian Peninggalan Purbakala, 2010). It is hoped that this preliminary survey can contribute to the framework for conservation planning of West Kudus as a cultural heritage district.

Preliminary survey method

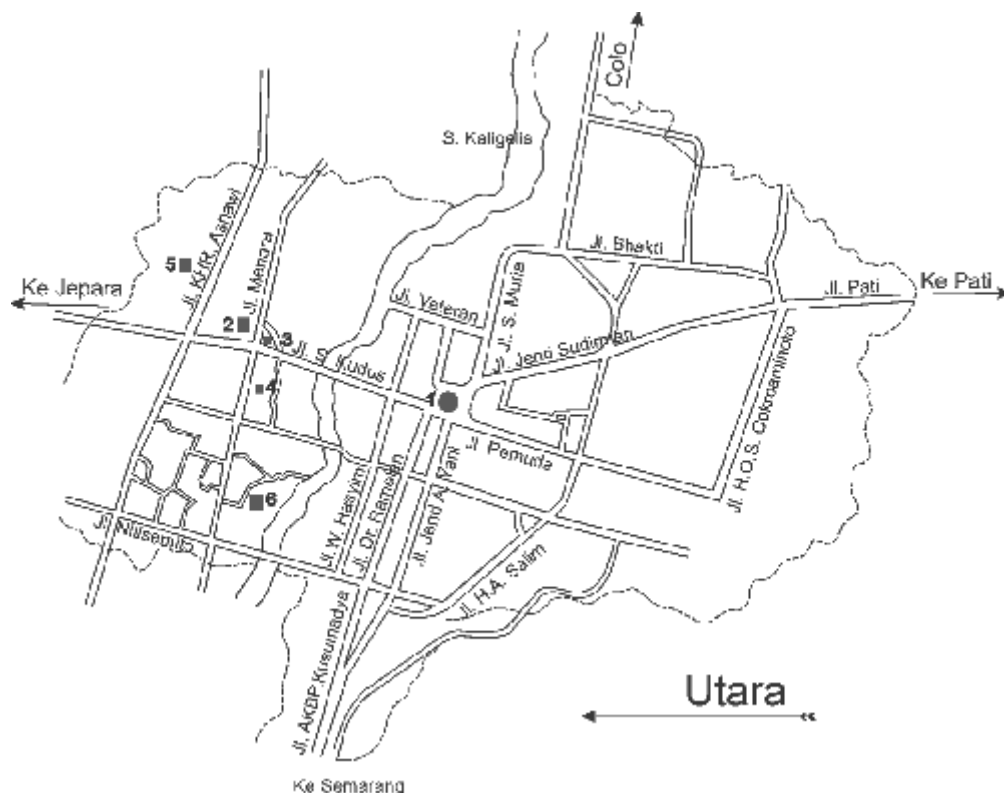
Two methods were used in combination for the preliminary survey. First, library research and direct observations were conducted to identify the architectural characteristics and degree of deterioration of *rumah pencu*. Examples were observed randomly among surviving *rumah pencu*, based on inventory

data provided by BP3, Central Java Office, and a bachelor's thesis in the Archaeology Department, Gadjah Mada University, by Imam Nazarudin (2011).

Second, in-depth interviews were conducted with *rumah pencu* owners or people currently occupying the houses, and government staff involved in the inventory of *rumah pencu*. The aim was to obtain information about efforts that have been carried out in the community to maintain/treat these houses, and to identify problems faced by the house owners. In addition, it was hoped to track factors that cause owners to sell these houses. In all, twelve local people, and two staff members of the preservation department of BP3, Central Java Office, were interviewed to represent stakeholders' opinions about the protection of traditional wooden architecture (*rumah pencu*) in Kudus. Two academics as experts involved in the protection of heritage in the Kotagede cultural district, and one local CBO representative from Kotagede, Yogyakarta, were also interviewed to give some insight about local community involvement in cultural heritage districts.

Setting

Rumah pencu is a key heritage element in the West Kudus district, which has an ancient main mosque and minaret in Hindu style architecture as its center. Geographically, the district is located on the west side of the Gelis river. The west border of the district is Kiay Haji Asnawi street, the north border is KH. Dahlan street, and the south border is Sunan Kudus street (see map).



Map of Kudus city, separated by Kaligelis River (source: google map)

Generally, settlement patterns in the cultural district of Kudus divide into two types: a linear pattern with lines of traditional Kudus houses, and an isolated pattern with one house surrounded by a fence. Most architectural features in West Kudus district, consisting of traditional Kudus houses (*rumah pencu*), colonial buildings, and Chinese style buildings, still keep some of their ancient style, and there are also modern houses. Narrow, shared alleys are another distinctive characteristic of settlement in the district. From the place names around the mosque, it is known that several different groups of professionals lived there in the past, forming settlements of butchers, wayang puppet makers, gamelan instrument players, and smiths. Other place names, such as Kejaksan, Demangan and Kauman, inform us that settlements of lawyers, district heads, and religious leaders were also in existence (Wardani, 1991).

Pictured below are several types of buildings around the main mosque in West Kudus district.



An ancient brick minaret and mosque from the sixteenth century and its brick gate, West Kudus district



Modern house on the main street, Kudus Kullon district



Left: Setting on the main street in West Kudus district. Right: *Rumah pencu* complex, facing the inside yard. The *kilungan* fence and its entrance on the right picture have been adapted for small shops.



Narrow alleys in Kauman village, Kudus Kulon district

***Rumah pencu* characteristics**

Rumah pencu is one of several traditional Javanese wooden house types that are differentiated by the roof. *Rumah pencu* belongs to the *joglo* type (JHS, 2007:39), but the roof is higher than ordinary *joglo* roofs, from which it derives its name (*pencu* means “high”). The other important characteristic of *rumah pencu* that is shared with all types of traditional Javanese houses is its semi-permanent structure. All parts of it can be removed.

Rumah pencu is actually a group of buildings consisting of a main building, *jogosatru*, at the front, and a *pawon* (kitchen) to the side of main building, and some other structures. In front of the main building is located an open yard. On the left side of the front yard there is a well that functions for taking showers and a holy wash before praying. The structure of the main building is also an adaptation from the *joglo* (Nazarudin, 2011). Structurally, *rumah pencu* has a roof structure, several

posts and a multilevel floor. The roof structure consists of the components *molo*, *usuk*, *reng*, *dudur*, *takir* and *lumajang*. Some roof decorations are usually put on top of the *molo*. The post system utilized for *rumah pencu* consists of *umpak* (pillar base) and four different rows of posts (*saka*) i.e: *saka guru*, *saka geder*, *saka rawa* and *saka emper* (see picture below). The different levels of floor in *rumah pencu* include the lowest as the *tritisan* (front terrace), a middle floor for the *jogosatru* (living room, room for guests), and the highest giving more privacy to the *senthong* and *gedhongan*, rooms where the house owners sleep, pray, and keep important possessions. Between the living room and these private rooms is a low moveable stair, also made of wood, called *bancik*. The side of this stair is often decorated with carving.

A component that makes *rumah pencu* very special is the semi-permanent wooden walls, called *gebyok*, often heavily decorated, serving as a front wall, and an interior wall enclosing the *gedhongan* and *senthong*. The variety of doors is also interesting. Commonly, there are three different types of doors. One is a sliding square door that looks like a fence, attached to the wooden wall separating the *tritisan* and *jogosatru*. Hinged double doors are attached to the outer wall, and to the wooden wall that separates the *jogosatru* and private rooms. Another type of sliding door with different decoration is seen on the *senthong* and *gedhongan*, and a swinging door is on the side building used for the kitchen. Commonly, each door type is also carved (Nazarudin, 2011; personal observation).



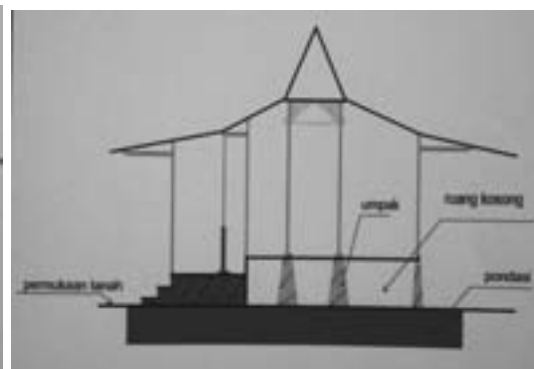
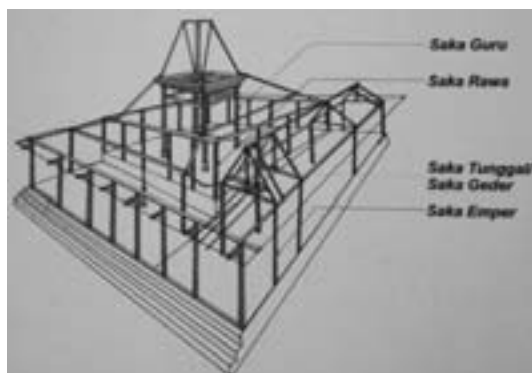
Typical main building of *rumah pencu*



Left: Decorations on the outer wall and sliding door shape show Chinese influence. Right: Double doors separating the living room from the inner private rooms; in front there is a low moveable stair (*bancik*).



Interior carving decorations in the *jogosatru* room



Sketches of *rumah pencu* (Nazarudin, 2011) Left: Post and beam construction system, showing the main components. Right: Side view of the construction system

***Rumah pencu* and its significance in the context of Kudus history**

The city of Kudus is an important early Islamic city in Indonesia. Its development cannot be separated from the development of the first Islamic kingdom in Java, the Demak sultanate in northern Java that developed after the ruin of the Majapahit kingdom in east Java in the middle of the fifteenth century. For early Islamic Indonesia, three important cities in northern Java are Demak, Jepara and Kudus. Demak was the center of the Islamic kingdom in that period, while Jepara functioned as its port and Kudus as the supplier for both Demak and Jepara (Graff, 1985, as cited in Sardjono et al., 2011).

It is said that Ja'far Shadig was the founder of Kudus. Later becoming more famous as Sunan Kudus, formerly he was a prime minister of the Demak sultanate. It is hypothesized that political intrigue in the sultanate made Ja'far Shadiq move to Kudus, where he then built a mosque with a temple style minaret. Another strong hypothesis for his migration to Kudus is a desire to spread Islam.

There are two different inscriptions that inform us when the Islamic community started to become established in Kudus. The first one, reading Trisula Pinulet Naga (863 H, or 1458 AD), is on Langgar Dalem mosque. On the *mihrab* (a place where a person serving as prayer leader stands) at the main mosque, Masjid Menara, there is an inscription informing us that Ja'far Shadiq was founder of this mosque, also called Aqsha, in 956 H (1549 AD). The research team from the History Department, Gadjah Mada University, is of the opinion that an Islamic community possibly existed already in Kudus in the fifteenth century. The settlement became firmly established from the sixteenth century (Tim Peneliti Jurusan Sejarah, Fakultas Sastra, UGM, 1989/1990, as cited in Nazaruddin, 2011:25). Currently, the early establishment of Kudus settlement is under reevaluation by an Archaeology Department research team (Adrisijanti, Musadad and Nur, personal communication, August 2011).

Several houses are built around the minaret mosque. It is likely that the previous community in Kudus was familiar with brick, bamboo and wood as building materials. By the end of the fifteenth century, the Javanese were already familiar with brick structures, as this building material had been known from even earlier, around the fourteenth century in East Java, and also at Kraton and the Sunan Gunug Jati graveyard in Cirebon (West Java), dated to the fifteenth century. At the Cirebon Sultanate palace and the Sunan Gunung Jati burial complex, red brick was used for the foundation and the floor. However, whether such red brick material was used for common people's houses from the early stage of its development, or just for important buildings such as minarets, palaces, and other monuments, needs further research. Until recently, many traditional houses in villages in Java had earthen floors.

Sardjono et al. (2011) argue that the distinctive *rumah pencu* architecture did not develop in the early stage of the city of Kudus, but later, from the early seventeenth century in conjunction with socioeconomic development in the West Kudus District. During that period Kudus developed as a distributor of rice and other plantation products from the inland to Demak, Jepara, and other cities. This enabled Kudus local traders to increase their economic resources. In the eighteenth century, Kudus came under Dutch colonial control. The increase in economic activity among traders in Kudus continued in the nineteenth and early twentieth centuries, when the tobacco industry developed in Kudus. Historic records suggest that tobacco prospered from the mid-nineteenth century in the Dutch

colony. Apart from the three tobacco centers in the principalities, Besuki (East Java), and Deli (East Sumatra), there were also many other producers of Javanese *krosok* tobacco in areas such as Kedu, Rembang Kediri, Lumajang, and elsewhere (Padmo, 1994: 21-22). It is likely that the success of tobacco industry in Kudus was correlated with this socioeconomic phase in the Dutch colony.

It is inferred that to proclaim their status, rich traders built *joglo* houses, which is a typical house for nobles, with some adaptation in the roof and with richly carved decoration (Wikantari, 1996; Sardjono 2011). One *rumah pencu* owner I interviewed said that a Dutch coin from the 1700s was found under the main post, when the house were renovated. This suggests that some *rumah pencu* date back to the eighteenth century. Another owner (Mbah Chadik) said that the heavy selling period of *rumah pencu* wooden walls (*gebyok*) took place around the 1970s. This information agrees with the historical facts, since during the 1970s economic conditions for the owners worsened, leading to abundant selling of *rumah pencu*. Some were sold to other cities in Indonesia, and even to Singapore. However, this owner also remembered that at one point in the colonial era, around 1935, a house next to the minaret was sold. Thus, the selling of *rumah pencu* has taken place since colonial times.

Examining the socioeconomic history of Kudus city in the larger context of Java and Indonesia generally, there are indications that *rumah pencu* houses are important historical evidence not only for local history but for regional history as well. This is because they correlate with the development of food and cash crop plantations in Java. Apart their historical significance, *rumah pencu* also have architectural and aesthetic significance. The structure of *rumah pencu* belongs among traditional Javanese houses, but has local uniqueness as a result of the adaptation to economic and social conditions of *rumah pencu* owners. They wanted to express their economic success by adopting a noble lifestyle, by owning a noble style of house that was richly decorated, but they did not adopt all of *joglo* architecture, in keeping with their own lifestyle.

Traditional conservation practices for treating wood in Kudus

Local people have practiced traditional methods of conservation for generations. Apart from removing dust from carvings, local people use traditional mixtures to maintain their houses. Most people, as mentioned by the local people interviewed, use emulsions made with dried tobacco leaves, cloves, and bananas to varnish the wood surface. While the proportions used vary, the mixture of these three materials is believed to produce the most effective emulsion for protecting a wooden house. Sometimes an emulsion made only with tobacco and bananas is used. The various compositions are used to produce emulsions for wood treatment depending on the condition of the wood. According to one person who currently works as a professional for treating wooden houses in Kudus, if the condition is not too bad, an emulsion made with a mixture of 1 kg dried tobacco and 1 oz of cloves, soaked in water for one night, is good enough. If the condition of the wood is bad, the addition of bananas is needed. Further, he said that the function of the tobacco is to darken the wood's surface.

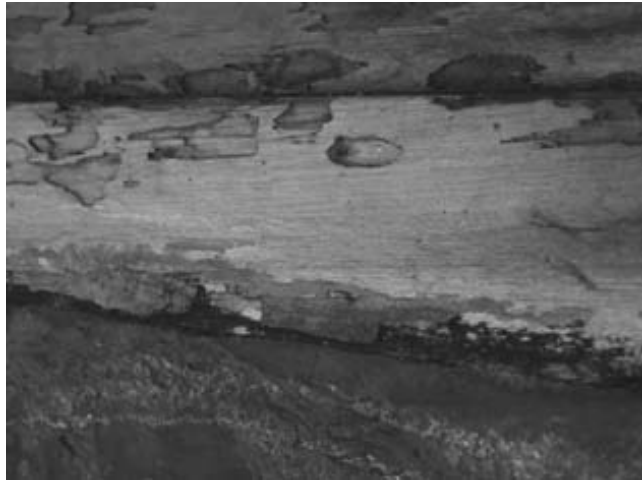
Another person said that tobacco leaves, cloves and bananas, in the proportion of 1:1:1 (usually one ounce each), are soaked in a sufficient amount of water for three days before being ready to use.

One person interviewed said it is best if the materials are soaked for up to seven days before use, but now people only soak the materials for three days. Another treatment mentioned for wooden houses is an emulsion made with burnt rice straws. One person said this mixture was used by his parents during his childhood, in addition to tobacco mixtures. He said it is not as effective for protecting wood as emulsions using mixtures of dried tobacco leaves and bananas.

Local people believe this substance keeps insects from eating the wood and maintains the beautiful color of the wood's surface. They usually treat their houses with this emulsion once a year by hiring a professional to do it. Currently they have to pay someone Rp. 40,000 (around \$5 US) per day for this work. If they only hire one person, it will require more than a month to finish treating a fully carved house with wooden walls on four sides, meaning the owner may have to pay around \$250, whereas a plain house can be done more quickly. Ordinary people treat their houses by themselves. But there is a tendency nowadays for the owners of *rumah pencu*, especially those who are already elderly and live alone, not to treat their houses anymore, leading to the deterioration of the house.

Considering that this traditional emulsion has been used for years, and seems effective in protecting wooden houses, the Borobudur Conservation center initiated an experiment on its effectiveness. This study was carried out by Parwoto and Arif Gunawan (Balai Konservasi Peninggalan Borobudur, 2010:20-33) at the Borobudur Conservation study center, Central Java, Indonesia. They found that the mixture of alkaloids available in tobacco leaves (*Nicotiana tabacum*), plus eugenol, eugenol acetate, and B-varyophyllene available in oil extracted from clove (*Syzygium aromaticum*) and bananas (*Musa paradisiaca L*) is more effective for killing termites in dried wood compared with only a single-component emulsion made with any one of the three. However, the optimum effectiveness of the application, especially in terms of the period of application, needs further study, considering that the mixture is applied on wood surfaces that are exposed on open air.

Below are pictures showing some current conservation problems of *rumah pencu*. Apart from damage caused by insects and climate which has been identified by local people, there are other causes of deterioration/damage, such as vandalism and fire.



Examples of deterioration of *rumah pencu* caused by insects, ultraviolet light, fungi and humidity



Examples of vandalism (*left*), and damage from ultraviolet light, humidity, and insects (*right*)



Damage to a the ceiling due to leaking water (*left*), and to a sliding door from climate and human factors (*right*)

Problems for *rumah pencu* protection

The decline in numbers of *rumah pencu* in the West Kudus district is alarming since it can reduce its value as a cultural district comprising a historic old town area. Interviews with local people suggest that the first selling took place around 1935, but the abundance of selling occurred in the 1970s. Nowadays, only one or two *rumah pencu* are sold, and for some it is only parts of the *gebyok* wall, which has beautiful decorations, that are sold. The price for an entire house, excluding the land, can be up to Rp. 2,000,000,000 in 2011, or around \$250,000 US, while for the same size of modern house including the land the price is around \$25,000.

In 2007, the Tourism Department of Kudus City inventory recorded 63 *rumah pencu* surviving in Kudus, spread among 10 different villages. Most *rumah pencu* were found in Langgar Dalem, Kauman, and Kerjasan Villages, with 14, 12, and 13 houses respectively, while the total number of *rumah pencu* in the West Kudus district was 58. A recent inventory carried out by Nazarudin (2011) shows that only 48 house are available in the original context of West Kudus. If these data are correct, this means that within four years, 10 houses have been sold.

From my preliminary survey, it is known that there are three different types of ownership status for *rumah pencu*, as follows.

1. Single private owners, as in cases when a person buys it from others or inherits it from his/her parents as the only child in the family.
2. Family owners, as in cases when a single private owner of the house has died, but the rights of ownership for the *rumah pencu* are inherited by all of his/her children.
3. Government ownership, with there being only one case. A private owner, the Jarum Cigarette Company, bought the *rumah pencu* and gave it to local government to be displayed to the public in the city's museum area. But this *rumah pencu* has been removed from its original context of the West Kudus district to East Kudus.

Local informants cited the following as the main reasons for selling the houses in interviews.

1. Economic reasons. The treatment process for the wooden house is expensive and complicated, and many owners feel they have to meet other needs instead, such as paying for education for their children, and other daily needs.
2. Social reasons. When children decide to divide their inheritance, including a house, after a parent's death, they may have to sell the property first, especially if the number of children in the family makes it impossible to divide the house room by room.
3. Lifestyle changes. Some people tire of living in old *rumah pencu*, and desire more modern houses that are easy to clean.
4. Lack of knowledge about heritage and its value, and of the heritage district. Some people interviewed who said the old minaret is important heritage did not consider their own house to be as important, because it is not ancient or beautiful enough. Two people interviewed, however,

realize that heritage is important and has to be preserved so that future generations know the specific characteristics of traditional Kudus houses.

5. Lack of knowledge about heritage conservation, especially the concept of authenticity. This may result in a private institution or company with good intentions preserving and conserving a *rumah pencu* while removing the house from its original setting, even though the value of the house and that of the district are more significant if it remains in its original setting.

It is rare that *rumah pencu* buyers, especially when they live in other cities, also want to buy the land, and local people prefer to sell the wooden houses only, without the land. This means that more *rumah pencu* move from their original setting in West Kudus district.

The above reasons for the case of Kudus are also faced by other cultural heritage districts such as Kotagede in Yogyakarta, Java. Economic and life style changes have been identified as factors that are changing the traditional character of Kotagede (Rahmi, 2009:6-7). In addition, lack of knowledge and social reasons are some of the more challenging factors that have to be faced. An advantage for Kotagede is that nowadays there are several CBOs and NGOs as mediators who are concerned with the revitalization of the area's cultural heritage, and the area has been designated as a Cultural Heritage District under law. Despite many CBOs still depending on funding from government and private institutions, the present condition shows that local community concern in Kotagede for its local heritage is improving and is good phenomenon (Adisakti, personal communication, August 2011).

That situation is very different compared with conditions in Kudus. Government efforts in Kudus to conserve the heritage district are still very minimal. Although West Kudus district has potential, the government has not designated it as a heritage district under law. Until recently, BP3, Central Java Office, gave more concern to ancient mosques and the minaret as architectural heritage, while common people's dwellings have yet to be treated as heritage under law. The only effort that has been carried out so far is inventory activity for *rumah pencu*. The preliminary survey showed that some awareness of the importance of *rumah pencu* as heritage has been achieved, but only for several house owners, which is not effective enough.

There is one positive effort by the Local Cultural and Tourism Department to support a local *rumah pencu* owner with an incentive to treat his house. The precise amount of money given was not told to the interviewer. But unfortunately there is not enough funding, and the incentive was only given to the owner with the best and most beautiful house, while other *rumah pencu* considered not as beautiful and dirty because the owners are not rich enough to treat them received no incentive. If this system is continued, more houses in the district will soon be sold. Unlike Kotagede, no tax reduction system is yet applied to help owners of traditional houses who have conserved their houses properly. Although the amount of tax reduction is considered minimal by the house owners in Kotagede, the community appreciates such government efforts (Nazir, personal communication, 2011).

Interviews with local people also suggest that there is no local community group/organization concerned about the heritage conservation. The formation of such an organization needs to be initiated

because community involvement will have greater influence on the sustainability of heritage in the district now and in the future. However, when this involvement emerges, attention must be given to possible conflicts because of the different preferences and priorities to conserve, and it should be made clear from the beginning which houses are worthy of being conserved, so that ways of preventing conflicts can be devised.

Conclusion and further thoughts

By applying direct observation with in-depth interviews, the preliminary survey has identified some problems in protecting *rumah pencu*, one of the traditional wooden house types in Kudus. The number of problems identified may increase when a more extensive survey with more interviews is carried out. Another important finding of the preliminary survey is that traditional conservation practices which have been applied for generations are effective enough in protecting these wooden houses, as shown by one wooden house which survives from the eighteenth century. It is also known that there are different proportions for the mixture of traditional substances used. However, the effectiveness of this traditional conservation method needs further study, since local people do not undertake the conservation periodically in a systematic way. Thus, the period of effectiveness of the traditional solution is still questioned.

Traditionally and conceptually, Javanese wooden houses are designed to be moved and the owners of *rumah pencu* feel they have the right to do anything to their property. These concepts tend to support local owners who sell *rumah pencu*, although the new Indonesian cultural heritage law prohibits the removal of cultural heritage from its setting. This is a difficult contradiction that we have to face in order to protect a cultural district. Nevertheless, efforts in Kotagede to have it designated as a heritage district were successful, and while they have also been initiated by the local government of Kudus, West Kudus has not yet been designated as a Cultural Heritage District under law.

Government efforts to protect *rumah pencu* in West Kudus as part of a heritage district are still very minimal. It is suggested that efforts in the future be maximized with the addition of involvement of the local community for the benefit of all. Local community involvement should be initiated with some dialog from the beginning, and local views and decisions regarding the conservation of the West Kudus district should be given special attention by the government. Cases in other cultural heritage districts in Indonesia, especially those involving the community in the protection of heritage, can be used as reference, provided that we realize there is no precise repetition of problems and solutions from one case to another.

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Kazakhstan

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Problems and Needs for Cultural Heritage Protection and Restoration Activities in Kazakhstan

The government program of the Republic of Kazakhstan, “Cultural Heritage” 2004-2006 (hereafter, “the Program”), developed out of the message of the President of the Republic of Kazakhstan to the people of Kazakhstan, on the “Basic Directions of Internal and Foreign Policy for the Year 2004,” and the Action Plan on Implementation of Government Programs, 2003-2006.

Development of the present Program is necessary as a stimulating influence for the situation of cultural heritage.

The current state of cultural heritage in Kazakhstan consists of the maintenance of a complex of measures on preservation, and further development of centuries old traditions through the creation of new cultural and historical monuments, the activation of restoration and preservation works on mausoleums, ancient mosques, and ancient cities, and the creation of new historical and cultural museum reserves based on these materials.

At the present time there are more than 25 thousand immovable monuments of history, archaeology, architecture and monumental art, 11 thousand libraries, 147 museums, 8 historical cultural museum reserves, and 215 archives in Kazakhstan.

A wide network has been created of state museums on history and ethnography, and memorials dedicated to memorable events in the history of Kazakhstan.

A unique monument of the history and culture of Kazakhstan, the Khodja Akhmed Yassauï mausoleum in the city of Turkestan, was inscribed on the UNESCO List of the World Cultural Heritage in June, 2003.

Measures to improve the cultural infrastructure of Astana have been implemented. In recent years in the capital of the Republic, the Kazakh Theatre of Musical Comedy, and the Presidential Center of Culture including a museum, library and a concert hall, have been opened. Construction of the National Library is finished. Construction of a concert hall and circus is underway.

Heritage laws of the Republic of Kazakhstan, “On Protection and Use of Historical and Cultural Heritage,” “On Culture,” and “On National Archival Fund and Archives,” have been passed and are in effect.

At the same time, the current situation in the sphere of preservation and development of cultural heritage needs urgent comprehensive measures for further development and to step up efforts in this direction.

Many historical, archaeological and architectural objects of great importance for the national history of Kazakhstan require urgent treatment. Among them are unique monuments of history and culture such as the mausoleums of Arystanbab in South Kazakhstan, Asan-Ata and Aikozha in the Kyzylorda area, Zharkent Mosque in the Almaty area, historical architectural monuments in Turbat village in South Kazakhstan, historical architectural and archaeological monuments of the Azret-Sultan museum reserve, the Zhidebai Borli reserve in the Mangistau area, and the Ordabasy reserve, etc.

Most of these are not protected yet from the destructive effects of urbanization and industrialization. The system and methods of studying and using intangible and spiritual objects of culture from the earliest times, along with Ancient Turkic written records, as well as the transliteration of traditional mythemes and characters into modern writings, are underdeveloped.

Since the 1990s, the publication of fundamental works of scientific ideas from the outside world in the fields of philosophy, history, jurisprudence, etc., as well as fiction for Kazakh-speaking audiences has been practically suspended.

In this connection, in order to educate the current generation in the spirit of Kazakhstani patriotism, and fill in the gaps to enable full-fledged study of our historical and cultural heritage, as well as sum up the centuries-old spiritual experience of the Kazakh people, publication of comprehensive historical, artistic, and scientific series in the national language has become an especially critical issue.

Also, the natural ageing process affects the written heritage, especially documents made of organic materials, such as paper, glue, leather, cardboard, etc. It is also necessary to pay special attention to the physical condition of records of outstanding musicians of the oral professional tradition, which remain deposited in the archives of the Kazakh State Conservatory named after Kurmangazy, and other archives of the country.

An integrated solution of the abovementioned problems within the framework of the present Program will promote further development of the educational system, and preservation and popularization of the cultural heritage of the people of Kazakhstan.

Reconstruction of monuments of national history will be provided through the organization of integrated scientific and cultural research, and the realization of measures for the restoration, preservation, and renovation of monuments with special value for the national culture, such as the mausoleums of Abat-Baitak, Aisha-Bibi, objects of the Karaman-Ata and Shopan-Ata necropolises, the Akyrta and Baba-Ata palace complexes, as well as through the revival and development of historical and ethno-cultural environments, and the realization of archaeological research on ancient and medieval sites, mounds, and settlements, such as Koilyk, Issyk, Saraichik, Berel etc.

Preparation for publishing the List of Historical and Cultural Monuments of the Republic of Kazakhstan will be carried out. Movable objects of history and culture stored in museum holdings of the country require regular restoration work. From this consideration, it is necessary to consider the possibility of creating the Center on Restoration and Formation of Museum Funds, which have great importance for national history.

With the aim of studying the heritage of outstanding scientific thinkers of the past, as well as discovering and purchasing rare items, manuscripts, old publications, books and archival documents having historical value for the cultural heritage of the Kazakh people, research expeditions to archives and libraries of foreign countries will be organized.

Also, scientific research will be conducted on historical, cultural, architectural and archaeological monuments which are very important for the national culture, in order to provide their preservation and safety, including items in the territories of museum reserves.

For the purpose of preserving unique objects of documentary heritage and organizing free access to them, it is necessary to continue studying the heritage of outstanding scientists, thinkers of the past, such as al-Farabi, Yu. Balasagun, M. Kashgari, S. Bakyrghani, A. Yugneki, M. Dulati, K. Zhalairi, Z. Babur, etc. It is also essential to locate, purchase, or make copies of manuscripts, rare items and books, including the Kummanikus Code and Kitabi Dedem Korkud (which are in Dresden and the Vatican), Oguz-name (in Paris), Babyr-name, Mukhabbat-name (in London), Kutadghu bili by Yu. Balasagun (in Cairo), and others which have great importance in the cultural heritage of the Kazakh people.

With the aim of ensuring the protection of ancient manuscripts, books, and other sources, it is necessary to create under the National Library the Center on Discovering, Acquisition of National Book Rarities, Books and Ancient Manuscripts Restorations.

With regards to information technology, rapid development and implementation of the Electronic Data Processing Unified System, for preserving and using documents of the National Archival Fund on updated media, has become a task of high priority. To facilitate the execution of this task it is planned

to create the Center on Insurance Copying and Restoration of Archival Documents under the Central State Archive of the Republic of Kazakhstan.

The work of discovering and copying Ancient Turkic runic inscriptions, which are found in the territory of modern Mongolia and other countries of the world, is proceeding. A monument will be built, as the symbol of state integrity and the unity of the peoples of Kazakhstan, on Ulytau Mountain. Borders of protected zones for cultural and mixed heritage objects included in the preliminary list of the World heritage will be determined, and a database on such objects will be created. A business plan on management and preservation of the mausoleum of Khodja Akhmed Yassauy has to be developed.

Financing the Program will be carried out by means of the Republic's budget. The total amount of financing is 1,933.6 million tenge, including 641.65 million in 2004, 631.7 million in 2005, and 660.2 million in 2006. The amount of financing of the Program for 2005-2006 will be specified in the frameworks pro forma the parameters of the Republic's budget for the appropriate fiscal year.

Issues on financing the large serial editions of national and world scientific knowledge, culture, literature, which have to be released in the ensuing years, will be considered in accordance with the appropriate procedures.

Implementation of the Program will contribute to increases in the spiritual, intellectual and cultural levels of the nation, to the education of the incoming generation in the spirit of worldwide values and Kazakhstani patriotism, and will promote further consolidation of society.

The main achievements to result from implementation of the Program can be summarized as follows.

- Over 30 significant monuments of history and culture will be reconstructed
- Works on scientific research, preservation, accomplishment and tourist use at 32 ancient and medieval archaeological sites and settlements will be carried out
- Cultural infrastructure will be expanded, tourist activity will be developed and spread, work on propagation and popularization of historical cultural values will become more active
- Measures for the creation of a comprehensive research system of cultural heritage shall be realized
- The following will be created:
 - The Center on Discovering, Acquisition of National Book Rarities, Books and Ancient Manuscripts Restorations, under the National Library
 - The Center on Insurance Copying and Restoration of Archival Documents, which will be equipped with high technology facilities, under the Central State Archive of the Republic of Kazakhstan

- The Center on Formation and Restorations of Museum Funds, which have special value for a national history, based on the Presidential Cultural Center
- Borders of the zones for protection of the cultural and mixed heritage objects, included in the preliminary list for UNESCO, will be determined and a database on such objects will be created
- Old records of outstanding musicians and performers which are stored in funds and archives of the country will be restored and transferred to modern sound-recording media

At the moment, the restoration of timber houses is a rather urgent procedure with regards to the restoration of old wooden structures. There is a need to preserve the facilities of historical and cultural value. Generally special, technologies and programs are used that allow the architecture of such buildings to be preserved as much as possible.

Complex structural relationships in conjunction with the effects of architectural changes and other factors also require a coherent idea of the functions of each element or condition at the initial, intermediate and final stages of the operation. The overall complexity challenges the control of fractures and the assessment of the load-bearing capability of the aged spacer-bar structures – the arches and vaults – which are determined by the specifics of the vaults as spatial systems with masonry structure, their dependence on the conditions of the vertical load-bearing members and braced frames, the variety of possible load transfers and reallocations, and the variability of the functional diagram.

The modern approach to reviewing the artistic significance of a monument is based on the assumption that the monument always carries its own emotional and aesthetic impact in its particular context. First of all, this is in the context of contemporary culture, which includes developed attitudes towards art in general and towards the art of the past in particular.

In the decade of the 60s during the last century, the architects of Alma-Ata carried out grand construction along Lenin Avenue for dedication to the 100th anniversary of Lenin's birth. According to the design, the renewed avenue was to start from the area in the eastern part of Panfilov Park. The construction of the House of Officers was started. The House of Officers (the former building of the District Officers' House) was erected in 1978 according to the design of Kazgorstroyproekt GGPI (currently the KAZGOR Design Academy, which for the development of the complex was awarded with the Prize of Council of Ministers of the KazSSR) with participation of such architects as G. Ratushny, O. Balykbaev, and T. Yeraliev. The District Officers' House was erected at the city park entrance and linked with the Eternal Light monument and 28 Panfilov Guardsmen memorial. The entire complex of buildings forms the town-planning site – the city square, culminating in one of the city's arterial highways, Lenin Avenue (nowadays Dostyk Avenue). The main block is made of a cast-

in-place reinforced concrete frame with brick-filled walls. The floor slab of the auditorium is of a tent-shaped type. The extended curved plan of the façade of the four-story structure contrasts with the strict rhythm of the vertical pylons crowned with the attic floor at the top. The façade of the pass-through passage of the building to the Eternal Light of Fame memorial is shaped with embossed copper positioned above the white marble colonnade. The combination of colors, the white shell limestone of the attic floor with the black-streaked flagstone, makes the building both solemn and festive. Stone, aluminum, decorative plastics, synthetic materials, leather and other materials are widely used in the interior finishing. The fate of Vernyj house, known as Museum of Folk Instruments, has been regarded favorably. An age-old building, designed by the architect Yuri Ratushny, it can be thought of as decorating the concrete mass of the new Officers' House.



Figure 1. Museum of Folk Instruments building, against the giant concrete Officers' House as background (for original photo, please visit the Almaty and surroundings website)

Looking at the decorative woodwork of the building's tower, Almatians say different things about it, often retrieving from memory preconceived facts and fanciful stories. For some, this house is reminiscent of a place documenting the revolutionary youth of their grandparents, who once sat here and campaigned for the Soviet powers. Some recollect how their ancestors sent telegrams to families and friends, when the building hosted a postal telegraph office. Some used to visit it as the Red Star cinema and during the war, and came here to see performances of actors, all masters of scenes, evacuated to Alma-Ata. People of different generations could also recollect the celebrated political processes that have taken place here, the mourning, solemn meetings, and ordinary events, which have

already become milestones of the past century. A newsreel captured a depressed Boris Yeltsin in the house as he knew about the August 1991 coup d'état in the Kremlin.

The history of the building itself is unclear. Its designer is unknown, although rumors bear the name of Andrey Zenkov. This “not low, not high” tower has been standing since 1908. The building was erected under the order of the Military Assembly – a class club designated for the leisure of the officers of the Vernyj garrison. The former building was destroyed by an earthquake in 1887, and thereafter the club members had to meet in private apartments. The Officers Club is mentioned in the whirl of events celebrating the 300th anniversary of the Romanov dynasty. In autumn 1913 it was decided to hold an exposition of handicraft industry of the Semirechie people here.

The organizer of the architectural part of the anniversary exhibition was the great architect A. P. Zenkov, a graduate from St. Petersburg Military Engineering Academy. As a student he was fond of Russian architectural history and studied the issues of material culture monuments protection, conservation, rehabilitation and the renovation of samples of architecture. He brought to Semirechie the so-called Ropetovsky style, in which elements of old Russian timber architecture were used as decoration for buildings, but purely ornamentally, without regard to their function in the building. Under the supervision of Zenkov, in addition to the Military Assembly building, 28 state owned and 15 private pavilions were erected in the city park for the anniversary exhibition to accommodate expositions of agriculture, industry and commerce. The main park walkway along Kolpakovsky Avenue was decorated with yurts (nomad tents), wherein all the variety of Kazakh art, life and crafts was placed. In the eastern part of then Pushkin Garden and at the adjacent streets the builders constructed pavilions of commercial and industrial houses of Gabdulvaliev in Ropetovsky style, Shakhvorostov in Moresque style, Pugassov in roman style, and Ivanov pavilion in gothic style. The ensemble includes timber pavilions, topped by drums and tents, decorated with cornices, cocks, towels and other dry fretworks, while the roofs of some pavilions have been skillfully covered with conventional shavings that due to their ornamentality were architectural triumphs. When erecting the exhibition halls, the builders applied the latest innovations in construction equipment and materials: bituminous felt (for roofing), *terrofazerit* (tile), and linoleum. Reinforced concrete products manufactured in the local plant of F. I. Titov and successors were used for the first time. In the ensemble with the Military Assembly house (perhaps newly constructed especially for the exhibition?), the new types of buildings were characterized by primitive stylization while showing the bright talents of the builders, by the successful interaction of Russian architectural traditions with a search for distinctive architecture and construction, and in particular, by earthquake-resistant structures and technologies.

The local builders constructed the Military Assembly house in the form of a peasant log-house covered with planks. Its façades have been heavily decorated with superimposed carving. The design in plan is an oblong rectangle, the central volume has a tent-shaped top increased with a tower/steeple.

The building façade facing Zenkov Street (former Proletarskaya Street) is decorated with timber carving: rectangular windows, cornices, crests, fencing of the sky deck, and false pediments.

In addition, there are motifs of the Kazakh national patterns *agash* (tree of life), *shynzhara* (running waves), *uzilmes* (bramble stem), *otkizbe* (horn-shaped curl), etc. The main entrance is emphasized by a keeled abat-jour resting on carved stands. The original name, the club of officer corps, was changed from 1918 to the postal and telegraph office, then the cinema house Krasnaya Zvezda, and finally the Officers' House (Central Asian Command). In 1918 the building accommodated the Vernyj County/City Council of workers, soldiers and peasants' deputies. In October-November 1918, the first Semirechensky Oblast (province) congress of Soviets was held there (a memorial board is displayed).

At the moment the building is under national protection and is listed as a historical and architectural monument of the Republic of Kazakhstan.

Myanmar

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Problems and Needs for Cultural Heritage Protection and Restoration Activities in Myanmar

1. INTRODUCTION

Myanmar is rich in natural resources and also has a diverse cultural heritage. There are many famous ancient wooden structures which tell the history of Myanmar, especially relating to the role of Buddhism in daily life. Many tourists usually visit Myanmar to explore its cultural landmarks. Not only for the benefit of such tourists, but also to conserve Myanmar's cultural heritage for posterity, the Department of Archaeology has been taking responsibility for conserving and maintaining the ancient structures, and for restoring them to their original forms. The conservation work deals with many types of buildings such as monuments, temples, stupas, monasteries, and so on. Because our country is rich in valuable timber such as teak, most of the ancient monuments were constructed using teak and bricks. Monasteries in particular are constructed with teak, in which case they are called *atha kyaung* (*athar* meaning "wood," and *kyaung* is "monastery"). Most of the wooden monasteries were damaged by insects, fire, war, weathering, and natural disasters. Therefore, the conservation and maintenance of these ancient structures is an important task for the Ministry of Culture and also the citizens of Myanmar.

Wood is a useful basic material for construction in Myanmar, from farmers' dwelling huts to the Royal Grand Palace. In past centuries, wood was easy to get, long lasting, and strong, and therefore skillful sculptors made many designs such as floral motifs, mythical animals, and so on to decorate the buildings.

2. CLASSICATION OF WOODEN STRUCTURES

Wooden structures can be classified mainly into two groups, one being a large number of religious monuments such as pagodas, temples, stupas, monasteries, *tazaungs* (a type of shrine), *pyatthats* (buildings with multi-tiered roofs), and *zayats* (shelters/assembly halls), and the other being residences such as palaces and dwelling houses that have been built throughout the country since the Pyu period. The religious monuments are made of stone, brick, or wood depending on the availability of the materials. Among these buildings ancient monasteries are one of the most interesting religious structures.

In this paper, emphasis is put especially on monasteries. Monasteries are a premier indicator of social status in Myanmar, and are important buildings in our daily life. When the day starts in the morning, the monastery sounds the call for people to wake up and prepare to cook rice and curry for Lord Buddha and for the monks. The countryside or village daily life starts with the monastery, and is paced by it until bedtime.

The majority of Buddhist monasteries were also built of teak. Unlike their masonry counterparts the wooden edifices of Myanmar owe more to an indigenous domestic architectural tradition. To erect a house in Myanmar was a relatively simple affair. Building materials, such as palm, bamboo and wood were readily available. Professional architects and carpenters were not required, for house building was a skill passed down from generation to generation. With the help of relatives and neighbors, a simple, four-roomed dwelling made of bamboo and matting, and consisting of a shrine-parlor, bedroom, kitchen, and store room could be built within a day or so. The average life of such a house was not more than ten years, since hazards such as insects, fire, flood and war did not encourage the construction of structures of a more permanent nature.

For the construction of a monastery (also called *hpongyi kyaung*, adding the term for a monk), a contingent of carpenters and wood-carvers would be contacted by the donors, who would specify the length and breadth of the desired edifice. The master carpenter would then be able to calculate the dimensions of the various component parts, comprising the image room (*pyathat hsaung*) in the east, followed by the room for the chief monk or *sayadaw* (*sanu hsaung*), the reception hall, school room or dormitory for monks (*hsaung ma gyi*) at the back and the surrounding veranda (*zinggyan*). He would base his calculations on the traditional Myanmar system of measurement that used the approximate dimensions of various parts of the body.

Once the carpenters had assembled the basic post and lintel skeleton, the carvers would begin the arduous work of carving hundreds of decorative details for the doorways, windows, balustrades, and multiple roots from planks and blocks of well-seasoned wood. Decorations were carved section by section and assembled later. They were attached to the building by tenons and nails. A large monastery might take from three to ten years to complete. Artisans were usually paid in silver and received food and lodging for the duration of the project.

A classical Myanmar wooden monastery is generally divided into two areas. An official area for visitors occupies the eastern side of the building with the residential area on the western, private side. This scheme resembles that of the Bagan monasteries, where the official public hall with a Buddha statue built of wood adjoins a brick dwelling building. This similarity in the overall general planning concept is the only common feature to the Bagan and wooden monastery buildings of the 18-19th centuries. The latter are known only in the form of fully developed examples that have no analogues in India, China or in any other neighboring country.

A Myanmar wooden monastery is, as a rule, symmetrical along the east-west axis. Its floor is elevated 2.5–3 m above the ground. The building is surrounded by an open gallery accessed by several massive plastered brick stairs. Every monastery room is covered with a separate roof. Shwe-in-bin Kyaung in Mandalay, erected at the end of the 19th century, is a definitive example of traditional monastery composition. The main entrance is the eastern one. The King and the abbot were the only persons who had the right to use the eastern stairway. The first entrance hall formerly enclosed one or several Buddha images and is crowned with a *pyatthat*, hence its name *pyatthat hsaung*. The next small room *sanu hsaung* (intermediate room), is sometimes considered the abbot's residence and was also used by him for talks with visitors and for receiving presents and donations to the monastery.

The *sanu hsaung* leads into the *maraphin hsaung* (*hsaung ma gyi*), a large hall-like room divided with a partition into western and eastern parts. The name of the hall originates from this partition because *maraphin* in Burmese means “partition, dividing a hall into two parts.” It is always the largest room in a *kyaung*, covered by a separated three-tiered roof, clearly distinct in the composition of the building. In the eastern section of the *maraphin*, near the center, a portion is always elevated for two to three steps, with a low fence usually surrounding this elevated area. This is the scene for various activities.

A monk sitting on the elevated floor delivers sermons, teaches novices and monastery school pupils who take their place on the lower level. At the western part of the *maraphin* is a private room, closed from strangers. Monks used to sleep on the bamboo mats along the walls in the different parts of the *maraphin*. The *boga hsaung* or *zanu hsaung* (western room) on the main monastery axis separate from the *maraphin*, houses novices and pupils, and it may also be used as a storeroom.

3. CONSERVATION WORK OF WOODEN STRUCTURES IN MYANMAR

The Bagan branch conservation team has conserved the following monasteries.

- (a) Myauk Lay Zin Kyaung, Salin Township
- (b) Yoke Sone Wooden Monastery, Legaing Township
- (c) Beikmarn Bonthar Koe Saung Kyaung, Salin Township

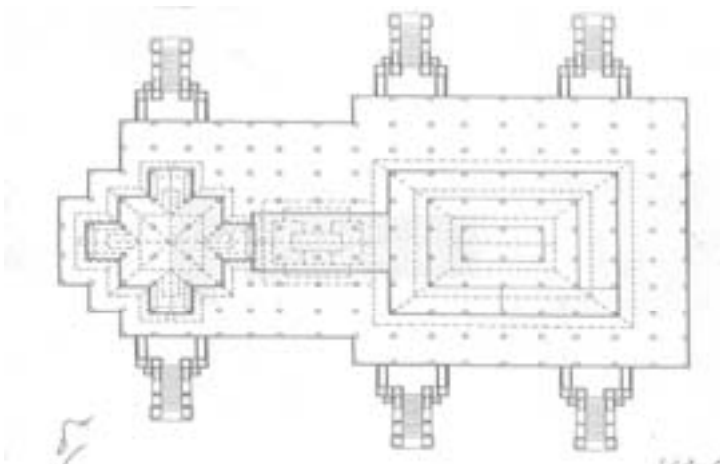
(a) Salin Kyaung (Myauk Lay Zin Kyaung)

This monastery lies in Ahnauk Kanswel Taik, Sinkyone Group, Salin Township, Magway Division, and was donated by Daw Pu in the year 1231 of the Burmese calendar (ME, corresponding to 1869 AD). Salin Kyaung is situated in Salin, and this monastery of approximately 49 m (163 feet) east-west and 25 m (82 feet) north-south has been built with a total of 244 teak pillars, the largest of which is 20 m in height and nearly 0.5 m in diameter . It was donated to the order in 1868 by Daw O Kyee.

It is in the format of monasteries of the later Kongbaung period style, having a Kyaung Oo Pyathat (pavilion), Sanu Saung (passage), Jatewon Saung (main shrine) and corridors. At the corridors and hand railing, adorned with sculptures of great Jataka (the Buddha's life stories), there are 244 posts

with nayas (a mythical animal in the form of a dragon) supporting the gallery. Owing to its collapsed condition, the major conservation work was done by Department of Archaeology, National Museum and Library in 2003-04.

To achieve the original condition, the post were lifted up using large jacks and reinforced concrete blocks were used to fill spaces beneath the posts. Not only parts of wooden components such as floors, walls and roofs, but also the traditional Burmese wooden decoration and floral designs on the roof were conserved. The four staircases (in the shape of a mango sprout) were also conserved. The Buddha image of the Kyaung Oo Pythat was also conserved and is displayed as a small museum.



Plan view of Salin Kyaung (Salin Monestry)



Before Conservation



Before conservation



During conservation



During conservation



After conservation

(b) Yoke Sone Wooden Monastery, Legaing

This monastery is situated in ancient Laekaing city, Pwint Phyu Township, Minbu District, Magway Division. It was donated by the Mayor of Laekaing city, U Anhtaw Ni, in 1252 ME (1890 AD). The carpenter in charge was saya Ngel, who also constructed the Mandalay Palace. This monastery's construction cost was 17.5 buckets of silver coins.

This monastery measures approximately 52 m (174 feet) east-west and 21 m (68 feet) north-south, and has been built with a total of 214 teak posts, the largest of which is 15 m high and nearly 30 cm in diameter. It was donated to the order in 1890 by U Anthaw Ni, whose family had it built. The building is of classic cruciform proportions consisting of a shrine room (*pyatthat hsung*), a *sanu hsaung*, a store room (*boga hsaung*), and a corridor. The shrine room collapsed 20 years ago but its posts were

decorated with beautiful carvings. The store room had also collapsed before we restored it. The original composition was in the format of monasteries in the later Kon Baung period style. Along the corridors was a hand railing adorned with sculptures of great Jatakas, the Buddha's life stories. At present, the passage and corridor are left, though all of the parts were either collapsed or damaged. The work on restoring the hand railing and corridor, decorated with great Jataka, and the traditional sculpture of the Kyaung Oo Pyathat Saung (pavillion, or shrine room), and other necessary works of renovation, restoration and conservation were carried out by the Department of Archaeology, National Museum and Library, in 2003.



Side view before conservation



During conservation



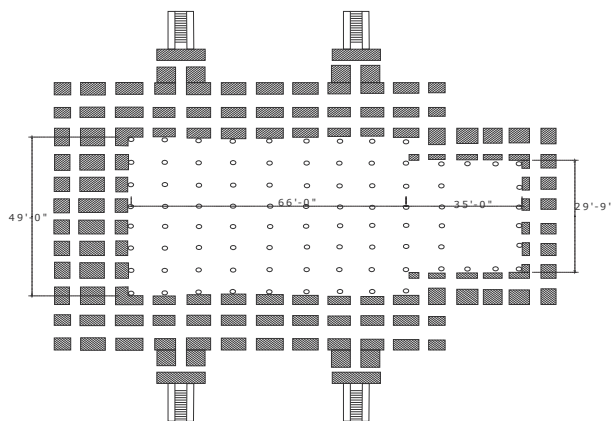
After conservation

(c) Beikmarn Bonthar Koe Hsaung Wooden Monastery, Salin

This monastery lies in the Paungnar quarter of Salin Town. The land was donated by Mahathamone U Paw's great-granddaughter and his son in 1011 ME (1739 AD), and the monastery was constructed by Mal Ray, U Paw's great-granddaughter and her husband U San Khine, mayor of Salin Town in 1108 ME (1746 AD). Later, the monastery was conserved by U Pan and his wife Daw Tok.

This building was donated to the order in 1818 by U Paw and his sons U San Aung and U Aye. The construction of the building was commenced in 1818 and was completed in 1823. It was restored in 1908 by U Pan and Daw Tok O, relatives of the first donor. It measures approximately 30 m from east to west and 15 m from north to south, has been built with teak posts, the largest of which is nearly 30 cm in diameter. The wooden building is surrounded on all sides by a veranda, which is a brick structure. There are four stair cases decorated with a mango sprout shape. The wooden flooring, walls, and teak posts of this building were damaged. The brick chamber with corridor were completely collapsed.

In 2004-05, the corridor and main brick structures were completely conserved in their original form by the Department of Archaeology, National Museum and Library. Moreover, all of the damaged parts of the wooden buildings and posts were completely restored. The finishing work for the floor and walls of the wooden buildings was carried out in the 2007-08 fiscal year.



Plan



Before conservation



During conservation



During conservation



During conservation



After conservation

4. DETERIORATION AND CONSERVATION

According to our traditional building methods, all of the monasteries were built by digging holes for the wooden pillars. Accordingly, the parts of the wooden pillars that were in the ground were usually ruined several years later. Following this, the upper part of the monastery typically leaned in different directions and eventually collapsed into a heap of wood. As a result, our Department would try our best to save the remaining parts of the monastery.

As teak wood is very expensive and not readily available, other types of wood therefore have to be used as replacements that are not durable in the long run. In terms of further conservation work, advanced methods of conservation are required, and as there are only a few well-trained technical assistants in my Department it is difficult to cope with the large numbers of ancient monuments.

5. BENEFITS FROM THE TRAINING COURSE

I hope that I will be able to apply the useful techniques and methods of preservation of wooden monuments that I study in the 2011 ACCU training, and I will share my experiences with my colleagues.

Nepal

Ram Govinda SHRESTHA

Head of Section (Architect)

Building Permit Section

Bhaktapur Municipality

Renovation of Navadurga Dyochhen, Bhaktapur: A Short Report



Introduction: Background to the Project

Nepal is 800 km long and 170 km wide and contains most of the Himalayas stretching between Assam, Bhutan and Sikkim in the east to Kashmir and Jammu in the west. It not only incorporates the highest mountains in the world, but also a 40-km-wide strip of lowland belonging to the Ganges plain. Nepal is a country with its own historical and cultural background, for which it enjoys worldwide popularity. Innumerable temples within the Kathmandu valley constructed in the ancient period are reason for its being popular as a country of temples. Of the World Heritage sites in Nepal, the Kathmandu Valley World Heritage Site and Lumbini, the Birthplace of the Lord Buddha, are both cultural heritage sites, whereas Sagarmatha and Chitwan National Parks are sites of natural heritage. The Kathmandu Valley Site is again divided into seven heritage zones, namely Kathmandu, Patan, Bhaktapur, Swayambhu, Bauddhanath, and the Changu Narayan and Pasupati temples.

Bhaktapur, one of the three historic royal towns in the Kathmandu valley with rich architectural and urban heritage, was founded in the eighth century AD and is known as Khopa in the Newari dialect and Bhaktapur in Nepali. It has remained ethnically, religiously and culturally homogeneous as compared to Kathmandu and Patan. Built urban and architectural heritage has also remained relatively well preserved in Bhaktapur even today. “Were there nothing else in Nepal save the Durbar Square of Bhadgaon (Bhaktapur) it would still be amply worth making a journey halfway round the globe to see,” expressed E. A. Powell of London. Again Swiss Geologist Dr. Toni Hagen wrote, “Bhaktapur is the cleanest city, others should follow her.” Inspired by such high praise the citizens of Bhaktapur are engaging in the conservation of their heritage.

Bhaktapur Municipality's conservation efforts

Our cultural heritage is a component of the organic whole of human civilization. Its conservation is a major and important task. We have understood the cultural and economic value of our heritage only since the late 1980s. For the past decade and a half, the Municipality has been working with great concern in the conservation of its heritage. It has not been able to achieve the desired level in this sector due to constraints on resources.

The Municipality has given highest priority to heritage conservation and environmental improvement, with almost 70 percent of the municipal development budget directed towards the conservation of art, culture and heritage, along with maintaining the cleanliness of the city. In the past 12 years, Bhaktapur Municipality has renovated, reconstructed or conserved temples and monuments such as Bhairabnath Temple, Nyatapola Temple, Chaturbrarna Mahavihar, Jhaur Bahi, Navadurga Dyochhen, Tripurasundari Dyochhen, Yaksheswor Temple, Shiva Temple, Ikhalachhi Math, 55 Windows Palace, Taleju Temple, Patis, and Sattal.

With the sole purpose of conserving cultural heritage within the city we have expressed in our motto the commitment we try to achieve in operation: “Creation of our predecessors – our art and culture.”

Short descriptions of some renovations by Bhaktapur Municipality

Nyatapola

The tallest temple in Kathmandu Valley, Nyatapola (a five-storied structure) is simply the finest specimen of traditional Nepalese architecture. Its symmetrical roofs are supported by 108 pillars, all adorned with figures of different Hindu gods and goddesses. The temple houses an elegant image of Siddhi Laxmi, the goddess representing the most powerful female force. The 33-step stairway leading up to the temple is flanked by guarding figures at each level. The bottom plinth has the legendary wrestlers Jaymal and Patta, each said to have the strength of ten men. On the level above them are a pair of elephants, then a pair of lions, then a pair of griffins, and finally the pair of deities

Singhrini and Byagrini, with each level ten times stronger than the one below. There are 20 wooden artistic pillars on the top floor level and 60 *dyojhya* (goddess windows) fitted on the wall. Nyatapola has five tiers of receding roofs, each tilting downwards in a 45 degree angle. In 1702, King Bhupatindra Malla erected this five-tiered temple, which still dominates the skyline of Bhaktapur. Its design was so elegant and its construction so well done that the earthquake of 1934, which completely destroyed so many other temples and buildings, caused damage only to the topmost story. The temple honors King Bhupatindra Malla's family deity, Siddhi Laxmi.

The temple is 32.93 m in height, and 22.70 m by 22.70 m in length and width. It was in dilapidated condition before the restoration, with timber members such as joists, rafters, beams, columns, *meths* (lintels) having become weak and losing their bearing capacity as the result of being eaten up by termites, fungus, etc. It was renovated by Bhaktapur Municipality in 1997 at the cost of US \$25,847.



Nyatapola Temple after renovation



Bhairabnath Temple after renovation

Bhairabnath Temple

Bhairabnath Temple is located at Taumadhi Square of Bhaktapur. It has great historical and religious importance. The huge three-storied rectangular temple (21.95 m high, 12.80 m long, 8.23 m wide) is dedicated to Bhairav, the ferocious form of lord Shiva. It was made in the period of King Bhupatindra Malla, 1690-1722. This temple was destroyed by the great earthquake of 1934 and later rebuilt in the Rana period. Recently, in 1996 it was renovated at the cost of US \$42,260 by Bhaktapur Municipality.

Jhaur Bahi

Among the historic Buddhist monasteries of Bhaktapur, Jhaur Bahi is one of the oldest types of complexes known as *bahi* in the city. It was badly damaged by the earthquake of 1934, losing its

original form of *bahi* architecture, but still retains its religious importance. The religious activities related to *shakyas* and *bajracharyas*, such as *nitya puja* and *chudakarma*, are performed in the *bahi*. Nepal has harmonious intercultural relation so both Buddhist as well as Hindu people of Bhaktapur have equally been giving importance to the renovation of Jhaur Bahi and other cultural heritage examples. Jhaur Bahi is located at Golmadhi Tole, Bhaktapur. It is recorded that in the year 676 of the traditional calendar, or about 447 years ago, Jhaur Bahi was built by Jib Chandra Bajracharya in the period of King Bishow Malla.

Bhaktapur Municipality has supported technically as well as financially the reconstruction of Jhaur Bahi. About US \$3,200 was donated by local people for the reconstruction. Visitors and tourists also contribute indirectly because the Municipality collects money from tourists visiting Bhaktapur. After about one and half years of hard work by woodcarvers and local masons, the reconstruction of Jhaur Bahi was completed. The religious ceremony to celebrate the finishing of the roof was held in September 2002. The size of the square-shaped *bahi* is 19 m by 19 m, with a height of 6.5 m. The total renovation cost was US \$110,063.



Jhaur Bahi after renovation



Ikhalachhi Math after renovation

Ikhalachhi Math

Math is a social and religious Hindu institution, a house for a priest. Ikhalachhi Math is one of the oldest *maths* of Bhaktapur, located at Bolachhen Tole, Ward No. 12, Bhaktapur. This *math* is almost 300 years old. It was badly damaged by several natural disasters such as earthquakes and heavy rainfall. The first phase of Ikhalachhi Math renovation work has been completed by Bhaktapur Municipality this year, at an estimated amount of US \$36,000. The first phase of Ikhalachhi Math work covered an area 14.76 m in length, 6.15 m in breadth and 9.2 m in height. The remaining three phases of renovation work will be completed very soon. After the renovation work, Ikhalachhi Math is proposed for use as a terracotta museum or an educational institute of art and culture.

Navadurga Dyochhen Renovation Work

Background: Navadurga Dyocchen

Navadurga Dyochhen is one of the major traditional religious structures among the ancient architectural heritage of Bhaktapur. It lies between Gachhen Tole and Kwathandau Tole, in the northeastern part of Dattatreya Square of Bhaktapur. It is famous for being surmounted by a golden window and being guarded by two metal lions. It is equally famous for the Chariot window placed in the first floor of the northern wall. Very huge crowds of devotees visit during Dashain, one of the biggest Hindu festivals in Nepal.

Unfortunately, Nepal is situated on the Indian Plate of the Indo-Australian tectonic plate, which is sinking continuously under the Tibetan Plate at the southern edge of the Eurasian Plate. Because of this action, Nepal is in a zone prone to earthquakes. Devastating earthquakes in the past have proved the vulnerability of most vernacular buildings in Nepal. Enormous losses in life and property have been due to the collapse of buildings made of low strength masonry as their main bearing elements.

From information gathered from people living nearby the Navadurga Dyochhen, it is known that this building was badly damaged in the Great Earthquake of 1934 (8.3 on the Richter Scale). As a result, the inner parts of the building had collapsed completely and were reconstructed with salvage materials, and not properly following traditional architectural rules. The front part had not collapsed.

The Navadurga Dyochhen was built in the sixteenth century. This *dyochhen* is religiously important not only for the people of Bhaktapur but for all Nepalese Hindu. This *dyochhen* is said to be the house of Navadurga. Literally translated from Sanskrit Navadurga means nine *durgas*. *Durgas* are the various demonic representations or manifestations of Parvati, the *shakti* of Siva in the tantric tradition. The oldest form of *durga* is said in Bhaktapur to be the goddess Taleju, who predates the Navadurga. Taleju is important to the Navadurga even though she is not represented within the Navadurga pantheon. The Navadurga are subordinate to her and at prescribed times they visit her temple within the enclosure of the Royal Palace. Though the meaning of Navadurga is nine *durgas*, there are thirteen masks used in public ceremonies in which they participate. Only seven masks represent the *durgas*, however. Of the nine *durgas*, those represented in ceremony are Mahakali, Kumari, Varahi, Brahmani, Mahesvari, Indrayani, Mahalaxmi, and Tripurasundari, and among these, Mahalaxmi is not represented in public by a mask but by a two-dimensional repoussé silver icon. Another, Tripurasundari, is not visually represented to the public; her mask is kept inside the Navadurga Dyochhen with the others, including the “secret” mask of Mahalaxmi.

The remaining six of the thirteen masks represent Siva, his son Ganesha, Bhairab and Seto Bhairab, who are manifestations of Siva and the guardians Simha and Dumha. Individual gods and goddesses which collectively form the Navadurga are well known to the people of the Bhaktapur and

its surrounding villages. They belong to the Hindu Brahmanical pantheon and are venerated by Hindus and many Buddhists.

Dyochhen

The word *dyochhen* come from two words *dyo* and *chhen*, meaning respectively god and house in the Newari dialect. Accordingly the house of a god is a *dyochhen*. There are nine other *dyochhen* of the mother goddesses, Astamatra, including Tripura Sundari in Bhaktapur. They are Bramhayani Dyochhen in Taulachhen Tole, Maheswori Dyochhen in Inacho, Kumari Dyochhen in Kwachhen Tole, Bhadrakali Dyochhen in Ichhu, Barahi Dyocchen in Bansagopal, Indrayeni Dyochhen in Khauma Tole, Mahakali Dyochhen in Bholachhen Tole, Mahalaxmi Dyochhen in Thalachhen, plus Tripura Sundari Dyochhen in Tulachhen. Each of the first eight mother goddesses above has a shrine which is palced outside the ancient boundary of the Bhaktapur city core. But Tripura Sundari has a shrine in the middle of the city. These nine mother goddesses are known as savior goddesses of Bhaktapur city.



Bramhayani Dyochhen



Bramhayani Pith



Maheswori Dyochhen



Maheswori Pith

The construction technology

A masterpiece of medieval period architecture, the *dyochhen* was built by local craftsman and builders using local technology and materials. The foundations were built with mud mortar joints using rough stone. The load-bearing walls of the *dyochhen* were built with specially made bricks, such as *maapa*

and *dachi appa*, with mud mortar of high quality.

Structural wooden members such as posts, joists, beams, and wall plate rafters are made of pine and sal wood. Carved windows and doors were normally made of champ or sal wood. Special roofing tiles (*jhingati*) are used to cover the sloped roofs on timber supports.

Description of the existing structure

The main building of the Navadurga Dyochhen complex is a three-storied structure with an approximate size of 12 m long by 4.35 m wide and 9 m high from the ground to the ridge of the roof. The ground floor of the structure has an internal bearing wall 84 cm thick with 14 cm of cladding using *dachi appa* terracotta bricks on the front face. The rear side of the building consists of two 1 m thick mud masonry brick piers with a large opening 5.27 m by 2.36 m in the middle. The side walls are also 1 m thick with mud masonry brickwork. The thickness of the wall is seen to decrease to 74 cm and 60 cm in the second and third floors respectively. Large openings of traditional types such as doors and windows are situated in the front, back and side walls. The size of the doors and windows varies from 66 cm by 125 cm to 75 cm by 230 cm.

The floor component of the building consists of traditional brick tiles (*telia appa*) laid over 10 cm of mud mortar and supported by timber joists. The span of the joists is between two long front and rear walls. The joists are supported over two beams above the rear wall opening, above which the second and the third walls have been constructed.



Navadurga Dyochhen before renovation

The roof has an approximate slope of 30° on all four sides. The covering of the roof consists of traditional roof tiles (*jhingati*) laid over mud mortar and supported by timber rafters which rest on timber trusses.

Renovation work on Navadurga Dyochhen: Documentation phase

For the renovation of this *dyochhen* we divided the job into two steps: the documentation phase described here, followed by the implementation phase.

Collection of relevant data

The data collection forms were filled out. All detailed measurements of the building were taken and an inventory of the structural components of the building has been prepared. A thorough study and assessment of the materials of the building components has been done regarding their positions, functions and present conditions, as usual.

Exploratory examination was done to confirm the type of foundation, its width and depth, and also the characteristics of the subsoil.

Current use of the dyochhen

As mentioned above, Navadurga Dyochhen is the dwelling of all the Navadurga ceremonial masks. On the ground floor is an open hall around an inner courtyard, with the front part also open, bounded by three walls on the middle, north and south; usually this place is used for visitors and guardians of the *dyochhen*. But the southern part of this floor is kept separate for male holy buffalo (*khan mayen*).

The southern and western parts of the first floor are left open for visitors. In the northwestern part is a room for storing the thirteen Navadurga masks, and the eastern part of the room has the main shrine. Devotees come here daily for devotional ritual (*puja*) for the goddesses.



Carved windows with *toran* at front of Navadura Dyochhen before renovation

Studies of existing physical conditions

Roof. The roof of the *dyochhen* was found to leak in a number of places. The continuous alternation of wet and dry of the rafter in the third floor resulted in decayed timber joists. The leaking water flows in here and there during the rainy season. This led to the third story being less serviceable. Certain joints of the rafters and the joists have been displaced due to unusual movements, probably during earthquakes. Wooden wedges securing the ends of the rafters are ineffective due to the loose fit that leaves gaps between the walls and the wedges. Not all the members are provided with such wedges, which are important considering the frequency of earthquakes.

Floor joists and wall plates. The floor joists and rafters used low quality timber with poor material strength. These materials, being much older, have been damaged due to termites and other insects. Most of the wall plates on the ground floor have decayed due to dampness in the wall. Even the ends of the floor joists have decayed and softened so that certain parts have been eaten by mice. Five successive joists of the ground floor have been broken due to excessive loading on the weaker members. Such joists have to be supported directly from the underside as a safety precaution.



Decayed tie timber seen in a wall panel test

Beams and timber posts. The ground floor consists of timber posts and beams to receive the load of the upper story walls, roof, and floor joists. Two parallel rows of posts placed at a certain interval were found to be tilted in opposite directions. The inner row of posts was found to be tilted to the inside,

producing a wider gap with the other at the top than at the bottom. The features built above show the existing condition as well. Even the beam above the inner posts has tilted to the inside due to the horizontal thrust developed probably during the 1934 earthquake and the existence of the large opening on the underside. It was found that most of the joists rest over the inner beam only. The cut pieces provided for getting a pleasing appearance on outer faces only are found above the outer beam. This structure shows the unequal loading on the two beams.

Walls. The wall system of the *dyochhen* has different thicknesses for the walls of different stories. Each upper storey wall is not constructed exactly above the one below, so that the exterior faces of the walls do not line up vertically. This led to eccentric conditions in the load transfer system from one story to the next. All four side walls share the load of the roof. However, the floor loads are transferred down the two long walls via joists. The front long wall consists of *dachi appa* brick facing with mud mortar. The inner walls consists of *maapa* constructed in mud mortar. Most of the joints in the wall are filled with mud mortar.



Wall cracks seen in the interior and exterior walls of the *dyochhen*

The bond between the two successive layers of the brick in a course was found to be very weak. Most of the internal parts of the walls are open to accommodate different wall panels. The spaces are used by mice. The south wall has been strengthened outside with a bulk, as the inner wooden wall ties have rotted due to dampness at some places. The exterior front wall face shows a number of vertical as well horizontal cracks developed probably due to settlement and shear forces. Most of the diagonal shear cracks penetrate throughout the entire thickness of the wall. Also, some of the facing bricks are encrusted. This is probably due to excessive stress concentrating on the outer face of the wall at its narrower part. Also the bricks in the inner face were found to be loose, showing the load of the wall is not transferred at that part. The joints of the windows and doors show unequal movement of the different parts. Plumb line checking at various places shows the building to be in tilted in the front face.

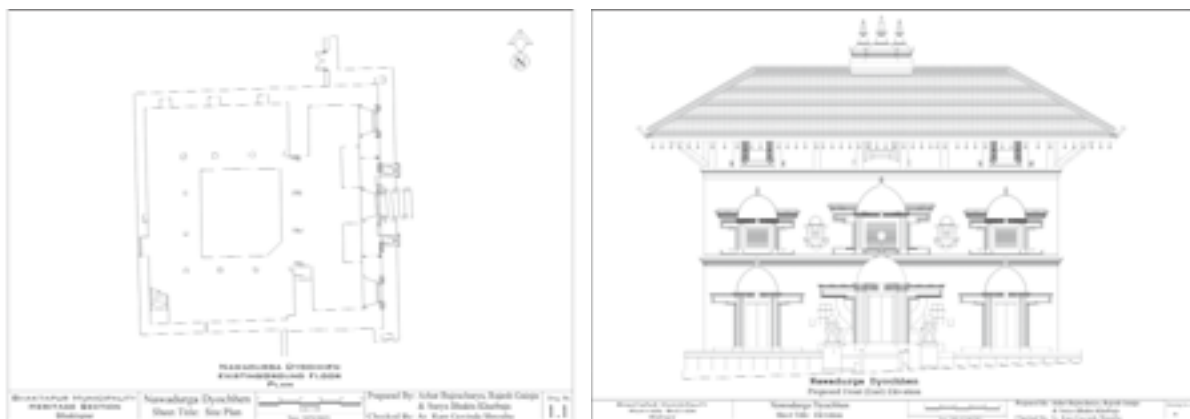
Some basic measurements

Floor height. The height of the eastern block is 3 m on the ground floor and the main shrine room, and that of the western block and second story of the eastern block is 2.15 m.

Roof overhang distance. The eastern block is 2 m, and the rest is 1 m.

Preparation of the technical drawings and estimate

In 2001, the Archeology Department formed a technical team of four members to measure the *dyochhen* in detail. They prepared drawings of the existing structure and a detailed estimate for the renovation work. In 2003, Bhaktapur Municipality formulated another technical team. They were the four technicians involved in the detailed measurement of the *dyochhen*. We prepared existing drawings of the main *dyochhen* again. We prepared proposed drawings of the *sattal* and kitchen *pati* for ordinary people for the back yard. The newly proposed *sattal* is space for the Navadurga Shrine, including the masks, at the time of renovation of the main *dyochhen*. Preparation of proposed drawings for the main *dyochhen* was difficult for us because we did not know the elevation of the back portion of the *dyochhen* before the earthquake, and the back portion of the existing structure is roughly made using salvaged material and not properly following traditional Malla style architecture.



Architectural drawings of Navadurga Dyochhen

For this reason we called a committee meeting at the local ward level. I asked the local people “Is there any evidence for the back portion of the building? Do you have any old photographs? What do you know about the back portion of the *dyochhen*?” We discussed with this users’ committee about that portion of the elevation, but no one was able to say what it actually looked like. Then remembering all these things I began looking for an appropriate architectural façade for this portion. I found a good example in the same building that could help restore the lost part. I decided to design the back wing like that of the inner courtyard which displayed the old façade, designing the back portion of the courtyard’s west and south wings in the gallery system of the north wing on both the ground



Existing and proposed south elevations of Navadura Dyochhen

and second floors, and placing lattice windows in the first floor façade. The completed design was shown to users' committee and the municipal authorities. The design was approved. With the help of the approved design and drawing we prepared a detailed plan and cost estimate. The total cost estimate of this work was 10,104,819.35 Nepalese rupees (about \$144,354.56).

Main points of the renovation proposal

The focus of the renovation can be summarized as follows.

- ◆ Renovation should be done with reference to detail documentation and records.
- ◆ *In situ* reconstruction of the main east portion of *dyochhen*.
- ◆ Construction of the remaining portion of the *dyochhen* with the approved new design.
- ◆ Maximum reuse of carved items of the *dyochhen*.
- ◆ Decayed wooden structural elements are recommended to be replaced with new sal timber.

Renovation work on Navadurga Dyochhen: Implemetation Phase

Work started from the west back courtyard by dismantling the backyard hut (*tahara*) and constructing a *sattal* to place the shrine and Navadurga masks from the main *dyochhen*. After dismantling the existing *dyochhen*, the foundation stone-laying ceremony was performed by Mr. Pancha lal Banbala, the oldest of the Navadurga custodians. Then construction was started from the foundation.

The renovation work was carried out with the help of the users' committee which was established for the renovation of Navadurga Dyocchen. All proposals with technical drawings were studied by the committee with help of the architect and overseer from the municipality, who also implemented the work as instructed by them. The users' committee was funded by the municipality. They also collected donations from devotees throughout the country. Besides monetary donations, many local people participated in the renovation of their most powerful goddess's Navadurga Dyochhen as a volunteers.



Renovation work going on at the ground floor

Major challenges faced in renovation work of the dyochhen

The challenges encountered during the work can be summarized as follows.

- ◆ Storage of shrines from the main building during restoration work. This was a problem since the building had to be repaired from the foundation up and there was no proper place to enshrine the deities who have to be regularly offered worship.
- ◆ Strengthening of the foundation was required.
- ◆ The back portion of the building neither survived in original form, nor followed traditional style.

These challenges were met in the following ways.

- ◆ In order to transfer the shrine from the existing main building to another place, the users' committee called a meeting with the custodians of the deities, and with devotees. The meeting came up with the solution of building a new temporary shrine house in the backyard.
- ◆ To strengthen the foundation, the foundation strips were given transverse support by

extending them to adjacent strips after consultation with structural engineers.

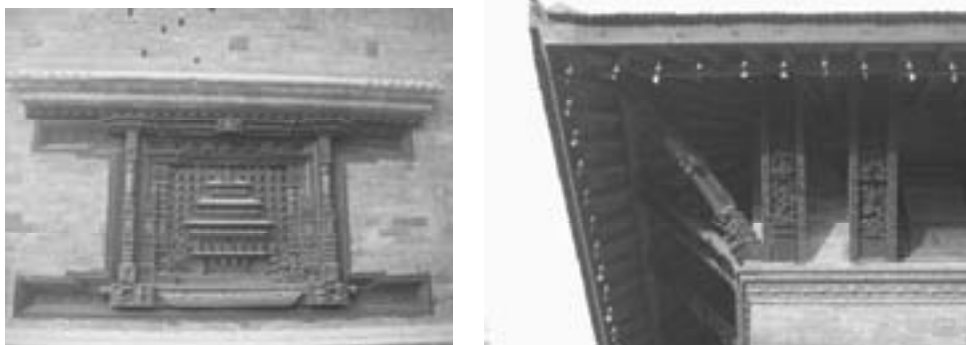
- ◆ Regarding uncertainties about the architecture for the back portion of the building, I requested local people to find photographs related to this building. But no such evidence was available, so we started to study the remaining original portions of the building. I found good examples that could help to restore the lost part of the same building. I decided to design the back wing like that of the inner courtyard that displayed the old façade, designing the back portion of the courtyard's west and south wings in the gallery system of the north wing on both the ground and second floors, and placing lattice windows in the first floor façade. The completed design was approved by the users' committee and municipal authorities.



Newly constructed *sattal* for the shrine and Navadurga masks



Navadurga Dyochhen during the renovation phase



Maximum use of old carvings with new timber supporting struts

Main reasons for decay and damage of wooden members of dyochhen

General problems of traditional Newari style buildings are rainwater leakage from the roof, which results in damage to the wooden rafters and then the entire structure, because of lack of regular maintenance of the *jhingati* roof. This problem was also seen in this *dyochhen* before renovation.

Other reasons for decay and damage found at this *dyochhen* are as follows.

- ◆ The inner and outer frames of the doors and windows on the ground floor were damaged from dampness from the ground.
- ◆ Columns and corner posts were damaged by dampness from the ground, and rainwater that splashed onto the bases of their foundation stones.
- ◆ Joists, wall plates, and inner wooden tie members were decayed at points of contact with the mud walls.
- ◆ Fungal growth, encouraged by the presence of moisture.
- ◆ Most timber members were damaged by insects such as beetles that create holes in the timber.
- ◆ Most of the ancient timbers had been attacked by termites.

Problems in conserving traditional Newari style wooden structures in their present condition

- ◆ Timber is the main load-bearing element of traditional buildings, which cannot be replaced by other materials.
- ◆ Timber is a material which can be subjected to many decaying processes.
- ◆ Timber components are often used over large spans and these are continuously subject to various stresses and strains.
- ◆ The long and large-sized timber members used in monuments are difficult to find in the present market.
- ◆ Because of the lack of timber, a conservation project may take a long period which delays the target time.
- ◆ There is also a scarcity of skilled craftsmen for the conservation of ancient timber structures, because of a lack of training in traditional as well as modern techniques of conservation.



Metal pinnacle (*gajur*) support (*bhangī*) and wooden planking before *jhingati* laying on the roof



Navadurga Dyochhen in the renovation phase



Outer and inner elevations of Navadurga Dyochhen after renovation

Conclusions

The renovation of Navadurga Dyochhen is a great example of excellent work done by Bhaktapur Municipality with the help of the users' committee and huge local participation. The successful completion of this work proves that local craftsmen are still capable of renovating traditional structures using traditional materials and technology.

By conducting such renovation work, Bhaktapur Municipality would like to transmit traditional technology from generation to generation. Accordingly the Municipality is giving wood carving training to the new generation every year. The Municipality is also giving preference to sharing our own technology with other countries of the world. It will support both traditional and new technology for the conservation of wood, according to the nature of the project.

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New Zealand

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Risks and Remedies for Cultural Heritage Protection and Restoration of Wooden Heritage Structures in New Zealand

Introduction

This report has been prepared for the Preservation and Restoration of Wooden Structures Training Course (Asia/Pacific Cultural Centre (ACCU) for UNESCO 2011). The report draws on the author's experience while employed by the New Zealand Historic Places Trust Pouhere Taonga (NZHPT) for the past thirteen years. The report provides a brief introductory context within which the conservation of wooden structures can be discussed: the threats to and possible solutions for the long term conservation of historic wooden structures in New Zealand is a particular focus. The report focuses mainly on wooden buildings and the issues facing their conservation and restoration.

The Broader New Zealand Context

Wooden structures in New Zealand have resulted from both indigenous and European settler influences. New Zealand was settled some 800 years ago by Maori, recognised as the indigenous people of *Aotearoa* (New Zealand) who have thought to have arrived from East Polynesia. According to Maori oral traditions a migration known as the 'Great Fleet' of seven *waka* (canoes) is said to have arrived in Aotearoa circa 800, bringing the ancestors of the Maori people (McKinnon, 1997). *Waka* affiliations and *whakapapa* (genealogy) are important to Maori delineations of the *iwi* (tribes) and definitions of inter-tribal relationships. The various *iwi* spread throughout the country in kinship-based extended networks. Settlements, both permanent and transitory, were constructed using available resources, most of which were of perishable material. Hence there are few physical remains of wooden structures dating from the Maori settlement of New Zealand.

Europeans first arrived in New Zealand from around 1642 and began to formally settle from 1830 (McKinnon 1997; Shaw, 1997; Stacpoole, 1976). The majority of the settlers during this early period were from Britain. Following the signing of the Treaty of Waitangi in 1840 between Maori and Queen Victoria, New Zealand became a Colony of Britain and part of the Commonwealth. The years that followed saw substantial land purchases by companies for newly arriving settlers. The small port settlements in the Bay of Islands, Auckland, Wanganui, Wellington, Nelson, Lyttelton and Dunedin

soon became thriving centres. Dependent upon arrival on the knowledge of local Maori, trade featured prominently although relations were not always friendly. Some iwi willingly sold land and continued trading with Europeans during the 1850s, but other Maori began to fear the loss of their customs, territory and *mana* (dignity), leading to the New Zealand land wars breaking out in 1860 in the North Island (McKinnon 1997, Salmond, 2010). By 1858 non-Maori outnumbered Maori, and relations between the races were permanently altered with the customs of the new arrivals taking prominence.

The cities and provincial centres have continued to grow, with residential, civic, commercial and religious buildings, and infrastructure now dominating the landscape. New Zealand has a strong pastoral history which has led to a wealth of structures associated with farming activities.

New Zealand has a current population of over 4.4 million (Statistics, 2011) and a land area of 267,710 square km. There are 5,500 entries in the NZHPT Register of Historic Places, Historic Areas, Wahi Tapu and Wahi Tapu Areas, which comprise some 10,000 structures. Many of these are wooden, reflecting the most prevalent building material available in New Zealand.

New Zealand's Wooden Structures

New Zealand had a rich stock of hardwood trees which were ideal for use as building materials. The great forests of New Zealand contained many conifers (hardwood pine species): *kauri*, *rimu*, *totara*, *matai*, *tawa*, *miro* and others. Maori used hardwood timber for posts, ridge poles and exterior walls, slabs of trunks of *ponga* (tree ferns) for interior walls, and other plant material such as rushes, *toetoe* (a tall grass) and bark for thatching, which was often attached to battens made of *manuka* (a shrubby tree). In addition, *raupo* (reeds), *ti* (Cabbage tree) and *harakeke* (flax) featured as strapping and in the decorative woven work such as *tukutuku* panels of the interior (Salmond, 2010; Shaw, 1997).

While timber was a locally available building resource, so too were sod or cob, stone and clay for brickmaking, and in some parts of the country these materials became the primary building stock. The decision on what construction materials to use was not only linked to availability – events also played a major part. For example, early settlers to Lyttelton chose first to build in stone, but damage following an earthquake led to a desire to rebuild in timber. However, a major fire destroyed most of the town in 1866, and stone became popular again.

The European settlers brought with them knowledge of European architecture of the time. Using primarily local materials of stone and timber they set about building modest huts (often with the help of Maori), more substantial houses, followed by churches and other religious buildings, schools, civic buildings, commercial premises, and structures associated with transport and other infrastructure. Wealthier settlers imported prefabricated houses from Britain (and later from California), plus

building parts such as windows (Salmond, 1986 and 2010). The European settlers made use of the hardwoods in great quantities for the structural framing and cladding of their buildings.

Types of Wooden Maori Traditional Structures

The primary traditional Maori wooden structures included within the context of a *marae* (community meeting place) are the *wharenui* (carved meeting house), *pataka* (storehouse), and *pou* (commemorative carved posts). Within the *kainga* (village) or *pa* (fortified village) are *whare* (houses) for family living.

Wharenui. The wharenui (carved meeting house; also known as the big house, sleeping house or simply carved house or meeting house) is the main building within the marae, often with elaborate carved (or in some cases painted) bargeboards and carvings throughout the interior of the house depicting the tribe's ancestral heritage. The building itself is deeply symbolic, representing the ancestor in itself. A single gabled roof is supported by 3 to 5 posts and low walls. Wharenui often have an enclosed verandah to the front of the large single room used for gatherings and sleeping.

Pataka. This storehouse is a small building ranging in length from 1 to 7 metres raised, on one or more posts to protect the food contents from *kiore* (rats), and often adorned with elaborate carvings. There are very few pataka remaining today.



Figure 3: Pou whenua, East Cape, NR Jackson, 2005



Figure 1: East Cape, NR Jackson, April 2011



Figure 2: McManaway's Pataka and Waka. Jo Wylie NZHPT 2004

Pou. These are commemorative carved posts, usually as a single item but sometimes as a more elaborate structure, that are commemorative or used as markers.



Figure 4: Unidentified Māori group alongside a raupo whare c. 1870s, Alexander Turnbull Library, Wellington, ID: 1/2-003135-F

Whare. These houses are built with perishable materials such as raupo reeds used for thatching, lashed with flax or ti to a timber frame of wood of the manuka tree, nikau, or ponga trunks. Due to the vulnerability of the building materials there are no authentic examples remaining today. A recent archaeological discovery, however, uncovered what is thought to be a ponga whare at Te Aro Pa in Central Wellington. However, only a small portion of the base of the walls remains.

Types of Wooden European Structures

There is a variety of European wooden structures in New Zealand. Timber structures included huts, raupo houses, weatherboard houses, more substantial homesteads, churches and other religious buildings, schools, civic buildings, commercial premises, and structures such as bridges associated with transport and other infrastructure. Wealthier settlers imported prefabricated houses from Britain (and later from California), plus building parts such as windows. (Salmond, 1986 and 2010). The European settlers made use of the hardwoods in great quantities for the structural framing and cladding of their buildings. Thatching was rare for European buildings (except in the very early period when raupo huts were common) and most certainly after 1900 had roofs of shingles, slate, tile or more commonly corrugated iron (Salmond 1986, Shaw, 1997).

The most common wooden structures in New Zealand are residential buildings, ranging from small miners' huts to cottages, from bungalows to larger homesteads. Timber was a plentiful local resource, a relatively cheap building material, and easily accessible. The two-roomed hut became the four-roomed workers' cottage with a lean-to kitchen at the rear. Others had two storeys from the start, or were added to over time to become substantial homes.

New Zealand's houses were greatly influenced by the overseas styles of Britain and America. Once patterns and mouldings for skirtings, architraves, fretwork and other decorative features were readily available by the late 1800s, houses quickly adopted Colonial or Victorian styles. For example many houses had a verandah, derived from the British Colonial style in India to cool the exterior-facing rooms, despite New Zealand's climate never reaching India's high temperatures.

Of course structures for other uses, such as civic, commercial, and religious buildings, were also constructed of timber. While heavily influenced by European and American styles, peculiarities were

ripe in New Zealand as in other colonies. For example, in some cases timber was made to mimic the role of stone with quoins, false buttresses, and even texture applied with paint (Stacpoole, 1976).

The following provides a summary of the types of European wooden structures.

Examples of Residential Buildings

Raupo houses. Popular with the very early settlers, these were often temporary houses used while a more sustainable house was built. Raupo was a good insulator but very susceptible to fire, and this fact led to the first building regulations in New Zealand banning the construction of such buildings for European inhabitants in built up areas. Due to the perishable materials, there are no authentic examples remaining today (Iasscs, 2005).



Figure 5: Raupo house near New Plymouth c1860 Alexander Turnbull Library, Wellington, ID: 1/2-011751-F

Cottages in Arrowtown, Otago. Gold was first discovered on the Arrow River in 1862 by William Fox. In the same year the area was opened and miners poured into the region, many from Victoria, Australia. During the goldrush years the total population of the Shotover and Arrow districts was estimated at about 3,000. In the early years, accommodation for the miners consisted merely of calico tents, but this gradually changed with the erection of more permanent structures of timber and iron. At the



Figure 6: 61 Buckingham St, Arrowtown, NZHPT Online Register

end of 1864 Arrow contained 19 wholesale and retail stores, 10 hotels and several private dwellings. Buckingham Street still features a significant group of heritage buildings dating back to the 1870's, including a former bank and the original Oddfellows Lodge (both constructed of stone), and a number of small timber miners' cottages (NZHPT Online Register).

The Cuddy, Te Waimate Station, Timaru. The Cuddy was built in 1854 by the Studholme brothers, who established a number of large sheep runs after taking up residence in Te Waimate. The Cuddy was based on English precedents but adapted New Zealand materials as a temporary measure. The walls are constructed of vertical totara slabs, with cob pugging on the inside. Snowgrass was used for the original thatched roof, however it was later replaced with corn straw thatch. The two-roomed cottage is architecturally and historically valuable as a charming example of early settlers' ingenuity in house building before dwellings of sawn timber could be built (NZHPT Online Register).



Figure 7: The Cuddy – Exterior, Timaru, NR Jackson, 2010



Figure 8: The Cuddy –Interior, Timaru, NR Jackson, 2010

Hulme Court, Parnell, Auckland. Hulme Court was built in 1843 for Sir Frederick Whitaker, later to become Premier of New Zealand. It is in the Regency style and features a hipped roof, elegantly trellised verandahs and shuttered sash windows. The house has 30 cm thick bluestone walls which have since been plastered over, and a slate roof. Its architect is unknown. Despite some interior alterations over the years Hulme Court remains as one of the best examples of Regency architecture in New Zealand, and almost certainly the finest built in permanent materials. It is the second oldest surviving house in Auckland and the oldest documented dwelling still standing on its original site (NZHPT Online Register).



Figure 9: Hulme Court, Parnell, Auckland, NR Jackson Jul 2011

Antrim House, Wellington. Built in 1904, Antrim House was the home of the successful Wellington businessman Robert Hannah. It has architectural significance as a fine example of an Edwardian Italianate style house designed by a notable architect, William Turnbull. It is a prominent landmark, particularly as it is one of only a few houses left in what was once a predominantly a residential street, and it is still surrounded by its grounds and trees. It is the national office of the New Zealand Historic Places Trust (NZHPT Online Register).



Figure 10: Antrim House, Wellington, Grant Sheehan 2009



Figure 11: Antrim Stables and Glasshouse, NR Jackson 2009

Examples of Agricultural Buildings

Te Waimate Woolshed, Te Waimate Station, Timaru. Erected by Michael Studholme and his brothers in 1855, Te Waimate Woolshed is still regularly used. It is of interesting construction, originally having a totara roof over sarking before roofing iron was available. A lot of the timber is adzed, and all the inside timber is pit-sawn totara. The railings are of manuka, preserved by the grease of sheep's wool. It can hold 1,000 sheep during shearing, and the shorn sheep can be kept inside in counting-out pens in wet weather. At one time there were 22 machine stands, eleven on each side of the shed, but today there are only three. One of the internal features is the old Farmers screw wool press, a huge and historic piece of machinery (NZHPT Online Register).



Figure 12: Te Waimate Woolshed exterior, NR Jackson 2009



Figure 13: Te Waimate Woolshed interior, NR Jackson 2009

Examples of Civic and Commercial Buildings

Old Government Buildings, Wellington. These government buildings, completed in 1876, are a remarkable example of timber construction designed by New Zealand's first and only colonial architect, William Clayton, in the classically-derived Italian Renaissance revival style, much in favour for government buildings throughout the British Empire. Bids were originally solicited for both concrete and timber. Due to the sheer cost of concrete, it was eventually decided to build in timber



Figure 14: Old Government Buildings, Geoff Mew, 2001

alone, mimicking stone construction. The H-shaped building included two staircases, eight vaults, 143 rooms, 126 fireplaces, 22 chimneys, two hydraulic lifts, 64 toilets, eight verandahs and seven porticos. The restored building is a key feature in the Government Centre Conservation Area, an historic reserve in its own right, and a popular tourist destination (NZHPT Online Register).

Shand's Emporium, Christchurch. This building is significant as one of the oldest commercial buildings in central Christchurch, and unlike other timber buildings of that era, Shand's was never replaced by a more substantial stone or brick building. Erected c1860 by John Shand, a successful farmer and businessman, the design was simple: a utilitarian two-storeyed timber building, rectangular in plan. It was originally divided into five offices, two downstairs and three upstairs, with a gable roof of shingles (from Tasmania), later replaced by corrugated iron. Although modified over the years to accommodate its various tenants, the building's layout remains essentially unchanged. In 1977 it was refurbished to house a variety of small shops. In the late 1970s the New Zealand Post Office proposed to build a new telephone exchange would have seen Shand's demolished. However, a community campaign to save



Figure15: Shand's Emporium, Christchurch, NR Jackson 2011



Figure16: Revealed features following demolition of an adjacent building, NR Jackson 2011

the building, with many people signing the petition, was successful (NZHPT Online Register). In 2010 and 2011 a series of earthquakes in Canterbury led to the adjacent brick heritage building being demolished, thus revealing parts of Shand's Emporium that were previously unseen.

White Hart Hotel, New Plymouth.

Built in 1886, the White Hart Hotel is one of New Zealand's finest hotels built of timber. The earliest section is now largely hidden by the extensive balconies. Occupying a corner site, approximately half the current floor area adjoins the façade, which includes round-headed windows on the ground floor and square-headed ones on the second. A balustraded parapet completed the design. Extensions in 1900 increased the hotel to its current



Figure17: White Hart Hotel, Elizabeth Cox, NZHPT 2001

size. At the time, the famous White Hart statue was erected on the corner above the parapet. The balconies were added in 1909. Running the extent of the hotel's facade the balconies and bull-nosed verandah enhance one of New Plymouth's best known landmarks.

Immigration Barracks, Somes Matiu Island. Originally built for the influenza pandemic of 1919, these were subsequently used to accommodate internees during World War II. Half of one of the barracks remains today (Department of Conservation Website).



Figures 18, 19: Immigration Barracks, Somes Island, NR Jackson 2011 and historic photo, Department of Conservation website accessed 17 Jul 2011

Religious Building Example

Old St Pauls, Wellington. This notable church, constructed in 1866, is a fine example of nineteenth century Gothic Revival architecture adapted to colonial conditions and materials. Designed by the Reverend Frederick Thatcher, then vicar of St Paul's parish Thorndon, the first Anglican cathedral of Wellington is considered his best work. The interior roof structure and stained glass windows are particularly notable (NZHPT Online Register).



Figures 20 & 21: Old St Paul's, Wellington, Interior, NZHPT Website Old St Paul's, Wellington, Geoff Mews NZHPT 2001

Examples of Structures Associated with the Military, Law and Order

Blockhouse, Wallaceville. An American-style blockhouse, one of very few of its type remaining in New Zealand, was erected in 1860 in response to a fear held by local settlers that the conflict between Maori and the Crown, over the disputed sale of land at Waitara, Taranaki, would escalate.

A double-skin timber-clad frame with shingle infill was constructed to provide protection against rifle fire. Loopholes were also built for defenders to return fire. The blockhouse was originally surrounded by a much larger defensive earthwork (NZHPT Online Register).



Figure 22: Wallaceville Blockhouse and detail of gun hole, NZHPT Website accessed 1 Aug 2011



Figure 23: Lock Up, Ophir, NR Jackson 2009

Lock Up, Ophir. A simple, weather-boarded two-celled jail in Central Otago, built c1882, was thought to have been originally located between the courthouse and policeman's house in the small town of Ophir. It was relocated to the nearby town Omakau in 1939 when a new police station was built. In 2002 it was returned to Ophir, and now sits behind the Ophir Post Office.

Example of Infrastructure

Arahura Combined Road and Rail Bridge. Situated on a state highway between Greymouth and Hokitika, the Arahura Combined Road and Rail Bridge was formerly one of a only a handful of combined road-rail bridges still in use in New Zealand.



Figure 24: Arahura Combined Road Rail Bridge, NZHPT Register - Lost Heritage accessed 20 Aug 2011

The bridge could take both motor vehicles and rail carriages, mainly freight trains, but eventually the arrangement was considered an impediment to traffic flow. Registered as a Category 1 historic place, being a place of special or outstanding value, the bridge was replaced with separate modern bridges. A small portion of the bridge remains, interpreted for visitors.

Heritage Conservation Principles

In considering changes to heritage places, the NZHPT is guided by the purpose of the *Historic Places Act 1993* in assessing the impact of any changes to the place. These principles are:

- Historic places have lasting value in their own right and provide evidence of the origins of New Zealand's distinct society.
- Taking into account of all relevant cultural values, knowledge and disciplines.
- Promoting the least possible alteration or loss of material of cultural heritage value.
- Safeguarding the options of present and future generations.
- Ensuring decisions are well researched, documented and recorded.
- Observing the principles of the Treaty of Waitangi and the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, wahi tapu, and other taonga.

The conservation principles of the ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value (ICOMOS NZ Charter 2010) are also relevant to work carried out at heritage places. In particular:

1. The purpose of conservation is to care for places of cultural heritage value through retaining and revealing heritage values, and supporting ongoing meanings and functions of places in the interests of present and future generations.
2. Conservation of a place should be based on an understanding and appreciation of all aspects of its cultural heritage value, recognising all relevant values and utilising all available forms of knowledge about the place.
3. Recognising and providing for the indigenous cultural heritage of tangata whenua relating to whanau, hapu and iwi.

4. Conservation should be subject to prior documented assessment and planning, including a conservation plan.
5. Conservation maintains and reveals the authenticity and integrity of a place, respecting surviving evidence and knowledge from all periods, and involves the least possible loss of heritage.
6. Work should involve the least degree of intervention consistent with the principles of the Charter, and avoid removing heritage fabric.
7. Invasive investigation should be carried out only where it provides primary evidence not available through other methods, minimising the disturbance of significant fabric and being fully recorded.
8. While recognising the need for heritage places to serve a useful purpose, any new use should be compatible with the cultural heritage values of the place and should have little or no adverse effect on the cultural heritage value.
9. Where the setting of a place is integral to its cultural heritage value, that setting should be conserved with the place itself.
10. Relocation is not a desirable outcome and is only acceptable in exceptional circumstances if the site is in imminent danger and if all other means of retaining the structure in its current location have been exhausted.
11. All aspects of conservation should be fully documented to ensure that this information is available to present and future generations.
12. Systematic recording should occur prior to, during, and following any intervention.
13. Fixtures, fittings and contents that are integral to the cultural heritage value of a place should be retained and conserved with the place, and conservation work should be carried out by specialists.

When dealing with changes to wooden structures it is important to retain as much authentic heritage fabric as possible, while accommodating the needs of the owners who care for the place. The extent of change considered permissible is often determined by the heritage significance of the place and the reason or need for the change to occur. Less change is generally tolerated for places of high heritage significance, except where necessary to ensure the long term conservation of the place.

Threats to Wooden Heritage Structures

Wooden structures can be modified in many ways, through either intentional change, gradually over time, or due to a sudden catastrophic event. Intentional alteration includes making buildings larger by adding to the structure, adapting the building for a new use, demolishing to make way for new structures or a new use for the site, or altering to suit the current owner's wishes. Gradual deterioration can occur through a lack of maintenance, and when buildings are not occupied neglect can result,

causing in some cases irreversible damage and ultimately leading to the destruction of the place (dilapidation beyond the point of repair). Sudden events such as fires, floods, landslips and earthquakes can cause damage to and destruction of wooden structures from which some may not be able to be restored. In some cases, a range of threats rather than just one can lead to heritage loss.

Alteration and Development

Perhaps the most common changes to wooden buildings relate to alterations, additions, redevelopment and change of use (i.e. from a domestic home to a commercial site). Such changes should not detract from the existing heritage values of the place and should minimise loss of heritage fabric. In New Zealand, District Councils regulate changes to heritage places listed in their Council planning schedules. Listing in a schedule often requires an owner to apply for resource consent to make any changes, and also requires that NZHPT is consulted as an affected party thereby allowing NZHPT to comment on the resource consent application.

Maintaining continuity of use or new uses ensures a building retains liveability and utility (McClean, 2010a). NZHPT encourages buildings to be used as this increases the likelihood that the place is cared for. However, where total loss by way of demolition or relocation proposals are not normally considered acceptable, other options are vigorously explored. However, as the District Council is the ultimate decision maker NZHPT recommendations are not always followed, leading to loss of heritage.

Except for relocation and demolition, change of use proposals often involve considerable changes to a place. Heritage conservation principles encourage consideration of appropriate uses for a place when the original use is not considered to be viable. It is better to fit the use to the physical constraints of the building while recognising that certain elements of the building may have greater heritage value than others, rather than making wholesale changes to fit the desired new use as this will lead to greater loss of form and fabric.

Some Councils encourage good conservation practice by offering grants and waiving consent fees for proposals that meet conservation standards. NZHPT has produced a range of guidelines to assist owners in making appropriate changes to their heritage properties.

Maintenance and Neglect

‘Demolition by neglect’ is the final undesirable outcome of heritage places that are not cared for by their owner and is generally the term used when the neglect or abandonment is intentional, such as when the owner wishes to redevelop the site but is unable to get permission to remove a heritage structure located there. An example of this occurred with respect to a row of cottages in Arrowtown (refer to Figure 6, above), which were bought by the district council through an agent, as the owner was unwilling to undertake any maintenance on the cottages preferring instead to redevelop the site, despite the Council declining consent to do so (Wallace, 2007).

Lack of maintenance for other reasons, such as when there is no economic return for a place or the current owners are unable to afford maintenance work, can also lead to the demolition or destruction of heritage structures.

In 2010, two NZHPT Register entries were destroyed due to their poor condition: a building was destroyed by wind (blown over) and a bridge was washed away in a flood. Regular maintenance of buildings is needed to ensure the heritage fabric does not deteriorate especially to the point where the structure becomes unstable. Rot can increase dramatically due to poor paint finishes and where water egress has occurred. Cyclical maintenance plans which outline the tasks and timeframes for regular work are encouraged by NZHPT to assist owners to care for places. There is also a small pool of district and national funds available to assist in conservation work, but often this is for work that is over and above general maintenance, meaning the funding of conservation work that could have been prevented by regular maintenance. There is no regulation in New Zealand which requires an owner to maintain a historic place.

Fire

Fire is perhaps the greatest threat to wooden heritage structures in New Zealand. Fire can be caused by natural events (i.e. lightning strike), arson (especially in the case of unoccupied buildings), electrical faults, work on a place including conservation work, poor housekeeping or carelessness (McClean, 2010). In New Zealand about 15 heritage buildings (of which one or two may be on the NZHPT Register) are destroyed each year as a result of fires (NZ Fire Service, 2009). Two heritage places were lost to fires in the last twelve months, a brick flour mill in Ashburton and a timber courthouse in Kaikoura.

In 2004, BRANZ with the NZHPT and the NZ Fire Service conducted a major research project on fire protection of New Zealand's traditional Maori buildings. The results found a high incidence of marae fires, with an average of 'five reported fires a year.' Fires on Maori buildings can be particularly severe, because of the flammable characteristics of the surface linings in comparison to standard building materials. The research report recommended improving fire safety measures at marae with the installation of a second exit (where there is only one), adequate exit signage, the preparation of a fire safety action plan, and the installation of automatic fire alarms, such as smoke detectors, in areas used as sleeping accommodation (Duncan, 2004).

In remote areas, buildings can literally burn to the ground before the fire service can respond to assist. For heritage buildings (including Maori heritage) located out of urban areas the need for fire protection systems is obvious given the length of time a fire response unit could take to even get to the property, let alone put the fire out.

NZHPT advocates for fire protection systems to be installed in timber buildings to reduce the risk of catastrophic loss. While recognising the diversity of heritage buildings NZHPT considers all heritage buildings should have some basic fire safety measures. These will include:

- Evacuation and escape plans.
- Smoke detectors and alarm systems.
- Sprinkler systems.
- Fire extinguishers.

In addition, heritage buildings should have adequate insurance, security measures to protect against break-ins, arson, and should be smoke-free properties. Also, historic buildings in rural areas should be protected against wildfire (McClean, 2010).



Figure25: Sisters' of Mercy Convent, Reefton damaged by Fire, NZHPT, 2009

Smoke and heat detectors and alarm systems can be sufficient protection where there is easy access for a fire response unit. Fire sprinkler systems are better protection, but these systems are expensive and require regular maintenance and monitoring. Recently developed home sprinkler systems that are cheaper to install and maintain have still not been widely embraced. Where larger homesteads have been developed into commercial accommodations, there is regulation to ensure suitable fire protection systems are in place.

Heritage buildings can present special challenges for the development of fire safety provisions. There are two main challenges (McClean, 2010b):

1. Fabric and materials that are integral to the construction of a heritage building being of a highly combustible material or without sufficient fire-resistant barriers.
2. The design and installation of fire safety-related work that may adversely impact upon historic heritage values.

However, in most situations an acceptable solution can be found that both reduces the risk of fire damage while conserving heritage values.

Floods and landslips

Floods can cause damage to heritage buildings, and in severe situations lead to the total destruction of places. Swollen rivers can wash away bridges and heavy rainfall can create pooling of water and landslides.

Two wooden heritage places were damaged by floods in the last twelve months: a wooden bridge was swept away and destroyed, and a timber woolshed was hit by a landslide in the Hawkes Bay region.



Figure 26: Nga Pataka Wharenuī during flood clean up, Waipapa Marae, NZHPT, Conserving Marae Buildings brochure (undated)

In Porirua, one of Wellington's oldest remaining residences, the Taylor Stace Cottage, was relocated to higher ground to remove the risk of flooding. While relocation is not usually considered a conservation method, where a place is in imminent risk and no other alternatives are available, relocation can be supported. Indeed, Taylor Stace Cottage was also the recipient of a NZHPT Incentive Fund grant to assist the conservation work.

Earthquakes

The recent significant earthquakes in Canterbury during 2010 and 2011 have highlighted the immense risk to New Zealand's heritage structures, including those constructed in timber. At least 80 registered buildings have been or are highly likely to be demolished as a result of the earthquakes, being a loss of approximately 30% of registered places in Canterbury. In



Figure 27: Chester Street Houses, Christchurch, 2011, John Kirk Anderson, The Press

In the Central Business District the street the streetscape has changed dramatically with the loss of familiar heritage landmarks and even more non-heritage buildings. While damage to unreinforced masonry buildings has been a key focus with respect to earthquake prone policy work, it was surprising the amount of damage sustained by timber buildings. While not completely failing, many wooden buildings were damaged by earth movement and subsidence. Many structures became 'racked' from the lateral (side-to-side) movement. Particularly in buildings greater than a single storey, and especially where interior walls had been removed, the building was less able to withstand the movement (see Figure 27). In addition, buildings with brick party (shared) walls sustained damage

where the brickwork collapsed. Subsidence has also led to the demise of many buildings which are often unable to be repaired due to the lack of ground stability.

NZHPT supports earthquake strengthening to ensure historic buildings survive such events for present and future generations, and has been advocating for many years strengthening to 65% of the new Building Code. Where a change of use occurs the Building Code requirements are triggered and fire and earthquake strengthening work is often mandated. Councils also identify earthquake prone buildings and can require owners to strengthen or demolish, which can lead however to an unhappy juxtaposition of safety and heritage values.

Major earthquake strengthening work involves alterations to historic buildings. The careful design of alterations is important to avoid unnecessary loss of heritage values. Ensuring the least possible loss of cultural heritage value will involve retaining the surviving heritage fabric, respecting the historic design of the building, avoiding work that compromises or obscures heritage fabric, and making sure of the appropriate recording of new work (McClean, 2010a). Engineering advancements now mean that there is a range of potential strengthening schemes that can be considered for a heritage building. However, knowledge of the range of solutions is not widespread among the engineering profession, causing a professional development need to raise the skills of engineers working in this area (pers. comm. Clark, 14 July 2011).

In the recent Canterbury situation, insurance has been a particular issue relating to advocating the retention of damaged buildings that can be repaired, as many building owners are under-insured and are now faced with a gap between the amount of insurance payout and the cost of repair. Insurance does not provide protection from earthquake-related damage. Instead, insurance is a system that provides recompense to owners in the event of loss or damage. Adequate insurance cover is an essential aspect for heritage buildings to assist with the cost of recovery (McClean, 2010a).

There is a relationship between building damage and building maintenance in relation to earthquakes. Generally, well-maintained buildings will survive to a greater degree than poorly-maintained buildings (Clark, pers. comm. 2011). In fact, it has been estimated that some 50 percent of the damage that occurs in an earthquake may be attributed to lack of proper maintenance (McClean, 2009).

Earthquake strengthening of heritage buildings can involve significant costs for an owner or developer. Incentives are required to help rectify the market failure whereby the price paid for a property may not take into consideration the cost and need for strengthening. While some strengthening work can be spread over several years, assisting the ability to finance the work, in many cases the cost of strengthening is not offset in the short term with sufficient return for investment. Regulatory and non-regulatory incentives are needed – especially government policy giving incentives for strengthening of heritage buildings and also directing funding support from government and local authorities.

Conclusion

There are many types of wooden heritage structures in New Zealand, and many threats to their long term conservation. The recent significant earthquakes in Canterbury have highlighted the immense risk to New Zealand's heritage, including buildings constructed in timber. While there is considerable guidance with regard to minimising the adverse effects of change to heritage places, regulatory and non-regulatory incentives are needed to ensure heritage buildings are better protected from fire, flood, earthquakes, neglect and development.

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Philippines

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Conservation of Wooden Structures in the Philippines

Architecture in the Philippines is a reflection of the history and heritage of the country. The most prominent historic constructions in the archipelago are from the Spanish, Japanese, Malay, Hindu, Chinese and American cultures.

The pre-colonial architecture of the Philippines consisted of the *nipa* hut made from the natural materials, but there are some traces of large scale construction before the Spanish colonizers came, although not well documented.

During three hundred years of Spanish colonization Philippine architecture was dominated by Spanish culture. The Augustinian friars built large numbers of grand churches all over the Philippine islands.

During this period the traditional Filipino Bahay na Bato style for large mansions emerged. These were large houses built of stone and wood combining Filipino, Spanish and Chinese style elements. The best preserved examples of these houses can be found in Vigan, Ilocos Sur and Taal, Batangas.

After the Spanish American war the architecture of the Philippines was dominated by the American style. In this period plan for modern cities were designed, with a large number of art deco buildings, by famous American and Filipino architects.

At the end of the twentieth century modern architecture with straight lines and functional aspects was introduced. During this period many of the older structures fell into decay. Early in the twenty-first century a revival of respect for traditional Filipino elements in architecture returned.

THE NATIONAL HISTORICAL COMMISSION OF THE PHILIPPINES

The National Historical Commission of the Philippines (NHCP) was created by virtue of Republic Act 10086, dated May 12, 2010, described as “an act strengthening people’s nationalism through Philippine history by changing the nomenclature of the National Historical Institute into the National

Historical Commission of the Philippines, strengthening its powers and functions, and for other purposes.”

The main functions of the National Historical Commission of the Philippines are as follows.

- Conduct and support all kinds of research relating to Philippine national and local history.
- Develop educational materials in various media, implement historical educational activities for the popularization of Philippine history, and disseminate information regarding Philippine events, dates, places and personages.
- Undertake and prescribe the manner of restoration, conservation and protection of the country’s historical movable and immovable objects.
- Manage, maintain and administer national shrines, monuments, historical sites, edifices and landmarks of significant historic-cultural value.
- Actively engage in the settlement or resolution of controversies or issues relative to historical personages, places, dates and events.

The National Historical Commission of the Philippines is composed of five divisions.

- Finance and Administrative Division (FAD)
- Research, Publications and Heraldry Division (RPHD)
- Historic Sites and Education Division (HSED)
- Materials Research Conservation Division (MRCD)
- Historic Preservation Division (HPD)

Among these, the Historic Preservation Division has responsibility for the following.

- Survey and documentation of historic sites and structures.
- Declaration of historical sites and structures as historic sites, monuments, shrines and landmarks.
- Preservation, restoration and protection of historic monuments, shrines and landmarks.
- Maintenance of National Registry of Historic Structures in the Philippines.
- Provision of technical assistance on historic preservation.
- Conduct scientific experiments and research works relating to the conservation of movable objects.

RESTORATION OF IMMACULATE CONCEPTION PARISH CONVENT AND MUSEUM

The Church of Immaculate Conception in Baclayon, Bohol is one of the oldest churches in the Philippines. It has been declared a National Historical Landmark by the National Historical Institute in 1994. It is both an architectural and historical gem that bears the rich Spanish colonial legacy in



Figure 1: Church

Baclayon and shares the unique characteristics of other exceptional colonial churches in the Philippines. Earthquake baroque architecture is reflected in its intricately crafted coral stone masonry construction, extensive use of flying buttresses, and independent construction of the bell tower. Every detail interprets the style in local flavor.



Figure 2: Convent

The Immaculate Conception Parish Convent and Museum stands beside the back portion of the Church of Our Lady of Immaculate Conception. The building is an authentic Bahay na Bato structure, with materials and artwork similar to the church, and contains original building materials. Authentic coral stones, adobe and Philippine hardwood compose the structure. Through time, the building has undergone a series of interventions from various occupants, but still the original materials are still intact. The museum is

housed inside the old convent, which contains an ivory statue of the crucified Christ looking towards heaven, a statue of the Blessed Virgin, said to have been presented by Queen Catherine of Aragon, relics of St. Ignatius of Loyola, old gold embroidered ecclesiastical vestments, books with carabao skin covers, and librettos of church music written in Latin on sheep skins. Here you can also find the *cuadro* paintings made by the Filipino painter Liberato Gatchalian in 1859.

Location of the Project

The Immaculate Conception Parish Convent and Museum is located at the Town of Baclayon beside the famous Church of Immaculate Conception (Baclayon Church) and is six kilometers away from Tagbilaran City, Bohol. The town of Baclayon still retains vestiges of this once important craft in the adornment of old houses and buildings. The convent features fine woodworks done by local artisans. The interiors and exteriors of the convent have preserved several intriguing relics and artifacts which can be traced to the Spanish colonial era.



Figure 4: Bohol Island



Figure 3: Map of the Philippines

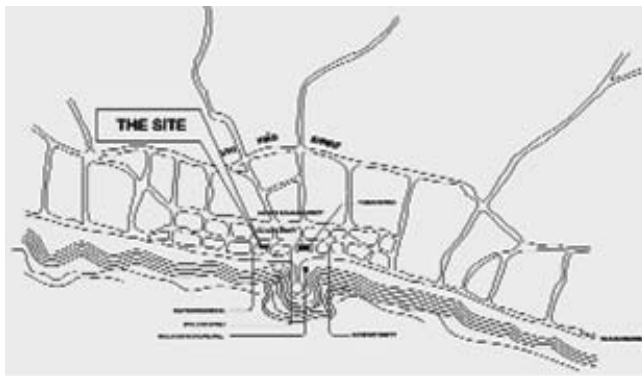


Figure 5: Location Plan of Baclayon, Bohol

Significance of the Conservation

The Church of Immaculate Conception is a historic religious edifice comprised of groups of historic structures that reflect the Spanish colonial past of the town of Baclayon. Preserving the historic structures through a macro-perspective shall not only protect the cultural heritage, but also promote a guided path toward its total development.

The restoration of the church's ancillary structures will be beneficial for every Filipino. Moreover, the convent is part of the church, and part of the macro-structure of a declared National Historical Landmark. The restoration of the structure will maintain the architectural landscape and preserve of the Spanish Colonial character of the place. As part of the historic center, composed of the church, plaza, casa tribunal, forts, and arrays of *bahay na bato*, the convent is deemed important.

Protection of this religious structure is a significant element in the preservation of important architectural legacies, created by the craftsmanship and interpretation of the foreign Baroque style by the Filipino people.

Project's Goals and Objectives

It was the objective of the National Historical Commission of the Philippines to restore the Immaculate Conception Parish Convent and Museum and save them from further deterioration, while at the same time carefully retain the original architecture and the character of the convent. The convent was envisioned by the NHCP to be a model of restoration for other colonial houses in Baclayon. The convent is a source of historical and cultural pride among Baclayon's citizenry and a tribute to the builders, owners, artist, and craftsmen who first conceived and developed this structure to become an object of pride for the residents of Baclayon.

Conservation Program

In 2010, the National Historical Commission of the Philippines' technical staff undertook a survey and documentation of the Immaculate Conception Parish Convent. These activities included the following.

- Preliminary research
- Photographic documentations
- Visual inspections
- Assessment (basic consideration)
- Existing local ordinances and guidelines on the preservation and conservation of Baclayon
- Local and National building code requirements
- Preparation of restoration plans (in coordination with the Baclayon Parish Pastoral Council and the Local Government Unit of Baclayon, Bohol)

As a result of these investigations, the physical condition of the structure was found to have the following problems.

- Termite and dry rot infested wooden parts in major and minor structural members (Figure 5)
- Misaligned and dismantled capiz windows, shutters and wooden grills (Figure 6)
- Deteriorated ceiling sheets, wattle and daub wall plaster (Figure 7)
- Sagging and rotten floors (Figure 8)
- Chipping in the paint on walls and ceilings (Figure 9);
- Missing, dismantled and deteriorated wooden balusters at the stairs (Figure 10)
- Deteriorated and damaged wooden partitions and doors (Figure 11)
- Misaligned doors (Figure 12)



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10

The causes of the deterioration thus found at the Immaculate Conception Parish Convent includes many factors, which can be grouped into five broad categories.

1. Direct exposure to the elements and extremities of weather.
 - Discoloration
 - Decay of painted wooden walls
 - Weakening of plaster and mortar of the adobe walls
 - Biological growth
2. Structural defects.
 - Sagging and weakening of girts and floors
 - Weakened structural shear wall
3. Natural calamities such as earthquakes and typhoons.
 - Previous earthquakes caused stress on roof's structural members
 - Typhoons seriously weathered the house structure
4. Man-made causes.
 - The convent has been a home to different priests and nuns who have somehow contributed to the wear and tear of the convent.
 - Lack of knowledge of the owners regarding restoration
 - Leaving the convent in the hands of caretakers
5. Termite and dry rot infestation, which was widespread throughout the entire convent.



Figure 11



Figure 12

Project Methodology

1. Photo documentation

- An important step in the restoration project is the taking of photographs of key parts of the structure before, during and after restoration, with detailed descriptions and labels. The location and time of the photo documentation should also be recorded in notes.



Figure 13

2. Dismantling

- The tasks of dismantling should be executed as to protect the historic building materials of the structure. Wattle and daub plaster, coral masonry and lime/adobe plasters should be properly protected from any damage or obliteration. (Figure 13)



Figure 14

3. Restructuring wooden floor joists and nailers

- Each floor should be checked for its structural condition. Sandwiching weak members on either side with treated new wood is worthwhile, but the new wood must be installed correctly for greatest strength. A better option is sistering, where identical lumber is bolted to the member. Better still is sistering with a flitch plate, a 1/4 to 1/3-inch-thick piece of steel or wood. Two flitch plates may also be used to repair localized damage (Figure 14).
- The solution to sagging floors, or the damaged sills and joist ends that contribute to them, often involves jacking. A common scenario is to install temporary jack posts and support beams, then permanent posts and beams over new footings. Posts set on dirt floors should be upgraded to concrete pads with footings. Place wooden posts on metal post supports to create a waterproof barrier between the post and the footing.
- As with other structural repairs, jacking must also be done appropriately. Ideally, an experienced carpenter will assess the problem and set up the posts and any necessary beams. You can then screw the jacks up a turn or two each month.

4. Repair of hardwood floor planks

- *Scraping.* Working on hands and knees, carpenters or flooring mechanics level out any high spots using hand planes and then go over every inch of the floor with scrapers. When drawn across the wood (or finish) at a slight angle, the scraper shaves off paper-thin curls of wood



Figures 15 and 16

similar to shaving a beard, leaving a surface that is both smooth and remarkably even (Figure 15).

- *Filling.* The typical filler might be a finely ground, pigment-like material (such as wood dust, marble or quartz dust, or corn starch) mixed with a drying oil binder (typically linseed oil) and thinned with a solvent (turpentine). When mixed to a paste the consistency of mashed potatoes, the finisher applies the filler over the floor with a rag, working against the grain of the wood to force it into holes and depressions. Once the filler had begun to dry, the finisher the wipes it from the floor using burlap or wood shavings, leaving the remainder below the surface in the wood pores. The result is a smooth, level surface ready for final finishing (Figure 16).

5. Provision of anti-termite treatment

- Three coats of brown Solignum or Lentrek are applied to structural wood supports in floor joists, while three coats of clear Solignum or Lentrek are used for exposed wood supports and finishing. These new materials should be properly dried first before the treatment. Make sure that all sides including the sawn or cut parts are properly applied with these chemicals. Use protective body covering while handling the anti-termite chemicals.

6. Retrofitting of Doors (Figures 17-19)

- Start by removing the doors. Use wire cutters to pinch the hinge bolt free from paint or other substances. Remove the top bolt first, then the bottom, before yanking the door out of its hinges. Next, remove the trim. Drive a sharp flat bar behind the casing, braced it against the jamb, and gently pry it loose. Remove all of the casing on both sides before tackling the jambs.
- After taking off the casings, remove the jambs, cutting across the center of each jamb leg with a reciprocating saw. Once halved, wiggle the jamb, working the lower nails free and pulling the bottom leg out. Yank out the other jamb leg, leaving an upside down U at the top, which you should be able to work free.
- With the rough framing exposed, look for a control point to serve as the starting point for your layout. For door openings, this is generally the shortest distance between the floor and the door head.

- Next, measure how to get a square door into an out-of-square opening. If the finished floor is not already in place, position blocks the thickness of the new floor on the subfloor.
- On the floor (or atop the floor blocks), place 3/4-inch-thick blocks of jamb stock. Measure up each side of the doorway to the level line (control point). This is the actual length of your new jamb legs.
- To determine the head jamb length, measure the rough door opening at the top, middle, and bottom. If the measurements are different (they often are), subtract 1/4 inch from the smallest dimension for leeway. This is the actual length of the head jamb.
- Test the measurements. On a flat surface, square up the head jamb and legs, then fasten with three 2 1/2 inch deck screws through the head jamb. Dry-fit the assembly in the opening to make sure it is the right size.
- A framing square across the door is a quick way to identify a short side. The width of the finished door is the distance between the jamb legs, minus 1/4 inch. The extra 1/4 inch leaves room at each side of the door for hinges and travel. If it is necessary to remove more than 1/4 inch, make sure to take half of the total amount from each side of the door to keep the stiles the same size.
- The circular saw leaves corners very square, so for softer edges, run a router with a chamfer bit down each side. Saw swirl marks can be sanded out with 100-grit sandpaper.
- Once the door is squared, it is time to measure and mark the new hinge locations on the new jamb.
- Take the hinge-side leg off the jamb assembly. Next, lay the door flat on a worktable, and place the hinge-side jamb leg next to it. Make sure the jamb leg rests 1/8 inch above the door's top rail and at least 3/4 inch past the bottom rail.
- Use a router with a hinge jig and mortising bit to cut the new mortises. Use a hinge leaf held against the bottom of the jig to set the bit depth, adjusting the router bit flush with the hinge. Once cut, re-assemble the jamb.
- To position the jamb assembly in the opening flush with the plaster, run a level diagonally across the front of the opening. Next, butt the jamb to the level, then pop a nail in the top of the hinge side with a finish nailer. Then, use the level to get the jamb leg plumb and pop a nail in the middle. Finally, tack the bottom. If the hinge-side jack



Figure 17



Figure 18



Figure 19

stud is out of plumb simply use a flat bar to gently pry the jamb leg straight and plumb. Next, register the head jamb to your control point level line, then pop a few nails in.

- To hang the door, install one hinge leaf in the door and the other in the hinge-side jamb leg. Use two of the three screw holes on each hinge. Using two stacks of shims on the floor, lift the door, align the hinge barrels, and slide together. Once the barrels are lined up, drop in the hinge pins, top one first. Tap them gently with a hammer if needed.
- Operate the door to see what adjustments need to be made. A plumb hinge-side jamb means the door swings easily at every point in its arc, except right when it closes. This happens when the hinge-side jamb leg is out of square with the strike side. To fix, slide a bar or a shim in behind the hinge-side jamb and adjust.
- Once the door swings closed easily, shim behind the strike-side jamb. The goal is to get an even “reveal” (or gap) between the door and the strike-side jamb leg and head jamb. Tucking shims in from both sides usually works best. Snug them in gently. Once the shim is snug, pop two nails into it from the jamb side. Get three or four shim locations per jamb leg. After the strike side is set, shim and nail the hinge side.

7. Retrofitting of windows and shutters (Figure 20)

- Dismantle sliding window panels and their components for repair.
- Measure the actual capiz window shells to repair or replace. In the case of the shutters or persiana, prefabricate the missing parts.
- Capiz shells for windows are available commercially. Some are already cut into commercially available sizes, similar to those in Baclayon. For simple repairs, cut the portion of the capiz shell frame and replace the missing part, and use silicon sealant to put back the shell and frame.
- For larger repairs, remove one part of the panel frame to remove and re-arrange all the capiz shells.
- Capiz shells are cut easily after soaking in soap and water.
- Use silicon sealant to cover all sides of the capiz shells. This is also useable as waterproofing for other materials.



Figure 20

8. Restoration of wattle and daub walls (*tabique pampango*)

- Re-plastering old wood lath or the *tabique pampango* needs several considerations. Inject bonding grout to the cracked surfaces to seal usable materials, to prevent them from crumbling. Use a 1:1 ratio of calcium carbonate (lime) and



Figure 21

calcium sulphate for the plaster mix. When plasterers work with old lath, each lath strip is re-nailed or weaved and the chunks of old plaster are cleaned out. Because the old lath is dry, it must be thoroughly soaked before applying the base coats of plaster, or it will warp and buckle; furthermore, because the water is drawn out, the plaster will fail to set properly. If new wood lath is installed over old wood lath as the base for new plaster, many of these problems can be avoided and the historic lath can be retained. The wall should still be sprayed unless a vapor barrier is placed behind the wood/bamboo lath (Figure 21).

9. Ceilings (Figure 22)

- Lumber should be in accordance with accepted commercial practice and of the quality approved for the respective parts of the work, well seasoned, thoroughly dry and free from loose or unsound knots, shakes, waves, pitch marks or other defects impairing its strength, durability, or appearance.
- Woodwork should be in round dimensions.
- All woodwork should be done as much as possible with carefully fitted joints.
- All exposed woodwork should be smooth.
- Framing lumber and other carpentry work should be fitted closely set accurately to the required lines and levels and should be secured in place in a rigid substantial manner. Framing members should be free from pronounced defects. Bolting and nailing should be done in the approved manner.
- Fastening should be with common wire nails or common machine bolts where specified or called for.
- Surface woodwork, framework and other woodwn members coming in contact with or embedded in concrete should be painted with two coats of Solignum or Cuprinol.
- Use Narra, Tanguile or Apitong for framing lumber.



Figure 22

10. Restoration of rear elevation walls and windows (Figure 23)

- The rear elevation of the former convent was severely damaged. The goal is to restore its undamaged materials and replace badly deteriorated ones. The elevation at the rear is the similar to the front façade, with sliding capiz windows, shutters and ventanillas, and wood bandeja panels. Upon removal of the existing comfort rooms located on that side, the full conservation of the architectural features is conceptualized. Refer to methods of restoration of windows and finishing works for methodology and materials.



Figure 23

- Apply silicon sealants to retrofitted bandeja or wood panels to provide waterproofing on joints.

11. Finishing works

- *Paint stripping.* Use Stripsol, a solvent based sealer, stain, coating and paint stripper with a wide range of applications that is non-hazardous and does not burn the skin. It penetrates most acrylics and elastomers almost instantly. Stripsol will remove multiple layers of acrylics, deck sealers, polymer coatings, latex, acrylic latex, alkyds, enamels, oil-based stains, polyurethanes and other resin coatings. It is not classified as flammable, has low odor and will replace methylene chloride in many applications. It does not harm aluminum, wood, masonry or sidings when used properly.
- *Oil finish.* When using a proprietary oil finish, apply a generous coat with a cloth or paintbrush. Allow it to soak in for a few minutes, and then wipe off excess. Let the wood dry for up to eight hours, depending on the drying conditions, before applying a second and third coat in the same way. In Baclayon, because of the moist weather, it is recommended to leave it dry for twelve hours.
- *Using wax.* On bare wood floor, apply two coats of sealer, using either thinned varnish or a proprietary sanding sealer. Sand down the surface with very fine sandpaper. The sealer stops the wax from sinking in too deeply, which would draw dirt into the wood. Brush on liberal coat of liquid wax and leave it to soak in. About an hour later, work over the surface with the aid of an electric floor polisher. Apply further thin coats, with a cloth pad charged with wax, and buff each in turn. Leave the surface to harden, then burnish with the polisher next day. Paste waxes need be applied sparingly, using a cloth pad and building up the wax in layers until you have obtained a satisfactory finish. Never apply thick coats of paste in an attempt to achieve quick results. It will remain soft, hold the dirt and look dull. Between coats, burnish the wood with an electric floor polisher.
- *Applying varnish.* Valspar is the common recommended commercially available varnish that gives the historic color to the wood even in the United States. New wood should first be sealed with a thin coat of varnish, containing about 30 percent solvent. Brush it in well, working with the grain. On a previously finished surface, use the varnish full strength for the first coat. When it has set, apply two or three coats of unthinned varnish, allowing each to set before applying the new one. Work first across the grain to spread the varnish evenly, and then finish by brushing with the grain. Between each coat, rub down the surface with sand paper. Do not begin another work on partly cured varnish. Let it dry first.
- *Painting newly plastered wall.* The key to a successful paint job is proper drying of the plaster. Historically, lime plasters were allowed to cure for at least a year before the walls were painted or papered. With modern ventilation, plaster cures in a shorter time; however, fresh gypsum plaster with a lime finish coat should still be perfectly dry before paint is

applied--or the paint may peel. (Plasterers traditionally used the “match test” on new plaster. If a match would light by striking it on the new plaster surface, the plaster was considered dry.) Today it is best to allow new plaster to cure two to three weeks. A good alkaline-resistant primer, specifically formulated for new plaster, should then be used. A compatible latex or oil-based paint can be used for the final coat.

- *Painting the ceiling.* Before painting the ceiling, check if the materials installed were fully treated with anti-termite treatment, basically clear and dried. Use flat white enamel for the first coat of the wooden ceiling. Apply two coats for topcoats suitable for the desired color scheme.

Technical Problems encountered during restoration

1. The structure is quite large and the degree of deterioration of wooden components varies.
2. Termite infestation (a common problem in church convents).
3. Wooden floor frames and planks deteriorated faster than the older counterparts.
4. Sourcing of repair/replacement materials was difficult, resulted in some substitution and restructuring works.
5. Scheduling of pest control treatment was delayed because of local accreditation requirements.
6. Some wooden structural parts had to be replaced, spliced and restructured, particularly the rear elevation walls and windows that had rotted due to aging and extreme climate exposure.
7. Window panels and sills had to be reworked and adjusted to restore them to good working condition.

Present needs of the convent after restoration

- Conservation management / maintenance program
- Comprehensive periodic treatment

CONCLUSION

The support of the National Historical Commission of the Philippines as a government body in the conservation of this historic buildings played an important milestone in the town of Baclayon. It inculcated awareness not only in the church administrators, but in the people of Baclayon and the local government – and based on local survey, the people learned to appreciate more their heritage. Hence this awareness created the end users’ master development plans for the maintenance and restoration of the historic structure.



Figure 24



Figure 25



Figure 26



Figure 27



Figure 28

Before Restoration



Figure 29



Figure 30



Figure 31



Figure 32



Figure 33

After Restoration

Republic of Korea

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Conservation of Cultural Heritage in Korea: Recent Projects and Points of Improvement in the Process

1. Introduction

This report concentrates on three architectural conservation projects recently conducted in Korea. The first is Jungmyongjeon (重明殿, masonry with wooden floor), built in Deoksugung (德壽宮) Palace around 1901. This royal building was used as a reception area for foreigners and was also where the Eulsa treaty was signed in 1905. Its conservation was recently completed. The second is Seokjojeon (石造殿, masonry with steel floor), built in Deoksugung Palace in 1909. King Gojong used this building as the royal family's living quarters. The building's revitalization project is currently in progress. The third is Gyonggyojang (京橋莊, reinforced concrete), built in 1938. This building was originally built as a personal residence but was provided to Kim Goo (金九), the president of the provisional Korean government, upon his return after 1945. The renovation planning for conservation work is now being conducted.

Therefore, this report considers the conservation process through three projects at different stages of work in the conservation of Korean cultural heritage. This report also suggests methods for improving the conservation process.

2. Recent Cultural Heritage Conservation Projects in Korea

2.1. Repairing and Restoring th Jungmyeongjeon, Deoksugung Palace

Jungmyongjeon (重明殿, historic site No. 124 - Deoksugung Palace) was constructed around 1901 as a brick building consisting of 1 floor underground and 2 floors above ground. It was originally located within Deoksugung Palace, but was separated from the premises when a road was constructed in 1922.

After other buildings of Deoksugung Palace were destroyed by accidental fire in 1904, Jungmyongjeon served as palace for the king's morning audience temporarily to let King Gojong (高宗, 26th King of the Joseon Dynasty, 1852-1919) perform official duties at the building. Also, it was where the coercive signing of the Eulsa Protective Treaty with the Japanese government took place in 1905. In March 1925, the building was destroyed by accidental fire except for the exterior walls. After restoring the roof trusses and wooden floors, new windows were installed on the outer facade when adding corridors for indoor use.

After investigation during dismantlement, the original plan was thought to have had open brick arches at the front and on the left and right sides, and to have had a veranda. The repairing and restoring was conducted, including internal restoration work. The conservation work started from December 2007 and was completed in December 2009.

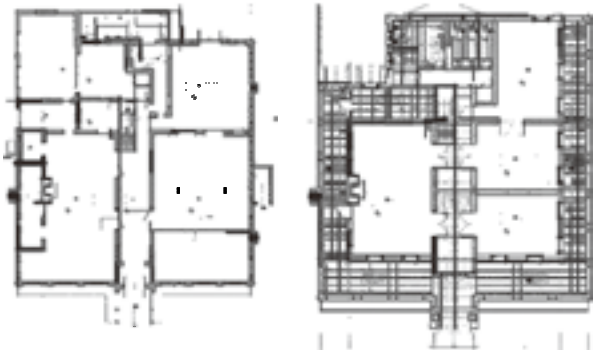


Fig. 1. Floor plan (left: before, right: after)



Fig. 2. Jungmyongjeon, Deoksugung Palace, 2007

2.2. Revitalization Project for Seokjojeon in Deoksugung Palace

Seokjojeon (石造殿, historic site No. 124 - Deoksugung Palace) is also one of the western-style buildings in Deoksugung Palace, built during the Great Han Empire period (大韓帝國期, 1897-1910). In 1898, following the suggestion of John McLeavy Brown (柏卓安) regarding the Seokjojeon plan, the Englishman J. R. Harding carried out the design. The structural work was carried out by Okura Doboku Gumi (大倉土木組) from August 1903 to November 1906. Ishii Shuhei (石井周平) was dispatched as superintendent for this work. In 1907 the Englishman Lovell received a request for interior work. The plumbing, heating, and electrical construction was contracted to Britain's Crittall company, and the inside decoration and furniture contract was given to Britain's Messrs Mapls company.

The floor plan puts servant space and a service area on the first floor and a reception room and a main hall on the second floor, while the third floor contained living rooms and bedrooms for the king and the queen. From October 1933, Seokjojeon was used as a modern art museum with a transformation of its plan. Also, the interior space was damaged during the Korean War. It is currently under renovation, starting October 2009, to return it to its original form during the reign of King Gojong (1852-1919).

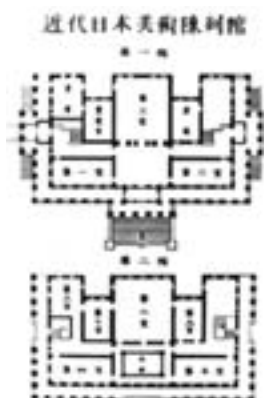


Fig. 3. Plan, Seokjojeon, 1933



Fig. 4. Seokjojeon, Deoksugung Palace, 1910

2.3. Renovation Project for Gyonggyojang, Seoul

Gyonggyojang (京橋莊, historic site No. 465) was originally built as the residence of a mining entrepreneur, Choi Chang-hak (崔昌學). It was constructed in 1938, during the Japanese Colonial period, and was designed in 1936. Obayashi Gumi (大林組) constructed the building. After 1945, it served as the executive office and living quarters for the president of the provisional Korean government, Baekbeom Kim Goo (白凡 金九, 1876-1949).

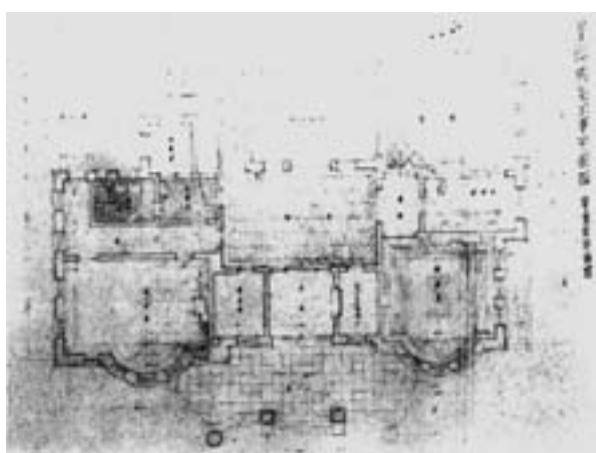


Fig. 5. First floor plan, Gyonggyojang, 1938



Fig. 6. Gyonggyojang, 1938

The building was constructed of reinforced concrete for the posts, lintel beams, floor slabs and external walls, with partition walls made of brick work. The internal space consisted of not only public space on the first floor, such as a reception room, restaurant and billiard room, but also private space on the second floor such as a Japanese style room (*washitsu* 和室), bed room, library and office, etc. After being constructed, the building was converted to other uses that deformed the internal space. The restoration work of the building has been planned and the design stage is now in progress.

Table 1. Recent cultural heritage conservation projects in Korea

Name	Cultural Properties	Site	Construction Period	Structure	Conservation Period
Jungmyongjeon (重明殿)	historic site No. 124	Deoksugung Palace, Jung- gu, Seoul	ca. 1901	masonry with wooden floor	2007.12 –2009. 12 (completed)
Seokjojeon (石造殿)	historic site No. 124	Deoksugung Palace, Jung- gu, Seoul	1909 (plan – ca. 1899)	masonry with steel floor	2009.10~2012 (under repair)
Gyonggyojang (京橋莊)	historic site No. 465	Pyeong-dong, Jongno-gu, Seoul	1938 (plan – 1936)	reinforced concrete	2010 – (plan- ning)

3. Process and Improvement of Conservation Projects

3.1. Current Process of Conservation Work

Persons who are qualified by having passed the cultural properties preservation specialist system are permitted to preserve cultural heritage of Korea. The areas of the cultural properties preservation specialist system consist of conservation, measurement and design, painting wooden buildings, historic landscape, conservation science, plant protection, etc.

In the case of historic buildings, an engineer who is qualified for measurement and design is permitted to plan the conservation of a building, while any construction company which is qualified for conservation and paintwork on wooden buildings is permitted to preserve a building. Also, the construction company that constructs the building has the principal role in filling out the preservation report.

A qualified measurement and design office capable of doing the preliminary survey, planning, and budgeting worked on not only Jungmyongjeon but also Seokjojeon. Subsequently, a construction company did the actual restoration work and made an agreement to produce the preservation report with the design office that was qualified to do measurement and design. Both buildings had low budgets for the initial planning expense, that should be used for planning the budget as well as the repair work. Therefore the original repair plan was insufficient. The problem was solved with an agreement involving not only the repair work company but also the measurement and design company that produced the preservation report.

In the case of Gyonggyojang, an office qualified in measurement and design is now planning the conservation. It is surveying the foundation carefully to faithfully reflect the original use of each room in the design. As a result, Gyonggyojang was given a much greater budget for repair planning expenses than either Jungmyongjeon or Seokjojeon.

3.2. Conclusions - Improvement in the Process of Conservation Projects

First, the conservation process should be done in a dual system. Recent examples of cultural heritage were continuously used, while hiding their original shapes, often by changes involving replacement or reinforcement of original materials, plus changes in lighting, heating, and other facilities. Conventional types of wooden buildings are thought to have the same problem, and it is necessary to investigate the causes of damage, and decide the replacement materials and scope of repairs during the dismantling process. Therefore, the scope of and policy for conservation is to be decided while dismantling buildings as the first stage, and then the execution plan and conservation work are carried out as the second stage.

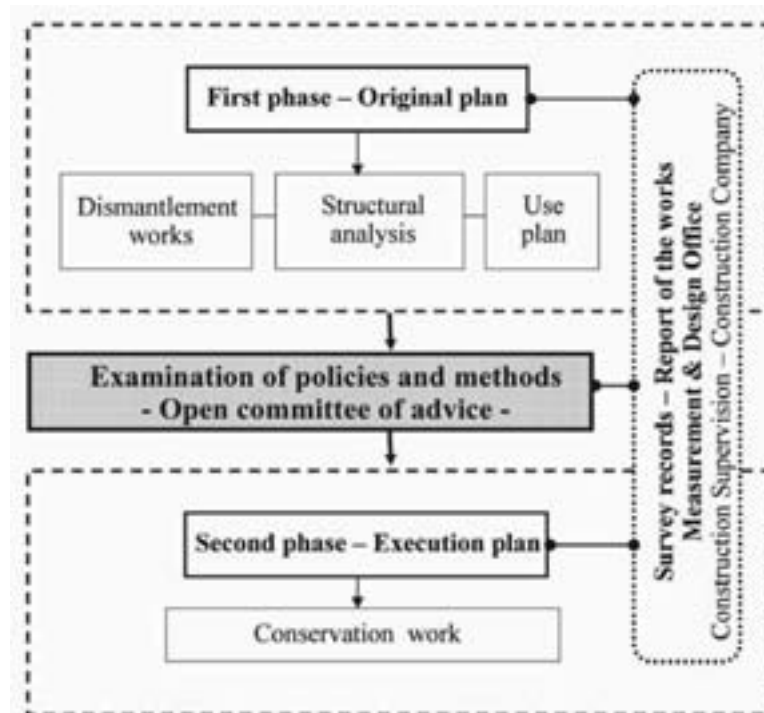
Second, the advisory committee should hold regular meetings to give assessments. The conservation of Jungmyongjeon reflects the results after dismantlement of more than eight advisory meetings. The situation of no advisory meetings held to assess the scale of each construction work needs reform. Decisions of the scale and policy of conservation after dismantlement require advisory meetings for discussion and agreement.

Third, the obligations of the measurement and design office should be reinforced, and means for its supervision of the construction should be provided. When construction work starts, the measurement and design office has no obligation to participate in the conservation work according to the current conservation process. The measurement and design office should be given more budget and have obligations to survey the dismantlement work and make changes to the repair plan, and to release a preservation report in accordance with designations of the system. Also, a system that supervises overall conservation work needs to be introduced.

Fourth, the program of survey records should be reinforced. Modern buildings as well as traditional wooden architecture that are dismantled and repaired need to have preservation reports of precise measurements from the survey.

Fifth, the plan for use should be made as soon as possible. A detailed plan for use should be decided prior to the repair work, which should reflect the plan's design not only for interior decoration but also in the construction work for facilities such as lighting, heating and other equipment.

Table 2. Proposed process for conservation work



4. References

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Samoa

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Problems and Needs for Cultural Heritage Protection and Restoration Activities in Samoa

Samoa, which officially is the Independent State of Samoa, and formerly known as Western Samoa and German Samoa, is a country encompassing the western part of the Samoan Islands in the South Pacific Ocean. It became independent from New Zealand in 1962. The two main islands of Samoa are Upolu, and one of the biggest islands in Polynesia, Savai'i. The capital city, Apia, and Faleolo International Airport are situated on the island of Upolu.

The country is located east of the International Date Line, but in 2011 Samoan Prime Minister Tuilaepa Sailele announced his country would move the International Date Line to the east of the country, so that Samoa would lie to the west of the date line.

Samoa is south of the equator, about halfway between Hawai'i and New Zealand in the Polynesian region of the Pacific Ocean. The total land area is 2,934 km² (1,133 sq mi) (slightly smaller than the U.S. state of Rhode Island), consisting of the two large islands of Upolu and Savai'i which account for 99% of the total land area, and eight small islets. The land area is about the size of the two Hawaii islands Oahu and Maui combined.

The eight small islets are three in the Apolima Strait (Manono Island, Apolima and Nu'ulopa), the four Aleipata Islands off the eastern end of Upolu (Nu'utele, Nu'ulua, Namua, and Fanuatapu), and Nu'usafe'e (less than 0.01 km² — 2 ½ acres — in area and about 1.4 km off the south coast of Upolu at the village of Vaovai). The main island of Upolu is home to nearly three-quarters of Samoa's population, and its capital city is Apia.



The *fa'a Samoa*, or traditional Samoan way, remains a strong force in Samoan life and politics. Despite centuries of European influence, Samoa maintains its historical customs, social and political systems, and language. Cultural customs such as the Samoa 'ava ceremony are significant and solemn rituals at important occasions including the bestowal of *matai* chiefly titles. Items of great cultural value include the finely woven 'ie toga.

Samoan mythology includes many gods with creation stories and figures of legend such as Tagaloa and the goddess of war Nafanua, the daughter of Saveasi'uleo, ruler of the spirit realm Pulotu. Other legends include the well-known story of Sina and the Eel which explains the origins of the first coconut tree.

Some Samoans are spiritual and religious, and have subtly adapted the dominant religion of Christianity to “fit in” with *fa'a Samoa* and vice versa. As such, ancient beliefs continue to co-exist side-by-side with Christianity, particularly in regard to the traditional customs and rituals of *fa'a Samoa*. The Samoan culture is centered on the principle of *vāfealoa'i*, the relationships between people. These relationships are based on respect, or *fa'aaloalo*. When Christianity was introduced in Samoa, most Samoan people converted. Currently 98% of the population identify themselves as Christian. The other 2 percent either identify themselves as irreligious, or do not belong to any congregation.

Some Samoans live a communal way of life, participating in activities collectively. Examples of this are the traditional Samoan *fale* (houses) which are open with no walls, using blinds made of coconut palm fronds during the night or bad weather.

The Samoan word for dance is *siva* with unique gentle movements of the body in time to music and which tells a story, although the Samoan male dances can be more physical and snappy. The *sasa* is also a traditional dance where rows of dancers perform rapid synchronized movements in time to the rhythm of wooden drums (*pate*) or rolled mats. Another dance performed by males is called the *fa'ataupati* or the slap dance, creating rhythmic sounds by slapping different parts of the body. This is believed to have been derived from slapping insects on the body.

The form and construction of traditional architecture of Samoa was a specialized skill by held by a master builder (*tufuga faifale*) that was also linked to other cultural art forms.

Museum of Samoa

The Museum of Samoa was established in May 27, 1999, to provide safe storage for material cultural heritage. It is a facility for preserving both artifacts and the history of our country. The museum collection continues to increase with the donation of historical artifacts from local and overseas donors. On the July 28, 2008, the Museum of Samoa closed its doors to the public to relocate temporarily to Malifa, locus of the Ministry of Education, Sports and Culture (MESC) headquarters. This relocation

came after the cabinet approved the renovation of Court house. The museum re-opened to the public on the August 19, 2008, with a revitalization project that aims to give the museum a face-lift by developing new graphic displays. The museum consists of four rooms, the environment room, Pacific room, and culture room, plus the new room for the Lapita exhibition showcasing the nation's cultural founding maintained at the Tanoa hotel by the workers. There are two staff members working in the museum. There have been a number of exhibitions going on from the beginning of this year. The new building of the museum is one of the old colonial buildings from the German period, formerly a school building, so the building itself is historical in that this was when schools in Samoa started, apart from those run by missionaries in the villages before the colonial takeover of Samoa.

The Old Court House and the Preservation Issue

This building was former location of the Museum of Samoa until the government agreed to the renovation of the building and approved the move of the Museum to its new location. The old building is now vacant, and there have been differences in opinion, tensions, and arguments about its fate. People have different thoughts on the structure, as some want to tear it down and some want to save it as a part of Samoan history, and preserve it for future generations.



The main part of the court house was constructed in 1906 as the central office for the German colonial government (1900-04). The architect was Mr. Albert Schaffhausen, government architect for the German administration. The style is a mixture of historicism (a copy of old European building styles) and subsequently art deco, which later came into fashion in Europe. The building was used as a court house and administration building as well under the British/New Zealand administration.

When the British/New Zealand occupation force took over Samoa from the Germans in 1914, the Union Jack was raised in a special ceremony in front of the building. The leader of the Mau

Independence Movement, Tupua Tamasese Lealofi II, was shot at its doorsteps on “Black Saturday” in 1929. After independence (1962), the structure was used as main office of the government of the Independent State of Western Samoa. Until 1993, the actual area that the museum used to occupy was the seat of the Samoan Prime Minister’s Office and Cabinet. This part of the building is a later addition. Many changes have been made in the structure and appearance of this place, often without written documentation. Frequently it is difficult to say how old a certain part of the building really is. The Museum of Samoa occupied the right wing (which is the new addition) from May 1999 to July 2008.

Whether this will be regarded as a viable project for historic preservation, or simply an old rundown building, is an issue that must be decided soon. With time fast running out, this question is being put to our citizens. Some wish to restore this once beautiful landmark, the old court house, for future generations.

Situated on Beach Road, Apia, the court house was built in 1903 under the German administration and was also in use when New Zealand governed Samoa. It housed the first Government of Samoa after independence in 1962, and until 2010 the Court of Samoa dispensed justice from it. It is also on the corner of the road where on December 28 in 1929, the Zealand military police fired into a peaceful procession of Mau protesters, turning the day into violence in the event to become known as Black Saturday. In short, the area is steeped in history. For these reasons a former politician, Hans Joachim Keil, and the German Consul, Arne Schreiber, have organized a series of meetings to work with a committed group of like-minded citizens.

“I want to do this for the community,” says Mr. Keil. “I don’t want to look back in years to come and wish that I had done my best to help preserve and restore this fine piece of architecture. There is too much wishful thinking around. Even if we fail, at least I will have tried.”

Mr. Schreiber is equally passionate about the project. “You can’t have a future without a history” he says. “You need to be able to see your history”

Robert Louis Stevenson Museum

The building itself was the former residence of the famous author Robert Louis Stevenson. He chose Samoa to live the last years of his life. Known locally as “Tusitala,” Stevenson resided in Western Samoa the last five years of his life, built his home at Vailima, above Apia, and is buried on top of Mount Vaea, a short distance directly above the house. On December 5, 1994, one hundred years after his death and burial, the Robert Louis Stevenson Museum/Preservation Foundation dedicated the materials and historical artifacts are actively solicited. Stevenson titles, especially rare and first editions, are currently being collected. After Stevenson lived there the house was used by the German governor and became the official residence of the head of state of Samoa. Now, the residence has

become one of Samoa's famous museums depicting the colonial lifestyle of Samoa's past, especially the development of European style wooden structures. The land itself has a beautiful view of Apia and the ocean from its height, plus a cool breeze of from the mountain beside the residence, with a botanical garden that has become tourist attraction.



An old photo (left) of the Robert Louis Stevenson Museum, and its new look now (right)

Archeological Site in Apia

Archaeological excavations have been taking place at Tanoa Tusitala Hotel under the Guidance of resident archaeologist Tautala Asaua-Pesa. There, she and 8 students from the National University of Samoa (NUS) have been researching the recent man-made structure that was unearthed a few weeks ago. Early interpretations of this structure have varied from a bunker during German times, to an ice cellar and a septic tank. Nothing has yet been found to support conclusively any of these suggestions.

The initial stop order on construction activities at the site was issued by the Planning and Management Agency of the Ministry of Natural Resources and Environment, which holds legislative authority to halt any construction when sites of heritage value have been discovered. The owners of Tanoa Tusitala Hotel, and Lee Collet, the Tanoa project manager, were supportive of this action and expressed willingness to preserve the structure by incorporating it into their building site, thus providing opportunity for further archaeological research to occur.

Salvage work commenced at the beginning of the NUS mid-semester break. Students from the 100 and 200 level archaeology courses were happy to give up their mid-semester break in order to participate in this rare opportunity. Students were introduced to excavation methods which involved setting up test units in order to find out if there was any other human activity around the structure and the site.

A total of 7 test pits were dug, which required the students to excavate carefully and sift through the soil that was removed from these pits to see if any artifacts might be found. Artifacts such as pieces of ceramic bottles made in Germany in the late 1800's, broken glass and one intact wine bottle, animal bones, metal objects, a German mark (1900) and a British pence were recovered.

Another interesting find was an oxidized copper pipe with wood still attached to it, along with two wooden panels also lined with oxidized copper, found in an upright position directly above the copper pipe. This was located 50 cm from a brick feature.

The students learned that archaeological digs require a lot of patience due to the importance placed on being meticulous in the recording and documenting of finds. They endured long hours in the sun, in rain showers that slowed down work, and also the challenge of removing water from their test pits.



Finds from the archeological site in Apia

However, this did not dampen their efforts or enthusiasm in being a part of a unique opportunity to uncover aspects of their history. Ms. Asaua-Pesa was heartened by her students' enthusiasm and said "My professor, the late Roger Green, who had conducted archaeological work in Samoa in the 1960s, had always said to me that the Samoans needed to continue this work, and now I can see the next generation of Samoan archaeologists embracing their past."

Canoeing in Samoa

People who first arrived in our country named Samoa the Navigator Islands, as we display very considerable skill in the construction of our canoes. The largest of our canoes are form thirty to sixty feet in length and capable of carrying from four to ten paddlers besides a steersman. There is no regularity in the length or breath of the planks. On one of the edges of each plank a ledge/projection is formed to attach the sennit, and to connect and bind it closely to the adjoining one. The many pieces thus laboriously joined received an application of gum from the bark of the breadfruit tree to make them stick closely together and prevent leakage. On the outside pieces are neatly joined and required close examination before the seams can be detected, and this perfection of workmanship is the more

astonishing when it is considered that the only tools we use are a gimlet and a piece of iron tied to a staff, forming a sort of adze.

These canoes are long and narrow, and their shape approaches elegance. They are decked fore and aft, as shown in engravings; when propelled with paddles our people sit two abreast and the canoe is guided by a steersman. The seat of honor is on the forward deck, in the center of which is a row of pegs, covered with the large white ovula shell, by way of ornament. The striking peculiarity of these canoes is that they have a rising prow and stern, and therefore the sail cannot be shifted without tacking the boat. Our usual fishing canoe is made of single hull with a small outrigger to balance it. The trees from which these log canoes are carved and are gradually disappearing. There is need for our government to replant these native trees. Also, only handmade tools are used, fashioned by our own people. There are no electric tools to make our work easier. It takes four to five weeks to carve the canoes. No chemicals are used to prevent the wood from decaying, and the wood easily develops leaks, and our way of repair is to use gum from the breadfruit tree. Today our people and our government celebrate our Teuila Festival to attract more tourists to our country, and as part of the program we have our canoe carving competition and a canoe raising competition.

Vocational Training

The Ministry of Education Sports and Culture assists the youth by conducting vocational training for selected schools twice a year. We select certain people with skills at carving and weaving, and before the program starts some of our culture staff go out to the forest to look for trees to do the training. These are hard to find as they are not to be found in Upolu, so we go to Savaii our other islands and ask for permission from the village to cut the trees. In exchange for the trees we give the village money for the wood we get. It takes days to bring the wood to Apia. Handmade tools are used to do the work. No chemicals are used to prevent the wood from decaying. We also hold 'ava ceremonies in traditional fashion. After carving for days, the materials must dry before we can use them.



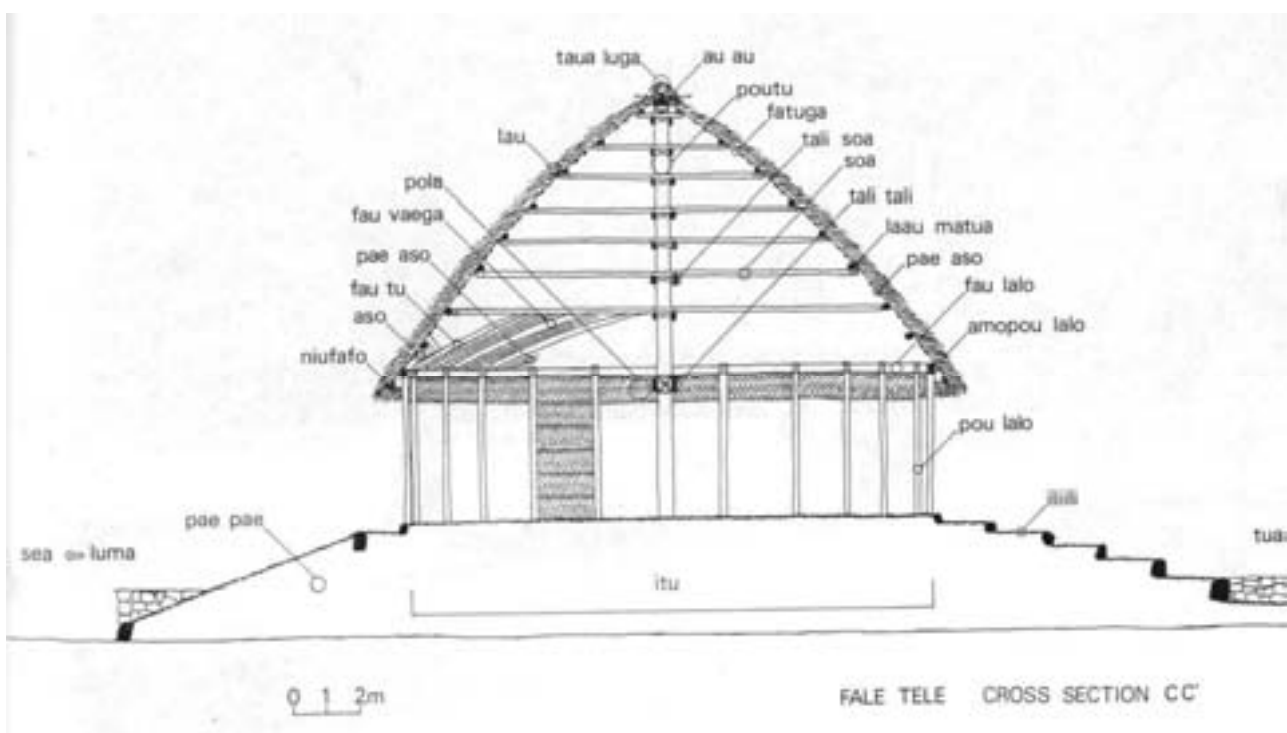
Students carving during vocational training conducted by some of the culture division

Houses in Samoa

Before the Europeans arrived in Samoa, our people stayed in several kinds of Samoan house. A traditional Samoan house is constructed with strong wood and is always round or oval in shape. The roof is covered with thatch, the floor is layered over with clean white pebbles from the sea, and the blinds are woven from dried coconut leaves. Today, few examples of this kind of house exist, although in rural areas traditional houses are still a common sight, as they accommodate visitors and are used as meeting places for extended families.

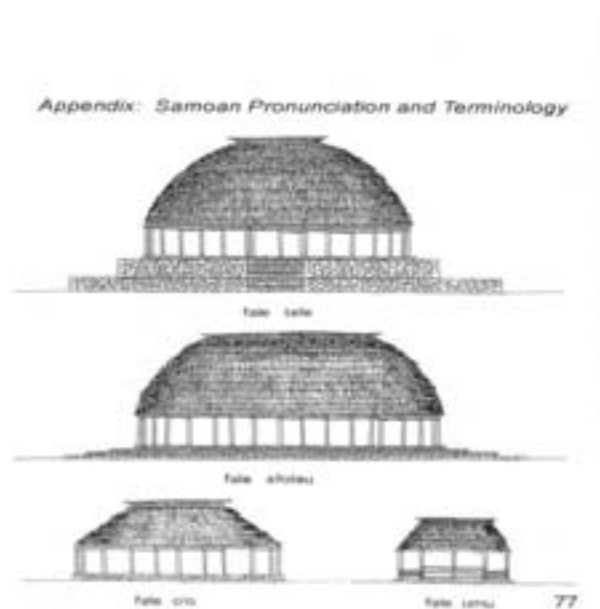
Fale afolau. The *fale afolau* is essentially an elongated house having straight sides and rounded half domes at either end. The length of the *fale afolau* is obviously dictated in large measure by the number of crossbeams (*utupoto*) which lie on top of the posts on the two long sides, and which form the platform on which the central part of the roof is constructed.

Fale tele. The *fale tele* has between one and three posts to which is fixed a vaulted roof. The roof height is dictated by the number of *so'a*, or crossbeams connecting these posts to the roof. Commonly a *fale* will have seven different levels of *so'a*. In both types of *fale*, protection from the elements is provided by wall screens or blinds (*polasisi*). The *pola* are made from loosely plaited coconut leaf mats, which are raised or lowered at need on the outer side of the posts on the structure's circumference. When wind and rain blow into the *fale*, the *pola* are lowered on the windward side only. The *pola* are raised when the rain stops. In the past when a family has a *fale tele* or a big house it meant being rich. This is because hiring an architect to build the house was very expensive and the process required a long time.



Faleo'o. These are always located at the back of the big house as a shelter for younger family members, or to house couples and all their belongings. This house is small in size, and is made of simple wooden members which can be replaced regularly.

Tunoa. This is a house made especially for the preparation of food. All cooking utensils are kept in there, and simple woods are obtained for building such a house. No blinds are required for this house. In the past a typical Samoan family was always an extended family, consisting of grandparents, uncles, aunts and their children. However every couple had their own small vernacular building or *faleo'o*. Young ones at the age of fifteen could sleep with grandparents in the family's big house or *fale tele*. Maidens of each family in the village have a special house to sleep and to accommodate the *taupou*, or the daughter of the highest chief in the village. The young men of the village, not including the married untitled men, also had a separate house to sleep. Every family had a hut for cooking called *umukuka/tanoa*. Families always assembled in the main house for time of meals.



The four different *fale* or house in Samoa

Architects

Architects are highly respected and are very important in our traditions. It is said in our oral history that the children of Ilu and Mamao were all appointed by the god Tagaloa to be architects and to come down from the heavens to this earth. Perhaps there were ten thousand of them and they all had the same name Tagaloa. They all worked for building houses for Tagaloa. Our oral history tells how all these builders built all shapes and kind of houses and one day came together in a meeting called by Tagaloa the god. The meeting was to select the best style that could be used by the people to be uniform for every structure in the islands. However they did not reach any final decision because everyone thought his own to be the best. At last they asked Tagaloa his desire for the style of structure he

prefers. Tagaloa pointed to the heaven and said “domed as the heavens and flat as the earth.” And that is why the style of our houses became and remains as it is.

Changes to Samoa’s Vernacular Housing

The changing style of shelters in Samoa is partly due to the frequent visits of tropical cyclones which the traditional Samoan *fale* could not withstand. The weakest part of a vernacular Samoan house is the roof. This was observed after every cyclone, when most houses’ roofs were damaged although complete destruction rarely occurred. The plant used for thatch is also disappearing from the country. The wood and sennit used in the house are destroyed by termites, often requiring the renewal of the house. This is why nowadays paint is applied to lessen the damage caused by termites. Maintenance of traditional Samoan vernacular houses has become very difficult recently, due to shortages of materials used for thatch and the blinds. This is because the thatch has to be renewed every three to four years, while the blinds are renewed in one to two years to remain neat, and pebbles were also collected from the sea every year. The special type of coconut used to make sennit has become extinct. All the above work mentioned has to be done by elders but as life goes on and change has come very quickly these producers have been influenced by advanced technologies such as television, which now takes most of their time, instead of doing their usual routines as in the past. Moreover a mixture of European house and the traditional Samoan house is now common in our country. These factors have combined to stop the people from building the old and traditional Samoan *fale* houses because they prefer the western style for it is easier and less work is needed. Nowadays our young generation has no knowledge of building a Samoan house, because of the influence from the outside world. People occupy their time with work and other things, leaving no room for teaching or passing their knowledge on to the young people.

With regard to this situation the Ministry of Education, Sports and Culture, through our culture division, undertakes vocational training for communities, schools and church organizations, as a way of teaching the young people and letting them know the significance of our old structures by building Samoan *fale*, thereby keeping our knowledge of making Samoan houses alive for future generations to come.

The National Archive of Samoa

The national archive project of MESC is in the process of establishing archives of Samoa for government records. Archives of legislation, a general records retention schedule, and a code of best practice for public recordkeeping have been drafted. The project is already the custodian for records from the German and New Zealand administrations of Samoa. At present, government bodies are still responsible for archiving their own records. Some private and church organizations have also established their own local archives, such as EFKS (the Samoan Congregational Christian Church) and the Catholic Church, sometimes in connection with regional or central archives situated in other countries such as the Marist archives in Fiji and the LMS Archives in London.

There is a wealth of artifacts, images and documents of Samoa held in museums, archives, university and private collections overseas, for instance in the ethnographic museums in Germany, New Zealand, Australia and Great Britain; the German Federal Archives; Archives New Zealand and the Turnbull Library in Wellington.

Emerging Problems for both Museum and Archive

The wealth of artifacts, images and documents of Samoa held in museums, archives, universities and private collections overseas have not been repatriated. Guidelines and training in records management should include all government Ministries and other organizations such as churches (the first phase has been conducted as a pilot project for only seven government Ministries).

There is a lack of funding support for conducting workshops in development, such as for record management, retention schedule, code of best practice, and awareness programs for the local communities to promote maintaining traditional knowledge and skills, such as carving and weaving. There is no policy to guide further development of the Museum. Archive legislation is currently awaiting approval and endorsement by the Parliament. There is no safe storage building for the archives. There is a lack of staff with special training in archive and record management. There is also a lack of archeological research conducted in the landscape for physical aspects of traditional material culture, such as pottery, stone axes and other implements, and the human remains of ancient people.

Conclusion

In our field of preservation and restoration of the cultural heritage of our country, we encounter many difficulties due to the fact that in some ways such cultural heritage is sacred and forbidden in some villages of extended families, because our unique culture has made people believe that making our traditional knowledge open to strangers or other villagers may give them the opportunity to distort and manipulate this knowledge, and the people may thus lose their right of custodianship over their own cultural heritage.

Despite all these difficulties and hardships, the Ministry of Education, Sports and Culture, through the culture division, is in various ways helping to maintain and protect our cultural heritage, by implementing many concepts in order to protect the custodians' right over our culture. We hope that these factors will increase and improve in the near future for the benefit of our future generations.

Sri Lanka

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Conservation and Restoration of Wood-based Mural Paintings in Sri Lanka

INTRODUCTION: BACKGROUND ON SRI LANKAN PAINTINGS

Sri Lanka is a tropical country with a rich cultural heritage. The history of Sri Lanka began about the fifth century BC with the colonization of the island by Aryan people from North India. During its 2,500 years of history several capitals were founded, and in these cities and elsewhere monasteries were built. According to the country's chronicles, almost all such monuments were decorated with paintings. These wall paintings, plus texts written on walls in Sinhalese, need to be looked at from their literary, historical, art-historical, documentary, aesthetic, scientific, technical, and conservation or restoration aspects. Together these viewpoints help give a balanced view of the subject.

Historical background

Sri Lanka has a rich and long tradition of wall paintings, starting from prehistoric times and traversing the historical period up to the present day. Painting was an art practiced in ancient times and it is still a living tradition in Sri Lanka. A good number of wall paintings survive, from prehistoric times to the present day, belonging to different periods and to different regions of country. A brief survey by period will look at prehistoric paintings, early and middle historic paintings from the Anuradhapura and Polonnaruwa periods, and late historic murals of the Kandyan period.

Prehistoric paintings. Usually called "rock art," these are the extant remains of a prehistoric type of painting in Sri Lanka. They have been executed directly on rock surfaces, without any ground layer and priming layer, and resemble similar paintings known elsewhere of hunting scenes.

It is clear that they were drawn only to satisfy those who drew them and not those who view them, as the lines are drawn extremely freely. This use of free lines suggests the artists were from a simple society, their needs confined only to daily requirements. The locally available materials such as kaolin,

ferruginous clay, and charcoal were used for paintings. There are about thirty-three rock shelters and caves at which prehistoric or *vaddah* paintings have been recorded.

Early historic paintings. Sri Lanka saw a great cultural transformation in the fifth century BC, with the colonization of the island by Aryan people from North India, the ancestors of the present day Sinhalese. Most of the early historical paintings they left have been found in residential caves and monastic dwellings. The subsequent history of Sri Lanka divides into several periods which are named after the capital cities that served as the seats of the government at different times. The earliest period is thus the Anuradhapura period, after the royal city which was the capital of the country for most of the period, which lasted until the tenth century AD (Wijesekara 1990). The capital was moved in the latter half of the fifth century AD to Sigiriya, where Kashyapa ruled while turning it into a rock fortress. The great Indian emperor Asoka sent a religious mission (Arahat Mahinda, four monks) to Sri Lanka in the third century BC. The adoption of Buddhism by the Sinhalese marked the beginning of a period of great cultural activity, including creations in sculpture and painting (Figs. 1-3).



Fig. 1 Sigiriya site, Matale district



Figs. 2-3 Mural paintings, Sigiriya

Among Sinhalese wall painting, the paintings of Sigiriya are particularly well-known. The rock of Sigiriya with its world famous paintings is situated in the Matale district, in the central province. The paintings on this rock which belong to the Anuradhapura period are representative of paintings of the early period, and have the largest surface area of such paintings in the country. Even though the paintings of Sri Lanka are mainly religious paintings, the Sigiriya paintings are secular in nature. The twenty-three female figures, somewhat less than life size, are depicted in three-quarter profile. Some are in pairs.

Other sites in Sri Lanka known for their early historic wall painting include the Cobra Hood Cave at Sigiriya, Pidurangala, Kandalama, Kotiyagala, Pulligoda Galge, Hindagla, Gonagolla, and the Mahiyangana relic chamber (Figs. 4-6).



Fig. 4 Pulligoda cave painting



Fig. 5 Mahiyangana relic chamber



Fig. 6 Gonagolla painting

Middle Historic Painting. The Thivanka Pilimage, or image house, is situated in the city of Polonnaruwa. This was the capital of the kingdom of Sri Lanka in the middle ages. The Thivanka Pilimage is one of four notable monuments, mostly built during the reign of King Parakrambahu (r. 1153-1186), and consisting also of Gal Vihara, Lankatilaka and Pothgul Viharaya. All these buildings have beautiful mural paintings (Figs. 7, 8).



Figs. 7, 8 Thivanka image house mural paintings

The thirteenth century marks a watershed in Sri Lankan history. The main centers of political, economic and cultural activity were moved from the dry zone of the north central and eastern provinces to the wet lowlands of the southwest and central highlands. We have no actual remains of paintings after the Polonnaruwa period until the eighteenth century.

Late historical mural paintings. After a lapse of several hundred years, painting reappears in the middle of the eighteenth century. The late period paintings are popularly known as Kandyan paintings, because Kandy was the last royal capital of Sri Lanka. Kandyan paintings are not limited to the district of Kandy. These late period paintings are almost entirely confined to image houses of Buddhist temples. Only a few temples paintings can be seen in the preaching halls.

The most prominent characteristic of late period murals is their stylization. Whereas murals of the early period are more or less realistic, late period mural paintings are imaginary. The Kandyan artist focused his attention on two technical requirements, namely lineation and pigmentation. Traditional artists followed the same general techniques. But variations developed in different sub schools, due to master artists who, though belonging to the same traditions, introduced their own individual innovations. These sub schools accordingly had their own special techniques and styles. Late period murals can broadly be divided into two groups of schools, namely the Kandyan and the Southern. Characteristic examples of the Kandyan schools, such as Degaldoruwa, Ridi Vihara, Suriyagoda and Dambulla, belong to the nineteenth century (Figs. 9-12).



Fig. 9 Madavala Viharaya mural painting (Kandy)



Fig. 10 Degaldoruwa Viharaya (Kandy)



Fig. 11 Madavala Viharaya (Kandy)



Fig. 12 Degaldoruwa Viharaya (Kandy)

Southern artists displayed a considerable degree of freedom. Human figures of Kandyan paintings are severe, expressionless and inflexible. But southern artists had been able to achieve a near naturalness in depicting human figures. In Kandyan murals dresses are depicted in simple manner southern murals dresses are decorated with many floral and geometrical designs.



Fig. 13a Mulgirigala mural painting



Fig. 13b Mulgirigala mural painting



Fig. 14 Bothale image house

It can thus be observed that a painting tradition has existed in Sri Lanka from prehistoric times to the present day. Wall paintings exist in large numbers, in caves, temples, monasteries, palaces and other residential buildings.

Technical aspects of Sri Lankan mural paintings

In a mural painting there are two essential components, namely (1) a support such as a wall, wooden panel, paper, cloth, terra-cotta pottery or canvas on which the painting is done, and (2) the paint. The paint is prepared by mixing pigment with a binding medium, such as gum, animal glue, egg yolk, or drying oil. There is also a technique of painting in which no binding medium is required (Figs.15- 20).



Fig. 15 Karagampitiya Subodharamaya preaching hall, decorated wooden structure



Fig. 16 Ambalangoda traditional decorated wooden masks (National Museum, Colombo)



Fig. 17 Paper-based painting



Fig. 19 Fabric-based painting (*pethikada*)



Fig. 18 Wooden-based paintings (*laksha*)



Fig. 20 Door sash in Lankathilaka Viharaya (Kandy)

Support. This can be a natural rock surface or a wall made of stone block joined with mortar or sometimes without mortar, or bricks joined with mortar. But sometimes other techniques were also used to build walls. For example, the structure was prepared of wooden rafters, over which clay plaster was applied. The painting may have been drawn directly on the support, or on a surface (ground) prepared on the support. Brick walls and wooden surfaces, walls made of wattle and daub are also used as support for Sri Lankan murals.

“Ground” or “rendering” are the terms given to the surface material of a wall or building, on which the painting is done. Many materials may have been used in making it, as for plaster, composed of components which set in different ways. It can have clay which sets by drying, lime which sets by carbonization, and gypsum which sets by hydration. Also, inert materials such as sand and finely crushed stone, and fibrous binders such as hair, straw and jute have been important ingredients in plaster from a very early period. Plaster has commonly served as the ground for mural paintings.

In the case of a wall painting the ground is the plaster, which itself may be in several layers of rough plaster and then the final fine plaster. Finally, there may also be a layer of varnish as a protective coat on the surface of a painting (Figs. 21, 22).

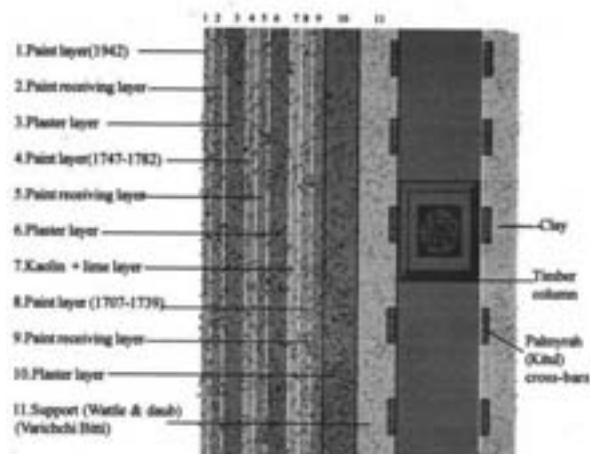


Fig. 21 Structure of mural painting at Dalada Maligawa (Prematilleke and Colombage, 2000)



Fig. 22 Structure of mural painting at Dalada Maligawa (Prematilleke and Colombage, 2000)

Paint. The pigments used in paintings can be classified into two main categories, inorganic and organic, both of which may be either natural or artificial. Natural inorganic pigments are obtained from the earth in the form of oxides (Fe_2O_3), red ocher, sulphides (HgS), carbonates (such as CuCO_3). Artificial inorganic pigments are synthetically prepared pigments such as massicot that is made by roasting of white lead. Natural organic pigments and synthetic organic pigments are derivatives of phenols and aniline but they are not used in murals.

The binding medium which holds the pigments plays a significant role in painting. Different media such as glue, gum, casein and egg yolk are commonly used in tempera painting, and in the case of secco painting lime is used as binding medium.

Techniques of mural painting. Paintings can be categorized into two types, namely portable ones, which are paintings done on board, paper, cloth, etc., and immovable ones such as murals. The word mural is derived from Latin *murus* meaning wall, and therefore paintings done on walls are known as mural paintings. Mural paintings can be executed in different ways, such as fresco buono, fresco secco, tempera, sgraffito, etc. The designation is made on the basis of the technical process used for the preparation of the plaster or in the application of the paint.

Contemporary examples of wood-based mural paintings

Cultural properties convey the most accurate information on the materials and techniques of artistic activities from the past. Cultural properties are our human heritage, produced by individuals who used various materials such as plants, animals and minerals from a different age. Regardless of whether they are made of wood, brick, clay, paper, cloth, or stone, however, deterioration can be found in the

full range of these materials. Before looking at the specific problems of conservation, a review is made of the types of wooden structures with mural paintings.

Image house tradition of Sri Lanka (timber). Having discussed the historical development of mural paintings, here is an examination of the image houses in Sri Lanka, and especially the type known as *tampita vihara*. Compared to earlier versions of *patimagharas*, image houses or halls at temples, a *tampita vihara*, which is built on pillars, is a simple, compact and unique image house. There is a lack of archeological evidence on the image houses belonging to the post-Polonnaruwa era, up to the late Kandyan period, but the *tampita viharas* now in use were originally built in the second half of the eighteenth century. It seems that the tradition of constructing timber image houses on stone columns, or those of brick construction such as the ones in Polonnaruwa, were the exceptions (Fig. 23).

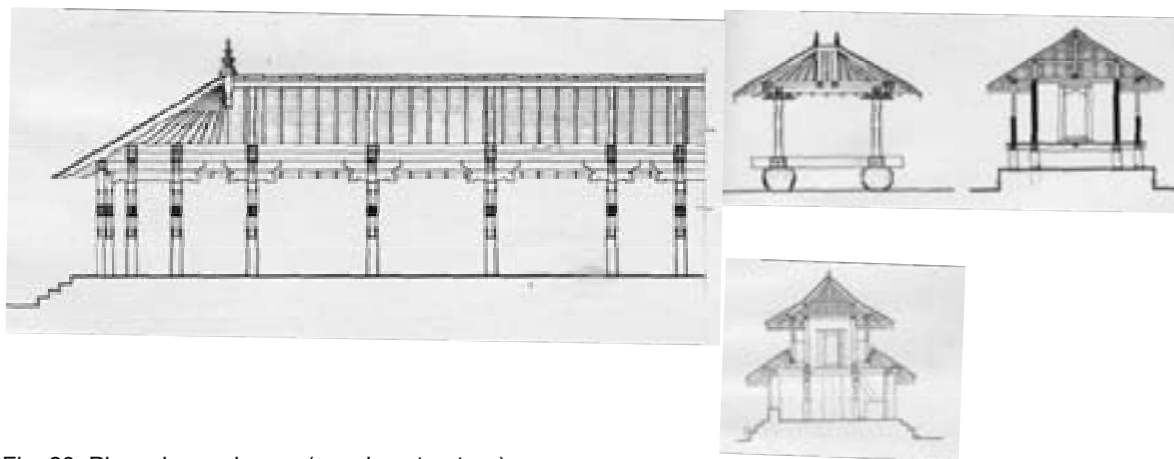


Fig. 23 Plans, image house (wooden structure)

(ICOMOS International Committee on Wood, 1993)

In the earliest *patimagharas*, between the fifth and ninth centuries, more elaborate structures with a tile timber roof on stone pillars and brick walls encasing the framed structure were in vogue, the stone columns acting as support for the shrine, thus the brick wall did not necessarily support the roof.

Tampita vihara. *Tampita viharas* were constructed on short stone pillars, with the ground floor of the shrine reduced in height, as it served little utilitarian purpose. As the stone columns were needed only to give sacred significance and to keep out dampness and termites, shorter pillars sufficed. The *tampita vihara* tradition might also have developed through foreign influences, especially during the Kandyan period, due to the religious and political ties with countries such as Thailand and Buruma. Most of the image houses and *tampita viharas* now in existence are still unused for ritual worship. However, some of them have either been abandoned and are used or inappropriately renovated, as it is not conventional practice to worship discolored or damaged images or paintings. *Tampita viharas* and image houses are depositories of the Kandyan tradition of mural paintings, and their preservation is

therefore of great significance. All these indicate the necessity of paying attention to the importance of preserving such monuments and the dire need for better conservation practices. The *tampita vihara* tradition has been used not only as Buddhist structures (functioning as *patimagaras*), but also very rarely as image houses for gods (*devalaya*) during the Kandyan period, such as a *tampita devalaya* serving as the Yatawattha temple in the Gampaha district (Figs. 24-26).



Fig. 24 Batuvita *tampita viharaya* image house (Gampaha district)



Fig. 25 Batuvita *tampita viharaya* image house (Gampaha district)



Fig. 26 Ganewattha *tampita* image house (Gampaha district)

PROBLEMS IN CONSERVING DECORATED WOODEN STRUCTURES

Timber was one of the earliest and most popular building materials in the history of civilization. Wood had many good qualities such as availability, strength and flexibility. But it had other limitations, as timber was subjected to fast decay due to environmental conditions and natural causes, attacks by many insects, and it was also often destroyed by fire.

In the conservation of structural timber important considerations have to be made regarding the preservation of the material, its dimensions and texture. But the restrictions thus imposed for a normal timber building become more complicated in the conservation of decorated timber. In such cases the degree of decoration, and the extent of deterioration, of the timber in the monument will make

conservation more difficult, complex, and complicated, because one has to preserve the authenticity of the decorative art work, while stabilizing the structure to enable it to regain its strength.

Causes of deterioration in heritage structures

Bio-deterioration (fungi). In connection with the restoration of monuments and the artistic materials, bio-deterioration may proceed slowly and be highly advanced. It may be related to the fungal activities of the clay and soils at the site, which have a close relationship with the growth of fungi on cultural materials. Moisture and dusty conditions are also favorable conditions for the growth of fungi. This situation is clearly seen on the wall paintings in Sri Lanka. Amino acid is one main product of fungi which is harmful to colors, causing discoloration of the wall paintings. Fungal growth increases with internal moisture content. Since Sri Lanka is a tropical country we have to face this problem. Fungal attacks to paintings on ceilings and door frames can be observed in the central province temples (with Kandyan period paintings). Fungi growing on the surface of the wood produce stains. They do not affect structural strength, but can cause painted surfaces to flake off.

Insect attack. Organic materials such as wood are all vulnerable to insect attack. Insects cause a great amount of damage by weakening structural timbers and many parts of the wood work. Most of the prominent decay in Sri Lankan wooden structures is caused by insects. Among them termites, ants, wasps, beetles, etc, can be seen. Due to termite and other insect attacks, not only are mural paintings damaged but also the wooden frames are weakened (Figs. 27-30).



Fig. 27 Arabegama image house (wooden ceiling)



Fig. 28 Asmadala
Buddha image
(wooden structure)



Figs. 29-30 Thivanka image house

Damage by birds and small animals. Birds and animals can damage monuments and mural paintings by urinating and defecating.



Fig. 31 Thivanka image house

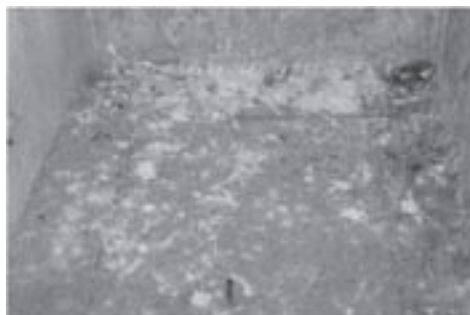


Fig. 32 Thivanka image house

Birds and rats also cause damage by building nests, which provide likely spots for the start of fires, and by gnawing electric wires, for which they have strange a predilection. Residue from activities of birds, bats and insects include both alkaloids and acids that promote decay on the surface, particularly for wooden ceilings and wall paintings, from which the resulting dark deposits are difficult to remove.

Manmade causes of decay. The main categories of manmade causes of decay in Sri Lanka are vandalism (Fig. 33), and vibration from traffic and commercial activities.

Climatic causes of decay. Climate, in all its aspects, is one of the fundamental causes of the decay of monuments, contributing to the failure of their materials, which in turn affects the structure. Included in this category are changes in temperature, and thermal expansion. All building materials expand when heated and contract again when cooled, with this expansion and contraction resulting in thermal movement which is a major cause of decay in buildings. Thermal movement in soft mortar will cause only fine hairline cracks. Mud, brick and adobe also have relatively low thermal expansion and conductivity, and similarly have very few thermal movement problems.



Fig. 33 Sigiriya mural painting damage (due to vandalism)

By contrast, wood moves markedly and fairly quickly with changes in the relative humidity of the air, and these movements are far greater than thermal movements. Because of its nature, wood is generally used in a framed structure which is able to absorb both thermal and humidity movements.

Action of moisture. The presence of water in any of its various forms causes or accelerates the decay of most building materials. The access of water to porous masonry materials may be caused by rain. Water also penetrates porous masonry materials through capillary action.

Categories timber used in different elements of buildings

Different types of timber, presenting different problems for conservation, can be classified broadly into three groups: (1) the timber frame as a base to entire the image house (Figs 34-37), (2) timber beams used in the roof (Figs. 38, 39), and (3) timber used for the doors, door frames, windows, ceiling, and railings, often decorated with traditional paintings (Figs. 40-43).



Figs. 34-37 Timber frame as the base to the entire image house



Figs. 38-39 Timber beams used in the roof



Fig. 40 Door and frame



Fig. 41 Door



Fig. 42 Ceiling



Fig. 43 Column

Sri Lanka is fortunate to have timber elements of buildings preserved from the fourteenth century AD, despite all the political unrest and external troubles that occurred during post Polonnaruwa period (twelfth century).

MY EXPERIENCE IN CONSERVING WOOD-BASED MURAL PAINTINGS

I have been working in Western province ancient temples. Most of the mural paintings in this province belong to the Kandyan and southern traditions. There are three districts in Western province, Colombo, Kaluthara and Gampaha (Fig. 44).



Fig. 44 Map of Sri Lanka

Among these three districts, most wooden paintings are found in Gampaha district. These temples are the *tampita vihara* type. Others are image houses, being wattle and daub buildings with wide verandahs and a roof supported on timber columns. The ceiling beams were painted and the verandahs provided with lacquered and turned balusters. The shrine rooms have paintings of *Jathaka katha* on plastered walls. The wooden ceiling has also been painted. The architecture of the Kandyan period consists mostly of heavy timber construction with the wood protected from the elements by a large roof and the floor raised well above ground level.

Conservation Method

The procedure followed consists of the following steps.

1. Inspection report
2. Preparation of estimates
3. Preliminary study
4. Photo documentation
5. Graphic documentation
6. Conservation
7. Final report

These success of these activities depends first of all on documentation, and second, on analysis of the causes of decay, and thirdly on actions to correct these causes of decay. Actions should be the minimum necessary, reversible if possible, and should retain the maximum amount of original material in the fabric.

Any work executed must be documented both before and afterwards. All work should be guided by the Venice Charter which must be taken as a whole, the emphasis being on authenticity (Figs. 45-50)



Fig. 45 Applying insecticide



Fig. 46 Filling the rendering



Fig. 47 Reintegration (Dottergio)



Fig. 48 Consolidation



Fig. 49 Applying insecticide



Fig. 50 Applying insecticide

The conservation of timber monuments, especially decorated wooden structures, has faced many problems which are of a multifaceted nature. It is important to understand these properly and take the most appropriate path in order to conserve them for future.

Problems and Needs

Craftsmen and their workmanship. All decorated timber monuments and other wood-based cultural properties are the product of excellent craftsmanship. They were promoted by the craftsmen's traditions, their commitment, devotion and capabilities. The following types of craftsmen were invariably involved in and contributed to the production of decorated timber products: carpenter, painter, timber carver, ivory carver, metal carver, and blacksmith. Today most of these skills have deteriorated and even if available are very expensive and unreliable. It was found that in the conservation of decorated wooden cultural properties as currently conducted, the consolidation carried out by the laboratory conservator was visually unsatisfactory, and it was necessary to employ craftsmen skilled in in-fill and reintegration, and capable of reproducing quality equal to the old.

Required personal and training. From past experience it has been necessary to train categories of people to handle aspects of the work, namely:

1. Art historians and researchers in traditional technology
2. Conservators
3. Craftsmen

The services and contributions of these categories were required to understand the contents of past artisans' performance, given the conditions of the time and environment. These experts and researchers were basically needed to study and understand the monuments and advise on historic, aesthetic, and scientific matters regarding conservation. Training needs to be carried out with the help of international institutions involved in the conservation effort.

The laboratory facilities, appropriate personnel, and financial support required for these studies are not considered the highest priority in developing countries like Sri Lanka, where other are problems are much more acute.

Conservators who handle decorated timber need to be reasonably well trained and made aware of disciplines other than their own area of specialization.

Craftsmen are trained in different skills. Different crafts in Sri Lanka are still handled by members of traditional families who have been continuing their crafts for generations. They still have the

traditional methodology and skills that they learned from their fathers. But most of them have lost the proud traditions of these crafts and work today for financial gain only.

Many efforts are being made by the government to promote skills in all areas of craftsmanship. Skilled craftsman are very expensive and difficult to find. Even if found, they are often not willing to do conservation work due to the low remuneration. Training in special skills of crafts required for the conservation of monuments and valuable art treasures is very important. The maintenance of decorated timber work will only be possible by educating the users on the value and importance of safe-guarding cultural property, and by monitoring their behavior to ensure that they do not harm these valuable national treasures.

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Thailand

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Gaps in the Conservation of Traditional Communities in Thailand

This country report examines the status and roles of traditional communities within the urban context in Thailand, and explores gaps in their conservation, explaining current conservation measures through case studies of two such communities, Klong Amphawa and Trok Baan Jeen.

BACKGROUND: TRADITIONAL COMMUNITES

Each city has a traditional community that is related to its origin. The traditional community plays its role not only as an existing housing stock, but also as a place of historic and cultural significance that is worthy of conservation. Due to its special characteristics, the traditional community makes each city unique, bringing pride and an economic base to the residents. However, modern development projects, ownership patterns, and the lack of sufficient measures to support the continuity of the traditional community have led to loss or degradation in many cases. There is, therefore, a need to seek ways to maintain traditional communities in good condition, but no comprehensive study on the problems of conserving traditional communities is available.

As part of the national socioeconomic plan, the traditional community has been assessed as cultural capital with potential to revitalize a “creative economy” in Thailand, but there are many gaps in various levels of practice as a constraint to setting up a comprehensive system of conservation.

Definition of traditional community in the conservation system in Thailand

A “traditional community” is a place which contains cultural significance as cultural heritage. The traditional community delivers its value through urban development as “housing stock” for urban inhabitants. Its cultural significance is linked with the identity of the place as well as of the town. This special characteristic can be found through the architecture, pattern of settlement, and way of life, which can serve a socioeconomic function, and as a source of knowledge for the community and for cultural tourism. There are several characteristic issues such as the historical significance, age, character and way of life, which can be detailed as follows.

1. Historical and archaeological significance. A traditional community can be evidence of past civilization, wisdom and human development, which will differ from place to place depending on past adaptations to geography, landscape and cultural ecology. Some historical evidence may involve important events in the past, or important persons on a national or even a global level. Archaeological significance relates to civilization in the past, including aspects such as the way of life, traditions, and beliefs.

The Fine Art Department's (FAD) operational guidelines for monument registration includes "Historic District/Community/Old Town" as one of the categories of monuments, meaning a district or town which comprises historic structures, monuments, traces and evidence from the past such as old moats, walls, or a site which presents unique and uniform architectural characteristics.

2. Age. In conservation practice, a minimum of 50 years is normally taken as the age of a monument. In Thailand, since 1926 we used to take 100 years as a standard, but now we do not have an operational standard which could be a criterion for assessing cultural value in registering a historic structure as a National Monument. Age is not weighted high on the score, but the overall score is based rather on aesthetic values, which includes artistic and architectural values. Accordingly the "collective value" of a traditional community will likely be ignored because of its continuity of use and physical change, so that many traditional communities have been left out of the conservation system in Thailand.
3. Character. "Collective value" is the most important value which creates the character of a traditional community as a whole. We may not find many high value buildings in the community individually, but together they may form a unique characteristic as a quality of the traditional community. Most traditional communities in Thailand are vernacular, and include physical characteristics such as topography, accessibility pattern, circulation network, site planning, landscape and planting, architectural style, materials, and age.
4. Way of Life. The way of life is a character that broadens the concept of conservation to cover "intangible value," not only with regard to the physical character but also local wisdom and indigenous knowledge, which may include the following
 - A. Basic life skills
 - B. Literacy
 - C. Religion, philosophy and ethics
 - D. Arts and music
 - E. Social system, family and kinship
 - F. Economic system, trading and transportation
 - G. Industry and technology
 - H. Politics

Accordingly, a “traditional community” could be defined based on the following characteristics.

- Living communities located in both urban and rural areas
- Having historic fabric and life span
- Related to historic events and/or important person from the past
- Having unique physical characteristic
- Having a way of life reflecting socioeconomic conditions and a continuity of traditions

The significance of a “traditional community” can be stated as follows.

- It provides housing stock for population needs
- It consists of cultural assets for local identity
- It contains economic resources for the community
- It promotes cultural learning and a knowledge-based community

Factors in the historical development of traditional communities

From this definition of “traditional community” in Thailand, critical aspects can be seen to have developed from the modernization and westernization of the nation during the period 1857 – 1937 (Reign of King Rama IV – World War II). These can be summarized as follows.

Development of the transportation system. Canal transportation was cut throughout all regions in Thailand, especially in the central region, where there are many important canal-based communities which were established during that time, such as Amphawa, Klong Damnoensaduak, and many water-based communities along the rivers in Suphanburi province. Development of a railway system at the same time during the reign of King Rama V established “station towns” all over Thailand as well, but during and after World War II, construction of new highways proceeded, changing the mode of transportation and leaving “canal communities” and “station towns” difficult to access.

Development of the systems of politics and government. During the reign of King Rama V (1892), the government system was changed to consist of Departments (which later became Ministries), whereas the country was divided into 14 counties. This change was enacted together with “Royal Visits” by the King to the main town of each county, with these towns and communities developing from small villages to urban communities.

Development of the trading system and industrialization. These developments occurred after the main treaties were made by Thailand with western countries, especially the Bowring Treaty (1855) with the United Kingdom. Thailand became modernized and opened its doors to industrialization. Mass production was introduced, including that of construction materials as in the forestry and timber processing industries. Wooden construction spread nationwide in urban communities. Wooden shop houses were constructed with the coming of Chinese in large numbers, who made communities

serving the cities as markets and commercial centers, together with Chinese shrines, schools, and related structures.

Factors in the decline of traditional communities

Physical degradation. In terms of their architecture, the buildings and other structures of traditional communities such as markets have suffered degradation and aging in their physical condition. New buildings and infrastructures have been constructed to replace old structures without concern given for compatibility of physical characteristics or attempts made to avoid conflict with the community's collective value. New road systems and infrastructure transform the original layout of traditional communities. Causes of decay are mainly based on a lack of appropriate materials (mainly wood), lack of suitable craftsmanship, lack of proper maintenance, new trends toward modern construction and a lack of awareness of heritage value.

Property rights and ownership. Most of the land and properties in traditional communities are under private ownership, entailed from previous generations. New generations do not relate strongly and attach value to the place, because of a preference for a modern style of living, and the properties are often sold for new development. Some traditional communities are owned by temples, the Treasury Department and the Crown Properties Department. If these landlords and owners are not aware of the cultural value, these traditional communities are also in danger.

Laws and legislation. New laws and legislation contribute to the degradation of traditional communities as well. Traditional communities were established more than 50 or even 100 years ago, and in most cases before the establishment of modern building regulations, which now threaten the existence of the traditional community. For example, some shop houses have a width of less than 4.0 meters, which is the minimum requirement in today's building regulations. If those shop houses are not protected by the Monument Law, when falling apart they cannot be rebuilt with the same width because it is below the standard of the law. Another example is when the layout and street pattern of a traditional community cannot be integrated with new development and urban expansion. Plans may then be made to widen old streets, which will affect the old buildings and community's character.

In cases of monument registration under the category of "Historic District and Old Town," there is no example of an entire district or site being registered. Some suggestions regarding this are as follows.

1. Delimitation of the boundary of a monument means the whole area or site must be controlled by Fine Arts Department (FAD). Different ideas and concepts are needed for the operation and management of historic districts (traditional communities), however, which comprise historic buildings, non-historic buildings, and surrounding structures which the "Monument Act" does not cover.

2. To delimit a monument boundary requires acknowledgment from property owners, but most historic districts are under private ownership and owners do not want to let their properties to be registered because it deprives them of their rights. Currently there are insufficient measures for incentives to balance the development pressure.

Impact from urban development. Development pressure is the main factor of degradation to both the physical condition and the way of life of a traditional community. Physically, new development in urban areas, such as new building construction and new infrastructure, affect the old buildings. Even developing traditional communities for cultural tourism allows gentrification to occur in the area, changing the traditional way of life and forcing local people to relocate from their community.



Figure 1: Distribution of traditional communities in Thailand

Source: National Housing Authority and Thammasart University, 2010

CASE STUDY 1: KLONG AMPHAWA COMMUNITY

The Klong Amphawa community is located along the Klong Amphawa (Amphawa canal), which connects with the Maeklong river, one of the main rivers in the greater central region of Thailand on the western side of the Chao Phraya river, which passes through Bangkok.

Historical development of the Klong Amphawa community

It is noted in an old document of the Ayutthaya period (King Prasat Thong, r. 1630-1655) that Klong Amphawa was a small community which prospered from both agricultural and trading activities. The area was covered with coconut and fruit orchards, connected by small-vessel canals with a central large floating market that functioned as the main trading center of the region. The historical development of the Klong Amphawa community can be divided into four phases as follows.

1. Fishery village and self-sustained agricultural community (before the Ayutthaya period).
2. Early floating market and commercial agricultural community (from the Ayutthaya to the beginning of the Rattanakosin period).
3. Late floating market and commercial agricultural community. Amphawa, the floating market in the area, had completely developed as a center of trading in the region and played an important role as an economic center. The area along both sides of the canal had developed and become occupied for trading purposes, mixed with boat vending activities within the canal.
4. Economic regression. The construction of roads in the area, and changes in the ecosystem of the Maeklong river basin which resulted from the construction of a dam upstream, were the causes of a decline in the economic fortunes of Amphawa. The trading center shifted to the Muang Maeklong area (now the center of the modern province) which offered easier access by road and railway. At the same time, people could no longer grow agricultural produce, because the river did not have enough flow to push back the salt water after the dam's construction, resulting in a brackish mixture that left many of the coconut and fruit orchards in ruin. Local inhabitants left the area after this economic regression occurred. The new generation went out to work in other urbanized and factory towns nearby, leaving the very young and old people at home. With the lack of cultural continuity, the traditional way of life changed very quickly in parallel with worldwide globalization, even though many local activities are still continued within the same environment.

In face of the current situation, the Amphawa municipality as a local government tried to revitalize the economic situation by promoting Klong Amphawa community as a new “eco-tourism” spot. The new evening floating market has been promoted to bring tourists to visit from Bangkok and nearby areas.

Local environment and architecture

The local environment and architecture in the area are very closely related. All structures have been built under the influence of the environment and its ecosystem. To understand this relationship, we must understand some characteristics of the environment, the ecosystem and the landscape.

Natural ecosystem. The Amphawa canal is one of the branch waterways of the MaeKlong river. This part of the MaeKlong passes through Samut Songkhram province before flowing out to the sea in the Gulf of Thailand. There are three main types of water: salt water, brackish water and fresh water. From its location in the middle part of the province, the Amphawa canal is influenced by a brackish water system, meaning that sometimes salt water moves into this area, and sometimes fresh water from the north will push the salt water back. The ancestors of the Amphawa residents had understood this and adopted a way of life which is very much in harmony with this water system.

Natural and cultural landscapes. The main natural landscape features of the area are the MaeKlong river, which passes through the province and connects with a network of branch canals and small access canals that spreads through the orchard areas. In Klong Amphawa and the neighboring canal communities, local people grow coconut trees (to make coconut sugar and also sell the coconuts) as their main produce, together with other kind of plants such as litchi and pomelo, which like the coconut thrive in flowing brackish water. The coconut tree can grow well, and gives good quality syrup to produce sugar, in such an environment of mixed fresh and salt water. The local people learned this natural phenomenon and adapted the natural topography by opening small access canals from main waterways like the Amphawa canal to supply their coconut orchards.

This coconut orchard system is called *kanad suan* in Thai, which means a set of orchards or plantations. One set is comprised of ditches and dikes to lead the water so that it can continuity flow through every part of the orchards. The length of each dike, on which the coconut trees grow, depends on the ability of the coconut farmer to carry the coconut syrup tubes. Sometimes making coconut syrup was not profitable due to the economic situation. Many coconut farmers turned to other kinds of fruit mixed with coconuts, but still maintained this system. Accordingly the dominant landscape feature of this area is the network of orchard waterways connected with the MaeKlong river and its branches. This system can help greatly when the flood season comes, because water flowing from the north can be spread into the waterways of the MaeKlong river, like a system of blood vessels.

Local architecture. As the Klong Amphawa community historically not only operated the orchard plantations but also served as the main trading center of the region, there are many types of architectural heritage which were adapted to the local environment, and can be described as follows.

1. Wooden row houses. These are the main architectural feature in the area, not only having architectural value but also in reflecting its character as a trading community. These one-story row houses are comprised of many units of shops, and covered by corrugated sheets or rectangular cement tiles, with awning extending over the walkway in front of the shops. The entrance of each unit is a wooden folding door which can be fully opened to support sales activities.
2. Individual wooden houses. These are individual shop houses with wooden folded doors. Most of them have three or four entrances to access one big hall inside, also for sales purposes. The shape of the roof is adopted from the Thai traditional style. Some of the individual wooden houses used to be floating houses in the past, which were relocated to the side of the canal, behind the row houses or in the orchards.
3. Orchard houses. The orchard houses can be different in style but are always located in the orchards near the access canal, which can be used to convey the produce and as a way to go to and from home. Some were built in traditional Thai style, and some are vernacular wooden houses. Nowadays in some orchards in Klong Amphawa, we can still see old-sugar making chimneys which have been abandoned.
4. Connection elements (walkways and stairs). The concrete walkways in front of the row houses developed from individual wooden terraces in front of individual houses. Formerly the only way to access each house was by boat from the canal. Later the connected concrete walkway was built by Amphawa Municipality. While this change disturbed the privacy of each house, it also gave accessibility and more convenience for local people. At the same time it can be used as a transition space from the house to the stair to access the canal for various purposes, such as buying things from boat vendors, giving food to Buddhist monks in the morning, and accessing the waterway.



Figure 2. Cultural environment and architectural characteristics of the Klong Amphawa community

Sustaining the cultural environment

Michel Bonnette has written “Why work at preserving the fishermen’s village if the mill upstream is polluting the river and killing the fish?” The approach to sustain this Gaia system must be integrated and must be holistic. To safeguard Amphawa’s natural ecosystem, cultural landscape, architectural heritage and the way of life of its people, we cannot just conserve selected aspects separately, but rather all of them as a whole. We have the means to restore any of the old buildings, but how can we maintain the local activity to keep the building alive, how can we continue the orchard activities to sustain the cultural landscape as it used to be? How can we conserve and sustain both Amphawa’s tangible and intangible heritage?

The definition “cultural environment” was put into early use by the Office of Natural Resources and Environmental Policy and Planning (ONEP) to control development around monuments in Thailand. During the years of 2003-05, ONEP had been aided by Danish International Development Agency (Danida) to run the project called “Thailand Cultural Environment Project (TCEP)” which aimed to broaden the idea of conserving the cultural environment in Thailand. The Ministry of Environment and Energy, of the Forest and Nature Agency in Denmark had defined the term cultural environment

as “Geographically delimited areas that reflect important features of societal development; it is a third dimension of the environment related to the cultural and historical aspects of the physical surroundings.” ONEP adopted this definition of cultural environment for application in the project (TCEP), broadening the previous one to become “The environment or area related to human development from the past until now, which contains value in art, culture, history, archaeology and technology including the monument which should be counted as part of the environment as a whole.”

Cultural environment conservation in Klong Amphawa

After identifying the natural and cultural resources of the Klong Amphawa community, the Thailand Cultural Environment Project ran many activities to support and revitalize these resources, all aiming to sustain the overall cultural environment. These activities can be divided into three main categories.

1. Local planning process. This is the planning process of working together with the local government, Amphawa Municipality. One of the biggest threats to cultural heritage in Amphawa is from local development policy. An attempt at integrated planning has been initiated, and is still in progress, involving Amphawa Municipality.
2. Demonstration project. Selected buildings were restored as a demonstration of the potential for restoration. One orchard system was revitalized by one organization with the aim of serving as example for the local community.
3. Awareness raising programs. Many activities were run with the youth in the area to educate the young generation in understanding the high value of their natural and cultural heritage.

CASE STUDY 2: TROK BAAN JEEN COMMUNITY

One of the important traditional communities in the northern part of Thailand, the community of Trok Baan Jeen was settled and established on the bank of Mae Ping river in Taak province. Originally, Chinese merchants set up a market community for which the place name was given that referred to the Chinese, as “Jeen” in Thai.

Trok Baan Jeen was a trading and commercial center because of its location along the Mae Ping river, a major transportation route from Bangkok to the north. Since it served as a market community, Trok Baan Jeen did not produce agricultural products or cultivate rice, but it depended on a town system where agricultural areas situated around the town, especially on the other side of the river, delivered products by boat for sale in the community.

The integrity of the Mae Ping river and its environment in the past allowed people to use the river in various ways. It served the community and the town as a transportation route, a means for the forestry industry at that time to raft logs downstream from the northern region. People used the water from the river for everyday life. Data from interviews reveal that during the dry season sand islands appeared

in the river, which used to be almost 1 kilometer in width. Local people went there for recreational purposes, and also to collect usable and potable water that filtered through the sand.

Architectural characteristics

The main architectural feature which uniquely characterizes the place is a “wooden shop house with a traditional Thai roof,” situated along a small street called *trok*, showing how the structure of the place becomes the place name. A *trok* serves the area as a public space whereas a small space call *tern* in front of the shop acts like a welcome and transitional space, before climbing two or three steps to enter the inside of the shop. The way local people would buy things was by asking the shop owner to pick the goods they preferred, while the owner stays in *tern* area in relaxing ways such as lying down, sleeping or chatting, from where they can observe what was going on in the *trok*, while private space is used in the back of the house. There was some advantage for buildings situated on the riverside where the other side can used as the back of the house, for the kitchen, rice storage, and water well.

The other type of architecture in the area consists of residential houses, or structures that had been adapted for living purposes. The most valuable example is the *baan yai* or the main house of the Sopanodorn Family Residence. This had adopted a western style with wooden decoration, a hip and gable roof with rectangular cement tiles, plus a main entrance with a Chinese character.

The architectural characteristics of the place had developed through factors such as social stability and continuity of the community as a commercial and trading center, its coherence with the environment and cultural ecology, use of skilled craftsmanship, and unique wooden materials. These various aspects can be elaborated as follows.

Commercial and trading activities. The architecture of Trok Baan Jeen had been designed and built to serve these activities and functions. The combination of a hierarchy of spaces and the circulation of people, inside and outside the structures, has developed from these factors which are reflected in the physical characteristics.

Construction materials. Because the Mae Ping river was the main transportation route for the distribution of timber as logs to the other part of the country, there was a place to stop and check the wood around the community. Teak wood, also available from the forest nearby the town itself, is the most valuable and important material for construction. The rich availability of teak wood can be found in the structure and elements of the buildings, which used the whole length of logs without any joining, including for wooden decorative ornaments, which have high artistic value. The terra cotta roof tiles, with unique details, can be produced in a nearby swamp area not too far from the community.

Craftsmanship. As Trok Baan Jeen was a commercial center, the place always invited craftsmen and skilled labors who used the area for exchanging building knowledge. Local people can decide who and how they want to build the house with quality materials and skilled craftsmen. In some cases, local people could buy part of a house to be redesigned and reconstructed for a new house.



Figure 3. Architectural heritage of Trok Baan Jeen

Cultural landscape and ecology. The Mae Ping river formed the unique natural landscape as background for the settlement form and built environment. The community had developed with both land-based and river-based characteristics, such as the small street (*trok*) as the main backbone together with small walkways to reach the river, and the orchard behind the community where there is the main temple, Wat Nam Hak, as a religious center for the community at the south end of the *trok*.

Period of change for Trok Baan Jeen

Around the 1940s, the Mae Ping river had started to fill up and its width narrowed. The riverside of Trok Baan Jeen was replaced by a landfill to be used for government purposes. The effect of the landfill was to place an area of higher level land in between the community and the river, so the rain could no longer drain out to the river naturally. This affected to the structure of the old houses and the land underneath them.

The process of change affected the way of life and physical character of the community. From being an active trading community, it turned into a peaceful residential area in an urban part of Taak province. The architectural heritage still proudly remains, but is degrading. The existence of the cultural heritage and its value are waiting to answer in a meaningful role for the people and future generations.

Statement of significance of Trok Baan Jeen community

As the result of study, the community's significance was found to be highly intact in both its cultural and socioeconomic values. It can be stated that "this community shows an example of settlement which harmonized with the environmental and ecological context, and the cultural context by reflecting its trading and commercial purpose. The *trok* structure and architectural heritage still maintain their condition of authenticity. The kinship system is an important measure to developing the conservation planning process and prolonging the quality of the place for the future."

Study process and conservation status

The project has been launched with a partnership of three organizations, which are (1) the Trok Baan Jeen Club, (2) Sook Architects Limited, and (3) the Faculty of Architecture, King Mongkut's Institute of Technology, Ladkrabang. Students in the Conservation class surveyed the architectural heritage and made an inventory report, including measurements of important and decayed buildings, to set up the restoration framework. The architectural team made the conservation master plan, together with the local community, which aims to revitalize the quality of life and solve infrastructure problems such as drainage and lighting for safety, while balancing this by keeping the cultural value and creating new interventions to enhance the quality of the place, and integrate it with the larger urban area.

This has been done through a participatory process involving local people and developing conservation measures in keeping with academic standards and practice. The project is now underway and open for involving the participation of further partners. The Trok Baan Jeen community was awarded by the Association of Siamese Architects under Royal Patronage as an "Architectural Heritage Community" in 2009.



Figure 4. Participatory process in Trok Baan Jeen community revitalization

Viet Nam

VO Duy Trung

Chief

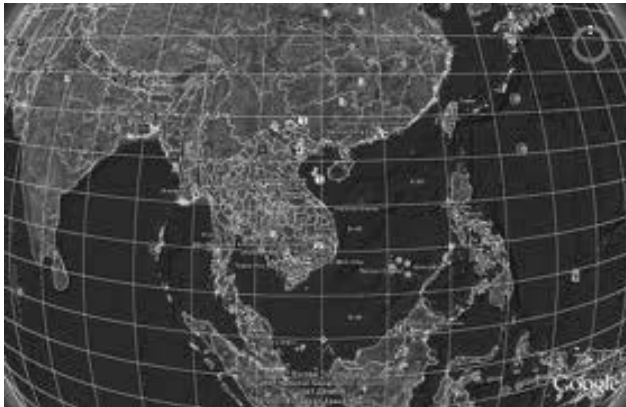
Division of Monuments Restoration Management in Hoi An Ancient Town

Hoi An Center for Cultural Heritage Management and Preservation

Management and Conservation of Cultural Heritage: Hoi An, Viet Nam

I INTRODUCTION TO HOI AN CITY

1 Location and Geographic Features



Position of Viet Nam on a world map

Viet Nam lies on the Indochina Peninsula, in Southeast Asia. Vietnam's territory runs along the east coast of the peninsula. Vietnam has land borders with China (1,281 km), Laos (2,130 km) and Cambodia (1,228 km) and 3,444 km of coastline bordering the Gulf of Tonkin, South China Sea and Gulf of Thailand.



Map of Viet Nam

The city of Hoi An is about 50 kilometers north of the city of Tam Ky (the capital of the province) and about 30 kilometers south of Da Nang. Hoi An has nine wards along with four communes. Situated on the Thu Bon estuary, a network of waterways about 34 kilometers long, Hoi An is close to the ocean. Off the coast is an archipelago of eight small islands: Lao, Ông, Khô Mệ, Khô Con, Tai, Dài, Lá and Mồ, known collectively as Cu Lao Cham (Cham Islands).



Map of Quang Nam Province showing the location of Hoi An



Hoi An Ancient Town



Map of ancient Hoi An



Aerial view of Hoi An Ancient Town

2 History and Development of Hoi An

2.1 Prehistory. The history of Hoi An can be traced to the late Sa Huynh period (200 BC to 200 AD). Archaeological relics, Chinese copper coins (Wu Chou and Wang Meng period) and Xi Han period iron items similar to artifacts from Dong Son and Oc Eo sites indicate that the Sa Huynh traded with communities in China and in central and south Viet Nam. Archaeological excavations in Bai Ong indicate that the Cham Islands have been occupied for over 3,000 years.

2.2 Champa period. During the Champa or Cham period (200–1500 AD), Hoi An was known as Lam Ap Pho (Champa city). Between the ninth and tenth centuries, Lam Ap Pho became an important commercial port, which attracted many Arab, Persian and Chinese merchants trading goods. Remains of Cham era foundations, wells, stone statues, along with pottery and ceramics, jewelry and colored glass attest to bustling trade in Lam Ap Pho during the Cham period. Ultimately, the prosperous Trà Kiệu kingdom was weakened through continuous war with the Dai Viet to the north and the Khmer to the southwest. The Dai Viet eventually gained the upper hand and gradually expanded southward. Le Hong Duc (1471) and Nguyen Phuc Tran (1693) pushed the border southward to the Cu Mong Pass in modern day Qui Nhon city (Binh Dinh province), effectively annexing all Cham areas.

2.3 Đại Việt - Đại Nam period. From the sixteenth century on, thanks to the advantageous geographical position and various external and internal factors, many foreign merchant ships from China, Japan, Portugal, Netherlands, British, France, etc. came to Hoi An to trade in commercial goods. Japanese and Chinese merchants in particular had been permitted by Nguyen Lord in Dang Trong to settle for their living and trading. Besides these residents, cultures and craft experiences from many areas and countries gathered at Hoi An, which quickly became a place of abundant goods, produce, and well developed domestic and foreign trade. Hoi An remained a prosperous trade port for several centuries. This was the period of greatest development for Hoi An as a port town in the past. As a result of the creation of Hoi An communities through many centuries many valuable cultural heritage treasures remain, including tangible and intangible aspects. On December 4, 1999, Hoi An was inscribed on the World Heritage List by UNESCO, providing new chances for social and economic development in Hoi An.

II TANGIBLE HERITAGE

1 Urban Lay-out

According to archaeological evidence and historical documents, due to the accumulation of silt and changes in the course of Hoi An river, the port area has gradually extended southward. Nguyen Thai Hoc street was created sometime between the late eighteenth century and the early nineteenth century to further expand the port area. Streets running east-west were interconnected with perpendicular streets resulting in a grid-like pattern. This grid of streets made the town very different from a traditional village which usually evolves organically, with winding streets. The town of Hoi An today occupies an area of about 300,333 square meters.



Location of Hoi An's first settlement according to archaeological findings



Hoi An between the late eighteenth and the early nineteenth century



Hoi An today

2 Built Heritage

The built heritage of Hoi An reflects the cultural influence of diverse peoples who settled and worked there in the past. Though trade with Japan lasted only around half a century (1592-1636), the cultural legacy of those traders can still be seen in Hoi An today because of its style. The Hoi An Center for Monuments Management and Preservation has identified more than 1,350 relics considered important for the preservation of Hoi An, and of these 1,273 are artistic or architectural features, which include civil structures (houses, bridges, wells, markets), religious structures (communal houses, temples, assembly halls, family chapels) and other special constructions (tombs, etc.) that Japanese settlers built in their quarter of the city. Likewise, many of Hoi buildings feature Chinese architectural influences.

There are five major types of traditional buildings in Hoi An, reflecting different purposes: houses, shop houses, family chapels, communal buildings, and assembly halls. These will be examined in turn.

2.1 Houses. The houses of Hoi An Ancient Town are a harmonization of Vietnamese, Chinese, Japanese, and French architectural styles. The talented hands of many craftsmen have taken great pains to internalize and integrate these styles and building traditions into a suitable arrangement of structure and decor to produce a vibrant architectural expression.

Today, these houses continue to be renovated and maintained using the same materials and skilled craftspeople. Kim Bong woodcarving village has a 12-generation woodworking tradition, and its craftspeople have made an immeasurable contribution to maintaining the old town. In Thanh Ha, traditional roof tiles and other terra cotta products continue to be made for restoration of buildings in the old city. Conservation follows an integrated model in Hoi An, for not only are the buildings themselves conserved, but also skills and traditions associated with their conservation.

The old houses can be classified into five sub-categories, based on their external components.

1. One-story building with wooden walls. These are mainly located along Tran Phu St., and date from the eighteenth and nineteenth centuries. A typical example is the house at 48 Tran Phu St.



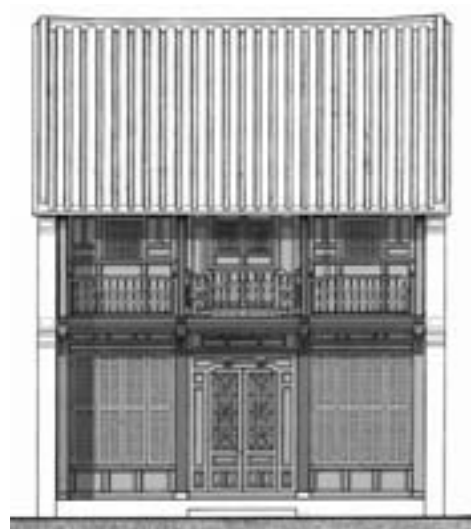
One-story building with wooden walls

2. Two-story buildings with eaves. A typical example is located at 05 Nguyen Thi Minh Khai St. These were built in the late nineteenth and early twentieth centuries.



Two-story building with eaves

3. Two-story building with wooden walls and balconies. These were built in the late nineteenth and early twentieth centuries.



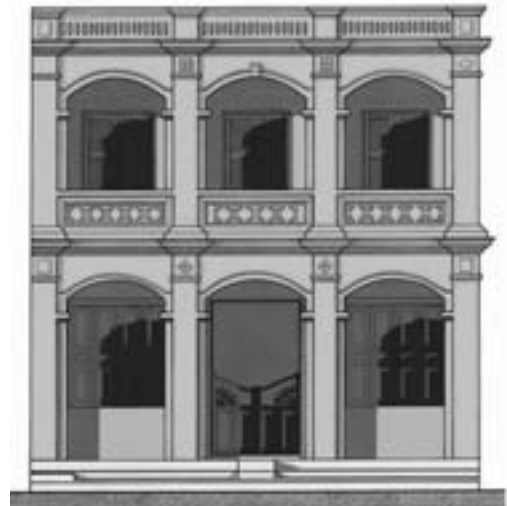
Two-story building with wooden walls

4. Two-story brick buildings, which can be seen along Tran Phu St. and Nguyen Thai Hoc St. These buildings were built in the late nineteenth and early twentieth centuries.



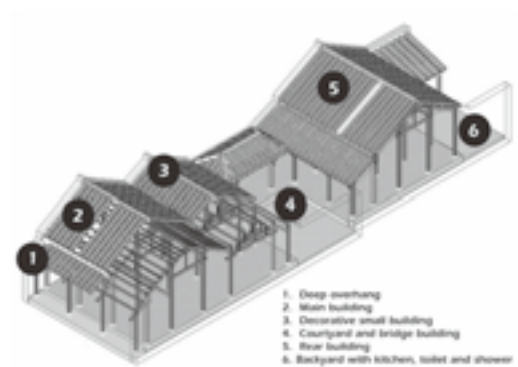
Two-story brick building

5. Two-story French-style buildings, which can be found on the western end of Nguyen Thai Hoc St. These buildings date back to the early twentieth century.

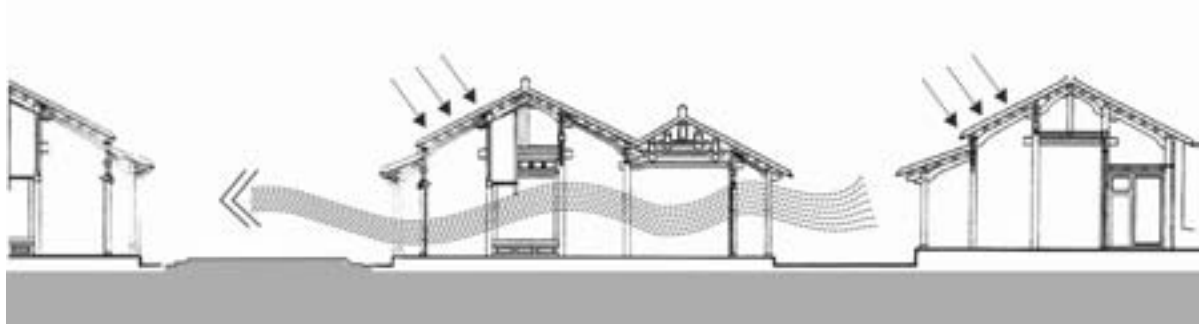


Two-story French-style building

2.2 Shop houses. Hoi An's complex of wooden shop houses is one of the largest in Southeast Asia. Within Viet Nam, similar building styles were commonplace in the old quarters of Ho Chi Minh City and Ha Noi, but they have all but disappeared today.



Plan and section of a one-story wooden-walled shop house



Air flow in a shop house

Shop houses are built on long and narrow lots along the street. A shop house is composed of three buildings in a linear arrangement: the front (main building), a rear building (annex) and a building which connects the front and rear buildings (bridge building). The building facing the street is usually reserved for commercial purposes. An open courtyard, located between the front and rear buildings, is paved with stone and has an ornamented basin on the wall facing the bridge building. This building style allowed several generations of a family to live close together, while maintaining privacy.

2.3 Family chapels. Family chapels are detached buildings built on a square lot, usually located in small alleys and set back from the street. The lot is enclosed by a fence and there is large garden in the same fashion as for as a shop house. The core plan and structure are the same as the main building of a shop house, but with eaves on all sides. Often, a separate residential building is located at one side of the lot. Family chapels are primarily used for ancestral worship and are places where the younger generation is taught to pay their respects to the ancestors. Family chapels are symbols of strong ties among clan members.



The Truong family chapel



The Kim Bong communal building

2.4 Communal buildings. Communal buildings serve as both religious and cultural centers for Hoi An's Vietnamese and Vietnamese-Chinese communities. Communal buildings are the main places for social and cultural interaction among clan members and people from the same village. They are

used as meeting halls and for holding gatherings to celebrate festivals and special events. Hoi An's communal buildings are still in use today.

2.5 Assembly halls. The assembly halls in Hoi An were built to serve the Chinese community. The halls incorporate Chinese religious and architectural elements conforming to the principles of feng shui, but also integrate architectural and stylistic elements from Vietnamese building traditions. While having similar functions to communal houses, assembly halls have traditionally also served as places in which trade deals are negotiated.



The Phuc Kien assembly hall

3 Other Heritage Structures

Other miscellaneous types of structure comprising the built heritage include religious, utilitarian, and mortuary features, as discussed below.

3.1 Pagodas and temples. Religious architecture is relatively ornate compared to other architecture. Religious structures are scattered throughout the town of Hoi An and surrounding areas. One example of religious architecture is the Phuoc Lam pagoda, which is located in Cam Ha village, about 3 kilometers from Hoi An.



Front of the Quan Kung temple

3.2 Bridges. One example is the Chùa Cầu (Pagoda Bridge), also known as the Japanese Covered Bridge or Lai Vien Bridge. It is said that this Japanese covered bridge was built in the early seventeenth century by Japanese, and that it relates to the legend of an animal named “Cù.” The creature's head is said to be in India, its back in Vietnam, its spine running along the coast in Hoi An, and its tail in Japan. When this monster moved, there were earthquakes in Japan. The Japanese believed that they built this bridge on its spine, though it is unclear whether this was meant to appease the creature. The bridge has been restored at least six times, though its pillars and supports are part of the original construction.

The bridge is covered, meaning it has a roof. Providing a roof meant that the bridge could act as a refuge from rain for pedestrians, but more importantly, it meant that the wooden structure would last longer in Hoi An's tropical climate. This bridge is arched and has seven spans. It is lined by two

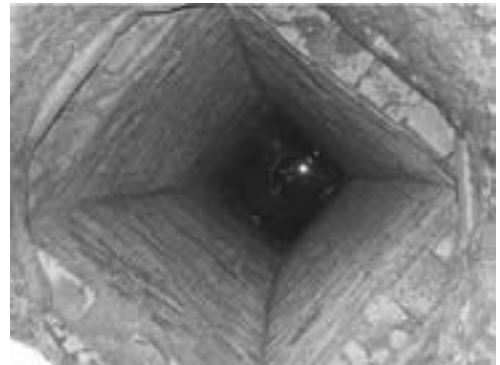
narrow corridors on either side, which house religious objects. Thus, it is also a place for religious activities.



The Japanese covered bridge, a landmark of Hoi An built heritage

The bridge cannot be said to be in the building tradition of any single past or present group of inhabitants. The structure and decorations of the bridge demonstrate a combination of architectural styles, Vietnamese, Chinese, Japanese, and also the West. Perhaps this is for the best, as bridges are sometimes seen to symbolically link peoples together; the bridge then becomes an image for friendship among Hoi An's inhabitants and visitors.

3.3 Ancient wells. Ancient wells can be found in many locations both inside and outside of Hoi An Town. The wells were built using a structure and shape to conserve the water's purity. Most frequently wells were built out of bricks to help filter the water. The oldest wells found to date were dug by the Cham and are square in shape. According to some very early historical documents, water from Cham wells was used to provide freshwater to Arabic and Persian merchants when they stopped in this area in the ninth and tenth centuries.



An ancient well in Hoi An

3.4 Tombs. There are tombs of Cham, Vietnamese, Chinese, Japanese, Portuguese, Spanish, and German inhabitants in Hoi An. Aside from their obvious social importance—linking the living generations to their ancestors—headstones have been an invaluable source of information, which has helped scientists research the origin of resident groups, and helped write Hoi An's history.



Seventeenth century tomb of a Japanese merchant



Urban context

III CHALLENGES TO HOI AN ANCIENT TOWN

1 Challenges from natural conditions

Due to its location at the end of the lower section of Thu Bon river, Hoi An suffers frequent strong typhoons and major floods annually. Moreover, most of the historic buildings in Hoi An Ancient Town are mainly wooden structures over 100 years old and located on an unstable geological foundation (alluvial ground along the town's lower section), and are further subject to many disadvantageous factors from the severe climate, which is sunny, hot, high in humidity, and rainy in addition to the typhoons. These are the causes of frequent disasters in Hoi An. The number of floods is increasing annually, and they are becoming more severe and prolonged because the rivers are shallow or extended, and the current patterns have changed. Every year two or three floods on average are seen in Hoi An, with each flood usually lasting from two to four days.

The changing and extending of rivers and currents are also the cause of environmental pollution in the dry season, and of landslides on the river bank. These threaten the traditional villages along the rivers, including Hoi An Ancient Town.

In Hoi An, fire and termites are also a threat to the existence of the ancient town. The historical houses and buildings are mainly made of wood and are close together. The density of perishable materials is thus high. Recently, many inflammable goods are displayed and stored up everywhere, such as silks, pictures, etc., and the local people use more and more electric appliances, which also pose a danger of fire.

2 Challenges from human factors

The change in local people's lifestyle is at present the most important human factor directly challenging the Hoi An World Heritage, because more than 82 percent of all historical houses are owned by local residents.

Recently restoration and repair of historical houses and buildings has proceeded at a rapid pace and is

difficult to control. In order to accommodate trading activities and the demands of modern life, there are too many factors infringing on the restoration, repair, and use of historical houses in Hoi An Ancient town. These have affected the historicity and authenticity of the heritage properties. Structures become younger and their value is reduced by arbitrary enlargement of the house's area, removal of partitions, covering the court-yard's area and the façade, and even removing the spaces for ancestor worship. These impacts detract from the value of Hoi An cultural heritage, affecting also the intangible heritage by altering the local residents' daily life, in addition to the townscape, environmental landscape, etc.

At present, materials for heritage restoration (ironwood, peck wood, lime mortar, bricks, yin-yang tiles, etc.) are difficult to obtain because the forest exploration in Quang Nam province and kilns operating in the traditional method are forbidden, in order to protect the environment.

The inappropriate use, purchase, and transfer of heritage properties in some cases has changed them from their traditional cultural value over the generations into shops purely for displaying and trading goods. The situation of ownership changing from long-term local residents to people from the outside, and mostly young people, is more and more common. This has seriously eroded traditional cultural values of life-style, manners and customs, behavior, culinary habits, etc., in Hoi An.

The local economy mainly depends on the tourism-service industry, while conditions for development are limited. Trading activities are mainly focused in the center of the ancient town, while the rural areas remain underdeveloped.

To note some additional problems, first of all, some big projects for promoting the economy in general, and the tourism-service industry in particular, have not yet been sufficiently funded. Also, the infrastructure for economic development, especially roads to accommodate more traffic, has not yet been improved. Additionally, construction planning and architectural planning still lack strategic vision.

Although the potentials of the river/water/sea/island/beach in Hoi An, as well as for Cham Island, as a world biosphere reserve are promising, it is difficult to find investors with sufficient capacity and confidence. In addition, development in Hoi An faces stiff competition from neighboring provinces.

Some traditional villages have seen explorative development as eco-villages. Others have followed the direction of economic development, while others gradually decline due to urbanization and tourism promotion projects going in the wrong direction.

IV CONSERVATION OF THE BUILT HERITAGE

Most heritage structures in Hoi An were built in the early nineteenth century (only a few, such as chapels and tombs, have been standing since the seventeenth or eighteenth centuries), with a total of over 1,300 items; the category of houses holds the majority, with over 78 percent making up the appearance of Hoi An Ancient Town. Most of the houses were built chiefly of wood, brick walls (functioning as shelter), and a concave and convex-tiled roof.

There are two types of traditional residential buildings in Hoi An. They are shop houses and family chapels. Shop houses are built on long and narrow lots along the street. Family chapels are located in small alleys and set back from the street.

In 1997, the national government of Viet Nam, the provincial government of Quang Nam, and the municipal government of Hoi An started to invest state funds in restoring government-owned historic properties in Hoi An, in preparation for the nomination of Hoi An as a World Heritage site. Foreign donors also contributed by providing funds for the restoration of ancient houses, along with technical expertise which helped build the capacity of local heritage site managers.

In December 1999, the ancient town of Hoi An was inscribed as a World Heritage site. Encouraged by the upsurge of domestic and foreign tourist arrivals following the inscription, the national, provincial and municipal governments have invested in long-development as a tourist destination.

1. Zoning within Hoi An

The boundaries of Hoi An Ancient Town were established by the Cultural Heritage Law of the Vietnamese government and the Hoi An People's Committee statute on managing, preserving and utilizing Hoi An Ancient Town. To provide guidelines for the appropriate conservation, the town area is divided into two zones, as follows.

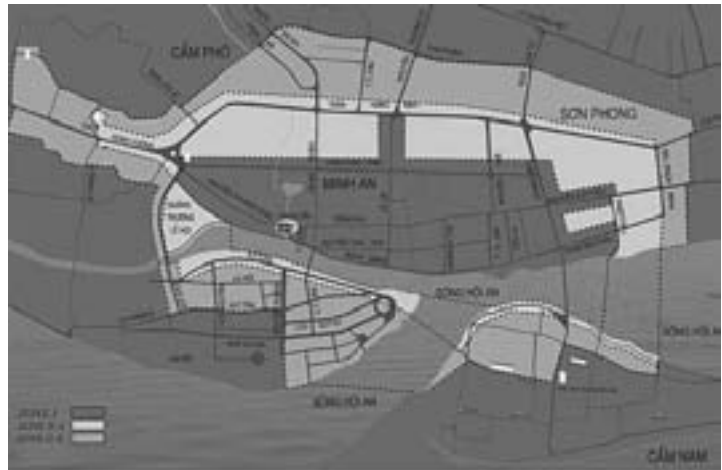
1.1 Zone I: Intact Protection Zone. This zone covers the monuments in the ancient town and the areas determined to be part of the monuments' original elements, which must be protected in their original state.

Regulations for Zone I are as follows.

- All the original elements of the historic town's composition, architectural styles and details, the townscape and environment and its infrastructure shall be completely and strictly protected.
- All the moveable historic objects (antiques, old written documents, etc.) should also be protected in the same manner.
- All use, restoration, repair of monuments should ensure authenticity in all four aspects: design, technology, materials, townscape and environment.

1.2 Zone II: Ecological Environment and Landscape Protection Zone.

This is the area surrounding protection Zone I, where structures can be built that contribute to the promotion of the monuments' value, provided that these do not affect the architecture, natural scenery and ecological environment of the monuments. Zone II is divided into Zone II-A and Zone II-b, each with its own set of detailed regulations pertaining to physical interventions in the buildings and new development.



Zoning plan for Hoi An Ancient Town

Regulations for Zone II-A:

- Construction and adjustment are possible according to specific locations but they should contribute to setting off the architectural value of the historic town in particular and its townscape and environment in general.
- All the new built projects should:
 - NOT have more than 2 stories (except for some especially important and unique cases)
 - NOT be higher than 10.5 meters
 - NOT have flat, modern and concrete roofs. This means that all the roofs should be pitched.
 - Have roofs and wall colors in harmony with those in the core area.

Regulations for Zone II-B:

- Tall buildings are possible but their height should not exceed 10 meters and should not have more than 3 floors, except for especially important and unique projects.
- All the newly built projects should NOT have flat, modern and concrete roofs. This means that all the roofs should be pitched.

2. Classification of Historic Buildings

The Hoi An Centre for Monuments Management and Preservation (HACMMP) has classified the historic buildings of Hoi An into categories according to their historical, cultural and scientific value, as shown in Table 1. This categorization enables the authorities to determine the value and classification of the property, and whether government subsidies are applicable for their restoration and maintenance.

Table 1. Classification of Historic Buildings in Hoi An

Category	Criteria
Special Category and Category I	All original elements of these unique architectural and artistic structures have been maintained in an integrated manner. Their elements have special historical, cultural and scientific value.
Category II	All original elements of the front building, façade and roof tiles have been maintained in an integrated manner. Their elements have historical, cultural and scientific value.
Category III	The yin-yang tiled roofs and some original parts of the house have been maintained <i>in situ</i> . Their elements have some historical, cultural and scientific value.
Category IV	These houses are built in modern style using modern materials such as concrete. They do not contribute cultural significance to the complex of architectural monuments in Hoi An Ancient Town.

Regulations for structures falling into the above categories:

- Special and Category I. Restoration can be done only when urgent and necessary to save the monuments. When carrying out restoration, the authenticity of each construction detail and the entire building should be strictly ensured. Use serviceable parts when repairing or restoring monuments to retain their old appearance and value. This also means maintaining their authentic beauty.
- Category 2. All original elements of the front building should be maintained. The remaining portions of the house, depending on their specific position and surrounding architectural style, can be rebuilt for the interior, but the roofs must be covered by yin-yang tiles, and no extension can be made. When sufficient scientific evidence is collected, it is necessary to restore the deformed parts in the house.
- Category 3.
 - The front building: roof tiles, facade and the two visible sides must be maintained in the traditional style of houses of Zone I; the interior of the house can be renovated in new function but all must be approved by authorized agencies and must not have a negative influence on the surrounding townscape.
 - For the remaining buildings of the residence: depending on their specific positions and surrounding architectural style, their interior could be renovated or could be extended as regulated in the Ancient Town, while the roof should be covered with yin-yang tiles.
- Category 4. When repairing, restoring or rebuilding, the roof must be covered by yin-yang tiles, and the facade and floor of construction have to harmonize with the townscape. The remaining portions of the house, depending on their specific position, height and surrounding architectural style, can be extended as regulated to harmonize with the townscape and not hide other valuable architectural constructions.

Out of 1,254 identified heritage buildings in Hoi An, a total of 929 houses are privately owned, 120 are collectively owned and 205 are state owned. Collectively-owned properties belong to associations

and community groups, such as the Fujian Chinese community of Hoi An.

In 2003, one of Hoi An's heritage buildings collapsed. In response, the municipal government directed HACMMP to conduct an investigation of the entire built heritage of Hoi An. HACMMP prepared a Master plan for the restoration of 30 government-owned historic buildings and 52 privately-owned houses, which would cost about US\$ 3 million. This estimate would cover the restoration of 30 government-owned properties and partial subsidies for restoring 16 privately-owned historic buildings.

3. Restoration of Government-owned Heritage Buildings

Between 1997 and 2007, nearly 200 government-owned heritage buildings were restored at a total cost of more than US\$ 5 million (see Table 2). The municipal government provided over 50 percent of the total funding, while the national and provincial governments contributed over 40 percent. Financial support from foreign donors accounted for 5 percent of the total cost. In addition to providing funding, foreign donors also provided technical support and management assistance.

Table 2. Heritage Buildings Restored and Funding Sources, 1997-2007

State-owned heritage properties restored			Funding source					
			Municipal budget		National and provincial		Foreign donors	
Year	Number	Budget	Number	Budget	Number	Budget	Number	Budget
1997	10	238,930	8	56,230	1	157,700	1	25,000
1998	5	133,000	2	32,700	1	69,000	2	31,300
1999	13	552,308	5	84,518	7	426,881	1	40,909
2000	13	246,241	1	27,272	11	201,060	1	17,909
2001	32	371,370	27	163,812	3	130,558	2	77,000
2002	18	438,658	10	112,633	7	301,275	1	24,750
2003	22	522,416	11	96,400	10	369,776	1	56,240
2004	31	1,954,754	17	1,388,024	13	543,200	1	23,530
2005	16	474,028	16	474,028				
2006	6	202,207	6	202,207				
2007	2	29,129	2	29,129				
Total	168	5,163,041	105	2,666,953	53	2,199,450	10	296,638
Percent	100		51.7		42.6		5.7	

Source: HACMMP Report on Built Heritage Restoration. Funding amounts are in US\$.

4. Restoration of Privately-owned and Collectively-owned Heritage Buildings

About 1,125 privately owned heritage buildings were restored or repaired by local building owners.

This figure is based on the number of restoration permits issued during the period. Before any repair or restoration work can be initiated on a heritage building in Hoi An, the owner is required to obtain permission from the Hoi An People's Committee and other relevant authorities, such as the Hoi An Center for Monuments Management and Preservation. The restoration process can only start when the owner has developed a plan and identified a budget. Because the cost of restoration of historic buildings is high relative to the income levels of most of the owners of heritage buildings, the municipal government provides a partial subsidy for private conservation endeavors. Financial assistance for restoration is based on the classification of the building according to its heritage values, its location and the economic situation of its owner.

Table 3. Financial Contributions in Restoring Privately-owned and Collectively-owned Ancient Houses

Classification	Located on main roads		Located in small lanes, alleys	
	Government support (%)	Owner contribution (%)	Government support (%)	Owner contribution (%)
Special	60	40	75	25
Categories 1 and 2	45	55	65	35
Categories 3 and 4	40	60	60	40

In 2008, in order to support private homeowners facing financial difficulties in restoring their buildings, the municipal government devised a supplementary method to help: in addition to any financial support based on the value of the monuments, the homeowners have to cover 15 percent of the project's estimated cost at the time of restoration, with the municipal government making a no-interest, three-year loan for the remainder. Also, scientific documentary file making, help in planning and estimating the cost, and technical advice on the repair and restoration of heritage buildings is provided to owners of historic properties by the HACMMP through the Consultancy Office for Relics Restoration and Heritage Information. In some cases the local government has purchased privately owned heritage buildings from families who have economic difficulties and want to sell their houses. In these cases, the government has renovated the houses and allowed the previous owners to continue to live in the same place at a favorable rent. This has prevented outside interests from purchasing the properties and has enabled the residents to remain in their homes. This initiative has only been applied in a few cases, however, due to limited funds. The municipal government has devised a strategy for collecting entrance fees from tourists to contribute to funding the purchase of privately-owned heritage buildings and to funding the restoration and maintenance of all built heritage in Hoi An. These funds are also used for the improvement of tourist and public facilities, and for the conservation of intangible heritage of Hoi An.

V MEASURES FOR POSTERITY

The following items are suggested here as key points for efforts to secure the conservation of Hoi An.

- Building the Master Plan and long-time orientation for the development of Hoi An; constructing and upgrading the rural and urban infrastructure system; protecting the social and ecological environment.
- Building and developing Hoi An harmoniously between fields and developed areas, balancing the speed of growth with quality of development, and economic growth with social progress.
- The local government should determine that the tourism/service/trading industry plays a key role in the economic structure of city and contribute to a multi-occupational, fast-growing, and dynamic economy. Both cultural tourism and eco-environmental tourism should be developed.
- Building Hoi An into the main tourism attraction in central Vietnam. Hoi An tourism will develop based on links between the values of the Hoi An World Heritage site with the World Biosphere Reserve
- Coordination should be maintained with Cu Lao Cham and other World Heritage sites in the region.
- The principles of “The perfect heritage preservation and sustainable tourism promotion” are to be implemented. This means that heritage preservation is not only to give maximum protection for the authenticity of the heritage, but also that the cultural traditions and eco-environment must meet the demands of the current residents’ livelihood.
- All resources should be mobilized for local economic, cultural, and social development in general, and for Hoi An heritage management, preservation and promotion in particular (mainly the local resident’s awareness for their heritage preservation). However, the heritage management and preservation will be not separated from administration and community management, and local social and cultural activities.
- The capacity for recruiting quality local staff must be developed and maintained.
- International investment should be attracted, along with domestic private investment and support from local governments at all levels, for developing the local economy (including heritage preservation).

IV. Final Reports by Participants

Bhutan

Namgay DORJI

Training Course on Cultural Heritage Protection in Asia/Pacific Region, 30 September to 29 October 2011, NARA, Japan “Preservation and Restoration of Wooden Structures”

The protection and conservation of cultural heritage in Bhutan is my main responsibility, as I have been engaged as a conservation engineer in restoration under the Division for Conservation of Heritage Sites in the Department of Culture. The planning and management of restoration sites, supervision, and retaining the values of the old structure are some of the responsibilities related to my work. The restoration works to which I am usually assigned are at monuments where the structure is mostly built of timber.

Accordingly, I feel very privileged to be one of the participants in the training course, as it is very much related to the kind of work I am undertaking at the moment in my country. Moreover, the choice of the training place (Nara) among many other places in Japan has made me feel very much at home as it has a similar landscape, temperature range, and mountains as in my country. I am deeply impressed with the ancient monuments and structures which in themselves are a valuable resource for the participants to study and learn about cultural values and their importance.

As I have already mentioned in my country report presentation, Bhutan has a very rich cultural heritage, which includes a large number of ancient monuments, works of art, and sites, including a great number of timber structures. It is a great responsibility to conserve and maintain them in good condition in order to present them to the future generations to help them understand our ancient practises. To make this dream come true, it is very essential to have proper management skills, correct decision making abilities, and proper approaches at the right time.

So far, I have been engaged in different types of conservation projects in my career to date, and that involvement has helped me gain much experience in the field of architectural conservation in my country. Although I have gained good experience, I am also left with many doubts regarding the problem-solving methods, especially in the conservation of timber structures, as I have never had the chance to learn the conservation practises of the other countries.

Now, it is my great pride to say that I have learned and gained many solutions to my problems from this training on preservation and protection of wooden structures. Throughout the training course, I have seen many similarities and contrasts with current practices in Bhutan. Considering these facts, I would like to mention a few important factors which I observed and learned during the one-month training course.

I. History of Wooden Architecture in Japan

In Japan, most of the buildings listed as cultural properties are made of wood. It is not surprising that almost ninety percent of their National Treasures are wooden structures. Century-old methods along with the modern techniques to carry out conservation work can be observed in Japan. Climatic conditions, geographical locations, traditions and religion influence the style and appearance of the structure in each region.

Japanese wooden architecture is mostly visible in shrines, temples, castles, and vernacular houses in various prefectures.

The Japanese began to establish a legal basis for preserving architectural monuments as early as 1897, and that is one reason why Japan is far ahead in the preservation and restoration of wooden structures than other countries. The most common causes of deterioration of wooden components are damp rot, leakage from the roof, insect attacks, and poor craftsmanship. However, their concepts of restoration and conservation techniques are very advanced and different from the ones used in most other countries. They have many World Heritage Sites and many other monuments and places designated as cultural properties. In fact, Japan has numerous heritage sites and is always giving intensive care to preserve them. Despite huge advances in technology, Japan has remained protective of its culture. Better and more practical ways to conserve and preserve historic structures are always sought, thus safeguarding the cultural heritage.

II. Management of Cultural Properties

Management of cultural properties is the most impressive phenomenon I have noticed in this country. The system of protection for culture properties appears optimal for the purpose of conservation. Categorizing, listing and recording of each property helps to take care of all of them under different states of management, and provides an opportunity for experts to take part in every phase of management. A proper national policy not based on political influence is a remarkable feature. The training and management of cultural experts, coordination, and funding are also some of the important factors. Bhutan also has a superior management system for cultural properties, but coordination among institutions and experts is less than optimal. I think this is a very crucial point in the handling cultural properties, so I would like to convey some of the Japanese methods in the management of cultural properties to my colleagues who are involved in this work.

III. Approaches to Cultural Properties

The uses of different approaches such as preservation, restoration, reproduction, analysis, etc. for different kinds of situations are some of the best examples I have noticed. The flexibility towards owners of culture property is very interesting and it can help overcome problems with cultural

properties. There are also some steps taken to overcome contradictions of Japanese restoration with the approaches of Western countries. Reconstruction of an entire wooden structure is limited and the directions of different approaches can be seen.

In Bhutan, we do not have proper legislation for the protection of cultural heritage or a standard system for such work with respect to cultural property. From the past until now, while conservation of timber components in heritage buildings has been carried out, the techniques used are very traditional and most of the time it is either reconstruction or the replacement of timber members with new ones, with never a thought to conserving the usable items. The restoration of cultural heritage or monuments is usually carried out when the structure is in critical condition, and during that stage it has to be reconstructed as it can no longer be restored.

Preservation and maintenance of historic monuments that embody living culture is an uphill task in every country. In our country, the conservation workers experience negative reactions and substantial interference, from the general public to the end user, if the timber members are not replaced with new ones and if the old ones are patched and retained. We as conservators know that fulfilling their wants and desires will totally change the authenticity, history and cultural values of a particular monument or property. Hence, there is always a crisis involved in conservation work.

Accordingly, the knowledge gained from the lectures regarding the complementary and contradictory aspects of Western philosophy will be useful for seeking a kind of approach that will be based on context, community, and cultural diversity.

IV. Natural Disaster/ Risk Preparedness

Natural disasters such as fire, earthquake, tsunami, flood, typhoon, etc. are common enemies to mankind and cultural properties. They cannot be predicted beforehand so that important property can be removed to a safer place, so we must learn to be prepared to face such disasters any time, and anywhere. The Japanese are trying their best to reduce the risk of damage not only to the people but also to the cultural properties. They use traditional and contemporary methods to reduce the risk against such disasters.

In my country, although we have a disaster management division, which was formed after the 2009 and 2010 flood, earthquake and typhoon devastations, we do not have much emphasis in this regard on the reduction of damage to cultural properties, rather than to the lives of people.

Japan has a very efficient method in the area of risk preparedness and mitigation approach, to ensure protection for its heritage structures. The detailed and plain approach, such as a red pail with water or a fire extinguisher with the simple casing in front of the structure is really practical.

Accordingly, from the site visits and on-site lectures during my training period with regard to this topic, I learned methods and approaches on how to take precautions against such disasters, how to complete the task of listing cultural properties and assessing damages after a disaster, which I will share with my colleagues working in those sectors.

V. Conservation Methods

In Bhutan, we lack an advanced systematic approach regarding conservation methods such as that of Japan. A brief survey and documentation are carried out, followed by conservation or restoration work which hardly takes more than few months for smaller structures, and about four to five years for larger ones. But the fact is that this work is always carried out in a shorter period of time compared to Japan for a similarly sized structure due to budgetary constraints. We lack a system for recording and doing research on the old structures or members which are dismantled during restoration, and they are commonly burned as firewood. Even in recent years, wooden members of monuments were completely replaced with new ones during restoration without implementing any methods of conservation. At present, the conservation division is trying to streamline the system and a certain effort is being made to incorporate concepts of conservation and preservation of cultural monuments.

To compare the methods used in my country with those of the Japanese in the case of wooden members, I would prefer conservation in a manner similar to that of Buddhist temples where the structure is inspected and necessary conservation work carried out, compared to the case of Shinto shrines which are totally reconstructed every twenty years with new timber. I prefer replacing only the damaged or unsound timber members, as new construction has a major impact on the resources of the country and the continuity of knowledge of craftsmen involved in conservation work. When we conserve those structurally sound timber members and reuse them we directly reduce the requirements for new ones, even though that would benefit the economy of the country, and we also enhance the skill of craftsmen as they will be engaged in conservation work almost every year.

VI. Documentation and Recording of Cultural Properties

The practical work carried out at the Tanaka family farmhouse has given me immense knowledge about how to proceed before the restoration or conservation work is carried out. Bhutan can also adopt the method of documentation of cultural properties from the Japanese system, such as having a standard surveying and documentation system as guidelines before carrying out any restoration or conservation work, in order to retain the authenticity and originality of the structure.

VII. Prevention of Insect Damage to Wooden Structures

It is surprising to know that simply knocking on a piece of wood, or making keen observations of the premises, will give some idea of the existing condition of the wooden structure.

I have learned a lot about how Japanese conservators control insect damage to wooden components. It has been significant learning the different aspects of dealing with different varieties of insects, and it is a great solution to apply those ideas and methods in my country while working with timber. We have many insects such as termites which cause severe damage to our wooden structures, but due to a lack of specialised experts or professionals who can deal with that kind of problem, it has always been the insects that won from mankind, since the local methods applied to this problem have not proved efficient.

VIII. Observations from Country Report Presentations

I observed and gained considerable extra knowledge from the presentations of the country reports by the different participants. The methods and types of materials used are very different from country to country, but they are very practical, and I am planning to incorporate some of this in my country, such as the following.

- Using bamboo as scaffolding during restoration or conservation.
- Using bamboo sticks on the walls or roofs as seismic measures.
- Using tong oil on the timber members to prevent decay or insect attack as done in Hong Kong.
- Using tobacco leaves rubbed on the timber members to prevent insect attack.

IX. Survey on Painting and Plans for Painting Restoration

In our country, almost all the religious monuments are glorified by both external and internal paintings, with internal paintings in particular having great significance as a way of translating the religious themes into symbolic colours and patterns. However, restoration of painting that involves complete repainting leads to a loss of the original, which had been maintained as historical or cultural heritage.

From the on-site lectures and practical training on this topic, I learned that the old painting which has great historical values can be preserved with its values in its current form by implementing the methods followed by the Japanese conservators.

Accordingly, upon returning to my country, I would like to share this method of painting survey and restoration with my fellow conservators, in order to protect the values of the old paintings.

X. Conclusion

From my point of view, the ACCU training course on the cultural heritage in the Asia/Pacific region for 2011 on 'Preservation and Restoration of Wooden Structures' was very useful for all the participants, who are professionals in their own fields in their individual countries, and the knowledge and

experiences gained here can be adopted and integrated into the cultural heritage protection activities in their countries.

Moreover, I personally found that I have gained a lot of knowledge and experience from this training course, particularly on how the Japanese deal with cultural heritage preservation, restoration and conservation through their unique approaches, supported by enormous resources and experienced experts. Although the training course is quite short in duration, the information and knowledge imparted was very effective for me as an individual participant. The program enabled me to enhance my theoretical and practical knowledge regarding cultural heritage protection, both in classes and through the on-site lectures and practical training.

Finally, the knowledge and experience gained from this course will be shared with my colleagues, fellow conservators, and other conservation architects in our country, in order to strengthen the conservation system.

XI. Acknowledgement

As a participant in this course, I entered Japan with mixed feelings and it was my first journey to the outside world from my country. Although I was very tired after a long journey, it was a pleasure to receive the warm welcome of the ACCU Nara officials as soon as I exited at Kansai airport. I experienced great help, care, and a friendly environment throughout the training course.

I would like to express my gratitude to the Government of Japan, the Nara prefectural government, ACCU and ICCROM for selecting me as one of the participants in this course.

I sincerely thank **Dr. NISHIMURA Yasushi** (Director of ACCU) and **Ms KATO Naoko** (Director of International Cooperation Division), who have been very helpful in assisting us in everything to make the training a wonderful learning environment.

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I personally would like to thank **Ms HATA san**, who is a very skilful interpreter, for making us understand all the words said by the lectures and others.

I would also like to thank and express my appreciation to the most active staff member, **Ms KATO san**, for her successful coordination of the training programme.

I would like to extend my heartfelt thanks to the following tutors for giving us company, helping us in all the matters and guiding us throughout the training period;

- Ms Yamamoto Rika

- Ms Lee Jihee

- Ms Tsujita Naoko

- Ms Saito Junko

They are very polite, kind, friendly, and cooperative. I wish them all good luck and a successful life ahead.

My heartfelt thanks also goes to all the participants from the fifteen countries for giving me company, sharing their information, and making my stay in Japan a memorable one.

Lastly but not the least, I on behalf of the Kingdom of Bhutan and on my own behalf I would like to express my sincere thanks to the Government of Japan for giving such an opportunity to Bhutanese conservators, to enhance our knowledge of conservation and preservation works.

TASHI DELEK.
ARIGATOO GOZAIMASU.
AND THANK YOU ONCE AGAIN.

Cambodia

PHIN Vicheasachara

I. Introduction

This one-month training completion report will briefly describe a number of items such as impressions of the intensive training course, its content and meaning related to wooden heritage, and then describe the post-study knowledge that can be applied to my current work in Cambodia, comparing it with the restoration and conservation works there of historic buildings, and finally, briefly outline its legal relevance to conservation work, based on the laws on preservation of heritage in Japan and in Cambodia.

II. Intensive training outline

Japan is a country that has had historic wooden buildings for a long time, since the eighth century, and those buildings remain to date under maintenance and repair according to specific schedules. Presently, those ancient wooden buildings and historic sites have been promoted by the government with the aim of attracting domestic and international visitors, and to disseminate knowledge of their historic value.

Regarding the preservation and maintenance of such historic buildings, all ancient buildings in this country are under a strict preservation and maintenance laws that are jointly upheld by other relevant institutions such as:

- Municipality
- Prefecture
- Other local government agencies
- Ministry of Education, Culture, Sports, Science and Technology

Some of these laws were adopted in late nineteenth century, such as the decree for the preservation of ancient artifacts established in 1871, the temples and shrines preservation law made in 1897, etc. Besides these, there are other laws that were consecutively adopted between the early twentieth century up to the 2010s, such as the preservation law for scenic places, historic sites and national monuments made in 1919, the national treasures preservation act made in 1929, law regarding the preservation of important works of fine art made in 1933, the comprehensive law for the protection of cultural properties made in 1950, etc. As the laws have been made with the aim to preserve cultural properties in sustainable fashion and promote their historical value, the enforcement of the site and building laws in the zones of people's residences has impacted and sometimes caused disputes between local residents and the conservation task force officials, as the proprietors did not understand the laws on the preservation of ancient buildings in the zones where they lived.

The above obstacle requires the government to seek a solution to promote awareness of the benefits

of ancient houses, hold workshops for people to participate in aspects of village development, such as the preservation of heritage or the promotion of local tourism, and to learn to value and maintain those cultural legacies for the generations to come.

III. Work application through intensive training

Japan is a country of advanced development in terms of science that can serve the interests of preservation and conservation of ancient buildings. A number of buildings that were damaged by natural phenomena such as earthquakes have been completely repaired, with a renewed focus on waterproofing and fireproofing used in the construction. Moreover, new technology has been used to protect ancient buildings against earthquakes using seismic isolation systems, including cushioning materials, sliding materials and runners with steel plates. Besides, in order to strengthen the above construction structure, patterned reinforcing bars have been used in order to ensure the construction balance. In the repair work, the main focus is authenticity. Accordingly, at least 50 percent of the old construction materials must be reused. In case those materials were seriously damaged such as through breakage, a technique must be applied in order to reassemble them to their original condition. Normally, the repair of ancient buildings requires the application of traditional techniques adopted by people in that era, for instance, earthen walls reinforced with bamboo or wood inside.

IV. Comparison with my country's current practices

With regards to preservation laws, any repairs of ancient buildings in Japan are always under legal requirements focusing on the height, structure, color, roof, walls, outer appearance and components that comply with the original historic condition of the buildings, and the persons responsible for that work must have many years' experience in actual work practice. As for the conservation and preservation of wooden buildings in Cambodia, conditions are far different from those in Japan. Ancient wooden buildings such as major houses and pagodas were removed without any intervention from relevant institutions or local authorities, while the repair was carried out without requesting consent from relevant officials, thus the outer appearance of those buildings lost their historical value. We have the department for settlement management in the Angkor zone of the APSARA authority which has not yet fully supervised the buildings in the archaeological park, much less at other places besides Siem Reap province. Moreover, this institution has only limited recommendations for construction owners in the protected areas. Besides, we have a royal decree made in 1993 on the establishment of culturally protected zones that did not mention the matter of ancient building repairs, and there are no other royal decrees related to this.

V. Relevance of this training program to conservation work

In Japan, the Cultural Properties Protection Act was adopted in 1950, whereas the heritage registration system in 1996 required the preparation of a list of major historic buildings. The heritage preservation laws cover matters such as:

- Determination of the types of major cultural heritage

- Heritage buried underground
- Major cultural sites
- Heritage registration

In Cambodia, the Royal Decree establishing the Protected Cultural Zone in the Siem Reap Angkor Region and Guidelines for their Management was adopted on October 24, 1993. Since then, the territory of this province has been divided into five zones:

Zone1: Monument site

Zone2: Protected archaeological reserve

Zone3: Protected cultural landscape

Zone4: Site of archaeological and anthropological interest

Zone5: Socio-economic and cultural development zone of Siem Reap.

This law mentions the settlements in the protected areas, but does not make any detailed stipulation in the manner of the Japanese law. In addition, Cambodia has also signed a treaty with the World Heritage organization on the protection of cultural heritage against the theft or illegal trafficking of cultural heritage in time of war.

VI. Acknowledgment

I would like to express my heartfelt thanks to Asia-Pacific Cultural Center for UNESCO (ACCU Nara) office of Japan as well as other relevant institutions for their contributions to the training, thus providing knowledge and good experience regarding the preservation of historic buildings. The intensive training will become another level of knowledge that is incorporated in the fields of restoration and preservation of wooden heritage in Cambodia. This training has allowed me to develop some of my own views on the current tentative list in Cambodia, and the strengths and weaknesses inherent in it. I have had the opportunity to take part in a valuable experience during my time here in Nara. There is an incredible amount of information I have to share with colleagues and heritage practitioners in my country.

China

WONG She (Sharon)

Final Report of the Nara ACCU 2011 Training Course on Preservation and Restoration of Wooden Structures

How people have coped with their changing environments in the past, and how they have adapted their habitations and communities to these changes, are the real issues of concern in today's heritage conservation. The Nara ACCU 2011 training program has covered all these broad issues by looking at various historic buildings, preservation districts and landscapes in a holistic manner, and working down to a finer level of understanding on the subject matter in its full setting. I realized through Mr. Kanai's and Mr. Murakami's lectures on Japan's architectural history and on the protection of historic townscapes in Japan that the Japanese approach to the preservation of timber structures is rooted in the country's culture and its natural conditions. At the same time, the approach to preservation work is also based upon on-going scientific research, such as through dendrochronology, and on humanistic methodology, as in the concern, for example, for building stronger links between stakeholders. Preservation of historic buildings or townscapes in Japan can be interpreted as a process of growing awareness of what cultural heritage is, and what is the best way to protect it.

The training program also reflects the increasing awareness that heritage buildings, objects and landscapes cannot be considered in separation but need a broader and less demarcated approach. I have benefited greatly from the many diverse disciplines and field studies of the training program, and truly believe all the participants are interested in the practice of heritage conservation rather than just a purely theoretical understanding of the subject. The test of any training program is whether it influences the way participants think about a subject and leads to some meaningful impact. By these measures, the Nara ACCU 2011 training program is definitely a successful one. The field trips to Imai-cho and Takayama-shi remind me of the current situation of the preservation of historic townscapes in Hong Kong. The visit to the World Heritage site Shirakawa-go kept me reviewing the tourism management plan of a world heritage site in China, the Kaiping Diaolou and Villages.

The Historic Townscapes: Machiya of Imai-cho in Nara, Takayama-shi in Gifu and Stilt-houses of Tai O Fishing Village in Hong Kong

The recognition of the different house types, streetscapes and unique atmosphere within these historic townscapes is an important element in the conservation strategy as a whole. The charm of all these townscapes derives from the combination of different styles, sizes, textures, uses, and colors of vernacular buildings, illustrating the achievement of local distinctiveness and in-depth characterization. The Tai O fishing village, on the far northwestern side of Hong Kong's Lantau Island, is just a boat ride

away from Central Hong Kong even though visitors can feel like being taken back about 50 years. The village is a tiny settlement with many houses perched on wooden stilts a few feet above the edge of the sea (Fig. 1). They are little dwellings, like miniature huts painted with silver rust-proofing paint. Many visitors like Tai O because it is unlike any other place in Hong Kong, although the locals do not really believe the entire village with its quaint pint-sized architecture on stilts could be of interest to any tourists. Because of the modern change in urban structure and layout, Tai O has to face the challenges of traditional economic life and depopulation as well as its consequent decline in social vitality. Lack of infrastructure has also resulted in poor adaptation of the residents' life and this is certainly a common issue in every urban historic quarter. In Hong Kong Government's 2004 Concept Plan, a proposal has been put forward, aimed at preserving the Tai O old fishing village given its cultural heritage and natural attributes. Additional improvements should also be proposed to enhance Tai O's visitor appeal (Lantau Development Task Force 2009).

The houses preserved in historic towns in Japan are quite different from those preserved in Tai O of Hong Kong, as they are all made of wood, and with each reconstruction or repair, these houses have come to reflect and preserve changes in lifestyle, as well as expertise in carpentry. In Japan, conservation architects and town planners are trying their very best to preserve the appearance of the historic townscapes such as Imai-cho (Fig. 2) and Takayama-shi (Fig. 3), and they consider it very critical to preserve the facades of the old town houses and restore them on the basis of historical evidence. Extensive investigations have been carried out to determine exactly how a house can be constructed or restored, especially for the benefit of the local inhabitants, who can live a modern lifestyle inside the buildings while the appearance of the outer facades can be preserved and be accepted as historic. So it is possible to equip a historic residential building with modern kitchen, bathroom and heating system. Besides, any new construction or alterations in these preservation districts need the prior consent of the city planning department, and different building standards such as height limits, roof-form, and grouping are all laid down in detail.

As understood from various speakers throughout the training, in contrast to previous decades when preservation of historic towns was predominantly seen as a means of boosting the local and regional economy by promoting tourism, the concept of protecting the traditional heritage in its function as a facilitator of historic identity to the local people has in fact gained increasing importance in recent years in Japan. In Imai-cho, for instance, designated as an Important Preservation District in 1993, the aim is to preserve the traditional living environment for the benefit of the inhabitants themselves. By contrast, in towns like Takayama-shi where tourism dominates the economy, almost unrestricted tourism promotion can be found, which ensures mass media coverage and aims for a remarkable increase in the number of tourists (over one million tourists a year).

Which model, then, is best suited for Tai O's conservation and future development? It seems there is still no clear direction where the tiny fishing village is going. Perhaps we should first ask ourselves, what is the main reason for preserving the townscape in Tai O? Do we simply want to boost the local

economy by the development of tourism? Do the Tai O people want to live in an “open-air museum?” Or do we prefer to protect and preserve the traditional living environment as a cultural property for the benefit of the fishing village or even Hong Kong as a whole? Besides, we must always bear in mind that townscape preservation is not only about saving old buildings, but about creating a safe and pleasant environment while preserving what is good from the past. It is also understood from the field studies that gaining any kind of assent from the people living in these historic townscapes is always the result of lengthy discussions between the local administration and local residents. Three of my course alumni are now working on the Tai O project, and I will surely share with them the knowledge I have gained from the Imai-cho and Takayama-shi.

The World Heritage Sites: Shirakawa-mura Gassho Houses in Japan and Kaiping Diaolou and Villages in China

The visit to Shirakawa-mura, in the Japanese Alps, was a very pleasant experience for me in terms of its setting. The way that *Gassho* houses are dotted on the hillside, how they are grouped in a small cluster, and also their buildings’ size and shape, are features and characteristics which make me think about how much they are shaped by their natural environment. The day we were there, minor repair work was carried out on one of the *Gassho* houses (Fig. 4). Exactly as indicated by speakers in previous week’s lectures, the workers were using some modern equipment such as helmets and aluminum ladders (Fig. 5), but the materials and the tools used were the same as they had been for hundreds of years. On the other hand, local residents who are engaged in tourism-related jobs have become busier and competed with each other, and the number of new residents has increased which suggests there are intangible negative changes in local culture. Moreover, the town tends to face enhanced invasion of tourists (Fig. 6) into local people's life, which keeps weakening the feel and spirit of the local communities (Fig. 7).

In a manner nearly the same as in Japan, interest in the viable economic vision of the historic town and the World Heritage Site inscription has never been so high in China as in recent years. In February 2011, I joined a field study to Kaiping and together with other team members from the Architectural Conservation Program, we presented a Tourism Management Plan for the four villages in the World Heritage Site of Kaiping to the local government officers. The building type of the Kaiping Diaolou itself dates back over 500 years and was traditionally defensive towers that could shelter an entire village from storms or attacks. In Kaiping, the local government does promote the Diaolou and tower houses as the repository of sentiments and values of the overseas Chinese. However, millions of visitors per year descending on a few thousand inhabitants has resulted in industrialization of the emotional aspects of tourism (Fig. 8), and consequently led to visitors and locals complaining about a loss of warmth and naturalness which is considered to be a major part of the precious experience of cultural tourism.

Both the Shirakawa-mura *Gassho* house and the Kaiping Diaolou or tower houses are fascinating

constructions because they are responses to the social and political environments of their times in addition to their physical environments. The World Heritage Site listing brings both sites higher visibility, makes them well-known to the public and brings huge prestige at both the international and national levels, and the number of visitors for each has increased immensely since the time of inscription. Of course, it also causes a shift in local industry from agriculture, which had already been declining, to tourism, hence influences the decisions of local planning. Eventually it places additional pressures on the physical and natural environment, and on the local people who are living in the sites. The World Heritage Site listing inevitably brings international attention to sites, however, so unless the presence of local people is carefully considered by those planners and conservation experts, those local people would only regard World Heritage Site status as a nuisance which disrupts their previously quiet way of life.

On the other hand, getting local people to have real understanding of the meaning of World Heritage Site status is never an easy task. In Kaiping, local people still tend to focus more on the conservation of the Diaolou or the tower houses than that of their surroundings. We understood from Ms. Aso, of the Shirakawa-mura government office, that the situation in Shirakawa-mura is more or less the same. The planning and management of tourism has been a longstanding concern for preserving historic townscapes. When promoting tourism, instead of focusing on the preservation of tangible historical heritage, should we first consider fostering the townscapes' development through creation of comfortable communities that local people can take pride in? Should local participation, community involvement, human interaction and pride – albeit often idealized – still be the important elements of sustainable development, no matter whether it is for cultural tourism or heritage conservation? And should a historic townscape or landscape and its heritage assets always be conserved and enjoyed for the quality of life they bring to both the future and the current generations?

As a practitioner in the field of conservation, I have to keep reminding myself: for any kind of sustainable development, a suitable balance must be established between the environmental, economic and socio-cultural aspects of the communities, which means when giving any conservation advice, we have to get all stakeholders to see and understand the bigger picture, and to create places where people want to live, visit and invest.

Acknowledgment

The Nara ACCU 2011 training program was a great experience for me. I have learned a lot and shared a lot of information with people from all across the Asia and Pacific region. It was great to meet all these participants, and it was really amazing to share thoughts and subjects with them. What I have learned from the training program will greatly benefit my future conservation work, when I share and impart the knowledge I have gained. By taking part in the one-month intensive study, I am sure all participants end up with a broader spectrum of conservation knowledge that is hard to beat. Once

again, many thanks to Nara ACCU for organizing such an excellent training program.

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Fig.1 The Tai O fishing village of Hong Kong



Fig.2 Historic townscape of Imai-cho



Fig.3 Historic townscape of Takayama-shi



Fig.4 Minor repair work on one of the Gassho houses



Fig.5 Workers using traditional materials and tools for the repair works



Fig.6 Invasion of tourists to Shirakawa-mura



Fig.7 Excessive number of tourists weakening the feel and spirit of the local communities



Fig.8 Industrialization of the emotional aspects of tourism in Kaiping, China

India

Kunkumadevi Kishore

Training Course on Cultural Heritage Protection in the Asia Pacific Region 2011: Preservation and Restoration of Wooden Structures

The Cultural Heritage Protection Co-operation Office, Asia Pacific Centre for UNESCO (ACCU), Nara, has been organizing a training program from 2000 onwards on heritage conservation with ‘opportunities to acquire the latest knowledge and practical techniques with reference to Japanese archaeological sites and historic buildings’, alternating every year under the broad headings of archaeology and traditional architecture. A Conservation Architect by profession with an infinite love for traditional construction materials, I was looking forward to an opportunity to expand my knowledge about one of the most versatile construction materials, wood. Japan has one of the highest concentrations of traditional wooden structures in the world, and its approach to their conservation has been a case study from my days in the university as a student. Although wood is not used as extensively in most parts of India it still has a very special role to play in traditional architecture. The challenges posed to its conservation are many, as it is used mostly as a composite material with a large variety of stones and various sizes of bricks. What further attracted me to this program was the fact that the structure of the course was not limited to historic buildings and sites, but extended to historic settlements as well.

The NARA 2011 training program consisted of 15 participants from different countries, and 2 observers pursuing their doctoral theses in Japan. It was a good mix of archaeologists, architects, planners, engineers and urban designers working on different facets of built heritage conservation. The participants’ presentations on the wood conservation situations in their home countries not only enlightened me regarding the immense wealth of wooden architecture that we Asians have inherited, but also the similarities and dissimilarities in our approaches to conservation and the initiatives taken by the respective governments in preserving this heritage. My interactions with the others also involved discussions and other forms of exchange regarding our intangible heritage and culture as well.

The training program started with an introduction by ICCROM to the built heritage of the Asia Pacific region, the issues faced in conserving it, and recent developments in the philosophy and approach to conservation. This was followed by a brief presentation of essential information on the history and monuments of Nara, as well as Japanese architecture and its conservation. As discussed by ICCROM, there is an increasing awareness in India not to limit its focus on the architectural heritage of the three P’s, namely the ‘Politicians, Princes and Priests’, but protect the people’s heritage

as well. The approach to conservation in India is also largely along the lines of a value-based and community-based approach. However, we still have a long way to go in successfully educating the community on the immense value of the heritage they have inherited, and how important it is to protect it. Several initiatives have been undertaken in many conservation projects, at both building and settlement levels, to engage the community and stakeholders at different stages of the decision-making process. Considering the size and diverse nature of tangible and intangible heritage India has inherited, the process of documenting the traditional knowledge pertaining to each of these heritage items is a very laborious and time-consuming task. Such projects are being undertaken by NGOs and private organizations, but the efforts are mostly fragmented and the approaches are neither holistic nor methodical. The Government of India has to be more pro-active in devising a system and strategy to record this traditional knowledge, and use it as an essential database for future protection of the invaluable cultural heritage. Moving away from the old theory that heritage has to be preserved for future generations, to one acknowledging that its preservation is essential for the present generation as well, is a thought that particularly fascinated me. It is not sufficient if India, through the Archaeological Survey of India and State Department of Archeology and Museums, protects a few thousand of its historic monuments (older than one hundred years) to facilitate a sense of identity for its future generations. The situation of the unprotected built heritage is bad and although several attempts are being made by private organizations and individuals to preserve the historic environments and associated intangible heritage, the efforts will not see the bright light of the day unless the central government takes initiatives to protect the same by passing suitable laws, formulate an agency, and provide subsidies.

Nara is a good case study for many small historic towns in India that have an equally fascinating group of historic monuments spread amidst a natural landscape. What appeared to be a complicated system of construction and planning for my mind to collate and comprehend was made easy by presenting the evolution and understanding of the same in a simplified manner, through brief sessions each on history of Japanese wooden architecture, recording and documentation of a small residence made of wood, its damage and deterioration survey, and a brief materials survey for planning a management policy. This understanding was very crucial for maximizing the benefits of this entire training program through the subsequent site visits, which enhanced my appreciation of Japanese architecture both as a participant and as a tourist. It also further reinforced my basic belief that it is extremely important to have such a holistic understanding of the traditional construction materials of your own country. Different types, forms and sizes of bricks, stone, wood (a wide range of species) and lime products have been used abundantly in India and in many instances, with wide variations in their basic characteristics and nature due to the varying sources of their origin from across different parts of the country. Although efforts are being undertaken to restore the traditional and historic buildings as authentically as possible in terms of the materials and techniques used, there is still a dearth of holistic understanding of every construction material under consideration, and deficiencies in appropriately documenting the discovered knowledge in India. There is a practice of replacing essential original material with new material without substantially addressing every aspect of authenticity and undertaking sufficient research. In a country

of plenty (innumerable heritage buildings and historic monuments), it is sometimes a relief that many structures get the privilege of being structurally stabilized and further deterioration is arrested, however that is not sufficient reason for failing to undertake extensive research prior to beginning the restoration works, or implementing the principles of authenticity more appropriately.

In this context it would be relevant to mention that this training program, and my brief but informed dialogue with some of the historic buildings in Japan, have helped me better understand the essence of the Nara Document on Authenticity. It has sparked another debate in my mind, however, as to where the lines of applying these principles must be drawn while restoring historic buildings. The nature of my job as a private consultant broadly involves contributing to the preparation of a Conservation Management Plan, and of Conservation Reports encompassing a wide range of built environment, monitoring restoration works on the historic sites, as well as preparing Nomination Dossiers for potential World Cultural Heritage Sites in India. Although we have started incorporating the principles of Nara Document of Authenticity in all our assessments of values and decision making processes, I still find a need to understand more rigorously the cultural context of my project, the vulnerability and nature of the materials along with the customs and traditions of the community involved, and not 'base judgments of values and authenticity within fixed criteria' (Nara Document on Authenticity, 1994). I see this as an essential key to work in the living historic settlements of India. The challenges faced by India in conserving its tangible heritage are rooted in the nature of its pre- independence history, as well as the radical changes through the post independence developments, and it is time we drafted a comprehensive charter that specifically addresses the highly unique nature and diversity of its heritage.

One of the most important modules of the course was the introduction of the cultural heritage protection system and current status of conservation in Japan. The Japanese Law for the Protection of Cultural Properties 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 protects Historic Sites, Places of Scenic Beauty and Natural Monuments, Cultural Landscapes, Preservation Districts for Groups of Traditional Buildings and Individuals/Groups as holders of selected Conservation Techniques under the umbrella category of Designated and Registered Cultural Properties. Apart from these it also protects paintings, sculptures, applied crafts, calligraphic works and classical books, ancient documents, archaeological artifacts and other historic resources as National Treasures and Important Cultural Properties. Tangible and Intangible Folk Cultural Properties are protected as well. On a comparative note, the law that protects historic monuments and archaeological sites in India is known as the Ancient Monuments and Archaeological Sites and Remains Act, 1958. The Archeological Survey of India (ASI, established by the then British Government in 1861) under the Ministry of Culture is the primary custodian and owner of the 3,600 protected monuments and historic sites across the entire country. These monuments belong to different periods, ranging from the prehistoric period to the colonial period, and are located in different geographical settings. They include temples, mosques, tombs, churches, cemeteries, forts, palaces, step-wells, rock-cut caves, and secular architecture, as well as ancient mounds and sites

which represent the remains of ancient habitation. It also protects explored and excavated pottery and other antiquities regulated by the Antiquities and Art Treasure Act, 1972. Funds are allocated annually for the restoration of buildings that require repair on a priority basis, and for maintenance of all the buildings under its purview. Some of these are ticketed while many are not. The State Department of Archeology and Museums protects another 3,500 monuments (similar in nature to those protected by ASI) across the country. Many historic buildings from the colonial period are now being reused as government offices, museums and hospitals. Post independence in 1947, many of these buildings began to be maintained by the Public Works Department and with limited funds at their disposal, and a lack of trained conservation professionals in the team has caused further damage to the original character and fabric of these historic buildings. There are still about 33,826 unprotected monuments in India. Apart from these, there is no law or legal governing body to protect individual or groups of traditional buildings in historic towns and rural settings, which are occupied by people and form a part of the tangible living heritage, where the ownership pattern is private. There is an urgent need to devise a strategy to protect these traditional buildings, and while dealing with the heritage of historic towns, villages and settlements it is impossible to view the tangible heritage as isolated from the intangible heritage. Although the solution may not lie in framing a single law to protect all these under one umbrella as far as India is concerned, the system adopted by the Japan is a good case study and reference material. To that effect the National Commission for Heritage Sites Bill has been currently introduced in the Indian Parliament and it will focus on the preservation of unprotected heritage.

The extensive number and range of cultural properties protected by the governmental bodies of Japan benefit hugely from the subsidies provided annually, which can be as high as 90 percent. This is not the case in India, where funds for restoration of historically significant architectural buildings that are under private ownership have to be generated on their own. There are funds floated by the government under temporary schemes, mostly for historic buildings and precincts that benefit the public realm, but not all sectors of the public are well informed about these schemes, thus limiting their accessibility to only a selected few. Numerous historic buildings are restored in India under the guidance of experts through funds from the owners, and joint funds from philanthropic organizations and international collaboration, however better efforts from the government to recognize the living heritage and improve the funding schemes would help broaden the reach and encourage more people to view their own historic properties as shared heritage. It is also essential to mention that significant efforts are made by the conservation professionals involved in historic settlement studies and preservation to identify, document and protect the intangible heritage associated with the tangible heritage. The government also bestows titles of Master Craftsman and Master Artisan on talented craftsmen practicing traditional arts and crafts of all nature. However there is no specific recognition for knowledge holders of traditional construction techniques.

The concept of preservation districts for groups of traditional buildings, which is recognition and protection of historically significant urban and vernacular historic settlements, was introduced as early as 1975 in Japan, and ever since efforts have been made through trial and error to protect the different

aspects of the built heritage, open spaces and entire urban and rural cultural landscapes. These 35-40 years of efforts, both from the government sector and the local community organizations, has helped preserve the historic character of these settlements, as demonstrated to us through some of the best examples such as Imai-Cho, Takayama and Shirakawa. These towns bear close similarity to many historic towns of India in their conception and evolution. These case studies also led me to believe, however, that the emphasis is laid largely on the preservation of only the façade and external character, while the interiors could be significantly modified unless otherwise designated as an Important Cultural Property or National Treasure. Trying to even discuss concepts of conservation and preservation in the densely populated historic core towns of India, where every house is occupied by people who dream eternally having of every modern materialistic possession just like their counterparts in newly developed areas, can be a very challenging task. Whether the solution in such a case lies largely in preserving the facades and commonly shared spaces, improving infrastructure facilities to better the hygiene and quality of living, imposing restrictions sufficiently enough so as not to alter or make additions that are detrimental to the quality of living or the visible historic character of the townscape, and leaving the rest to be modified so as to give greater freedom and satisfaction to the owner, is debatable and to a large extent dependent on the particular site. The differences in the political history of Japan and India (Japan has never been politically subjugated, while India has been repeatedly invaded and subjugated by different ethnic groups from Central Asia and Europe for the past thousand years) render two entirely diverse scenarios, in terms of not only the nature of the cultural heritage but also the current political systems in place, and this in addition to differences in the basic human nature of a relatively homogeneous nation, versus a people broadly divided among 6 different religions and 18 different languages, makes comparison more than slightly difficult. Add to this an increasing population, also evident in historic towns in sharp contrast to the Japanese scenario, where the population is decreasing in historic urban core, and with real estate properties eternally on the rise, heritage properties may remain abandoned or get locked in legal disputes for years but are never donated to the government. There is also considerable difference in the basic attitude towards tangible heritage between a historic property owner in India and Japan. Although on a general note, India appears to be very proud of its heritage, we are working very hard on channeling the same in a direction that ensures that the community recognizes, values, and protects every significant aspect of its cultural and natural heritage.

The fact that consistent efforts for over 40 years in Japan have brought positive results today is a case study of hope for India, which is in the nascent stages of protecting its cultural landscapes, historic urban core, and vernacular heritage. To that effect the cities of Pondicherry and Mumbai have taken major steps to recognize the historic value of their urban heritage core. The core zones are declared protected under regulations of the Urban Development Authorities, and an advisory committee now oversees the development, repairs and renovations of structures in the precinct. Efforts are being undertaken to curtail insensitive development in other historic cities too, however there are large gaps to be bridged between the local communities, urban local bodies, and the experts involved in evaluating the significance of the historic environment and making a management plan. The

decentralization of power from the national authorities to the prefectural and municipal levels has been devised carefully in Japan and it is one of the key factors governing the successful protection of its heritage. Although the Town and Country Planning Act of 1972 stresses decentralization of power, there are still many loopholes in our system that need to be plugged, and greater responsibilities need to be bestowed on the urban and rural local bodies. Interdepartmental interactions need to be stressed upon during the decision-making process.

Incorporation of disaster management systems within the existing building bylaws and planning framework in a historic environment, as well as retrofitting the same in traditional and historic buildings, is yet another area that lacks sufficient attention in India. An introduction to the restoration systems and project planning for wooden structures highlighted the role of a foundation known as Japanese Association for the Conservation of Architectural Monuments (JACAM), which constitutes about 100 conservation architects of Japan. An organization of this nature is lacking in India, and although we are now a reasonably large group of professionals working on the preservation of our heritage, we are fragmented. Architects and conservation architects can choose to impanel themselves with the ASI and can be consultants for chosen projects through the tendering process. Experts are awarded restoration projects undertaken by other governing bodies of India only by a long and tedious process of expression of interest and bid by tenders.

Insect damage in wooden structures is a common problem in India and there is a need to undertake a systematic and detailed study of the same in the context of historic buildings. This session will help me assess the condition of wood better and aid me in my interactions with the anti-termite and insect treatment dealers. Photography is an important tool for recording the different stages of conservation of historic and traditional structures and is used widely in India. A basic understanding of the features of compact digital and manual SLR cameras was imparted, of which I was not aware, and the same would help in adjusting the settings for recording relevant details with greater clarity. Advantages of shooting pictures in raw format and storing them as tiff were also emphasized. The most important lesson learned on this front is that if pictures are to be stored in jpeg format, a copy of the master set should be made to access them for further viewing, studying and usage in reports for each time an image is saved the quality deteriorates.

In India there is an increasing stress on assessing the values and significance of paintings and murals on historic surfaces before drawing a restoration plan for the same. They are chemically preserved in the same condition they were found when undertaking the restoration works if they bear an outstanding value, and in other cases due to lack of funds, skilled artisans and authentic techniques. Sometimes paintings are partly retouched depending on the extent of deterioration in addition to preservation. Where the above three factors are met, partial or complete repainting is also undertaken based on the assessment of values and context (historic housing and private properties).

Wood is used mostly as a composite material in most of the traditional and historic buildings in

India, except for a few regions. Dismantling wooden structures, repairing them and replacing where essential when the deterioration of the whole has reached a certain stage, so as to ensure its stability for a few succeeding centuries, is the practice prevalent in Japan. For historic buildings where wood has been used as an independent material for the sloped roof or the flooring boards and the extent of deterioration is significantly high, we too have dismantled the same and reused wood that could be recycled in some situations. While I have learned through my observations and training sessions here the methodologies adopted for the conservation of wood, the tools used, recognition of species used, methods of assessing its condition and documentation through careful analysis of the carpenter's tool marks, planning methods adopted, etc., the methods to be adopted in restoring wood, when used as structural components in Indian buildings, remains a challenge where it is used as a composite material in combination with stones and bricks, and there is greater stress on *in situ* repairs.

The concluding session on values, authenticity, integrity helped me assess to what degree we have been using these in drawing our conservation plans. There is a need to stress more monitoring of historic properties and traditional buildings after their restoration. This is being undertaken only at a preliminary level, and the detailed lecture on this topic will help me devise better post-restoration maintenance plans in the projects I undertake.

My organization is a private consulting firm that works towards protecting different aspects of cultural and natural heritage, and we are consultants to the Government of India on projects of such nature. In an individual capacity all that I have learned here would certainly help me in the decision-making processes during various stages of a conservation project. Although I cannot take any pilot initiatives within the associated government organizations, the knowledge I have gained in this training program will be shared with my colleagues and fellow conservation professionals (both from the government and private sectors), through training programs that we regularly undertake. As a part-time lecturer, I also look forward to sharing my experiences in Japan with my students of architecture and conservation.

It is impossible to express in words all the other intangible things that I am carrying back to my country from this land of Shinto shrines, Buddhist temples, pagodas, gassho houses, Zen gardens, sushi, maikos, tatami mats, Hida beef, pine forests, cosmos, tea ceremony and 45 tunnels to a mountain village (all of which I was experiencing for the first time), and the influences they will have on me and my professional work.

Indonesia

Mahirta

Final Report

Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2011: Preservation and Restoration of Wooden Structures

Each country in the Asia-Pacific region has its own characteristics for heritage comprised of wooden structures. Wooden structural heritage in the Asia-Pacific region varies in the dating, types, techniques and skills applied in the construction. However, countries in the Asia-Pacific region also share some elements in their heritage as a result of a long history of relationships going back even to prehistoric times. There is some evidence that spatial organization among traditional houses distributed in the Southeast Asian and Pacific region is similar, and that some share the same symbolic meanings (Fox, 1993). Based on archaeological and historical linguistic evidence, it is believed that the similarities are the result of a long history of migration of Austronesian-speaking communities from Southern China and Taiwan going back 6,000 years (Fox, 1993). In the early centuries AD, India also gave its architectural influence in the form of temples, but in Japan wooden temple architecture was influenced by both Chinese and Indian wooden structures. In the ancient time people absorbed elements of cultures either brought by foreigners or brought back home from those visiting abroad, which then experienced historical transformation to adapt to the local natural and social environment.

Each country in the Asia-Pacific region also has its specific problems, and may share similar problems with others, in protecting their heritage. The chance to participate in the Training Course on Cultural Heritage Protection, especially with a focus on the Preservation and Restoration of Wooden Structures, together with other participants from 15 different countries, organized by ACCU-NARA in 2011, is a valuable experience for me. The training course made it possible to broaden my perspectives and discuss with others problems in the conservation and preservation of wooden structures. From presentations by the training participants, it is seen that the problems can be classified into material-related ones, such as problems that derive from agents of wooden deterioration (insects, fungi, environmental factors, natural disasters, etc.), economic and socially-related problems, and policy-related problems. These problems often interrelate with each other, and should be discussed together.

SUBJECT CONTENT OF THE TRAINING PROGRAM

The training program is arranged in such a way so that each participant can have some new perspectives on current issues of heritage management, especially wooden heritage, in the international context, and the past and current practices of wooden conservation and preservation in Japan. The latter is broken down into: (a) policy and other cultural properties legislation in place, and (b) principles and practices for preservation and restoration, including historic wooden elements, individual buildings,

and different types of districts. Some specific knowledge related to the conservation activities, such as introductions to dendrochronology, risk management, prevention of insect-caused damage, and principles of photography for cultural properties, are also given during the training. Overall, the content of the training program is quite solid for providing an understanding of conservation and preservation processes for wooden heritage, and the relevant principles involved.

From the first day to the end of this training program I gained a growing knowledge of preservation problems, from simple to complex, and of current practices in the protection of wooden structures, especially from the Japanese perspective, plus important international context for conservation activities. The following parts of this report will explore these important elements of this training program, followed by some current practices in Indonesia, and potential applications of aspects of this training course to my work, plus my evaluation.

1. Current issues of heritage management in the international context

In the earlier part of the training, issues in heritage management in the international context were presented by three speakers. It was explained that heritage conservation and management in the world has a long history, which can be classified into pre-modern and modern periods. The paradigm of conservation and heritage management also shifts from time to time. It was explained in the training program that conservation varies in different contexts, changing and developing from an emphasis on the material (fabric) to an emphasis on value, and now to an emphasis on the contemporary lives of various communities (the living heritage approach). In value-based heritage management, decisions are value-based: a combination of artistic, contextual, and informational values is normally considered. A value-based approach is currently the most preferred approach to heritage conservation, adopted, and advocated by major conservation authorities, both at national level (e.g., USA, Canada, Australia, and UK) and at international level (e.g., UNESCO World Heritage Centre), and by major research and educational institutions (Paulios, 2010). In the training it was discussed that in some cases, such as living heritage cases, a value-based approach cannot be applied in advance, as we have to consider the community that still uses the heritage. Dialog and various other types of discussions are held before the conservation and preservation decisions are taken. The concept of living heritage approach is the concept of continuity. Although this living heritage approach has nowadays become a trend that is directly applied, there are certain situations where conservators have to initiate some dialogs with the stakeholders and community, to convey their views about their professional judgment for preserving certain heritage items with minimum, partial, or total restoration.

2. Japanese perspectives and current practices in the conservation, preservation, and restoration of wooden structures

It is good practice that in Japan, professionals and organizations involved in conservation activities for traditional and historic buildings have to be certified. There are different certification programs run by the government, offered for different levels of expertise, such as a trainee program, mid-level program, manager training program and executive training program. It is also useful that Japan has research

institutes focused on specific interests, such as architectural history, and conservation architects with specific interests rather than only general professional architects. When very specific expertise in conservation is needed in a restoration project of cultural heritage, there are experts the government can ask to be involved in the project.

Generally, there are three different stages that have to be followed in conservation work for historic wooden structures in Japan. The first is a detailed survey that includes preparation of the history of written documents, and carrying out documentation visually (both in the form of photographs and drawings) of building elements as conservation targets (which can be individual buildings, or groups of historical buildings in districts). The second stage is the conservation/renovation work, and the final stage is production or publication of a report. Basic principles of conservation and renovation are: follow traditional methods, look at building as a whole, pay attention to the wood species that are used, apply traditional craftsmanship, use traditional woodworking materials, with new wooden members properly labeled. However, in certain cases where traditional techniques are not enough to correct certain damage, for example as a result of earthquake, modern scientific techniques can be applied.

In relation to protecting cultural heritage, visual documentation before and after restoration is important. The short one day refresher course on basic photographic principles especially for cultural properties was very useful. It was emphasized by Mr. Sugimoto that the “fundamental principle of photography of cultural properties is to enable storage of materials that can record as much information as possible for an extended period of time.” Following this principle, apart from some instruction in taking the photographs of cultural properties, the documentation system for cultural properties was introduced, although very briefly, stressing that cultural properties documentation is best saved as raw image files (raw data prior to processing) and in TIFF format.

Drawing is another important method of documentation that should be applied for cultural properties, either for parts of structures such as paintings or carvings, or for the structures themselves before and after conservation. Some principles of drawing for documentation purposes were given to the training participants, and practice was carried out individually and in working groups. It was useful to have several tutors guide the participants closely in documenting a traditional wooden house that belonged to the Tanaka family, and during surveys in the Imai-cho districts. The different types of preservation districts that were visited, and the explanations and discussion of several cases for each district especially of community roles in the district, were interesting case studies for me.

CURRENT PRACTICE IN INDONESIA

Indonesia has several types of wooden historic buildings such as mosques, palaces, and community residential houses. The oldest of wooden historic building in Indonesia is from fifteenth century, the *Mesjid* (mosque) Demak in north Central Java. Some other wooden buildings are traditional houses that are classified into Austronesian house types and some town house styles. Most mosques and wooden palaces in Indonesia have been renovated, usually only partly renovated, either for the

purpose of enlarging the space or because it was renovated after a fire. Examples of this are known for the Yogyakarta Sultanate. The period of renovation went back before the colonial period, and some were carried out afterwards. After the independence of Indonesia, some conservation and renovations were carried out by the Indonesian government, some with financial support from international organizations. Commonly, community residential houses are conserved by the owners, and the same goes for traditional/historic residential wooden houses which have not been designated as important cultural properties. Recently, several traditional houses in one district which has been designated as a cultural district, Kotagede, have been restored with funding support from international and also domestic sources. It is good practice, as in the Japanese case, that is worthwhile, if private owners, local governments (municipality, prefecture) and the national government all give their contributions for renovation of designated cultural properties in suitable proportions.

Indonesia is continually improving the management system for its heritage. Under the new legal system of heritage management that was established in October of 2010, several good important things are being carried out by the Indonesian government. An example of this is the preparation of a certification process for professionals that will involve conservation activities for cultural properties. Up to now, the choice of a person in that field was based only on length of experience. We have not yet determined which institution has the right to certify such expertise. However, before formal certification for conservation and restoration professionals is carried out, some training for mid-level technicians working in conservation activities, and training for archaeologists, has been regularly carried out either at the national or regional level. Some archaeological scholars and technicians are also sent abroad for further studies and training, while training for architects and engineers for work in conservation projects is not yet available.

Only in the last five years has the Indonesian government started to involve private contractors in doing conservation work on heritage, provided there are some archaeologists in the those private firms as consultants. Conservation of temples, however, which are not of wooden materials, is always carried out by Conservation and Preservation Heritage Institution in each province, supervised by the central national level office. Good practices followed in Japan, such as a group of experts consisting of a certified architectural conservationist, an archaeologist, and an engineer working together on a conservation project, are worth being applied as well in Indonesia, because private contractors do not always have an architectural conservationist with knowledge of traditional Indonesian buildings who is closely involved during the restoration. Right now, one difficulty for private contractors is recruiting experienced archaeologists and architects as their consultants, because more than 80 percent of experienced archaeologists in Indonesia work as government officers, and are therefore not allowed to act as a consultant for private contractors in heritage renovation.

APPLICATION TO MY WORK IN INDONESIA

Since 2004, the Archaeology Department of Gadjah Mada University has opened a Master's Degree for Cultural Resource Management studies, and in 2009 our department started a new program in

Museology studies. Currently, only two universities in Indonesia, the other being Universitas Indonesia, offer graduate studies in Cultural Resource Management. Students in the Archaeology Department of Gadjah Mada University come as both freshly graduated architects and also archaeologists who have been working in several conservation and preservation of heritage offices, such as the Borobudur Conservation Research Institution, and other archaeological research institutes all over Indonesia. It is hoped that after finishing their Master studies in our Department they can apply their new knowledge in their regions.

There are several course subjects in the training program that I think need to be added to our department's curriculum. Some examples that I consider essential additions to cover are the following:

1. Current issues and debates in the management of heritage.
2. Detailed study of international norms in conservation.
3. Introduction to the World Heritage Convention.
4. Principles of preservation of historic wooden structures, with the addition of the Japanese perspective and other current international practices as examples.
5. Documentation system practices (both visual and verbal) for conservation and restoration purposes.

Hopefully, through the transfer of knowledge that occurs during training courses for other teaching staff in the department and to our students that originally came from different conservation branch offices in Indonesia, I can contribute to the improvement of conservation work for cultural properties in Indonesia.

EVALUATION

All of the themes in the training were delivered through interrelated methods of lecturing in class followed by discussions, plus individual practice and group work with several trained tutors, then followed by a small seminar. As both a researcher and as head of the Archaeology Department, which is currently running programs in museum and heritage studies, I find that the approach applied in the training is worth emulating. With this approach, each participant can maximally obtain new knowledge from the speakers, and members within each working group, which consist of different types of expertise (architect, archaeologist, engineer), learn by working together to document wooden structures and solve real cases of conservation problems. Afterwards, each participant can gain new knowledge from members of other groups through seminars. Visiting sites that are selected to focus on elements of buildings, individual buildings (temple museum and residential house), and several different groups of cultural districts, also strengthens understanding about principles of conservation and preservation of wooden structures that are currently practiced in Japan, and how heritage is used in Japan. Perhaps if the principles of photography course is coordinated with the drawing practice (for both buildings and paintings) they would become more effective, because both are essential elements of visual documentation in the conservation process. When this part of the course is given at the beginning, participants can apply the new knowledge obtained in the subsequence on-site practice. Overall, this training program was great.

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Kazakhstan

Rustem ILYASOV

Final Report 2011

Kazakhstan has stable relationships with all of its neighbors. Kazakhstan is a member of the United Nations, Organization for Security and Cooperation in Europe, and North Atlantic Cooperation Council, and will serve in the office of chair of the Organization for Security and Cooperation in Europe in 2010. It also is an active participant in the North Atlantic Treaty Organization's (NATO) Partnership for Peace program. Kazakhstan also is a member of the Commonwealth of Independent States and the Shanghai Cooperation Organization, along with Russia, China, Kyrgyzstan, Tajikistan, and Uzbekistan. Kazakhstan is the founding member of the Conference for Interaction and Confidence in Asia. Kazakhstan also engages in regional security dialogue with ASEAN (Association of South East Asian Nations).

The great steppe was an arena for foreign invasions for many centuries, which led to the destruction of a multitude of medieval towns and architectural objects. Among the objects that remain are the H. A. Yassauï mausoleum (Turkestan, fourteenth – fifteenth centuries), which is inscribed on the UNESCO World Heritage list. The Ascension Cathedral in Almaty (1907) is also included on the UNESCO monuments list. The Palace of the Republic (Almaty 1970, architect N. Ripinsky) and the Medeu complex (1972, architects V. Katzev and A. Kainarbayev) are world famous. An “Architectural Renaissance” started in Kazakhstan during the period of its independence. In Astana (layout by Japanese architect K. Kurokawa, 1934-2007), buildings have been constructed such as the Ak Orda, the Residence of the President of Kazakhstan (Kazakh architect K. Montakhayev, 1950-2009), Water-green boulevard (K. Kurokawa), the Palace of Peace and Harmony (Pyramid, 2006), the Khan Shatyr center (2010, English architect N. Foster), the Kazakhstan Central Concert Hall (2009, Italian architect M. Nicoletti), the Nur-Astana mosque (2005, Lebanese architect Ch. Khafiz), and a number of sport complexes built for the 2011 Asian Games.

To talk now about the land of the rising sun, diverse cultural properties have been created and developed throughout Japan’s long history. They have been passed down from one generation to the next, to the present day, and are a precious legacy of Japanese people.

Cultural properties include structures such as shrines or temples, Buddhist statues, paintings, calligraphy and other skills such as performing arts and craft techniques, traditional events and festivals. Natural landscapes unchanged by time are also included as cultural properties in Japan. Of these cultural properties, the government designates, selects and registers important items in categories such as Important Cultural Properties, National Treasures, Historic Sites, Places of Scenic Beauty, and

Natural Monuments, and gives priority to their protection.

Of course, wooden structures are among the most important items of cultural heritage. Characteristics of the uses of wood include the following.

- Used for objects and buildings
- Used from past to the present
- Used all over the world
- Used from simple huts to massive buildings
- One of the most used materials
- One of the most vulnerable materials

Conservation issues related to the use of wood in cultural heritage include: protection (recognition, knowledge, legal aspects, sustainability), prevention of deterioration (through maintenance and monitoring), interventions (from particular structural elements, be they protective or decorative, to the entire building), dismantling, replacement, reconstruction, and restoration.

Various issues regarding historical and cultural heritage, or rather, the attitude of society to that heritage, and to its different monuments, has always been associated with the character of the state of public consciousness at a particular historical period.

The current state of the cultural heritage of a region is also characterized by how viable is the set of measures to ensure the preservation and further development of centuries-old tradition, plus the process of discovery of new historical and cultural monuments, the revitalization or the conservation and restoration of cultural heritage, and the creation of new historical and cultural centers on that basis.

Nowadays, the problems of restoration of heritage address not only the restoration of concrete works of art and culture, but also the preservation of cultural values, associated with a people's identity or ethnicity.

All societies have notions of what they value and what needs protection. Conservation is a context dependent endeavor, and requires respecting the diversity and continuity of connections with the living community.

Many countries in the Asia-Pacific region are faced with a variety of problems related to the planning of cultural heritage protection, and the preservation and restoration of cultural properties. Almost universally, the cases requiring resolution include a shortage of human resources and funds, and insufficient heritage legislation. As a result of these deficiencies, a large number of cultural properties have been destroyed or damaged. In addition, policies resulting in excessive tourism have prevented sufficient repair or restoration of these properties. For these reasons, cultural heritage in this vast and diverse region is seriously endangered.

In contrast, Japan's research activities in cultural heritage protection and techniques for cultural property preservation/restoration are highly regarded around the world. Therefore, numerous countries in the Asia-Pacific region have come to expect Japan to continue promoting international cooperation in cultural heritage protection.

In response to such requests for cooperation, the Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO (ACCU Nara Office) was established in Nara on August 1, 1999, with the cooperation of the Japanese Agency for Cultural Affairs, the Nara Prefectural Government and the Nara Municipal Government, to serve as a domestic center for promoting cooperation in cultural heritage protection. Nara is considered to be the birthplace of Japan's ancient culture, and is home to a number of the world's unique historic and cultural properties, and as a consequence, to various excellent organizations involved in cultural property research and management.

To help promote cultural heritage protection activities mainly in the Asia-Pacific region, the ACCU Nara Office conducts a wide range of programs, maintaining partnerships with international organizations such as UNESCO and the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM).

The Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2011, "Preservation and Restoration of Wooden Structures," is jointly organized by the 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); Ministry of Foreign Affairs of Japan; the Japanese National Commission for UNESCO; Nara Prefectural Government; and Nara Municipal Government.

During this training course, we became acquainted with many stages of conservation and restoration. We practiced drawing plans and sections, and became familiarized with the tools and technical processing of wood. We studied methods for surveying private residences and urban streetscapes, practiced making plans to manage the preservation district for a group of traditional buildings in the town of Imai (Kashihara City), observed the major traditional techniques used for preservation work at Himeji Castle (techniques for stone walls on the civil engineering side, and carpentry, plastering and roofing techniques on the construction side), conducted a survey on painting and drew up a plan for painting restoration. The painting restoration in Japan gave us the impression that in many countries the basic principles of painting restoration have not yet been fully established. In Japan, the restoration of paintings has been implemented for many years to preserve cultural properties. However, repainting hides the original and in the worst cases can even destroy it. We should consider this fact.

I obtained extraordinary useful knowledge in the field of photographing tangible cultural heritage.

Also, we analyzed one of the main issues regarding wooden structures, the prevention and treatment of insect damage to cultural properties. Carrying out a good inspection is the fundamental basis for achieving a successful and definitive treatment in controlling different types of pathologies that affect wood, such as the xylophagous insects (termites, woodworms, etc.), and wood-destroying insects in general. We need experts in this area for the identification of harmful species.

Dendrochronological analysis of ancient wooden cultural properties was very interesting. Generally speaking, there are two methods of measurement of in dendrochronological analysis that use cultural properties as specimens. One is the direct method, in which specialized equipment is used to take measurements directly from the specimen. The other is the indirect method, where measurements are made through intermediate media such as images taken of tree rings. Tree ring measurement has played an important role as a means of age determination in the study of wooden cultural properties. The most generally used method of measuring tree ring width is to take measurements on the specimen surface using a lens, or through photography, etc. A technology for measuring tree ring width using tomographic images acquired by micro-focus X-ray CT to perform nondestructive visualization of the tree rings within a test article was put into actual use. This technology, which relates to the nondestructive measurement of tree ring width, is a technology of very high utility in the nondestructive tree ring dating of wooden cultural properties, especially as regards ring width measurements.

Kazakhstan is a seismic region but with no experience in that kind of risk management, so that is why I would like to emphasize the importance of the restoration of Sawanotsuru Onoishi-gura (Sake Brewery of Sawanotsuru) and the elaborate description of a soft-landing system, which was presented by the Cultural Asset Protection Office Director MURAKAMI Yasumichi.

This soft-landing system has a fail-safe mechanism, an improvement of the patented mechanism co-developed by the Power Reactor and Nuclear Fuel Development Corporation and Obayashi Corporation. The system works as follows: when the isolation system is subjected to a great horizontal force, the increasing displacement makes the system lose its ability to support perpendicular loading. The soft-landing system slides on the horizontal steel plate, supporting the perpendicular loading in place of the isolation system, and making the most effective use of the capability of high damping rubber to accommodate horizontal displacement. This makes it possible to accommodate earthquakes with high seismic intensity and high displacement using a smaller-diameter isolation system, which allows the use of an isolation system for small loads (lightweight wood structures etc.). With the use of the isolation system including this soft-landing system, the seismic input energy is decreased to one-third or one-fourth, which will help prevent damage to the building as well as toppling, breakage and other damage to the exhibits inside (the sake brewing equipment, etc.).

During the earthquake, the structure on the land moves with the artificial ground in a large, horizontal pattern (capable of accommodating a maximum of 64 cm, or approximately 58 cm at 802 gal, or gravitational acceleration). In order to accommodate this displacement, a clearance of at least 650

mm was secured around the berm of the artificial ground, and flexible joints were used for electric, plumbing, and drainage wires and pipes.

In my opinion, the Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2011, “Preservation and Restoration of Wooden Structures,” gave all participants invaluable knowledge and experience in the conservation and restoration of wooden structures. We had a wonderful opportunity to observe the Japanese approach to solving these problems. It was really a very informative and interesting process. Notice of appreciation should also be made of the beautiful natural environment and rich culture of Japan, and the friendly and polite Japanese citizens. We visited many temples and shrines, such as Horyu-ji and Toshodai-ji temples, the oldest Horen-zukuri style farmhouse, the municipally-designated cultural property Kyu-Tanaka-ke Jutaku (Former Tanaka Family Residence) in the city of Nara, preservation districts for groups of traditional buildings (Gojo Shinmachi, Imai-cho), Himeji Castle etc. I acquired many skills and new information about the conservation and restoration of cultural heritage. The site visits and lectures were conducted very effectively. I think the value of this kind of experience cannot be overestimated.

I would like to express my gratitude to the organizers for this great opportunity to participate in the training course. I would also like to thank ACCU staff members, Mr. NISHIMURA Yasushi, Mr. TAKAHASHI Wataru, Mr. KOBAYASHI Ken-ichi, Ms. KATO Naoko, Ms. HORIKAWA Kazuko, Ms. NISHIDA Michiko, Ms. OTANI Yasuko, Mr. SHIMOMURA Nobuhito, and our interpreter Ms. HATA Chiyako, the tutors Ms. LEE Jihee, Ms. TSUJITA Naoko, Ms. YAMAMOTO Rika, Ms. SAITO Junko, and also the participants from other countries for their useful information and sharing of their experience.

Myanmar

Htun Htun Win

My Experiences during the ACCU Nara Training Course

1. Introduction

The Cultural Heritage Protective Cooperating Office, Asia/Pacific Culture Centre for UNESCO in Nara, Japan, organized the training course on the preservation and restoration of Cultural Heritage in the Asia-Pacific Region 2011, entitled “Preservation and Restoration of Wooden Structures.” This course lasted about one month, from 30 August 2011 to 29 September 2011.

There were 15 participants from 15 countries in the Asia-Pacific region in this training, and they will be using the knowledge gained for improving the restoration, conservation and protection of cultural heritage in their respective countries. The aim of the course was to introduce concepts and methods of preservation and restoration of various wooden structures, with reference to Japan’s system for the conservation of cultural properties.

I am a conservator with the Department of Archaeology, National Museum and Library under the Ministry of Culture. I have responsibility for the conservation of ancient monuments in upper Myanmar. The monuments are made of stone, brick and wood. Due to disasters, most of the cultural properties all over the world are faced with the danger of deterioration day by day. It is necessary to take immediate action. Nowadays, every country is trying to protect and preserve its own cultural properties in various ways. Myanmar is also trying to protect and preserve her cultural properties.

2. General Overview of the Training Course

The training course began at the end of August 2011 and was completed at the end of September 2011. During the long course, there were lectures, practical training activities, and on-site lectures of restoration, preservation, and excavation.

In the first week of training, we had an “Introduction to Architectural Heritage in Asia,” beginning with a lecture on that topic by Dr. Gamini Wijesurya, the Project Manager for ICCROM. Then, two days were allocated during the training course for all participants to make their country presentations on the preservation and restoration of cultural properties. Each participant presented for about 15 minutes on topics such as “Problems and Needs for Cultural Heritage Protection and Restoration Activities,” “Conservation of Architectural Heritage,” “Treatment of Cultural Property as Wooden Materials,” “Preservation and Restoration of Wooden Structures” and “Protection and Restoration of Traditional Houses, etc.” in his/her respective country, followed by 15 minutes of discussion. The participant’s presentations were seen to be very positive, because there was discussion after each presentation,

which allowed participants to share their ideas and comments on issues pertaining to his/her country's efforts to preserve and restore important cultural properties.

In the second week, we had a good introduction to the "History of Wooden Architecture / Cultural Heritage Protection System and Current Status of Conservation in Japan." We also learned about "Restoration Systems and Project Planning for Wooden Structures." We then had practical training on recording and documentation of the Tanaka family residence. I learned about sketching a drawing of the floor plan and cross-section of a farmhouse, and then making the detailed measurement. The Japanese method is exact and in detail. All participants learned a great idea from this practical training. In this week, we had three practical trainings, with the other two on "Damage/Deterioration Survey and Planning for Restoration" and "Materials Survey for Sustainable Conservation and Planning a Management Policy." Apart from the hands-on practical training activities, participants were also given the opportunity to visit some of Japan's Important Cultural Properties outside of Nara.

In the third week, we had an on-site lecture on "Buddhist Monuments in Horyu-ji Area," which is one of the World Heritage sites in Japan. During the third week we also had on-site lectures at vernacular houses and historic townscapes, and practical training in survey and planning for preservation. In the townscape survey, we had group work and each group had to make a presentation. We also had on-site lectures on "Citadel Preservation in Practice" by Kobayashi Masahiro and "Risk Management of Cultural Properties" by Dr. Murakami Yasumichi."

In the fourth week of training, we learned the recording of wooden structures by means of photography and also techniques used in the prevention of insect damage to wooden structures, which is quite useful in our preservation activities. During this week, we took study tours focusing on the preservation of modern architecture in practice, and on the preservation of vernacular houses and townscape.

In the last week of training, we had an on-site lecture on the surveying of painting and making plans for painting restoration. The theory and practice lectures on "Future Tasks in the Preservation of Cultural Properties" were the last sessions of our training program, which highlighted what we need to do in our future work in preservation.

Japan has a long history of protection of its cultural heritage through legislation and other means. Its heritage is mainly protected by the Law for Protection of Culture Properties. I learned that the government also grants subsidies for National Treasures, and provides other support for the preservation and restoration of designated cultural properties. In many countries, cultural properties are also protected by similar legislation, such as Myanmar's 1998 Protection and Preservation of Cultural Heritage Regions Law.

Japanese architecture is shaped by its circumstances of climate and geography. In Japan, with its high humidity, seasonal change and plentiful forests, wood has been the traditional building material.

Traditional Japanese architecture has good foundations, good water drainage systems, good ventilation and interior air circulation, slanted roofs, long overhangs, and floors covered with tatami mats. The tatami mat is one of the important elements in traditional Japanese architecture. It is fixed in size, and while different depending on the region, this determines the building size.

In Japan, many of the cultural heritage wooden buildings are more than 500 years old, and were made using traditional construction methods and tools as compared to modern buildings. One of the most important aspects I learned is the use of traditional materials and techniques in the restoration of historic wooden buildings. In the restoration of a wooden structure, depending on the proportion of the rotten material, a wooden member may be reused after being repaired with traditional methods that use joints or grafts. Mostly the Japanese historical structures are made primarily of wood, with paper screen doors, straw mats, plaster and clay mixed walls, and bark shingles, planks, or tiles for the roofs.

The next important aspect of culture asset preservation and restoration in Japan is the disaster preparedness plan. One of the greatest threats to historic wooden buildings is fire, as the outbreak of fire will destroy everything. It is no exaggeration that the history of preserving wooden structures in Japan is in fact a fight against disaster by fire. Japan has installed modern and sophisticated physical fire-fighting equipment in most historic wooden buildings.

3. Conclusion

Through the Training Course on Cultural Heritage Protection in the Asia/Pacific Region, held in the city of Nara, I learned many methods and new knowledge about the conservation and restoration of cultural heritage. The various sessions and practical training will be helpful in my work. In Japan, the preservation and restoration of cultural properties is more advanced than in other countries. Through the training course I have gained new ideas, and more advanced knowledge, with which I have been revising my current understandings and concepts regarding the preservation and restoration of cultural properties, which will be helpful for my country in this field. I will share my experiences with other conservators in my department, in my country.

4. Acknowledgment

I would like to thank the Cultural Heritage Cooperation Office Asia/Pacific Cultural Center for UNESCO, Nara, and the International Centre for the study of the Preservation and Restoration of Cultural Properties (ICCROM). I would also like to commend our course coordinator and staff. Thanks to all of you for your support and guidance throughout the entire program. Finally I would like to thank the Ministry of Culture, Department of Archaeology, National Museum and Library, Myanmar, for nominating me to participate in this training course.

Nepal

Ram Govinda SHRESTHA

Final Evaluation Report on the Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2011: Preservation and Restoration of Wooden Structures

1. Introduction

The “Training Course on Cultural Heritage Protection in the Asia Pacific Region 2011: Preservation and Restoration of Wooden Structures” was organized by the Agency for Cultural Affairs, Japan (Bunkacho), Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO (ACCU Nara), 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 the Japanese Association for Conservation of Architectural Monuments (JACAM), Japan Consortium for International Cooperation in Cultural Heritage (JCICI-Heritage), the Ministry of Foreign Affairs of Japan, the Japanese National Commission for UNESCO, the Nara Prefectural Government and the Nara Municipal Government. The course was held from 30 August (Tue) to 29 September (Thu) 2011.

The training course was offered to participants from the 37 different countries in the Asia/Pacific region through the UNESCO National Commission or the endorsement of the member of JCICI-Heritage. Each country having certain qualifications, according to criteria fixed by the concerned organization, and then 15 participants and two observer participants among them were selected. The selected participants from different Asia/Pacific countries have been involved in their own countries in the field of cultural heritage preservation and conservation.

The course on preservation and restoration of wooden structures included theoretical aspects, or principles of conservation and restoration, as well as traditional and modern Japanese practices used for wooden structures, with the purpose of giving knowledge about traditional practices, modern norms, and advanced techniques of restoration and conservation in Japan.

In my point of view the training course was very systematically designed for dedicated professionals having experience in their own countries. Detailed knowledge and practical experience with the Japanese system were conveyed, as well as theoretical instruction in lectures.

2. Significance of the training

The training was held in very nice environment. During the training period participants felt free to learn about the lectures and every detail of all the subjects. The lectures were of value not only

in Japan but also in every corner of the world. The lectures given by the instructors involved were understandable for the participants, and communication among the latter helped us learn about more things from each other. The instructors in the subjects concern made the training more informative. If someone questioned me about ranking the training course, I would rank it at a high level. I would say the training course was 100 percent successful.

The Japanese conservation and preservation systems were the principal topics. Accordingly we had the opportunity to observe these on sites as well as to interact with relevant professionals. It was a great benefit that resource persons were either technical practitioners or academics capable of giving detailed information on their subjects, either in the field observations and practical knowledge, or in terms of the principles and theoretical knowledge.

Due to the broad scope of the training, it can benefit not only the trainees in making successful contributions but also their home countries as well, which is the true significance of this training. Most of the Asian countries have similar kinds of problems in the conservation of heritage. There are some specific problems which are due to the situation of the country, the perceptions of the local communities and traditions, or linked to the communities' climate. But broadly these countries all have the following kinds of similar problems: management, legal system, and budget.

We have faced a number of problems of management regarding the conservation, restoration, and preservation of cultural heritage in Nepal. The proper coordination between government and non-government institutions, lack of skilled sufficient manpower, coordination between traditional and modern technology, lack of expert documentation of the heritage, and lack of public awareness about conservation and preservation of heritage are the major management problems. However, insufficient budget is the main problem for Nepal regarding heritage conservation, and there are also some gaps in the existing legal system for preserving and conserving cultural properties.

Acknowledging these problems in the Asia/Pacific region, the above-named organizations including ACCU Nara have organized this training program for all countries of the region, to share in the knowledge of the existing conservation and preservation system of Japan, where cultural properties are well preserved and conserved using traditional knowledge, and some adoption of modern advanced technologies, with advanced community awareness as well as a comprehensive legal system, as I observed during the training course.

Obtaining feedback from other participants in the training course can help us in the preservation and conservation of cultural properties after going back to our home countries, which is the main purpose of preparing this report. So I will focus on this issue and give an explanation about the knowledge I gained that can help me as heritage professional.

The practical course included various subjects with case studies in the Japanese context regarding the

conservation and preservation of wooden structures. I think these topics were more valuable for the conservators in the profession.

The practical training provided important opportunities for the participants to gain new knowledge and to learn about real conditions. Observation, surveying, site measurement, drawing preparation, paintings, and the planning process are valuable tools for conservation and restoration used in Japan. The site visits and on-site lectures also provided great opportunities to observe how conservation and restoration are conducted in Japan.

Communicating practical knowledge among the participants through their presentations about their own countries' work in preservation and conservation also provided a great opportunity to learn many more things. In addition, the lectures provided opportunity for discussion on various issues and topics taken up, as did the practical training and on-site lectures.

3. Limitations of report

Regarding this evaluation, the current report has been prepared with following limitations.

- The report was prepared within one month.
- The report was prepared at the direction of ACCU Nara.
- The report volume was specified as 2,000-3,000 words.
- The report was prepared based on my own experience.

4. Construction of buildings in Nepal and Japan

Every country builds its own building to fit their natural situation and time, the perceptions of their people, communities, and places. So characteristics of built heritage may vary from country to country around the world, and may not always be the same even in the same place, due to differences in temporal and contextual factors. Due to this it is very difficult to apply the same ideas and knowledge about built heritage in the same manner, everywhere and every time.

One of the major features of traditional Japanese structures is that the building is completely constructed in timber, atop a base foundation of stone, so that it can be disassembled and reassembled without damage to any members. It is possible to dismantle and repair because of this character, making this approach very common in the conservation of wooden structures in Japan.

From my observation in the practical training and on-site lectures, Japanese traditional architecture is close to nature, in that traditional architectural buildings and monuments are harmonious with their surrounding landscapes, and suitability matched to the local climates. This kind of feature can be observed in the wooden planks of the Takayama traditional buildings, the steep thatched roof roofs in Shirakawa-go gassho buildings, in the tile roofs of traditional Japanese houses in Naramachi, Gojo, and Imai-cho.

In the context of Nepal, traditional structures are mostly different from Japan. We very rarely find buildings made totally as wooden structures. The structures we have do not use heavy and thick wooden materials. Traditional wooden materials were used as secondary materials, but they still have a significant role. In traditional architectural construction wooden material was used for various purposes. Pillars were sometimes used with mud mortar as upright posts, in which the wooden material was not decorated, but placed inside the mud mortar brick wall on a base that was wooden or stone. Other pillars, with highly decorated members, were placed outside brick walls as load-bearing members. Doors, windows, lattice windows, *sanjyal* (bay windows) were decorated wooden materials. Upright posts, beams, *challu* (wooden supports), struts, eaves boards, wall plates, and sill members used wooden materials. Those elements have significant roles in the structure. In Nepalese traditional architectural, load bearing elements are made in line with the required size. But I observed at the Tanaka house in Nara that in Japan, the load-bearing pillar size is not sufficient as compared with the load-bearing beam, even though most Japanese houses were built as massive wooden structures, either plain or decorated.

While for both countries the system of traditional conservation method may vary, we both have to think about safety measures ourselves in order to preserve and conserve important heritage, to pass on from our generation to future generations. After having received this training, with its theoretical as well as practical aspects, and observed directly aspects of the conservation system at Toshodaiji temple, Todaiji temple, Horuji temple, the Tanaka family house, houses in Imai-cho in Nara prefecture, Himeji castle and the Sawanotsuru *sakagura* (old Japanese sake brewery) in Hyogo Prefecture, the Yoshijima house in Takayama and Maeda house in Shirakawa in Gifu prefecture, I have learned that we should accept scientific methods of conservation. In my observation, the Japanese traditional structural system also has good ideas about placing the post on a base foundation of the stone. Wooden members are linked using a good joining system. Roofing with planking is more modern and artistic to view.

After going back to Nepal I will try to use the knowledge I gained in the fields of conservation and preservation. I will make suggestions to my municipality college, and give the ideas gained from Japan to the municipality as well, and if someone requests me to talk about the Japanese method of conservation, I will explain to them how it has made me feel about my duties for the conservation and preservation of important heritage.

As I know that conservation and preservation are never-ending processes, I will pursue the sole purpose of conserving cultural heritage within our city, where we have expressed in our motto the commitment we try to achieve: "Creation of our predecessors – our art and culture."

As this motto describes, our predecessors' creations are our art and culture. This heritage should not be destroyed in our generation, but should be passed on to the future generations, so that they can know about their predecessors' design and civilization.

Concerning the above motto, we should think about authenticity. We should preserve not only material heritage but also all the techniques used by our predecessors as far as possible. For this purpose we should train craftsmen and masons in the techniques used by our predecessors. Also, we should not intervene much in the work of conservation and preservation. We do not wish to lose the value of the heritage. And we should not ignore the people, by which I mean the community related to this heritage. It is necessary to make them aware of the value of the heritage as well. Their participation is necessary for conservation, so they need to understand about authenticity, responsibility, and the value of heritage. They should be involved in the decision-making process involved in heritage conservation. I heard from an on-site practical trainer that conservation work in Takayama city and Shirakawa village in Japan had this kind of participation from local communities. As a result, they have successfully conserved and preserved their heritage.

As far as possible we should reuse wooden materials in order to save the authenticity of the heritage. The use of new materials should be limited, because a wooden member is a reusable material. For Japanese wooden structures, reconstruction and replacement involve a minimum amount of conjecture. By saving these wooden members we could save the natural environment as well.

I did not know about restoration through the total dismantling and relocation process before coming to Japan. I just learned of it through attending the class lecture of Professor Inaba. If a monument is structurally deteriorated and vulnerable, total dismantling and repair in the same design and form may be adopted, but partially deteriorated structures may be partially dismantled when necessary for repair. Generally some repair work is done. According to Dr. Inaba, dismantling and relocation are also common practices in the conservation of monuments in Japan. But we do not have this type of conservation practice. I can convey this message to Nepal. This type of conservation may be applied in the hilly areas of the Nepal where monuments are constructed by mostly using wood.

According to Yasumichi Murakami, Director of Cultural Assets Office, Hyogo Prefecture Board of Education, concerning the Kobe disaster, people who are involved in conservation and restoration work should be dedicated to this task even in disaster situations. As learned from Director Murakami, during disaster situations heritage professional should be active for the collection of the data on heritage property, and should inform the central government about the condition of the disaster, should give quick decision about implementing work in dangerous situations. By keeping this in mind I will also try to involved and do my best in heritage conservation. For me Mr. Murakami's work was memorable and it was a great lesson for me to obtain through this training.

5. Conclusion

This training course is very important for me, my organization, my city and my country too. I will use all the knowledge gained from this training after going back to my job in my country, in our context as much as possible. Although I know, as a professional person involved in heritage conservation, the conservation systems in Japan and Nepal are not the same, but the important thing is that I have gained

knowledge from this training that is of great value which will be applicable in the context of heritage conservation in Nepal.

The lectures were interesting and relevant to this course, and clearly presented with good explanations. The aims and requirements of the workshops were very clear and well explained, highly relevant to this training course, and the instructors' explanations always very clear and the level of the workshop easy to understand. The workshop on recording/documentation gave me ideas about our recording system for heritage. The workshop on the townscape survey and planning for preservation gave me good lessons about how to plan in the context of a historical city. The workshop on recording of wooden structures (photography) gave me training about composition and the use of the camera in the context of photography documentation. The workshop on the painting survey and making a plan for painting restoration trained me in the use of a record system for painting and the analysis of painting composition, which are valuable aspects of painting conservation. The study tours and on-site lectures were very clear and useful in increasing my understanding of this training.

In general the course fulfilled my expectations and aims, the coverage of the subject was about right, the depth of coverage of the subject also about right, and most components of the program were relevant to my work, so I can apply what I have learned in my own country.

Thanks to all who helped me.

New Zealand

Nicola Rachel JACKSON

Asia and Pacific Region Conservation of Wooden Structures 2011: Final Report

Introduction

This is the final report written upon the completion of the 2011 Asia and Pacific Region Conservation of Wooden Structures training course. The report focuses on the application of the concepts and knowledge presented in the course to my work in New Zealand.

I have worked for the New Zealand Historic Places Trust Pouhere Taonga (NZHPT) for over 13 years in a variety of roles. I was first employed as a heritage planner and my main tasks involved working with owners wanting to make alterations to their heritage properties and with local authorities on the development of their district and city plans. This work required a sound knowledge of heritage principles and a practical approach. My next role was as Registrar where I was responsible for the overall management of the NZHPT national Register of Historic Places, Historic Areas, Wahi Tapu and Wahi Tapu Areas. This role required understanding why places are significant and how to document this significance for registration purposes. My current role as Policy Manager followed a period of holding the position of Senior Heritage Policy Adviser where I was mainly involved in the preparation of heritage guidelines for owners of heritage and NZHPT staff.

Following the major earthquakes in Canterbury in September 2010 and February 2011 I was appointed as the NZHPT Emergency Response Manager. My key tasks were to organise temporary office space and staff resources and to lead the heritage response to the earthquake during the immediate aftermath of the events. The response work involved assisting local authorities in determining emergency consent procedures and undertaking assessments of the damage sustained to heritage buildings.

This training course has provided a wide range of learning opportunities from practical hands-on work in conservation and recording, to information about the Japanese heritage conservation legislative system and methods of restoration in relation to wooden structures. Unfortunately our time in Kobe for the consideration of the damage and response to the 1995 earthquake was caught short due to heavy traffic as I would have liked to explore this topic in more detail. However, the detailed handout from this session is particularly useful, and I am likely to refer to it especially over the coming months as I analyse the New Zealand response and experience.

Three areas covered in the course have been of particular interest to me in my current role. These are:

- 1) The wide range of heritage that is able to be recognised and/or protected under Japan's legislative system.
- 2) The challenges facing preservation districts.
- 3) The issue of authenticity in the conservation process.

Recognising a wide range of heritage

Japanese heritage legislation seeks to conserve a wide range of heritage. In a way similar to New Zealand, cultural properties including historic sites, monuments, buildings, groups of buildings, and cultural landscapes are recognised and protected through legislation. In the case of Japan, a national and regional regulatory approach is used, whereas in New Zealand protection is achieved only at the local authority level. At a national level, the NZHPT Register can identify and recognise significant heritage but does not regulate it.

A key difference between the two countries is the recognition of heritage not covered by New Zealand legislation explicitly. Japanese heritage legislation covers:

- Tangible cultural properties, which includes structures, sculptures, works of art, crafts, books, documents, and artefacts, that can be designated as National Treasures (highest category) or registered as tangible cultural property.
- Intangible cultural properties, which includes drama, music, craft techniques including the practitioners themselves as holders of the skill or technique. These can be designated as Important Intangible Cultural Properties.
- Folk cultural properties, which includes clothes, tools, houses, objects, manners, customs, folk performing arts and techniques related to food, clothing, domestic situations, occupations, religious faith, annual events and festivals. These can be designated as Important or registered as either intangible or tangible Folk Cultural Properties.

In New Zealand such objects are either considered as chattels if related to a specific heritage building or held in museums with no formal recognition through legislation other than for the export of Maori artefacts. For the intangible matters, the legislation in New Zealand only covers land based heritage and the values can only be protected in so far as they relate to a physical site. There is no distinction between folk attributes and other cultural property in New Zealand, however, there is a general recognition of the need to ensure a wide range of heritage types, as represented for example in the Register. There is no legislation in New Zealand that provides for the retention of traditional skills and techniques. For example, for Maori meeting houses (wharehau) it is important that skilled carvers are available for restoration, and in order for this to happen the traditional skills and techniques need to be passed on to each generation. In practice this happens at a local level but is not required by legislation. It may be useful to prepare a more formalised approach to ensure all skills and traditional techniques are maintained and the knowledge passed down.

Challenges facing Preservation Districts

Another key theme covered in the course relates to the conservation and management of preservation districts (called historic precincts or historic areas in New Zealand). We visited three preservation districts in Imaicho, Takayama and Shirakawa. Each of these places exhibited similar issues to historic areas in New Zealand, including loss of heritage/character buildings, impacts of poor alterations to buildings, new buildings being constructed that are out of character with the heritage values, change

of use and socioeconomic changes, neglect, effects of tourism, and vacant properties. There are about 90 nationally designated preservation districts in Japan managed by municipalities. The municipalities receive subsidies from the government which provide important incentives for the restoration of historic buildings within preservation districts and for ‘façade enhancement’ – returning altered or newer buildings to a more original design in line with strict guidelines. This can mean that it is difficult to visually pick the original traditional houses from modern houses. The regulations only cover the external front façade which means internal alterations need not be in keeping with the traditional layout. Each municipality can set its own regulations which, like what happens in New Zealand, means there are a range of approaches – some don’t protect the retention of the character or historic buildings themselves, rather the focus is on character or townscape.

A key concept explored within this theme is ‘living heritage’. Preservation districts are places where people live and work. It is important that the focus of conserving the traditional townscape does not lead to such increased tourism that the towns are no longer desirable places to live. Services and goods essential for daily life are important aspects to be retained. A high concentration of souvenir shops, restaurants and tourist attractions can alter the character of a town and reduce its integrity as a historic townscape. A particularly interesting part of the Japanese approach to conserving historic townscapes is the involvement of the local community. In some cases it was the local residents that instigated the first principles and guidelines to promote conservation of the area. It seems that a key to successful conservation relies on the involvement of the local community in the on-going management of the preservation district. There are many lessons to be gained from studying the Japanese approach to preservation districts, the effects of regulation, and the methods used to retain heritage, that are applicable in the New Zealand context.

Authenticity

Over the past two decades or more there has been international debate around the concept of authenticity. Wooden structures, as opposed to those constructed in stone or brick, have less permanent properties and a lesser expected lifespan. While replacing very perishable materials such as straw thatching regularly is common, such practices (if carried out using similar materials and similar methods), do not appear to raise issues of authenticity. Full scale dismantling of structures however, has raised concerns. How to conserve wooden structures over hundreds of years while retaining authenticity has been an important consideration for many countries.

Wooden structures have been conserved continuously in Japan since at least 700 AD. Seemingly unique restoration processes have evolved over time, which aim to extend the life of the structures. The Japanese restore their wooden structures, particularly temple buildings, by dismantling, inspecting, repairing and reassembling the structures every 100-200 years or so. Where parts are damaged and unable to be used, new material is added. Damaged timbers are repaired by piecing in new material or replacing whole members depending on the extent of damage and remaining structural strength. In particular, this relates to main structural beams and pillars which come in contact with the soil or sit on

foundation stones. These restoration processes are all carried out with a high level of documentation (at least since the 1800s).

In some cases whole members or parts are replaced when they are not beyond use but because of the difficulty in reaching these parts for repair during the usual course of maintenance. For example at Himeji Castle, dating from 1601, the two 8-ft fish sculptures which sit at the very top of the castle have been replaced at least four times. The last four restoration efforts have seen these sculptures replaced with similar but not identical sculptures. The changes arise from artistic or stylistic changes of the preference of the craftsman, or relate to the fashion of the time, or in some cases a desire to return to an early style.

Before being dismantled the structure is meticulously documented. Full plans are produced showing floor plans, site layout, cross section and all elevations and some details. A scaffold is erected and the entire structure is covered during the restoration to keep the rain off. A site office is erected and space created for the storage of the parts often on the site or nearby. During the careful dismantling process, the timber members are carefully noted as to their location and kept orderly. As the buildings are constructed without nails generally the timbers interlock. Damaged timbers are repaired using a variety of carpentry joints to piece in new material which is carefully chosen to match the original. Sourcing appropriate timbers is becoming an issue, and the government has taken to buying/planting forests for the restoration of cultural property.

A similar approach is taken with ceramic tiles – with the damaged ones being removed and often the older ones moved to lower positions and new tiles being used elsewhere. Perishable material such as the earth for the walls was usually discarded but I noted in the case of Himeji castle the earth was going to be reused (with some additional earth being added). Normally the bamboo used in the walls and the roof substructure are replaced. Roofing thatch on traditional farm houses is replaced in its entirety at regular intervals.

There is a big difference in my opinion between replication and reconstruction, repair and reassembly. I wonder if a lot of the confusion relating to the conservation methods in Japan has arisen just because of terminology. For example, some lecturers on this course used the term ‘demolition’ when they were describing the careful dismantlement of structures before they were reassembled.

In New Zealand, as in many Western countries, original material is given priority for the conservation effort. The replacement of too much heritage fabric calls authenticity into question. However, in New Zealand it is difficult to find wooden structures pre-dating 1820 – a far cry from the eighth century structures of Nara. What would it be like to have early Maori wooden structures surviving from centuries ago ‘restored’ in the Japanese way over many years? I suspect these would be treasured together with the traditional practice of their restoration.

There does seem to be a difference between replacing all material at one time rather than repairing and replacing small pieces over longer time period. A major restoration project replacing and renewing much material can result in a heritage building looking like a 'new' building. Care needs to be taken to ensure that only the parts that are beyond repair are replaced or there are other very good reasons for the replacement. An example of this in New Zealand was the restoration of the Brunner suspension bridge which had sustained many alterations over its one hundred plus years. It was decided to replace almost all of the rotten timber main structural beams, but leave a few of the originals in a position easier to get to so they could be replaced when their condition became such that their structural integrity was called into question. While more of the original beams could have been retained, efficiency and future maintenance costs were also taken into account.

It really is a matter of balance between the long term conservation of a structure built of materials that are not permanent and the retention of heritage fabric. Moreover, it is important that the spirit of the place is conserved, as can be achieved when the structures are still used for the purpose they were built for.

Japan has invested considerable resources in dendrochronology and can trace the growth patterns of six tree species used in construction back hundreds of years. Dendrochronology can precisely date the felling of a tree (in samples containing all of the sap wood) and has been used to date many cultural properties both for the year of construction and when major restoration works have been carried out. This has given additional weight to the authenticity issue, as it allows the date of replacement material to be accurately determined.

Considerable confusion has arisen over the practice of renewing Shinto shrines as opposed to the restoration of Buddhist temples. Following a long tradition, Shinto shrines have been 'conserved' through a complete renewal of the building constructed on an adjacent site, in the same form, every 20 years following a ritualistic and traditional process. In some cases this renewal has occurred every 20 years for centuries. While the material can not be considered heritage fabric as it is all renewed so regularly, the process and traditional methods and materials can be described as 'living heritage' and the preservation of the practice can be seen to be more important than the material itself. The matter here is not authenticity of materials but rather authenticity of process and traditions. Interestingly there are a few Shinto shrines where the renewal has stopped at a given date, such as in the early 1800s, and this provides an interesting contrast to the 'new' shrines. Furthermore there have been difficulties in applying the Japanese designation system to such structures and instead the focus has been on the continuity of use and traditions.

The issue of authenticity has become and continues to be an international debate. The debate reached a level of resolution with the adoption of the 1994 ICOMOS Nara Document on Authenticity.

A key concluding paragraph in the 1994 ICOMOS Nara Document on Authenticity states (paragraph 13):

Depending on the nature of the cultural heritage, its cultural context, and its evolution through time, authenticity judgements may be linked to the worth of a great variety of sources of information. Aspects of the sources may include form and design, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling, and other internal and external factors. The use of these sources permits elaboration of the specific artistic, historic, social, and scientific dimensions of the cultural heritage being examined.

This paragraph seeks to ensure that authenticity of heritage is not based on a survey of original materials alone. In New Zealand, perhaps even more topical at the moment is the issue of replacement following catastrophic loss such as in the case of the recent Canterbury earthquakes – discussion focusing on authenticity and appropriate conservation responses to repair and replacement, and what is acceptable, is at the forefront of our minds.

Looking to the future, conservation experts in New Zealand need to consider how we are going to conserve our timber structures for the many years to come – facing challenges of the risk of wholesale destruction from fire and earthquakes, together with gradual on-going deterioration.

Conclusion

I would like to sincerely thank ACCU Nara and ICCROM for the opportunity extended to me to attend this training course. I have benefited not only from the excellent programme of lectures, field trips and practical exercises but also the experience has been greatly enriched by spending time with heritage professionals from a range of Asia and Pacific nations. I will be pleased to share my experiences and knowledge with staff of NZHPT upon my return to New Zealand and to consider the concepts explored in the training course over the years to come.

Philippines

Ar-Bi Agloro ARCIAGA

Understanding the Japanese Way

Thank you Japan

First and foremost I would like to express my sincerest gratitude to the 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), the National Research Institute for Cultural Properties (Tokyo and Nara), 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, the Nara Prefectural Government, and the Nara Municipal Government for this wonderful Training Course on Cultural Heritage Protection in the Asia – Pacific Region 2011.

I would also like to thank the lecturers who have wholeheartedly given their time and effort in explaining and answering our question with regards to the conservation of World Heritage in Japan, the ACCU staff and especially Ms. Naoko Kato, for always being there to lead us and guide us in this training course, Ms. Chiyako Hata for finding the best words for us to understand better the training, and to the tutors, namely Ms. Ji Hee Lee, Ms. Naoko Tsujita, Ms. Rika Yamamoto and Ms. Junko Saito, for the never-ending support and hard work that they have shared with us.

I am much honored to be one of the participants in this training.

Five weeks in Japan

First week

The first week was tough and exciting as well. This is my first time to come to Japan and I never thought that getting through a Japanese airport would be so difficult. Good thing the ACCU staff members were there to kindly help us on our way.

During the presentations by each of the lecturers, I was amazed by their reports. I can't stop wondering at how deep their knowledge is with regards to conservation of cultural heritage, how focused and how dedicated they are in their own lines of specialty. They showed us many issues regarding the conservation of wooden structures, especially the issue of authenticity of wooden structures and the use of traditional and modern ways of conservation, and how they manage and solve these issues. In my country, if I may compare it to Japan, we are still in the process of learning how to solve and manage these kinds of issues, so I noted some points that I think are applicable to my country, especially on the use of traditional and modern types of conservation, which I think will guide us in solving issues of authenticity regarding these cultural heritage structures.

With regards to the presentations of each of the participants, I learned that each country has its own unique heritage structures. Some traditional structures from my country may look the same as those of other countries, but the process of how the structure was built, and the materials used for the construction are different. Learning about the restoration and conservation of these cultural heritage structures is very interesting. We all agreed that funding for the restoration of these heritage structures is one of the biggest problems in restoration, but I was impressed by how some manage to solve this problem especially those who involve the private sector. Promoting the significance of these heritage structures is one of the solutions that we are currently pursuing in my country. Informing the Filipino people of the importance of these heritage structures in some manner helps us in searching for funds for these heritage structures.

Second week

This week we were introduced to a deeper way of understanding the architectural history of Japan, and how they manage to conserve, restore and protect their cultural heritage structures.

By just listening to the lectures, I learned that Japan is very rich in its culture. Shinto shrines go back to the third century, Buddhist shrines start from the Asuka period, and there are palaces and castles, western style old houses, farmer's houses, vernacular houses and others. Most of these heritage structures still exist, showing that the Japanese started the conservation of these heritage structures hundreds of years ago. Japan has done a great job in the preservation of these wooden structures.

The Japanese government improved its laws with regards to the protection and preservation of cultural properties, not only for those structures managed by the government but also the structures owned by private entities. This was the first time I heard of a government body providing a subsidy for the restoration of cultural property owned by a private person. In my country, we also have laws regarding the protection and preservation of cultural properties, but we don't have these subsidies for cultural properties owned privately. Just maintaining these traditional structures requires large amounts of money, and this has been the reason why most of the private owners would rather change their traditional houses into modern structures, which require less in maintenance compared to traditional ones. Providing a subsidy for up to 85 percent of the total project cost is I think the best solution to encourage private owners to maintain their traditional houses. This is maybe the reason why in Japan you can see a lot of traditional houses owned by private persons.

One of the traditional houses in Nara is the Tanaka Family Residence. In this house we were trained to conduct recording and documentation of old houses, a damage/deterioration survey and planning for restoration, a materials survey for sustainable conservation, and planning for the management policy. At first I thought this was easy since this has been my line of work for the past three years, but when they said we will do the training in the traditional way then everything changed. In my country we usually use the modern way of recording and documentation, taking photographs of the structure and using computer programs to draw the floor plans, section plans, elevations and others. Recording and

documentation of old houses in a traditional way is a bit time consuming, especially when it is free hand, with no rulers, no guides. But one good thing I learned is that you get more in touch with the structure. You get to know the details on the connections, the materials that were used, and the function of each of member of the structure. These things are not commonly noticed in the modern way of documentation. With regards to the survey of damaged parts and planning for restoration, the process of conducting the survey up to the planning for restoration in my country is almost the same as here in Japan. We conduct a site investigation of the structure, prepare the necessary documents and drawings, and estimate the required amount of cost for the restoration, then submit the project for approval. The materials survey is the most difficult part of the training, maybe because most of the wooden materials are not known in my country, but still it was fun learning all of these processes.

Third week

This week we went to the first two places in Japan designated as World Cultural Heritage Sites by UNESCO, and also in this week preservation districts were introduced.

Horyuji temple is one of the best Buddhist temples I've seen in Japan, with its history going back to the seventh century and its huge structures made out of wood. I may not be able to compare it with the Baroque Churches that were designated as World Cultural Heritage by UNESCO in my country, since these heritage sites are very different from each other.

Shinmachi district in the town of Gojo in Nara prefecture is one of the preservation districts of Japan. In this district I saw a lot of vernacular houses. Some are old and deteriorated and others are newly restored. Walking in this district is like moving back into the past. With all the old houses around the district, even the roads and bridges look old. Even the structures inside these houses are traditionally constructed. It is nice to hear that even the municipality and local people in this area are helping one another in preserving this wonderful district. This type of coordination and cooperation from the local community can rarely be seen in my country. Again I think back to the issue of choosing the modern type of structure rather than restoring the old one.

Imai-cho is another preservation district in Japan. Comparing Imai-cho to Shinmachi, they have the same characteristics with regards to house structure and both are well preserved by the municipality and the community, only Imai-cho is larger than Shinmachi and more detailed in terms of preserving the district. I have observed that even the widths of the roads are preserved. Our training here in Imai-cho was very interesting, fun and exciting, especially when we conducted our group work. I never actually thought that we could create a proposal for a facility planned in that area in just one day. Thanks to my very nice group mates, I have learned a lot in this training in Imai-cho. I discovered many issues with regards to the preservation district. Maintaining a preservation district is a lot harder than maintaining a single structure. In these cases it is not only the structures that are important but also the people living in that area, and their way of living.

Another interesting site visit was our visit to Himeji castle. This was the most interesting visit for me because we went directly inside and saw the on-going restoration of the castle. Restoration of cultural heritage structures here in Japan is very strict, using much high scaffolding and wall covers to protect the structure. In my country, we use bamboo scaffoldings in the restoration of huge structures. I think the reason why they use steel scaffoldings here in Japan is because they can preserve the bamboo for future use. Another good thing is that when they replace deteriorated material, they use the same type as that of the deteriorated item. They also use the traditional way of restoring the structure. In my country we usually use the modern way of restoration and often replace deteriorated wooden materials with commercially available items that are not the same as the original. Again the reason for this is the funding for the restoration. Unlike the Japanese, we cannot provide huge amounts of funds for these restorations.

Our visit to Sawanotsuru Daikoku-gura would have been more interesting, since it is an example of risk management for cultural heritage structures, but unluckily we were not able because of a tight schedule. But having the chance to see the building that was destroyed by the great Hanshin earthquake and then rebuilt was a great opportunity.

Fourth week

The photography lecture is one of the lectures that I liked the most. Taking pictures is one of my hobbies, but the problem is I don't know how to use the camera best. This lecture and training has taught me a lot in terms of using the camera. Since documentation is part of my job as a restoration engineer, what I learned from this lecture will help me a lot in my job. Even though we only tried one type of camera, I think learning the basics of photography is the most important. No matter what type of camera you use, as long as you know the basic principles, taking the best pictures is not a problem.

Insects and pests are also the main problem of wooden structures in my country. Termites are the worst. I agree with what the lecturer said: "know the characteristics of the insect first before you treat them." It's like knowing your advantages first before going to a war. Having proper ideas about these insects is very helpful. The only problem is I don't think we have similar insects and pests. Mostly, for these cases, we usually use chemical treatment for all types of insects and pests. We seldom use the traditional way because it is time consuming. Most of the time, before using new wooden material, we first treat the wooden material with anti-termite solution to eliminate the problem of termite infestation.

Another interesting lecture was on dendrochronology. This was my first time to encounter such a word. For me, dendrochronology is a better way of knowing the time of construction of a structure than researching in books or having interviews with people. It may not give the exact date but it is more accurate, reliable, and has a scientific basis.

Our study tour in Takayama was somewhat different from Shinmachi and Imai-cho. Takayama is another type of preservation district. The difference is that Takayama is a city, with all the people

roaming around. Takayama is a very cold place, like Baguio city in the Philippines. Like Shinmachi and Imai-cho, Takayama is well preserved despite its urban setting. If I may compare Takayama to Vigan Heritage Houses, they are almost the same, only Takayama is well equipped with fire prevention materials. Even though Takayama is covered with huge buildings, still the municipality of Takayama and the local community were able to preserve their cultural heritage structures, and they have done a great job.

The last study tour was Shirakawa village. This is like the Igorot area in the Cordillera region in my country. One thing I observed was the municipality has a very good way of preserving the district. Helping the lifestyle of the community and educating them while preserving the area is a tough job for a municipality, but Shirakawa was able to do it, and this maybe is the reason why many tourists go to this area even though the vernacular houses are decreasing.

Fifth week

I had a hard time in our training with regards to the survey of paintings and plans for restoration. This is my first time to encounter an on-site painting survey, and in addition, the paintings on the wooden structure were severely deteriorated and very hard to visualize. During the discussion on whether to restore the paintings on the wooden structure or not, many issues were raised but most of them proposed repainting the structure, which is very different from the lecturer's opinion. Again it came to mind that every conservator has his/her point of view with regards to conservation. In my country we always ask the owner's or the end user's opinion before planning the restoration. Sometimes the owner's opinion always comes first, before our own. What I learned in this lecture is that we, the conservators, should be the one telling the owner what to do. We must explain to them in a way so they understand that what we think is the best for the structure. This is what the lecturer actually said and I will carry this idea back to my country.

The last lecture was about the values, authenticity, integrity, and monitoring of cultural heritage properties. This was another tough lecture and also a very educating one. Having a deeper understanding of cultural heritage properties is not as easy as looking at the structure. We need to know or understand the value or values that lie within this heritage item. The knowledge that we gain from understanding the value will serve as our basis for knowing the authenticity of this heritage item. Integrity is different from authenticity. Integrity, the way I understood it, is the connection of one element to another element, how each of the elements will serve its purpose or function with respect to each other. This was my first time to have a deeper understanding of these items (values, authenticity and integrity) and I actually want to learn more. So when I go back to my country I'll try to go over these issues, have conversations with people who are engaged with these issues, and incorporate into my job what I have learned.

Monitoring of cultural heritage is another issue. What I observed here in Japan with regards to monitoring of these cultural heritage properties is very good cooperation and coordination starting

from the national level, prefectural level, municipal level, and down to the community. I think this has been the key to why the Japanese have been able to protect and preserve their cultural heritage for the longest time. In my country, we at the national level are doing everything to monitor these cultural heritage properties, sometimes we request help from the local government, NGOs and other concerned parties. The problem is we cannot conduct a systematic monitoring process for all the cultural properties because the budget is not sufficient. So I think we need to transfer these monitoring procedures to the local government in the same way Japan is doing now. In that case these cultural properties will be monitored periodically.

Time to go home, Sayoonara Nara, Japan

This training has been very helpful to me. I have learned a lot in this training with regards to the restoration, preservation and protection of cultural heritage properties. We may have different views with regards to the value, authenticity, and integrity of the structure but all of us have only one common goal, and that is to preserve the history that lies within the structure.

Once again, *Arigatoo gozaimasu!*

Sayoonara!



Republic of Korea

KANG Soungwon

Points of Improvement in the Restoration Process for Cultural Heritage in Korea

1. Introduction

First of all, I am happy to have participated in this training course on cultural heritage protection in the Asia-Pacific Region 2011, “Preservation and Restoration of Wooden Structures,” in Nara, Japan. I think the training gave me lots of knowledge and hints for points of improvement, with the help of KATO Naoko, HATA Chiyako, Lee Jihee, YAMAMOTO Rika, and the lecturers, even though it was such a short period of time. I especially appreciated every teacher giving a lecture on theory, followed by practical lessons.



This report concentrates on the points of improvement in the restoration process for cultural heritage in Korea, in reference to the Japanese restoration system which was learned in this training course. Therefore, this report considers the processing system in Korea from the perspective of the restoration process for cultural heritage in Japan. This report also suggests future improvements for the restoration process in Korea.

2. Process of Current Restoration Work in Japan and Korea

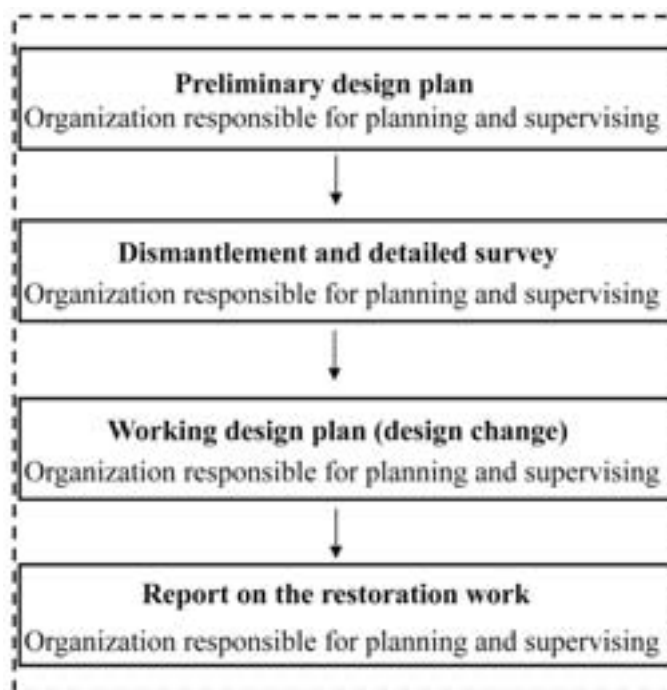
2.1. Current Restoration Work in Korea

Those who are qualified, based on the cultural properties preservation specialist system, are permitted to preserve cultural heritage in Korea. The areas of cultural properties preservation specialist system consist of conservation, measurement and design, paintwork on wooden buildings, historic landscapes, conservation science, plant protection, etc. In the case of historic buildings, the engineer who is qualified with measurement and design is permitted to plan the conservation of a building, while a construction company which is qualified in conservation and paintwork on wooden buildings is permitted to preserve a building. Also, the construction company that constructs buildings principally fills out the preservation report.

Chart 1. Restoration work in Korea



Chart 2. Restoration work in Japan



2.2. Current Restoration Work in Japan

In the case of Japan, prior to beginning the restoration of a building which is designated as cultural property, they usually conduct a survey on the current state of the building, assess the degree of

damage, and determine a preliminary restoration policy according to such damage. They then draw up a preliminary design plan that sets forth the restoration policy.

During the first stage of the restoration work, they place an order with a contractor (based on the preliminary design plan), who undertakes the construction of the sheltering scaffold and the partial dismantlement of the building that is subject to restoration.

In parallel with the dismantling process, they conduct a detailed survey of the building to discover its original style and construction method, the nature and extent of the damage to its components, and the cause of such damage. At the same time, they perform a structural diagnosis of the building and a ground survey to assess its seismic capacity.

Besides locating the damage sustained by the building in order to develop a renovation policy, they attempt to discover any alterations that have been made to the building in the past and trace their history.

Based on the findings of these surveys, they draw up a final restoration policy. If the restoration work involves structural restoration, it must be determined when the structure to be restored was constructed and develop an appropriate restoration policy, and if structural reinforcement is required, the means and methods of reinforcement must also be determined. In this way, a working design plan is drawn up, incorporating the elements that could not be finalized when developing the preliminary design plan. The addition of these elements may result in changes to the renovation cost, period, and/or policy specified in the preliminary design plan.

As shown above, restoration work requires detailed and comprehensive surveys. For this reason, the constant presence of a design engineer is required at the restoration site if the restoration work involves extensive dismantlement. Once a working design plan is ready, an order is placed with a contractor based on this plan, and the restoration work begins.

Upon completion of the restoration work, they publish a report on the work performed, compile and summarize the results of the detailed surveys conducted for the restoration, record the restoration work and the findings of the historical survey of the building, and gather drawings and photographs of the building before and after the restoration, which were taken and prepared during the process.



Fig.1. Restoration work at Kongoji temple

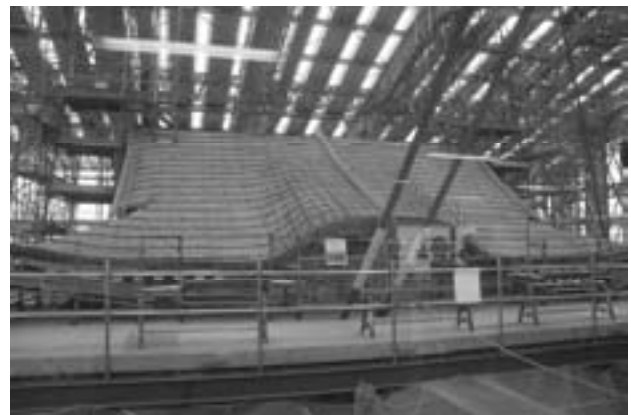


Fig.2. Restoration work in Himeji castle

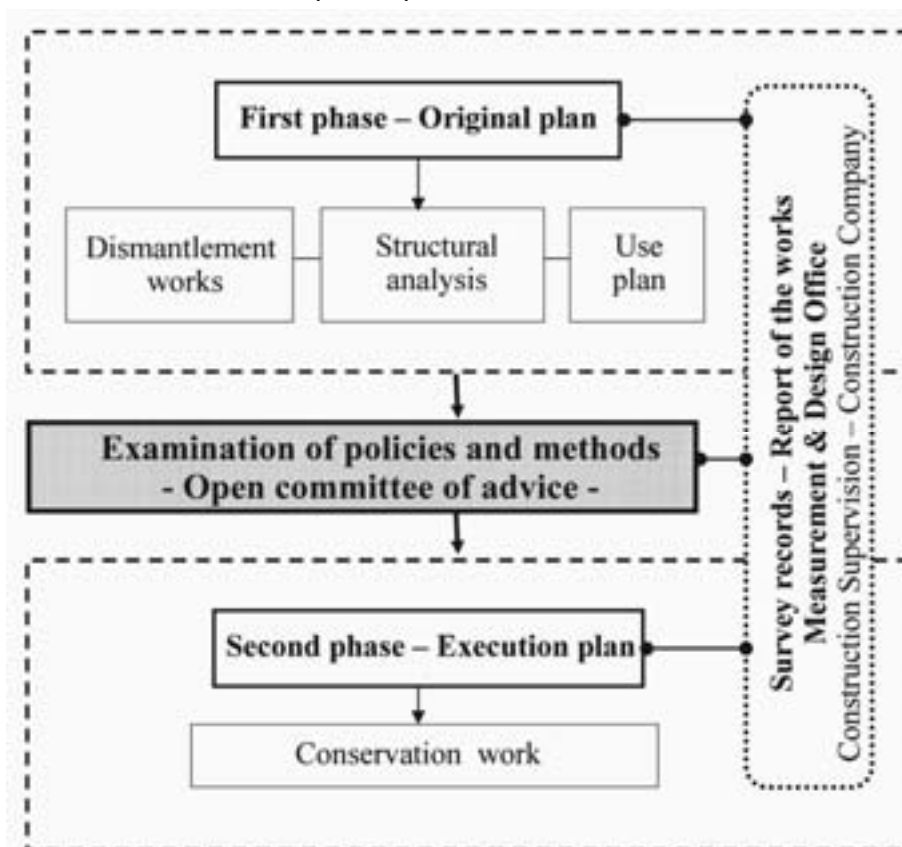
3. Improvement Points of Restoration Work in Korea

3.1. Improvement in the Process

Firstly, the restoration process should be done in a dual system. Recent cultural heritage has been continuously used, with the original shape often hidden by changes due to replacement and reinforcement of built-in materials, and changes of lighting, heating and other facilities. Conventional types of wooden buildings are thought to have the same problem, and it is necessary to decide upon the causes of damage, the replacement materials and the scope of repair at the dismantlement process. Therefore, the scope and policy of restoration should be decided while dismantling buildings as the first stage, and then the execution plan and the restoration work should progress as the second stage.

Secondly, the committee of advice should be required to be held regularly. The advisory committees that fail to meet frequently, and the method of deciding the scale of each construction work, need reform. For instance, the advisory meetings that decide upon scale and policy of restoration after dismantlement require frequent discussion and agreement.

Chart 3. Proposed process of the restoration work



Thirdly, the obligation of the measurement and design office should be reinforced and a construction supervisor should be appointed. When construction work starts, the measurement and design office has no obligation to participate in the restoration work according to the current conservation process. The measurement and design office should be given more budget and have

obligations to survey dismantlement work and make changes to the repair plan, and be involved in the release of the preservation report.

Also, a system in which the supervisor, who is conducting the planning, also oversees the overall progress of the restoration work needs to be introduced. In the case of Japan, the organizations responsible for planning and supervising are not separate. In Kyoto, Shiga, and Nara prefectures, where important cultural properties are especially numerous and repair projects are continuously implemented, repair technicians are employed as staff of each prefecture's board of education, and accept commissions of repair work from the project client (direct operation). In prefectures other than the three above, the project client commissions the design work to a design supervision organization, such as the Japanese Association for Conservation of Architectural Monuments (JACAM). The owner then decides on a construction company to do the work on the basis of competitive bidding (subcontracting). Korea also needs to introduce an organization responsible for planning and supervising like JACAM.

3.2. Improvement in the Survey Method

The survey records should be improved. Modern buildings as well as traditional wooden architecture that are dismantled and repaired need to have restoration reports with precise measurement surveys.

In the survey conducted during the dismantling process, we must have detailed surveys as in Japan. They inspect individual building components to discover how they were arranged and assembled. To be specific, we must attempt to identify and determine the building's characteristics, such as: (1) wood species, (2) quality, (3) style, (4) dimensions, (5) finish, (6) angled-joint connection, (7) joint connection, (8) quantity, (9) reusability, (10) necessity of removal, (11) necessity of addition, (12) the extent of necessary repairs, (13) usability for other purposes, (14) convertibility, (15) necessity of disposal, (16) age, and (17) any writings found therein. At the same time, we should conduct a historical survey by examining old documents, maps, and photographs in order to trace the history of the building.

Moreover, we also should make the restoration drawing by hand and not using a computer program such as Auto CAD. In Japan, the restoration drawing (*honzonzu*) is one of the most important items. Pre-repair and post-repair drawings are made. Restoration drawings are made when radical repair is performed, using A0 size Kent paper and finished in ink with drawing in fine lines. The restoration report is an organized and edited publication of the material compiled and created during the project period, and includes various survey reports, records, photographs, drawings, and documents.

Also, plans for use should be made as early as possible. A detailed plan of the use should be decided prior to restoration work so it can be reflected in the design, not only for interior decoration but also for facility construction work of lighting, heating and other equipment.



Fig.3. Section drawing, Imai-cho

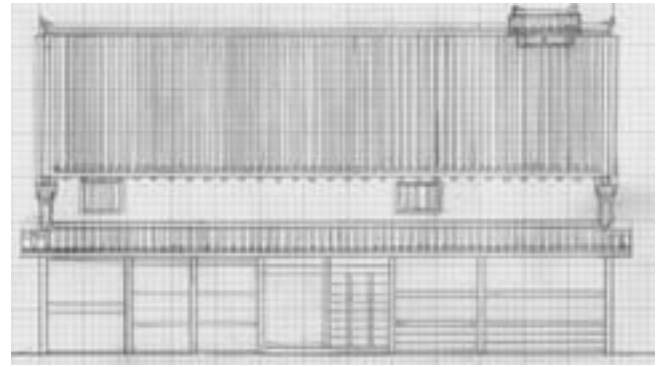


Fig.4. Elevation drawing, Imai-cho

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Samoa

Ailini AH KEN-ETEUATI

Introduction

Facing the future, we treasure the past, for without history we have no roots, and without roots, there is no future. Firstly, I would like to say it was a great honor for me to be a participant in the “Training Course on Cultural Heritage Protection 2011.” Working as a Museum Officer means not only preserving and conserving artifacts, but at the same time protecting and promoting the history, and the significant and unique culture, of my country. This training has broadened my horizons by making me realize more about the different cultures in Asian and Pacific countries, and above all, how people of each country react or respond in preserving, restoring and conserving their own cultural heritage through various aspects of heritage management, such as restoration and conservation of old wooden structure buildings, historical sites, monuments, temples and artifacts. So in this report I will be addressing, first, how this training can be applied to my country’s situation of preserving and conserving cultural heritage, and evaluating thereby the relevance of this training to conservation work in my country. Second, I will identify problems encountered during the work process, and last, compare the training with current practice in my country.

How the training applies to my country

Practical training in the recording and documentation of the Tanaka Family Residence in week two was a very good experience for me. It was my very first time drawing a floor plan or floor section and cross-section of an old vernacular house, and perhaps drawing a plan of a house. In addition, it is spectacular to see how the Japanese survey damage or deterioration in architecture, and devise a working plan for restoration of the damaged parts of the house. Moreover, the materials used are all traditional tools from the time before machines and new technology existed. In this way it can be applied to my country through educating and teaching the younger generation about the knowledge and skills of conservation and restoration of old traditional houses. Our division, the culture division, conducts workshops and other similar training for traditional architects, to sustain and maintain the appearance and significance of old Samoan vernacular houses, and though there are problems we are still continuing to preserve these kinds of houses by passing the skills and knowledge from generation to generation, so that the appearance of these houses will not be obliterated by the fast changes introduced from Western or European countries.

This training taught us the importance of taking photographs, and learning basic knowledge of cultural properties photographs was a good experience for knowing more about how to take detailed and precise photographs. It is a benefit for me as a museum officer. In the museum we take photos of all artifacts for recording and labeling, so with this photographic training I have now learned how to focus the camera properly and the kind of camera to use for more detailed photos. As part of our job we conduct quarterly research of historical sites, and as always a good camera and good photography are

very much needed in recording and explaining the sites and artifacts. This is why we have a special audiovisual section under the culture division, for this purpose.

Emerging problems

Observing in the training the ways that Japanese people are protecting their cultural heritage was very much similar to our conservation methods in some ways. But I think we have identified more problems than here in Japan, because of different circumstances such as the environment, economy, and the people. So here are some of the emerging problems we are now facing in our work. A major problem is the disappearance of some of the skills used to produce cultural heritage objects. Many of the well-known master builders are now gone and their knowledge and skill have not been transmitted to the younger generations. Some of the people who hold knowledge about myths and legends are very reluctant to impart stories, because of reasons such as wanting to keep those things for themselves and their own offspring, and suspicion that outside people who conduct heritage work will use their stories for economic gain. Family taboos, restricting people who are not family members from receiving the knowledge and skills, have contributed to the decrease in numbers of master builders, particularly for ceremonial houses.

There is another problem, posed by some master builders who are not interested in transmitting the knowledge and skills to any of their own family members. Sometimes potential recipients prefer to take on another profession. Furthermore, families are increasingly more interested in building European houses, leading to a gradual loss of the following.

- a. The knowledge and skill used in the artistic design of the Samoan house.
- b. The tools used for traditional construction.
- c. The semantic domain of words related to house building
- d. The rituals associated with house building.
- e. Building materials which are available locally, because people are no longer interested in conserving the trees that were normally used for building materials.

In spite of the heritage conservation policy, some historical buildings have been demolished. The necessary strategies for the implementation of the project were not developed, and there is insufficient focus on awareness programs in the country to make people realize the importance of their tangible heritage. A related issue is the lack of an inventory of all old and new settlements in Samoa and information on why old settlements were abandoned. This hinders awareness of the historical and cultural value of old settlements. Some of the missionary and the early church establishments have been neglected by the churches themselves, and there has been no inventory of all church sites. Many of the sites spoken of in myths and legends, such as significant mountains and stone mounds, have been destroyed through modern development, such as road construction, logging, clearance for agriculture, and by natural disasters such as cyclones and fires.

Because historical mountains as well as volcanic mountains are parts of customary land it is very difficult to obtain permission from owners to conduct research and surveys of these significant areas. Legal measures have proven insufficient to enforce the preservation, protection and promotion of historical mountains and stone mounds with cultural significance.

Furthermore, disputes between members of the local community regarding ownership of historical sites affect the accuracy and provision of information about myths and legends. Researchers also cast their own judgments as to the “true” version rather than record the different versions given. The efforts of cultural and natural heritage agencies to work together to preserve in all ways possible the environment as an important basis for the cultural and natural heritage of the people of Samoa have so far proven inadequate. There is as yet no national committee including representatives from cultural institutions and environmental governmental and non-government agencies, communities, and land owners where sites are located, to preserve and maintain the latter for their cultural significance.

Additionally, there is insufficient awareness and appreciation about the importance of conducting cultural heritage mapping to enhance local, national and international scientific and educational knowledge about important heritage sites, and about the linkages between natural and cultural heritage sites. Moreover, there is a lack of resource materials such as audiovisual productions and brochures/pamphlets identifying and publicizing the many important heritage sites and resources in Samoa, and their contribution to cultural continuity. This is in part due to the general lack of awareness about the importance of promoting knowledge and appreciation of Samoa’s heritage for research and educational purposes, so that communities and other stakeholders may come to value the importance of preserving natural and cultural heritage sites.

Comparisons with current practices in my country

Observations and experiences obtained in this training have taught me and made me realize the difference between my country’s practices and those of Japan over the last five weeks. I can say that Japan as a developed country has contributed more to preserving and protecting its cultural heritage. This is understandable, because this kind of work depends on the wealth and economy of a nation. Moreover every practice here is governed by laws and agencies protecting the existing cultural heritage. The most important factor in these conservation practices are the people of a nation itself, and in Japan all the people, especially the elder generation, are very protective of their cultural heritage. This is because people are well educated about the significance of their cultural and natural heritage. These practices help maintain and sustain the uniqueness and appearance of many old Japanese vernacular houses.

By contrast, in my country there are more problems emerging than there are practices being followed at the moment. In some way this does not mean that we are neglecting our cultural heritage, but for the reasons mentioned above, we are facing more hardships in doing our work. But we are still able to educate the people about the significance of our culture heritage. Vocational workshops are one of our

practices done quarterly throughout the year, to help maintain and pass on to the young generation the importance of cultural heritage in Samoa. This training includes carving, making handicrafts, learning and teaching the young people the building old Samoan houses by some of the master builders in our country.

Vocational training. The Ministry of Education Sports and Culture assists the youth by conducting vocational training for selected schools twice a year. We select certain people with skills at carving and weaving, and before the program starts some of our culture staff go out to the forest to look for trees to do the training. These are hard to find as they are not to be found in Upolu, so we go to Savaii our other islands and ask for permission from the village to cut the trees. In exchange for the trees we give the village money for the wood we get. It takes days to bring the wood to Apia. Handmade tools are used to do the work. No chemicals are used to prevent the wood from decaying. We also hold 'ava ceremonies in traditional fashion. After carving for days, the materials must dry before we can use them.

The National Archive of Samoa. The national archive project of MESC is in the process of establishing archives of Samoa for government records. Archives of legislation, a general records retention schedule, and a code of best practice for public recordkeeping have been drafted. The project is already the custodian for records from the German and New Zealand administrations of Samoa. At present, government bodies are still responsible for archiving their own records. Some private and church organizations have also established their own local archives, such as EFKS (the Samoan Congregational Christian Church) and the Catholic Church, sometimes in connection with regional or central archives situated in other countries such as the Marist archives in Fiji and the LMS Archives in London. There is a wealth of artifacts, images and documents of Samoa held in museums, archives, university and private collections overseas, for instance in the ethnographic museums in Germany, New Zealand, Australia and Great Britain; the German Federal Archives; Archives New Zealand and the Turnbull Library in Wellington.

Museums. The purpose of building museums and archives is to provide safe storage for material cultural heritage. They are mechanisms to preserve both artifacts as well as government records. The oldest museum presently operating in Samoa is the Robert Louis Stevenson Museum. It was established through the Robert Stevenson Act 1991, with the Board of Directors mainly based in the USA. The Museum of Samoa was opened in 1991 and is now operated by the Ministry of Education, Sports and Culture (MESC). It features information on Samoan culture, history and nature. Other galleries and exhibitions in Samoa include the MADD Gallery, the Tiapapata Gallery and a historical photographic collection at the Rainforest Café. In addition, the Beautiful Expressions of Nature Art Studio and gallery are being planned for opening as a contemporary art museum.

Visual arts and crafts. Samoa is rich in traditional material culture. Visual art and crafts cover a wide range of artifacts and practices, such as traditional art works, including carving and weaving,

boat building, production of war weapons, tattooing. Samoa also produces a range of ceremonial items including valuables such as *tuiga* (head dress), earrings manufactured from coconut shells, traditional garlands made from the fruit of the pandanus tree and with sea shells, 'ava bowls, cooking bowls, oratory staffs, and flying whisks. Traditional tools include digging sticks, stone axes, coconut scrapers, fishing nets, baskets, fire-making implements, wooden adzes, traditional sports equipment and traditional fishing lures. Traditional crafts are mainly passed on through non-formal education and within families, but contemporary visual arts, a growing area, are taught within the formal education system and in two specialized art schools, the Leulumoega School of Fine Arts and the Beautiful Expressions of Nature Art Studio. Both schools offer full-time study in fine arts.

The National University of Samoa (NUS) through its Faculty of Education, offers courses in fine arts to develop the skills of art teachers. The development of artists is also nurtured by local galleries, MADD Gallery and Tiapapata Gallery, where workshops for different techniques and topics are offered. These are some of the practices in my country. As I say, even though we face many problems we can still preserve and protect our cultural heritage in many ways, through co-operation with different organizations, schools, local communities, church organizations, universities and so forth.

Evaluation

It was fascinating to see and learn the way Japanese people protect their cultural heritage properties such as their old wooden structures and buildings. Previously, I knew nothing about these ideas and methods of how to protect cultural heritage property. It is a responsibility for everyone, the people in the community, private organizations, and government. They all must work together with the aim of their cultural heritage being protected and preserved not only for the future generations, but for the significance and value of the cultural heritage itself. Wooden buildings are very common in Japan and they are very well protected under the legal system, and are well preserved by people of their communities as their cultural heritage property. In my country we do not have specific ideas or methods for preserving old traditional houses because nowadays people have adopted European style housing to live in, rather than our very own Samoan house. Also we do not have many old wooden buildings existing of maybe 30 years or more as in Japan, where wooden structures of 100 years or more still exist and therefore people have established principles and regulations on how to protect these buildings according to their condition. I think that this training is applicable to my country in ways for protecting our own traditional Samoan houses that are slowly being washed away by modern change. We could do the same here, and building a traditional Samoan house through our Ministry is perhaps what we can do so that we can create our own principles and rules on how to conserve, restore and protect such wooden structures. This is for learning and teaching the young people how to protect our own traditional houses, and especially for them to know the significance of sustaining and maintaining their historical aspects and cultural meanings of these houses.

In addition, from my own observation, restoration does not simply mean restoring a house or old wooden structure. In Japan there are many steps taken before conducting the actual work of restoring

such cultural heritage property. There are many aspects of restoration work, such as temporary construction, dismantling, foundation, woodworking, roofing and so forth. Above all, there are some basic principles of restoration work, like identifying the current state of the structure or building. Then dismantling, but before this, having architects look at the structure and measure the dimensions, assess the damaged areas, create records or documentation of the components, investigate historical materials and documents. All these concepts are taken step by step, and it is a very good effort by Japanese conservators. Whereas in my country, we do not have specific rules and steps if we want to dismantle or pull down a wooden traditional building for restoration, and once it is damaged we just pull down the entire house without assessing, documentation, and so forth. So we use new wood in our own style, and there is no significance and absolutely no connection with our past or historical function. This is unlike Japan, where there is always something about a building being preserved and restored. So I think this approach is applicable to my work, so that we can continue the bond between the past and future.

Conclusion

All in all, I can say that this training showed me or made me realize that cultural heritage property is not just there in a country to look at, but is there to protect, conserve, restore for our own betterment and ways of knowing how important cultural heritage is to us, to keep or maintain and sustain it as a record of our past, and how our ancestors lived and created these things for us and for our future generations, because they are the ones to continue what we are doing and striving for at the moment, for there is no use to do all these things without teaching and passing the skills and knowledge to the young people, so they can do the same for the next generation.

On behalf of my department, Ministry of Education, Sports and Culture, I would like to say thank you very much to the ACCU Nara for inviting me to be a participant in the ACCU Nara training 2011. It was a great honor for me to be involved for the past five weeks and it has been a good experience and a great challenge for the future improvement in my work back home, and for my own country. My special thanks for taking good care of me when I was sick. Thank you for the kindness and loving when I needed help. May God repay you for anything spent during my sickness.

Fa'afetai lava. Tofa soifua and God bless.

Sri Lanka

Rupika Nishanthi RANASINGHE

Preservation and Restoration of Wooden Structures Training Course 2011: Final Evaluation Report

Conservation of cultural heritage is a multidisciplinary process. Protection, conservation and maintenance of these valuable treasures in Sri Lanka are my major responsibility as I am engaged in the field of conservation. I work for the Department of Archaeology of Sri Lanka under the Ministry of National Heritages as a painting conservator. The Department of Archaeology and Central Cultural Fund are the main government organizations which are responsible for the conservation of cultural properties in Sri Lanka. Identification of ancient monuments, investigation and conservation of valuable mural paintings, wooden monuments, wooden artifacts, and preparation of estimates are some of my responsibilities related to the work.

Sri Lanka has a rich cultural heritage which includes a large number of ancient monuments and sites. It is my great responsibility to conserve them and maintain them for future generations. I have been engaged in different conservation projects mainly in the Western province and other parts of Sri Lanka.

This training program is an invaluable opportunity for me to get further experience at an international level, and have the chance to share knowledge with professionals from different countries. I am grateful to the government of Japan, and the Nara institute for selecting me for this valuable program, and also I wish to express my sincere gratitude to the Department of Archaeology and the Ministry of National Heritages of Sri Lanka for giving this opportunity to me. Being a painting conservator I must be thoroughly familiar with not only the theoretical parts but also with the practical part of conservation with modern techniques. This valuable training program helped me to polish my knowledge and upgrade with knowledge of high technology.

From the moment I arrived in Japan all the necessary arrangements had been made for us and I enjoyed good accommodation facilities. All the staff members gave their fullest cooperation to us. During the one month training period the staff of the Nara institute made a tremendous effort to teach us everything they know about conservation. This training program allowed me to study the different aspects of conservation and many other intangible cultural values, rituals and social behavior of the Japanese people.

During my training period I had the opportunity to study how to preserve a vernacular house, and a historic townscape. In Japan, most of the ancient houses were wooden houses. I had the chance to study the preventive conservation methods and detect the physical factors in the environment. Though the Japan has four climatic seasons the causes of decay of wooden buildings are the same as in our country. I can use the methods that I studied here in my future conservation projects. There are some *tampita viharas* in the Western province of Sri Lanka and the materials used for these viharas are mostly wood.

Accordingly I got the maximum benefit from the course. Both theoretical and practical aspects regarding wood conservation were covered during this training program. The training course has been properly designed to cover all parts of wood conservation science. I got a chance to study the methods that are followed in the Japanese approach to conserving cultural properties. I have gained more experience and this knowledge will help me to upgrade my career.

Sri Lanka is an island which lies in the Indian Ocean, with an area of about 25,332 square kilometers and a tropical climate with monsoon rains. Sri Lanka has a fascinating documented history dating back to 543 BC and covering a period of over 2,500 years of civilization. The great chronicle *Mahawamsa* and many other historical manuscripts such as *Deepawamsa*, *Chulawamsa*, *Rajawaliya*, and *Pujawaliya* have provided much of Sri Lanka's documented history. A significant event in the history of Sri Lanka was the introduction of Buddhism. The Indian emperor Asoka sent his son Mahinda to the island in the third century BC and introduced Buddhism to the reigning Sinhalese king Devanampiyathissa, who then followed the Indian emperor's strategy of merging the political state with Buddhism. As a result, Buddhism became an integral part of Sinhalese culture and civilization on the island.

Archaeological heritage comprises a basic record of the past. The ancient chronicles provide the outlines for Sri Lanka's political and religious history since the third century BC. As material remains, thousands of both immovable and movable heritage items are scattered all over the island. Anuradapura, Pollonnaruwa, Kandy, Galle, Yapahuva are some of the historic cities. Conservation of monuments and historic environments is a major problem of national and international concern. In order to deal with these problems there are some internationally accepted charters. The Athens Charter, Venice Charter and Burra Charter are some examples.

In Sri Lanka, the Department of Archaeology is the major organization which is responsible for the protection of cultural heritage for future generations. To fulfill this requirement the Antiquities Ordinance No. 9 of 1940 was enacted on 15 July 1940. This was later amended in 1956 and 1998. This act contains eight different parts and covers the topics of antiquities, discovery of antiquities, ancient monuments, archaeological reserves, export of antiquities, power and duties of the archaeological commissioner, miscellaneous items, and interpretations (Antiquities Ordinance No. 9). The Department of Archaeology, since its creation in 1890, has been the only legal entity which not only has powers to manage and protect the archaeological heritage but also powers of controlling development activities in areas associated with them. The department took steps to establish a semi- government organization called Central Cultural Fund, and the CCF Act was adopted in 1980. The CCF Act mainly is to collect much needed finances for the management of the archaeological heritage. It gives licenses for carrying out archaeological activities in identified areas.

Since the identification of the cultural heritage of Sri Lanka with an exceptional universal value by the international community, and the designation of these places as World Heritage sites, the government of Sri Lanka has taken steps to establish separate institutions to manage and protect them with special care. Such institutes are the Galle Heritage Foundation, Sigiriya Heritage Foundation and Kandy Heritage Foundation. The Galle Heritage Foundation Act was adopted in 1994. Its major object is to promote the preservation, conservation and development of Galle Fort together with its historic

hinterland as a historic city center and as an area of archaeological interest.

The Sigiriya Heritage Foundation Act, 1998, established a foundation to promote the preservation, conservation and development of the cultural, archaeological, and natural heritage of this World Heritage site. The Sigiriya World Heritage Site means the area declared to be an archaeological reserve by notification made under section 33 of the Antiquities ordinance.

The Kandy Heritage Foundation Act, 2005, aims to identify and plan the development projects within the limits of the Kandy municipal council and conserve archaeological findings, cultural, historical, and architecturally important buildings and monuments, or the environment.

The Cultural Property Act (No. 73) of 1988 is another piece of legislation in which the Archaeological commissioner features prominently. The Urban Development Authority Act No. 41 of 1978 also supports the Antiquities Ordinance to protect archaeologically important sites. This will help to protect the environment around archaeological sites.

When we consider the Japanese and regulations that govern cultural properties, I learned that cultural properties are categorized according to the Law for the Protection of Cultural Properties and the most suitable measures are taken for each category. Cultural properties are designated after the Minister of Education, Culture, Sport Science and Technology has consulted with the Agency for Cultural Affairs and received a report. I understood that there are some similarities between the cultural property law of Japan and Antiquities Ordinance of Sri Lanka.

One must argue why we must conserve the environment. The urban spaces have value that is inherent. It tells us the culture, history, aesthetic beauty, social and political values of the particular monument. As a painting conservator, we can understand the techniques used in painting, the preparation of the plaster layer, how it was done, the thoughts of the artists at that time, their rituals etc. These materials are precious witnesses of the past, which should be respected.

Wall paintings may be defined as cultural expressions of human creation throughout history. They display the varieties of cultural expressions, aesthetic achievement, diversity of materials and techniques used from ancient times until the present. Architectural surfaces and their finishing layers, with their historical, aesthetic and technical values, have to be considered as an equally important component of historic monuments.

All conservation projects should begin with substantial scholarly investigations. The aim of such investigation is to find out as much as possible the details of the urban fabric and its superimposed layers, with their historical, aesthetic, and technical dimensions. The method of investigation should be non-destructive. This can be achieved by literature surveys, interviewing chief incumbent inheritors or residents, as in the case of temples.

The Venice Charter of 1964 states “The concept of a historic monument embraces not only the single architectural work but also the urban or rural setting. . . .” Regarding the conservation strategy for local heritage, the Antiquities Ordinance, under section 16 as amended in 1998, states that places of past human activities are included as part of the material heritage of mankind.

In this training program international charters were studied. In Sri Lanka as well, during conservation programs the Venice Charter is followed. During all conservation programs we are trying to do the minimum intervention to the monuments and always try to protect the authenticity

of the monument. With regard to documenting the site, I upgraded my knowledge when I carried out fieldwork in Japan. I can use this knowledge and can share it with my colleagues in the future documentation of sites.

During my stay I learned that the urban fabric is also very important in conservation. Though we knew it theoretically, in my country since most of the culturally important sites are religious places, the conservation of urban fabric has become a problem since most places are owned by the chief incumbents. They do not consider the landscape. They want to build another new image house on the same premises.

The most common material heritage which can be seen today is located at Buddhist religious places. In Sri Lanka we have a living heritage. Among these religious places, timber was used in decorative forms in architecture for a long period of history. The earliest timber buildings surviving today were constructed during the Gampola period, in the thirteenth century AD. It was seen that after the British occupation, the architectural tradition of using decorated timber was continued in buildings. Even when the architectural plan was British, the craftsmen who worked during the colonial period introduced Sri Lankan decorated forms of timber into their buildings. In the renovation of timber buildings, decayed members are generally replaced by new timber components. But invariably the timber components are carved or decorated.

Wall paintings are an integral part of the monuments and sites. In addition, they should be preserved *in situ*. Wall painting alone does not give meaning. They were drawn either on the ceiling wood or on pillars and sometimes carved on pillars. The beauty, cultural, historic, and aesthetic value goes with the physical fabric. When conserving this cultural heritage, the conservator should keep these points in his mind. Paintings in a *tampita vihara* and painting in a cave temple give us different feelings and have different values. Therefore when conserving paintings the substrate where the painting was done should also be kept in mind and should be considered.

When a monument was in use for a long period of time it may have undergone many renovations, modifications, and sometimes even the original use has changed, adding complications to the task of understanding and conserving the monument.

It should be emphasized that for proper conservation of these valuable works of art it is necessary to train conservators, since they are the persons who come directly in contact with the artifacts. A conservator should understand the content, materials, method of production, their relation to time and the environment. I wish to say happily that in this training program the field work and the lectures fulfilled these requirements.

In Sri Lanka, Sri Lankan craftsmen used native timber for the carvings. They used native timber since it can easily be cut and worked with designs. Since Sri Lanka is a tropical country, insect attacks on historic buildings are more prominent. I learned that even in Japan, which is a temperate country, this problem affects the monuments. I learned a lot more about the control of insects and it can be applied to my country.

Disaster risk management of cultural heritage is one of the important aspects I studied in this training program. In Japan most of the wooden buildings are destroyed by fire. Other than fire, earthquakes, floods and landslides can also harm cultural properties. In order to overcome these

problems there should be a properly planned risk management system. In Sri Lanka some of the cultural properties were damaged by the tsunami in 2004. We also face floods, in addition to tsunamis and other natural disasters. Therefore we should have a risk management plan for our cultural properties. I can share this knowledge with my colleagues and can propose a management plan for cultural properties.

In this training program I had the opportunity to share my knowledge with professionals from different countries. This exposure to the world in conservation has been very useful to my career.

Consequently I got new experience through team work. Since conservation is a multidisciplinary process, I worked with experts in different fields. Finally I would like to thank all the members of the Nara institute for their kind assistance throughout the course, and my colleagues who participated in this training program for cooperating with me in group work.

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Thailand

Poon KHWANSUWAN

Introduction

As a participant in the ACCU Nara Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2011, I am pleased to give feedback and opinions according to my experience, knowledge, and thoughts about a comparison with Thailand, organized into sections as: 1) General Ideas on Japan's Conservation System 2) Comparison to the Thai Context, 3) Discussion and Conclusion.

General Ideas on Japan's Conservation System

Comprehensive Law for the Protection of Cultural Properties

One of the most important factors I have found in why Japanese conservation of cultural properties is very successful is because of the comprehensive Law for the Protection of Cultural Properties. Its establishment in 1950 through a combination of previous laws, and its own amendments over the next sixty years, have both strengthened its structure as policy on cultural heritage as well as raised awareness among the Japanese people. The previous laws had also established and addressed the importance of conservation in Japan, even more than 100 years ago (1871 Decree for the Preservation of Ancient Artifacts, 1897 Ancient Temples and Shrines Preservation Law, 1919 Historical Sites, Places of Scenic Beauty, and Natural Monument Preservation Law, 1929 National Treasures Preservation Law, and 1933 Law regarding the Preservation of Important Works of Fine Arts).

Enactment of the Law for the Protection of Cultural Properties in 1950, along with subsequent amendments to the designation system, provided a successful mechanism for and broadened the scope of heritage protection in Japan, which divides major cultural properties into two levels of categories, National Treasures and Important Cultural Properties, and also supports Japanese tradition in its non-physical form by establishing a system of protection for Intangible Cultural Properties (together with Buried Cultural Properties).

The most meaningful amendments to the law for me, which I want to address here as suggestive for my country and worthy of comparison, are the 1975 amendment establishing the system of Preservation Districts for Groups of Traditional Buildings, the 1996 amendment establishing a system of Registered Cultural Properties, and the 2004 amendment giving protection for Cultural Landscapes. The system of Preservation Districts for Groups of Traditional Buildings broadened the scope of protection for cultural properties, not only in terms of scale and type of cultural properties, but also by emphasizing the importance of the close relationship of people with their own heritage. I do believe that initiative for this system had been delivered from bottom up, from networks of small goodwill groups, as for example the Zenkoku Machinami Hozon Renmei or the Traditional Townscape Preservation League, established in 1974, resulting in its recognition at the national level with a shift to less focus on monuments and more on people. The framework of Preservation Districts for Groups of Traditional

Buildings, Dentoteki kenzobutsu gun hozon chiku or Denken chiku in Japanese, is similarly concerned more with process on the local level, rather than the national level. The system according to the law itself plays an important role as supporter and motivator to help the process take hold among local society, and to let local authorities have more options for protecting their cultural properties.

While the system of Preservation Districts for Groups of Traditional Buildings strengthens Japan's conservation system at the level of villages, towns and urban areas, the establishment of the system of Registered Cultural Properties in 1996 has opened more opportunities to protect cultural properties during the rapid changes in Japan which cause the loss of heritage, especially of the recent past in many cases. The flexibility and more open system makes gives wider scope to the cultural properties lists meant to be preserved and utilized by and for Japanese society. I have found that the importance of this system is not only to identify a greater amount of cultural properties, but also, and at the same time, to re-evaluate and give more recognition to recent heritage and more ordinary heritage.

The system for the protection of Cultural Landscapes in 2004, even though not much discussed during the course, has been focusing on the aspect of people's relationship to nature, which I will also later give more attention to in this report. As stated in the system, Cultural Landscapes are landscapes that have evolved in association with the modes of life or livelihoods of the people and the geo-cultural features of the region, which are indispensable to the understanding of the lifestyles and/or livelihoods of the people of Japan. The concept of Cultural Landscapes, in my opinion, recognizes another aspect of heritage conservation, one more realistic in its approach to continuity and change, by considering more the relationship between nature and culture in our changing world, where the essence of this relationship is seen in the existence of vernacular settlements and the indigenous knowledge of the immediate environment. I also found some shared aspects and links between the system of Preservation Districts for the Groups of Traditional Buildings and the system for Protection of Cultural Landscapes, in that both of them share a focus on settlements, especially in farming and mountain villages, and both systems give authority to local municipalities to make application from the local level, while protecting the heritage on the other hand for the sake of integrated sustainable development.

From the issues above, I can summarize visually what I have learned in the following figure.



I personally think that Cultural Landscapes, as well as Nature which bounds us, are not only categories in the system of the protection of cultural properties, but are also the integral environments which give meaning to how cultural properties exist in society.

Establishment of knowledge on conservation

Japan has developed its knowledge of the history of architecture through conservation; this fact impresses me and makes me realize more the benefits of conservation. A chronological table of the history of Japanese architecture can detail the styles, characteristics, uses, functions, and changes from the sixth to the twentieth century, and beyond toward the future, thanks to conservation practices. The method of dismantlement and reassembly, or *kaitai shuri*, may lead to questions on the issue of authenticity, but I think that without having done this as the traditional Japanese method of conservation, the development of knowledge in both the history of architecture and the practice of conservation would not have happened. *Kaitai shuri* offers many opportunities to study and analyze all of the wooden members closely, with careful and systematic documentation.

By doing so, the analysis of problems and causes of decay has led to strengthening the conservation system in Japan as whole, and importantly, skilled persons have been trained for both the carpentry and as conservation architects. Therefore qualified experts at all levels, from architects to craftsmen, can be assigned and involved throughout the process of repair work from the beginning, in the dismantling, analysis, repair, reassembly, and stage of completion, as well as in the final documentation and report. This has also helped develop the system, resulting in a protective measure for the Techniques for the Conservation for Cultural Properties, which covers the techniques necessary for the production of materials or tools necessary for repair and restoration. Examples for this in the field of architectural conservation are wood carpentry, wall construction, painting and coloring, and the production of cypress bark shingles, thatching, and clay roof tiles.

Somehow in Japan, discourse on conservation has developed and remained as a part of social life. There is acceptance of conservation practice in Japanese culture, and this is not so much a recent introduction as an ongoing solution for the society.

Comparison to the Thai Context

In Thailand, we have developed the concept of conservation of cultural heritage since the first decade of the twentieth century in the Reign of King Rama V. The Archaeology Club or *Borankadee Samosorn* had been established to study the history of the nation as well as be the starting point of restoration works of some important Buddhist images and temples. The early restoration guidelines gave the idea to keep the most usable parts of a historic structure and to restore the new paintings by keeping harmony with the originals. I can mention here that perhaps this focus developed partly because, without having more practical knowledge, they tried to intervene as little as possible. One of the important conservation activities during the 1920s were surveys of historic structures and yearly reports. The first laws concerning the protection of cultural heritage were established in the year 1926,

which aimed to protect historic pieces of art and sculpture, and also most importantly began inventory surveys throughout the country, developing for the first time systematic lists of cultural heritage in Thailand. The Royal Institute had been established to assume the main role of conservation of cultural heritage in Thailand. After the Siam Revolution in 1932, a new law was introduced establishing an important organization, the Fine Arts Department, which took over all conservation work from the Royal Institute. This can be called the beginning of modern conservation in Thailand.

The conservation approach of the Ecole Française d'Extrême-Orient (EFEO), which was working in the region of Indo-China, greatly influenced Thai conservation methods at that time, which mainly focused on "consolidation techniques." During the period 1962-73, conservation projects had been done by the archaeologists and site foremen, but after the Venice Charter had been introduced in Thailand this was expanded to involve persons such as architects, historians, engineers, art restorers, and also landscape architects. Since that time, conservation approaches from Europe have had more influence on Thai methods, and trained personnel coming back from ICCROM played more of a lead role in conservation activities. The degrees of intervention became more clarified in the areas of protection from deterioration, preservation, consolidation, restoration, reproduction, reconstruction, and adaptive re-use, and were different from the EFEO approach. Experimental projects on ruined bricks historic structures had been introduced first in Ayutthaya, and the anastylosis method was first introduced at the stone historic structure Pimai and then at Phnom Rung. In 1985, the Fine Arts Department initiated the Regulation on the Conservation of Monuments which gives more precise definitions and methods of conservation of cultural heritage in Thailand.

This is a short outline of the history of conservation in Thailand. But Thailand has not only historic structures of brick and stone, but also various other types of heritage from the past. What I will address here, just to show the gaps in comparison with the Japanese system, are wooden structures in vernacular settlements, traditional communities, and cultural landscapes (vernacular environment, cultural environment) which exist in all parts of Thailand. The gaps between the conservation system and initiatives from academic and local levels are still wide.

As for vernacular building heritage, it retains important characteristics of local manner, continuity, way of life, local materials, craftsmanship, and cultural diversity. Conservation process and method should be done with consideration for the local community, using local expertise, and with respect for traditional techniques, uses, and changes. Whenever this type of historic building has been listed as a National Monument, however, standardization to meet the criteria of the regulation system is given more consideration than the perspective of local concerns. This results in some degree of gap in some cases of conservation, with values and understandings of authenticity and integrity different from those of local people who are taking care the building. We developed conservation knowledge solely from practice with historic monuments and important buildings, while Japan had passed through this process with understandings and knowledge based on series of discussions, trial and error, and values from heritage, as already stated in the previous section.

Traditional communities are more complex in terms of recognition of their values and significance. Traditional communities in Thailand have been facing various types of changes over time that have resulted in degradation of their values. New laws and legislation contribute to this degradation of the traditional community as well. Traditional communities have been established for more than 50 or 100 years in some cases, from before the establishment of contemporary building regulations, which makes for conflict with the existence of the traditional community. According to the registration system for the category of “Historic District and Old Town,” there is no case that registers the entire district or site. Delimitation of the boundary of a monument means the whole area or site must be controlled by the Fine Arts Department (FAD). In the case of a historic district (traditional community), where it comprises historic buildings, non-historic buildings and surrounding structures for which the “Monument Act” does not provide, the idea and concept of operating, managing, and delimiting a monument boundary has to be acknowledged by the property owners, but mostly in historic districts the buildings are in private ownership, and owners do not want to let their properties be registered because it deprives their rights without any incentive measures to balance the development pressure. While I have already addressed issues of traditional communities in my country report, I have come up with further suggestions after joining the training course. First, we can learn from Japan through the way the Japanese value “Groups of Traditional Buildings,” as stated in the Agency for Cultural Affairs’ pamphlet about the system of preservation districts for groups of historic buildings, in that “...People improved their life in their environment. From one generation to another, they refined the culture of their daily life. While each building had its own characteristics, the buildings harmonized with the other buildings”. With recognition of this statement of significance, somehow we can broaden the scope of conservation to include more about the people and their built environment. But the second issue could be different from Japan. Traditional communities in Thailand have been passing through changes over time and these changes occur in both the physical and socio-cultural aspects of the communities. Some still retain their function as a part of a town center with multi-level activities, while some have faced depopulation and economic regression but still keep their physical characteristics. The question which should be asked and carefully discussed among Thai society is “What kind of values do we give to traditional communities and what values will society be given by them?” The approach of façade enhancement may fit well in Japanese society, but given the lack of preparedness in Thai society, we must answer this question on our own.

One related mechanism for dealing with the conservation of traditional communities is the concept of Cultural Landscapes. In Thailand, Cultural Landscapes had been introduced just a few years ago from the Ministry of Culture in a form of promotion and advocacy. Before that, there was one important concept already in existence, which is “Cultural Environment.” Debates and discussions focused on the Cultural Environment issue had been conducted during the “Thailand Cultural Environment Project” (TCEP), regarding whether to expand to idea of Cultural Environment to give more meaning to the settlement and its environs, or to keep its function as a monument’s buffer area. The definition of Cultural Environment was used early by the Office of Natural Resources and Environmental Policy and Planning (ONEP) to control the development around monuments in Thailand. As a lesson learned from

TCEP, ONEP had adopted, from the Ministry of Environment and Energy, Danish Forest and Nature Agency, the definition of the term “Cultural Environment” as “Geographically delimited areas that reflect important features of societal development; it is a third dimension of the environment related to the cultural and historical aspects of the physical surroundings,” and broadened the meaning to be “The environment or area related to human development from the past until now, which contains value on art, culture, history, archaeology and technology including the monument which should be counted as part of the environment as a whole.” This seems to be a good starting point, though until now the new idea has not received any further promotion in Thai society after TCEP ended. The monitoring process should reassess the status and possibility of using the concept more in the near future.

For Japan, both Preservation Districts for Groups of Traditional Buildings and Cultural Landscape are laws which urge local authorities to carry out the process on their own. And at times in Japan, it is not only the Law for the Protection of Cultural Properties, but several other measures relating to urban planning which can be used to protect valuable environments, such as the Keikan Ho (Landscape Act) and Rekishi Machizukuri Ho (Historical Community Rebuilding Act).

Moreover, the issue of humans and their relationship to nature has theoretical aspects to be studied further. Landscape also has meaning given by its society, as addressed in Augustin Berque’s paper “Landscape and the Overcoming of Modernity – Zong Bing’s Principle” in 2000. He stated:

Landscape is not a universal object. Its existence requires that of a certain society, with a certain way of looking at its environment and representing it . . . [and] . . . studying a human settlement is not the same as studying a coral reef, because people inhabit the earth differently according to their culture, and though these differences appear in the landscape, their reasons are not visible . . . [furthermore] . . . this requires more than measuring the forms of the landscape, and even more than a functional analysis. It requires to study the meaning which human societies give to the environment.

So that, in conservation field, to revalue nature and culture, as well as landscape, will reveal a new channel of conservation as a whole, in a more theoretical manner, with a new rationale.

Discussion and Conclusion

In my opinion, the most dangerous thing about a comparative study is it will only grasp the tip of the success story of conservation in Japan, to be used without understanding the story and the process of struggle behind that success. Japan had struggled with changes and destruction of traditional districts from the economic growth of the country. Citizenship and awareness among Japanese people run deep through their traditions and culture. We, in Thailand, also developed our own process but it has to take time. During an incompleteness of the system and society, I have found many opportunities to find a new way by means of our own experience, a new way to revalue our own heritage for our society. Japan developed their own approach through continuity and change, as an integral part of their society,

and we somehow, can develop our own approach from that valuable experience learned from Japan, even though we still have to deal with our continuity and change as both opportunity and obstacles.

Experience from the course has not only broadened my knowledge on conservation, but also sharpened my thoughts on theories of conservation on the basis of the diversity of different cultures, and on nature which shapes them in the world.

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Thank you all participants in 2011, who will always be good friends, for all the experiences we have shared.

See you all again!

Viet Nam

VO Duy Trung

Final Report for the Training Course on Cultural Heritage Protection in the Asia-Pacific Region 2011

I. General comments

The schedule of the training course was appropriate, the time allocated for the lectures reasonable, most of the contents of the lectures were relevant for the participants, and highly practical.

This training program has provided the participants with large amounts of information, knowledge and skills in the field of conservation of wooden structures. Most of the lectures during the training process provided much information and useful knowledge. The teaching was also easy to understand, and the documents and lecture notes are clear and accessible.

The training program had a combination several different methods – lectures in classes, practical lectures, visual observations and study tours – that helped the participants gain an overview of both theory and practice.

II. The results achieved by the course

1. Theoretical lectures

The content of the lectures consisted mostly of general issues related to the management and conservation of wooden structures. Other lectures covered more in-depth issues relating to the preservation and restoration of wooden structures.

In Viet Nam in general and at Hoi An in particular, the management and conservation of wooden structures are also of interest in recent times. In Hoi An this work really began to draw interest only after the Hoi An Ancient Town was inscribed on the World Heritage list as cultural heritage. Therefore, survey and management methods, and skills in the preservation and restoration of wooden structures, are still limited. Because there are many parallels in the weather conditions between Viet Nam and Japan, issues related to risks that adversely affect the value as well as the existence of cultural heritage which is built with wooden material, are almost identical between the two countries. The contents of the lectures on the history, and on the system of management and protection of cultural heritage in Japan, have provided me with certain knowledge about the cultural and traditional architectural values of Japan, especially the value of its wooden buildings. The conservation methods and system for the protection of cultural heritage in Japan are good examples to take for application in cultural heritage management at my local level.

For some countries in the world today, including Viet Nam, there is still much confusion regarding

how to establish a conservation system, or the issues involved in tasks such as developing a master plan for a restoration project for wooden structures. Therefore, the lecture content in this field is of course essential for people such as me. The understanding of the work to perform during a project is essential, and the content lectures showed the core issues to help conduct the work systematically and scientifically, which is helpful for many managers and professionals like us. This is very practical and can apply to my work locally.

Currently, training opportunities in practical skills for those who participate in repair projects are on the whole still limited in Viet Nam. Therefore the content of this program is useful for our work in the future.

Insect infestation is a big issue that most countries with cultural heritage consisting of wooden structure are facing, and they must deal with the consequences that insects bring. Viet Nam's climate is hot and humid, providing ideal conditions for insects to live and develop. In lectures in this program, in addition to equipping us with knowledge about how to identify the portions of a wooden structure that are prone to insect damage, we also obtained a lot of knowledge required for preventing the destructive effects of insects to wooden structures, which can be used in planning for future prevention.

2. Practical training lectures

For most countries in the world today, to conduct a restoration project for heritage buildings regardless of the particular cultural history, it is necessary to have drawings for the implementation process. However, for cultural heritage renovation projects, making a correct drawing as required for this task is very difficult and demanding, so the person doing it must have professional experience or be trained appropriately. The practical lectures in conducting surveys, taking measurements, making drawings, assessing deterioration and planning for restoration, making a conservation and material survey for planning a sustainable management policy, helped us get the basic skills needed for this process. In particular, the survey of damage and planning for restoration, and the material survey for planning sustainable conservation and management, showed the basic knowledge needed for the conservation of a wooden structure.

Hoi An is living cultural heritage in an urban setting, a situation similar to Imai-Cho, and the lectures at this place gave me much knowledge about the value and methods for effective management of an area with urban history. Especially useful were the solutions adapted to new building in a historic urban setting. These issues are very close to the practical management of my present situation.

The lectures at the wooden buildings of the World Heritage sites, including Buddhist monuments in the Horyu-ji area, gave me much useful knowledge about cultural values, Japanese art and architecture in the construction of wooden buildings, and the management and conservation of cultural values and architecture as practiced here in Japan.

The practical lectures in methods of recording wooden structures, including the use of photography,

will be carefully considered for application in the management of cultural heritage at my local level. Especially important aspects were the storing of photographic records, and the renovation of historic cultural structures.

3. Study tours

Most of the instruction on the study tours was matched with the cultural and historic values of the destinations. Visual observations were combined with information from the personnel charged with management at each location. In addition to receiving information about the spectacular value of the culture and architecture, we also received knowledge about management experience in historic areas (Takayama and Shirakawa-go). Especially useful were the methods and experience of managing risks in these areas.

III. Conclusions

The management and conservation of cultural heritage buildings comprised of wooden structures increasingly faces new challenges. Equipping people directly involved in this work with the knowledge and skills needed in the current context is essential in order to preserve the maximum values of the cultural heritage. Therefore, the organization of classes of this course of essential topics was relevant and highly effective.

V. Appendix

- A. List of Participants
- B. List of Lecturers
- C. Acknowledgements for Cooperation
- D. Interpreter and Assistants
- E. Staff Members, ACCU Nara

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