ISBN 974-7809-31-1 SPAFA/301.5/WS24/90

SEAMEO REGIONAL CENTRE FOR ARCHAEOLOGY AND FINE ARTS
(SPAFA)

FINAL REPORT

SPAFA-ICCROM SEMINAR ON
CONSERVATION STANDARDS IN SOUTHEAST ASIA

December 11-16, 1989 Bangkok, Thailand

Prepared and Published by:

SPAFA Regional Centre
5th Floor, Darakarn Building
920 Sukhumvit Road
Bangkok 10110, THAILAND

Tel: (662) 381-1310, 381-1311
Facsimile: (662) 381-2546

(SEP90)

ISBN 974-7809-31-1 SPAFA/301.5/WS24/90

SEAMEO REGIONAL CENTRE FOR ARCHAEOLOGY AND FINE ARTS
(SPAFA)

FINAL REPORT

SPAFA-ICCROM SEMINAR ON
CONSERVATION STANDARDS IN SOUTHEAST ASIA

December 11-16, 1989 Bangkok, Thailand

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

TABLE OF CONTENTS

PROCEEDINGS

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

PROCEEDINGS

December 12, 1989
10:00 a.m.

INTRODUCTION

SPAFA, conscious of the increasing need of raising the standard of conservation in the Southeast Asian region, through constant training and research, initiated a seminar on Conservation Standards in Southeast Asia, in collaboration with ICCROM. The objectives of the 4-day seminar were: to discuss the ways and means of improving the standard of conservation in the Southeast Asian countries and to discuss future cooperations and possible network among the national conservation laboratories of Southeast Asia. The expected outcomes are: to achieve better understanding and exchange of ideas among those who are presently responsible for the conservation laboratories of the SEAMEO Member Countries and to come up with recommendations for the improvement of standards and the establishment of the necessary agency.

Participating in this seminar were representatives from Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore and Thailand. Mr O.P. Agrawal, Vice-Chairman, ICCROM and Adviser, INTACH Conservation Centre, Lucknow, was present as a resource person. Observers from SPAFA and from Thailand's Archaeology Division and National Museums Division were also present in this activity.

The complete list of participants appears in *Appendix 1.*

OPENING CEREMONY

On behalf of the SPAFA Regional Centre, the SPAFA Centre Director, Professor M.C. Subhadradis Diskul, welcomed the participants of the SPAFA-ICCROM Seminar. He explained that the SPAFA Regional Centre, with the support and cooperation of ICCROM, has organized the Seminar on Conservation Standards in Southeast Asia because of the felt need to formulate an action plan and strategy for raising the standard of conservation. This seminar, he said, provides ample opportunities to exchange ideas and experiences on conservation. He hoped this meeting of minds brings about fruitful results for the betterment of the Southeast Asian region as a whole.

After expressing thanks to ICCROM and Mr O.P. Agrawal for their assistance rendered in the materialization of this seminar, he wished all the participants success in their discussions and deliberations during the seminar.

The full text of Professor M.C. Subhadradis Diskul's speech appears as *Appendix 2a.*

Following the Centre Director's welcoming speech was a statement made by Mr Muhammad Ishtiaq Khan, UNESCO Regional Adviser for Culture in Asia and the Pacific (RACAP).

In his statement, Mr Khan congratulated the seminar organizer, SPAFA, for focussing the attention of SEAMEO Member Countries on conservation standards. He noted with great satisfaction that consciousness in the need to provide a link with the past and the need for shaping the future is now on the rise in Southeast Asian Countries. He, however, warned that although over-enthusiasm in the need to assert culture is fraught with dangers, it also ensures attention and the realization of its proper place in the nation's economy and cultural development. He explained that while the new Medium Term Plan of UNESCO, lays due emphasis on the preservation of the cultural heritage, they also stress its revival and re-integration in everyday life. UNESCO, he said, has made concerted efforts, to provide training in conservation and that they have recently collaborated with SPAFA in the establishment of a Regional Conservation Research Laboratory. However, he said, UNESCO's support to the conservation laboratories in the SPAFA Member Countries will continue as before since they are fully conscious of the basic work of the actual conservation of the cultural heritage.

On the other hand, he noted that to raise the standard of conservation in the region requires more specialized institutions. Thus, he said, it needs proper survey and thorough documentation. But this may not be possible for each Member Country. To proceed with such a task, he suggested that perhaps the concerted efforts of all Member Countries could help develop a centre in a specialized field and that each centre could be located in a different country. Networking, he added, is needed in the cultural area and this could be considered in the deliberation of the seminar.

Then he informed the participants that UNESCO would be looking forward to the results of the seminar. Finally, he wished them success in their deliberations and thanked them, once again, for allowing him to share some of UNESCO's ideas.

The full text of Mr Khan's speech appears in *Appendix 2b*.

Thereafter, Mr O.P. Agrawal greeted the participants on behalf of the ICCROM Council. After introducing the programmes and activities of ICCROM, he noted that SPAFA and ICCROM have similar scopes in Southeast Asia. And owing to the distance of ICCROM to Southeast Asia, he said it is difficult to have many activities in the region. He suggested that SPAFA takes up the role of ICCROM in Southeast Asia. He welcomed this first collaboration of ICCROM with SPAFA and hoped for many more such programmes in the future. He assessed that ICCROM will always be willing to help SPAFA in its regional activities in training, research, library, publications, and others.

Meantime, he informed that ICCROM will be watching the outcome of the present seminar. Anyhow, he expressed confidence that the seminar's deliberations would be fruitful. On behalf of ICCROM, he wished the seminar every success.

The full text of Mr Agrawal's address appears as *Appendix 2c*.

ELECTION OF OFFICERS

The following participants were elected to lead the seminar:

Mrs Kulpanthada Janposri (Thailand)	Chairman
Mr Kwa Chong Guan (Singapore)	Vice-Chairman
Ms Susan SR. Naranjo (Philippines)	Rapporteur

ADOPTION OF TENTATIVE AGENDA AND TENTATIVE PROGRAMME

Members of the seminar adopted the programme and agenda as proposed. The Agenda and Programme appears as *Appendix 3.*

INTRODUCTION TO THE SEMINAR BY Mr O.P. AGRAWAL

In his introduction, Mr O.P. Agrawal stressed the importance of the seminar's theme: Standard of Conservation in Southeast Asia. He noted that there is a subtle difference between the words status and standard. To clarify this, he explained that if in a country there is no conservation facility and a conservation laboratory or a conservation department is being created, then this concerns the status of conservation. On the other hand, if the laboratory is already established, it will have to deliver desired results. These results involve the term standard. Every profession, he said, has set for itself a certain standard. And if that standard is not achieved, then the profession cannot succeed.

In the creation of a regional conservation laboratory, he suggested the need for criteria in setting up a standard, the need to decide whether or not research is necessary, the need to consider long-term cooperative programmes for research, and the need to distinguish between a research and an actual conservation laboratory. The interpretation of laboratory analysis, he said, should be useful and far-reaching.

He observed that at present, there is no in-depth conservation training available in Southeast Asia. SPAFA trainings which last for two months, he opined, are not enough for actual conservation training. There must be a way to improve this situation. And this is why the present seminar has been brought about, he said.

Mr Agrawal ended his introduction by looking forward to a fruitful exchange of ideas and cooperation in conservation.

In reaction to the exposition of Mr O.P. Agrawal on the theme Conservation Standards vs Status, Mr Nikom Musigakama of Thailand, inquired what supposedly is the "standard". He commented that only one standard so far had been established and that is the American Standard of Conservation. He went on to say that a laboratory has to be considered on the basis of cultural conservation, embracing monuments, cultural properties, etc.

Mr Agrawal fully agreed that the laboratory is one part of conservation and that when talking about conservation, one talks about the totality of the work.

Mr Uka from Indonesia suggested that a special laboratory should be set up for each object, i.e. one country would specialize on metals, another on wood, etc. and that what has been done in the different laboratories in Southeast Asia should be disseminated to each member country. He stressed the need for a model for the standards to be adopted, whether it be a high standard or otherwise, and that there should be a way to encourage the existing laboratories to upgrade their respective standards. He said that one country cannot at first have all the research works, there has got to be networking.

COUNTRY REPORT OF NEGARA BRUNEI DARUSSALAM

Next in the programme was the country report of Brunei presented by Mrs Kolam. The full text of her report is in *Appendix 4.*

Still the attention of the body focussed on the question of standards. Reiterating his point on the conservation standards and the status of conservation and how to go about maintaining such standard, Mr Nikom inquired how are standards are set in Brunei. Mrs Kolam said that due to space and building

problems at the moment, the Brunei Museum laboratory is concentrating on the training of its staff for proper implementation of projects while concentrating more on the preventive aspect of conservation.

As regards organization, she went on to say that the Brunei Museum is under the Ministry of Education, Culture and Sports and that the laboratory is a section of the museum, responsible for all cultural properties of Brunei, including monuments.

Mr Nikom, after briefly explaining the Thai organizational set-up, asked Mr Agrawal how the standard for conservation should be fixed.

Mr Agrawal opined that there is no fixed standard as a whole. The standard may be high depending on the state of development of a certain undertaking in a particular place. Citing, as an example, the 24-hour air-conditioning system installed in Brunei, he said, is already a high standard in conservation. He noted that we cannot get for ourselves the standards set by developed countries, however a standard could be set according to the best resources available.

Mr Agrawal asked Mrs Kolam about the status of conservation laboratories in Brunei and whether a Plan for the development of conservation already exists there or not.

Mrs Kolam informed the body about their plan for a 2-storey building envisioned mainly for conservation, which is expected to be completed in two years time. She also stressed the fact that there is not enough staff trained to do conservation work even as they expand their reference books and library materials on the subject.

Mr Kwa posed several questions, one about prioritizing of interest in the Brunei Museum and whether or not that requires conservation of manuscripts. Another was, whether or not there is an internationally accepted standard, or is it more flexible and loose depending on the country. Noting different uses of the word "standard", Mr Kwa wondered if it could be possible to establish a criteria which could be useful. Perhaps, he said, it is a question of management, rather than of standards.

On the objectives of a Regional Conservation Laboratory, a question on how a very specialized regional conservation laboratory could help solve these problems was raised. Or is there a need to conduct basic research or just attach the existing ones with an eye to borrowing advanced technology and adapting it to local needs, and perhaps embank on a cheaper solution.

As far as the question of standard is concerned, Mr Agrawal underscored the fact that it is actually a difficult problem. He said there is no agreed formula on what a standard is. Raising the level of each department, is raising its standard. It is again a question of leadership. To have a uniform standard everywhere, is at present not just yet possible.

In answer to what a regional conservation laboratory could do, he said the SPAFA regional laboratory should try to do a bit of every possible research work it could. Giving an example, at NRLC in India, he thinks that there is no harm in adapting technology from abroad. On the other hand, he said that research should, as much as possible be far-reaching and then again, since not all countries would be doing research, it should be adapted only according to the needs of each country.

He also cited the need for consultancy service for conservation to give advices in terms of planning, preparations, etc. as this could bring about faster solutions to conservation problems confronting the region. He pledged to take this matter up with SPAFA.

Prof M.C. Subhadradis Diskul assured that SPAFA could hold training not only in the regional laboratory but also in the laboratories of other countries.

Going back to the points raised by Mr Kwa earlier, Mrs Kolam enumerated the priority areas of conservation in Brunei Storage, in terms of an improved system, whereby monitoring devices for lighting, also for galleries, etc. are considered. Because of insect infestation, which is still an unsolved issue due to the lack of a proper fumigating chamber, the use of other chemicals are being resorted to at present as well as personnel training and consultancy.

Mr Uka commented that financing might not pose a problem for Brunei, therefore storage priorities and other areas of concern can be solved. Retracing the issues of storage, lighting, personnel, objects and management/government, he suggested that these be decided as parameters of standards. And that a standard should be set up according to the condition of the country as it is fairly difficult to judge what a good standard is.

Mr Nikom reiterated his findings: that there is only the American standard to start with, and that this concerns the guidelines of recommendations. He tossed more questions on who supposedly is the authority to say which is the standard and who is to set it up.

COUNTRY REPORT OF INDONESIA

Next on the agenda was the presentation of the country report of Indonesia by Mr Uka which could be found in *Appendix 5*.

Mr Agrawal requested for more information about the conservation laboratories in Indonesia. In response, Mr Uka explained that the National Museum has a laboratory that is concentrating on movable objects. The National Museum has developed professionally, he said, and that little by little some site museums in Jogjakarta with small laboratories are being put up, but equipment is a problem. He also noted the problem of staffing high school graduates, making it hard to train them, unlike if they were chemists or conservators.

Mr Nikom asked about the restoration of Borobudur. Citing the fact that some pieces of structures are no longer existing in the original site of the monument, he wanted to know what cooperation was done on this. He noted that some fragments can no longer be attached to the original structure and that a site museum had been established in Borobudur.

Mr Uka said that the site museum belongs to the Directorate for the Protection and Development of Historical and Archaeological Heritage, and that in the case of loose fragments they could no longer be fitted into the structures, there are laws enacted for the conservation of all these immovable and movable objects.

Mr Agrawal noted that similar system also exists in India, Burma and Bangladesh, and that if its importance pertains to the site then these fragments go to the site museum, otherwise, to the National Museum.

Mr Nikom mentioned about a protection law being considered for the next parliamentary meeting. He also cited the limited manpower available, as chemists normally would prefer working in manufacturing firms rather than in the museum laboratories. He also asked how to set up or develop the organization in Thailand, basing from the experiences of the other Southeast Asian countries.

Mr Kwa mentioned that there should be a distinction between research and conservation, between scientists, and technicians and how this information is being used.

Mr Uka mentioned about their plans for the future which include analysis, etc. for stones and an information dissemination, not only for Borobudur, but on a national scope and eventually for the whole of Southeast Asia.

Responding to Mrs Kulpanthada's inquiry on whether or not Indonesia can now put up a conservation centre, Mr Uka replied that this would depend on several conditions, like if information from developed laboratories are available, noting that tropical countries have different climatic conditions from those of the temperate regions. However, he assured that Borobudur people can furnish pertinent information to countries in need of assistance on the basis of the Indonesian tropical climate. Concerning the organization, he thought it depends on the country's policy or government structure.

COUNTRY REPORT OF MALAYSIA

The following discussions of the Country Report of Malaysia by Mrs Norizah Abdul Talib were held. The full text of the report is found in *Appendix 6*.

Mr Agrawal noted that the efforts of Malaysia in terms of archives conservation are well known in Asia. And that Malaysia has already set up such a centre which could be used in the region. However as regards the National Museum, he said the situation is not very happy as the museum laboratory was damaged by fire many years back.

Mrs Norizah said that conservation work could still be executed, but there is a problem of the shortage of trained staff. She said there seems to be a need to put up exhibitions that will bring people to the museum.

In response to the question posed by Mr Agrawal, Mrs Norizah said the monuments and sites are with the National Museum, and altogether with the other three museums, under the Ministry of Culture.

Mrs Kulpanthada pointed out that the Malaysian National Archives should be a training centre of SPAFA for archives conservation work.

Mrs Norizah informed that the National Archives has a small laboratory tasked with carrying out tests on the materials to be used in the work, and that they also work together with national universities possessing the necessary facilities, if need be. They hope to establish their own standard as regards the work being done there.

Mr Uka pointed out the difference between a display for public viewing and a display for educational purpose. Then Mr Nikom brought up a problem between the Malaysian National Archives and the National Museum. If a stone inscription is found, he asked, who is responsible: the National Museum or the National Archives?

Mrs Norizah answered by informing that the Director-General believes that the stone inscription should go to the National Museum, but that the records must go to the archives. Corollary to this, Mr Uka commented that archives are also movable objects and that National Archives should only concern itself with paper artifacts. Agreeing to this, Mr Nikom mentioned that objects evident of old civilizations should go to the department of archaeology and that the pertinent documents go to the archives. He mentioned about an existing law in Indonesia and that if it is to be observed, the archives would belong to the monuments.

Mr Nikom reminded that before stones were used functionally as paper, since in the older times there was no paper yet. It was also Thailand's problem in the past. Before the National Museum was responsible, but later they came under the National Archives. But since the Archaeology Division was created, inscriptions were given to the Division but still the National Archives claims it is under their charge as these are documents.

He noted likewise that in the Thai experience, the Cultural Organization is separated by many independent kingdoms and that culture is equally as important as economy and education. But cultural administration is not strongly organized for national development. Today, however, Thailand is finding ways by which to use

culture as a strong separate factor in national development. It is, nowadays, looked upon as a factor embracing all others in the country's development.

In the following session, Mr Kwa requested Mr Agrawal to clarify different terms used during the seminar. Mr Agrawal then observed that certain terms are sometimes used loosely, e.g., conservation, preservation, restoration, protection.

He defined preservation as the maintenance of materials as they exist through good storage, keeping insects away and keeping the materials in good shape. Conservation, as he described, is both preservation and the treatment undertaken in a laboratory by an architect, engineer, or conservator, keeping climate under control. Restoration, he explained, is the process of repairing an object that has been disfigured or making up for the lost part. And, protection, in terms of all laws in the country, relates to the protection of antiquities or monuments.

Mr Uka then offered his interpretation of the terminologies. He explained that the more common treatment for maintenance is preservation, and that conservation entails treatment by chemicals. While agreeing to the definition that restoration concerns the building up of a lost part, he added the terms consolidation - to build according to the original place (but not dismantling), and rehabilitation.

Still on terminologies, Mr Uka agreed that there are many words used for building, e.g. restoration, rehabilitation, restatement anastolysis - the treatment of individual stone materials and putting them back to their original place, resettlement, reconstruction, rebuilding, rehabilitating - ancient cities/rebuilt and then rehabited again.

COUNTRY REPORT OF THE PHILIPPINES

Mr Kwa explained further the different terminologies mentioned and afterwards invited Mrs Susan Naranjo of the Philippines to present her country report which appears in *Appendix 7*.

After Ms Naranjo's report which concluded with a slide presentation, Mr Agrawal commented that the Philippine National Museum laboratory is not at all under-equipped. He noted that many laboratories do not have some of the equipment that the National Museum has and that he thinks that with these equipment, some research work could be done. He pointed out the fact that the problem lies on the training of personnel for research. He congratulated the Philippines for its achievement.

Ms Naranjo thanked Mr Agrawal and said that she felt the National Museum is still inadequately equipped particularly for research studies. And that sometimes they have to conduct analytical tests without necessarily using the sophisticated equipment that unfortunately had been broken down for quite sometime now. She mentioned about requesting Mr Agrawal to come and assess their laboratory in relation to the Museum's plan of upgrading the standard of the laboratory. As regards the various researches that they are doing, she likewise requested the body for any information or bibliography they might know of that might be of help in their new endeavors.

Mr Agrawal said that malfunctioning equipment could be repaired and that it is timely to take up research work as analysis work should have an aim or end goal - and should be directed to something. He mentioned two different types of researches: archaeological research for archaeological problems, e.g. identification, etc., and for improvement of conservation matters.

Mr Kwa raised the matter of cost effectiveness in implementing researches and wondered whether it would be better to delegate research to the universities. He rounded up the discussion for the day and hoped that the conservation standard would be settled.

<PROCEEDINGS>

December 13, 1989
9:30 a.m.

Mr Agrawal opened the second day of the seminar by explaining the term "standard" with a reading of its four meanings from the dictionary. Considering the objectives of the seminar, he gave the meaning of the term standard as the degree of excellence required for a particular purpose. He mentioned three aspects of different laboratory work aimed at reaching a certain degree of excellence, which are as follows: actual conservation, which refers to the execution of the necessary treatment and is common to all conservation laboratories; applied research as finding other solutions to the problem by experimentation; and, fundamental research as an in-depth research study of the problem embracing all other factors involved, which is quite costly and takes a lot of time. He suggested that one centre of excellence should be established in Southeast Asia so applied research could be done.

COUNTRY REPORT OF SINGAPORE

After the above discussion, Mr Kwa Chong Guan presented his report, which is in *Appendix 8*.

In the discussions that followed the report, Mr Uka commented on the phenomena of the stability of the objects found at the Singapore Museum as reported by Mr Kwa. He said that since mold growth is due to climate, not all artifacts should necessarily be stored under an air-conditioned environment. Mr Agrawal observed the same type of phenomena was found in Kerla, India.

He noted that whether or not air-conditioning is good in all circumstances or only in others, remains to be researched. Why air-conditioning is considered necessary nowadays should be blamed on the western books or the western practices imposed on the custodians of cultural properties. Mr Agrawal said he believes that in areas where the relative humidity is constant, this should not be changed by the use of air-conditioning units. What should be done is to look into the problems of visitor comfort. That is another point of view.

In this regard, Mr Nikom, informed that in Europe, heating the galleries is also used to attract visitors during the winter months. Reacting to this statement, Mr Kwa said that heating galleries lowers the relative humidity, thus, causing dryness of the artifacts in the museums or galleries.

Mrs Chiraporn, observer from the National Museum of Bangkok, related their experience. According to her, teakwood cupboard is a good humidity stabilizer. She also related their use of acid-free papers and cardboards as humidity buffers for their textile displays.

COUNTRY REPORT OF THAILAND

Thereafter, the Country Reports of Thailand by Mr Nikom, Mrs Kulpanthada and Mr Arphorn was presented. Their reports are found in *Appendix 9*.

After the reports presented by Mr Nikom and Mrs Kulpanthada, Mr Uka asked how Thailand differentiated restoration from conservation. In addition, he asked how they restored immovable artifacts. Mrs Kulpanthada, replied that in Thailand, all conservation work from the 34 provincial museums are sent to the National Museum of Bangkok for treatment. Restoration, on the other hand, needs serious consideration as complete restoration is not always necessary, she said.

Mr Nikom informed that in Thailand, any cultural object found are, by law, kept by the National Museums. Mr Kwa added that the problem of cultural management is not unique to Thailand as it is also found in Singapore.

SPECIAL CONSIDERATIONS

Mr Kwa proposed that a Regional Conservation Laboratory, if established as proposed, could focus on three categories of functions:

- as the central clearing house in an information network, linking the conservators and conservation laboratories in SPAFA, and SPAFA with international organizations. This would be an information and dissemination centre function;

- as a training centre for conservation; and

- as a research centre, working not on "Pure fundamental" research but on applied research.

On the point stressed by Dr Agrawal, Mr Kwa also stressed that there has to be a close link between the research to be conducted and the training required. For example, training on insect control should be based on research conducted on the types of insects infesting our collections.

Discussions on the "Special Problems" was then held. here, it was unanimously agreed that a network of conservation laboratories should be established. And if this could materialize, information dissemination should be an important aspect of this network. Mrs Norizah suggested that this type of coordination could first start at the national level, with local laboratories cooperating with each other. Then at the international level, the SPAFA Regional Conservation Research Laboratory could serve as the clearing house of ideas.

Information, as suggested by Mr Agrawal, should be kept in a computer data bank. This could be in the form of bibliographies of conservation, publications, information on conservation activities and training needs of the Member Countries.

Supporting the idea, Dr Chua, SPAFA Senior Specialist in Performing Arts, informed that SPAFA can assume the role of disseminating information through the network. On the mechanism of the network, Mr Uka suggested that the SPAFA Governing Board, through each of the Member Countries, appeal to form a council to coordinate the activities of the network in the respective countries. Mr Agrawal, however, reminded that this task is not within the direct responsibilities of the Governing Board Members. Someone else should take this kind of work, he said. Probably, it should be the National Laboratory at the national level and the Regional Laboratory at the international level.

Dr Chua announced that the SPAFA Governing Board Members will be holding a special meeting in May 1990 to consider training programmes for the second Five-Year Development Plan of the Regional Centre. He then invited the participants of the seminar to suggest themes for training courses for consideration in the said meeting.

After a lengthy discussion, training on the Conservation of Ethnographic Objects, Care of Objects, and Scientific Examination of Artifacts were suggested by the participants. These training courses, they said, are commonly needed by the Member Countries.

As regards research project proposals, the following themes were recommended: The Effect of Biological Factors on the Cultural Properties, The Effect of Pollution and Environmental Factors on the Cultural Heritage, Analysis of Metals, and Bricks and Monuments.

RECOMMENDATIONS

After lengthy discussions and deliberations, the meeting came up with several bright recommendations for the possible upgrading of conservation in the region to a level acceptable in the international standard.

1. Considering that there are numerous problems in the conservation of materials of monuments and of art objects in Southeast Asia, and taking into account that at present , it is not possible for each country to have an advanced laboratory, it is therefore recommended that SPAFA establishes a Regional Conservation Research Laboratory in the region of Southeast Asia on the pattern of the National Research Laboratory Conservation (NRLC), Lucknow, to cater to the needs of all the countries in the region.

2. Keeping in view that an exchange of ideas and knowledge is extremely important, it is proposed that a network for the exchange of information on conservation, in Southeast Asia and internationally, be established with the proposed Regional Conservation Research as the nodal agency.

3. Considering that at present there is a great dearth of trained conservators in each country in Southeast Asia, it is therefore recommended that the proposed SPAFA Regional Conservation Research Laboratory be equipped to provide training in the following priority areas:

   a. Preventive Conservation
   b. Conservation of Ethnographic Objects
   c. Scientific Examination of Objects
   d. Conservation of Underwater Archaeological Objects

4. Taking into account the needs of the region, it is felt that the proposed SPAFA Regional Conservation Research Laboratory should take up research in the following areas:

   a. Effect of Environment on Cultural Property
   b. Control of Biological Agencies like Fungus, Algae and Lichens
   c. Control of Termites and Other Insects
   d. Analysis of Metal Objects for Understanding Fabrication Techniques
   e. Improvement of Techniques in the Conservation of Paintings

It was further recommended that the research should be applied, rather than fundamental.

5. On how the research projects should be implemented, it was felt that several laboratories could join together to have collaborative research projects, with the SPAFA Regional Research Laboratory acting as the nodal agency for the coordination. A Project may be split into several parts, with one laboratory doing a part. The working group may keep in touch by correspondence and should meet at intervals of two years or so for an exchange of information and comparing results of researches.

6. In order that research projects and training programmes are properly formulated, it is recommended that,first of all, there should be a survey of such objects by the national laboratories. And then a meeting should be convened to discuss specific problems.

7. It is felt that at present there is a lack of staff for conservation in each of the countries, and therefore, there should be more staff, equipment, books and journals for the purpose of conservation in the laboratories.

8. Taking into consideration that problems of conservation are quite often specific in each country, there cannot be a general standard formula for setting up a laboratory. Missions of high calibre specialists, if possible from the region, should be arranged for giving advice in the setting up and development of conservation laboratories in each country.

9. Realizing that one single laboratory cannot specialize in all areas of work, it is recommended that conservation laboratories in different countries be developed to specialize in one or two specific subjects.

10. The meeting recognizes that, in addition to the conservation laboratories in each country, there are other facilities and laboratories in universities and government agencies which can be called upon to contribute to conservation and conservation research. The meeting notes that it may be useful for countries to establish a national committee or council to coordinate the contributions of these different universities and government agencies to conservation.

ADOPTION OF THE FINAL REPORT

Following the recommendation, the meeting adopted the final report, with amendments.

CLOSING CEREMONY

The members of the meeting thanked SPAFA and the Fine Arts Department of Thailand for organizing this meeting and providing the wonderful facilities. The meeting also thanked Mr Nikom for helping SPAFA to secure the services of Mr O.P. Agrawal. Then they expressed gratitude to Mr Agrawal for his contribution and especially for his very comprehensive report to SPAFA, which the meeting noted. At the request of Mr Kwa, the Vice-Chairman, Mr O.P. Agrawal delivered a brief remark for the Closing Ceremony.

Mr Agrawal, in his parting message, expressed great satisfaction on the successful outcome of the seminar. He particularly noted the following important points:

1. Each country in the region has already a conservation laboratory; while some are doing advanced work, others are still in the initial stage.

2. There is a felt need to provide more training, books, etc., in order to upgrade the level of conservation work in each Member Country in Southeast Asia.

3. The need for a network for the exchange of ideas, information, etc., in order for the region to become a part of the international network already existing abroad.

4. The need for applied research, on various conservation problems confronting each country, to be undertaken in the region.

5. The need for training in various stages and such needs should be spelled out.

6. There are assurances of support from SPAFA as far as programmes for conservation endeavours are concerned.

Mr Agrawal was optimistic about the growing conservation laboratories in Southeast Asia which are bound to consolidate into a formidable entity that will leave a mark in the international scene. But he warned that unless advances in the outside world are carefully noted, the laboratories in Southeast Asia are bound to lag behind.

He ended by reiterating his great satisfaction that the outcome of the seminar was in a very high order and thanked individually, the Chairman, Vice-Chairman and Rapporteur for working very hard in leading the seminar towards its fruitful conclusion. On that note he declared the seminar closed.

OTHER ENDING REMARKS

Dr Chua Soo Pong, on behalf of the SPAFA Regional Centre, expressed delight in the great exchange of ideas that occured in the short span of the seminar. Then he thanked all the members of the seminar for

their active participation during the three-day seminar. He assured them that all their recommendations will be considered in the forthcoming Special SPAFA Governing Board Meeting. Finally, he thanked all the officers of the meeting, particularly Mr O.P. Agrawal, for their efforts spent during the seminar. He also wished all the participants departing Thailand a safe trip home.

Thereafter, Mr Uka, on behalf of the members of the seminar, thanked SPAFA and Mr Agrawal for organizing the seminar and for providing all the conveniences during the activity. In the same manner, Mrs Kulpanthada, Chairman of the Seminar, thanked the participants, especially Ms Susan, Rapporteur, and Mrs Wynette Puntuna, Assistant to the Rapporteur. At the same time, she extended her gratitude to the other members of the secretariat for their efforts and diligence spent during this activity. Then she took the opportunity to give her best wishes to all for the holiday season and wished all of those departing Thailand for home, a safe journey.

dations will
ked all the
r. He also

grawal for
anner, Mrs
ır, and Mrs
o the other
e took the
g Thailand

APPENDICES

APPENDIX 1

List of Participants

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

LIST OF PARTICIPANTS

OFFICIAL DELEGATES

BRUNEI DARUSSALAM

1. Mrs Kolam Binti Haji Gapar
   Conservation Officer, Brunei Museum
   Kota Batu
   Brunei Darussalam 2786

INDONESIA

2. Mr Uka Tjandrasasmita
   Director of the Directorate of Preservation and Restoration of Archaeological Monuments
   Sejarah dan Purbakala, Depdikbud
   Jalan Cilacap No. 4
   Jakarta 10310
   Indonesia

MALAYSIA

3. Ms Norizah Abdul Talib
   National Archives
   Jalan Duta
   Kuala Lumpur
   Malaysia

PHILIPPINES

4. Ms Susan Sr. Naranjo
   Assistant Laboratory Head
   Chemistry and Conservation Laboratory
   National Museum
   P. Burgos Street
   Metro Manila
   Philippines

SINGAPORE

5. Mr Kwa Chong Guan
   Director
   National Museum
   Stamford Road
   Singapore 0617

THAILAND

6. Mr Nikom Musigakama
   Director
   Archaeology division
   81/1 Si Ayutthaya Road
   Sam-sen, Theves
   Bangkok 10300

7. Mr Sanchai Maiman
   Archaeology division

OBSERVERS

1. Dr Chua Soo Pong
   Senior Specialist in Performing Arts
   SPAFA Regional Centre

2. Mrs Chiraporn Aranyanak
   Senior Scientist
   Conservation Sub-Division
   National Museums Division
   Na Phra Tad Road
   Bangkok 10200

<APPENDIX 1>

SPAFA

Organizing Committee

1. Assoc Prof Kamthorn Kulachol (Head)
   Programme Officer

2. Mr Thanongsak Thanyapagonpun
   Administrative and Finance Officer

3. Mrs Tippawan Na Lampoon
   Secretary I

Secretariat

1. Mrs Wynette Puntuna
   Publications Officer

2. Mr Nara Chompooiam
   Secretary II

3. Mrs Thitima Leosri
   Clerk/Typist I

APPENDIX 2

Speeches

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

WELCOMING SPEECH BY PROFESSOR M.C. SUBHADRADIS DISKUL SPAFA CENTRE DIRECTOR

Distinguished Guests,
Ladies and Gentlemen,

On behalf of the SPAFA Regional Centre, I would like to welcome all of the participants of the SPAFA-ICCROM Seminar on Conservation Standards in Southeast Asia. I am pleased you have accepted our invitation to participate in this regional endeavour.

Admittedly, there is a felt need to raise the standard of conservation everywhere by constant training and research. To formulate an action plan and strategy for such a task, the SPAFA Regional Centre, with the support and cooperation of ICCROM, has organized this important SPAFA Regional Seminar.

In this meeting of directors and high officials from museums, archaeology divisions or departments, and conservation laboratories; discussions will be held not only on the extent and type of cultural properties present in the region but also on the status of conservation facilities, training and research infrastructure available and common problems of conservation.

It is obvious that there are outstanding problems of conservation in the region. And we are all gathered here today to work and find out the possibilities of coordinating efforts for solving these problems and for improving the general standard of conservation among the SPAFA member countries.

Needless to say, this seminar will provide you with ample opportunities to exchange ideas and experiences on the status of conservation in your respective countries. I hope this meeting of minds will bring about fruitful results for the betterment of the Southeast Asian region as a whole.

Before I close my speech, please allow me to express my profound thanks to ICCROM for their funding support and to Dr O.P. Agrawal for his active assistance in this SPAFA Seminar, from the planning to the implementation stages.

Finally, I wish all the participants of this seminar all the success. I am confident that the decisions and recommendations produced by this seminar will prove useful and suitable for the conservation needs of the Southeast Asian region.

Thank you.

<APPENDIX 2b>

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

SPEECH BY MUHAMMAD ISHTIAQ KHAN
REGIONAL ADVISOR FOR CULTURE IN ASIA AND THE PACIFIC (RACAP)

Prof M.C. Subhadradis Diskul, Centre Director, SPAFA,
Mr O.P. Agrawal, Vice-Chairman, ICCROM,
Distinguished Participants,
Ladies and Gentlemen,

It is indeed a privilege for me to have been invited to speak to you on this auspicious occasion of the inauguration of the SPAFA-ICCROM Seminar on Conservation Standards in Southeast Asia, and share some of my ideas with you. First of all, let me congratulate the organizers of the Seminar - i.e. SPAFA for focussing the attention of the SEAMEO Member Countries to this important subject, for most of them, being newly independent countries need to assert their cultural identities. The cultural heritage of a country being the core and basis of its cultural identity needs to be adequately preserved, presented and revitalized for providing a link with the past and the shaping of the future. It is a matter of great satisfaction that consciousness of this significance of the cultural heritage is now on the rise in countries of Southeast Asia. It is clearly manifested in the establishment of not only organizations responsible for the systematic survey, documentation and preservation of the heritage but also its integration in the modern society. Of course, over enthusiasm of its utilization for cultural tourism is also fraught with dangers but its revival and reintegration into modern society also ensures attention to it, leading to realization of its proper place in the nation's economy and cultural development. It is now a matter of common belief that no development, without reference to culture of a nation, is possible as balanced development. While the new Medium Term Plan of UNESCO, recently adopted at UNESCO's General Conference held recently in Paris, lays due emphasis on the preservation of the cultural heritage - both physical as well as non-physical - it also stresses its revival and re-integration in day-to-day life. That it should form part of the development process is, indeed, a most logical consequence of such use.

We, in UNESCO, are happy, as I mentioned earlier, to note the same tendency in the Member States of Southeast Asia. On its part UNESCO has made concerted efforts, within limitations of its means, to provide training in conservation to specialists in various related disciplines, financial assistance in the acquisition of equipment and chemicals, advisory services of consultants to study and analyze the existing state of cultural heritage and assistance in institution building or strengthening of existing conservation laboratories. I would not take your valuable time by citing examples, for this is not the occasion to recount UNESCO's contribution. I would, however, like to bring to your notice our recent collaboration with SPAFA in the establishment of its Conservation Laboratory. This laboratory, as I am sure you are fully aware, will be essentially a teaching and research laboratory for the region and its functions will not in any way conflict with the laboratories in each Member State. Indeed it will serve to augment and supplement them and to provide the essential requirements of research in the field of traditional materials and technology used in the region as well as develop new methodology in conservation. Here I might also mention that UNESCO's interest in strengthening the institutions in the Member States will not be diminished in any way. Our support to the conservation laboratories in the Member States will indeed continue as before since we are fully conscious of the fact that the basic work of actual conservation of the heritage will continue to be carried out by these institutions - the conservation laboratories in the countries of the region.

In order to raise the standard of conservation in the region we will, however, need more specialized institutions - institutions such as a centre for the conservation of brick monuments, centre for the conservation of stone or laterite monuments, centre for the preservation of textiles, etc. At the same time, means for the proper survey and thorough documentation will have to be developed. Such institutions and arrangements may not be possible for each State. Perhaps concerted efforts of all Member States will help a State to develop a centre in a specialized field. Each Centre can then be located in a different country. Moreover in order to share the information already available or to meet needs in a particular area we will have to develop sooner or later a mechanism of networking linking various sources of information. Networking in other fields as in education, social sciences, general information, already exist. The need for similar network in the cultural area is overdue and maybe you would consider it during your deliberations in the Seminar. We, in UNESCO, would be looking forward to the result of the Seminar and wish you all success in your deliberations.

Thank you once again for allowing me to share some of our ideas.

<APPENDIX 2c>

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

ADDRESS BY Mr O.P. AGRAWAL
VICE-CHAIRMAN, ICCROM COUNCIL

Ladies and Gentlemen,

I am very happy to be with you this morning to attend the SPAFA-ICCROM Seminar on Standard of Conservation in Southeast Asia. I bring to all of you the greetings of the Council of ICCROM for the success of the seminar. ICCROM which was established in 1959, is an inter-governmental, international organization, with over 70 member-countries. It has several training programmes, it promotes research in conservation, helps organize seminars/conferences, has an active documentation centre. SPAFA in some ways is similar to ICCROM, but its scope is within Southeast Asia. Like ICCROM SPAFA too has several training programmes, has an active documentation centre, has a publication programme, promotes research in art and archaeology. Because it is difficult for ICCROM, which is so far removed from Southeast Asia, to have many activities here, I think SPAFA could up take up the role of ICCROM for Southeast Asia and act as a Regional Centre for conservation in this part of the world. For this reason, this first collaboration between SPAFA and ICCROM is most welcome and we can hope that there will be many more such collaborative programmes between ICCROM and SPAFA. ICCROM is always keen to support all regional ventures in the sphere of conservation. It is not possible for ICCROM to itself take up all the activities, but it always wants to act as a catalyst, to start an action. It is therefore necessary that there be a deep bond of collaboration between ICCROM and this regional institution of yours, namely SPAFA Regional Centre. As the Vice Chairman of the ICCROM Council, I would like to assure you that ICCROM will always be willing to help SPAFA in its regional activities of training, research, library, publication, and so on. We shall watch with very great interest the outcome of the present seminar, which is being held for a very important cause, and that is to deliberate on how to raise the standard of conservation in Southeast Asia. I am sure the deliberations will be fruitful and will guide us and show us the path to achieve the desired goal.

On behalf of ICCROM Council, I wish you all success.

APPENDIX 3

Agenda and Programme

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

AGENDA

1. Opening Ceremony
2. Election of Chairman, Vice-Chairman and Rapporteur
3. Introduction to the Seminar
4. Country Report Presentation and Discussion
   - Brunei Darussalam
   - Indonesia
   - Malaysia
   - Philippines
   - Singapore
   - Thailand
5. Discussion on "Special Problems"
6. Excursion of Conservation Sites in Petchaburi
7. Adoption of the Final Report
8. Closing Ceremony

<APPENDIX 3>

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

PROGRAMME

Monday, December 11, 1989 : Arrival of Overseas Participants

Tuesday, December 12, 1989

9:00 : Leaving hotel

10:00 : Opening Ceremony

- Welcoming speech by SPAFA Centre Director
- Remarks by UNESCO Cultural Adviser
- Address by ICCROM Representative

10:30 : Election of Chairman, Vice-Chairman and Rapporteur
Introduction to the Seminar (O.P. Agrawal)

11:00 : Coffee Break

11:15 : Presentation and Discussion:
Country Report of Negara Brunei Darussalam

12:15 : Lunch hosted by SPAFA

13:30 : Presentation and Discussion:
Country Report of Indonesia

14:30 : Presentation and Discussion:
Country Report of Malaysia

15:30 : Coffee Break

15:45 : Presentation and Discussion:
Country Report of the Philippines

17:00 : Back to hotel

Wednesday, December 13, 1989

9:00 : Leaving hotel

9:30	:	**Presentation and Discussion:** *Country Report of Singapore*
10:30	:	**Coffee Break**
10:45	:	**Presentation and Discussion:** *Country Report of Thailand*
12:00	:	**Lunch**
13:30	:	**Discussion on "Special Problems"**
15:30	:	**Coffee Break**
15:45	:	**Continuation and Conclusion**
17:00	:	**Dinner hosted by the National Museum**

Thursday, December 14, 1989

9:00	:	Leaving hotel for an excursion of Conservation Sites in Petchaburi
18:00	:	Back to hotel

Friday, December 15, 1989

9:00	:	Leaving hotel
9:30	:	Adoption of the Final Report
11:30	:	Closing and coffee break
12:00	:	Farewell Lunch hosted by SPAFA

Saturday, December 16, 1989 : Departure of Overseas Participants

APPENDIX 4

Country Report of Negara Brunei Darussalam

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

COUNTRY REPORT OF BRUNEI DARUSSALAM

by Dayang Kolam Bte Hj Gapar

INTRODUCTION

Brunei Darussalam is a small Muslim, Malay Sultanate on the northwest coast of the island of Borneo. The country has an area of 5,765 sq. km. (2,226 sq. mi.). Brunei became a fully independent nation on 1st January 1984.

Brunei Museum was established in 1965 as a National Museum, and today developed consisting of Archaeology, Ethnography, Natural History, Park and Wildlife, Archives, Education, Exhibition and Photography, Library and Conservation Section. The construction of the present Brunei Museum building commenced in 1968 and was completed in 1970. The building consists of six exhibition galleries, four storage rooms for collection and offices.

EXTENT AND TYPE OF CULTURAL PROPERTY

The Brunei Museum, like so many young museums of the world, is in the process of tremendous and speedy development. The Brunei Museum is the overall guardian of the nation's cultural and historical treasures. Its collections consist of organic and inorganic materials from the following section:

1. ARCHAEOLOGY SECTION

The Archaeology objects that are kept in the store room of the archaeology section are those of:

1. Excavated finds at Kota Batu, Sungai Lumut, Tanjong Kupang
2. Surface finds along the Brunei River, Kota Batu and elsewhere
3. Field trips surface finds of developed areas

The above finds are those of broken pieces of ceramics, pocelains, earthenwares and stonewares. Waterlogged wood, stones, beads, and metal objects collected during excavations. This collection is roughly about 20,000 pieces.

The archaeology section is also responsible for the purchase of items such as ceramic plates, bowls and jars. This includes the collection of copper, silver, iron, beads, gold, jade and lead.

ITEM	NUMBER
Beads	118
Ceramics	3,275
Copper	3,804
Gold	30
Iron	279
Jade	26
Lead	7
Silver	1,449

2. *ETHNOGRAPHY SECTION*

The ethnography section is responsible for the purchase of ethnographic objects for the Brunei Museum. Some objects were presented to the Brunei Museum. This collection is mainly for exhibition, research and study purposes.

The nature of its collection is as follows:

ITEM	No. OF PIECES
Bamboo Objects	186
Hornbills/Ivory	545
Human Skulls	12
Paintings	189
Pandanus	140
Rattan/Rope	128
Textiles	553
Woodbark/Animal Skin	18
Wooden Objects	1,220

The Malay Technology Museum was officially opened on 29th February 1988. This is an ethnography museum and consists of three exhibition galleries. The exhibitions are about typical native houses and the technology of their constructions.

3. *BRUNEI STATE ARCHIVES*

The Brunei State Archives, through its ***Enactment 1975***, provide for the custody and preservation of public archives and public records of Brunei Darussalam.

The nature of the collection is as follows:

RECORDS	YEAR RECEIVED	TOTAL
Government Files (Papers)	1971-1972, 1974-1975, 1977-1987, 1988	85,942
Historical Photographs	1980-1988	5,605
Manuscripts JAWI	1980-1983	239
Posters	1978-1984	192
Plans	1978-1985	732
Maps	1978-1982, 1985	477
I.C. Cards (Immigrations)	1980, 1982	20,271
Passports (Immigration)	1980	44
Letters of Agreements	1979, 1984	140
Banned Books	1967, 1972, 1978, 1988	
Audio-visual Archives Films	1979-1982, 1984-1987	1,299
Cassettes and Tape Reels	1979-1982, 1984-1985, 1987-1988	189
Microfilms	1978-1985	623
Video-Cassettes	1979-1987	233
Gramophone Records	1978, 1986	4

The Brunei State Archives occupies ***642*** meters and the annual growth is about 30-40 meters.

4. BRUNEI MUSEUM REFERENCE LIBRARY

The Brunei Museum Reference Library purchase books and periodicals of interest for all the sections of the Brunei Museum. These books are for reference and other purposes.

However, through ***The Preservation of Books Enactment 1967***, the Brunei Museum Reference Library became the depository of copies of books printed and published in Brunei Darussalam. The publisher of every book published in Brunei Darussalam (whether for sale or otherwise) shall, within one month after the publication, deliver, at his own expense, three copies of the book to the Director.

The nature of the collection is as follows:

a. General Reference Books	8,611 Books
b. Borneo Books	1,770 Books
c. Brunei Books	1,047 Books
d. Periodicals-Subscription	94 Titles
e. Periodicals-Exchange	117 Titles
f. Periodicals-Brunei	789 Titles

To this date the collection occupies 94.73 meters and the annual growth is about ***4.5 - 5.0 metres***.

5. THE NATURAL HISTORY SECTION

The Natural History Section is responsible for the collection of specimens for the purpose of exhibition, research and study.

The collection consists of the following items (1966-1988):

<APPENDIX 4>

ITEM	NUMBERS
Birds (stuffed)	14,303
Mammals (stuffed)	1,540
Amphibian	31
Reptiles	101
Fish	378
Shells	919
Insects (Liquid Preservation)	28,411
Insects (Dry Preservation)	25,858
Plants	293

The Natural History Section, through '***The Wild Life Protection Enactment 1978***, is able to make provision for the protection of wild life and to provide for the establishment of wild life sanctuaries. The enactment also prohibit people from hunting, killing or capturing any protected animal in Brunei Darussalam.

STATUS OF CONSERVATION FACILITIES

Facilities for the conservation of cultural materials in the Brunei Museum are very limited. This is mainly because the museum is improperly equipped as regards space, services, equipment, supplies and conservation literature to carry out conservation work to the level required.

1. PAPER CONSERVATION AND BOOK BINDING

The paper conservation and book binding section was established in January 1979. This section is housed in a wooden building with a working space of 17.06 m x 7.92 m (56' x 26'). This section receives various kinds of materials and needs individual care and treatment. The bindery is responsible for the binding of books and periodicals of the Brunei Museum Reference Library and Brunei States Archives. The bindery is also making boxes for other sections of the Brunei Museums.

2. CONSERVATION OF ARCHAEOLOGICAL AND ETHNOGRAPHIC MATERIALS

In August 1988, a laboratory with the size of 3.10m x 3.08m (12' x 10') was set up in the main building. It caters to the needs of archaeological and ethnographical specimens. The laboratory space is too small to carry out proper conservation treatment; equipment and materials are also limited.

3. TEXTILE CONSERVATION LABORATORY

The textile Conservation Laboratory is also situated in the main building. It is a room of 6.80m x 6.17m (23' x 20'). The work involved here is mainly on preventive conservation and restoration. This section works together with the Ethnography Section, especially in terms of storage and the display of textiles.

4. THE NATURAL HISTORY SECTION

The Natural History Section is responsible for taxidermy work. Its collection includes animals, birds, reptiles and insects. Napthalane balls and flakes are used in the storage boxes.

5. MONITORING DEVISE AVAILABLE ARE:

5.1 Air conditioning: The Brunei Museum has a central air conditioning system which runs 24 hours.

5.2 Dehumidifiers: Dehumidifiers are used in the storage rooms and some of the exhibition galleries.

5.3 Thermohydrographs: Thermohydrographs are installed at storage areas and exhibition galleries.

5.4 Whirling Hydrometers: Whirling hydrometers are used to measure the relative humidity and the temperature in the exhibition galleries where thermohydrograph is not available.

PROBLEMS OF CONSERVATION

1. STORAGE

Owing to the expansion of the museum's collection and other activities, the storage areas became problems to the Brunei Museum. Some of the archival materials are now stored along the corridors.

2. LIGHTING

At present, the lighting used are mainly fluorescent tubes of 40 watt, daylight intensity and spotlight between 100 watt and 180 watt. Almost all of them are without ultra-violet filters.

3. INSECTS INFESTATION

The most serious problem, however, is that some of the exhibition galleries and objects on display are infested with insects that were brought in with the exhibition materials. Insects such as powder post beatle and wood borer have attacked wooden objects and bamboos at the exhibition galleries.

4. EXCAVATED OBJECTS

The Archaeology section has a large collection of excavated objects. although some have received first aid treatment, the majority of these objects continue to disintegrate due to improper storage. The storeroom is full and no monitoring devises are available.

5. ACQUIRING CHEMICALS AND EQUIPMENT

The problem here is mainly the time it takes for chemicals and equipment to arrive from overseas. It is long: six months to one year.

6. PERSONNEL

At the moment there are two conservation officers. The section lacks trained conservators, especially in the conservation of archaeological and ethnographical materials.

<APPENDIX 4>

AVAILABILITY OF TRAINING

At this stage the conservation section of the Brunei Museum has no facilities for training. However, junic staffs are trained in book binding and paper conservation.

As for archaeological and ethnographic objects, there are no facilities available for the training of personne

AVAILABILITY OF RESEARCH INFRASTRUCTURE

There are no facilities for research in conservation due to the lack of a proper laboratory and the lack staffs.

CONCLUSION

It can therefore be seen that cultural materials are damaged by natural factors such as climate, ligh microorganisms, insects and so on, and also by improper handling, neglect and vandalism. These factors ca be controlled by having properly well equipped conservation laboratories staffed by trained personnel. After documents and cultural materials in the museum collection have been examined and treated, the should be kept in proper surroundings to save them from further deterioration.

A better understanding of the materials and the processes used to conserve cultural materials require reading, studying, training and practicing. A basic understanding of science, especially chemistry, is quit helpful. Good management of collections and buildings contributes to the permanence of the collectio The Brunei Museum has the responsibility to preserve its collection for posterity.

BIBLIOGRAPHY

BRUNEI MUSEUM (1989)

Report on the Conservation of Cultural Materials Workshop at the Malay Technology Museum, Kota Batu, Brunei Darussalam 4-28 February 1989.

GOVERNMENT OF BRUNEI GAZETTE (1975)

The Brunei State Archives Enactment, 1975, Part I, Vol. XIII, No. 2 - 21st April 1975.

GOVERNMENT OF BRUNEI GAZETTE (1967)

The Preservation of Books Enactment, 1967, Vol. VI, No. 3 - 18th January 1967.

GOVERNMENT OF BRUNEI GAZETTE (1978)

The Wildlife Protection Enactment, 1978. Gazette Part I, Vol. XVI, No. 10 - 19th July 1978.

GOVERNMENT OF BRUNEI GAZETTE (1967)

The Antiquities and Treasure Trove Enactment, 1967, Vol. VI, No.8 - 21st January 1967.

APPENDIX 5

Country Report of Indonesia

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

COUNTRY REPORT OF INDONESIA

BOROBUDUR CONSERVATION LABORATORY

by Uka Tjandrasasmita

INTRODUCTION

Indonesia is rich in cultural properties. There are approximately 3,000 cultural heritage, monuments and sites spread all over the country. The various forms are of Prehistoric Period, Clasical Hindo/Buddhist, and other periods. The types can be categorized into prehistoric, Hindu/Buddhist sites, and Islamic sites. Usually the prehistoric sites contain animal and human fossils, artifacts, book paintings, or sarchopagus. The Hindu/Buddhist remains are mostly temples -- free standing structures as well as rock cut temple made of stone and brick. Remains from the Islamic period are mosques and old graves. Other archaeological remains found in Indonesia are traditional buildings, palaces, ancient churches, etc. (see Annex 1).

Movable artifacts are mostly preserved in museums, but some of them are kept in sites and housed in site museums. It goes without saying that monuments and sites are preserved ***in situ***.

The need for conservation of the cultural property in Indonesia has been realized since the last several decades, especially after Indonesia got its independence. Conservation of the cultural property, housed in museums, has been pioneered by setting up a conservation laboratory at the National Museum in Jakarta. For the conservation of monuments and sites, the Borobudur Conservation Laboratory has been established.

Thanks to both laboratories, which provide courses and consultation to provincial offices, some provincial conservation laboratories have been developed. Though at first they were only modest conservation workshops gradually they are being developed for simple conservation studies.

This country report will deal only with the Borobudur Conservation Laboratory, which can be regarded as a fast growing laboratory, thanks to the international aid through UNESCO, even up to now. Most of its technicians have been trained abroad, and its equipment are becoming more complete. And up to date for conservation studies, the laboratory has equipment such as the Scanning Electronic Microscope, with its Energy Dispersive Spectrometer, Prosimeter, Universal Testing Machine, etc. For geodetical measurement, various types of instruments such as Electronic Distance Meter or theodolite are also available.

THE BOROBUDUR CONSERVATION LABORATORY

1. STATUS

Protection and preservation of cultural heritages in Indonesia is the task of the Directorate for the Protection and Development of Historical and Archaeological Heritage (DPDHAH), under the Directorate General of Culture, Ministry of Education and Culture. The DPDHAH has its functions a.o. in formulating the government's policy for the protection, preservation and development of the utilities of the cultural heritages, and in execution and guidance of efforts for the protection, preservation, conservation,

restoration, registration and documentation of the cultural heritages, including the sites.

Focussing on the job, i.e. the preservation and conservation, it can be noted that the DPDHAH has to formulates the preservation and conservation technical procedure and the guideline for such namely: the preservation and conservation method, which is applicable to the situation and condition of the cultural heritages in question. So the DPDHAH is not only involved with the daily up keep or maintenance work, but also even much more, it has to conduct preservation and conservation studies.

Though the headquarter of the DPDHAH is in Jakarta, most of the conservation studies are conducted in the Borobudur Conservation Laboratory, in the vicinity of the Borobudur Monument in Central Java. The Borobudur Conservation Laboratory is a part of the Borobudur Conservation Project, DPDHAH's project for conserving the Borobudur monument after its restoration which up to now is still financed by using the development project's. An effort to establish the project into a permanent institution is still in process. So beside the laboratory's job to study Borobudur, the laboratory is also used by the DPDHAH for conservation studies of other cultural heritages throughout country.

Field observation to diagnose the conservation problems of other monuments and to take samples is conducted by sending laboratory technicians to the field. But sometimes this can also be done by receiving samples taken by trained local technicians from the field, provided with an adequate information.

It can be noted that the laboratory is also used by the National Research Centre for Archaeology as well as the Department of Archaeology of the University of Gajahmada for archaeological research, especially in the identification of materials, including their technology.

2. *HISTORY OF THE LABORATORY*

History of the development of the Borobudur Conservation Laboratory is closely related with the history of the safeguarding and restoration of the Borobudur monument. In this case, UNESCO has played a very important role, not only in the restoration of the monument, but also in setting up and developing the laboratory.

The degradation and deterioration of this Buddhist monument, belonging to the 9th century, has gradually increased so seriously during the last several centuries. This had been realized since the middle of the 19th century. That was why the monument was partially restored in 1907-1911 but the restoration effort did not succeed in eliminating all the shortcomings found in the monument. Continuous survey followed up to 1929, resulting to an appraisal of the deterioration process, but the commission in charge was unable to propose any correct measures.

It was only in the 1950s, immediately after the physical revolution to get our independence, that the Government of Indonesia began to look abroad where great strides had been made in the utilization of chemistry for the conservation of archaeological objects. Our appeal for help to UNESCO in 1955 was promptly responded with the arrival of a Belgian expert. He found the stone disease of Borobudur as "stone cancer". He made it clear that the monument had fallen victim to an acute disease of a chronic and malicious character.

As a consequence of this warning a really solid restoration plan had to be drafted. UNESCO's international aid began to materialize when the various experts on conservation and restoration arrived in the 1970s. During their field studies at Borobudur, where they stayed for several months up to 1-2 years, they were assisted by local engineers and technicians. Their field studies were conducted by installing a simple workshop equipped with some beaker glasses, simple balance, etc. I say that it could not be stated as a real laboratory.

Meanwhile, an in-house training was conducted to produce skilled technicians for the restoration and conservation of the monument. The three years training was started in 1971, with the trainers and teachers from some universities, some were project engineers and international experts. After passing the local training, some of the trainees were sent abroad for further international courses on conservation and restoration.

During the courses at the time of the restoration which ended in 1982, the simple workshop grew to be a real laboratory. The increase of knowledge was compensated by the increase of equipment, some of them purchased by UNESCO. The laboratory became more important, not only for conducting conservation studies and other laboratory researches, but also for conservation quality control purposes.

Meanwhile, training courses for conservation and restoration were conducted annually at the national as well as the regional level, with laboratory technicians as trainers. At the same time trainees from various places of the region could study how the Borobudur monument was restored and conserved.

TECHNICAL ASPECT OF THE LABORATORY

1. THE JOB DESCRIPTION

The present Borobudur Conservation Laboratory consists of eight related sections, viz.:

Chemistry Section	:	to study microbiology and biodeterioration.
Petrography and Physics Section	:	to study petrology of stones and their physical properties.
Climatology and Geophysics Section	:	to study climatology and geophysic, i.e., the seismography of the region.
Conservation Section	:	to study conservation methods for stone, wood, metals, and for aging tests, etc.
Photogrametry Section	:	to study and document the architectural aspects of the building by using photogrametry.
Drawing and Mapping Section	:	to study the architectural aspects of the building by manual drawing and to study the site by geodetical measurements.
Photography Section	:	to make documentations by use of photographs, including processing and painting.

Each section is handled by one to three skilled technicians, with one to two assistants. There are more than 15 technicians trained abroad, viz, in the Netherlands, France, Italy, Belgium, India, Japan, etc.

It can be noted that now we are processing our proposal to establish the so called institution: ***Borobudur Conservation Centre for Monuments and Sites***, following the last International Experts Meeting on the Conservation of Borobudur, held at Borobudur on 7-11 August 1989. In the proposed organization, the sections mentioned above will be grouped into divisions as follows:

- Division on the Maintenance of the Borobudur Monument and Site.
- Laboratory Division.
- Civil Engineering and Architecture Division.
- Documentation and Publication Division.
- Archaeology Division.

- Division of Human Resources Development.

In principle, the Minister of Education and Culture agreed to the proposed organization, recommended by the international experts.

2. *FACILITY AND CAPABILITY*

It has been mentioned that laboratory facilities are more complete now, especially during last six years of which some sophisticated laboratory equipment have been received from UNESCO. The list of some important equipment can be seen in Annex 2-4.

Most of the equipment available in Indonesia were bought by the Borobudur Conservation Project, whilst the more sophisticated ones were bought through the UNESCO Trust Fund for the Safeguarding of Borobudur.

Equipment for climatological and geophysical recordings were mostly given by the Meteorology and GeophysicBureau of the Ministry of Communication, in a joined project condition that we have to send the copy of the collected data to the bureau. But we also get the climatological data of every station in the country. Thus it is mutually beneficial: we get the climatological data of the Borobudur area as well as other areas, while the bureau can use the climatological station of Borobudur as a member of the climatological stations network in the country.

The combination of the availability of technicians and equipment in the Borobudur Conservation Laboratory produces capabilities in conservation studies, such as:

1. Chemical, physical and mechanical analysis in the framework of material science and technology of the cultural property.

2. Combined with biological analysis and others, the above analysis can be utilized in diagnosing conservation problems in the deterioration process of the cultural property.

3. Architectural and geodetical analysis of monuments and sites.

4. Environmental/climatological studies.

5. Studies on Conservation methods, applied to the cultural property including aging tests, quality control analysis, etc. of materials used for conservation.

It can be noted that skills have also been used in the framework for the protection of the cultural property, i.e. to identify the originality and the authenticity of an object to avoid the possibility of falsification.

3. *AVAILABILITY OF TRAINING*

a. Training at the National Level:

Following the in house training for the technicians of Borobudur, the DPDHAH realized the necessity of such a training for the national level, for breeding technicians through out the country. The trainings were held in Borobudur with a duration of four months for each group. From 1977 till 1986, not less than 11 groups of basic and intermediate training courses had been held, each group comprised more or less 25 persons from all provinces.

Theoretical lectures and practical training were given on: archaeology, cultural history, basic engineering, safeguarding of cultural properties, field archaeology (excavation), restoration, topography, photogrametry, conservation, climatology, basic laboratory research and documentation. The participants who followed the intermediate courses after passing the basic one, had to submit a paper or report on his conservation work, to be presented in a seminar. This was apart from other follow-up courses on how to conduct feasibility and technical studies, progress report and documentation system.

b. Regional Training:

The successful training courses and, surely, training opportunities presented by the on-going restoration of Borobudur, drew the special attention of SEAMEO. Borobudur was appointed as the Sub-centre for the Restoration and Conservation of Ancient Monuments of SPAFA. And from 1978-1981 eight training courses were also conducted on conservation and restoration of monuments in Borobudur, attended by 40 participants from Thailand, the Philippines, Malaysia and, the host country, Indonesia.

The syllabi of the SPAFA training courses were similar to the national training, except for the fact that some of the theoretical lectures such as chemistry, biodeterioration, civil engineering, architecture, etc. were given by the professors of the University of Gajahmada.

c. Study Visits:

Apart from the above formulated training courses, Borobudur had also received scholars from abroad, who want to study Borobudur. From 1986 till 1988, the UNESCO Principal Office for Asia and the Pacific, Bangkok, has arranged four scholarships from Burma (3 persons), Bangladesh (1 person) and Vietnam (3 persons) to make a study visit to Borobudur for one to two weeks.

Through bilateral cooperation, we have also trained two technicians from Brunei Darussalam for a duration of three months.

4. RESEARCH INFRASTRUCTURE

Most researches on conservation are carried out in the Borobudur Conservation Laboratory. But we realize that the laboratory is not perfectly complete. It is virtually impossible, and in practice not desirable, to have all expertise and required manpower and facilities grouped within a single body.

That is why in some cases we conduct a cooperation or joint research with other institutions. At the national level, we have close cooperation with the Gajahmada University, Yogyakarta (Faculty of Technology, Agriculture, Geography, etc.); National Biology Institute, Bogor; the Meteorology and Geophysical Bureau, Jakarta; etc.

At the international level, thanks to UNESCO we also had close cooperation with several institutions such as the Tokyo International Research Centre for Cultural Property, Centre des Etudes des Batiments et Travaux Public, France, etc. Now we are also approaching the Getty Conservation Institute.

CONCLUSION

The Borobudur Conservation Laboratory is a growing laboratory for conservation studies, not only for the Borobudur monument but also for other cultural heritages. It is still in a project from, but it is being transformed into a permanent organization. It is has with sufficient technicians and equipment.

However, we realize that in conducting conservation studies of cultural heritages sometimes we find problems. These problems are on the wide range of types of cultural properties, and our still limited field

experience. If in the conservation studies of Borobudur, we have an international joint research, for other cultural heritages we can conduct mostly by ourselves.

So we realize the need for a regular joint program with other international agencies in the conservation studies of our cultural properties, to improve our capabilities and experiences, especially in the region of Southeast Asia. This effort will consequently improve our conservation standards.

LIST OF CULTURAL HERITAGES, MONUMENTS AND SITES IN INDONESIA

PROVINCES	PREHISTORIC SITES	CLASSIC SITES HINDU BUDDHIST	ISLAMIC SITES MOSQUE, GRAVES	FORTRESS/ ANCIENT CITY	ANCIENT CHURCHES, PURA, VIHARA	TRADITIONAL BUILDINGS	TOTAL
1 Aceh	7	1	157	18	-	14	197
2 North Sumatera	23	21	15	2	-	41	102
3 West Sumatera	30	32	25	13	1	26	127
4 Riau	2	8	46	8	7	30	101
5 Jambi	4	13	16	3	-	39	75
6 Bengkulu	1	6	6	5	-	11	29
7 South Sumatera	82	2	35	15	-	18	152
8 Lampung	31	5	34	6	-	11	87
9 Jakarta	-	1	29	2	10	110	152
10 West Jawa	50	35	116	6	3	66	276
11 Central Jawa	5	81	35	5	2	4	132
12 Yogyakarta	-	14	42	5	-	46	107
13 East Jawa	6	90	29	2	-	14	141
14 West Kalimantan	-	1	30	-	2	10	43
15 Central Kalimantan	-	-	9	-	1	9	19
16 South Kalimentan	-	-	-	1	1	6	8
17 East Kelimantan	4	4	-	1	-	33	42
18 North Sulawesi	12	-	15	3	-	3	33
19 Central Sulawesi	59	-	1	-	-	5	65
20 South East Sulawesi	1	-	24	4	-	1	30
21 South Sulawesi	22	2	352	24	-	127	527
22 Bali	7	9	-	-	-	5	21
23 West Nusa Tenggara	6	5	27	-	-	8	46
24 East Nusa Tenggara	32	-	18	6	6	28	90
25 Maluku	-	-	7	33	2	2	44
26 Irian Jaya	5	-	6	4	3	11	29
27 Timor Timur	?	?	?	?	?	?	0
TOTAL	389	330	1,074	166	38	678	2,675

<APPENDIX 5>

LIST OF LABORATORY EQUIPMENTS

NO	KIND OF EQUIPMENT	SPECIFICATION (MERK)	ANALYSIS
1	Scanning Electronic Microscope and Energy Dispersive Spectrometer	Jeol T 300 Link System	Micrographic observation, physical and elemental analysis
2	Universal Testing Machine	Shimadzu UMH 50	Compressive strength Bending test of building material Searing test and chemical used Tensile test for repairing work
3	Viscotester	VT - 04	Viscosity of the chemical used for conservation measure (consolidant, water repellent, etc)
4	Polarizing Microscope	Olympus POM	Identification of mineral for determining kind of mineral
5	Stereoscopic Microscope	Nikon	Physical analysis (structure, texture, texture and temper)
6	Muffle Furnate	Sybron FB 147	Gravimentical analysis Determination the temperature of the ancient brick through Diffential Thermal Analysis Method
7	Mohs Scale Hardness Pencil	Brinell	Hardness of Cultural properties
8	Humidity Oven	Gallenkam	Accelerated Aging test for chemical used for conservation measures
9	Melting Point Tester	Electro Thermal	Determining the melting point
10	Permeamoter	Core Labt	Determining the permeability of the porous building material
11	Porosimeter	Core Labt	Determining the porosity of the porous building material including porosimetry
12	Colony Counter	Fisher OW	Determining the population of microorganism (fungi, algae, bacteri)
13	Microscope	Mono & Binoculair	Determining the species of micro-organism such as algae, bacteria, actinomycetes, and fungi
14	Incubator	Memmert	Cultuvating the microorganism

NO	KIND OF EQUIPMENT	SPECIFICATION (MERK)	ANALYSIS
15	Termite Detector	Jeic D - 3	Research on the source of termite on wooden object and on the wall
16	Pectrophotometer & Recorder	Yunior II 6120	Elemental analysis of Na, Du, Ag, Mg, Mn, Sn, Pb, Zn, Al, K, Na, Fe, Au, Ni, Cl, F, NO3, NH4, H25, Phe-Cd, Cr, and Se
17	Flame Photometer	Coleman	Elemental analysis of Na, K, Ca, and Sodium
18	Turbidimeter	HF DRT 15	Turbidity test
19	Conductivity Meter	Chemtrix	Conductivity test
20	Water Action Tester	Hach co	Physical and elemental analysis of water
21	Comparator Block & PH Meter	-	Determination of Salinity of the Solution
22	Ultramicrotome	Ultracut	Thin action of biological organic material speciment
23	High Speed Finishing Machine	Marui	Preparing the thin section up to the thickness of 0.003 mm

<APPENDIX 5>

LIST OF CLIMATOLOGICAL & GEOPHISIC EQUIPMENTS

NO	KIND OF EQUIPMENT	SPECIFICATION	ANALYSIS
1	Evapo Transpiration	-	Water evaporation intensity
2	Actinometer	-	Intensity of sun radiation
3	Canbel Stocks	Casella	Period of sun radiation
4	Barometer	Otaliciki	Air pressure
5	Rain Gage	Hellman	Intensity of the rainfall
6	Polymeter	-	Temperature max/min humidity an average air temperature
7	Anemometer	F. 420. C	Wind velocity
8	Thermohygrometer	-	Ambient temperature and humidit
9	Protimeter	-	Water content of materials
10	Neopyrometer	-	Temperature of materials
11	Digital Psychrometer	Alkins	Ambient humidity
12	Seismometer	SMAI	Seismic intensity

LIST OF PHOTOGRAMETRIC AND GEODETIC EQUIPMENT

NO	KIND OF EQUIPMENT	SPECIFICATION	ANALYSIS
1	Electronic Distance Meter (EDM)	Wild Tachymat	Measuring the slope distance Measuring the vertical angle
2	Theodolith	Wild T 2	Measuring the angle
3	Auto Level	Nikkon AE	For levelling
4	Standard Telescope Alidade	Breithaupt Kassel	Direct mapping
5	Theodolite Compas	Wild TO	Indirect mapping
6	B T M	Kern Arrau	Indirect mapping
7	White Druck	O.C.E.	For printing the drawing
8	Stereo Plotter Terragraph	Zeiss	Restitution of stereoscopic image got from the stereo camera
9	Stereo Camera	MK 40, SMK 12 Zeiss	Metric stereo photograph
10	Tracing Table	EZ 3, Zeiss	For drawing (restitution)

APPENDIX 6

Country Reports of Malaysia

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

COUNTRY REPORT OF MALAYSIA

CONSERVATION IN THE NATIONAL ARCHIVES OF MALAYSIA

by Norizah Bt Haji Abdul Talib

INTRODUCTION

It is the realization of the importance of recording happenings, ideas, actions, the late and recent past; coupled with the need to preserve them centrally; with a view to using them presently, that most archives are conceived and set up. This is also true in the case of the National Archives of Malaysia which was set up in December 1957.

The National Archives of Malaysia is now 32 years of age. It has expanded its scope and activities, but the following three remain as main functions:

1. Acquisition, be it records or archives, encompassing all processing functions;
2. Conservation, the life-giving and life-saving function; and
3. Research and reference, the window to the archives.

There will essentially be nothing to preserve and restore, if the acquisition function had not been started and mastered, the word *mastered* emphasizing the elements of planned acquisition and established methods of processing, including criteria for selection and appraisal, being extremely important. Research and reference too will not be possible if the materials acquired are at the deep end of deterioration. Hand in hand, the three main functions move, to assist in meeting the main objectives of the Archives.

SCOPE FOR CONSERVATION

The scope for conservation is invariably and necessarily dependent on the types of materials, especially the base and support materials of the holdings held; the volume; the level of technical knowledge of the staff; staff strength; budget; planning and vision. The bulk of the holdings of the National Archives of Malaysia is paper-based, whether public or private. There is a modest, but growing collection of films, photographs and sound recordings. These are held not only at the headquarters of the National Archives, but also at its seven branch offices - five in peninsular Malaysia and two in Sabah and Sarawak.

The point of entry for public records in the form of administrative files into the National Archives of Malaysia is through the Record Service Centre, situated in Petaling Jaya, a satellite town some 15 kilometres from the headquarters in Kuala Lumpur. Records at the Centre measured 6251.23 linear metres by the end of 1988. The repository at the headquarters has nine floors, each with a capacity of holding approximately 2196.92 linear metres of records. This works out to a full capacity of 19,772.28 linear metres for the nine floors.

Conservation activities are centered in the Conservation and Reprography Division with a staff strength of 51. All professional staff are trained. Two of the restorers underwent training at the Camberwell School of Art, London. One trained for three months in paper conservation while the other did a two - year diploma course in conservation. The Assistant Archivist trained for two years for the Diploma Course in Fine Bookbinding and Restoration at the Guildford County College of Technology, Surrey, United Kingdom.

The economy of a country is always reflected in the budget of its administrative departments. The size of the budget governs the operations of the department and so on. Over the years, the conservation budget, excluding emoluments, stood at the following figures:

1986 .. .. $151,962.00
1987 .. .. $114,436.00
1988 .. .. $137,452.00
1989 .. .. $155,150.00
1990 .. .. Being tabled

CONSERVATION ACTIVITIES IN BRIEF

Emphasis is the same as in all other archive institutions. Records and archives are fumigated, cleaned, tested for acid content prior to deacidification, repaired, whether by traditional method of repair or by lamination, bounding, and titles tooled. The points which I hope to bring out here are those which record changes. To mention a few, they cover: Fumigation, Deacidification, Repair, Binding, and Adhesives.

Fumigation

Fumigation is carried out both at the Record Service Centre and at the Conservation and Reprography Division. The former conducts bulk fumigation while the latter does fumigations on a small scale. In the early years, the Conservation Division conducted fumigation using Paradichlorobenze in a cabinet measuring 40" x 20" x 54".

The cabinet has racks which are adjustable. The formula is one kilogramme of paradichlorobenze to one cubic meter of space. Each fumigation takes 14 days and six standard boxes of archives are fumigated each time. This method is to rid the archives of insects. For fungus infestation, a solution of 100 grammes of thymol in one litre of methylated spirit is used. The solution is either sprayed or brushed on.

Fumigation is currently carried out in a fiberglass container measuring 40" x 30" x 24". Either Magtoxin or Phostoxin pellets are used. This method takes only 3 days.

Deacidification

In principle, W.J. Barrow Single Stage Immersion Process of deacidification is used. It is the formula that has been adjusted over the years. To date, three have been recorded.

Formula I

Calcium Carbonate	54 gms
Light Magnesium Carbonate	540 gms
Water	6 gallons.
Carbon Dioxide (Co_2)	bubbled in for 2 hours.

Documents are soaked for 18-20 hours and then dried at the racks.

Formula II

Light Magnesium	8.5 gms
Water	1 lit
Carbon Dioxide Gas	bubbled in for 2 hours.

Documents are soaked for 30-45 minutes and then dried at the racks.

Formula III

Light Magnesium	4 gms
Distilled Water	1 lit
Carbon Dioxide Gas	bubbled for 30 minutes. Bubble in for 2 hours if it is 100 litres of distilled water.

Documents are soaked for 20-30 minutes and then dried at the racks.

Formula III is currently in use and found to be very satisfactory.

Repair

Archives are repaired either by the traditional method or by lamination. Two types of traditional repairs are practiced, namely full repair and tissue repair. For full repair, a document is given a major face lift: missing corners and holes are filled, if possible, with an identical type of paper. Minor tears are mended and the document is mounted on a piece of backing material such as handmade paper or strong Japanese tissue. If it is too brittle and liable to be broken into pieces, its surface is further lined with a piece of support material such as silk chiffon or lens tissue. Most handwritten manuscripts and documents, maps and plans are repaired thus. It is especially suitable for materials written on one side only.

Tissue repair is for typewritten documents or even printed matters and for documents written on both pages. The document is sandwiched between two pieces of lens tissue and Carboxyl Methyl Cellulose (CMC) paste is applied on both sides of the document and dried under light pressure.

Change has been minimal in traditional repair. If any, only the choice of repair material has increased. Initially British handmade paper was used. This was followed by the use of Indian handmade paper. Kozo Shi 15, from Japan is currently being used. The fibers are long and soft, and best used with starch as adhesive.

Repair through lamination continues. Both solvent and heat lamination are used.

Binding

In the early years, most of the binding works done were simple. Currently, the emphasis is on the sharing of knowledge and skill on fine bookbinding and restoration techniques. Leather binding, on very select archives, was started in 1986. Amongst the latest works are the repair and binding of two volumes of the Quran - one handwritten and the other printed.

Adhesives

A number of adhesives have been tried in our conservation works. Initially, corn flour was used, followed by tapioca flour, ordinary flour, Sodium Carboxy Methyl Cellulose (CMC) and wheat or rice starch. Both CMC paste and wheat starch are currently used at the National Archives. CMC paste can also be used for sizing. It is effective when used on thin paper, with a thickness of 0.002 inch. With thicker papers, there are problems of air bubbles and the inability to hold or stick well.

CONSERVATION LABORATORY

This is a modest laboratory, set up especially to run tests on chemicals and materials used in conservation works. It also runs tests on new methods of repair and restoration, compiling literature in the course of the work. With time and emphasis, it is hoped that quality control on all conservation output can be centralised in the laboratory.

Work actually got off the ground in 1983. Emphasis was on paper. Amongst the test runs were fibre tests, tensile strength, folding endurance and bursting endurance. The results on samples of papers used are as follows:

Paper Type	Tensile Strength Extension (MM)	Load (N)	Folding Endurance (fold)	Bursting Strength (lb/in)
Handmade Paper (England)	7.13	47.2	2115	20.5
Handmade Paper (Indian)	11.34	55.3	2869	24.5
Blotting Paper	6.38	32.3	17	11.5
Tissue L_2	6.07	3.0	-	1.1
Tissue Kuranai	6.68	10.0	-	0.88

In 1988, the laboratory conducted simple tests to establish methods for the following:

1. Removal of rust stains left by paper clips on documents using oxalic acid solution and vitamin C,
2. Removal of celophane tape,
3. New formula for the preparation of the deacidifiction solution - this reduced the quantity of chemicals used and also the soaking time for the neutralization of acid,
4. Bleaching of documents.

Test to ascertain the level of Thiosulphate in microfilms, using the Methylene Blue Test Method, is currently a routine.

PROBLEMS OF CONSERVATION

Personally, I have always felt that one of the main problems of conservation is the lack of awareness as well as the concern amongst all, but to a lesser degree, amongst those with some contact with conservation, regarding the importance of *prevention* as apposed to *cure*. Other problems relate to physical facilities, knowledge, finance, and manpower.

In Malaysia, the above problems are especially felt with regards to film holdings. There are three agencies, apart from film companies, directly involved with moving images, as defined in the Recommendation for the Safeguarding and Preservation of Moving Images adopted by UNESCO on 27 October 1980. They are: the National Film Department (NFD), the Radio and Television Malaysia (RTM), and the National Archives of Malaysia (NAM). NFD was the pioneer in this field. Established in 1946, NFD acts for the production of and as a depository for films. The first film was produced in 1948. NFD presently holds a collection of about 20,000 cans of release print negatives, 3,000 cans of positives, 2,000 cans of archival negatives and 5,000 cans of cutting copies, and NG prints. The films are of 35 mm and 16 mm acetate - base.

RTM started its film archives in 1963. The film collection is made up of 16 mm films which has accumulated to 20,000 cans, and 15,000 video tapes.

Since 1982, both NFD and RTM started sending their films to NAM for permanent keeping. The National Archives, being a national depository has about 6,000 films in its holdings. Both 16 mm and 35 mm films in black and white as well as in colour are held in the National Archives. The types of magnetic recording materials used also varies. They include the optical picture films with magnetically recorded sound-track (COMMAG), magnetic sound recording film (SEPMAG), and magnetic sound tape and magnetic picture tape (namely video tapes of 1/2" and 3/4", U-Matic and VHF).

At the National Archives of Malaysia, access to films are on receipt. The number given denotes the order of the receipt in the collection of the year. For example, accession number 25/88 indicates the 25th collection received in 1988. The creating agency will be formally informed of this number and will quote it when requisitioning a particular film for reference.

Films are then sent to the repository. Those in steel cans are transferred to plastic cans. The next step is cleaning. The process is a partially manual process. The motorised film rewinder helps to run and rewind the film. The film is wound around a core and passed between a cloth dampened with trichloroethylene, which removes dirt and dust. This process is manned by an assistant photographer.

The films are stored on the second floor of the repository block of the NAM building. The repository is approximately 60x32 feet and is well equipped with all the basic facilities, such as a fire rating door, fire fighting equipment, a separate air-conditioning unit, dehumidifiers and a thermograph, to control and maintain the temperature which is kept between 60-70 F and 50%-60% RH. Films are stored horizontally on static metal racks. Video tapes are kept in pigeon holes. Each shelf is able to hold between 80-100 cans of films, depending on their sizes. The shelving units have grey stove enameled finish to prevent corrosion.

Although NFD and RTM are also responsible for the safekeeping of their films, in practice, their major concern is production. Because of this, NFD had to destroy more than 200 reels of films produced before 1950. The films were very badly damaged and the stage of deterioration extremely advanced.

PHYSICAL FACILITIES

The obvious problem here lies in the fact that moving images differ from traditional paper archives in that they are recorded on various support materials with or without accompanying sounds. This calls for a special storage area, complete with special shelving requirements unique to films, including environmental control conducive for film preservation. Ideally, the storage area for moving images should be sited away

from the main repository. In the case of all the three agencies in Malaysia, the film repository is a floor of the main repository or building.

Room temperature and relative humidity for black and white as well as coloured films should be lower. Presently, all the films, irrespective of whether they are coloured or otherwise are kept in the same room or repository. Another basic requirement is that a film archives unit should have space for a restoration area, a laboratory, a room for checking, viewing and inspection, and so forth. Only the National Film Department has this.

Another problem faced by RTM and NAM is the lack of equipment. A list of equipment used at NAM is enclosed. The equipment are only basic working tools. Some of them can only serve a single purpose. For example, the Viewing Machine Vedette 2 can only run films with a sound track (COMMAG). But there is four machines which can run both COMMAG and SEPMAG materials. A restoration machine is also a necessity in running the film archives to ensure that a film is properly restored before it is kept permanently.

KNOWLEDGE

Malaysia can safely claim, especially at the National Archives, she helds a lead in knowledge, both in theory and in practice, on the conservation of paper-based archives. This is not the case for moving images. In terms of their preservation, there is an urgent need for knowledge on standards applicable to the storage, safeguarding, preservation, restoration and duplication of moving images. There is also an urgent need for knowledge on how to improve the technical quality of moving images to be safeguarded and preserved, so as to ensure that they are in a condition conducive to long-term and effective storage and use. Efforts should also be made to educate all directly concerned with moving images on the need for due regard to all the rights in the images concerned when treatment involves the reproduction of material.

Training programmes in the safeguarding and restoration of moving images, covering the most recent methods and techniques are advocated. Experience, however, has often times proven that such training programmes must be supported with an adequately equipped unit, where practical sessions can provide an *all-hand-in* experience for trainees.

Knowledge on the preservation of the media should also be balanced off with knowledge on equipment closely associated with the media. With this added advantage, one can upgrade equipment at perhaps a fraction of the cost of purchasing brand new ones.

Knowledge on intellectual control, though not a technical problem, can lead to an insurmountable retrieval headache and, in the long run, preservation problems.

FINANCE

Film archives are expensive to run. It is impossible to preserve films without a budget. Financial constraints have affected the smooth running of the film archives. All the three agencies, for example, are facing the problems of purchasing equipment, having a proper repository area for the film materials, training their staff, and getting manpower. With limited budget, plastic cans, cores, chemicals, etc., which are all expensive items, have to be purchased.

The temperature control and relative humidity in some agencies have been neglected due to lack of funds. As a result, the condition in the storage area is very poor and without all the basic requirements needed for film storage. Lack of technical know-how, together with lack of funds, lead to preservation being carried out through a process of trial and error.

MANPOWER

Shortage of staff is a common problem in the film archives. One of the agencies has only two full-time staff to run the unit. In this case, only the very basic processes are carried out in order to clear the workload. In the long run, the element of preservation suffers.

AVAILABILITY OF RESEARCH INFRASTRUCTURE

There is no central research agency set up especially to meet the particular needs of museums and archives as such in Malaysia. The Forest Research Institute of Malaysia readily provides services for the evaluation of adhesive quality, evaluation of paper, and identification and classification of paper - all at charges previously fixed. The Conservation Laboratory of the National Archives of Malaysia serves her present simpler needs, but there are plans to begin studies in line with the current emphasis of Record Management Offices. Examples of areas of interest are:

1. Types and qualities of writing materials, including inks with a view to ascertaining their strength and permanency for use in invaluable documentation;

2. Keeping the qualities and the permanency of many duplication outputs; and others.

FUTURE

The National Archives of Malaysia has identified the following areas for action:

HOLDINGS MAINTENANCE

The holdings maintenance envisaged should begin with a statistical survey of the holdings and nothing of their physical conditions. Then a three tofive year plan could be drawn out. In general terms, the plan sets out the types of holdings maintenance projects that will be undertaken during these years and establishes procedural guidelines for custodial units. The holdings maintenance activities can begin with the recleaning of records. Here, there seems to be a very real need to check on microforms for fungus infestation. Reboxing of records, preservation copying of unstable media, flattening of folded records, removal of damaging fasteners and the like are all activities for holdings maintenance. Some archives do carry out these activities, though not termed as holdings maintenance, and executed in fits and starts.

PROJECT INTERCEPT

Project Intercept can be applied to most plans. It can be viewed as a pilot project, a test case on the plan. This was executed at the National Archives and Records Administration Office of the United States of America in 1985. They implemented a 90-day pilot project in the Central Research Room. During the pilot project, archives personnel examined all records before they were given to researchers in the Central Research Room, and information on the condition of each body of records examined was recorded on a special form. Project Intercept personnel took immediate action to preserve endangered records by placing deteriorated documents in protective polyester sleeves or withholding documents for conservation treatment. Project Intercept proved to be an effective way of identifying the condition of heavily used records and performing basic preservation procedures. It was not an inconvenience to researchers. It is presently a continuing element of the overall preservation effort. We can learn from this.

<APPENDIX 6>

CONSOLIDATION AND DOCUMENTATION OF CONSERVATION TREATMENTS

Writing and reading habits were never very strong in this part of the world. In conservation, we have moved from earlier methods to more current tested methods of preservation and restoration. These methods, whether recent or past, need to be consolidated and documented. They trace the developments in the field, record the weaknesses of previous methods, and identify the solutions as provided in more recently developed methods, the tests and the results. These are takeoff points for further development.

In conservation, not only are methods important, but also equipment and conservation materials. In this context, information on equipment and materials, desirably with critical comments on the quality of the products and their intended purpose, should also be compiled. Less developed archives are constantly looking up to their more established counterparts for specifications. With cooperation, documentation on quality control of conservation materials may eventually be worked out.

The absence of documentation on standards, in terms of format, processes or tests, is an area which should be attended to. It is true that reference can be made to relevant standards adopted and issued by the International Organization for Standardization (ISO), the American National Standards Institute or the British Standards Institute. Reference is one matter. But what is crucial is employing the standards in the *work culture*.

EXPLORATION OF ALTERNATIVE MEDIA AND METHODS

We ventured into microfilming as a means of archival preservation in the 60s. Microfilming on roll films worked out pretty well for the bulk of th public archives in administrative file form. However, for groups of archives or collections of archives which are small in number, and uncertain in the pattern of accrual, to name a few, an alternative media or a method of reproduction seems necessary for consideration.

Alternative means of preserving historical records more efficiently can of course be attempted through supporting studies in this area. Cooperation with institutions of higher learning where there are staff members who had specialized in particular areas of conservation studies could also be a starting point.

RESOURCE SHARING

The concept of resource sharing can also be executed thought sharing responsibility. With the limited funds of institutions, areas of responsibility can be defined and each institution thus functions within the confines identified. This was found to be useful with regards to microfilming programmes. Institutions with similar holdings and undertaking microfilming of their holdings can allocate titles for microfilming to participating institutions. Positive copies can thus be acquired at cost unless prevented by particular fees regulations. This is especially useful at national level.

The above concept can be extended to sharing of expertise. The Southeast Asia Regional Branch of the International Council on Archives (SARBICA) has in its plan, programmes such as SARBICA archives dialogue and staff exchange between member countries. This is a regional programme.

On the international scene, sharing of technical know-how, mission and concern for conservation is the function of the Committee on Conservation and Restoration of the International Council on Archives. Its mission is to advise institutional archives on the preventive and curative aspects of documental conservation. The first aspect includes the installation of archives and their climatic control in order to reduce deterioration to the minimum. The second aspect refers to the restoration or direct treatment of those documents which, because of inadequate preservation, the inherent deterioration of all materials, catastrophes, or other circumstances, jeopardizes the permanence and prevent compliance with their cultural mission. The committee considers the following as priority activities:

1. The drafting of standards on installation, climatic control, the security of archives, the restoration process, equipment for restoration workshops and other aspects related to documental conservation.

2. Up-to-date report on centres and institutions, where professional training in the said conservation is taught.

3. Up-to-date report on the centres and institutions responsible for documental conservation.

4. Promote coordination among these centres and suggest programmes of investigation, based on the problems considered of greatest priority and urgency in the field of documental conservation.

5. Periodic publication of a bulletin on general information.

6. The drafting of a technical vocabulary on conservation, with definition of concepts, the equivalent of which should be written in the different official languages in the International Council on Archives.

7. Maintain relations and the interchange of information with institutions similar to libraries and museums.

TRAINING

Training is crucial to development. Results however are dependent on the quality of training provided, the input to learning by the trainees, and the avenue to practice what has been learnt. An interesting programme at inter-governmental level is that known as the Malaysian Technical Cooperation Programme (MTCP), introduced in 1980, and extended to various developing countries in Asia and the Pacific. Since 1984, at least two candidates have been taken each year for training in conservation at the National Archives of Malaysia.

In this light, it would be very useful to work out a model curriculum for the training of archives conservation. Again, going along the idea of sharing, thought can be given to studying the feasibility of setting up a Conservation Centre - a national project; a Restoration Laboratory - a regional project or whichever.

CONCLUSION

Research and development are incomplete without the involvement of vision. Similarly, this is where recording of history will not outlast man, without the conscious efforts of preservation.

<APPENDIX 6>

Annex I

List of Equipment at the National Archives of Malaysia

1. Lipsnersmith - Film checking unit.
2. Film Cleaning Unit.
3. Film Rewinder.
4. Film winding Table.
5. Film Splicity Unit.
6. Projectors.
7. Viewing Machine Vedette 2.

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

COUNTRY REPORT OF MALAYSIA

PROBLEMS OF CONSERVATION IN MALAYSIA

INTRODUCTION

In recent years, Malaysia observed a series of developments in the establishment of museums. A number of new museums have been set up with a few more in the blue print stage.

At present, there are 17 museums in the whole country. Three of the museums, vis; The National Museum in Kuala Lumpur, Perak Museum in the State of Perak and The Archaeological Museum of Bujang Valley in Kedah come under the direct administration of the Museums Department which is under the jurisdiction of the Ministry of Culture and Tourism. The other remaining 14 museums are placed under individual state administrations. Most of the present museums in Malaysia, (with the exception of the National Museum), have been sites in old, or rather historic buildings. Eventually, this led to many problems, both for the conservation and preservation of the buildings, and also for the museum's collections. High moisture content is the most common problem as rain water drips and penetrates through old roofs, faulty windows and other openings. The speed with which specimens gained or lost moisture content is responsible for both mechanical damage and biodeterioration of the museums's objects made from wood, basketery, leather and paper, while metal objects like bronze, develop the "bronze disease".

CLIMATIC CONDITIONS

Geographically, Malaysia is located in the Southeast Asian region. Like its other Southeast Asian counterparts, it has a tropical climate which is characterized by constant heat, high humidity and abundant rainfall for a larger part of the year. The annual temperature ranges between 23^{o}C to 32^{o}C, while the relative humidity varies between 65-95%. There is no distinct change of weather but minor climatic change can be observed, namely the hot and dry seasons from January until August and the rainy season with heavy rainfalls in the months of October, November and December. It receives an annual mean rainfall of up to 4,500 mm.

This natural phenomena mentioned above, directly influences the rate of deterioration of our cultural heritage.

The preservation of the museum's collection has particularly been a major problem for a large number of our collections which consist of many different kinds of materials. The principal problem often encountered is the deterioration and damage of organic materials owing to the fluctuations of temperature and humidity. Subsequently, corrosions of ferrous materials occur. Once they enter the museums, they continue to deteriorate to the point of decay.

Conservation of cultural materials is a major task facing all conservators and curators, and their care and treatment has been one of the most serious and continuous problems. The museum is not merely a place for exhibition or storage but its functions are more diversified as far as conservation is concerned. Various

measures have to be taken for preserving the museum's objects. In this respect, I would prefer to choose the National Museum in Kuala Lumpur as a point of interest and reference.

The National Museum of Malaysia has come a long way since colonial times and had experienced disastrous and difficult times during the Japanese occupation when a huge number of collections had been destroyed as a result of the bombings. Since independence in 1957, efforts have been made to recollect the remaining cultural materials scattered all over the country. These efforts are finally paid off as the people celebrated the birth of the National Museum in Kuala Lumpur, on 31st August 1963. Since then, the museum has accumulated a vast collection of antiquities and has become the overall guardian of the nation's cultural and historical treasures. Its collections, are as varied as prehistoric stone tools and ethnographical artifacts of wood, textile, paper, bones, ivory, leather and metals. It also houses, a wide collection of natural history. According to recent statistics, there are about 31,834 ethnographical artifacts, 18,606 natural history specimens, and some 131,000 archaeological finds and artifacts. Due to the varied nature of its collections, the conservation laboratory in the National Museum, is performing a wider range of activities within the museum including restoration works on its collections. The preservation requirements of many of these materials are rather complex and the conservation section has begun to examine the conservation needs of these large collections.

In general, the conservation needs of the museum's collections have been divided into six areas and defined as follows:

1. The provision of a proper conservation laboratory and its facilities.

2. The Introduction of preventive conservation techniques and effective environmental controls such as the application of various instruments like psychrometer, hygrometer, thermohygrometer, thermometer, moisture content meter, etc.

3. The provision of adequate storage areas and controlled environment in terms of relative humidity, micro climate, lights and atmospheric pollutants.

4. The chemical stabilization of materials which may be regarded as dangerous to the useful life and long term and effective preservation of the objects.

5. The recruitment and training of the new and present staff in the conservation section. These staff are to be well trained in conservation as optimum quality of the work would ensure that museum objects are handled with professionalism and care they deserve.

6. A programme to educate other museum's staff in the handling of materials in order to safeguard their condition without damage due to negligence.

FACILITIES

The conservation section has very important roles to play within the National Museum. Ultimately, the problems of conservation faced by the National Museum are as many and as varied as its collections. In Malaysia, there are a few agencies for the protection of the cultural property. But as far as practical facilities for preservation and conservation is concerned, at present, there is scanty provision.

The conservation section of the National Museum in Kuala Lumpur, has a small laboratory which is concerned only with the repair and restoration works of the museum's artifacts. At present we have a minimum range of equipment and chemicals. This is due to an unfortunate mishap which occurred in 1984, when our laboratory which was then attached to a workshop caught fire. Most of the equipment and chemicals were destroyed.

Apart from these basic facilities, the lack of a fully trained staff and the scarcity of manpower helped to worsen the situation. Many had either retired or been transferred to other sections. All conservation works are carried out by just three officers, headed by an Assistant Conservator. This resulted in the heavy workload and many of the museum objects have to wait a long time before they can be attended to.

Another main problem often encountered is in the supply of chemicals and conservation materials. Most of these materials and chemicals are not available in the local market. We have to place an order direct to the distributor or supplier overseas. Sometimes it takes months for the shipment to arrive. Furthermore, the order have to be in large quantities. As a result, time, money and efforts are wasted.

Research facilities are not available as we have to start with the basic facilities within the conservation laboratory. Nevertheless, we do conduct conservation courses, training and hold conservation workshops attended by the museum staff as well as those staff from the State Museums. Scholars in conservation or experts from established institutions are invited as instructors for practical training from time to time.

SOME OBSERVATIONS IN THE EXHIBITION GALLERIES

Air conditioning has, no doubt, vitally provided for the reduction of humidity and temperature to suitable ranges, offering a stable environment in the museum buildings. Though, air conditioning serves its purpose in the museums, it is equally important to regulate and control humidity and temperature. In the case of the National Museum in Kuala Lumpur, the whole building is fully air conditioned. But unfortunately, it has no functioning temperature control. The air conditioning unit is switched off after public visiting hours at 6.00 pm. The air conditioning in the offices and storage areas is switched off even earlier, when most of the staff stop work at 4.15 pm. daily. To a certain extent, the air conditioning unit is rendered almost useless during public and school holidays and on special temporary exhibitions, which attract about 15 to 30 thousand visitors daily. According to the Visitors' Statistics Book, the National Museum attracted 12,282,996 visitors during the past five years!

Heavy visitor traffic also contribute to the factors of deterioration as they bring in dust and other pollutants. Exaust fans are not to be found in the exhibition galleries. Many open displayed artifacts are practically covered with dust. The situation is worsened by the museum building's location on a major road. The vacuum cleaning machines have to be used everyday as one measure to lessen the problem. The presence of air contaminants, mainly sulphur dioxide which is later converted into sulphuric acid, has an adverse effect on most materials. It is also noticed that artifacts made from silver tarnish easily due to the presence of hydrogen sulfide.

STORAGE

The unexpected rapid accumulation of the museum's collections in the past 26 years has brought up acute problems of storage and conservation. Displayed artifacts constitute only 25% of the entire collection. Therefore, the immediate major problem is the storage area. As a result some collections are placed outside the storage room. An overcrowded storage system poses difficulties during the retrieval of artifacts, which in turn result in improper handling and damage. What is needed is to organize a proper and systematic storage to facilitate easy access, retrieval and handling.

DISPLAY

Display techniques are ways to express the exhibits in such a way that is appreciated by visitors. While lighting plays an important part in making exhibits visible, one has to bear in mind that lighting is also one of the factors of deterioration, if they are not utilized according to conservation requirements. In the exhibition galleries of the National Museum, many types of light fittings are used. In some areas, rich coloured textiles

are displayed and, as required, lighting for these have been restricted. However, the intensity of other lights, which are dispersed or difussed by ceiling and other lights in the gallery, is difficult to restrict and control. Because of this, a certain amount of colour fading and degradation is noticed, especially on textiles. The UV monitor indicates variable readings ranging from 150-350 wv/lumen while light intensity varies from 150-550 lux. As we know, lights emit ultra violet rays, thus, reactivating photo chemical degradation as a key problem.

FUTURE PERSPECTIVE/CONCLUSION

As was mentioned earlier, the conservation activities of the National Museum have been organized to a certain extent. However, it is our hope, that the future development programmes for the National Museum will highlight the important role of conservation in museology, in a better perspective to obtain maximum protection for its collections. A step in the right direction had been taken when the proposals for the National Museum's development were submitted recently. An extension to the existing building is in the planning stage. It will definitely feature a proper conservation laboratory equipped with facilities, more space, especially for storage, better ventilation and environmental control. Last but not least, this new development will include a conservation orientated display and lighting techniques.

RECOMMENDATIONS

1. It is felt that at present there is a lack of staff for conservation in each of the countries, and therefore, there should be more staff for the purpose of conservation in the laboratories.

2. Considering that at present there is a great dearth of trained conservators in each country in Southeast Asia, more efforts should be made by offering fellowships to get conservators in the region trained them abroad.

3. Being conscious of the fact that for conservation, scientific investigations are absolutely necessary, it is recommended that the existing laboratories in the countries of Southeast Asia be provided with more equipment, chemicals, books and journals.

4. Considering that conservation of the cultural property depends much on how it is displayed, stored and conserved, it is felt that each museum and conservation laboratory should be provided with adequate space so that the various functions of these institutions can be properly fulfilled.

5. Recognizing the fact that workshops on various specific subjects of conservation, particularly on preventive conservation, play an important role in furthering knowledge, it is strongly recommended that such workshops be arranged in each Member Country so that a larger number of participants from the host country can take part and benefit.

6. Because there is always a need to consult literature on preventive conservation for guidance, it is recommended that a handbook on the care of museum objects be published, with special reference to problems in Southeast Asian Countries.

7. Taking into consideration that problems of conservation are quite often specific in each country, there cannot be a general standard formula for setting up a laboratory. Missions of specialists of high caliber, if possible from the region, should be arranged to give advice in the setting up and the development of conservation laboratories in each country.

8. In order to take the advantage of each other's expertise, it is felt that a Directory of Conservators in the region be prepared.

9. Realizing that proper storage play is an important role in the upkeep and maintenance of museum objects, attention should be paid in the improvement of the storage condition in each museum.

10. Keeping in view that exchange of ideas and knowledge is extremely important, it is proposed that a network for the exchange of information on conservation in Southeast Asia be established, with some advanced laboratory as the modal agency.

11. Taking into account the fact that at present enough attention is not being paid for the study of materials of monuments, it is proposed that the existing museum laboratories be also equipped to undertake that responsibility.

12. Realizing that one single laboratory cannot specialize in all areas of work, it is recommended that conservation laboratories in different countries be developed to specialize in one or two specific subjects.

13. Considering that there are some special problems of conservation of monument materials and of art objects in Southeast Asia, and taking into account that at present, it is not possible for each country to have an advanced laboratory, it is recommended that a Regional Conservation Research Laboratory be established in the region of Southeast Asia on the pattern of NRLC, Lucknow. And it is further recommended that such a laboratory be attached to a regional institution like SPAFA, so that it can cater to the needs of all the countries in the region.

14. Realizing that the exchange of ideas amongst the Asian countries will be beneficial to everyone, it is recommended that an Asian Regional Seminar on the Conservation of the Cultural Property be organized, if possible, annually, otherwise once in two years.

15. Plans should be utilized for a better exhibition.

<APPENDIX 6>

REFERENCES

1. Importance of Cultural Heritage and Its Conservation and Preservation. (ACCU 6 March 1989)

2. Conservation of Museum Objects in the Tropical Conditions. (Museum Association of Malaysia. 1981)

APPENDIX 7

Country Report of the Philippines

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

COUNTRY REPORT OF THE PHILIPPINES

by Susan Sr. Naranjo

INTRODUCTION

The Chemistry and Conservation Laboratory of the Anthropology Division of the National Museum of the Philippines, for the past twelve years of its existence, has been responsible for the conservation and scientific study of the country's cultural properties under the jurisdiction of the National Museum; and for supporting museum studies relating to: ancient technology and manufacture, trade patterns, provenancing, dating, authentication, the chemistry and composition of materials, deterioration, the museum environment, paleoecological research and human habitations.

EXTENT AND TYPE OF CULTURAL PROPERTY IN THE COUNTRY

1. The National Museum Collection

The National Museum collection, of over 490,000 items, is classified under archaeology, ethnography, underwater, natural history and art. The more notable collections include: the famous Tabon man remains, constituting the earliest evidence of modern man (Homo Sapiens) in the Philippines, dated from 22,000 to 24,000 years old by C-14; 10th and 16th century wooden Balanghai boats; the Late Neolithic Manunggul earthen-ware jar with hematite decoration; fossilized remains of stegodon and rhinoceros found in Paleolithic sites; fossilized molar dated as middle Pleistocene; Batan cloth from the 13th-14th century (the earliest known cloth found in the Philippines); large Chinese blue and white dish of the Yuan Dynasty; Chinese stoneware jars and ceramic pieces of the 14th-15th century; mummified remains of an Igorot man, and the Spolarium, a massive oil painting on canvass, by a noted Filipino painter, Juan Luna, a painting that won for him, the gold medal in the late 1880's exposition in Madrid.

a. Archaeological Artifacts

The Archaeological collection include: low-tired pottery, ceramic pieces, bones, chert and flake tools, waterlogged wooden boats, stones, glass beads and metals.

b. Ethnographic Artifacts

The ethnographic collection comprise: costumes, ornaments, basketry, fabrics, mats, pottery, metal objects, utensils, fishing articles, ritual objects, weapons of war and chase, musical instruments and grave markers.

c. Underwater Artifacts

The underwater collection comprise mainly of ceramics with some metallic artifacts and glass articles.

d. Natural History Collection

The natural history collection include geological specimens like: rocks, minerals and leaf imprints on sand-stone; zoological specimens of fishes, shells, reptiles, insects, birds, corals, sponges, mammals and other creatures of the animal kingdom; and preserved and live botanical specimens.

e. Art Collection

The art collection include oil paintings on canvass and on wooden panels, stone sculptures and metal works.

2. The Collection of the National Historical Institute (NHI)

The NHI collection number some 25,000 memorabilia, of Philippine heroes and other illustrious Filipinos, consisting of flags, prints, certificates and other documents and personal effects.

3. The Collection of the National Library of the Philippines (TNL) and of the Records and Management and Archives Office

The collection of the offices of the TNL and the Archives Division are mostly books, papers, documents and periodicals of historical value to the Philippines.

4. National Cultural Treasures Under the Supervision and Control of the National Museum

This includes The Sta. Ana Site Museum in Manila, the Roman Catholic Churches of Paoay and Bacarra in Ilocos Norte; the San Agustin Church and liturgical objects therein in Intramuros, Manila; Fort Pilar in Zamboanga City; the petroglyphs of the Rockshelter in Angono, Rizal; the petroglyphs of Alab, Bontoc; the stone agricultural calendars of Dap-Ay Guiday in Besao, Bontoc; the mummy caves of Kabayan, Benguet and of Sagada and Alab, Bontoc; the Ifugao rice terraces of Banaue; and other movable countless objects.

5. National Shrines, Monuments and/or Landmarks

a. Under the Supervision and Control of the National Museum

1. The historical churches and houses in the Vigan complex, Ilocos Sur.

2. Other historical sites, buildings, churches and monuments of historical and cultural value.

Of the immovable cultural properties, more than 700 are historical churches found all over the Philippines, and founded by catholic friars beginning in the 16th century. Only 149 Spanish catholic churches, including light houses and gate-ways, are so far documented by the National Museum. Construction of these are mostly massive.

b. National Shrines/Monuments/Landmarks Under the Supervision and Control of the NHI

This include the Barasoain Church in Malolos, Bulacan, and Tirad Pass in Cervantes. Ilocos Sur, the Miagao Church in Miagao, Iloilo; the site of the Battle of Mactan Island, in Cebu; the San Sebastian Church in Quiapo, Manila; the Church and Convent of Santo Nino in Cebu City, the 200 year old Basilica of Taal, Batangas; and the Church of Sta. Maria, Ilocos Sur.

6. The Cultural Property are Grouped into Organic, Inorganic and Composite

The organic materials are made of bamboo, wood, ivory, bone, textile, fiber, leather, palm leaves, twigs, tree bark, paper, vellum and feathers. Inorganic materials include glass, pottery, ceramics, metals, and construction materials like: adobe, coral stones, bricks, limestones, cement stones and rocks. Paintings generally make up the composite materials.

STATUS OF CONSERVATION FACILITIES

1. The National Museum Chemistry and Conservation Laboratory

The museum laboratory occupies an area of more than 535 square meters. It is manned by 17 staffers, comprising the laboratory head, assistant laboratory head, three research analyst conservators, four objects conservators, two research assistants handling palynological works, five assistants who help in restoration works, sample preparation, and maintenance of specimens and equipment, and a laboratory clerk.

a. Equipment

Equipment available for scientific examination, research and conservation are far from complete. They include the following: a scanning electron microscope, an atomic absorption spectrophotometer, a photometer, a furnace for baking clay test specimens and for refiring pottery, two electric ovens for drying various objects, two units vacuum cleaners, eight thermohyrographs, a UV monitor, a light meter, two units distilling apparatus, one unit de-fonizer, two fumehoods, equipment for electrolytic reduction of metallic antiquities, cameras, a refrigerator, two hot plates, an ion conductivity meter, mercury quarty and IR lamp, IR telethermometer for measuring surface temperatures of art objects, dental equipment for the restoration of antiquities, three centrifuge machines, hot and cold hand dryers for spot drying of surface, sets of analytical balances, five sets of microscope (binocular polarizing, metallurgical, stereozoom), soil mixer, two units PH meters and improvised fumigating chambers.

b. Library

Attached to the museum laboratory is a small technical library, where reference materials on conservation, physicochemical analysis, palynology and other references are kept.

c. Activities

To date over 3,000 objects have been treated and restored, and over 4,000 specimens have been tested and analyzed in the laboratory. The staff handles the conservation of ethnographic materials, waterlogged wood, marine archaeological objects, textiles, monuments or landmarks/structures made of adobe, stone and bricks, restoration of ceramics and control of biological agents of deterioration at the central office and 16 branch museums throughout the country; palynological processing of pollen and spores; physicochemical analysis of materials; and, extends technical assistance to outside institutions, notably the Intramuros Restoration Project, Casa Manila Museum, CCP Museo ng Kalinangang Filipino, Museum of Ethnography at Nayong Filipino, CB Museum and many other museums in the country, upon request.

2. Other Conservation Laboratories in the Country

a. The Conservation Laboratory of the NHI

The NHI laboratory deals with the repair, restoration and preservation of monuments, sites, relics, and memorabilia of illustrations Filipinos and heroes.

The conservation staff mainly handle flags made of fabrics, prints, certificates and other documents. Equipment acquired include: scanning electron microscope, polarizing microscope, moisture balance, laminating machine, light meter, recording thermohyrographs, pH meter, and other apparatus.

b. Facilities at the National Library of the Philippines and at the Archives Division

Mainly for laminating and bookbinding procedures.

c. Facilities at the Casa Manila Museum and the Archbishop's Palace

Mainly for basic conservation treatment of costumes and liturgical objects and vestments.

PROBLEMS OF CONSERVATION

1. Organic Material

It has been observed that artifacts made of organic materials are adversely affected by light, dust, moisture, insect pests, acidity, micro-organisms, and humidity resulting to weakening, yellowing, staining and/or fungal infestation, on fabrics and documents. Insect attacks are prevalent on wooden artifacts, leather, basketry, mats and textiles, particularly by silver fish, wood borers, moths and bugs. Paints on wooden surfaces are sometimes flaking. There are also some problems on the fading of fabrics and, in some instances, the dye even come off.

2. Underwater Artifacts

These are generally encrusted with corals and salts, and in some instances, ceramic glazes are reduced, cracked or are crumbling, and metallic artifacts are corroded.

3. Archaeological Artifacts

Excavated artifacts usually absorb certain amounts of salts during burial; with metallic artifacts corrosion occurs.

4. Paintings

The common problems encountered with paintings are cracking of the pigment layer and fading of colours, and in some instances, flaking of the paint.

5. Zoological and Botanical Specimens

These are also attacked by insect pests, excluding those stored in solutions.

6. Immovable Property

For immovable properties like forts, monuments, etc, there exists a problem in the growth of micro-organisms, i.e. lichens, moses, algae-fungi and vegetations. The problems of rain, water wash penetration, humidity and water capillarity resulting to salt crystallization in the structure are also present. Cracks, as a result of vibrations transmitted from seismic earth shocks, are also noted. Manmade factors like vandalism

and squatting, in some instances, are also confronting the authorities involved in the conservation of immovable property.

7. Lack of Materials and Equipment

The absence of some conservation materials in the local market is also felt, as well as the need for more sophisticated equipment for research studies.

8. Lack of Funding

Inadequate funding hampers conservation efforts of persons entrusted with carrying out the work.

AVAILABILITY OF TRAINING

To keep abreast of current trends and researches in the fields of interest of the laboratory, most of the staff were sent to local and foreign trainings, workshops, seminars and symposia, gaining expertise and practical knowledge on the following:

1. Conservation Works

Restoration and conservation of ancient cities and settlements, waterlogged wood, underwater archaeological objects (e.g. ceramics, metals, etc.), ethnographic materials (e.g. textiles, mats, basketry, wooden artifacts, etc.), library and archival materials, archaeological objects (e.g. bones, wood, ceramics, metals, etc.).

2. Physicochemical Analysis (Artifacts like pottery, textile, metal, rocks, soil, etc.)

Operation of laboratory equipment like scanning electron microscope, electron probe micro-analyzer, infra red spectrophotometer, atomic absorption spectrophotometer, gas chromatograph, liquid chromatograph, polarograph, x-ray fluorescence analyzer, x-ray diffraction, thermo-gravimetric differential thermal analyzer, dilatometer, etc.

3. Palynological Work

Extraction and morphology

4. Dating Methods

Radio-carbon dating and thermoluminescence dating

5. Others

Scuba diving, photography

6. *Training Conducted or Hosted by the National Museum Relating to Laboratory/Conservation Work*

Seminar/Workshop Hosted

a. *SPAFA Seminar on Research on Conservation of Organic Materials.*

b. *5th Intra Asean Workshop on Archaeology & Conservation.*

c. *SPAFA Training Course on Palynology*

d. *UNDP-Sponsored Lecture Series on Conservation of Cultural Properties, particularly Underwater Artifacts.*

Conducted

e. *In-house training on basic methods on palynological extraction techniques, analyses & conservation of artifacts.*

f. *Workshop on Basic methods of Conservation of Artifacts for CCP Museum Staff.*

AVAILABILITY OF RESEARCH INFRASTRUCTURE

The museum laboratory staff also embark on research projects in relation to conservation and physicochemical analysis of artifacts. The following researches are being pursued. The initial stage of w/c consist of literature survey and collection of specimen and data.

1. Chemical Characterization of Ethnographic Textiles
2. A Study on Corrosion Inhibitors and Their Effect on Metals
3. Tropical Pollen Reference Collection
4. Conservation of Wet Archaeological bones
5. Conservation of Angono Petroglyphs
6. Analysis of Philippine Woods and Wood Derivatives
7. Study on Deterioration Factors of Museum Materials and Their Control
8. Mineralogical Characterization of Some Philippine Archaeological Pottery
9. Preservation of Kabayan Mummies
10. Conservation of Balanghai Waterlogged Wood
11. Conservation of Marine Archaeological Artifacts

REFERENCES

1. Naranjo, S. "Conservation Practices in the National Museum of the Philippines". In Symposium'86 on the Care and Preservation of Ethnological Materials, Canada, 1986.

2. SPAFA Final Report on the Seminar on Researches on Conservation of Organic Materials, Los Baños, Philippines, 1982.

3. Laws on Philippine Cultural Heritage. Manila: National Museum, 1974.

4. "Inventory of Spanish Churches in the Philippines". Internal data as of 1989 from the Restoration Division. Manila: National Museum.

5. Catholic Directory of the Philippines. Manila: Catholic Trade, 1978.

APPENDIX 8

Country Report of Singapore

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

COUNTRY REPORT OF SINGAPORE

by Kwa Chong Guan

PRIORITIES & POLICIES

Conservation of cultural heritage materials in Singapore is the responsibility of the National Museum which deals with non-paper objects, and the National Archives which deals with paper materials.

In the National Museum one of the principal responsibilities is conservation of its collections of fine art, ethnographic and historical artifacts. The fine art collection was started approximately 15 years ago, and contains mainly works not only in the traditional media but recently mixed media as well. The ethnographic collection is older and contains a large number of artifacts inherited from the former Raffles Museum. The historical collection on Singapore social history was started only about ten years ago. Today it is the ethnographic collection which present the most and complex conservation problems.

Today the National Museum ranks conservation as a critical function which impacts on its collection policies and exhibition programmes. Fundamental to the management of the Museum's collection is the balance between the requirement to conserve a collection and the demands of access to that collection. Disintegrating collections and artifacts which cannot be displayed or studied are not only of no use, but occupy valuable storage space. On the other hand, the national heritage is not a collection of perfectly embalmed mummies stored in darkened environmentally controlled vaults to more effectively preserve it. On the contrary, the national heritage is cared for as a bridge between the past and present for members of the community, to shape the thinking and stimulate the imagination of successive generations of the community. Conservation so viewed is a prime duty and highly creative activity.

Unfortunately, the National Museum, like many other museums, has never had the resources to provide the full range of conservation treatment for all the artifacts under its care. Consequently, the National Museum had to emphasize "preventive conservation" which is defined as doing everything possible for an artifacts to reduced or prevent the on-going deterioration and destruction by inherit problems of structure and material, handling and exposure to the environment; in other words stabilization. "Preventive conservation" as practised by the National Museum excludes restoration or major treatment. Preventive conservation is not the responsibility of the conservator, but the duty of all curatorial and registrar staff who routinely handle the museum objects and collections.

STORAGE RENOVATION

The National Museum is currently, and for much of next year, closed for major repairs and renovation. Termites and dry rot has infected much of the timber structures, which now have to be replaced. Fortunately, the Museum's collections were unaffected. The Museum is taking the opportunity of its enforced repairs and renovation to restructure its stores. the Museum is planning to install mezzanine floors in the repository located inside its present building. When completed in the third-quarter of next year, the mezzanine floor will extend the Museum's on-site storage space by some 60% over the current space.

However, even this 60% will be insufficient for rational and secure storage of the Museum's collections which are currently stacked in very cramped conditions. The Museum is therefore also looking into the acquisition of containers to store its fine art collection.

This expanded storage space will be a major breakthrough for the Museum's preventive conservation strategy. Up to now shortage of space has forced the Museum to stack and squeeze artifacts, with resultant damage to some objects.

CLIMATE & ENVIRONMENT CONTROL

Most of the National Museum's collections have never been stored in any climate controlled environment. Both the repository at the Stamford Road premise and off-site are not air-conditioned. This non-air-conditioned storage ranges around 24-26 degrees celsius and 72-78 percent relative humidity. Air condition storage for some of the artifacts measures at around 23 degrees celsius and 75 percent RH.

A review of some of our collections late last year showed that the high humidity and temperatures have not damaged our collections as predicted in the conservation textbooks. According to the latter, the generally recommended temperature level for optimum preservation is 20 degrees celsius, plus or minus 2 degrees, and relative humidity maintained at 50% RH plus or minus 5%. The textbooks predict that humidities beyond 70% RH will produce mould in cellulosic fabrics and basketry, activate autocatalytic "bronze disease," and cause adhesive failure. Basically, mould, mildew, insect damage, cracking, splitting and rotting are predicted.

But examination of the National Museum's collections show that the damage and deterioration predicted has not occurred. Cellulosic textiles exhibit no signs of mould or mildew damage past or present; carved wood is unwarped; while basketry and other fibre objects appear more flexible than equivalents in European or American museums. The century-old Colonial Period oil portraits show the yellowed varnish of their untreated counterparts in American and European collection, but not the cracklure - the shrinkage and cracking paint film - found on equivalent age American and European oil paintings.

Why the National Museum collections have not deteriorated as predicted in the conservation textbooks, the Museum is now attempting to find out. We suspect that other museum collections in the region, which are stored in non-air-condition environments maynot have similarly deteriorated as predicted in the conservation textbooks. Why this is so is could be a major research project.

APPENDIX 9

Country Reports of Thailand

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

COUNTRY REPORT OF THAILAND

CONSERVATION STANDARDS IN SOUTHEAST ASIA

by Nikom Musigakama

1. INTRODUCTION TO OUR ORGANIZATION

The Report of the Thai Cultural Conservation Standard and Guidelines

Cultural Resource Management and Preservation policies of the Thai Fine Arts Department are based on its responsibility to protect the resources and to provide for their understanding, appreciation and enjoyment. In Thailand, there is a special focus on educating and enriching the lives of ordinary people as well as providing necessary information for the academic sector. As such, there are laws to protect antiquities, monuments and sites and archival collections, but some articles are being rewritten to make them appropriate for cultural management in today's society.

Meanwhile, there are certain policies which are closely followed. Because of the way in which our government is organized, all work concerning archaeology is conducted through, overseen and controlled by the Fine Arts Department.

However, our system and the policies of the Fine Arts Department are presently vulnerable to changes in personnel and legislation is the only way to adequately insure consistency in cultural resource management. Now this management relies upon the integrity of the Director General and the people who work for him. Nowadays to the best of our ability and to the point which our resources permit, these policies are implemented. The future is uncertain. The very fast pace of economic development we are experiencing in Thailand means that preservation demands are increasing at an even faster pace. With this pressure, coupled with the turnover of staff responsible for implementing the policies, what guarantees do we have without written enforceable rules?

The standards we use in Thailand are the result of our experience, of the mistakes we have made in the past, and of the successes we have enjoyed. I would like to outline these standards and to explain how our government agencies, which must implement these standards, are organized.

2. LEGISLATION AND GUIDELINES

The Ministry of Education, through the Fine Arts Department is dedicated to preserving the cultural resources entrusted to its care through appropriate programmes of research and interpretation.

Existing legislation passed to protect cultural resources in Thailand includes:

1. Ancient Monuments, Antiques, Art Objects and National Museum Act, 1961.

2. National Cultural Policy Announcement of the Office of the Prime Minister to promote national pride and identity B.E. 2524 (1981).

3. Announcement of the Office of the Prime Minister on Enforcement and Guidelines on Preservation Promotion and Development of Culture B.E. 2529 (1986).

4. Publications Act concerns the contribution of new publications to and the preservation of rare books in a controlled environment in the National Museum.

5. Criminal Laws deal with the report of individuals who find antiquities, objects of art, artifacts, etc. to government officials.

6. Conventions and Recommendations of UNESCO concerning the protection of the cultural heritage, first published in 1983 by UNESCO. The Fine Arts Department depends on these recommendations in the formulation of its own guidelines. The conventions and recommendations adopted by UNESCO for the protection of cultural property are listed below, in chronological order:

    1. Convention for the Protection of Cultural Property in the Event of Armed Conflict, with Regulations for the Execution of the Convention (Inter-governmental Conference. The Hague, 14 May 1954).

    2. Protocol for the Protection of Cultural Property in the Event of Armed Conflict (Intergovernmental Conference. The Hague, 14 May 1954).

    3. Recommendation on International Principles Applicable to Archaeological Excavations (General Conference, New Delhi, 5 December 1956).

    4. Recommendation concerning the Most Effective Means of Rendering Museums Accessible to Everyone (General Conference, Paris, 14 December 1960).

    5. Recommendation concerning the Safeguarding of the Beauty and Character of Landscapes and Sites (General Conference, Paris, 11 December 1962).

    6. Recommendation on the Means of Prohibiting and Preventing the Illicit Export, Import and Transfer of Ownership of Cultural Property (General Conference, Paris, 19 November 1964).

    7. Recommendation concerning the Preservation of Cultural Property Endangered by Public or Private works (General Conference, Paris, 19 November 1968).

    8. Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (General Conference, Paris, 14 November 1970).

    9. Convention concerning the Protection of the World Cultural and Natural Heritage (General Conference, Paris, 16 November 1972).

    10. Recommendation concerning the Protection, at National Level, of the Cultural and Natural Heritage (General Conference, Paris, 16 November 1972).

    11. Recommendation concerning the International Exchange of Cultural Property (General Conference, Nairobi, 26 November 1976).

    12. Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas (General Conference, Nairobi, 26 November 1976).

13. Recommendation for the Protection of Movable Cultural Property (General Conference, Paris, 28 November 1978).

14. Recommendation for the Safeguarding and Preservation of Moving Images (General Conference, Belgrade, 27 October 1980).

These laws, Cultural Policy Announcements, and guidelines oblige the Fine Arts Department to locate, identify, evaluate, manage and protect cultural resources so that they may be handed on to future generations unimpaired.

3. CULTURAL RESOURCES

a. Identification and Classification

By law, the Director General is responsible for all cultural activities but under the Director General, each division is headed by a director, each one responsible for the management of his staff and operations. In Thailand, cultural resources are divided into several identification groups. Among them are:

1. Monuments and Sites

This heading is sub-divided into 7 classifications:

1) National historical architecture
2) National historical statues
3) National historical districts
4) National historical parks
5) National historical cities
6) National historical landmarks
7) Archaeological and historical sites

2. Museum Objects

The National Museum is responsible for the research, collections, registration, exhibition and preservation of art objects, artifacts, etc. for the purpose of education. Categories are very clearly defined according to function and/or material in order to inventory, store, preserve, display, etc, the collection.

3. Archive/Rarebooks

This division is responsible for the inventory and preservation of rare books and any historical documents and manuscripts under their care.

b. Criteria for Significance

The degree of significance assigned to cultural resources is assigned by the committee appointed by the Director General of the Fine Arts Department, on the basis of: 1) History of its context; 2) Structural/artistic value, and 3) Antiquity.

c. Registration of Cultural Resources

The Fine Arts Department is required, by law, to inventory and classify all cultural resources for protection. The Government Gazette is the publication in which cultural remains must be legally registered in Thailand.

Once registered, they are officially protected by law. In order to qualify for this registration, the concerned agency must first draft a plan and make specifications which then must be approved by the Director General before any work begins. In practice, the restoration process must follow the guidelines of the Fine Arts Department which adhere to the UNESCO recommendations.

d. Inventory of Cultural Resources

Cultural resources are located, inventoried and evaluated as required under order of the Director General of the Fine Arts Department. The data collected serves to formulate preservation and management proposals to guide planning, development and interpretation, and maintenance activities.1,445 National Monuments and Sites are officially listed, 2,850 are being analyzed and classified, there are 38 National Museums, four National Archives and 16 branches of the National Library.

e. Control of Historical Objects

Each division of the Fine Arts Department maintains an inventory of antiquities in an attempt to keep an up-to-date record of the location and condition of the property.

f. Special Considerations

In Thailand, as in other countries, especially in Southeast Asia, we face special problems because of our environment and our culture. We rely on the Venice Charter to guide us in our preservation efforts but the Venice Charter was developed in Europe and must be adapted to our peculiar situation.

For example, the philosophy of Monument Restoration in Thailand must consider the fact that our monuments are religious monuments and the local people continue to practice that religion. Therefore, preservation is done not only with a view to restore and conserve structures and history as with the monumental architecture in Rome and in Greece. It must also be satisfactory to the people who continue to respect and worship at the religious sites.

Mural Paintings pose another problem specific to our area. In Thailand, there are 700 mural painting sites, 10% of which have been conserved. Because of the tropical environment, we must deal with the extreme, in humidity and moisture with the resulting moss and a quick rate of deterioration.

4. SUGGESTIONS

a) Thailand's problems and experience

1) One of the problems faced by the Fine Arts Department is one of organization. In Thailand, there is no Ministry of Culture. Therefore, cultural activities are divided among several ministries and even within the Fine Arts Department, we are divided into several divisions. Right now, we depend on very active coordination and cooperation among these ministries and divisions in order to carry out cultural activities successfully. A proposal to establish a Ministry of Culture is now being considered by parliament.

2) Laws protecting cultural property are out of date and cannot, therefore solve the problems which are arising as a result of activity associated with our quickly industrializing country. The laws need to be updated as soon as possible.

3) The Government's National Policy includes cultural policy as a part of human resource development program (i.e. economic plan). As it exists now, the policy concerning cultural remains is not satisfactory to

the local people. If cultural property is found on an individual's land in Thailand, it is more of a liability with few if any advantages to the landowner. Some sort of incentive, e.g., tax breaks, is required to encourage people to cooperate with government personnel involved with cultural property management.

b) Suggestions for SPAFA

1) Presently the Conservation Laboratory belongs to the National Museum and cannot serve the interests of either Sites and monuments of Museums and Archives. A Central Conservation Laboratory needs to be established.

2) Personnel must currently be sent abroad for training in cultural resource management. The training programmes arranged by SPAFA serve to train staff in technical and other essential fields. But it needs to play a larger role in the training staff in cultural resource management and in providing facilities for work in the preservation field.

3) If standards for Southeast Asian Cultural Conservation are going to be set up, a Southeast Asian Charter, with guidelines to deal with the specific problems we face in our area, need to be established first. This can perhaps be done through the auspices of an organization like SPAFA, which can fully understand the requirements of its Member Countries.

4) If Member Countries fully cooperate with each other, some of the existing restrictive laws dealing with the importation/exportation of antiquities, need to be reconsidered.

CONSERVATION

1. PROTECTION
   - Legislation
   - Research and analysis of biochemical and physical properties

2. PRESERVATION
   - Physical support
   - Humidity control
   - Structural enforcement
   - Covering

3. RESTORATION
   - Reinstatement
   - Anastylosis*
   - Reconstruction*
   - Renovation
   - Rebuilding

<APPENDIX 9a>

TACTICAL

1. MAPPING CONTROL
   - Lay out plan
   - Zoning separation

2. ELEVATION DRAFTING
   - Field measurement
   - Elevation analysis
   - Elevaion setting

3. CODING
4. RELOCATION OF UNWANTED ITEMS (MOVE OUT)
5. STRUCTURAL DESIGN
6. SITE ADDITIONS (MOVE IN)
7. LANDSCAPE DEVELOPMENT

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

COUNTRY REPORT OF THAILAND

CONSERVATION OF MOVABLE CULTURAL HERITAGE IN THAILAND

by Kulpanthada Janposri

INTRODUCTION

The conservation science of movable cultural heritage in Thailand was started in 1969 after the establishment of the conservation laboratory. This conservation laboratory is the only one in the country. It is under the Division of National Museums, Fine Art Department, Ministry of Education. It has been conducted by chemists and is responsible for the conservation of museum objects in 34 museums throughout the country. Besides conservation work, scientific studies of art and archaeological objects has also been carried out, for the ancient technology, the manufacture, the type and the chemical composition of cultural materials, causes of deterioration, and chemicals used for the appropriate treatment of objects.

TYPES OF MOVABLE HERITAGE

Thailand is rich in both movable and immovable cultural heritage. Movable cultural heritage comprise mostly archaeological objects, ethnographic objects, natural history and fine arts. They are in the collections of 34 national museums through out the country. They are made of various types of materials, i.e. wood, paper, leather, ivory, bone, clay, stone, glass, ceramic and painting etc. They have different chemical and physical properties based on the type of materials from which they are made. Some are very sensitive to the change of climate while others are more durable. The most sensitive cultural materials are objects made of organic materials such as paper, wood, textile, leather, bone and ivory. By nature these materials are a good nutrient for insects and micro-organisms. The damage or deterioration of the cultural materials can be caused by both physical and chemical changes which are irreparable or reparable.

PROBLEMS OF CONSERVATION OF MOVABLE CULTURAL HERITAGE

Thailand is located in a tropical zone characterized by hot and humid climate. Such climate causes the deterioration of all kinds of cultural materials with resultant external and internal changes. High humidity throughout the year promotes the growth of micro-organisms on various types of cultural materials and also on the building materials of the monuments. Metallic objects attacked by corrosive salts deteriorate quickly if they are exposed to high humidity.

The main problems on the conservation of movable cultural heritage are as follows:

1. Natural Degradation

Many cultural materials deteriorate or degrade because of the hot and humid climate as well as high level of light which causes chemical change or photochemical degradation of the cultural materials. This problem can be observed on objects made of organic materials, particularly cellulosic types, i.e., paper or textile. This internal change of the chemical composition of the material results to physical change.

2. Biodeterioration

High relative humidity causes the growth of micro-organisms on cultural materials, not only on those made of organic materials but also on building materials causing staining, degradation or disintegration. In addition, warm climate provides ideal condition for insect attack. Therefore problems caused by insects, such as termite, moth, and beatle, are, also serious problems of this region. Insects often cause extensive and irreparable damage to paper, books, manuscripts, wooden sculpture and other wooden objects.

STATUS OF CONSERVATION FACILITIES

Conservation Laboratory

Conservation science has been introduced to the conservation of museum objects since 1969 when the conservation laboratory was established. The conservation staff and basic equipment for conservation work have increased every year. The conservation laboratory is responsible for the conservation of museum objects in 34 national museums under the control of the Fine Arts Department. In addition, the scientific studies of the objects, the study of the problems, chemicals used and appropriate methods on conservation are also carried out prior to the conservation procedure.

At present, the conservation laboratory has six chemists with different levels of academic qualifications and who were trained abroad for the conservation of the cultural heritage. The laboratory also has ten trained technicians.

Equipments Available

Basic equipment, such as stereomicroscope, are available for scientific examination and simple study. Equipment available are stereomicroscope, binocular microscope, X-Ray machine, conductivity, spectrophotometer, PH-meter, UV-monitor, and lux-meter. And metallurgraphic cooperation with the other institute will be made.

Library

A small technical library is attached to the conservation laboratory. Some reference books are provided by the technical assistance of ICCROM. Many books were purchased using the budget of the department.

Activities

The conservation of museum objects is the responsibility of this conservation laboratory. Each year about 2500-3000 objects from various national museums are treated properly. In addition, proper keeping, packing of objects, climate control or other measures preventing museum objects from deterioration are also tasks of the conservation staff. The scientific study to solve problems of conservation, chemical composition, and microstructure of objects are also carried out for use in the conservation procedure. Technical assistance

upon request from outside institutes such as the Royal Palace, National Archive, National Library, Division of Archaeology and Division of Architect is also provided.

Availability of Training

The conservation staff were sent abroad, i.e., to England, Italy, Japan, Belgium, Australia, Canada and France, for training on the conservation of the cultural heritage.

The conservation laboratory provided about 10 training courses of various topics concerning to the conservation of museum objects, under the SPAFA Project in 1978-1989 for the SPAFA member countries. The courses covered the conservation of bronze object, the conservation of underwater archaeological object, Research method on the conservation of organic materials, and preventive conservation of museums objects. In addition, the training course on basic conservation, such as preventive conservation of museums objects, was also provided for the museum staff of this country. Special lectures on the conservation of cultural properties are also given to students at the university level, they are taken as minor subjects. This is very useful in helping the promotion of awareness of the museum objects or the cultural properties of the country.

Availability of Research Infrastructure

The conservation staff has to carry out research concerning conservation problems and conservation procedures. The following studies and researches are being carried out:

1. A study of the chemistry of oriental lacquer.
2. A study of the technology of copper alloy artifacts in Thailand in prehistoric period.
3. A study of lintel of Prasat Hin Noi, Prachinburee province.
4. A study of appropriated adhesive for the conservation of Typical Thai painting.
5. A study of stone objects in the North East of Thailand - the cause of deterioration and the conservation
6. Experiment study on humidity control in non air-tight showcase for organic objects.

SPAFA-ICCROM SEMINAR ON CONSERVATION STANDARDS IN SOUTHEAST ASIA

National Museum, Bangkok, Thailand
December 11-16, 1989

COUNTRY REPORT OF THAILAND

THE STANDARD OF CONSERVATION OF MURAL PAINTING AND SCULPTURE IN THAILAND

by Arphorn Na Songkhla

CONSERVATION IN THAILAND

In fact, conservation in Thailand had a beginning in 1961, when Dr Paul Wremans, Director, Institut Royal du Patrimoine Artistique, Brussels visited Thailand. Two of us, Mrs Kulpanthada and myself, went to Brussels for training. Conservation of wall paintings started in Thailand, when, with the support of UNESCO, Mr O.P. Agrawal visited Thailand and worked on the murals of Buddhaisawan Chapel in the National Museum. We have received the cooperation of UNESCO, ICCROM AND NRLC in our work. Now there is a conservation laboratory for the National Museums and another for the Archaeology Division. The Sub-Division of Conservation, with the Archaeology Division, is in charge of conservation of wall paintings, sculptures and stucco in-situ.

Mural Painting is an aspect of fine arts which reflects a nation's cultural heritage. Apart from their inherent artistic value, the national belief, history, social environment and the mode of living of the people through the ages may be seen in paintings. Paintings inspire thought and enhance an aesthetic sense in the artist's mind.

Traditional Thai Painting is an idealistic art form much derived from other styles of oriental painting. It is two-dimensional in essence, using bright flat tones and line work. Unique to Thai painting, however, is the compositional treatment in order. The pigments used in these paintings were originally only natural pigments which harmonize perfectly with each other in monochromatic style. But at the later period when foreign traders brought in a wide range of pigments not found locally, Thai painting changed to a beautiful polychromatic tonality. Within these colourful images, points of focus are brought forward by the application of gold leaf, rendering glitter to parts of the painting. Nowadays, with the unlimited availability of artificial colors, painters fall into the alluring trap of using them because they are pleasing to look at. The result obliterates the harmony of the tints.

Sculptures for conservation are Buddha images in-situ both in the living monuments and ruins; the stucco terra cotta or wood carving decorated on monument. These sculptures may be created with brick, stone, mortar, wood, metal, etc. of which most of them were finished with lacquer and gold-leaves on the surface.

A Large number of these cultural properties are suffering from deterioration. And the treatment on conservation must be at the site. So a system of the work is necessary to have information about the site, area and an understanding of problems in preparation for the conservation project. Cooperation among the owner of the site, the province's authority, person in charge and the Fine Arts Department is necessary.

<APPENDIX 9c>

AREA OF WORK

About 700 sites for mural paintings all over Thailand, almost 50% of which had been recorded in survey-reports, and about 20% were registered as national monuments. Emergency treatment for those paintings had been carried out in 142 sites. With this number, only two sites had complete treatment. So it is necessary to work fast to continue surveying the sites and the emergency treatment for those terribly deteriorated paintings. Meanwhile, complete treatment should be carried on too.

Conservation of mural paintings and sculptures in-situ is a new responsibility of the Sub-Division. So the work is only beginning. But the number and the area of work are gigantic. We are charged with more than 40,000 living monuments and 2,000 ruins and sites. In each of these we may have up to a thousand sculptures in-situ.

CONSERVATORS

One archaeologist-conservator, three arts-technicians-conservators, and four artist-conservators comprise the staff in the section of conservation of mural-painting. And two sculptor-conservators, one arts-technician-conservator and three artist-conservators are in the section of conservation of sculpture in-situ. The total number of conservator staff in this Sub-Division is 14, seven of them were trained by ICCROM, two by ICCROM and NRLC, and five of them were never trained abroad; but they were trained by the senior conservators in the work sites. Now they are chief of each conservation project, which has 10-50 temporary technicians working.

FACILITIES

The system of work was set into the following process:

- Survey of the site, collection of all the information and documents about the work with measure.
- Consideration of sites to be treated over the year - budget, concerning the National Plan of Economic and Social Development.
- Research of mural painting or sculpture and its problems.
- Preparation of each project's proposal, budget, manpower, equipment, etc.
- Work at the site.
- Public relations.
- Activities for protection.
- Report and publication.
- Follow-up activities.
- Yearly seminar and presentation of each project.

PROBLEMS

Surveying has a problem in the finding of the site, and it is necessary to have a list of the sites beforehand. So, questionnaires are sent to every temple. But answers show a misunderstanding of the mural paintings because many monks, especially in small and far away villages are not so educated. To solve this problem, two meetings were held with abbots of temples that have mural paintings. Then, knowledge about conservation of mural paintings expanded to other temples all over Thailand. Other public relations media from many institutes, e.g., radio, TV and newspaper, also helped. The quality of recording and report is excellent.

Analysis has its difficulty on lack of laboratory and specialists. So far very little research has been done on materials for mural paintings and conservation treatments.

Conservation Treatment has the greatest problems because of lack of budget and conservators. Hundreds of mural paintings are in a very dangerous condition, which need experienced conservators and budget. There are about 200 contemporary conservators working on conservation of mural paintings, but the government cannot support their permanent position. To solve this problem there was a request to raise funds from temples or foundation to support conservation. This was a success as a minimum of Baht 4M was offered for the conservation of mural paintings each year. With this budget all the conservators can work yearly. But many of them leave work because they were employed elsewhere with permanent positions. So the training of new technicians are carried out with the support of the experienced ones.

Report on the survey and conservation of mural painting have many important and valuable resources, which are useful to the study and research of several fields of knowledge existing in the painting. Some of these reports have been copied and utilized for study in some libraries. The total number of the reports are over 300 volumes but only one has been published. the problem is the lack of budget, but the publication of these reports is very necessary. So each year, one small part of the budget is set for publication. And these reports are mainly about conservation. Many of them are similar to each other, so they are rewritten and combined to make several volumes.

Research Project is rather difficult job for us to do, because most of the time we are seriously busy in conservation project. But the collection and study of the paintings is done while carrying out the conservation project. But it is not possible to do conservation research project unless the government approves to increase the number of officers in the field of science and archaeology.

RECOMMENDATIONS

1. The system and process of conservation has proved that it has reached international standards. But it is necessary to have very close cooperation with international experts for future progress.

2. Cultural properties are very weak and suffer deterioration. To treat them highly skilled experts are needed for their survival. First priority is to increase the number of conservators in the permanent staff.

3. There could be regional cooperation, for doing research of a fundamental nature.