

CONSERVATION MANAGEMENT  
AND PRESENTATION  
OF THE

# HISTORIC CITY OF ANGKOR

PREPARATORY GUIDELINES  
AND RECOMMENDATIONS

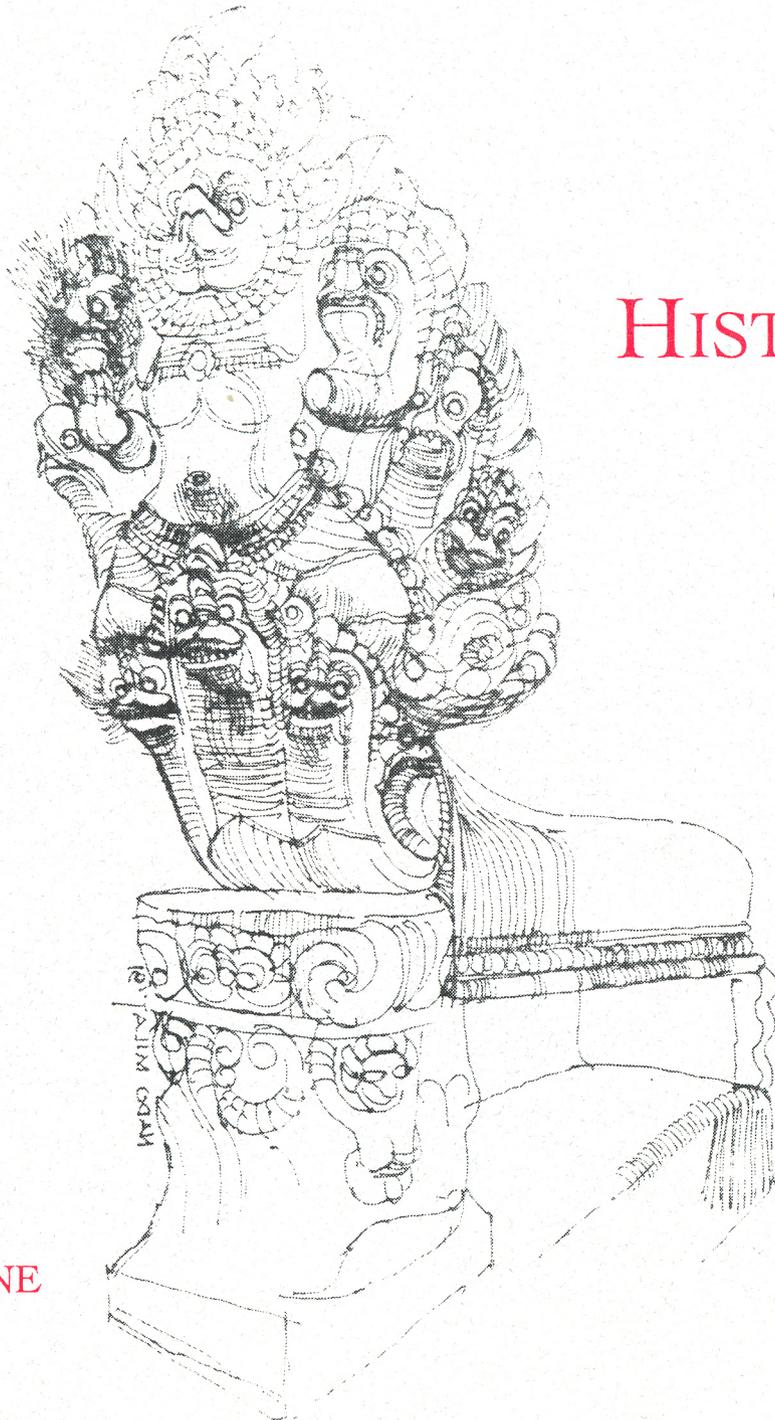
MISSIONS  
DECEMBER 1989  
MARCH 1991

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REPORT ONE



# Report Two – Separate Document

## Preah Khan Conservation Project – Stage One

# Contents

### 1. Introduction

1.1	Preamble.....	2
1.2	Report Purpose.....	3
1.3	Angkor Missions 1989-1991 .....	4

### 2. Preah Khan Background

2.1	History .....	6
2.2	Architectural Style .....	7
2.3	Archival Documentation.....	8
2.4	Preah Khan Design .....	10
2.5	Site Hydrography .....	12
2.6	1939-1990 Conservation .....	13
2.7	Chronology of Site Development .....	14
2.8	Religious Association .....	14

### 3. Conservation Management Plan Process

3.1	Purpose.....	16
3.2	Cultural Significance .....	17
3.3	Conservation Policy.....	17
3.4	Plan Framework.....	18

### 4. Initiating the Plan at Preah Khan

4.1	Documentary Research.....	20
4.2	Inventory.....	21
4.3	Site Investigation.....	24
4.4	Training .....	26

### 5. Action Plan 1991-1992

5.1	Administration .....	35
5.2	Planning .....	37
5.3	Training .....	39
5.4	Urgent Site Activities.....	39
5.5	Facilities.....	39
5.6	Work Program.....	40

### 6. Annexes

6.1	Mission Teams and Reports.....	44
6.2	Itineraries and Programs.....	46
6.3	Contacts in Cambodia .....	48

# Report One

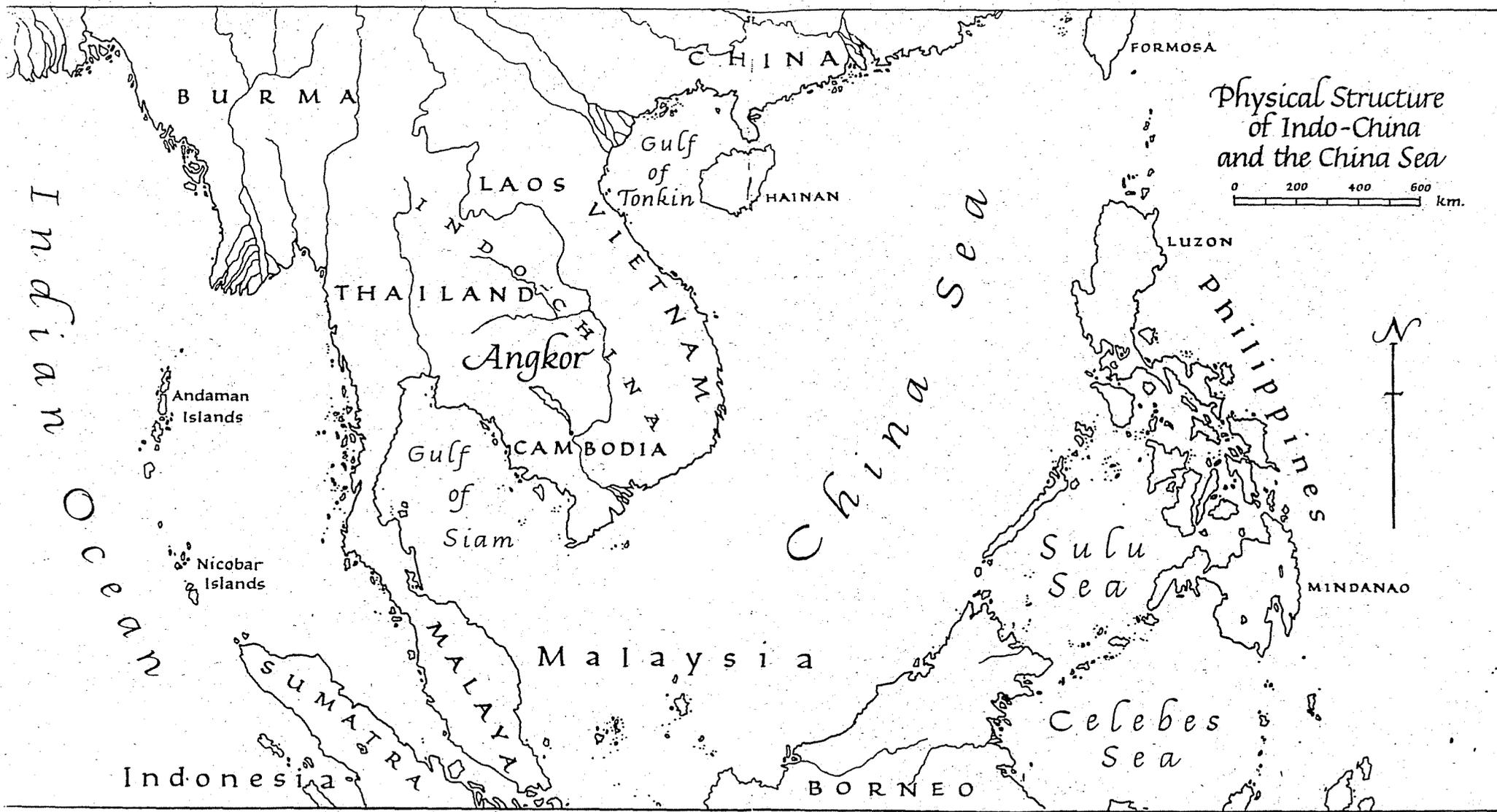
## Conservation Management and Presentation of Historic City of Angkor Guidelines and Recommendations

# Contents

<b>Introduction and Summary</b>		
1	Foreword .....	3
2	Introduction .....	5
3	Purpose of Report and Summary .....	6
4	Cultural and Historical Significance .....	7
<b>Part One Guidelines and Training</b>		
1.1	Identifying the Need .....	12
1.2	Principles and Procedures .....	12
1.3	Preliminary Intervention Principles .....	13
1.4	Definitions of Interventions .....	14
1.5	Conservation Training .....	15
1.6	Formal Training for the Professions .....	15
1.7	Formal Training for the Crafts .....	16
1.8	Informal Training for the Professions .....	17
<b>Part Two Management</b>		
2.1	The Conservation Management Plan - Its Purpose .....	20
2.2	A Framework for the Conservation Management Plan .....	20
2.3	The Development of a Building Inventory .....	22
2.4	Recommendations to Enhance Administration .....	25
2.5	Legislation .....	28
2.6	Fund Raising Strategies .....	29
<b>Part Three Associated Activities</b>		
3.1	The Conservation of Angkor Laboratory .....	32
3.2	An International Research Center .....	32
3.3	Environmental Protection .....	33

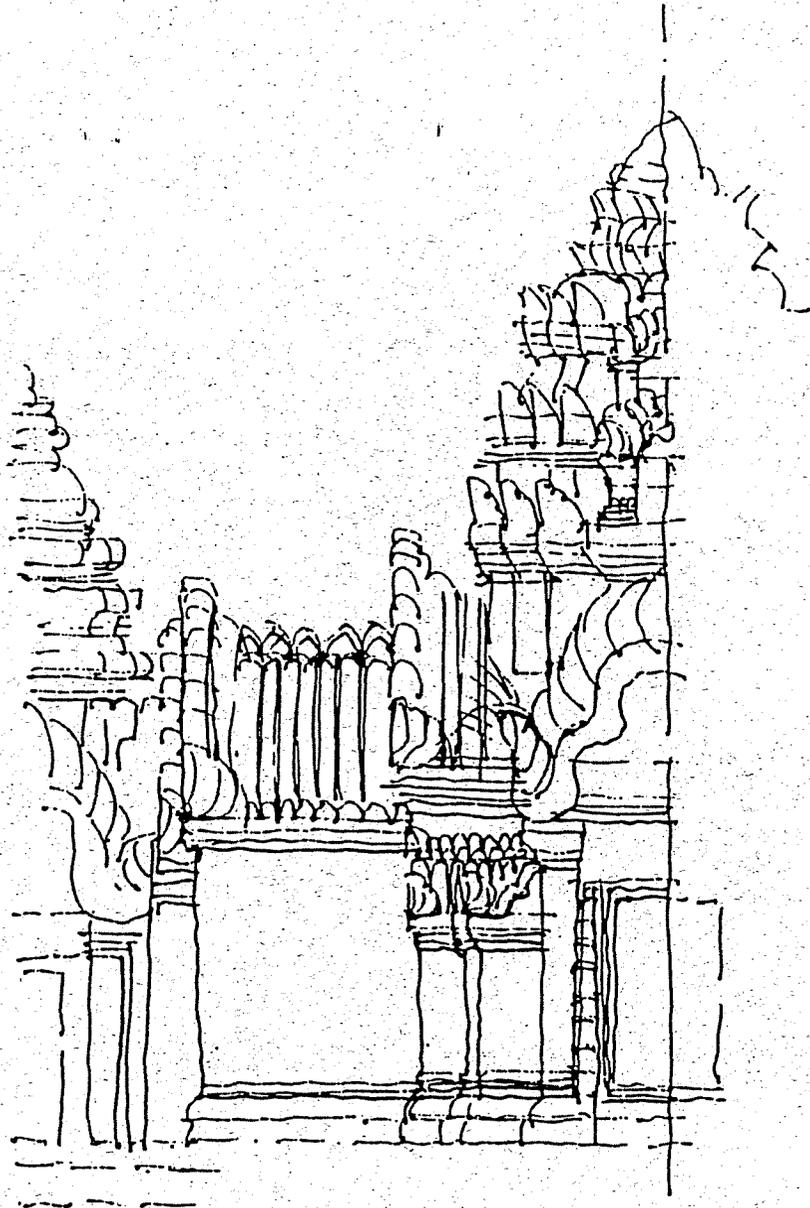
3.4	An Archaeological Program .....	34
3.5	Movable Cultural Property .....	34
3.6	Cultural Tourism .....	36

<b>Part Four Annexes</b>		
<b>Annex 4.1 Background and History</b>		
1	Location and Setting .....	39
2	Climate and Agriculture .....	39
3	An Historical Overview of Cambodia .....	40
4	The Historical Evolution of Angkor .....	41
5	Khmer Architectural Development .....	45
6	Angkor after the Fall of the Khmer Kingdom .....	48
<b>Annex 4.2 Angkor and its Monuments Today</b>		
1	Existing Administrative Structure .....	49
2	Access and Infra-Structure .....	49
3	Revival of Religious Activity .....	50
4	Survey of Conditions in the Historic City of Angkor .....	50
5	Structural Defects - Defects in Design .....	51
6	Building Materials and their Defects .....	52
<b>Annex 4.3 Conservation History in Angkor</b>		
1	Conservation Interventions .....	56
2	Recent Interventions .....	57
3	Current Internationally Supported Conservation Efforts .....	57
<b>Annex 4.4 Cultural Tourism Concept</b>		
1	Introduction .....	58
2	Assumptions .....	59
3	Discussion .....	60
4	Recommendations .....	61



Indo China and the China Sea (1957) (Source: Groslier and Arthaud, *Angkor - Art and Civilization*)

# Introduction & Summary



- 1 Foreword
- 2 Introduction
- 3 Purpose of Report & Summary
- 4 Cultural & Historical Significance

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**First Angkor Mission:**

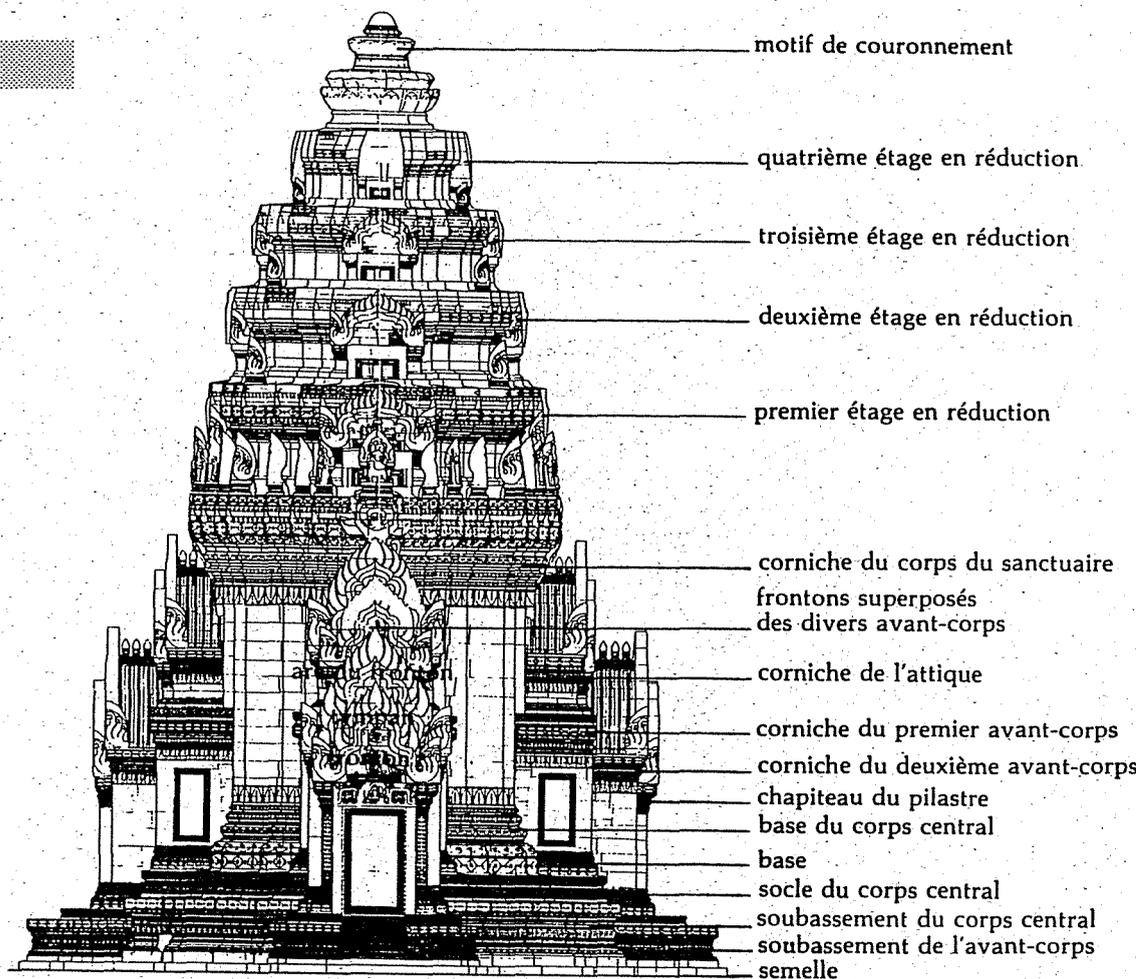
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- Getty Grant Program
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**Joint Field Mission with Sophia University**

- The American Express Foundation
- Henry Luce III
- H. Peter Stern

**Inventory Studies and Publication of Reports**

- The Brown Foundation



(Source: C. Jacques, drawing by Pierre Pichard, EFEO)

# 1. Foreword

In December 1989 World Monuments Fund (WMF) fielded its first mission to Angkor following formal approval from the State Government of Cambodia. During the three week mission the WMF team made initial contacts with the key personnel in the Cambodian government responsible for the administration and maintenance of Angkor as well as the faculty and students of the Department of Architecture, University of Beaux Arts, (UBA) Phnom Penh. In discussions with government officials, The team identified the country's need for assistance in developing conservation management, training and technology for the historic site of Angkor. At the end of the mission the WMF team met with Prime Minister Hun Sen who was interested to learn of the team's findings and recommendations. Subsequent to this meeting WMF proposed a second mission to develop the themes of management, training and technology - themes that were endorsed at UNESCO's first International Round Table of Experts on the Preservation of the Angkor Monuments held at the beginning of June 1990 in Bangkok.

The World Monuments Fund (WMF) fielded a second collaborative mission in March 1991. "The Preah Khan Conservation Project - Stage One" summarizes the research and analysis undertaken during the mission and proposed activities in Angkor in the short term, 1991-1992.

The June 1990 UNESCO Round Table Meeting brought together specialists and representatives of institutions who were supportive of an effort to protect Angkor. The outcome of this meeting emphasized the need for the various parties interested in supporting a program for the conservation of Angkor to collaborate in establishing:

- Measures required to preserve the Angkor Site;
- Methods to be used to draw up and implement a Masterplan;
- Procedures for International and Technical Co-operation.

Following these themes, several key issues relating to conservation training, research, preparation of inventories, conservation technology and fund raising were discussed.

Perceiving its most significant role as assisting in the methodological and technological aspects of the collaborative effort, the WMF has concentrated its efforts in the following report on identifying the requirements for the development of conservation activities in Angkor and on providing guidelines on

how to achieve these goals.

Realizing the great need to enhance the existing administration — a subject that was not touched upon during the 1990 Round Table Meeting — the WMF has set out a series of proposals for discussion. These proposals will assist the Cambodian government in establishing the necessary administrative framework to manage the scale of activities likely to develop in such a major conservation undertaking.

This report recommends a collaborative effort to develop a Conservation Management Plan for the Historic City of Angkor; the establishment of both local and regional training opportunities; and a well orchestrated research and analysis program on site. The report outlines a methodology for the development of a computerized inventory and management plan, which is being applied in WMF's pilot project for Preah Khan. It is anticipated that Sophia University and the WMF will continue their collaboration to develop the Angkor Inventory Program. The report also raises such key issues as the need for Conservation Guidelines, Definitions of Interventions and a framework for the Conservation Management Plan. It is hoped that the administration will be set up in 1991 to co-ordinate these guidelines and conservation policies and to ensure their implementation.

This document has been prepared for the Second Round Table of Experts on the Preservation of the Angkor Monuments as part of WMF's contribution to the collaborative conservation initiatives. Its purpose is to highlight the requirements needed to achieve the objectives set out in the report of the 1990 Round Table Meeting and to provide points for discussion. The WMF welcomes comments and suggestions for the improvement of this report which will be revised after the Meeting as a first step to formulating a Conservation Management Plan for the Historic City of Angkor.



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## 2 Introduction

The "Management Plan for the Conservation and Presentation of the Historic City of Angkor; Stage One - Preparatory Guidelines and Recommendations" (short title: "The Angkor Report" is the result of two technical missions organized by the World Monuments Fund (WMF). The research and recommendations have been prepared by a multi-disciplinary team of experts in response to the State of Cambodia's Government appeal for help to re-establish a program to protect and conserve the structures of Angkor.

The World Monuments Fund (WMF) is an international foundation based in New York USA whose purpose is to assist in the development and financing of international programs and whose aim it is to protect and preserve man's artistic and architectural heritage.

Recognizing the severe depletion of manpower during the recent conflicts in Cambodia, it is clearly understood that the first step to rectifying this situation will be the development and expansion of existing resources in the Department of Conservation in Phnom Penh and in the offices of Conservation d'Angkor in Siem Reap. It is hoped that this can be accomplished through a variety of different forms of assistance, including both funding and the establishment of programs in training and conservation.

The ultimate control over any project for the conservation and presentation of Angkor, of course, must lie with the Cambodian government. To make the requisite decisions effectively it is essential for the government to establish a strong centralized competence within the country's administrative system. Otherwise, there is a danger of developing a series of ad hoc bi-lateral projects, each unrelated to the other and having limited relevance to the Angkor project as a whole.

The Cambodian government's proposed formation of a National Cell for the Angkor project and the concept of an International Advisory Group of conservation specialists would provide the right guidance and stewardship for a project of such an international scale.

# 3 Purpose of Report & Summary

In this Angkor Report the WMF presents to the State Government of Cambodia its findings during the missions which are described in a overview of the present status of the Historic City of Angkor. The report is designed to provide general guidelines related to administration, planning, training and conservation for the government to assist the various ministries, departments and organizations with the formulation of short-term and a long-term programs for the development of a conservation management plan for the monuments in the Historic City of Angkor. These Guidelines will provide the basic principles and the philosophy that are recommended for the establishment of all collaborative programs in Angkor.

In summary, this report which sets out the preliminary guidelines for and recommends as the ultimate goal the compilation of a Conservation Management Plan for the Historic City of Angkor.

To achieve this goal, administrative and training strategies are required to provide the framework and manpower to undertake the tasks.

- **The Establishment of the National Angkor Cell** to administer conservation activities in the Historic City of Angkor.
- **The Establishment of the Angkor International Advisory Board** to assist with the formulation of conservation policies.
- **The Establishment of Training Programs** for technicians administrators and craftsmen.
- **The Development of Funding Strategies** for the Conservation Management Plan.

The WMF hopes that this report will provide the impetus to help the Cambodians draw up a plan of action whose goal is to make available once more the Historic City of Angkor to the Cambodian nation, to visitors and to pilgrims from around the world.



## 4 Cultural and Historical Significance

Hidden deep in the jungles of northern Cambodia lies the historic city of Angkor which represents the flowering of the Khmer empire. During its hey-day Angkor boasted a unique collection of temples dating from as early as the late 7th century to the middle of the 13th century. This remarkable royal city represents a significant landmark of the Khmer culture and civilization and is one of the most significant architectural sites in the world.



*A poetic vision of Angkor Wat in 1880 by Louis Delaporte.*

The temple of Angkor Wat, perhaps because of its monumental scale and grace, has in recent history served as the nexus for the monumental complex as a whole. Legends abound regarding Angkor Wat's origins, ranging from the belief that it was miraculously constructed under cover of darkness by the celestial architect Preah Pisnukar, or that it was constructed by Preah Ket Mealea, a legendary prince, reputed to have been born the son of Indra and a mortal queen. Thus the monument which legend has variously ascribed to the miraculous power of Indra, or simply to the handiwork of giants remains one of the most significant "wonders" of Cambodia's Medieval Age.

The great Angkor city, (a series of former royal townships), is located a few kilometers from present day Siem Reap and the Great Lake (Tonle Sap). The remnants of this unique culture is scattered over a large area in excess of 160 sq. km. (comparable in size to one third of New York City or twice the size of San Francisco). To provide an additional perspective, it is interesting to compare the areas occupied by Angkor Wat, - 200 acres (81 hectares) and Preah Khan - 56 acres (23 hectares) to sites such as at Sukhothai (70 sq km) in Thailand; Borobudur which is contained within 117 sq m. and the entire Imperial Palace complex in Beijing which is contained within an area of 178 acres (72 hectares).

Contributing to the unique environment around Angkor, the fragmentary remains of a highly sophisticated hydraulic-irrigation system, encircle and link the sites revealing a perpetual source of wonder for art historians and architects alike.

Legends concerning the creation of Angkor agree that the palace city and surrounding monuments evolved over an extended period of six hundred years. The temples and palaces were enjoyed by their builders, their inhabitants and their visitors over the centuries even in their ruined state as they were a dwelling of the gods. As is characteristic of many cities of this period, man's dwellings are ephemeral, being built of brick and timber, whereas the permanent structures of the gods have survived almost one thousand years later. In these structures are found a metaphorical open book of the Khmer culture where with the eyes and knowledge of a specialist, the stones can be deciphered and the information of the past can be read.

The ancient Cambodian capital of Angkor features monuments dating from the late 7th through 13th centuries and serves as an important landmark of Khmer culture and civilization on both national and international levels. The fact that Angkor Wat, which has often been regarded as the a model of Khmer architectural perfection, has continuously been preserved over the course of history and has been the topic of numerous legends explaining its origins, is reflective of the symbolic importance this structure serves within the context of Cambodian heritage and culture.

Not only is the Angkor region of great historical significance, representing the embodiment of Cambodia's cultural and artistic heritage, but it is a perpetual source of wonder for both art historian and architects alike. Certainly this site with its innumerable temple complexes ranks among the most important wonders of the world.

An introduction to the architectural history of the ancient Khmer empire is essential to any undertaking of the scope herein proposed. A more extensive historical and architectural statement is contained in Annex I, providing a general background in Khmer architectural history against which the Angkor temple structures might be more clearly understood. Significant chronological developments in architectural fabrication, design and decoration are noted.

When Cambodia was granted its independence from France in 1953, Angkor Wat was taken up as a symbol for the new Khmer nation. More recently, in the face of the current hostilities, Angkor has stood as a symbol for all the various fighting factions. As a token of a civilization that once dominated all Indo-China and much of present day Thailand, the towers of Angkor Wat have graced the flags of all recent regimes announcing to an international audience the ancient glory of the Khmer kings and the cultural heritage of its people.

There has been a constant intervention over the last century from various French teams who have made considerable efforts to restore and consolidate the monuments of Angkor. The known and recorded previous conservation and restoration interventions are well documented and are contained in the archives of the Ecole Française de l'Extrême Orient (EFEO).

In the early 1960's Cambodia and Angkor were a favored destination in South East Asia for the intrepid traveller. Consequently a sizeable tourist infrastructure had begun to develop around Angkor to receive the 45,000 tourists anticipated in 1969. Fortunately, very limited construction took place in and around the monuments. In the intervening years the historic city has slipped back into oblivion and only recently has it again become a destination for a few privileged travellers.

There is no doubt that Angkor will again become a multi-million dollar tourist destination in the near future and the historic city must therefore be suitably prepared for its future visitors. The development pressures of tourism need to be carefully monitored and controlled; the monuments must be correctly conserved and presented, otherwise the magical experience of visiting this unspoiled haven of serenity could be lost for ever.

Today, perhaps the single greatest threat to these monuments is tourism and the conceivable uncontrolled development that accompanies its demand. There are devastating examples in Asia of where the tourist industry dominates the historic site. Cambodia should not be provoked into using Angkor as a foreign exchange earner without giving careful thought to the controlled development of a sympathetic tourist infra-structure.

The Cambodian government realizes its responsibilities to the historic city of Angkor and has made outstanding efforts to protect and maintain the 40 or more different sites within the complex by inviting assistance from abroad.

A N A P P E L  
F O R A N G K O R

During the night of 31 August to 1 September 1989, very strong winds with torrential rains swept over the Park of Angkor, pulling down more than 750 large trees, causing some damages to historical monuments within the perimeter of the Park. Some parts of famous temples and sites such as Bayon, The Terrasse of the Elephants, the Terrasse of the Leprous King, Ta Prom, Banteay Kdey and the Pimeanakas were hit, and the damages could not be overlooked.

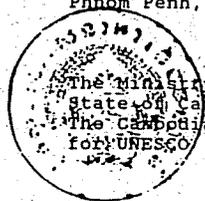
The Ministry of Culture of the State of Cambodia and the Cambodian National Commission for UNESCO are currently engaged in drawing up a first appraisal and have already started to have the trees cleared up. These age-old trees both protected the monuments from wind erosion and enhanced the natural beauty of these historic sites.

The Ministry of Culture of the State of Cambodia and the Cambodian National Commission for UNESCO feel it necessary and indeed urgent to mobilize important means both technical and financial, not only to repair the recent damages but also to restore and preserve other monuments which belong to the Cultural Heritage of all mankind.

For these reasons, the Ministry of Culture of the State of Cambodia and the Cambodian National Commission for UNESCO would like to appeal to all men of good will, to the Organisations of Friends of Angkor, to other Non-Governmental Organisations, to countries and to specialised institutions such as UNESCO, to take urgent steps to help to repair, to restore and to preserve one of the world wonders.

The Ministry of Culture of the State of Cambodia and the Cambodian National Commission for UNESCO welcome all kind of assistance, cooperation and suggestions aimed at preserving this common cultural heritage for futur generations.

Phnom Penh, September the 30, 1989



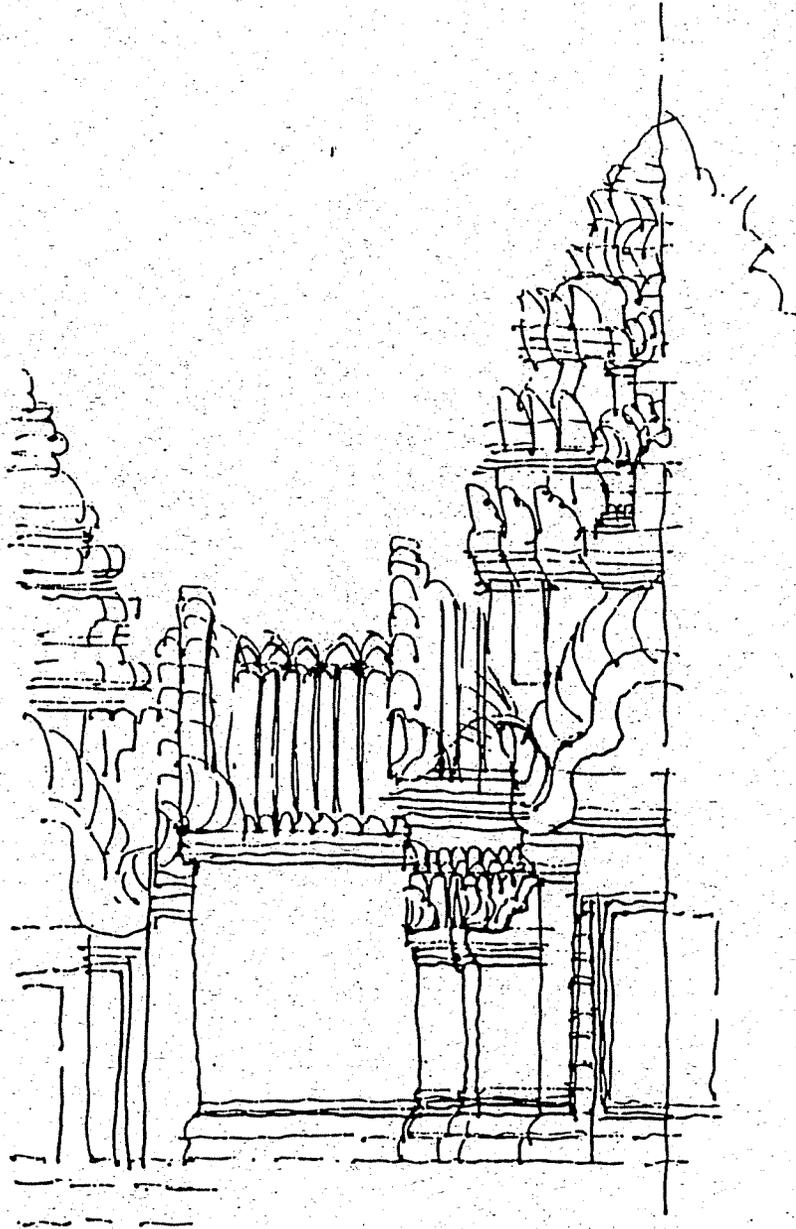
The Ministry of Culture of the  
State of Cambodia and  
The Cambodian National Commission  
for UNESCO

*In response to this international call for assistance the WMF has selected the 12th century monastic site of Preah Khan where a pilot project is in progress. The Preah Khan Conservation Project is establishing a conservation management framework, developing a training program and initiating appropriate site conservation. The Preah Khan Report which accompanies this report, summarizes the project and should be read in conjunction with it.*

*"The Angkor Appeal"*



# Part One Guidelines and Training



**Identifying the Needs**

**Principles and Procedures**

**Preliminary Intervention Principles**

**Definitions of Interventions**

**Conservation Training**

**Formal Training for the Professions**

**Formal Training for the Crafts**

**Informal Training for the Professions**

## 1.1 Identifying the Needs

This report is intended to assist in preparing guidelines and recommendations for the conservation and presentation of the Historic City of Angkor for national and international organizations intent on contributing to an international effort to safeguard the monuments of the Historic City of Angkor. The following "needs" have been established and are proposed for the Angkor Conservation Project:

- The urgent need to conserve and maintain the extensive site of the Historic City of Angkor.
- The need to develop a sound conservation and management philosophy for the conservation of the Historic City of Angkor.
- The need to develop skilled teams diversely trained as administrators, professionals, technicians and craftsmen to augment the present limited manpower.

To address these needs the following planning tools must be developed:

- Guidelines for the Conservation and Presentation of the Historic City of Angkor which place conservation related activities within a framework of general planning, development of infrastructure and encouragement of cultural tourism.
- A Cultural Tourism Plan for the Historic City of Angkor, as well as for Cambodia, to support the conservation efforts at Angkor.
- Development of a comprehensive Conservation Management Plan to undertake the repair and conservation of the Historic City of Angkor.

## 1.2 Principles and Procedures

The organization by UNESCO of the Second Round Table meeting is sufficient confirmation of a wide spectrum of support available for Angkor. Many countries, organizations and institutions are willing to provide advice and expertise. From discussions held during the WMF missions, it is apparent that there are no established principles or procedures to guide the potential supporters of conservation at Angkor. It is therefore recommended that some basic principles and procedures should be established to enable all projects to have common goals and standards for both research and implementation activities in the Historic City of Angkor.

Prior to any intervention on any of the sites within the Historic City of Angkor, it is recommended that each site be studied in order to establish a conservation vision or overview, taking into account the principles and interventions listed below. The relationship of each site should be studied in context with the adjacent sites and all conservation plans should be based upon conservation guidelines set forth in the Conservation Management Plan and administered by the Cambodian government through the Conservation d'Angkor unit of the Ministry of Culture.

### 1.3 Preliminary Intervention Principles

The principles for intervention in the protection and maintenance of historic structures and their environments should not be confused with principles applicable for the conservation of works of art. The principles adopted must be clear and succinct as many different professions and crafts will need to interpret them.

The following principles and procedures are based upon criteria set forth in the ICOMOS Venice Charter of 1964, and have been adapted as suggestions for use in Cambodia and more specifically in Angkor. They are present herein for discussion at the Second Round Table Meeting:

- The condition of the building must be fully documented prior to any intervention.
- Historic evidence should not be destroyed or falsified. In exceptional circumstances previous interventions can be removed for the well-being of the structure.
- Any intervention must be the minimum necessary and should be governed by unswerving respect for the aesthetic and physical integrity of the structure.
- All methods used during the conservation and repair must be fully documented, including coding of introduced or new materials.
- All procedures adopted for conservation should be substantially reversible or have minimum impact.
- Only well researched and proven conservation technology should be employed and in all cases technology new to the region should be carefully tested and monitored before an intervention program proceeds.
- A well developed maintenance plan is obligatory to any intervention.

Monuments du Cambodge, t. III, p. 163.

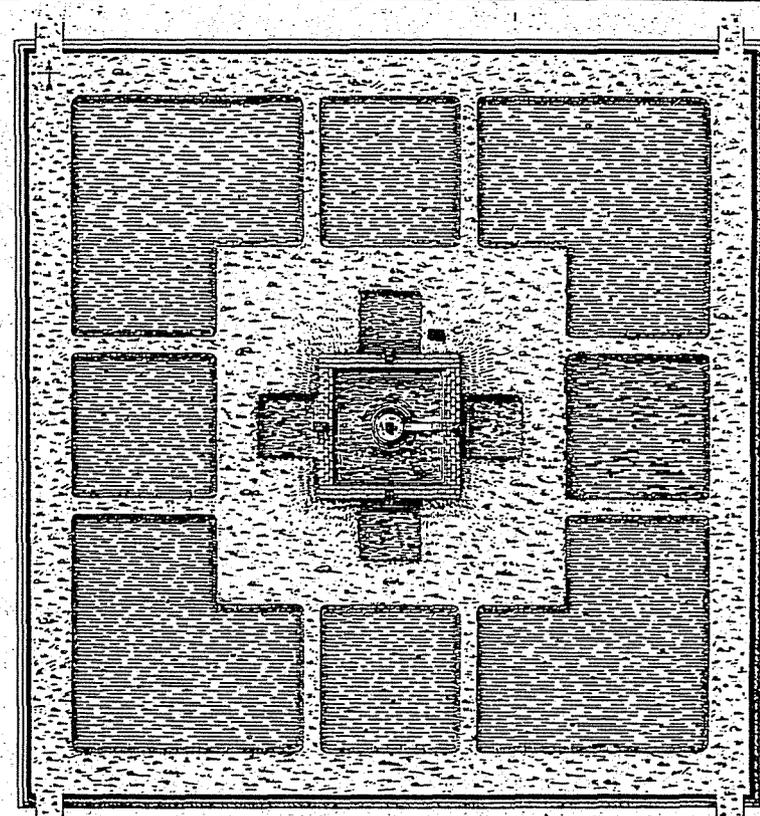


Fig. 51. — Neak Pean, n° 507. Plan.

*Neak Pean plan by E. Lunet de Lajonquiere  
(Source: Inventaire des Monuments du Cambodge, 1911)*

## 1.4 Definitions of Interventions

The adoption of definition of interventions at this preliminary stage is essential to facilitating consistent terminology throughout the program. The following definitions are proposed:

### 1.4.1 "No" Intervention

It is often sound practice to advise a moratorium that NO intervention should take place on a site or structure for an indefinite or a set period of time. Sometimes interference could cause more damage than if no work is undertaken at all and often new thinking or technology could present a better alternative several years hence. It may be part of the presentation approach to leave areas of a site "as found".

### 1.4.2 Conservation

This approach is restricted to the minimal repair and conservation of the structure and avoids the use of new visible materials. It may involve a degree of intervention to protect the structures as is feasible from the weather cycles and other associated problems.

### 1.4.3 Stabilization

This process involves the minimum intervention required to support or strengthen areas of imminent collapse. Any rebuilding should be undertaken with minimal structural intervention but should be directed towards prolonging the life of a structure that has been otherwise threatened with destruction. Stabilization measures may be undertaken to retard material deterioration.

### 1.4.4 Reconstruction or Anastylis

As many of the structures have collapsed, scattering their stone blocks to the ground, it is possible to deduce by anastylis how to reconstruct these structures. The process is typically not accurate, but it is the only way of reconstructing some of the more remarkable structures of the Angkor Period. Restoration by anastylis using the original material is justifiable when supported by firm archaeological evidence and when it makes a ruin more comprehensible. Patina should be preserved at all costs and lacunae made less emphatic than the original material.

### 1.4.5 Maintenance

Regular and careful maintenance is the process undertaken to ensure that structures are kept clear of vegetation and are well drained. The systematic checking and monitoring of the stability of structures will limit the later need to undertake major works on a structure.

### 1.4.6 Excavation

Excavation, an archaeological intervention for purposes of gathering historical information or investigating the condition of structures, should be carefully controlled to minimize its destructive impact. All archaeological interventions should be included in the conservation policy developed for a structure.

## 1.5 Conservation Training

One of the greatest contributions to be made through support of field conservation programs in the Historic City of Angkor is the continuation and development of a training curriculum. Programs should be formalized immediately to enable students to participate in both the preparatory and implementation stages of projects. It is recommended that training should be conceived for both formal and informal operations and should be directed to both professionals and craftsmen. It is apparent from information gathered during both WMF missions to Angkor that the existing curricula for training in architecture and archaeology are limited. There is no formal training in conservation theory or technology. During its first mission, the WMF team met with the staff and students of the Department of Architecture for general discussions and introduced the theme "Promotion Angkor" a motto for the first class to graduate in this faculty for twenty years. Focussing upon the urgent need for training in these fields, the WMF gave priority to providing "On-Site" training during its next mission and, in collaboration with Sophia University was able to set up the first "On-Site" training activity for students from the Departments of Architecture and Archaeology from the University of Beaux Arts in Phnom Penh. Twenty five selected students were taken to Angkor for the duration of the mission and given basic training on site in the history of Angkor, in the philosophy of building conservation, in general survey methodology, in site archaeology and geology as well as field experience in a conservation project.

WMF chose the monastic site of Preah Khan to teach the philosophy of conservation and demonstrate the techniques of survey work as it relates to the development of an inventory and conservation management plan. (Details of the training they underwent and the work they produced are included in "The Preah Khan Report" accompanying this document.) As

part of the collaborative mission, the Sophia University group undertook site training in archaeological excavation, geological research, and measured surveys at Banteay Kdei, the site chosen for the Sophia University pilot project. The success of this preliminary effort in training can be measured by the students' enormous enthusiasm and in practical terms by the drawings they prepared of Preah Khan following the instruction they received on site.

## 1.6 Formal Training for the Professions

Before any long term conservation work can be undertaken in the Historic City of Angkor, it is essential to establish professional training standards and to train conservation teams, representing several different disciplines, to undertake the necessary preparatory and implementation work at Angkor. Formal training at undergraduate and graduate levels is required in the professions of architecture, engineering, archaeology and history, after which specialized courses in building conservation are recommended. Training should be initiated at the University of Beaux Arts and on site for all potential building conservationists. Subsequent courses or exchange programs at regional or international training centers are also desirable.

### 1.6.1 At the University of Beaux Arts Phnom Penh

Following discussions with the faculty the Department of Architecture of the University of Beaux Arts, it is recommended that architectural conservation be introduced as a general subject and that certain provision be made for a few students to specialize in this field at the graduate level. Scholarships to universities abroad with comprehensive graduate programs in architectural conservation should also be considered as a possible option.

### 1.6.2 At an International Center

It would be appropriate to link Cambodian training programs into courses offered at the International Center for Conservation at Rome (ICCROM) and at the regional centers in India, Sri Lanka and Thailand, thereby providing opportunities for students who have already completed a course in architecture or a related field to train abroad — preferably within the region — in architectural conservation. Wherever possible this training experience should be related also to a “hands-on” conservation project.

### 1.6.3 At Conservation d'Angkor

Following the initial successful on-site training activities, in which staff members from Conservation d'Angkor participated, it is recommended that consideration be given to developing a basic conservation training program at Conservation d'Angkor. A nucleus of staff at this center could commence the urgent site work and carry out background research for the Angkor Project with the assistance of students.

### 1.6.4 At the Conservation Project Office

It is recommended that a permanent Conservation Project Office is set up within the Conservation d'Angkor compound to serve as a nucleus for such training. (This concept is developed in the Preah Khan Report which elaborates the short term requirements of such an office.

## 1.7 Formal Training in the Crafts

Without skilled craftsmen it will not be possible to implement conservation programs at Angkor. It is recommended that a crafts training program be initiated to implement approved projects. The current skills have not been appraised, however, some of the craftsmen who served the EFEO in the 1950's and '60's are still in the vicinity. After general discussions on site, the following issues were identified.

### 1.7.1 At Conservation d'Angkor

It is anticipated that some of the craftsmen that worked with the French team are still associated with Angkor. Utilizing this skilled work force, it should be possible to form a basic core of trainers and develop a training program for stone masons and carvers. Each will need to hone his skills and then, in a practical way, be introduced to the fundamental principles of conservation related to the various conditions at Angkor. Training in methodology and skills, ranging from the structural repair of collapsed buildings to the repair of damaged objects, will be needed. Basic training in conservation technology should be taught to craftsmen in conjunction with the training of professionals as outlined above.

### 1.7.2 On Site Training

It is recommended that the most feasible approach to developing a crafts training program would be to establish a pilot project at Angkor and develop a crafts training program in conjunction with its conservation program. (In the Preah Khan report a program for on site training for craftsmen is outlined). Once the basic methodology for crafts training has been instituted, craftsmen could be moved to other projects to which apprentices should initially be affiliated. It is likely that competent and

suitable trainers from abroad will need to supervise this program. If possible, they should be drawn from neighboring countries which share a common architectural and cultural heritage.

### 1.8 Informal Training for the Professions

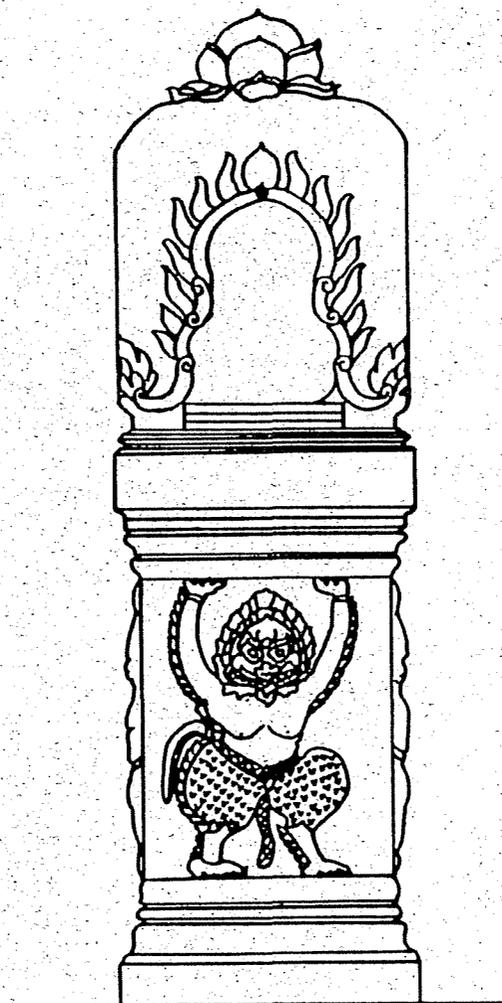
Building conservation is not a subject that can be taught without years of “hands on” experience. It is recommended that any bilateral or multinational field projects provide extra-curricular opportunities for both short term and long term training of Cambodian students as follows:

#### 1.8.1 On Site Training

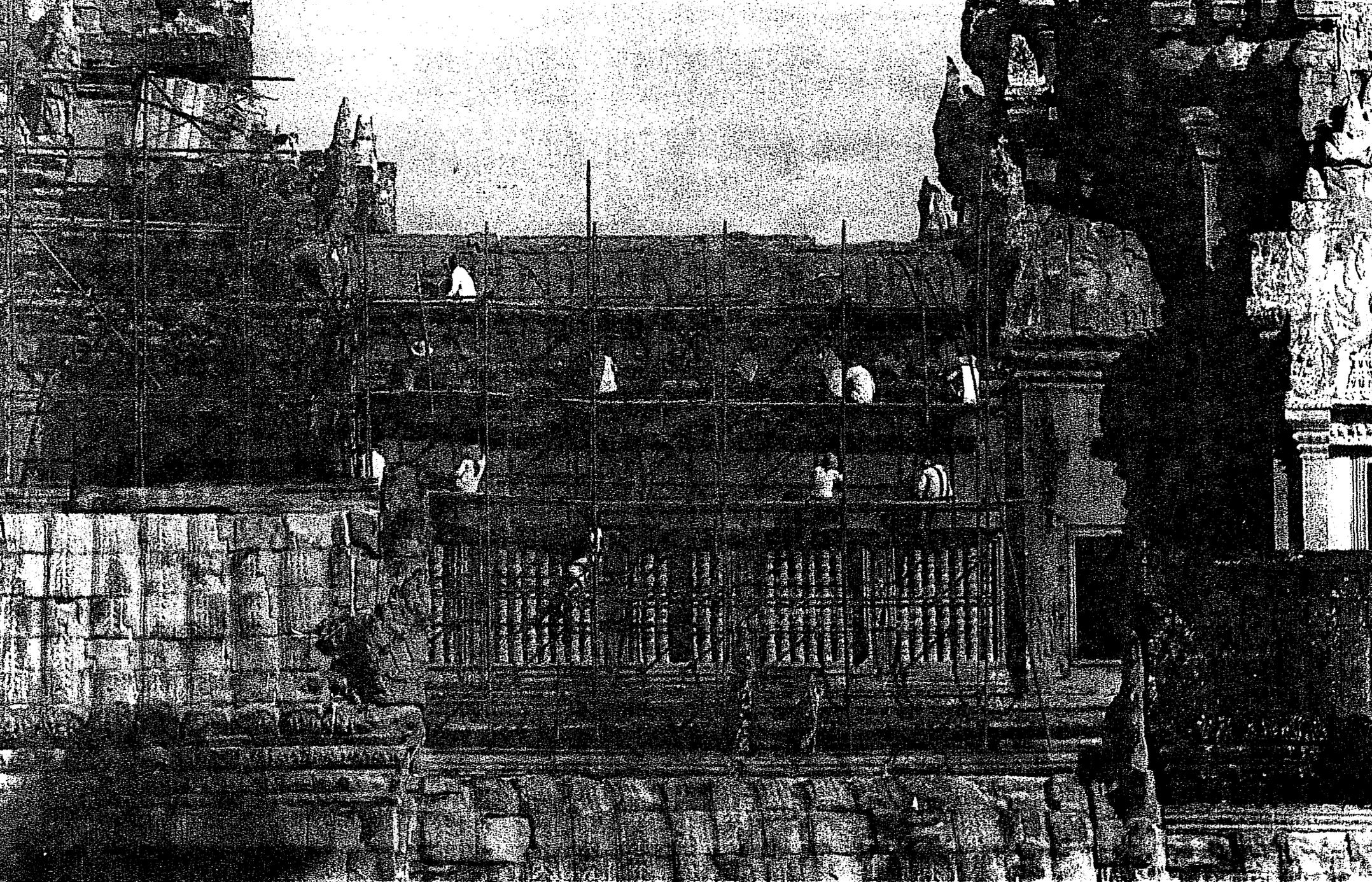
It is recommended that the Departments of Architecture and Archaeology at the University of Beaux Arts, incorporate into its curricula specific courses which develop opportunities for students to participate in the preparation and implementation of projects at Angkor.

#### 1.8.2 At Conservation d’Angkor

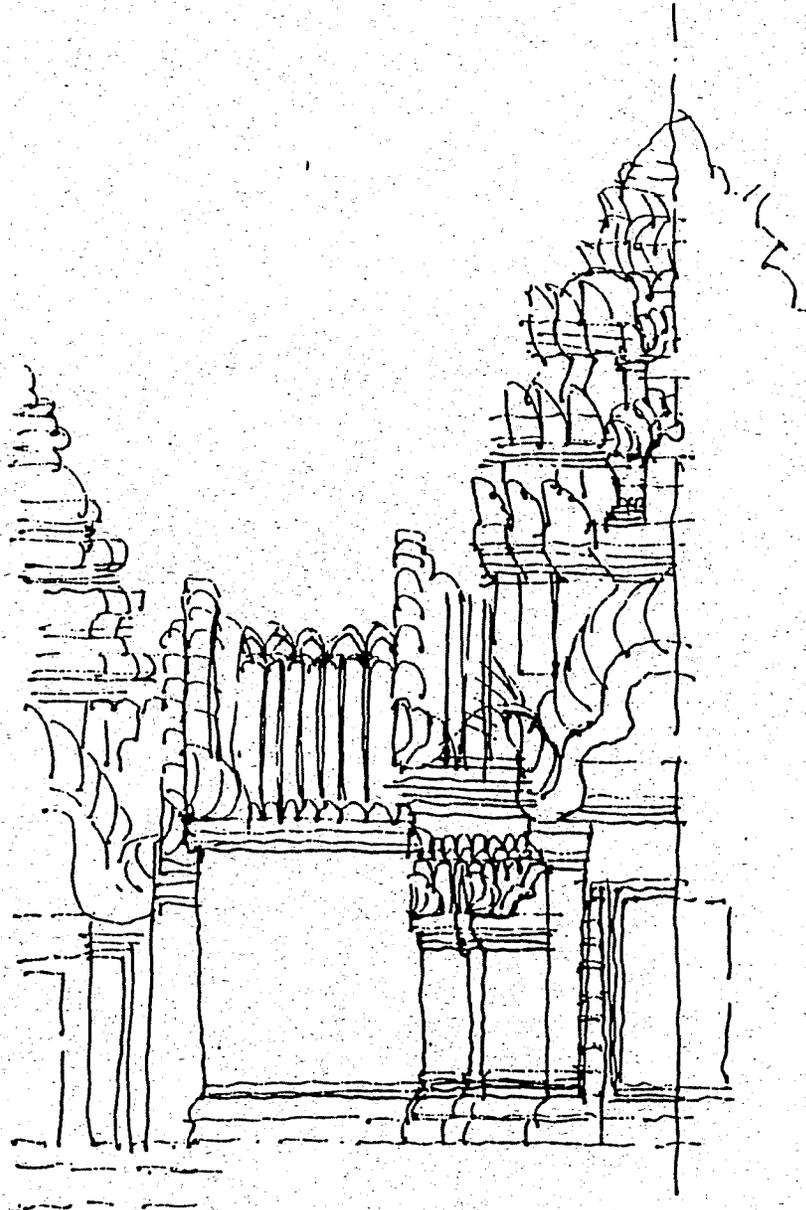
It is recommended that arrangements be made by Conservation d’Angkor to develop an internship program with the University. This should be specifically designed for students of architecture and related fields and tailored to periods of activity during both the preparatory and implementation stages of any conservation projects in progress. In 1992 the staff of Conservation d’Angkor should continue to participate in training activities.



*Detail of Student’s Drawing, WMF Training Session 1991*



## Part Two Management



**The Conservation Management Plan –  
Its purpose**

**A Framework for the Conservation  
Management Plan**

**Recommendations to Enhance  
Administration**

**Legislation**

**Fund Raising Strategies**

**The Development of a Building Inventory  
for the Historic City of Angkor**

### 2.1 The Conservation Management Plan - Its Purpose

The conservation of historic monuments and sites constitutes an inter-professional discipline coordinating a range of aesthetic, historic, scientific and historical methods. Conservation is a rapidly developing field which, by its very nature, is a multi-disciplinary activity with consultants combining to form an effective team. The Conservation Management Plan is the strategy document which will assist the team in planning developing and executing the conservation project whether it is for the Historic City of Angkor, on the macro scale, or a specific conservation project such as the plan being developed by the WMF for Preah Khan.

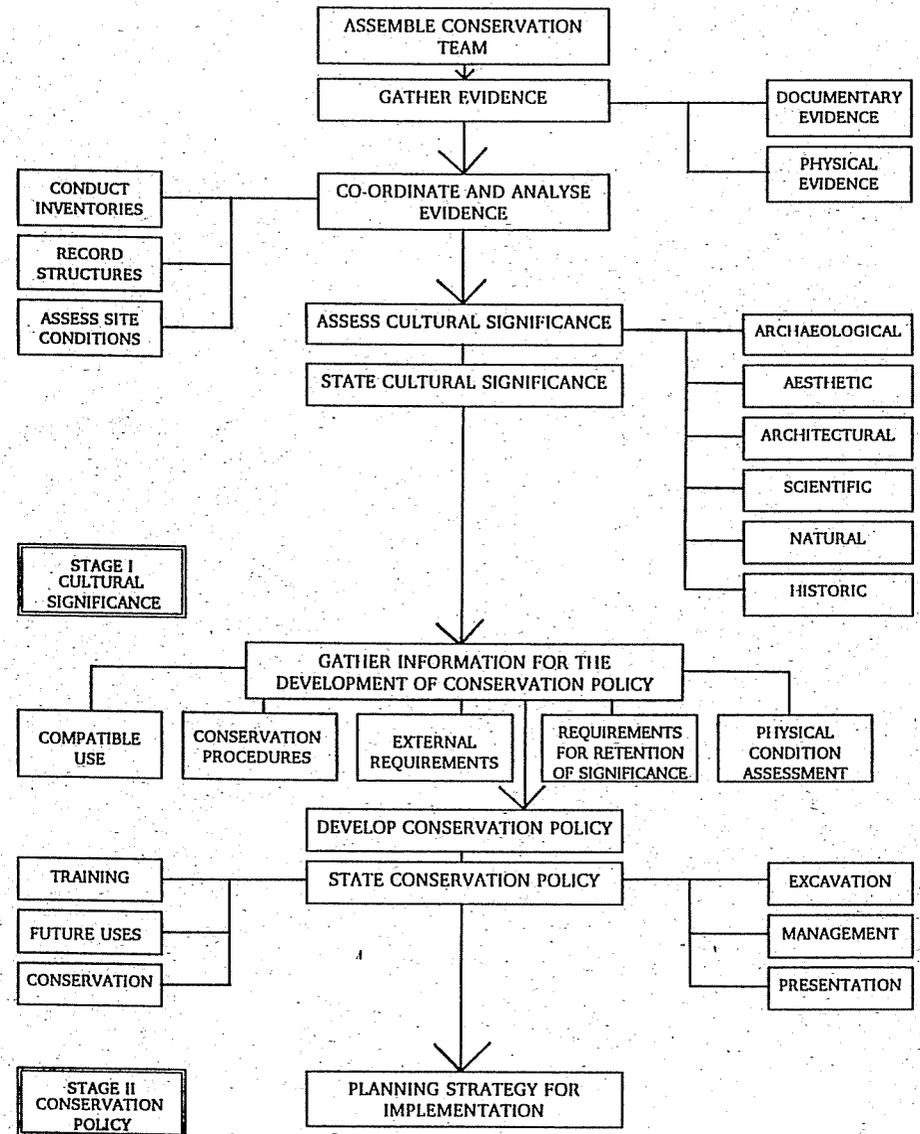
### 2.2 A Framework for the Conservation Management Plan

As there are several public and private organizations prepared to provide assistance to the Cambodian government, there is a great need to establish a framework for the development of a Conservation Management Plan for Angkor.

The Conservation Management Plan would become the working document for Angkor. It would identify a series of sub-projects centered around several significant monuments which would be drafted and monitored subsequently as special case projects under the guidance of Conservation d'Angkor and the Advisory Board.

Establishing a framework for the conservation and management of all sites is a basic requirement. By having the plan in place, decisions and interventions are structured by priority and undertaken in a logical and scheduled sequence that can be linked to funding strategies. This planning process is summarized in the diagram, Conservation Management Plan Process.

CONSERVATION MANAGEMENT PLAN  
PROCESS



### **2.2.1 Recommendation for Implementation**

It is recommended that the Second Angkor Round Table assists the State Government of Cambodia to draw up guidelines for a conservation management plan for the Historic City of Angkor. It is further recommended that UNESCO be appointed the administrative body responsible for the co-ordination of "Conservation Management Plan for the Historic City of Angkor".

### **2.2.2 Networking and Collaboration**

It is essential that there is co-operation amongst supporting groups and good collaboration with the Ministries and Departments of the Cambodian government. The development of a Conservation Management Plan for Angkor can only be undertaken in close collaboration with the Cambodian government and should be developed within the government's time frame. The development of a comprehensive management plan will require careful co-ordination and will necessitate the input of several different disciplines. The work related to each of the headings set out below will not necessarily be undertaken simultaneously.

### **2.2.3 Procedures for the Conservation of Historic Structures**

Before any work on the conservation of historic buildings is undertaken in Angkor, it is strongly recommended that a set of principles and procedures for future conservation work be adopted by the Cambodian government as recommended in Section One of this report. These should also be endorsed by UNESCO as the appropriate standards for all conservation work undertaken in Angkor. It is recommended that the administrative body known as the Angkor Cell apply these standards to all proposed works before giving its clearance for any work to proceed relating to a monument in the Historic City of Angkor. All work should be consistent with the Conservation Management Plan.

### **2.2.4 Procedures for Archaeological Excavations**

Similar to the guidelines for the conservation of historic structures, it is recommended that a set of stringent rules be developed to control archaeological excavation within the Historic City of Angkor. For example, it is recommended that archaeological excavations be related to building conservation projects and that adequate provisions are made for the conservation of materials uncovered. All work should be consistent with the Conservation Management Plan.

## 2.3 The Development of a Building Inventory

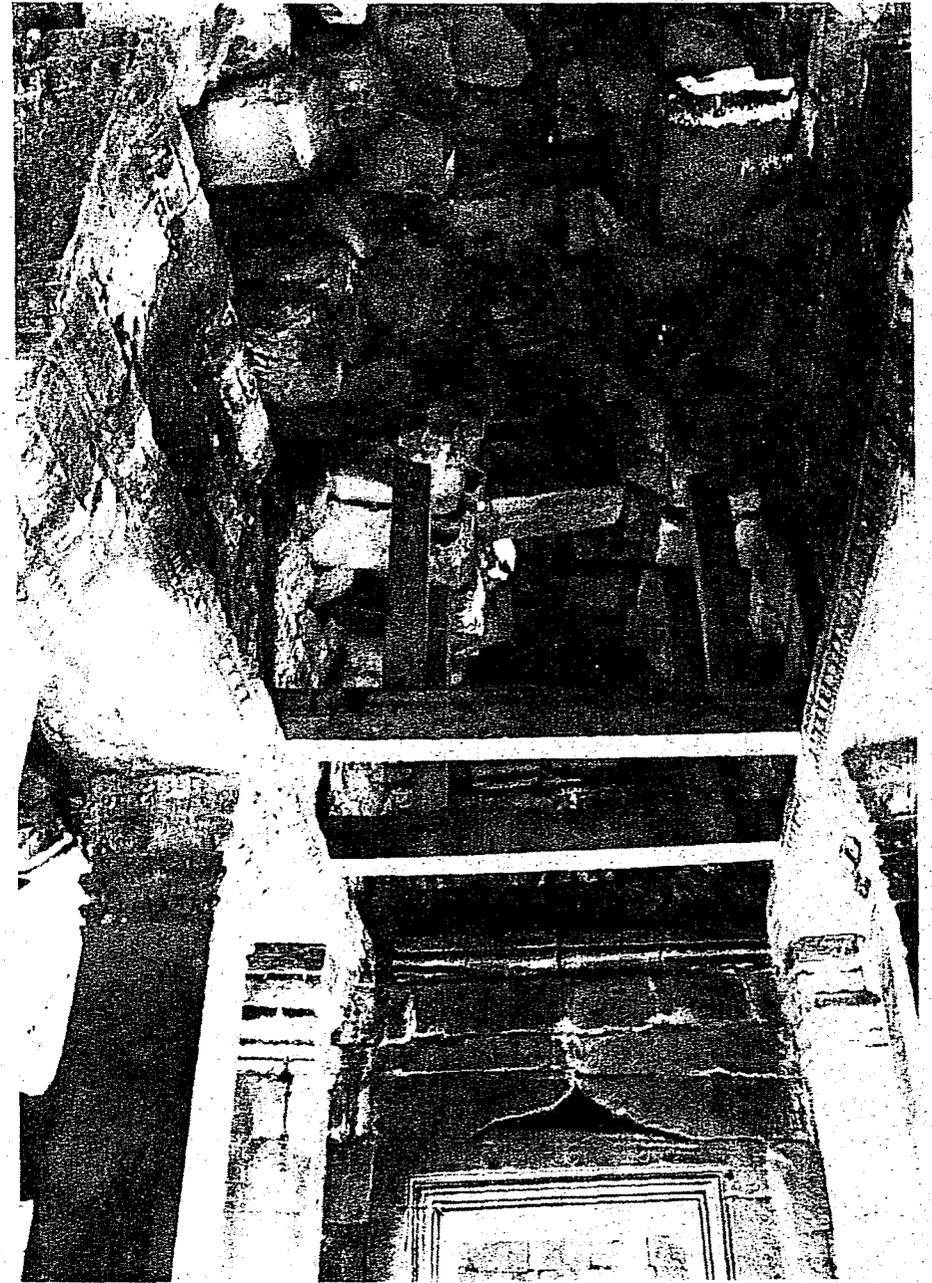
The Building Inventory is an integral and essential part of the conservation management plan. Existing data needs to be located, verified on site and compiled in a computer system that provides researchers, technicians and administrators with an easily accessible reference.

### 2.3.1. Identification of Sites

It is recommended that the existing "Legal Inventory" listing, as compiled by French teams, be checked and updated as necessary. The 1990 WMF Report, *The Conservation and Presentation of the Angkor Sanctuary, Cambodia* contains an inventory of temple complexes which should be used in conjunction with the "Legal Inventory". The revised inventory should list all the Khmer monuments associated with Angkor and it should be adopted as part of the legal protection for the region.

The compilation of the Preah Khan site inventory was initiated in March 1991 by the WMF Team. This basic inventory locates all items (ie, cells, courtyards, terraces) by grid reference co-ordinates and records data such as an architectural description, structural condition and construction type. The methodology was established and a photographic glossary of nomenclature was prepared in collaboration with the 1991 team from Sophia University. Both teams have used the same format for site recording.

The Preah Khan inventory is designed to establish exactly what exists on site, making it possible to set logical priorities for future programs and to schedule conservation activities accordingly. For example, all the areas in danger of imminent collapse are recorded for priority action. The heritage inventory is the fundamental starting point of a conservation management plan.



*EFEO and Conservation d'Angkor stabilisation: concrete truss in West Gopura III, Preah Khan. (Photo: L. Anglin, 1991)*

The inventory is dynamic and continually updated. It is suggested that any Angkor inventories should be compiled using a computer database to centrally manage the information. This is elaborated on in Section 2.3.3 to follow.

### 2.3.2 Guidelines for the Development of Sub-Projects

As projects are taken up by different countries or organizations, it is proposed that they are developed according to the Special Guidelines set out in Part Two of the Angkor Report. The Sub-Projects should be identified and programmed into the Conservation Management Plan and meet all the requirements therein. Special consideration should be taken of the Intervention Zones.

### 2.3.3 Sharing a Database Management System

At this early stage of the planning process, there exists an opportunity for all parties concerned to collaborate on the compilation of the inventory for Angkor. Further to this, the ability to centralize the information compiled on all the Angkor sites is a necessity for their on-site conservation management.

It was suggested at the 1990 Angkor Round Table that there should be a means of bringing together the results of research and investigations on the Angkor site, both past and present. It was also suggested that the development of a computerized system specifically for Angkor was at that stage not feasible. (see paragraphs 28-30, Section 2.5 The computerization of documentary material, UNESCO Meeting Report).

BUILDING INVENTORY: FIELD RECORDING FORM W.M.F. 3/91

IDENTIFICATION  
 SITE: PREAH KHAN ENCLOSURE NO.: 2  
 ITEM TYPE: VE GROUP: GW GND COORDINATE: 000N 100W ORIENTATION: W-E  
 COMMON NAME: GUPURA WEST VESTIBULE EFED REF: 522

GENERAL DESCRIPTION / DECORATION:  
 SHIVAITE SCULPTURAL BAS RELIEF 1M HIGH ON ALL 4 SIDES AT JUST ABOVE ROOF CORNICE. TWO COLUMNS IN LINE WITH PISTON COLUMNS WITH HORIZONTAL BRACES. DECORATED PILASTERS AT CC DOOR, FOUR VAINUSAS

DESCRIPTION  
 PLAN:  RECTILINEAR  SQUARE  CRUCIFORM  
 STRUCTURE:  CRUDE VAULTED  FINISH VAULTED  
 WALLS:  COURSED  KEPT

BUILDING MATERIALS	CLAY	BRICK	STONE	PLASTER	WOOD	OTHER
ROOF						
WALL						
FLOOR						

SCULPTURE	OTHER
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

NOTES  
 SMALL BRICKS BRICKS (APPROX 6) ON FLOOR PERIODIC FROM WINDOW.

SIGNIFICANCE  
 UNIQUE ELEMENTS OR PARTS SHIVAITE BAS RELIEF ABOVE CORNICE

PREVIOUS WORK OBSERVED:  
 STABILIZATION CONCRETE BEAM AT BASE OF ROOF VAULT, STRUTS  
 INTERVENTION UNREL PATCHED, RIDGE CONCRETING  
 RECONSTRUCTION ROOF PARTIAL ROOF RECONSTRUCTION

PRESENT CONDITION 1991:  
 STRUCTURAL CONDITION  
 GENERAL ASSESSMENT 1 2 3 4 5 good ruin  
 ROOF: 100% COVER  COLLAPSE  %  
 FLOOR: 85% COVER  COLLAPSE IMMINENT

GENERAL OBSERVATIONS  
 1 WINDOWS ALL OPEN, TWO TIER  
 2 RECT STRUCTURE 2 GATE  
 3 MISSING, SOME HOUGHED  
 4 APERTURE IN PLINTH

WALLS:	N	S	E	W	PARTICULARS
INTACT					
RUIN %	*	*			WINDOWS DECORATIVE
COLLAPSE IMMINENT					

MATERIALS CONDITION  
 GENERAL ASSESSMENT 1 2 3 4 5 good ruin  
 MISSING ELEMENTS: WINDOWS, PARTS OF ANGKORIAN COLUMNS (CORNICES)

DETAILS OF PRIMARY DETERIORATION: ROOF WATER PENETRATION → MFS, ROOTS ONLY PARTIALLY REMOVED, VANDALISM

RECOMMENDATIONS  PRIORITY  SHORT TERM  MEDIUM TERM  
 1. Check roof for water penetration, repair.  
 2.3.

SEE GW - PD for 2,3

RECORDED BY SC DATE 21 MARCH 91 PHOTO NEG. NO.

Viewing Main table with form F: Record 1 of 17 Main

Site: PK Enclosure #: Geo Code: N445S998 1  
 Item type: Group: Orientation:  
 Common Name: De La Jonquiere #:

DESCRIPTION

Plan  
 Rectilinear  
 Square  
 Cruciform  
 Other  
 n<sup>2</sup> Area

General Description  
 Memo

Roof  
 Crude Vaulted  
 Finish Vaulted  
 Other

Number  
 Doors  
 Windows  
 Columns

Walls  
 Coursed  
 Keyed  
 Other

Building Materials	L	S	B	T	S
Roof	<input type="checkbox"/>				
Wall	<input type="checkbox"/>				
Floor	<input type="checkbox"/>				

Detailing  
 Colonnets  
 Pediment  
 Cornices  
 Architraves

Sculpture  
 Scribed reveals  
 Scribed walls  
 Exterior has relief  
 Interior has relief

Editing Main table with form F: Record 1 of 17 Edit

Site: PK Enclosure #: 1 Geo Code: N445S998 Common Name:

STRUCTURAL CONDITION

Assessment Date: \_\_\_\_\_

General Observations  
 Memo

General Assessment  
 good  fair  ruin

Floor  
 % Cover

Roof  
 100% Cover  
 % Collapse  
 Collapse Imminent

Walls	N	S	E	W
Intact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ruin%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collapse Imm.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MATERIALS CONDITION

General Assessment  
 good  fair  ruin

Missing Elements  
 Memo

Details of Primary Deterioration  
 Vines, Roots  H<sup>2</sup>O Erosion  Algae, Moss

The World Monuments Fund has made considerable progress on the 1990 resolutions, collaborating on-site with the Sophia University team in the building inventory process. Work is now well underway on the customisation of a database management system, tailored for the specific needs at the Preah Khan site. After comments have been received from the various organizations working in Angkor and the system is finalized, it can then be readily adapted for application in the preparation of Conservation Management Plans. Information compiled on the EFEO database can be read directly into this system. It has been designed to accommodate other sources of computerized information (compatibility), knowing the likely requirements for this.

A separate document to be issued at the 1991 Angkor Round Table Meeting, describes the basic characteristics of the system, its comprehensiveness, its management capabilities, and its application at Angkor. The system is briefly described below with reference to the Preah Khan Project.

The site inventory field records are formatted for computerization. Using a customized database, information is organized into a hierarchy and the basic data collected forms the foundation of the system. The computerization of the field records is expedited by the use of codes and symbols. The computer program is PC based, and data can be entered using simple and friendly menu-driven screens.

The options for additional data correlation and conservation planning capacities can become more sophisticated as the inventory records grow. The system accommodates the storage and retrieval of archival documentation, image libraries, project scheduling and financial accounting. (The system is being developed for The World Monuments Fund by Cultural Management Consultants).

## 2.4 Recommendations to Enhance Administration

Annex 4.2 provides details of the existing administration that manages the site at Angkor as well as an overview of the current cultural heritage administrative structure of the Cambodian Government. From this information, it is evident that in order to undertake a major program for the repair and conservation of the Historic City of Angkor, it will be necessary to strengthen the administration and specialization of the existing Ministry of Culture and Information's Department of Conservation, Museums and Tourism and of the Conservation d'Angkor Department in Siem Reap.

### 2.4.1 The Angkor Cell

The formation of the Angkor Cell has been proposed at the national level with its director responsible to the Prime Minister's Cabinet. The Cell would consist of high-level government officials who will ensure the development and smooth running of all Angkor projects. The Cell would be responsible for facilitating the selection of the Angkor International Advisory Group and for the development and expansion of the existing Conservation d'Angkor. The Cell would also co-ordinate the planning and preparation of a Conservation Management Plan for the Historic City of Angkor, as well as the development and co-ordination of an international fund raising campaign.

During discussions with the Cambodian government it was suggested that the following government members should form the proposed "Angkor Cell":

- 1) Representatives of the Ministry of Culture in the following disciplines: legislation; conservation; conservation training.
- 2) Representatives from the Ministry of Foreign Affairs.
- 3) Representatives of the Ministry of Education, especially for the teaching of history archaeology and architecture.
- 4) Representative from the Ministry of Agriculture specializing in forest management.
- 5) Representative from the Ministry of Transport concerned with means of access (e.g. road, air).
- 6) Representative from the Department of Construction, Planning and Development.
- 7) Representative of Department of Tourism concerned with tourism development and the promotion of Angkor.
- 8) Representatives for the Province of Siem Reap for culture, urban planning and tourism.

The Cell would not only establish and facilitate the running of different projects in the Historic City of Angkor, but also at a national level be instrumental in mobilizing the skills and talents of professionals and craftsmen and ensuring the establishment of training programs for both professional and administrative staff.

Although focused on the administration of Angkor these proposals must anticipate the administration of the repair and conservation of monuments and sites throughout Cambodia at the provincial level.



### 2.4.2 Conservation d'Angkor

Conservation d'Angkor, which is the sole organization responsible for the maintenance of the monuments within the Historic City of Angkor, is currently grossly understaffed and under-financed to fulfil its obligations. Nevertheless it is an important link to past activities in Angkor and it is strongly recommended that it be revitalized and made the operating agency for all activities in Angkor.

Without a trained and competent team of professional conservation staff and a large work force of trained craftsmen, no project proposal or fund raising campaign is likely to succeed. The first step is, therefore, to develop site training under skilled teams of architects, engineers and craftsmen augmented later by selective regional training abroad of key professionals. Conservation d'Angkor will act as the agency which will administer this training program.

### 2.4.3 The Angkor International Advisory Board

An Advisory Board consisting of specialists from the following disciplines should be formed to act as advisors to the government and the Angkor Cell and possibly to participate in the training program of Conservation d'Angkor. Advisory Board members should include specialists in the following areas:

- Project Management and Development
- Architectural Conservation and Strategic Planning
- Archaeology and Anthropology
- Ecology
- Civil Engineering
- Physical Planning
- Tourism Development
- Economics
- Site Management
- Landscape Architecture
- Management and Fundraising
- Conservation Training

The Angkor International Advisory Board, which should be established immediately to assist the government through the early stages of planning would be commissioned with the principle task of undertaking a mission to assist the Angkor Cell and Conservation d'Angkor in the development of the Conservation Management Plan. It is also recommended that the Angkor International Advisory Board helps in the development of suitable conservation training programs aimed at the reestablishment and augmentation of Conservation d'Angkor.

## 2.5 Legislation

There is a need for legislation to protect and preserve the many national monuments including Angkor as well as to control development within and around the Angkor Conservation Area.

Legislation should be directed towards the protection of both movable and immovable property, protecting it against destruction, disfigurement and illicit export.

As important as the monuments themselves is the environment in which they stand. It is recommended that specific legislation in the form of planning control should be drawn up to protect the special environment that surrounds the temple complexes. It is appropriate that protective buffer zones be created around the extended sites such as the delineated boundary of the Historic City of Angkor; the Ruluos Group; the isolated hill sites, such as Phnom Kulen; and the secluded individual sites such as Banteay Srei. Strict planning control should be developed within these buffer zones and curtilages should be established around each individual monument to prevent any new development.

All legislation should be designed in such a way as to be constructive rather than punitive, providing assistance to local inhabitants and landowners on the best way to benefit from their association with this unique site.

### 2.5.1 Reinforcement of Legislation to Protect the Immovable Heritage of Cambodia

The existing legislation pertaining to the "Parc d'Angkor", last revised in 1968, is still in place. The WMF team is intending to study the legal requirements and regulations regarding this protection. It is strongly recommended that whatever legislation exists be reviewed and updated

to anticipate all potential requirements for both the Historic City of Angkor and other national sites. It is strongly recommended that such revisions take into account legislation existing in other countries designed to protect other architectural sites of world class.

### 2.5.2 Establishment of the Historic City of Angkor Conservation Area

It is recommended that the Historic City of Angkor be delineated and a series of zones established both within and around the site. This is particularly important in view of the anticipated tourism development that is likely to take place in the near future.

## 2.6 Fundraising Strategies

Fundraising for the conservation and presentation of the Historic City of Angkor can begin in earnest only once a campaign has been developed and specific funding targets identified.

Based on the recent interest generated by a variety of national and international organizations, it is evident that there are willing donors with financial and/or technical support available. However, it is essential that the Conservation Management Plan, a coordinating body and an infrastructure be developed prior to active fundraising efforts.

### 2.6.1 International Level

Fundraising by international agencies should be orchestrated to advance the Conservation Management Plan for the Historic City of Angkor. Four funding needs have been identified so far:

- for start up costs;
- for project preparation costs;
- for implementation costs;
- for international research activities.

For sub-projects within the Conservation Management Plan, funding should be channeled to two activities:

- i) Project preparation costs; and
- ii) Project implementation costs.

### 2.6.2 National Level

Support at the national level will largely assume the form of administrative support and the provision of both administrative and technical personnel.

### 2.6.3 Potential Funding Sources

The development of a fund raising campaign is largely dependent on the future political situation. There are various key organizations that have expressed concern for the conservation of Angkor and it is hoped that they and other bilateral or multi-lateral organizations will continue to provide assistance to this newly revived campaign.

### 2.6.4 Development of an International Campaign

Concerted efforts will be required to raise funds to implement the Conservation Management Plan for the Historic City of Angkor. It is recommended that campaigns be designed and developed separately for the public and private sectors.

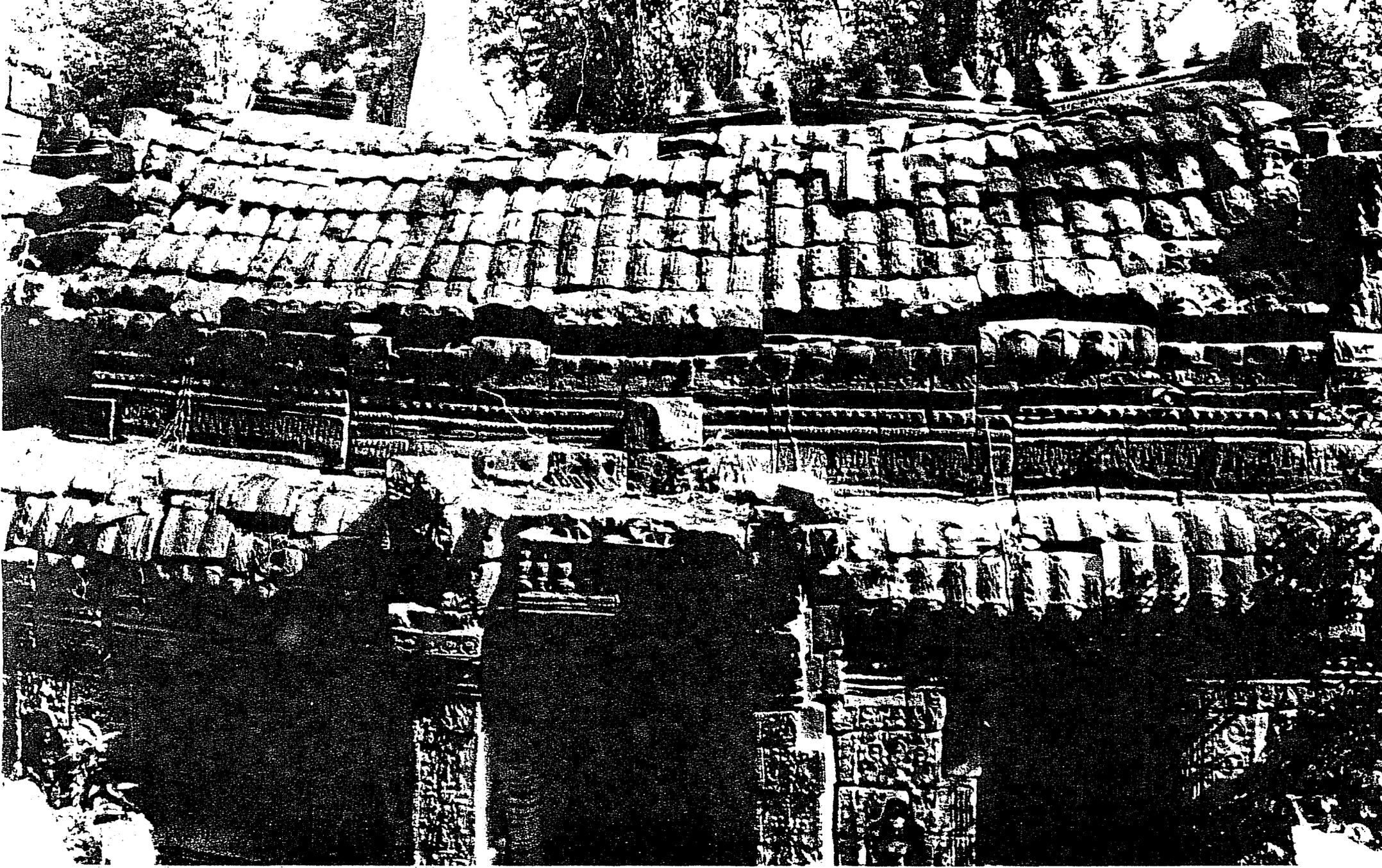
These should include:

An International Fundraising Committee for Angkor

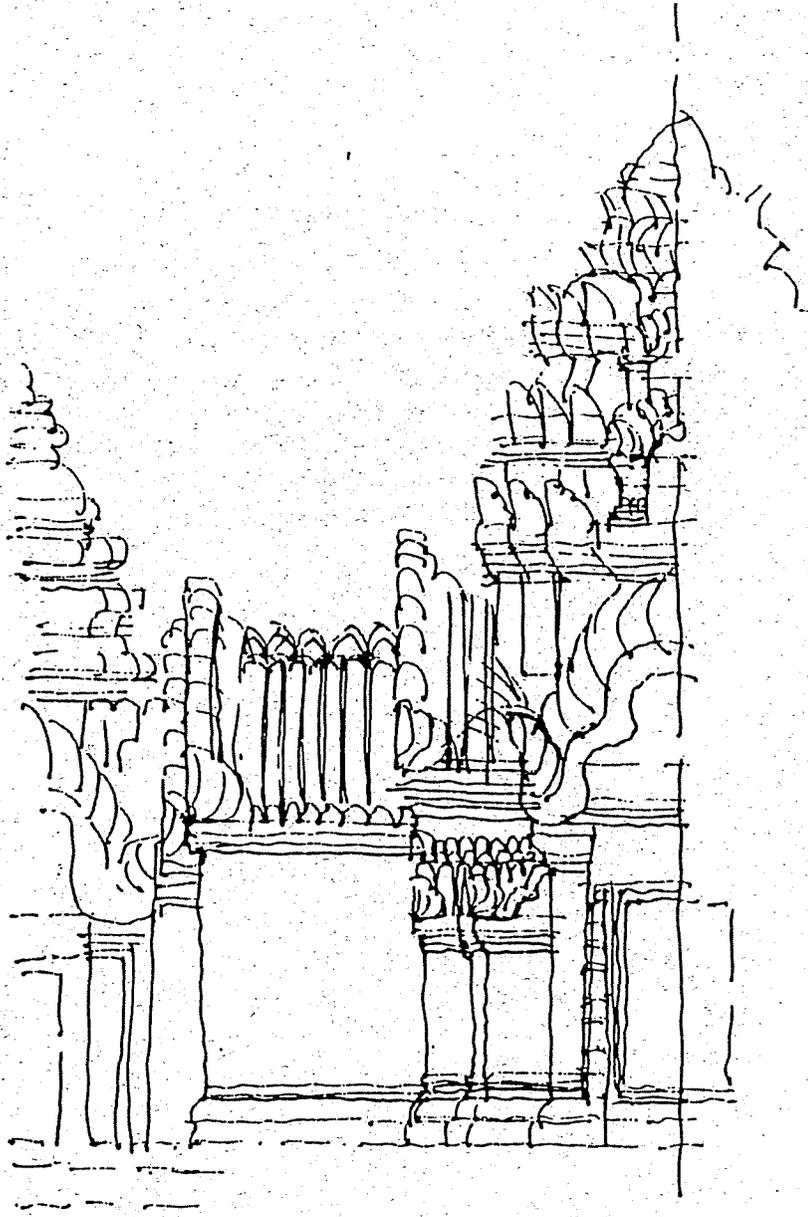
- Public Sector administered by UNESCO
- Private Sector administered by national and international private organisations

A National Fundraising Committee for Angkor

- Administered by the Angkor Cell



*Urgent Stabilization Required: An example of a structure assessed to be in danger of imminent collapse. Preah Khan, Location N000 – W065. (Photo: L. Anglin 1991)*



## Part Three Associated Activities

Conservation d'Angkor Laboratory  
An International Research Centre  
Environmental Protection  
An Archaeological Program  
Movable Cultural Property  
Cultural Tourism

Appreciating that WMF's principal commitment to Angkor is in the field of architectural conservation, the WMF team has, during the preparatory stages of this report, become aware of the need for holistic planning. During the team's period of research in the field it drew up a list of associated needs and is recommending that the following proposals are raised for discussion at the Paris Round Table with a view to identifying institutions and organizations that are interested and capable of implementing them.

### 3.1 The Conservation d'Angkor Laboratory

At this stage it is sufficient to say that it is a pressing requirement to establish a scientific laboratory within the Conservation d'Angkor premises. As the requirements for historic buildings and objects conservation are different it is proposed that there should be separate units that share, where possible, common equipment. The units should be

- Building Conservation Unit
- Museum Conservation Unit

The staffing and equipment for these units ought to be developed by field oriented scientists, understanding the remoteness of Angkor. Once a list of requirements has been drawn up, contributions of equipment should be solicited on a collaborative basis.

The services of both the Building Conservation Unit and the Museum Conservation Unit should be available to all the sub-projects in Angkor.

### 3.2 An International Research Center

The establishment of an International Research Center in Siem Reap has been discussed amongst the various research groups. Such a Center could provide facilities for research scholars from around the world. It would also attract the development of a documentation center for Angkor. However, the success of such a proposal will depend upon on commitments that institutions possessing archival material on Angkor are willing to provide or donate copies of their archives.

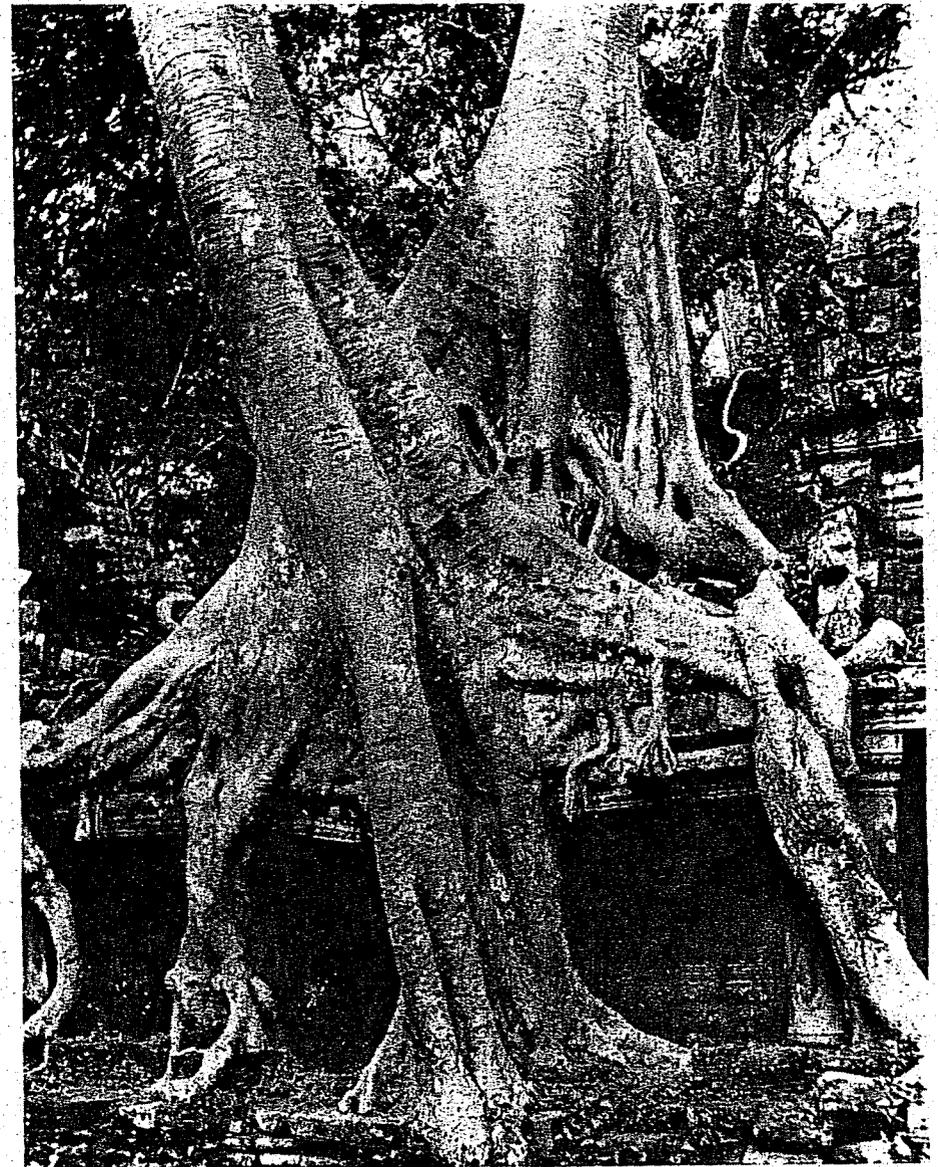
### 3.3 Environmental Protection

An unusual characteristic of Angkor is its unique relationship with its environment. Some might consider the presence of large trees within the monument compounds a threat to the historic structures, however these trees do represent a significant period in the historical development of the sites. Likewise the rebirth of religious activities within the old temple complexes and the presence of farming communities have animated the historic city and contributed greatly to the unique ambience experienced in Angkor.

Future development in the region will be governed mainly by the development of tourism. As noted in the following section on Cultural Tourism, the uncontrolled development of this industry could very soon undermine the very experience that visitors are travelling to Cambodia to witness. An environmental impact study should be undertaken and suitable plans and proposals drawn up to ultimately provide a suitable infrastructure for development. The purpose of such a study would be to identify the critical issues and limit development to a minimum around the Historic City of Angkor. Issues of access, tourist facilities and transportation will require careful study and resolutions in principle at an early stage.

Perhaps the single most significant feature besides the buildings is the unique irrigation systems that surround the temple and palace complexes. As part of the environmental impact study, a thorough survey of the systems should be made with a view to providing superior irrigation to boost the agricultural production for the local farmers. At the same time many of the historic structures could be seen in their former settings.

Specific studies for the re-integration of farming and religious activities as well as studies for the protection and control of the jungle are also to be recommended.



*Giant ficus at Preah Khan, East Gopura III (Photo: G. Clarke, 1968)*

### 3.4 An Archaeological Program

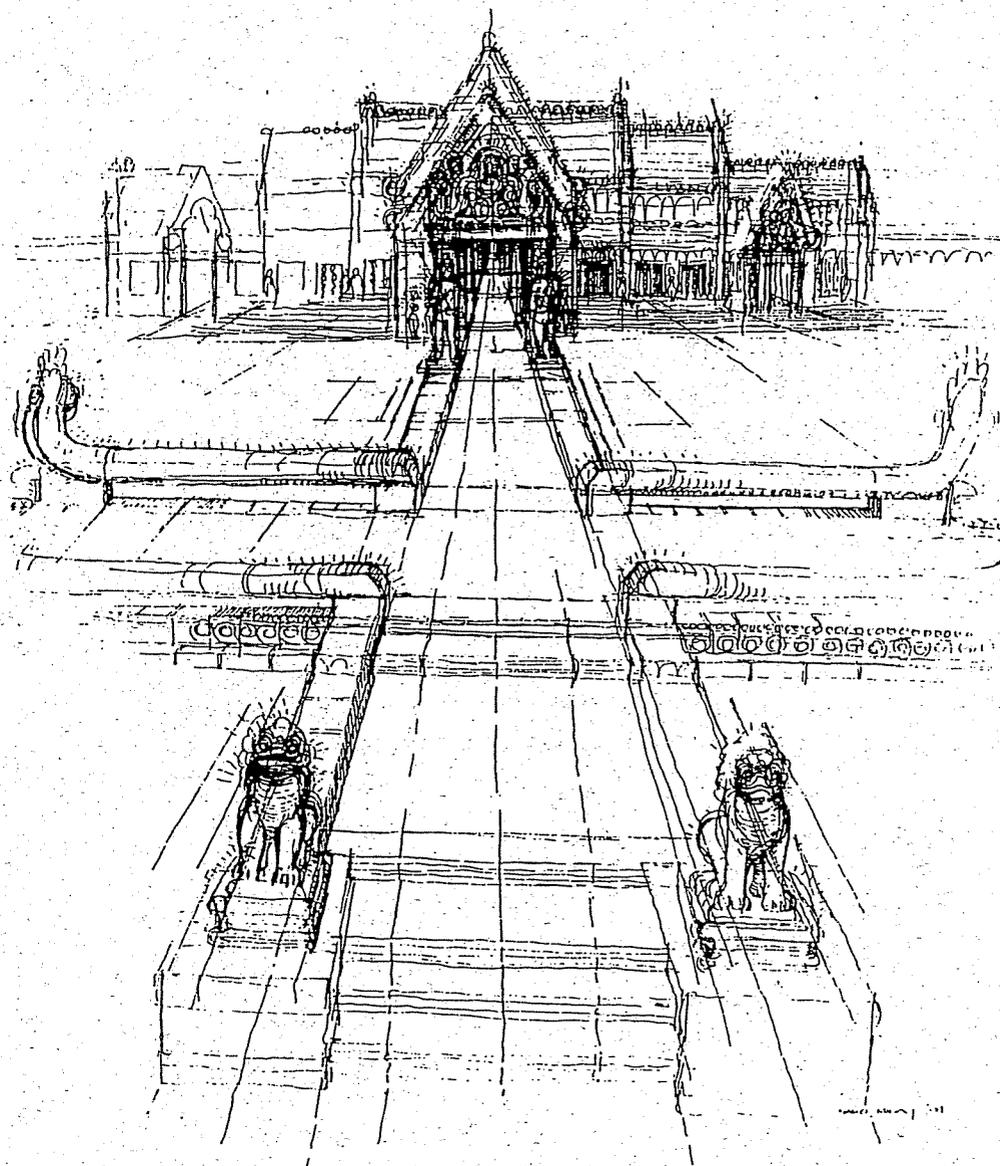
Little is known about either the life style or the types of domestic structure built in Angkor. So far there has been no concentrated archaeological program designed to research these aspects in Angkor. Although major archaeological excavations are not considered a priority, an integrated program that is closely allied to the Conservation Management Plan for the Historic City of Angkor would be desirable. The Preah Khan Report recommends that both historical research and archaeological investigation be carried out in conjunction with the conservation activities. Such excavations should be well supported by conservation and maintenance programs and serve as useful "On-Site" experience for the archaeological students.

### 3.5 Movable Cultural Property

Looting and theft are one of the major causes of concern for the safety and well being of the historic sites. A deterrent other than the physical presence of guards is the maintenance of an inventory and photographic record of all movable objects within the boundaries of each historic complex. The Ecole Francaise de l'Extreme Orient (EFEO) is in the process of compiling an extensive inventory of sculptures. In addition it should be the responsibility of every collaborative sub-project to carry out an extensive survey and recording of all sculptures and inscriptions within the complex.

During the First Round Table Meeting there were discussions concerning the illicit export of works of art. Great efforts have been made in the province of Siem Reap to deter local vandalism. However, practical solutions need to be found to stop the unlawful export and receipt of Khmer art from Cambodia in support of the local endeavor.





*The West Gopura III at Preah Khan as interpreted by N Milat, Sydney, 1991.*

### 3.6 Cultural Tourism

A Cultural Tourism Consultant who participated in the WMF team strongly recommended that tourism should be tightly controlled and mass tourism avoided, (See Annex 4.4). The first major consideration is to properly protect and conserve the historic monuments and the environment of Angkor. The priorities should therefore be directed towards funding the development of an administration and an infrastructure for these purposes rather than heavy investment in tourist facilities.

In the wake of recent civil strife Angkor has been out of the limelight, lost to an entire generation of young people. It is appropriate therefore that it should once again assume an international status, marking the changing political situation and underlining the enduring character of the Khmer civilization.

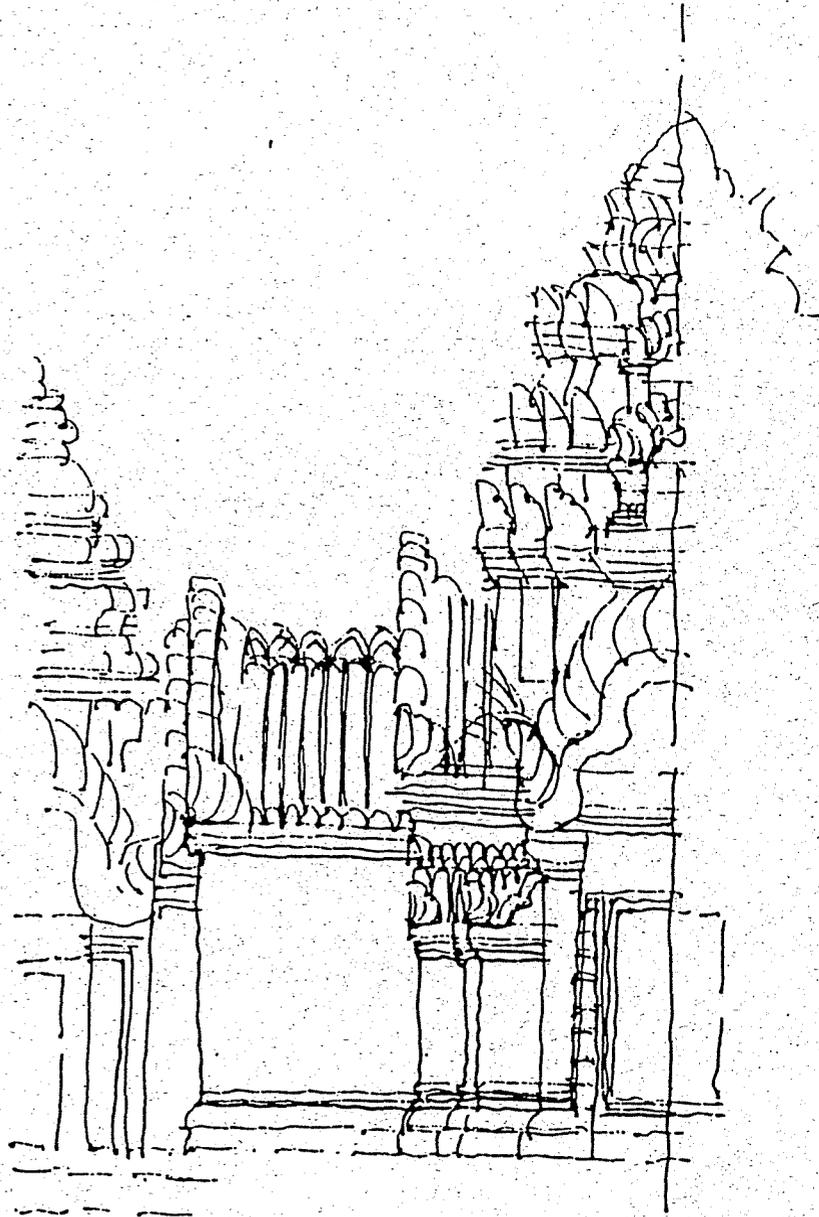
The Historic City of Angkor has a great potential as a hard currency earning asset for Cambodia. However, this asset must be developed to its benefit rather than to its detriment.

As Angkor will become a much sought after destination a policy of exclusivity should be adopted - fewer visitors paying a much higher price for the opportunity of visiting this unique site. To achieve this, the present facilities in Siem Reap should be upgraded, well trained and experienced guides should be employed and the site should be well presented with controlled access.

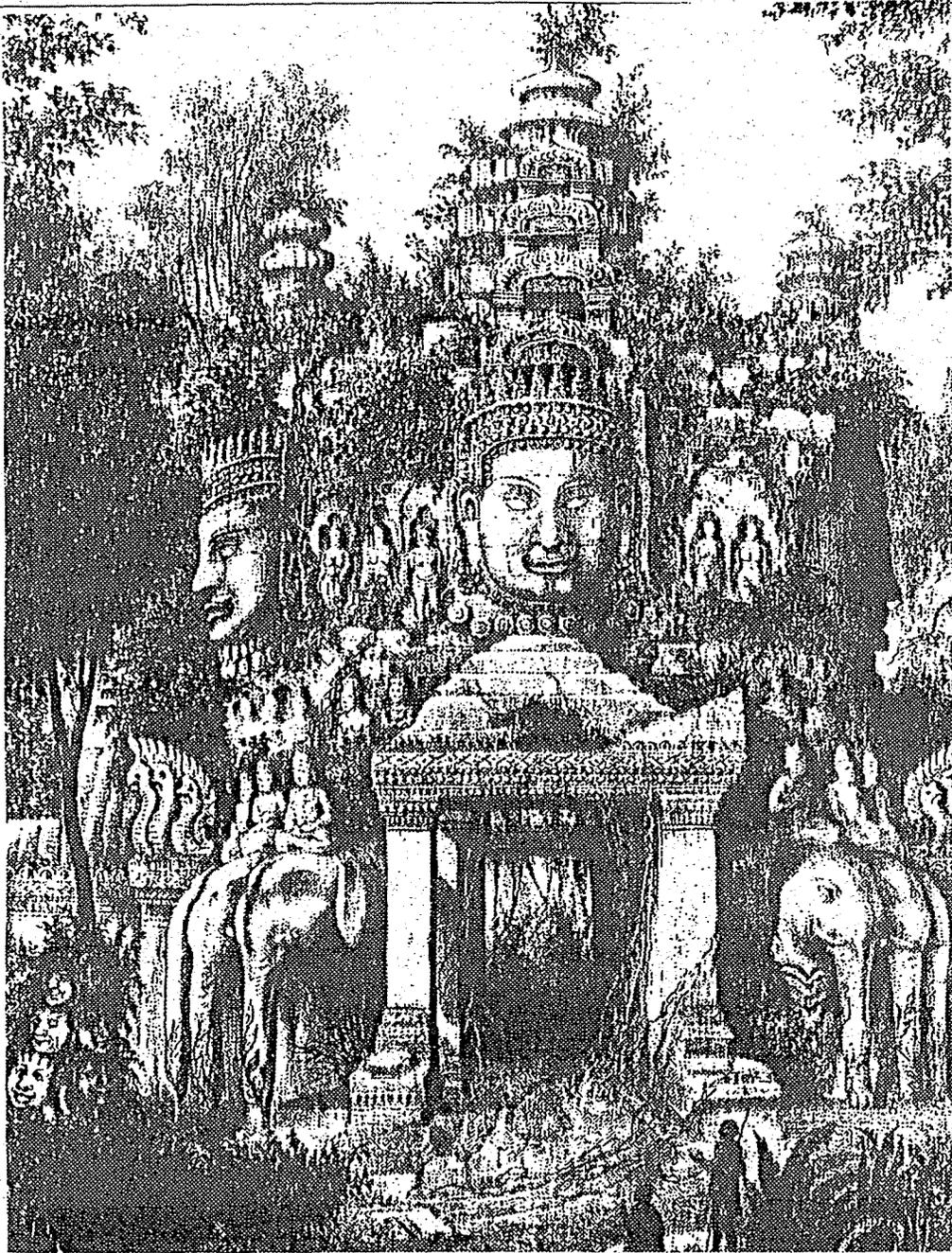
It is further to be recommended that a comprehensive analysis of tourism resources and potential values be undertaken for Angkor and that a Cultural Tourism Strategy for Angkor be developed. Among measures to be considered is the introduction of specific taxes on visitors to support conservation.

The Cultural Tourism Strategy should have as its goal the generation of funds to be reinvested in the conservation and presentation of the site and the education of a new generation of Cambodians to accept the responsibility of preserving this great cultural asset. A unique opportunity exists to utilize Angkor as a focus for national growth. Through integrated planning and programming this potential can be realized, and the devolution of the site into another mass tourism destination in Southeast Asia can be avoided.

## Part Four Annexes



- 4.1 Background & History
- 4.2 Angkor and Its Monuments Today
- 4.3 Conservation History in Angkor
- 4.4 Cultural Tourism Concept Paper



*A Gateway of Angkor – Taken from a drawing by L. Delaporte at the end of the 19th Century*

## 4.1 Background & History

### 1 Location and Setting

Cambodia lies between 10 to 15 degrees north of the Equator and between 102 & 108 degrees longitude East. Thailand borders the North and West boundaries and Laos and Vietnam on the South and the East. Two thirds of the country is flat and is drained of the monsoon rains by the Mekong River. The total area of the country is about 112,000 square kilometers with a population today of an estimated 8.4 million people.

Cambodia can be divided into two main geographical regions:- (1) the mountains, highlands, plateaux and forests consisting of the two major mountain chains known as the Elephant and the Cardamoms mountains along the western and northern boundaries; (2) the central plain itself. In general the mountains are densely forested and largely unpopulated save for a few minority groups.

The central plain covers about one third of the country and supports 90% of the population: in four different ecosystems which can be defined as the riverbanks (levees); the lowlands (bengs); the upper terraces; and the plain around the Tonle Sap (Great Lake) where the earliest examples of habitation have been found and where the Khmers established their empire. The Historical City of Angkor falls within the designated lowlands and is influenced somewhat by the proximity of the Tonle Sap.

Angkor is located within the basin of the Stung Siem Reap. Two hillocks dominate this plain: the Phnom Bakeng to the West of Angkor Wat and the Phnom Khrom which is at the edge of the Tonle Sap. The area of the Angkor complex is heavily forested with trees of monumental stature such as the Dipterocarpaceae trees, which are still used in construction, and the Ficus Religiosa, which serves a more sacred function.

### 2 Climate and Agriculture

The climate is tropical monsoon and it is characterized by a short rainy season, a prolonged dry season and an irregular rainfall, which is on the whole plentiful but unpredictable. Most of the rain falls between May and mid-October with a two week dry spell in July or August. The total annual rainfall varies between 3,831 mm on the west coast to 1,375 mm in Phnom Penh. Siem Reap itself has an average rainfall of 1,442 mm. Practically no rain falls between mid October and May. Ambient temperatures increase from December through April or May from an average of 24 Deg C. to 36 Deg C.

Angkor was more than a city and its creation alone was an immense technological achievement. Whereas cities generally live off an already established agricultural prosperity, Angkor was originally established to create its own prosperous agriculture. The land beyond Angkor is not well watered naturally and therefore gigantic barays (reservoirs) were built to store water to fill both the moats and linking canals in the city and to provide irrigation to the fields beyond the city. The water flowed from the high points where the barays were located, back to the Tonle Sap in the south. These irrigated tracts which provided fertile land and several crops a year were the source of support for the strength and prosperity of the Khmer empire. Indravarman-I was responsible for the construction of the first colossal baray, the Indratataka, near Lolei. He established there the principles for Angkor's irrigation system and the construction of this baray which measured 4 kilometers by 1 kilometer, was certainly one of the greatest engineering feats of its time. Today it is dry whereas the West Baray, which is of similar size, has in the last twenty years been excavated and restored for fish culture. From these great reservoirs, navigable canals channelled the water to the moats encircling the temple complexes and served as a mode of transportation for people and goods. It is said that the stone used to build these temples was quarried from the northern hills around Kulen and brought by barge to Angkor.

### 3 An Historical Overview of Cambodia

The Khmer people are said to have moved into the Mekong basin from the north some 4,000 years ago to occupy the area described today as Cambodia and they are both physically and culturally quite distinct from the Thais to the west and the Vietnamese in the east.

Although the earlier parts of Khmer history are obscure, by the 9th Century a powerful civilization The Kingdom was governed by a dynasty founded by King Jayavarman II which ruled the country from 800 A.D. onwards. The cultural heritage and political ideals were derived from the Indian heritage of Funan whence at a later date Buddhism also spread.

The Khmer kingdom was gradually extended until it reached its pinnacle in Jayavarman VII's (1181-1205) reign. From the 13th century onwards, the northwesterly movement of the Thais from the southeast gradually began to erode the Khmer dominance and Angkor was abandoned as a royal seat which led to the slow decline of the capital city.

After the demise of Angkor as the capital city in 1432, the monuments were gradually engulfed by the tropical forests. Nonetheless, the local peasants who no doubt frequented the temples and dwellings kept, where possible, the fast growing jungle at bay and some of the irrigation channels freed for their own use as religious centers. History recalls that the site was visited intermittently and in some instances re-occupied. It is for this reason that the complex of Angkor Wat has always been kept free of undergrowth. Since before its disintegration in the mid 15th century the city of Angkor was, from all accounts, a very vibrant and vital cultural center. Even in its "Dark Ages," it still retained a glimmer of its glorious past for a different community. Today Angkor preserves its "vitality" as a functioning part of the eco/cultural system of Cambodia and is symbolic of Cambodia's culture to the people of the country who have suffered immeasurable loss over the last twenty years. More significantly to a much smaller number, Angkor is a home; and as a mirror of the past, villages are again developing around the permanent homes of the gods; to serve as the protectors of the monuments much in the way that the previous less permanent wooden and brick dwellings must have once dotted the terrain around the former capital.

The Khmers have remained predominantly Buddhist belonging to the Hinayana or

Theravada School which also predominates in other Buddhist communities of SE Asia. Although all religious activities were stifled during the recent period of conflict and many of the brethren slaughtered, there is again a noticeable Buddhist presence in Cambodia. In Angkor, for example, monks have returned to the monasteries within several of the religious compounds where prayer meetings are regularly convened.

During the 14th & 15th centuries, the political and economic control of the country was largely centered at Phnom Penh where access could be found to the maritime trade routes which were just starting to open up.

In the second half of the 17th century threats to Khmer supremacy came from the Champa and later from Vietnam and by the end of the 18th century pressure was felt from Siam on the west and Vietnam on the east with Cambodia eventually emerging as a semi-independent state subordinate to both its larger and more powerful neighbors. The boundaries of the state established by the Angkor empire had diminished as a result of internal strife and incursions by the larger powers.

The arrival of the French and the establishment of a French protectorate in 1863 saved Cambodia from being apportioned between Thailand and Vietnam. As the latter was already a French colony, the dividing boundary between Vietnam was considered more an administrative convenience than a delineation along ethnic or historic lines.

During its administration as a French protectorate, many Chinese and Vietnamese entered the country and began playing increasingly significant roles in the economic development of Cambodia. Whereas the Chinese had been immigrating over the centuries, the recent arrivals established a more tight knit business community in the towns. The Vietnamese settled more in the countryside and were active in the fishing of the Tonle Sap.

Despite the recurring aggression from Thailand, the French maintained control until Cambodia declared its independence in 1953.

## 4 The Historical Evolution of Angkor

### Pre-Angkor Period:

Like various other Southeast Asian countries, Cambodia traces its origins back to the union of a foreigner and a naga-princess, whose father ruled a water-drenched land. According to one version of the story a Brahman named Kaundinya married the princess and in return for the clothes his father-in-law increased his territories by drinking the water that covered the land; built them a capital and changed the name of the country to Kambuja.

Europeans have traditionally divided the history of Cambodia, prior to the generally acknowledged emergence of Angkor, into two major periods, that of Funan (1st AD-c. 550) and that of Chenla (ca. 550-802). Descriptions of Funan have traditionally placed it in the south of Cambodia in the vicinity of Angkor Borei where numerous artifacts have been recovered. In reality, the perimeters of this ostensibly important kingdom are unknown. Nevertheless, there is little doubt that those who lived in this region were Khmers and there is ample evidence that they formed trade relations with India and China.

The inland territory north of Funan very likely formed in part what the Chinese annals have called Chenla, which has remained for them the name of the Khmer country until the 18th century.

### The First Kings of Angkor:

Traditionally, Angkorian history commences in the year 802, the date associated with Jayavarman II's consecration as cakravartin, the Sanskrit title meaning "Universal Emperor." His background is not altogether clear. After establishing several bases in the region, Jayavarman II subsequently moved his capital to Wat Phu in present day Laos, a site held sacred by the Khmers for centuries, and then he descended on the Angkor region, undoubtedly to serve as a base for his new conquests.

After the relatively uneventful reign of Jayavarman III (c. 835-c. 877), Indravarman I (877-889) assumed the throne and his reign was relatively brief. Reigning at Hariharalaya (Roluos), Indravarman I constructed first the temple of Preah Koh, which was dedicated to his ancestors, and surrounded it with an immense enclosure possibly to enclose his palace. He also constructed the embankments of Indratakata, "the basin

of Indra," the first baray (reservoir) of any significance realized in this region; and finally, he erected his temple of state, the Bakong.

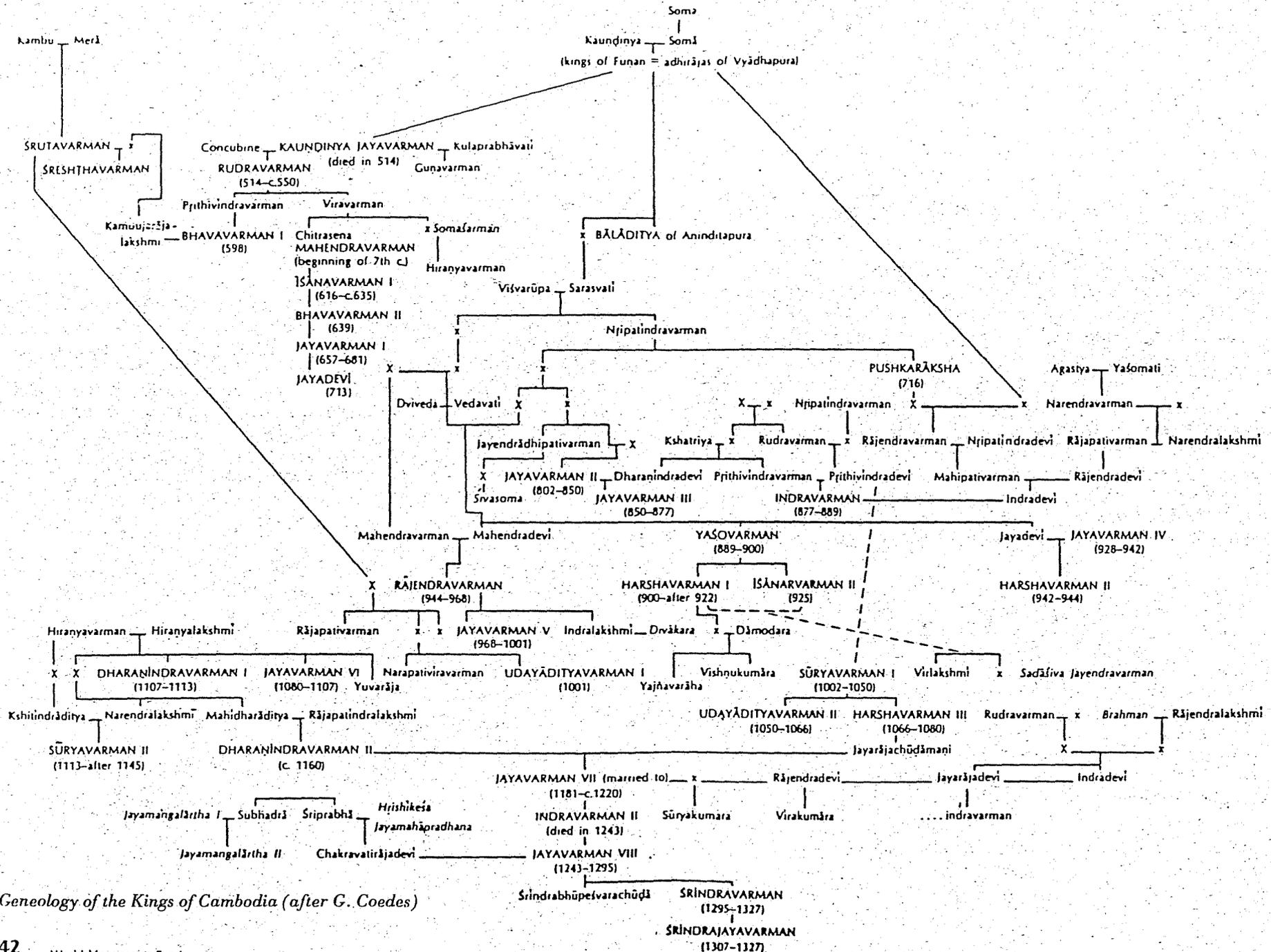
### Foundation of Angkor:

Upon Indravarman's death around 889, serious conflicts erupted over the regnal succession, and it is generally believed that it was not his son who ultimately assumed the throne. Serious controversy arose among the pretenders to the throne and it is quite possible that it was during this time that the temple of Bakong was secularized which might explain why his successor, Yasovarman I abandoned the Roluos region and installed himself some 15 km northwest at Phnom Bakheng, thus founding the first city of Angkor. Yasovarman I was consecrated in 889 and his first significant undertaking was the construction of the great reservoir, known as Yosodhara. This immense basin, now reclaimed for farm use, was a colossal undertaking as its original approximate measurements were 7 km by 2 km. At about the same time Yasovarman erected the temple complex of Lolei in its center which seems never to have been completed.

Apart from the temple of Lolei, a number of other monuments in the Angkor region are attributed to Yasovarman I's reign. Noteworthy among these is his temple of state erected at the summit of Phnom Bakheng and consecrated around 906. It was placed at the center of his capital, Yasodharapura, which was enclosed in a levee of earth delimiting an area of 16 square km. He also built the temples which crown two hills to the south Phnom Krom and to the northeast Phnom Bok. The three, equidistant from each other, form an interesting triad of temple mountains, which even today serve as defensive outlooks for the region.

### Rajendravarman and his Successors

Rajendravarman was already the king of the small kingdom of Bhavapura located in the center of Cambodia when he established himself in the Angkor region and consecrated himself as cakravartin in 944, re-affirming his wish to continue the work of Yasovarman I. It is probable that he installed himself in Yasovarman's palace as he undertook extensive restoration of the ancient city of Yasodharapura. He also reconsecrated the temple of Baksei Chamrong (948) and undoubtedly built the prasat at its apex, dedicating it specifically to his predecessors, and invoked them as the protectors of the kingdom. He subsequently erected the temple of the East Mebon on an island which was located right in the center of the Eastern Baray and consecrated it



Geneology of the Kings of Cambodia (after G. Coedes)

in 953. At this point Yasovarman seems to have decided to establish a new capital to the south of East Mebon and he undertook the construction of his palace, presumably designed by the architect Kavindrarmathana, who is also credited with the Buddhist temple of Bat Chum and the magnificent royal tank of Sras Srang. Rajendravarmān consecrated his temple of state, Pre Rup in 961.

As he was anxious to maintain his control outside the Angkor region, he undertook a number of unpopular reforms that probably instigated the rebellions that ultimately may have caused his death in 967. His palace was abandoned and the court subsequently moved to near Phnom Bakheng at the instigation of Jayavarman V, one of his sons. There is reason to believe that the latter was rescued as a child by his spiritual teacher, the famous Yajñavalkya, founder of the temple of Banteay Srei, one of the great architectural masterpieces of Cambodia, which was consecrated around 968.

### **Suryavarman I and his Successors**

Suryavarman I disdained the palace of his rival but he ultimately gave it to one of his disciples, who remodeled its appearance into what today is known as the Royal Palace of Angkor Thom. Within its enclosing walls he also erected the modestly proportioned temple mountain of Phimeanakas. Also, it is now certain that the Western Baray measuring approximately 8 km X 2 km previously credited to his successor, was constructed during Suryavarman's reign. He can be also attributed with the construction of several buildings in the Preah Khan complex to the east of Angkor.

After a reasonably long reign, Suryavarman I was succeeded by Udayadityavarman II in 1050. In spite of the numerous rebellions that confronted him during the course of his 16-year reign, Udayadityavarman II was not deterred from assuming the role of builder. At Angkor itself he is credited with the construction of the great temple of the Baphuon as his temple of state. He is also recognized as the creator of the Western Mebon temple complex, erected in the center of the Western Baray.

New unrest arose in the northwest in 1065, shortly followed by problems in the east. During this period Udayadityavarman II was replaced by Harshavarman III who inherited both the internal rebellions of his predecessor and the intermittent raids by his Cham neighbors.

In 1080, it is possible to verify that Jayavarman VI was at the head of the Khmer nation. However, there is no evidence that he had established his capital at Angkor.

### **Suryavarman II and Angkor Wat**

In 1112 Dharanindravaman I was succeeded by the son of one of his nieces, the great Suryavarman II, who installed himself at Angkor in a palace, the location of which is still unknown but which was probably not far from his celebrated temple mountain of Angkor Wat. Work started on the construction of the colossal Angkor Wat complex towards the end of his reign, making its completion in his lifetime impossible.

His successor was Yasovarman II, a king whose origins are virtually unknown, since not one inscription has been preserved from his reign. He resided at Angkor and his palace, it seems, was built on terrain ultimately claimed by the temple monastery of Preah Khan. The relocation of his palace suggests that he was unrelated to his predecessor. It is known that he was killed around 1165 by one of his servants who subsequently crowned himself under the name of Tribhuvanadityavarman. Little is known of this ruler apart from his death in 1177. In the same year a Cham ruler, Jayendravarmān IV, ascended the Mekong as far north as the Tonle Sap (Great Lake), in order to secure the Khmer capital and sack it.

### **Jayavarman VII**

Although his rightful claim to the throne is far from clear, Jayavarman VII was undoubtedly the greatest king of the Angkor period, if not of all Khmer history. He was a frenetic builder, covering Angkor with religious monuments, possibly destroying earlier structures in his zeal. He is, for example, attributed with the first temple-monastery of Ta Prohm (1186), followed by that of Preah Khan (1191). The latter was preceded on the east by his Jayatataka baray, in the center of which is the beautiful sanctuary of Neak Pean and, to its east, Ta Som.

Jayavarman VII installed himself within the enclosing walls of the old palace of Suryavarman I and erected his temple of state, the Bayon, at the center of his capital. Jayavarman VII's capital is today known as Angkor Thom and it was fortified with a powerful double wall and a wide moat in order to avoid the misfortunes of his predecessors. The temples of Banteay Kdei, Prasat Prei, Krol Ko as well as the

Elephant Terrace and Terrace of the Leper King were also erected during his reign. Numerous other monuments both within and without the Angkor region, including approximately 100 hospitals and an extensive infrastructure were attributed to his architectural zeal and humanitarian concerns. Additionally, the old basin of Sras Srang was restored under his instruction together with other monuments in the general vicinity. In short, Jayavarman VII modified so profoundly the countryside of Angkor that it is now difficult to distinguish what might have existed before the advent of his rule. The perimeters of his empire were stretched to their furthest limits—as far as north as Vientiane and as far south as Vietnam. Jayavarman VII was a fervent Buddhist and took every opportunity to affirm his faith. Less frequently discussed is his religious tolerance, which is given testimony by at least two architectural monuments which he sponsored, Preah Khan of Angkor and the Bayon, both of which contained Buddhist temples at their centers in addition to supplementary sanctuaries dedicated to Vishnu and Siva, and an additional structure reserved for honoring the ancient kings of Cambodia. Jayavarman's religious zeal was further complemented by his ambitions as a ruler and a warrior; the Khmer empire reached its furthest extent under the auspices of this rule.

The date of Jayavarman's death is unknown, but 1220 has been proposed as a rough approximation. His demise underlines the end of an era and the end of a massive building campaign and the resultant drain on the national purse. It also marks the beginning of the ultimate decline of the Khmer empire.

Little information exists concerning Jayavarman VII's successor, Indravarman II and there is no indication that the two were related. He died in 1243 and was succeeded by Jayavarman VIII, under whose reign a Saivite reaction took place leading to the smashing of Buddha images in the principal temples of Angkor and the transformation of the Bayon into a sanctuary for Siva.

Jayavarman VIII was forced to abdicate in 1295 in favor of his general Srindravarman. It was during Srindravarman's reign that the famous Chinese traveller, Zhou Ta-kuan visited Angkor and recorded his observations on Khmer life. Srindravarman has left us the first Pali inscription discovered in Cambodia, clearly indicating the appearance of Hinayana Buddhism by the end of the 13th century. Although Srindravarman, his successor, who belonged to his line reigned for 20 years, he left no trace of his activities.

In 1327, King Jayavarma-Paramesvara ascended the throne, an event that is recorded in the last Sanskrit inscription thus far recovered from the region and it denotes the closing of the so-called Angkorian period. The end of Jayavarma's reign is clouded in mystery as is the rest of the 14th century. The traditional date cited for the termination of the Khmer association with Angkor is 1432, which relates to the fall of Angkor Thom to the Thais and the subsequent evacuation of the palace.

## 5 Khmer Architectural Development

The evolution of Khmer architectural tradition is a complex subject that has been examined by numerous scholars each of whom has developed his own descriptive analysis. To avoid an unnecessarily detailed examination of the architectural development, the following descriptions are intended to highlight the significant stages of the architectural evolution in Angkor.

### A CHART OF THE ANGKOR PERIOD

*The following chart sets out the different periods of architectural development and identifies the key structures built in the period:-*

#### Pre-Classical Period:

Angkor Ak Yum (802-921) Rolous Group; Phnom Bakheng; Baksel Chamkrong

#### Transition Period:

Angkor Koh Ker (921-968) Phnom Bakheng; East Mebon; Pre Rup

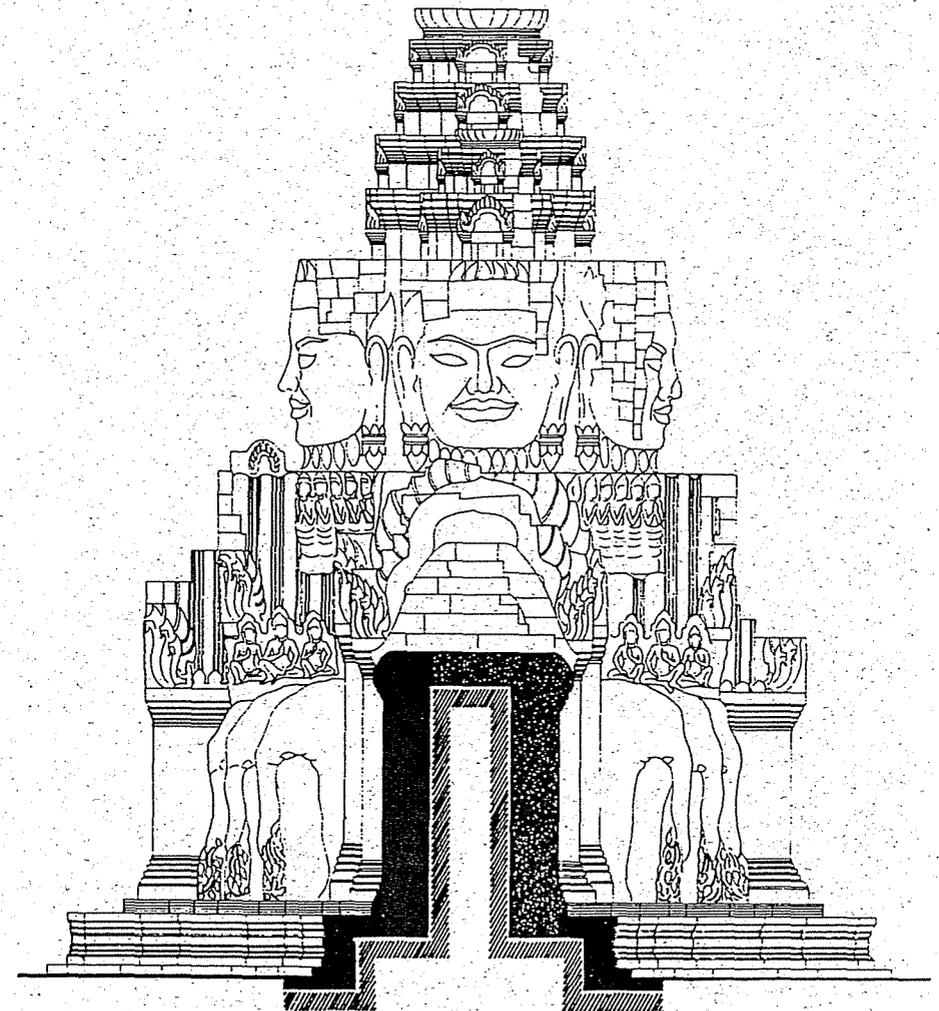
#### Classical Period:

Angkor Banteay Srei (967-1181) Phimeanakas; Takeo Baphuon Preah Vihear; Angkor Wat

#### Late-Classical Period:

Angkor Ta Prohm; Preah Khan Bayon; Royal Terraces; Sras Srang (1181-1295)

All major religious structures seem to have been constructed in stone and brick. The use of the heavy corbelled stone vault has established a new style of architecture with its heavy supporting walls, and narrow vaulted spaces. Since such structures served as the dwelling place of the gods, the need for interior space was limited as worshippers were ultimately restricted to the exterior areas where they gathered in wooden pavilions or open courts. So significant did their divine function ultimately become that by the Angkor Period the scale and scope of such temples assumed monumental proportions, that ease of access was certainly not a major consideration.



Angkor. Thom. East Gate. (Drawn by J. Dumarçay, EFEO)

Pre-Angkor structures have survived mostly because they were of stone or brick construction. With the exception of certain city walls, bridges or public works, these structures are largely religious in character. It appears that practically all the secular buildings were constructed of timber and leaves, much as the local dwellings are still constructed today. Palaces and audience halls, which required larger, open spaces were probably of similar construction and as they also needed materials for their fabrication.

Structures prior to the advent of the so-called Angkor Period show evidence of a strong reliance on Indian prototypes for both temple design and decoration. Certain temples elaborated upon the simple, square plan by the addition of redents or projections and in some cases a vestibule appears in front of the main cell, but regardless of these variations the superstructure of the primary cell (garbha griha) served as the focus of the structure.

Most Pre-Angkorian temples of this period are located on raised ground in low-lying regions, usually in valleys, and have an eastern orientation. There are exceptions reflecting topographical considerations or the interrelationship of one structure to another. Typically each temple stood alone, however groups of two or three have been found aligned in a haphazard fashion, suggesting spontaneous expansion.

Developments in the Angkor period follow an almost strict adherence to an eastern orientation and the development of the staged pyramid and axial temple forms have their seeds in the early architectural innovations of this formative period. Even the rigorous attempt to plan a given temple complex with all its attendant subsidiary structures could be seen as a reaction to these earlier, more spontaneous architectural expressions.

Noteworthy is the clear correlation between interior space and exterior form. Architects employed the corbelled vault for narrow entrances and a series of successive drums to support the superstructure. The interiors of such domed areas were typically masked by a low ceiling formed of perishable material which has long since disappeared.

The structures of this period are of brick construction to using stone to highlight door and window reveals. Decorative motifs are relatively simple and of Indian inspiration, but over time their forms and placement have become increasingly sophisticated.

The brickwork was coursed, often with dry joints — the only mortar being a kind of vegetable-derived adhesive, for which the recipe has long since been lost. Bricks were sometimes carved in situ and sometimes were plastered and probably also polychromed.

Laterite, which is a coarse soft stone found throughout Cambodia, was a common building material and in early construction often replaced brickwork. In the early developmental stages the finer quality Kulen sandstone was used solely for the architectural embellishments. Over time its use increased until the building of some of the great temples of the Angkor group used nothing else.

## BUILDING SITES

### Early Classical Period

Jayavarman II initiated the classic period of Khmer architecture. Significant among the developments at Roluos are the single prasats aligned systematically in groups of six or eight and raised on a laterite platform. The individual cells were fashioned of brick and were complemented with sandstone embellishments. Noteworthy among the architectural innovations of this period are the gopura and the library.

### The Transitional Period

The architecture of the reign of Rajendravarman II, including the magnificent structure of Banteay Srei, is largely transitional in character and the decorative tendencies are less noteworthy, largely reflective of an attempt to expand upon an earlier vocabulary of form while developing a newer, more innovative character. The simple caitya arch motif reappears in a complex arrangement of frontons positioned above entrances which become the dominant feature of the structures. Later, under Jayavarman VII they are reinterpreted as frames for the Lokesvara faces which dominate the temple and gopura prasats or towers.

The use of brickwork was greatly reduced and Banteay Srei marked the end of the plastered brick prasat, these structures being largely fashioned of laterite and faced with decorative sandstone. Noteworthy among the several developments at Banteay Srei are the library designs and the triple form of the boldly arched frontons positioned over the doorways, each intricately carved with scenes from the Ramayana or with vegetal ornamentation.

### Classical Period

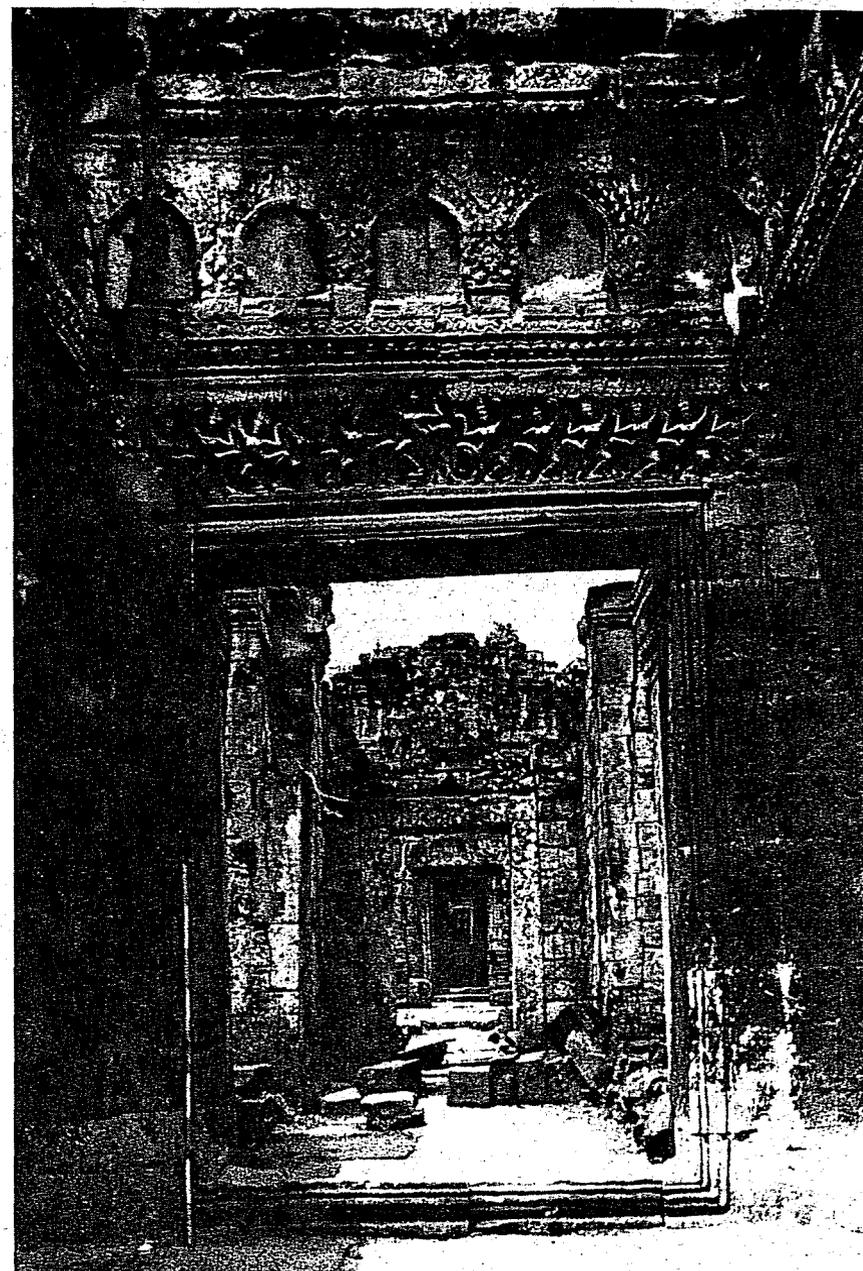
Jayavarman V and Suryavarman I were significant builder kings. During their reigns and the intervening years of Udayadityavarman I and Jayaviravarman, a number of significant works were built, the most noteworthy of which were thought to have been commenced by Jayavarman V and completed by Suryavarman I. Significant aspects of this period are the continued construction of terraced pyramids which consistently sustained sandstone prasats, the development of stone vaulted galleries and the creation of cruciform gateways at the temple's cardinal directions. The primary orientation was generally to the east and the decoration can be characterized as being more refined than its antecedents.

The Baphuon temple represents a further step in the development of the Khmer pyramid temple, with its multiple terraces and concentric galleries and attendant gopuras and corner pavilions.

After the construction of Baphuon the terraced pyramid temple seems to have gone into a decline, being replaced by temples whose concentric arrangement of enclosures and galleries permitted the effect of a "mountain temple" or Mt Meru without the complex engineering of multiple terraces. Angkor Wat was Suryavarman II's testimony to Khmer ingenuity, illustrating a significant number of changes evidenced in the structures of Beng Mealea and Preah Palilay. Beng Mealea was largely a training ground for the ultimate culmination of the style exhibited at Angkor Wat. Here the three inner enclosures evacuation of Angkor became an increasingly common story in the history of the later Khmer empire.

### Late Classical Period

It was the frenetic building campaign of Jayavarman VI which provides the majority of architectural evidence for the Angkor period. While it is difficult to ascertain the number and variety of structures that might have been destroyed in the wake of this creative explosion, it is clear that temples, hospitals, chapels and country-wide infrastructure are ample testimony to the height of Cambodian aesthetic and engineering acumen. Noteworthy among such achievements is the magnificent Bayon temple and its affiliated counterparts, Preah Khan and Ta Prohm. Additional note should be paid to the small but delightful structure of Neak Pean and its surrounding water tank. Ultimately the products of Jayavarman VII's reign must be regarded as the flowering of Khmer architectural tradition as well as the start of its decline.



*Preah Khan. East/West Axis looking west*

*(photo: S. Cunliffe, 1991).*

## 6 Angkor after the Fall of the Khmer Kingdom

While it has been claimed that Angkor was discovered by a 16th century Khmer ruler while on an elephant hunting expedition, implying his total ignorance of its existence, it seems, from the smattering of reference to the site, that Angkor was never really "lost" to the Khmers. Similarly, it was never totally unknown to the rest of the world which is typically said to have "rediscovered" it.

Although the economic burden placed on the coffers of the state by the extensive building campaign of Jayavarman VII (1181-c. 1215) may have set the nation on a rapid path of decline, 13th-14th century Chinese descriptions of the kingdom do not depict a decaying nation. In fact, they speak glowingly of its wealth and prosperity. References to Thai incursions do not seem to reflect concern for the stability of the country. Nevertheless, more significant than these brief intervals of abandonment is the periodic return to Angkor which was still regarded as the "center of the universe" and the seat of political authority. If the area was abandoned it was never an act of willfulness on the part of the Khmer people. Angkor was a symbol of their cultural heritage, and this they have never voluntarily abandoned.

Clearly, Chinese histories record an awareness of Cambodia's existence as early as the 3rd century AD when the deltaic region of the Mekong River Valley (Funan) is said to have both received and sent embassies from and to China.

The first Europeans to have visited the Angkor region were the Portuguese Franciscan Gaspar da Cruz (1580-90) and the Dominican monks Lopo Cardozo and Joao Madeira (c. 1570; 1580-90). From both Portuguese and Spanish travellers there are vivid accounts of Angkor during the 16th and 17th centuries. Although some of these records are more fanciful than factual, it is clear that the memory of the once great Khmer kingdom had not yet died by the 17th century.

French accounts of the mid-late 17th century speak of fabulous Khmer ruins which can only have been those of Angkor. Other miscellaneous accounts and studies by the Dutch and Germans in the 17th and 19th centuries further suggest that Angkor was not wholly unknown even in the more distant parts of Europe. More intriguing still is the 1636 Japanese mission to Angkor during which time the first known plan of Angkor Wat was commissioned. And after a brief hiatus of political isolation from the outside world, Japan ordered a duplicate copy in 1715 of the 1636 plan. Japan's

awareness and awe of Angkor Wat as late as the 18th century would clearly suggest that the great capital of the ancient Khmers was no Atlantis. It was never lost to mankind, only periodically evacuated and subsequently engulfed by the jungle.

Beginning with the works of Pallegoix, Bouillevaux and Mouhot, it becomes clear that by the end of the 19th century Angkor was well on its way to being revitalized in the annals of history. By 1909 more than 200 European works had been produced with Khmer civilization as its topic and the French supplanted the English as the primary funding source for these publications.

In brief, mention should be made of the following significant missions: Lagree'-Garnier Mission (1866-67); Lunet de Lajonquiere (1902-11); Louis Delaport (1873); E'tienne Aymonier (1888). Additional mention should be made of the sudden blossoming of societies (Paris Missionary Society, Paris Geographical Society, French School of the Far East [EFEO] and the development of museums both in France and Cambodia. France's initial zeal for the study of Indochina in general and Khmer civilization specifically ultimately led to Cambodia's transformation into a French protectorate in 1863.

## 4.2 Angkor & Its Monuments Today

### 1 Existing Administrative Structure

During the Ecole Francaise d'Extreme Orient's, period of extensive archaeological activity in Angkor, the Conservation D'Angkor was created in collaboration with the government which gave the Conservation d'Angkor a certain autonomy and set the historic city of Angkor aside from the other archaeological sites in Cambodia. Until 1970, the Conservation d'Angkor was an autonomous body, a "conseil d'administration", consisting of representatives of various ministries who were empowered to make decisions and the conservator who was in charge of the Conservation d'Angkor executed these decisions. The Conservation d'Angkor was not only responsible for the maintenance of the monuments but also of the infrastructure — the roads and forests — of the "Parc d'Angkor".

Despite political unrest, work under the supervision of the Conservation d'Angkor was continued in Angkor up to the beginning of 1970. In 1979 peace returned to Siem Reap and the region and in August of the same year the Ministry of Culture, Government of Cambodia, attempted to re-establish the Conservation d'Angkor.

Today the Conservation d'Angkor is directly under the jurisdiction of the Department of Monuments and Museums, Ministry of Culture and Information and retains a small staff of administrators and site workers totalling about 100 people, consisting of a director, topographers, draftsmen, stone restorers, drivers, mechanics, carpenters and modelers as well as site guards. It also has access to a labor force of between 600 and 800 who, for example, were called upon to undertake the recent clearing of the sites of undergrowth.

The Ministry of Information and Culture is made up of nineteen different departments. The ones that are critical to culture and conservation are: The Department of Monuments and Museums (Four Museums — three in Phnom Penh and one at Siem Reap); Department of Technical Research; Department of Administration; Department of Finance.

The museums, like the monuments in the Provinces, are under the control of the provincial authorities with technical assistance provided by the Ministry.

Despite the good intentions of the Ministry of Culture and the State Government there is a severe lack of trained personnel at all levels to undertake the technical conservation and restoration of Cambodia's cultural heritage. It is also evident that

there is a lack of consistent conservation philosophy, especially in the field of monument conservation which could perpetrate a large amount of inferior work which can be averted by proper training and updating of the conservation technology utilized on the monuments.

### 2 Access and Infra-Structure

#### Accessibility

Access to Angkor is by direct flight from the present capital Phnom Penh to Siem Reap the provincial capital. Formerly there were several direct international flights, but international air traffic was discontinued in the mid 1970s and has not yet been resumed.

The highway system of roads do link Siem Reap with Phnom Penh over a distance of about 100 miles and the road and bridges have been repaired to make access possible, although at present the use of the road is restricted.

Once at Siem Reap access to Angkor, which is about seven kilometers distant from the town, is straightforward. Relatively well maintained metalled roads lead to most of the sites within the complex. Small buses and taxis are available and are controlled through the Grand Hotel in Siem Reap.

#### Accommodation

The only accommodation at present available and serving Angkor is the Grand Hotel at Siem Reap which is, because of circumstances, very run down. It has about 60 rooms available and large reception facilities. There is also a small annex, the Apsara, attached to the hotel. There are proposals under discussion with foreign enterprise to upgrade and expand the hotel and to construct new hotels in the vicinity.

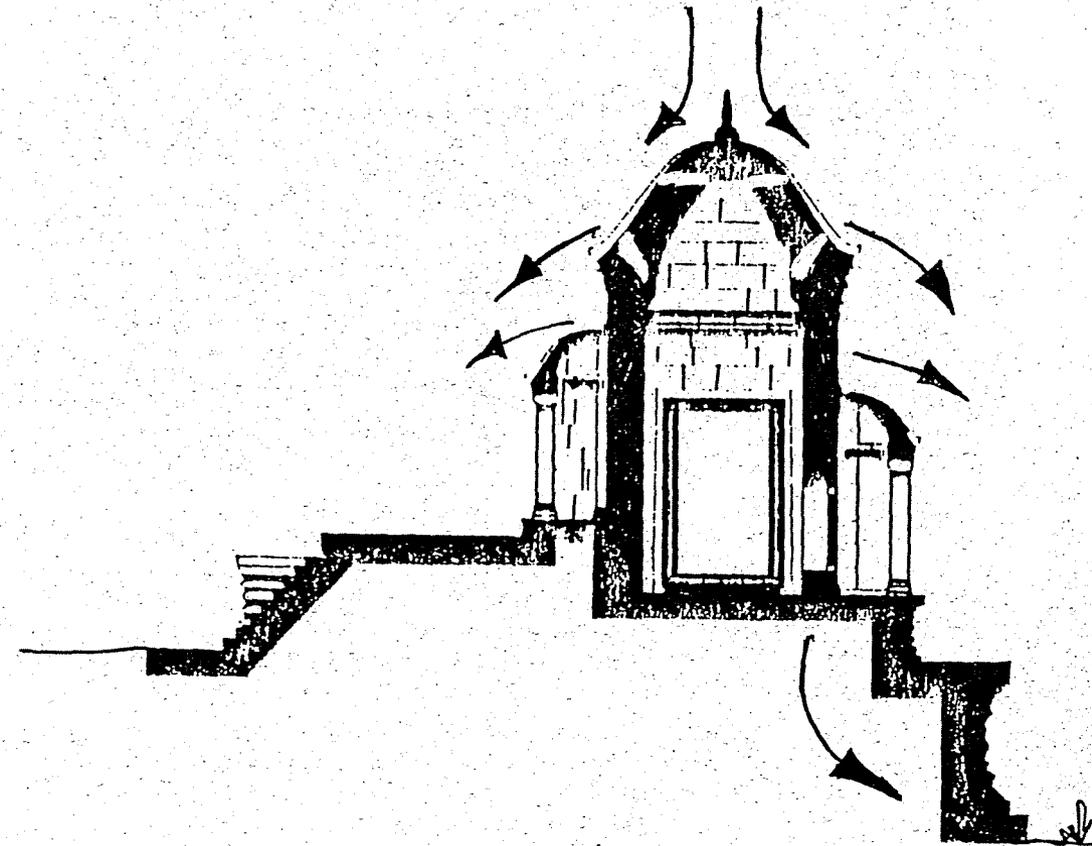
#### Services

Services, such as water and electricity, are somewhat restricted. Power supplies are cut during certain times of the day and switched off at 8:30 in the evening. Arrangements can be made to pay for generator costs to extend the period electricity is available.

### 3 Revival of Religious Activity

Immediately on arrival at the temple complexes of Angkor the presence of worship again pervades the sites whether it is a small shrine dedicated to a local spirit, a broken statue under at the foot of a tree or a large stone Buddha swathed in a saffron robe or a reclining Buddha that has been set into an old shrine. The perfume of incense sticks and flowers permeates Angkor Wat where a noted Vishnu sculpture is worshipped as Lokeswore and is adorned daily with flower garlands and offerings of incense.

During recent years and especially between April 1975 and January 1979 religion was eradicated; monks were exterminated or deported, the shrines violated, sculptures mutilated and religious artifacts destroyed. But this systematic destruction could not eliminate faith, and since 1979 veneration has been taking place in open air shrines where the local communities assemble for worship. In Angkor Wat the two pagodas to the north and south of the main temple have been repaired and monks have returned. Smaller temples have been erected in Angkor Thom around the Bayon and to the North of Phimaneakas.



*Section through a typical gallery showing movement*

## 4 Survey of Conditions in the Historic City of Angkor

During the First Mission the team visited the majority of the sites within the Angkor Conservation Area and was able to identify, during its rapid survey of the monuments, the common and salient defects in both the structure and fabric of the monuments which are outlined below.

The inspection was only visual and the conclusions drawn were based discussions among the World Monuments Fund's team, members with office of the Conservation d'Angkor, the Indian team at Angkor Wat and the staff of the Department of Conservation in Phnom Penh. The defects outlined are not intended to be exhaustive, but merely representative of the problems witnessed during the mission's initial inspection.

### The Effects of Age

The Angkor complex was evacuated historically in the middle of the 15th century under the threat of foreign incursions when the capital was moved. Apart from the major restoration interventions (See Annex 4) little else was done to maintain these structures except for the basic clearing of the jungle from the main sites. In spite of many of their inherent structural failings and the monsoon conditions that have plagued the structures over the centuries, the majority of these monuments still stand in varying stages of dilapidation. It is a wonder that they have not long since deteriorated into heaps of rubble.

### War Damage

From the various reports received through the media, the outside world was under the impression that the temple complexes had been severely damaged by the incursions of war. Fortunately there has been very limited damage to the structures, mostly the results of solitary sub machine gun bursts that caused damage to the fabric. The temple complexes obviously functioned as shelters for the warring factions and it was learnt that at least one of the temples at Preah Koh, in Roluos, was used as a store house for salt which has had significant negative repercussions on the brickwork.

**Weather Damage - Hurricane 1st September 1989:** An unusual but devastating hurricane swept through the historic city of Angkor on 1st September 1989, causing serious damage to several temples and structures. It was reported that over 750

mature trees were toppled by the high winds, causing considerable damage to the temples and enclosure walls. The team saw several examples of damage to the temple structures best illustrated at Banteay Kdei where a large tree shattered one of the gopuras and sheered a column in half from its capital to its base.

### Effects of Vegetation

There are classic examples in Ta Prohm and Preah Khan of where vegetation has taken an almost irreversible hold on the structures. In many cases for decades, possibly for centuries, keeping the jungle clear of the extensive linear temple complexes has been totally neglected. As a result, large trees have engulfed the structures and have created a unique blend of nature and architecture. Being particularly moved by this harmony, Andre Malraux, in fact, recommended to the EFEO that the temple complex of Ta Prohm should remain a captive of the jungle. Over the last twenty years, through force of circumstance, little effort has been made to keep the sites clear and again many trees of the Ficus variety have grown over and around the stone structures and have pried the temples asunder.

### Drainage Problems

Angkor is famed for the hydrological skills used to bring water to the moats and canals surrounding the temples and palaces. Over the centuries the water systems have silted up and the original storm water drainage within the complexes have been forgotten or ignored. Above, the question of the presence of moisture has been discussed at length. Often the cause for such an excessive presence is the result of improper drainage within the building complexes.

The Indian Team is making a study of the drainage system at Angkor Wat to try and locate the original drainage pattern inside the complex, since they have deduced that much of the damage and settlement of the complex's foundations has been caused by standing water around the wall bases.

### Looting and Theft

No survey, however cursory would be complete without mention of the problems of looting and theft. More damage is apparent from wanton destruction of the temple fabrics in efforts to decapitate or separate a bas-relief from its stone backing than that caused by warfare. It was also evident that several standing icons have been uprooted and removed. Where size or weight defied the looters, they made do by removing

heads or limbs, leaving behind the torsos, abandoned. Some of these priceless works of art are in safekeeping with the Conservation d'Angkor while others have found their way into private collections.

### Damage Relating to Free Access

General access to Angkor has never been restricted. In fact, to create the necessary control would be a major undertaking. However, there is no easy way of skirting the historic sites and all vehicular traffic passes along asphalt roads through the middle of Angkor Thom via the main South and East Gopuras (gates) passing close to many of the major temple complexes. The physical damage caused by large trucks to the gopuras is inexcusable. The uncontrolled vehicular access also encourages looting as it provides easy transport for the targeted large-scale sculptures.

## 5 Structural Defects

### General

The vastness and structural complexity of some of the major temple complexes such as Angkor Wat, Bayon, East Mebon and Pre Rup is remarkable as is the ingenuity of the builders of these monuments not to mention the labor-intensive nature of such undertakings.

### Defects in Design

One of the most surprising defects found in all the temple structures is an inherent failure in design and construction, which is one of the most serious and endemic threats to the buildings. The structures have been built using massive stone blocks — some weighing over four tons — which were placed in situ uncarved. Once stacked in position the stones were sculpted in elaborate sections undercutting the stones above to create deep cornices, string courses and podia. The later carving, especially of the heavily undercut plinth moldings caused considerable structural instability as much of the stonework was only supported by the metal cramps which were intended to give lateral support only.

### Foundations

It seems, from the available evidence, that the foundations of these massive structures were very shallow, were often made up of placed earth, as in the case of the temple mountains, and were usually built off a very friable laterite stone foundation. Often the laterite formed the structural support to this stone facing and, because of its porous nature, the laterite acted as a drainage conduit. The passage of water appears to have ultimately weakened the stone and aggravated the stability of the already precarious structures.

### Bonding and Metal Ties

The tying back of this stone facing to the laterite substructure also appears to be somewhat haphazard. There is evidence of both stone and metal wedges to connect the stones to each other but there appears to be a lack of bonding back to the main structure. A clear example of such failure can be seen in the retaining wall of Bakong at Roluos where the rainwater has percolated between the stone facing and the laterite causing considerable damage and partial collapse.

### Defects in the Temple Mountain Structures

The "Temple Mountain" or pyramidal structures are very susceptible to structural failure and instability. The design concept and the relationship between the structures and its human visitors demonstrate a conscious desire to achieve a sense of monumentality and a false sense of scale - the stairways leading to the temples are double the human scale with risers of 18" and treads of only 6". In variance, the doorways are smaller than expected to exaggerate the scale. The normal angle of repose for unconsolidated structures or mounds is 45 Deg.; the majority of the Angkor structures are set between 50-60 Deg. making them very unstable. During the 1960s the French planned and commenced a major restoration intervention at Baphuon, whose temple structure had partly collapsed and a large number of the stones of which had been removed for the construction of an enormous reclining Buddha along the western base of the terraced structure. The individual tiers leading to the temple superstructure were very unstable, and realizing this the French team decided to dismantle the terraces, to number the stone blocks and to construct heavy reinforced concrete retaining walls to which the sculpted stonework would be reattached. The present configuration of the mountain is temporary as the engineers who realized the instability of the mound decided to consolidate it temporarily with laterite and clay until they were able to place the newly designed retaining walls behind the decorative stone facade. Their work plan was interrupted by the war.

Using Baphuon as a case in point, it is possible to detect similar problems of structural failure in several of the other temple mountain structures. The inner temple structure of Angkor Wat, for example, is seriously threatened by instability due to the combined steepness of the central earthen base and the extensive undercutting of the stone carving covering it. The degradation of the stonework resulting from salt action and erosion has caused further structural movement that is particularly visible on the southwest tower of the quincunx.

### Defects in the Linear Structures

There is not a comparable structural complexity to the foundations of the linear complexes as the earth on which the foundations are laid is mostly undisturbed ground, is often laterite and appears to be reasonably stable and compacted. The most common failure in the linear structures, which is also apparent in the surrounding structures of the temple mountain complexes is the failure of the encircling galleries,

especially in the gallery roofs. The inherent lack of horizontal ties in the design and execution of the stone structures has caused the heavy corbelled roofs to spread and has placed uneven loading on the columns which seem to be already stressed. This eccentric loading is translated into the bases or plinth of the structure causing rotation of the columns and, in many cases, the resultant failure. An example of this chronic condition is to be found in the surrounding galleries at Angkor Wat where the heavy roof structures to the galleries are only in place because, in previous decades, restoration work was carried out on the structures using rather crude concrete buttresses to hold them in place. Similar examples can be seen throughout Angkor where crude concrete supports have been dexterously placed within the structures which has ensured that they are still standing today.

## 6 Building Materials and their Defects

A great variety of different building materials have been employed at Angkor throughout its history but the importance attributed to the individual materials varied with demand. What remains of the monuments today tends to provide the false impression that only the religious buildings were built of permanent materials.

### Sandstone

Most of the larger temple complexes and the remaining foundations to palace compounds have been partly constructed and faced in the pinkish-grey sandstone from the Kulen Hills. The temple structures have had to endure very harsh conditions due to the tropical climate. After abandonment most of the sites reverted to the jungle and all the ensuing stress of water percolation and vegetation. Most of the structural failures relate to the original design defects and are described above. There are different varieties and colors of sandstone found among the monuments of Angkor, but the most prevalent type is of grey with tinges of yellow, blue and pink. This stone which is typically fine-medium grained is quarried near the Kulen Hills, 15 km to the northeast of Angkor. Exploitation of these quarries was hindered as access to them from Angkor was difficult. It is reported, even prior to the arrival of the French in Angkor, that the quarries had been abandoned since the good stone supplies had been exhausted. The temples were constructed using stones which have been laid with no mortar. Weight and friction kept the stones in place after careful and precise cutting and rubbing to form a tight joint and stayed there due to friction. In some

cases a bonding agent made from tree sap is said to have been employed.

**Defects In Sandstone Caused by Humidity:** Due to the tropical monsoon climate and the considerable rainfall at Angkor, there is evidence of vast damage resulting from the presence of moisture in the stonework. This moisture dilutes and activates the sulphate present either in the ground or in the material itself and the salt laden dampness is drawn into the stonework by capillary attraction. During the drier months the warm dry weather causes the sulphate to crystallize under the exposed outer surface of the stone and cause the surface of the stone to disintegrate, removing the decoration. If the stone is incorrectly bedded — the natural laminations of the stone run parallel to the exposed surface instead, when correctly bedded, of laying horizontally exposing only the depth of the lamination. When stones are incorrectly bedded, serious flaking of the exposed surface of the stonework can take place. The cycle of sulphate attack is not solely dependent on the presence of rainwater as the high humidity experienced in this climate can also activate the sulphate in the same way.

**Defects In Sandstone Caused by Micro-Vegetal Growths:** The stone structures throughout the Angkor Sanctuary are covered with a variety of cryptogamous organisms such as mosses lichens and algae. The presence of different types of moss are abundant in the damp and dark interiors. The extent of damage caused by these growths is minimal save for the growths that harbor quantities of moisture. Methods to remove or control them, paradoxically, may cause more damage than if they are left untouched.

**Defects In Sandstone Caused by Theo Bacillus :** A micro-organism that develops in bat excreta which attacks and degrades the sandstone when it comes into contact with damp stonework. This defect has the similar appearance to that of salt action. An analysis of the stone deterioration is being undertaken at the moment in the Getty Conservation Institute Laboratories.

### Laterite

Although soft, this reddish rock hardens after being quarried and was therefore considered a logical material for foundations and walls; sometimes entire sanctuaries were fashioned of laterite. As it must have been readily available, it is likely that the laterite was quarried from the excavations for the moats and barays. There are said to be extensive layers of laterite near Phnom Kulen and in the vicinity of Banteay Srei as

well as in the province of Kompong Cham. Laterite was used extensively in the fabrication of the Khmer temples of North East Thailand where it was also laid without a mortar bed.

**Failure In Laterite Due to Poor Structural Integrity:** Laterite is an extremely poor quality building material, lacking in structural integrity and cohesion - failings which are evident in all the structures that are partly or wholly constructed in this material. Its stability and strength varies considerably between its dry and wet states. Laterite has been used extensively as a foundation material as well as the structural core, often concealed behind the stonework; its structural condition can only be assessed through failures transferred and, therefore, visible in the outer stone covering. Due to its porosity Laterite has been used as a drainage vehicle — possibly the original intention of the builders — and this has caused subsequent weakness and load bearing capacity of the laterite due to it being crushed. Evidence of damage caused to the fabric due to salt action is minimal. Due to its coarse-grained nature, Laterite has been used in its simple block form but occasionally it has been carved to form moldings for plinths and cornices.

### Brickwork

For the most part bricks must have been produced at each of the individual sites. The standard of brickwork is excellent which points to the superior quality of the clays from the Angkor region. It is possible to date the brickwork by the brick sizes. Bricks measuring 6x12x16x30 cm are of the pre Angkor Period (7th-9th Centuries); whereas the Angkor period bricks are somewhat smaller. To distinguish the equally fine modern replacements used for the restoration by the Conservation d'Angkor, from the original, the Conservation d'Angkor stamped the bricks with "CA" to differentiate the old from the new. The construction of the earlier brick structures is usually of very high quality. The bricks are well burnt and exhibit good load bearing characteristics. Some structural failure has been generally caused by the deterioration of the fabric resultant from continual dampness at the base of the building and the innate salt action which has structurally weakened the brickwork. Examples of this failure can be seen at Preah Koh and Lolei in the Roluos group and at Bat Chum. In Prasat Kravan where previously the condition of the temple structures was very derelict due to excessive salt action, extensive restoration and reconstruction has taken place to underpin the undamaged brickwork using newly made bricks that are appropriately stamped. The

quality of this new brickwork is very good but the colour differs from the original which helps to differentiate the newer work.

**Structural Failure in Brickwork:** Because the brick is a smaller module the structural integrity of the brick temples is in theory generally good. However, due to the porosity of the brick and the ease with which moisture can percolate through its fabric, and vegetation can take root, the brick structures have been subjected to considerable damage. The brick module, on the other hand, is much more easily replaced and, therefore, there has been great effort in years past to reconstruct and restore many of the brick temples within the environs of the Angkor. The total envelopment with vegetation of brick structures in the same way as the stone structures was not so apparent. The example of Bat Chum taken over by only scrub vegetation has left the structures themselves largely unaffected.

**Damage to the Brick Fabric:** Similar to the stonework, bricks are also susceptible to the damaging action of sulphate attack. This is an endemic failure due to the porosity of the bricks and severe examples of such deterioration can be witnessed in the brick temples of Ruluos. Masterful repairs can be seen in the temples at Prasat Kravan.

### Stucco

The stucco used on the monuments in Angkor was made of lime and sand and appears to have been applied only to the brickwork as a finish regardless of whether it served a decorative purpose or not. In some cases it was finely modelled after it was applied. What little stucco remains in situ, shows that it was applied in thick layers was very durable and adhered well to the brickwork.

**Extant Examples of Stucco:** Of the original stucco there are no examples of large areas of stucco still extant. Some of the brick temples at Preah Koh in Ruluos and Pre Rup have small samples which demonstrate the high quality of application and remarkable detail of this very perishable material. No efforts have been made to conserve or restore any stuccowork so far.

### Timber

Timber played an important role in all periods of construction and in all structural forms as evidenced by buildings depicted in the bas-reliefs. From textual and artistic sources, it seems that up to the 13th century timber was used for the non-religious buildings such as pavilions and habitations, but it also seems certain that sometimes more temporary sanctuaries have been built of lighter materials, awaiting final construction in a more permanent medium.

**Fragility of Timber:** Due to the perishable nature of timber there are very few examples of timber to be found in situ. There is the odd door lintel to be found or timber support in some of the gopura but all evidence of timber super-structures have long disappeared, probably due to excessive termite activity.

### Metalwork

The use of metals in construction appears limited to anchors for tying the stone blocks together and the possibility of using sheets of metal as an inner lining to the sanctuary walls. There are several examples of holes set at regular intervals to enable fixing of some type of wall covering, which are especially noticeable in the central tower of Preah Khan. More recently metal straps and reinforcing bars have been used to consolidate or restore some of the defective structures.

**Vandalism in search of Metal:** A more recent problem to the stability of the stone structures has been caused by the pilferage by vandals of the metal cramps bonding the stones together. The vandals skillfully cut into the joints between stones and remove the cramps, to make implements when metal was at a premium.

## 4.3 Conservation History in Angkor

It is significant that the first attempts at conservation are of Khmer instigation. The earliest known record of such attempts or intentions credit Rajindravarman II (944-968) with the restoration of Yasodharapura in the mid 10th century and in the 12th century Jayavarman VII completed the restoration of Srah Srang and some other monuments in the vicinity. Perhaps even more intriguing are the accounts of the early Portuguese missionaries (Lopo Cardoso and Joao Madeira) who record the massive restoration projects undertaken by King Satha (1576). According to these sources he invested considerable energy in the restoration of existing hydraulic-irrigational systems as well as Angkor Wat and the Bayon. The nine central towers of Angkor Wat were regilded in 1577 and the Bayon restored a decade later.

In the wake of making Cambodia a French protectorate (1863), a permanent mission for the exploration and excavation of the region was established in 1884 and the Governor General of French Indochina subsequently brought the remains of Angkor under the control of the Ecole Francaise de L'Extreme Orient in 1900. This marked the start of the EFEO's restoration efforts undertaken by a series of directors beginning with Jean Commaille. Commaille was succeeded by such luminaries as Henri Marchal, Maurice Glaize and Bernard Philippe Groslier. In 1907 the Conservation d'Angkor was established and from its inception until its dissolution in 1967, the direction of the Conservation d'Angkor remained in the hands of French conservators.

The initial projects undertaken by the EFEO and the Conservation d' Angkor were archaeological in nature, but after 1930 they focused increasingly on conservation activities of both minor and major proportions.

### 1 Conservation Interventions

There have been major conservation interventions taking place since the beginning of the present century. This information is maintained in the exhaustive archives of the Ecole Francaise de l'Extreme Orient in Paris and is at present being catalogued. During the research carried out by members of the WMF team the following references were found. This list does not pretend to be exhaustive.

1908-12: Excavation and cleaning in and around Angkor Wat (Jean Commaille): North and South Kleang; Phimeanakas; Baphuon

1913-15: Excavation undergone at Bayon (Jean Commaille)

1914-21: Excavation of the principal monuments of Angkor Thom: (Henri Marchal): Prah Pithu; Prah Palilay; Thommanon; Chausay Tevoda; Baphuon; Tep Pranam; Prasat Suor Prat #4; Ta Prohm; Krol Ko; Ta Prohm Kel; Sras Srang; Phimeanakas; North and South Kleang; Baksei Chamrong; (Marchal and Charles Bateur): Banteay Kdei

1921-30: Excavation of other monuments of the Angkor region (H. Marchal): Preah Khan of Angkor; Neak Pean, Phnom Bakheng, Prasat Kravanh; (Parmentier and Goloubew): Banteay Srei 1

931-2: Excavation and clearing of the Eastern Baray, including the temple site of Ak Yum; excavation of Pre Rup (begun by Marchal), Preah Koh of the Roluos group (George Trouve)

1932-5: Anastylis of Banteay Srei (Henri Marchal); excavation of Ak Yum and Preah Koh (G. Trouve)

1936-45: Restoration of Banteay Samre, Bakong (J. Lagisquet and M. Glaize); Neak Pean (M. Glaize) and certain sanctuaries at Preah Khan; Prah Palilay (M. Glaize); Phom Krom (M. Glaize); East Mebon (Marchal and Glaize); Phimeanakas (M. Glaize)

1948-53: Restoration of Sras Srang (Jean Boisselier); Baphuon (Groslier and Launay)

1954-9: Restoration of Neak Pean, Preah Khan, Pre Rup, Thommanon and the central causeway of Angkor Thom (Jean Laur and Rene Dumont)

1959-70: Continuation of the work on the southern approach to Angkor Thom, the temple of Thommanon, and commencement of the work on the Baphuon; work on the eastern approach to Angkor Wat as far as its passage of the moat and approach to Sras Srang; restoration of Prasat Kravan; excavation of small temples north of Phnom Bakheng and (?) the southern group of temples at Sambor Prei Kuk and the prehistoric site of Mimot in Kompong Cham province; excavation (?) of the eastern side of Sras Srang, the terrace of the Leper King (Bernard Philippe Groslier assisted by Guy Nafilyan and Jacques Dumarcay)

## 2 Recent Interventions

After the withdrawal of the French from Cambodia and the forced cessation of work in progress, notably that of the Baphuon, the Cambodians with their limited resources have taken certain measures to protect their national heritage from the ravages of war and the perpetual destruction of the invading jungle:

Removal of the Leper King to a more protected position the National Museum, Phnom Penh and its substitution of a concrete replacement.

Collection and storage of over 2400 movable images in warehouses located with the Conservation d'Angkor to discourage theft as well as the cataloging of these items together with other "found" objects retrieved by local villagers from the vicinity.

- 1986: Invitation of the Archeological Survey of India team to commence conservation work on Angkor Wat
- 1988-89: Invitation to a Polish team first to conserve the paintings in the Silver Pagoda of the Royal Palace of Phnom Penh and later to undertake a project at Bayon.
- 1989: Appeal for international assistance after the hurricane damage at Angkor.
- 1989: Establishment and maintenance of a guard unit to protect the monuments from encroachment as well as by potential trafficking in stolen art objects.
- 1989: Joint missions fielded by UNESCO, by EFEO, by Sophia University to study components relating to the preservation of Angkor. 1990: The UNESCO International Round Table Meeting of Experts for the Preservation of Angkor.
- 1991: EFEO Sophia University Joint Mission. WMF collaborative mission with Sophia University, EFEO and UNESCO.

## 3 Current Internationally - Supported Conservation Efforts

### Contributions from Government of India:

On September 29, 1983 the Government of India presented to the People's Republic of Kampuchea a Project Report outlining their proposed restoration plan for the temple of Angkor Wat, after having visited the site in 1980. It included proposals for both extensive restoration of the four corridors of the 3rd enclosure, repairs to the causeways, the cruciform gallery and a drainage system as well as cleaning of various parts of the structure. The proposed project plan was accepted early in 1986, after which date the Archaeological Survey of India (ASI) commenced its conservation and preservation program, working in six-month stretches each year. In the first two six-month seasons of 1986-87 numerous projects were commenced: (1) restoration and repair of the northern embankment of the moat adjacent to the main entrance; (2) restoration of the Northern Library; (3) continuation of the repairs to the moat; (4) dismantling and the "rebuilding" of the plinth, porches and steps of the Southern and Northern Libraries; (5) substitution of stone slabs for the missing ones in the Esplanade pavement; (6) the completion of rebuilding the roof over the Samudranatha relief of the third gallery after modifying the foundations and drainage systems. In conjunction with these efforts, additional measures concerning the chemical cleaning of the structure were also undertaken.

### Contribution by the Government of Poland:

The Polish Government were among the first to respond to the need for assistance at Angkor. After having established a support group in the Friends of Angkor Wat, the Polish entered into contractual agreement with the Cambodians in 1988. They have already worked for two seasons of six months each on the restoration of the early 20th century Ramayana paintings located in the Silver Pagoda of the Royal Palace in Phnom Penh. They had intended to commence the difficult and complex anastylosis of the Bayon in the Fall of 1989. A Polish group has produced a film on the Angkor region, establishing the significance and historical backdrop these monuments and providing a basis for the study of Khmer culture and civilization.

### Contributions from the Japanese:

Among the several parties interested in assisting the Cambodians in this important and extensive undertaking, the Japanese figure prominently. In the first phase of the University of Sophia's Project on the Study of Historical Sites, the temples of Angkor were but a portion of four Southeast Asian historical sites selected for comparative study on an interdisciplinary scale — the other sites were Borobudur in Indonesia; Sukhothai in Thailand; and Pagan in Burma. After the first symposium held at Sophia University in Tokyo in 1985, the subject of the Angkor temples was included in the first stage of the project. Problems of access to Angkor and communication difficulties were experienced by the Sophia team. However, more recently, the Sophia University Team have visited Angkor several times and were part of the joint mission fielded with the World Monuments Fund during March 1991.

In its first stage the Sophia University study, was involved with the present state of the cultural heritage in the four sites in South East Asia, as well as the recent preservation efforts undertaken. The second stage currently being planned will focus on: (1) the development of a methodology concerned with integrating the individual monuments into the local community and their preparation for presentation to the public in conjunction with related cultural art forms; (2) the development of the concept of "Cultural Space;" the application of the proposed methodology incorporating "Historical Site Engineering" together with concept of "Cultural Space."

### Contributions from France:

The French have also expressed a serious interest in renewing their ties with the Cambodians in this international conservation effort. 1988 saw the birth of a new organization, the Association of the Friends of Angkor (Association des Amis d'Angkor); it also witnessed a significant Exhibition of photographs taken in the 1960's by M. Nafilyan whose contributions at that time under the auspices of the Conservancy of Angkor are well known; supplementary photographs by Messrs. Claude Jacques, Rene Dumont and Matthieu Ravaux documenting their current condition provided the exhibition with an instructive edge, bringing to mind the significant contributions France had made to the rescue of these architectural masterpieces from the encroachment of the jungle.

Once Angkor was again accessible, the Association des Amis d'Angkor was among the first groups to revisit Angkor and subsequently to submit a proposal to the Getty

for funding to complete a project concerned with the study and eventual restoration of the Baphuon temple at Angkor (1989). This proposal was seen as a continuation of the work which was previously undertaken by Commaillie in 1908 and resumed by Marchal in 1916. In 1950 further major work was commenced involving the complete dismantling of the temple structure, but this was left unfinished after the French departed from the region in 1970. Clearly, the French are keen to take up the cause of Angkor once again and resume its study of the Khmer culture.

In 1990 the EFEO has expressed a serious interest in the reestablishment of relations with the Cambodians in a common effort to conduct widespread conservation of monuments which have suffered both as a result of recent war damage as well as jungle encroachment. As a result they have established an office in Phnom Penh and, in January 1991, fielded a collaborative mission to study the condition of the monuments in Angkor. They invited representatives from Unesco, the Archaeological Survey of India, from the Friends of Poland and they were also joined by a representative from Sophia University.

### Contributions from Australia:

The Australians have through the Joint Australian Non-Governmental Organization (JANGO) shown interest in becoming involved in the Angkor conservation project. Australian residing in Cambodia have supported activities in the cultural heritage field in Cambodia. The Cultural Division of the Department of Foreign Affairs and Trade have shipped over 140 Kilograms of architecture and cultural heritage textbooks to the University of Beaux Arts. This library was donated by Lori Anglin and Scott Cunliffe.

### Unesco's Contribution:

Unofficially Unesco has an active interest in becoming involved with conservation activities in Angkor and these activities are fully supported by the Director General. In the short term, Unesco has drawn up a Plan of Action, which has been circulated to member countries in an effort to raise funds and an interest in the conservation of the Historic City of Angkor. A result of this request has been a generous donation from the Japanese Government towards start-up costs. These funds enabled Unesco to host a Round Table conference of international specialists in June 1990. Other activities proposed in the Plan of Action will encourage research at centers around the world, the establishment of a research center in Angkor (Siem Reap) and the establishment of a coordinating office in Bangkok.

# Cultural Tourism: Concept Paper



## 1 Introduction

This report was prepared after twelve days of on-site visits at Angkor as a member of the second World Monuments Fund Study Team.

It should be read in conjunction with the first and second WMF Conservation Reports where detailed background material and evaluation of the monuments is included.

This Tourism Report describes a concept plan which foresees Tourism as the key element in a national economic development policy. Tourism is also seen as key to cultural conservation.

A detailed Tourism Plan should not be developed until after a Conservation Management Plan has been prepared. In Cambodia, tourism should follow conservation.

For clarity I may continue to use the terms tourism and tourists, but the Tourism Officials of the Government of Cambodia should NOT use these terms: Instead change-over-talk about "Visitors and a Visitor Industry". Go after the up-market clients: treat them as friends, not intruders. Avoid the pit-falls of number-chasing mass-tourism.

Think small.

## 2 Assumptions

The goal for Tourism Development is that cultural tourism planning be:

1. Appropriate to the importance of the sites
2. Sensitive to the conservation requirements
3. Responsive to the residents needs
4. Satisfying to the visitors
5. Profitable to operators
6. A hard-currency generator for the Government.

These Tourism Goals should never change, though for the early years their development will be uneven.

In both fields, Conservation and Tourism, international professionals will be attracted to Angkor and they will be needed for a while to initiate work and to train local people as their replacements.

Because the site has been "closed" for so many years, there is a great deal of pent-up interest in Angkor among scholars and archaeologists. It will be vital to have plans to be ready to manage this influx of these professionals and to take advantage of the reservoir of international goodwill.

## 3 Discussion

Eventually, a Conservation Management Plan is envisioned in the World Monument Fund studies. Similarly, and following that, a Master Plan for Tourism Development will be necessary.

Immediately, the Government of Cambodia should commit itself to the Conservation and Tourism Goals described above.

For ALL government Departments, all future budgets, investment permits and capital expenditures must be evaluated against these goals. Appeals for, and acceptance of, foreign-aid grants must be based on these goals.

The Cambodian Government should see their commitment to these Conservation and Tourism goals as:

1. Notification to would-be investors
2. Justifications for Cambodian aid requests.

Similarly, donor countries should set these goals as minimum commitments and as priorities for their aid grants.

Cambodia faces a daunting challenge as it works to heal the wounds of 20 years of civil strife. There are many urgent needs for its residents, but by recognising the international economic value of the Heritage resources at Angkor and by giving them prominence and priority, the economic benefits can flow to the residents.

## 4 Recommendations

The ensemble of monuments at Angkor must be recognised as world-class monuments.

Angkor must be proudly recognised by the Government of Cambodia as the most important economic asset in the country.

The Conservation Centre at Siem Reap must be funded and staffed to become the professional co-ordinating manager of Conservation work at Angkor. Internationally recognised specialists must be recruited to supervise work and to initiate training programs. Fund raising from governments and from private organisations will require a qualified on-site management presence.

The World Monuments Fund could and should step in to help re-activate the Centre. They are neutral, non-governmental, experienced and capable. A professional but non-governmental leadership is needed.

Foreign aid requests (and donor grants) should take note of the need for Conservation of Angkor and should recognise the beneficial Tourism potential of Angkor.

Planning for Conservation at Angkor and its fitting presentation to visitors can attract International co-operation and provide International prestige.

Guidelines and some administrative policies must be established to manage the reservoir of International goodwill that will be attracted to Angkor.

## The Case for a Conservation Strategy:

Conservation must be a primary national political policy.

Conservation can be a healing, unifying process and will be the basis for tourism development.

For over 20 years, nearly a generation now, Cambodia has had two International Images:

- \* Angkor Wat, a legendary ensemble of buildings, in-accessible, mysterious, standing in the jungle, victim of war and looting but survivors, symbols of artistic grace and architectural wonder; and
- \* the Killing Fields, an irrational horror story of hate, civil war and senseless, vicious deaths.

These conflicting images, positive and negative, dominate all discussions of the tourism potential of Cambodia.

For years, the Cold War, global geo-politics and regional power-plays kept the country a victim of circumstances beyond its control. For the past few years, planning for Peace has been almost as divisive as the Cold War had been. For the casually interested person a new negative image of bickering and squabbling over the right to rule has continued to keep at bay the prospects for tourism in Cambodia.

Now Peace is a likely prospect, but Cambodia has become a desperate, financial cripple, and the once rich and complex culture has nearly disappeared.

The Conservation of Angkor could become a key factor in re-building the country's image. "Conservation" in this context will include fund-raising and international expertise coming to the country to initially design and direct the Conservation Master Plans and to develop training programs in the specialty skills that the country will need for generations to come.

In turn, these experts would be creating "attractions" that would be the features of tourism development.

Conservation is the first need; Tourism would be a happy consequence. Patriotism would also follow.

For the next 10 years, Conservation and Tourism Development should be concentrated at Angkor. However, there is a dangerous tendency to think of Angkor Wat as the one and only cultural destination in the country; in fact, it is simply the best known among hundreds of monuments scattered throughout the country; there is work enough for several generations to come.

The spin-off of revived skills in masonry, carving and construction would enrich the nation, as would the market potential for handicrafts and souvenirs.

The Cambodiana Hotel in Phenom Penh is a monstrous failure of planning and of scale. It provides nice enough services but it is a garish, unnatural building. It ruins what must have been a beautiful site. It should remain as a lesson in what not to do in the future. Its failure to "fit" should be enough to make national and city politicians alert and international aid donors wary.

At Angkor there are older, local hotels that are quite attractive and which could be upgraded to become splendid hotels. These would give the town character, they would stabilize commercial areas and would avoid diverting money into new infrastructure and construction.

### **Tourism Development:**

Conservation will be the attraction at Angkor. The chance to observe the conservation process will be a great marketing feature.

Tourism officials should be spending their energies to help launch the huge, required, professional Conservation effort; unless it succeeds, tourism will not succeed.

The future of tourism in Cambodia is that simple and that obvious.

The national tourism image must be professional conservation. A partnership must be formed.

The leader, Conservation/Fred Astaire will give the project class, but it will take Tourism/Ginger Rogers to give it sex appeal.

Together they can create something important and memorable.

## Concepts:

- \* For a variety of reasons there should be no mass tourism at Angkor. This is a place for niche tourism, for small numbers, up-market tourism.  
The sites cannot take big crowds, so the need is for bit spenders.  
The country cannot take big crowds: resources are limited and there is much to be done to rebuild the economy and to improve the quality of life for the residents.
- \* The Conservation must be first class. If it is, the tourism can be, will be, first class. Simple. Local. One-of-a-kind.  
Think about small numbers, high expenditures.  
The existing hotels are ideal for upgrading. Additions can be made easily. Food and transportation should be deluxe class; not fancy, but impeccable.
- \* Government tax policies be established to attract up-market visitors and to encourage highest possible visitor daily expenditures and to encourage highest possible visitor daily expenditures. And, to deter low-budget and/or mass tourism. To accomplish this, a full range of incentives and disincentives will be acceptable and necessary.  
All International Aid programs should comply and enhance the theme of conservation and professionalism and niche market tourism.  
The International travel industry leaders should be asked for their advice and consulted while the Master Tourism Plan is being prepared. These leaders should be drawn in as high-level consultants to the Government.

## Conclusion:

In Cambodia, because of Angkor, in order for tourism to be successful, tourism must be identified with conservation. The professional curatorship of the Angkor monuments will be the attraction for the visitors. The sites are dramatic but at this moment in time, visitors will not come just to behold the stone structures but will expect and will pay for the chance to observe and support the conservation of these World Classics.

Successful tourism development will, in a canny way, be conservation driven. There is a wheel within a wheel here: successful conservation and successful tourism will need each other.

The re-activation of the Conservation Centre at Siem Reap is the place where it will all begin.

Think conservation

Think quality tourism

Think up-market

Think small

Think long

Count dollars, count length of stay; do not count numbers of visitors.

Conservation and Tourism at Angkor can create a political unity, an economic future and a marketing image for Cambodia.

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