WORLD HERITAGE

Special Issue

World Heritage in Cambodia

United Nations Educational, Scientific and Cultural Organization

World Heritage Convention

ISSN 1020-4202

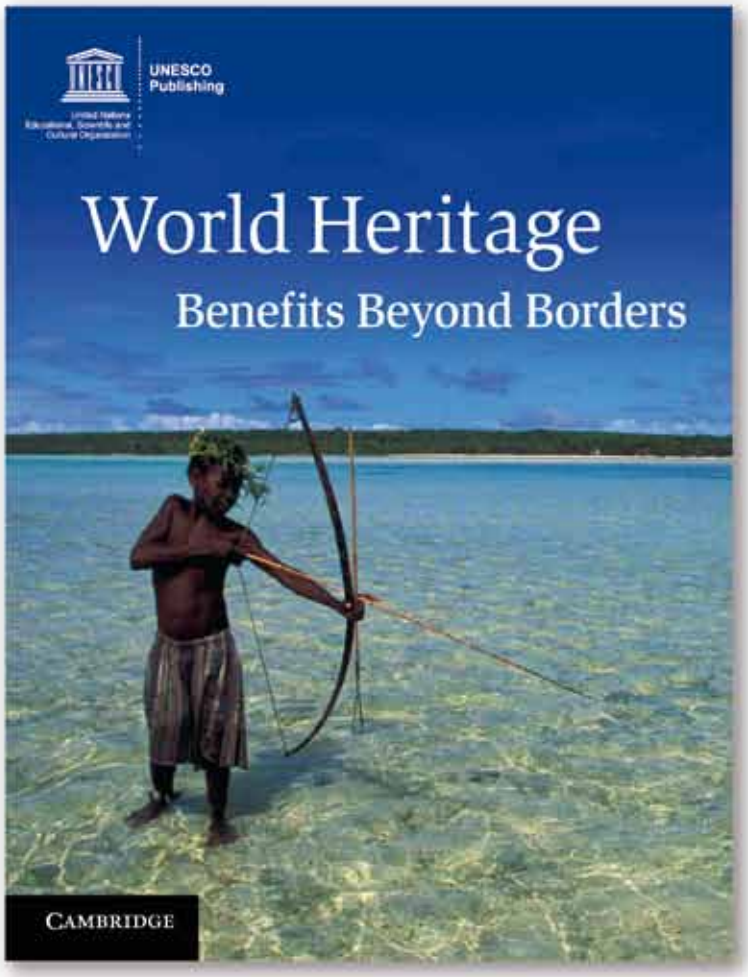
World Heritage No. 68 • June 2013 7,50€ US$9 £6 ¥850

United Nations
Educational, Scientific and
Cultural Organization

UNESCO Publishing

7, place de Fontenoy, 75352 Paris 07 SP, France • www.unesco.org/publishing
Fax: +33 1 45 68 57 37 • E-mail: publishing.promotion@unesco.org

World Heritage: Benefits Beyond Borders



- Published on the 40th anniversary of the World Heritage Convention, this thematic collection of case studies provides a thorough understanding of World Heritage sites and their outstanding universal value in the context of sustainable development.

- The case studies describe twenty six thematically, typologically and regionally diverse World Heritage sites, illustrating their benefits to local communities and ecosystems and sharing the lessons learned with the diverse range of stakeholders involved.

32,00 €
384 pages, paperback
217 colour illustrations
24,5 x 19 cm
2012, 978-92-3-104242-3
French edition, forthcoming in 2013

To order, please contact Jean De Lannoy, DL Services sprl, Avenue du Roi 202,
B 1190 Brussels, Belgium
Tel.: (+ 32) 2 538 43 08 - Fax: (+ 32) 2 538 08 41
E-mail: jean.de.lannoy@dl-servi.com
Postage by ordinary mail: Europe: € 5.50. Rest of the world: € 10.00

or **www.unesco.org/publishing** *(Secure payment)*

editorial

Cover: Angkor's magnificent harmony of art and nature (the temple of Preah Khan) (Cambodia)

World Heritage's annual special issue presents us with an occasion to take a close look at the World Heritage sites in the country hosting the annual session of the World Heritage Committee, to understand their unique value and explore what is being done to preserve them. In this issue, we have a fascinating study of the Cambodian sites of Angkor and the Temple of Preah Vihear.

Angkor is one of the largest archaeological sites in operation in the world. The story of Angkor is emblematic of what the World Heritage Convention can accomplish, not only in terms of recognizing heritage, but in rallying the expertise, resources and cooperation that make conservation work possible. Spreading over 400 km^2, Angkor contains the magnificent remains of the different capitals of the Khmer Empire, from the 9th to the 15th centuries. War and other upheavals during the 1970s caused serious and extensive damage leading to the simultaneous inscription of the site on the World Heritage List and the List of World Heritage in Danger in 1992.

The subsequent creation of the International Coordinating Committee for the Safeguarding and Development of the Historic Site of Angkor (ICC-Angkor), and the Authority for the Protection and Management of Angkor and the Region of Siem Reap (APSARA) have yielded excellent results. Uniting experts in various fields from around the world, their successful conservation efforts led to the removal of the site from the Danger List in 2004.

The Temple of Preah Vihear, dedicated to Lord Shiva, is remarkably well preserved and its complex history can be traced back to the 9th century. This outstanding masterpiece of Khmer architecture was inscribed on the World Heritage List in 2008.

In this issue we plunge into the intricacies of preserving these exceptional sites, including the critical issues of water management, ancient hydraulic structures and booming tourism; intimate looks at the mural paintings of Wat Bakong, and the structures of Angkor Thom, Banteay Kdei and the Bayon, with the privileged insights of the experts who work on them.

Other aspects of Cambodian culture, such as the Royal Ballet and Sbek Thom, a Khmer shadow theatre, as well as Tonle Sap Biosphere Reserve and the Tuol Sleng Genocide Museum Archive of the Memory of the World programme, are featured to give a more complete overview.

I would like to thank the Royal Government of Cambodia for their substantial contribution to the implementation of the World Heritage Convention, including their current mandate as a member of the World Heritage Committee, and for chairing and hosting this 37th session of the Committee in Phnom Penh.

Kishore Rao
Director of the UNESCO World Heritage Centre

WORLD HERITAGE

Quarterly magazine published jointly in English, French and Spanish, by the United Nations Educational, Scientific and Cultural Organization (UNESCO), Paris, France and Publishing For Development Ltd., London, United Kingdom.

Editorial Director
Kishore Rao
Director, UNESCO World Heritage Centre

Managing Editor
Vesna Vujicic-Lugassy

Editor for this Special Issue
Helen Jarvis

Editors
Helen Aprile, Gina Doubleday, Michael Gibson

Publisher
Richard Forster

Production Editor
Caroline Fort

Copy Editors
Caroline Lawrence (English), Brigitte Strauss (French), Luisa Futoransky (Spanish)

Editorial Board
ICCROM: Joseph King, ICOMOS: Regina Durighello, IUCN: Tim Badman, UNESCO World Heritage Centre: Giovanni Boccardi, Véronique Dauge, Guy Debonnet, Lazare Eloundou-Assomo, Feng Jing, Mechtild Rössler, Nuria Sanz, Petya Totcharova, UNESCO Publishing: Ian Denison

Editorial Assistant
Barbara Blanchard

Advertising
Fernando Ortiz, Peter Warren

Cover
Photo: Ross Huggett
Design: Recto Verso

Editorial Staff
World Heritage Centre, UNESCO
7, Place de Fontenoy, 75007 Paris
Tel. (33.1) 45 68 16 60 – Fax (33.1) 45 68 55 70
E-mail: g.doubleday@unesco.org
INTERNET: http://whc.unesco.org

Advertisements, production
Publishing for Development
5 St. John's Lane - London EC1M 4BH - UK
Tel: +44 2032 866610 - Fax:+44 2075 262173
E-mail: info@pfdmedia.com

Subscriptions
Jean De Lannoy, DL Services sprl
Avenue du Roi 202 - B 1190 Brussels - Belgium
Tel: +32 2 538 43 08 - Fax:+32 2 538 0841
E-mail: subscriptions@dl-servi.com

Published by Publishing for Development Ltd., London, United Kingdom. ISSN: 1020-4202.

Contents

Special Issue
World Heritage in Cambodia 18

World Heritage ***would like to thank the Royal Government of Cambodia, the National Commission for UNESCO, the Ministry of Culture and Fine Arts and the APSARA National Authority, and all the authors of the articles, as well as Tan Theany, Azedine Beschaouch and especially Helen Jarvis, the focal point, for their participation in the preparation of this special issue.***

UNESCO Publishing

United Nations Educational, Scientific and Cultural Organization

World Heritage Convention

PFD PUBLISHING FOR DEVELOPMENT

United Nations
Educational, Scientific and
Cultural Organization

UNESCO Publishing

7, place de Fontenoy, 75352 Paris 07 SP, France • www.unesco.org/publishing
Fax: +33 1 45 68 57 37 • E-mail: publishing.promotion@unesco.org

Atlas of the World's Languages in Danger

(3rd edition, revised and expanded)

Editor-in-Chief: Christopher Moseley

■ Languages are not only tools of communication. Languages are vehicles of value systems and cultural expressions and are an essential component of the living heritage of humanity. Yet, many of them are in danger of disappearing.

■ Created by more than 30 international specialists, the atlas framework identifies endangered languages in each region of the world. It evaluates their vitality, while making way for initiatives to revive and increase awareness of local languages.

28,00 €
218 p with tables and footnotes + 29 maps
Wall map included, 120 × 86 cm
30 x 20 cm, spiral bound
2010, ISBN 978-92-3-104096-2

To order, please contact Jean De Lannoy, DL Services sprl, Avenue du Roi 202,
B 1190 Brussels, Belgium
Tel.: (+ 32) 2 538 43 08 - Fax: (+ 32) 2 538 08 41
E-mail: jean.de.lannoy@dl-servi.com
Postage by ordinary mail: Europe: € 5.50. Rest of the world: € 10.00

or **www.unesco.org/publishing** *(Secure payment)*

United Nations
Educational, Scientific and
Cultural Organization

Message by Irina Bokova, Director-General of UNESCO

The cultural heritage of Cambodia expresses the core idea at the heart of the World Heritage Convention – the conviction that places of Outstanding Universal Value must be safeguarded and promoted for the benefit of all.

Preah Vihear, an exceptionally well-preserved temple to Shiva, is renowned for the quality of its architecture and carved stone ornamentation. The site of Angkor contains the magnificent remains of the successive capitals of the Khmer Empire, from the 9th to the 15th centuries. Both sites bear witness to a rich and irreplaceable history, which is important for all societies. Both exemplify also the responsibility we all share for safeguarding and promoting World Heritage.

Angkor stands out as an example of the extraordinary achievements made possible through international cooperation. The International Coordinating Committee for the Safeguarding and Development of the Historic Site of Angkor has provided a model platform of scientific expertise coordinating various disciplines in the areas of restoration, conservation, and research, serving as a forum for architects, engineers, archaeologists, and technical experts to exchange ideas, information and research methodologies. The structural stabilization of Angkor monuments has been resolved, but the sustainable development of the site remains a challenge for all parties concerned, especially the Authority for the Protection and Management of Angkor and the Region of Siem Reap. I am pleased that the longstanding involvement of the World Heritage Committee, since Angkor's inscription on the World Heritage List and the Danger List in 1992 and its removal from the Danger List in 2004, has contributed directly to this success.

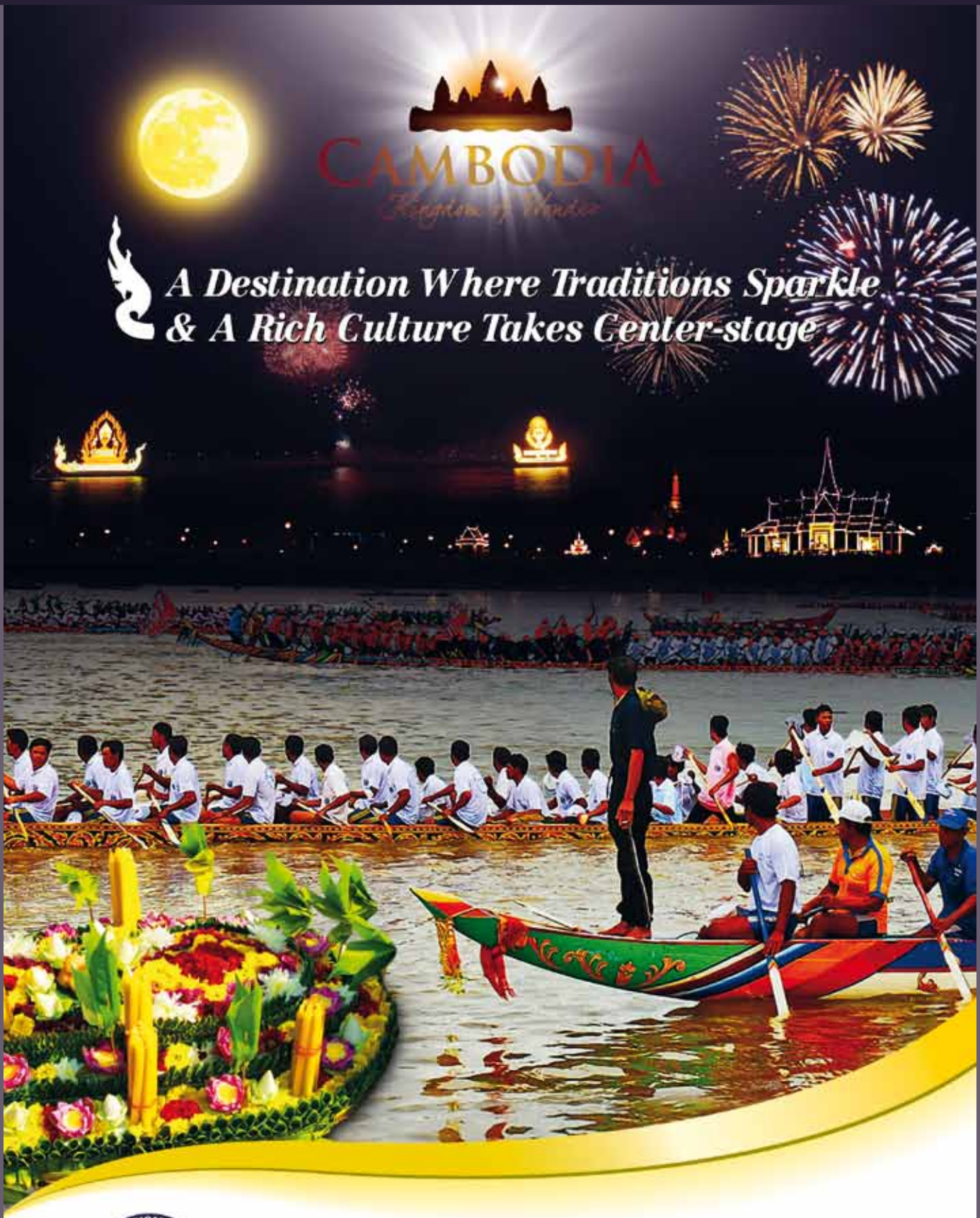

© UNESCO

Today, Angkor is an outstanding jewel among Asian tourist destinations and a motor for economic development. It stands out as a model of site management that has inspired many other large-scale restoration projects throughout the world. Its global popularity is also a powerful reminder of the fragility of World Heritage sites and the responsibility we share for their protection. The work of the World Heritage Sustainable Tourism programme is important here, in raising awareness among visitors and in helping site managers and others in the tourism sector to develop locally-sensitive solutions.

This issue contains much more than World Heritage. It reveals the Royal Ballet of Cambodia, and Sbek Thom, Khmer shadow theatre – two expressions inscribed on UNESCO's *Representative List of the Intangible Cultural Heritage of Humanity*. It also introduces Cambodia's Tonle Sap Biosphere Reserve, part of UNESCO's Man and the Biosphere programme, which is vital to the country's ecological and economical balance. This issue also features Cambodia's Tuol Sleng Genocide Museum Archive, part of UNESCO's Memory of the World programme. The Archive contains photographs and documents from the site's role as central prison and interrogation centre of the Khmer Rouge regime, bearing witness to a dark chapter of Cambodia's and humanity's history.

Reflecting UNESCO's integrated approach, this wide perspective expresses the rich, multifaceted and interwoven nature of cultural heritage – encompassing monuments and sites, living expressions as well as documentary heritage.

Since ratifying the World Heritage Convention in 1991, Cambodia has been an active and constructive partner in promoting the Convention's implementation. In 2013, Cambodia will complete its current mandate on the World Heritage Committee (2009–2013) and host the Committee's 37th session in Phnom Penh. I wish to thank the Royal Government of Cambodia for its generous efforts in taking forward the World Heritage Convention. I look forward to our continued collaboration in protecting humanity's outstanding heritage for the benefit of all peoples, today and tomorrow.



MINISTRY OF TOURISM

www.tourismcambodia.org

Southeast Asia
feel the warmth
ASEAN

Message of welcome

© Cabinet of the Prime Minister

Samdech Akka Moha Sena Padei Techo Hun Sen, Prime Minister of the Kingdom of Cambodia

The Kingdom of Cambodia considers it a privilege to welcome the 37th session of the World Heritage Committee to Phnom Penh and to Siem Reap/Angkor in June 2013.

The Royal Government has therefore taken every step to ensure that our distinguished guests benefit from a stay that is as pleasant as it is fruitful and informative.

The members of the Committee and the representatives of the States Parties to the 1972 World Heritage Convention will be hosted for their working sessions at the Peace Palace, the very seat of the Council of Ministers and home to a number of international conferences, including, most recently, the ASEAN Summit honoured by the presence of the world's great heads of state and government.

Near to Angkor, one of the jewels in UNESCO's World Heritage crown, and a few hours away from the Temple of Preah Vihear, the magnificent peak that granted Shiva's desire for the highest position, our guests will doubtless be inspired to make every effort to advance the implementation of the Convention as far as possible.

I wish the World Heritage Committee a memorable stay with us. May their works strengthen international cultural solidarity in the service of dialogue and mutual understanding of the values of civilizations!

This universally known and respected heritage will doubtless constitute a powerful force for maintaining peace in the world.

Angkor Wat.

© Ross Huggett

Interview with H.E. Dr Sok An

H.E. Dr Sok An, the Chairperson of the World Heritage Committee (2012–2013), is Deputy Prime Minister and Minister in charge of the Office of the Council of Ministers, and Member of Parliament of Cambodia. He has considerable experience in the fields of cultural heritage and diplomacy, including as President of both the National Commission for UNESCO and the APSARA National Authority.

Interview by Azedine Beschaouch
Professor Azedine Beschaouch is an archaeologist and member of the Académie Française des Inscriptions et Belles-Lettres. He is also a former Chairperson (on two occasions) and Rapporteur (on four occasions) of the World Heritage Committee.

© Office of the Council of Ministers

Azedine Beschaouch:
What would you say is the distinguishing feature of the 1972 World Heritage Convention?

Sok An: First of all, I would say that what most distinguishes the 1972 Convention is the fact that in recognizing the importance of diversity of cultures, it provides the cultural face of globalization. In this regard, allow me to remind you of something.

We have now seen the end of the often irreconcilable two sides of the Iron Curtain, which hung heavy between the Eastern and Western blocs. Little by little, across the world, channels of dialogue and the search for agreement have strengthened. Despite economic imbalances and social rifts, most of humanity is now once again thinking of ways and means to *build peace in the minds of men and women,* as the foundation document of UNESCO puts it. Against this background the role of UNESCO has also strengthened, thanks to the combined and sustained efforts of the Member States and the aims of the remarkable directors-general who have succeeded each other.

As is quite clear from the analyses and schedules presented during UNESCO's 65th anniversary celebrations, our international organization has now become truly global. More than anything else, however, it has become the place par excellence for sharing visions, proposing innovations, and favouring the exchange, if not the sharing, of knowledge and know-how.

If I may recall first of all UNESCO's universal vocation, it is to highlight the ideal of universality that was the inspiration for those who drew up the 1972 Convention.

We know it well: before the adoption of this Convention by the UNESCO General Conference at its 17th session on 16 November 1972, interest was mainly on monuments and works of art. After the trauma that followed the Second World War, the stress was on the need to protect these monuments and works of art in the event of armed conflict (this was clearly the emphasis of The Hague Convention adopted on 14 May 1954).

In 1972, our World Heritage Convention introduced innovations, firstly in terms of themes. From then on, cultural heritage has included monuments, sets (that is, groups of historical buildings) and sites (whether these are the works of humans or of nature or are the combined works of humans and nature). However, I consider the essence of it lies elsewhere. The Convention introduces, through its philosophy and its legal formation, a whole new approach to 'heritage'. It has managed to rise above the old but very persistent tensions between two forces of representation:

- On one hand, the indissoluble links (so dear to peoples and nations, especially in the Third World) between cultural properties and cultural identity.
- On the other hand, the progressive universality of cultural properties, due to the fact that within the UNESCO ethic, humanity has been and is becoming more and more defined as a dynamic assembly of cultures.

One thing is clear: in the late sixties and early seventies, UNESCO was very much ahead of its time. The 1972 Convention, in its very principles, took account of diversity of cultures long before a specific convention in 2005 lent a degree of legitimacy to this concept at international level.

AB: In your opening speech in Kyoto (6–8 November 2012), on the occasion of the festivities to mark the 40th anniversary of the Convention, you defined the Convention by also stressing the importance of the conditions of its implementation. Readers of *World Heritage* would be interested in a summary of the main aspects of your personal approach.

SA: Implementation, which has allowed a great number of countries to take possession of their territory's cultural heritage and to include cultural diversity on their national list of properties, is another characteristic of our Convention that can never be stressed enough, Let us take, for example, the case of Tunisia, which I mentioned in Kyoto, and which I know better thanks to you, from your contribution with us to the conservation and enhancement of Angkor. Everybody knows that Tunisia is now an important country in terms of Arab culture and Muslim civilization. The list of properties registered at the request of this country includes archaeological sites and historical monuments from the Phoenician, Roman and Christian eras, dating from several centuries before the coming of Islam. The same can be said of Arab-Muslim Libya, where sites from the Greek

and Roman periods are also seen as significant. In Egypt, which is so proud of its Islamic heritage, we note that the civilization of the pharaohs is still emblematic of the country.

And let us take also the exemplary case of Spain, which has embraced the Christian culture for centuries. Its list of heritage includes masterpieces of Arab architecture and Muslim art, with Cordoba, Granada, Toledo and Seville, to name just a few.

In this way, therefore, the Convention has broken free from the divides and allowed peaceful consideration of the events of the past, even when they are painful. The dialogue has become at the same time both generalized and introspective.

Implementation of the Convention has allowed a great number of countries to take possession of their territory's cultural heritage and to include cultural diversity on their national list of properties.

AB: But, I hear you say, international conflict and tension certainly has not disappeared. Mr Chairperson, what, in your opinion, is their possible or perceptible impact on the implementation of the Convention?

SA: It is not to deny reality or to be blindly optimistic to recall that the Convention has allowed a certain distance to be put between contentious or sensitive aspects of international relations in highlighting the symbolic strength of this or that monument.

I see the inclusion file for the Island of Gorée, in Senegal, as an excellent example of this. Gorée, to the universal conscience, is the symbol of the fate of black Africans 'with its procession of suffering, tears and death'. It remains 'the archetype of the suffering of black people across the ages' and a place sadly infamous in the history of the slave trade between Africa and America. In proposing its inclusion, Senegal explained that 'Gorée has been the theatre for unrelenting conflict between peoples. Modern Senegal wishes to make this place a sanctuary for the reconciliation of people through forgiveness'.

In this context, I would also like to mention the inclusion on the list of the Old City of Jerusalem and its Walls. Requested in 1980 by the Kingdom of Jordan, which administered the Old City until it was occupied in 1967, its inclusion was initially inspired by the political situation, the regional Arab-Israeli conflict, and the problems of applying the 1954 Convention.

A place of struggles for identity, confrontation in the name of history and memory, and a battleground for the relentless struggle between conflicting portrayals of the past, the Old City of Jerusalem was eventually included because of its exceptional universal character. By consensus, the symbolic significance of its history was highlighted along with the need to perpetuate the meeting of the Jewish, Christian and Islamic cultures in that place.

Another case that could be mentioned is the Old Bridge Area of the Old City of Mostar, in Bosnia and Herzegovina, showing how the conditions under which the 1972 Convention was implemented have inspired remarkable joint work between the federal and cantonal leaders in that country. The idea of calling on UNESCO to reconstruct the historic bridge gave them the hope of having it included. The bridge was destroyed deliberately by extremists during the civil war in the Former Yugoslavia, and was reconstructed in identical, and, I will say this, in authentic form. By making the Mostar bridge an asset of universal heritage, the World Heritage Committee has ensured the triumph of the ethic of peace and the symbolism of reconciliation between former antagonists.

AB: Allow me, Your Excellency, to remind you that on 14 December 1992, in Santa Fe (United States), the World Heritage Committee at its 16th session decided by consensus to include Angkor on the list, on the basis of four criteria (i, ii, iii and iv), with its area of 40,100 hectares between Roluos to the south and Banteay Srei to the north.
We have now reached the 20th anniversary of this inclusion. In this anniversary year, a Cambodian has been elected President of the Committee. Is that not highly significant? And what does this anniversary mean for you, Mr Chairperson?

SA: Apart from the personal honour of my election, I consider the fact that Cambodia is welcoming the 37th session of the World Heritage Committee, in June 2013, highly significant in itself. Our country is now making every effort to develop itself; thanks to the sustained action of the Royal Government, living conditions and levels of education among the population are continuously improving.

We have very recently shown, with the Association of Southeast Asian Nations (ASEAN) Summit, that we are capable of welcoming the eminent people of the world, from the United States to India, China and Japan. We can rightly affirm that the representatives of the 190 States Parties to the 1972 Convention will be given the best possible welcome, both in Phnom Penh and in Siem Reap/Angkor. The hotels will not let you down, and the infrastructures are considered to be good.

I now come to the twenty years of Angkor's inclusion on the List.

I mention first of all that through its decision, which was seen as very bold and innovative at the time, the World Heritage Committee took account of the exceptional situation of Cambodia following the Paris Agreements of 23 October 1991,and overlooked for the first time certain conditions set down by the *Operational Guidelines for the Implementation of the World Heritage Convention* which included protection of national heritage.

It is important, on this point, to note that the inclusion of Angkor required a long-drawn-out procedure and that the Royal Government spent much time explaining the situation to the Members of the Committee. The Committee decided on the inclusion, and with the desire to face the pressing problems with eagerness and efficiency (I quote the text of the Committee's decision), it also included the site on the List of World Heritage in Danger, requesting the Cambodian authorities taking over the necessary measures to fulfil the following conditions within three years (1993–95):

(a) Promulgation of adequate protection legislation.

(b) Establishment of a national protection agency with sufficient personnel.

(c) Establishment of permanent lists based on the United Nations Development Programme's project (document by the ZEMP – zoning environmental management plan).

(d) Definition of significant buffer zones.

(e) Establishment of surveillance and coordination of international conservation efforts.

These conditions were fulfilled and we celebrated at a distance when, during its 28th session in Suzhou (China, 7 July 2004), the Committee decided definitively to remove the Angkor site from the List of World Heritage in Danger.

Today, we can consider the historical significance of our actions, over the last twenty years, at the national and international levels.

We know it well: the Angkor monuments will ever stand as a national symbol of Cambodia and its people.In addition, by widely presenting it within the World Heritage Committee and the structure of UNESCO, the international community has definitively come to consider the Angkor site and its historical monuments as one of the most important cultural heritage sites in Asia and indeed the world.

Thus, twenty years after the inclusion of Angkor, nobody doubts that international cooperation to protect and develop the Angkor site and its neighbouring site, the city of Siem Reap, is of special importance that increases from year to year.

I am also particularly delighted and honoured to express, in the name of His Excellency the Prime Minister, Samdech Akka Moha Sena Padei Techo Hun Sen, and of the Royal Government of Cambodia, our recognition of the action of UNESCO to date and our profound thanks to the countries and governmental and non-governmental organizations that continue to work with the ASPARA National Authority and with the institutions and services in Siem Reap province with the aim of implementing the conservation, enhancement and sustainable development programmes and projects.

Dr Sok An at Bayon.

© Office of the Council of Ministers

We must not neglect the importance of all the works that have changed the face of Angkor, notably on the areas surrounding the monuments and the improvement to tourist access routes and security.

AB: Mr Chairperson, you have just recalled that December 1993 was the first session of the International Coordinating Committee (ICC-Angkor). Next December, 2013, should see the 20th session of that committee. Twenty years already! This is quite clearly a remarkable journey and a unique event in the annals of World Heritage. What will be done to highlight this special anniversary?

SA: I note first of all that we are quite justifiably very proud of the work done; we all agree that it is a great work. We wish to show, through exhibitions and the media, the long road travelled since 1993, when the 40,100 hectare site was still mined and the monuments in peril. Now, after twenty years of uninterrupted effort, Angkor is enjoying a full renaissance, and thanks to the success of the continuing fight against illegal trafficking and organized pillage, the site has ceased to be the preferred meeting place for those trading illegally in works of art.

A total of twenty-three countries and scientific organizations, representing four continents, have implemented almost seventy projects for an overall budget of more than US$250 million.

Assuredly, we have to advise everyone that alongside the spectacular consolidation and restoration works, we have enjoyed considerable success in the field of archaeological research. The public deserves to know that this research is teaching us more about the history of Angkor and its chronology and structures. Historians have therefore now dated the beginnings of Angkor to at least the 8th century rather than the 9th.

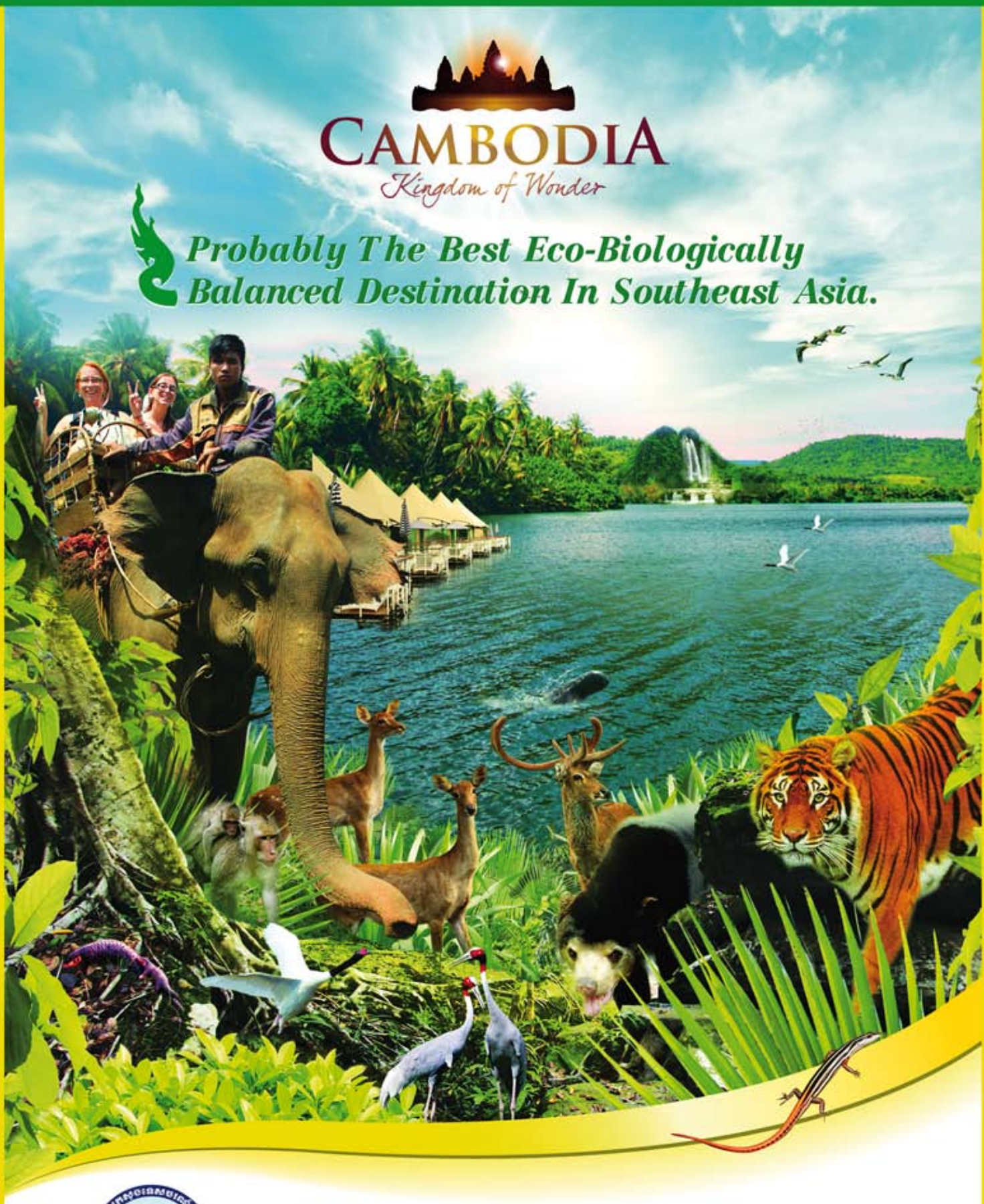
In Angkor Thom, remarkable excavation works have cleared the tropical vegetation to reveal a carefully developed city built on a precise and regular layout. This development model, based on a plan measuring 3 km^2 (in other words, a city with walls enclosing a space of 9 million m^2) has led some people to refer to Angkor as 'the mediaeval New York'. Besides, studies published in *National Geographic* in 2009 under the title 'Why did the world's greatest mediaeval city collapse?' sets the population of Angkor, in its heyday, at up to 1 million (a colossal figure for that time).

Similarly, prospecting works in the terrain and control soundings, armed with the very latest photo-interpretation technology from aerial images, have for the first time produced a morphological study of how the territory of Angkor was occupied. The territory, it turns out, covered a vast area of over 2,000 km^2.

I would like most, however, to stress the importance of the research carried out over the last five years into the water system of the capital of the Khmer Empire. Dr Hang Peou, our hydraulic engineer, has shown that the barays (immense reservoirs), and the basins, dykes and canals formed a coherent and very large network of catchment, circulation and storage of water for irrigation and domestic use. This was a major discovery.

Finally, I would draw attention to another aspect of our achievements. We must not neglect the importance of all the works that have, over the last twenty years, changed the face of Angkor, notably on the areas surrounding the monuments and the improvement to tourist access routes and security.

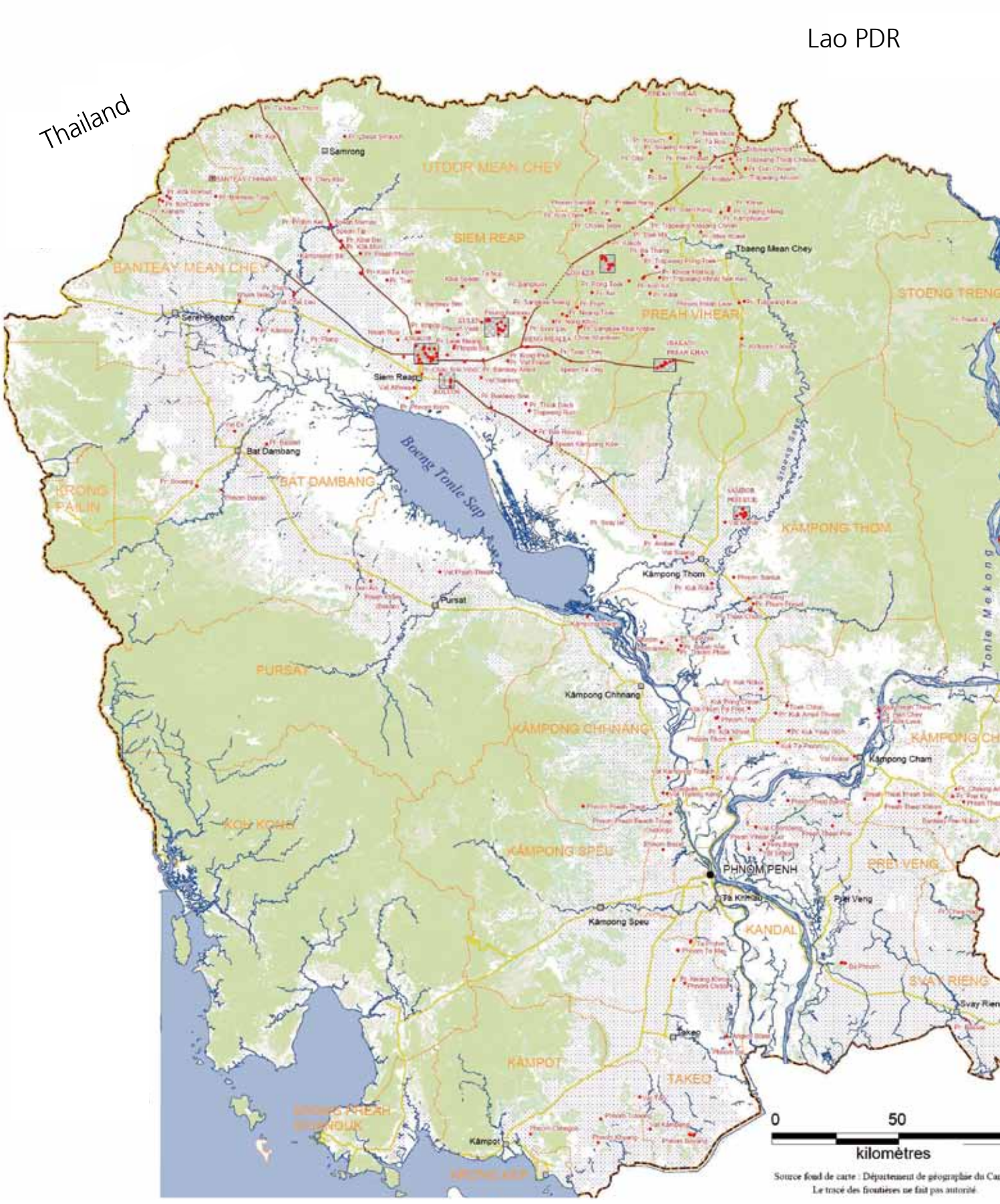
For all these reasons, and in consideration not only of the results but also the harmony that reigns between the Angkor teams, the Angkor campaign is unanimously seen as a model. Besides, the spirit of Angkor has led the international community to recently adopt an 'Angkor Charter', which lays down guidelines that could be useful for other sites included on the World Heritage List.



MINISTRY OF TOURISM

www.tourismcambodia.org

Southeast Asia
feel the warmth
ASEAN


Lao PDR
Thailand
Samrong
UTDOR MEAN CHEY
SIEM REAP
BANTEAY MEAN CHEY
Tbaeng Mean Chey
STOENG TRENG
PREAH VIHEAR
Serei Saophon
Siem Reap
Bat Dambang
Boeng Tonle Sap
BAT DAMBANG
KRONG PAILIN
KAMPONG THOM
Kampong Thom
Pursat
PURSAT
Kampong Chhnang
KAMPONG CHHNANG
Kampong Cham
KOH KONG
KAMPONG SPEU
PHNOM PENH
PREI VENG
Ta Khmau
Prei Veng
Kampong Speu
KANDAL
SVAY RIENG
Svay Rieng
Takeo
KAMPOT
TAKEO
Kampot
0
50
kilomètres

Ministry of Culture
and Fine Arts

EFEO

Principal archaeological sites and monuments of Cambodia

Key

- Provincial capital
- International border
- National road
- Provincial border
- River, canal
- Rice field
- Village
- Forest
- Group of monuments
- Shrine, temple
- Ancient road

100

Réalisation : Bureau de l'inventaire

Phann Nady — Coordination
Chim Nuong — Cartographie
Chan Sovicheara — Relevés
Chamroeun Chamroeng — Relevés
Bruno Bruginier — Responsable scientifique

October 2006

OUR PLACE ON OUR PLANET

EXPERTS IN PHOTOGRAPHIC DOCUMENTATION AND ARCHIVING OF WORLD HERITAGE SITES.
ORGANIZERS OF WORLD HERITAGE EXHIBITIONS AND DISPLAYS.
ON-SITE PHOTOGRAPHIC MENTORING, MARKETING AND PROMOTIONAL ADVICE.

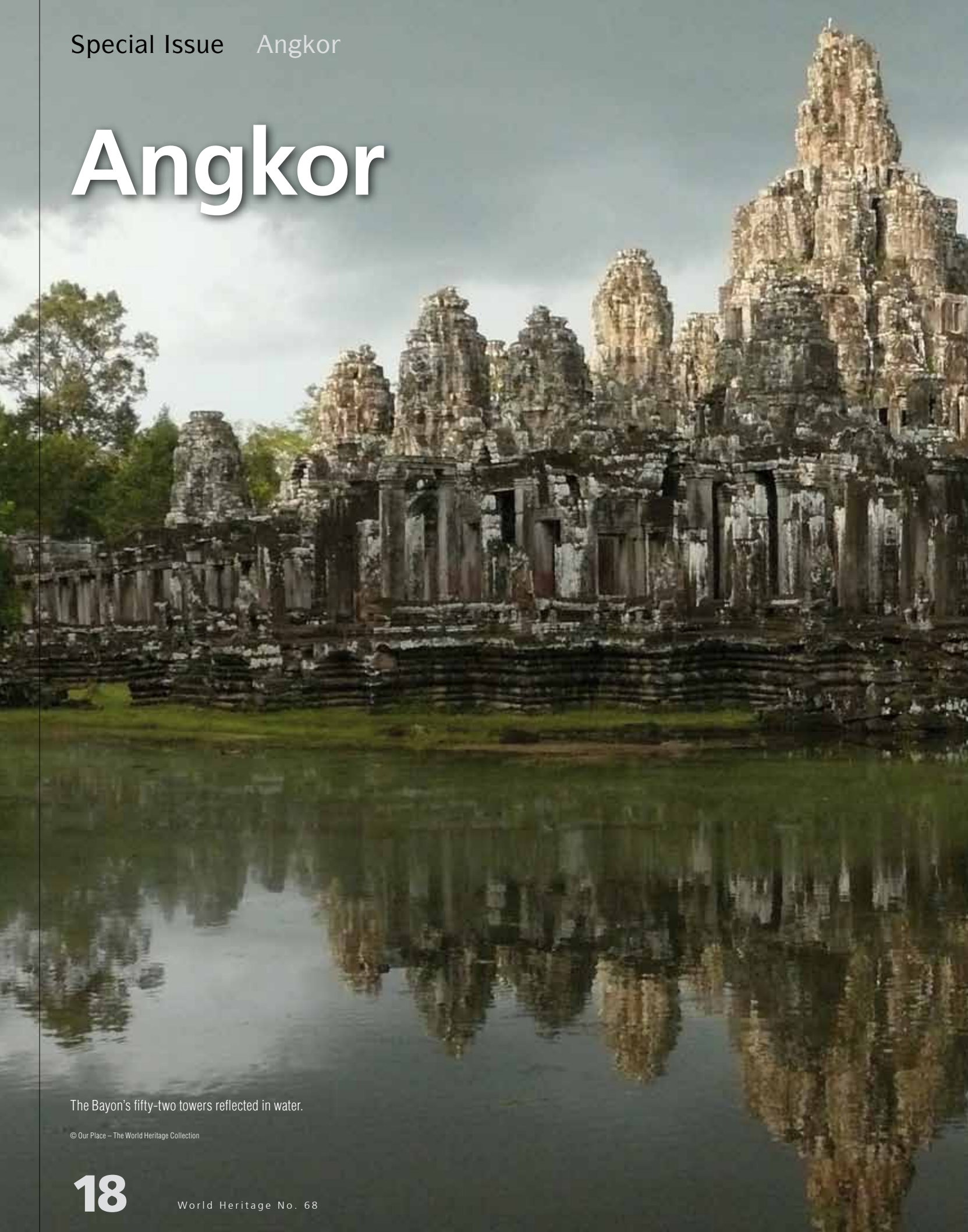
www.ourplaceworldheritage.com

AZERBAIJAN - GOBUSTAN ROCK ART CULTURAL LANDSCAPE

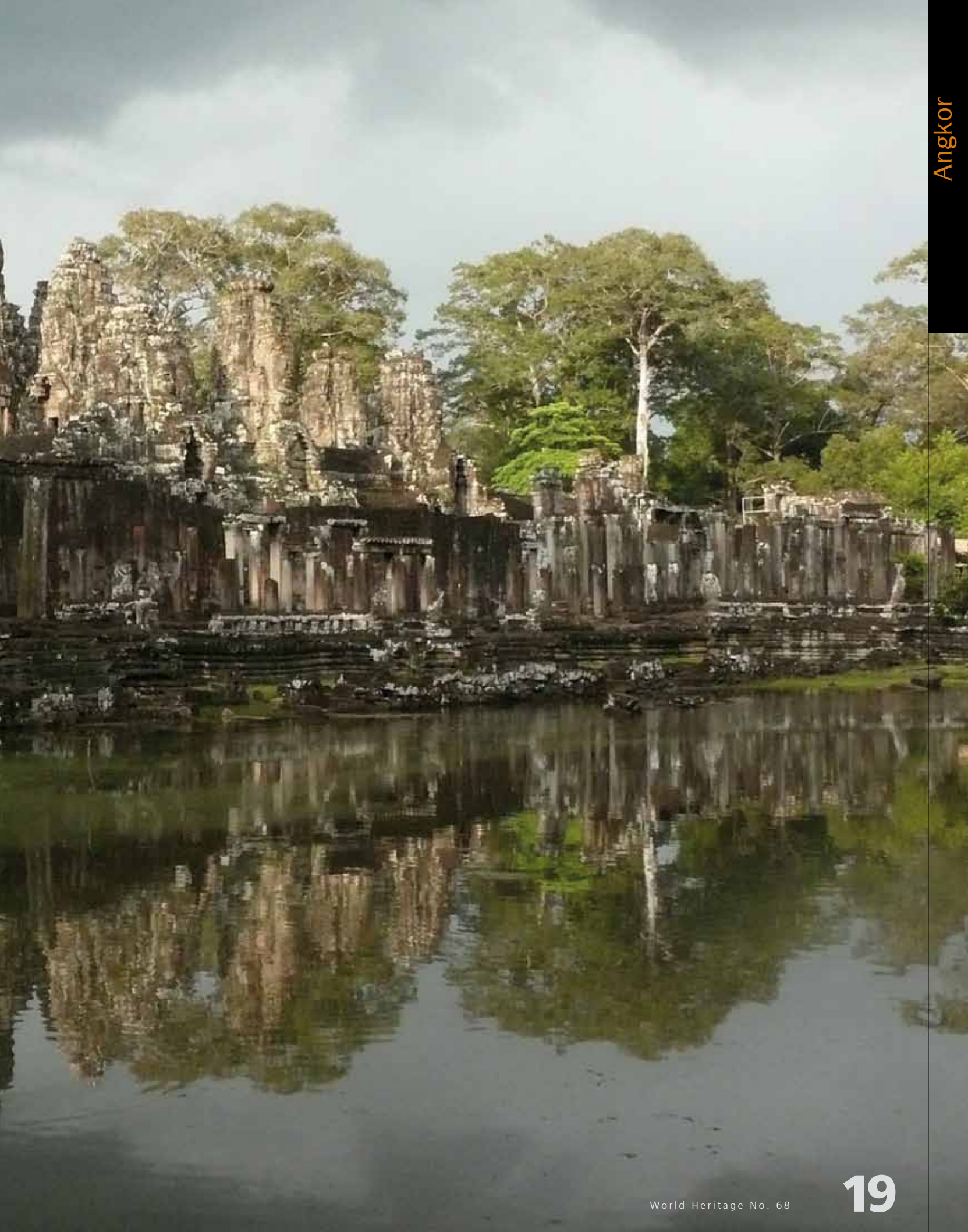
Ourplace

WORLD HERITAGE PHOTOGRAPHY & EXHIBITIONS

Angkor



The Bayon's fifty-two towers reflected in water.



Monuments and conservation

Ros Borath
Architect (DPLG)
Deputy Director General in charge of Conservation of Monuments and Preventive Archaeology
APSARA National Authority

Bakan, the central tower of Angkor Wat.

Following the Paris Peace Agreements in 1991, the national heritage area of Angkor underwent a fundamental change in the wake of inclusion of the entire site, covering 40,100 ha with ninety-one classified monuments, on the World Heritage List at the 16th session of the World Heritage Committee (Santa Fe, United States, December 1992).

Since its founding Tokyo Conference in October 1993, followed by the Paris Conference in November 2003, the ICC (International Coordinating Committee) has been the framework for twenty years of international action aimed at preserving and maximizing the value of Angkor, under the joint presidency of France and Japan, with UNESCO providing the Permanent Secretariat. The third ICC Conference is scheduled to be held in Phnom Penh in December 2013.

The Angkor monuments, generally consisting of laterite, sandstone or brick, are distinguished by an architecture that is remarkable for its consistency and homogeneity. Sandstone, the noble material par excellence, has always been the favourite of creators of sculpture and architectural ornamentation.

Large-scale work has helped to preserve the site and save a number of monuments. Much of this work was carried out by the École Française d'Extrême-Orient (EFEO) between 1907 and 1973. However, during a sensitive and not completely stable period, the Archaeological Survey of India (ASI) was also able to carry out restoration works in the Angkor Wat temple between 1981 and 1992. And, under the aegis of UNESCO, international action has involved multidisciplinary teams from twenty different countries, working in partnership with the APSARA National Authority as project manager.

Here are a few examples of works carried out on the site:

Angkor Wat

This is the largest and most magnificent of the Khmer temples (wats), constructed in the centre of a city (Angkor) during the first half of the 12th century under the reign of King Suryavarman II. The whole, including the 190 m wide moat, forms a huge rectangle measuring 1,500 m by 1,300 m and stretching over 9 ha. It essentially comprises a pyramid, concentric galleries and five towers in staggered rows. The restoration and consolidation works were conducted as part of a huge international project involving American, French, German, Italian and Japanese teams.

The statue of Ta Reach restored.

© Simon Warrack

Since 1997, the German Apsara Conservation Project (GACP) has been working to preserve the *apsaras* (celestial dancers) and *devatas* (female personages forming part of a divine environment) and other elements that adorn the temple. About 20 per cent of the *devatas* were in very poor condition, showing damage caused by erosion, micro-organisms and poor-quality restoration in the past, all with a profound effect on the sculptures. The GACP, in carrying out this delicate and sensitive work, has perfected certain diagnostic, removal and treatment techniques which will help to meet the challenges of time.

The statue of Ta Reach

One of the most important statues in Angkor Wat is that of Ta Reach, an eight-armed image of Vishnu, located in the south part of the western door of the temple. Undoubtedly installed in the 16th century during a restoration of the monument, it acquired great significance for the ancient animist cult known as Neak Ta. It is the heart of the spiritual and social life of the communities living around the temple and even beyond.

Poor-quality restoration work, particularly to the head, which was replaced by a copy, and the missing hands reconstructed with crude concrete reproductions, seriously damaged the image.

After receiving the support of local communities for its restoration work, and especially for the return of the original head (previously in the National Museum), a compromise was reached on the methods and materials of restoration and the techniques to be employed, so as not to interrupt the practices of the cult.

Lacquer on the statue has been reapplied and the missing arms replaced.

Phnom Bakheng.

The Bayon

This monument, in the very heart of the city of Angkor Thom, underwent various stages of construction (around 1200 under Jayavarman VII) and transformation and extension, giving it an exceptional character symbolized by a unique architectural style. Extremely complex, it has the distinctive appearance of a stone mountain with thirty-seven towers, generally sculpted with four faces, one on each cardinal point of the compass. However, the Bayon is also one of the temples most heavily damaged and most difficult to restore. The works commenced with an emergency intervention on the two libraries at the entrance to the monument, preserving much of the original material and using traditional construction methods as favoured by the Japan-Apsara Safeguarding Angkor (JASA), the Cambodian APSARA team, and the Japanese team from Waseda University.

Phnom Bakheng is a majestic structure comprising a pyramid of square terraces surrounded by 108 sanctuary towers.

The temple also presented problems of drainage, and work was carried out to prevent water seeping into the foundation embankments, thus reducing build-up of damp in the bas-relief walls.

The geotechnical study also revealed the need to consolidate the well in the central tower of the Bayon, prior to the planned return to its original location of the Great Buddha statue with all its significant symbolism.

Phnom Bakheng

This state temple of the first city of Angkor, built in the late 9th century by King Yasovarman I, this is a majestic structure comprising a pyramid of square terraces surrounded by 108 sanctuary towers.

The archaeological works and architectural surveys conducted on Phnom Bakheng began in 2004 and are still ongoing. A management plan has been drawn up in order to assess the problems and plan emergency work by a mixed team from the World Monuments Fund and APSARA.

The Baphuon

An imposing monument from the mid-11th century, the Baphuon consists of a massive five-storey pyramid, 25 m high and measuring 130 m by 104 m at its base.

It was under the supervision of archaeologist B. P. Groslier (EFEO), assisted by architect Jacques Dumarçay, that anastylosis was carried out for the first time at the Baphuon, aiming to stabilize

Preah Kô.

the massive foundations of the monument and then restore the sandstone facing of the original foundations. Given that this part of the restoration was finished, it was logical to follow the same approach in later efforts to restore the stonework to its original level of construction. This work, carried out over sixteen years by EFEO architect Pascal Royère, allowed the monument to balance again statically, and preserved the two main stages of the monument's history – the Hindu period (especially the bas-reliefs inspired by the *Rāmāyana*) and the Buddhist period (with a massive recumbent Buddha).

Preah Kô

This elegant brick temple, with six towers grouped on a single terrace and a large moat (500 m by 400 m) was constructed in the last quarter of the 9th century by King Indravarman I.

The first restoration work was performed by a German-Hungarian team. At present, the work is the responsibility of two Cambodian experts and specialist APSARA workers. The upper parts of this brick structure were showing significant signs of deflection and threatening to crumble, especially under the combined impact of nature and humanity.

This elegant brick temple, with six towers grouped on a single terrace and a large moat (500 m by 400 m) was constructed in the last quarter of the 9th century.

Ta Prohm

One of the principal temples of the great King Jayavarman VII (late 11th to early 12th centuries), Ta Prohm is in fact a temple monastery. The conservation works encountered serious challenges because of the environmental conditions of the site. A multidisciplinary approach was adopted to preserve and restore the whole. ASI has produced detailed documents on the stone and the various natural elements (mainly trees) that made up the monument as a whole. Special treatment was applied to subsoil and foundations, with repositioning of bases and paving stones.

Four areas of the five in which the works were applied are now complete. The trees that have wrapped their roots around the stones have long since contributed to the special atmosphere of this temple, and it is for this reason that the consolidation and restoration works completed and in progress have left this monument largely in its 'natural state', that is, the product of centuries of ruination.

The Angkorian hydraulic system

Hang Peou
Deputy Director General in charge of the Department of Water Management
APSARA National Authority

North-west moat and the main entrance causeway of Angkor Wat.

Neak Pean and its water basins.

The Khmer mastery of water engineering in ancient times is shown in a range of Angkor's hydraulic structures such as barays (constructed reservoirs), moats, laterite weirs, bridges, ponds, canals and dykes.

Due to the increasing number of tourists every year and the rapidly growing population of the whole region, the demand for water is increasing dramatically, making water management for the Siem Reap/Angkor area the most critical issue for safeguarding the monuments and for sustainable development. The challenge is to satisfy the needs of water for daily use while assuring the stability of Angkor temples standing on the sand layer and linked to the groundwater.

The Department of Water Management of the APSARA National Authority has conducted the necessary theoretical and practical work preparatory to rehabilitating the ancient Angkorian hydraulic system in order to permit the restored cultural landscape and general environment to recover their essential role of safeguarding the monuments. This long and challenging programme has been implemented with the technical and financial resources of the APSARA National Authority, and it has especially concentrated on comparing analysis and preliminary findings with the exceptional data provided by the floods of 2009, 2010 and 2011.

The challenge is to satisfy the needs of water for daily use, while assuring the stability of Angkor temples standing on the sand layer and linked to the groundwater.

Rehabilitation of ancient hydraulic structures

The main task to be achieved before rehabilitation can be carried out is analysing the flow from the upstream limit of the watershed outlet from the Kulen plateau right through until the water spills into the Tonle Sap (Great Lake) via three watersheds: the Pourk River in the west, the Siem Reap River in the centre and the Roluos River in the east. It appears that the Pourk and Roluos are natural watercourses, while the Siem Reap is an artificial waterway receiving water from Kulen mountain through the Bampenh Reach, a laterite spillway of 60 m breadth and 300 m length constructed in the 9th century.

More than eight years of applied research on the ancient hydraulic system by the Department of Water Management has managed to restore some structures built during the Khmer Empire of Angkor by hydraulic engineers as described below:

Srah Srang

The royal basin gained its water from rain and groundwater linked to the East Baray coming from underground and from groundwater from around the basin itself. However, as the East Baray dried up and the water table fell, so Srah Srang also began to dry up in the dry season and became completely dry in April 2004. In March 2005 the Department of Water Management set up a new supplementary system to refill Srah Srang by taking water from the Phnom Bauk reservoir on the Roluos River.

Angkor Thom moat

This major water store, capable of holding nearly 2 million m^3 of water, runs for 12 km around the walls of the city. In recent years only 3,000 m of the south-west moat has had water, while the south-east moat had water only during the rainy season. Following our restoration work, from 2010 the south-east moat (3,000 m) has had water for the full year (both dry and rainy seasons) and in 2012, the entire moat of 12,000 m was filled once again filled for the first time in hundreds of years.

Angkor Wat moat

Before 2010, the system to fill the Angkor Wat moat was a canal constructed from the south-west moat of Angkor Thom running behind the modern-day balloon station through to Tropeang Ses. Now we have rehabilitated the ancient system directly connecting the south-east Angkor

Preah Khan panorama.

Thom moat to the north-west Angkor Wat moat through the Phnom Bakheng moat and Sampov Loun canal. This system has allowed the water level to rise 1 m higher than previously.

North Baray (Jayatataka)

This baray measures 3,600 m by 930 m, with a previous storage capacity of 5 million m^3. It was not used for irrigation purposes like other barays in the region, but was used to supply Angkor Thom city, Preah Khan city and Neak Pean (hospital). It dried up more than 500 years ago, and some researchers did not believe that the North Baray could ever be refilled. But in 2007 Cambodian researchers restored its dyke feeding system found in 2005, and in 2008 water flowed again to this baray. The North Baray gained about 700,000 m^3 of water in 2008, 3,000,000 m^3 in 2009, 3,678,000 m^3 in 2010 and 5,000,000 m^3 in 2011 and 2012.

Neak Pean

This is an island temple in the middle of North Baray like the Mébon of the other barays, but in ancient times it had another function as a hospital using medicinal plants. The temple has five basins which, in recent times, were dry all year round except for the central basin, which had water for only a few months during the rainy season. However, since North Baray has regained water, these five basins have again filled and are full in all seasons. These basins linked to North Baray provide the best illustration of the hydraulic system in the Angkor World Heritage site.

Preah Khan

In ancient times, like Srah Srang, the moat of Preah Khan did not have a filling system. In recent times it has had water only for a small part of the year, but since the North Baray has regained water the Preah Khan moat is also now full of water for the whole year, showing that there is an underground water connection between the North Baray and Preah Khan, and also resulting from the effect of the raising of the water table from the recharge of the North Baray.

West Baray

In the 1960s, to fill the West Baray, water was diverted from the Siem Reap River at the north-east corner of Angkor Thom via a canal constructed inside the Angkor Thom moat (north and north-west moat) of about 4,500 m, connected to a canal running parallel to the access road through Ta Keo Gate, the western gate of Angkor Thom. These canals had the effect of depriving this part of the moat and the eastern part of the West Baray of water, which previously had been widely believed to be the result of sedimentation. In 2010, the Department of Water Management discovered the original feeding system of the West Baray in which an ancient pond (sedimentation basin) and canal extend from the north-west corner of Angkor Thom moat. In 2011, APSARA reopened the original inlet canal of the West Baray to release floodwater and protect the local people. In 2012, APSARA rehabilitated the whole feeding system and now the West Baray can be completely filled and thus play its part in flood management.

Drought and flood prevention

No inscription from the Khmer Empire mentions either flood or drought in the Angkor region, and neither do the Khmer people have a memory of disaster transferred from one generation to another through legends. It would seem therefore that these problems did not occur in the past, indicating that the water management system in ancient times was capable of optimizing water resources. But because the ancient system had not functioned for such a long time, in 2004 we encountered drought with the Angkor Wat moats and Srah Srang drying up, and this was followed by floods in 2009, 2010 and 2011.

An understanding of the overall organization of the Angkorian hydraulic system – rivers, barays, moats, canals, ponds and dykes – can be drawn from field identification of water flow, highlighting channels and their connections. Such field research has revealed that the north-east section of the North Baray has dykes running east–west and an ancient laterite bridge of multiple arc form on the Siem Reap River, which could be used to control the flow and discharge. Utilizing this distribution node, and the articulating channels, we managed to distribute water to the west (North Baray, West Baray and Stung River), to the east (Roluos River) and to the south (moats of Angkor Thom and Angkor Wat and Siem Reap River).

In 2012, the main part of this system was rehabilitated, allowing Angkor and Siem Reap city to avoid flooding during the rainy season of 2012. Without this work Siem

Reap city would have faced at least four successive flood waves. This result confirms that the ancient Angkorian hydraulic system can not only optimize water resource management but also achieve flood control.

We are sure that in the era of Angkor's prosperity, this imperial capital had efficient, coherent and systematic hydraulic engineering.

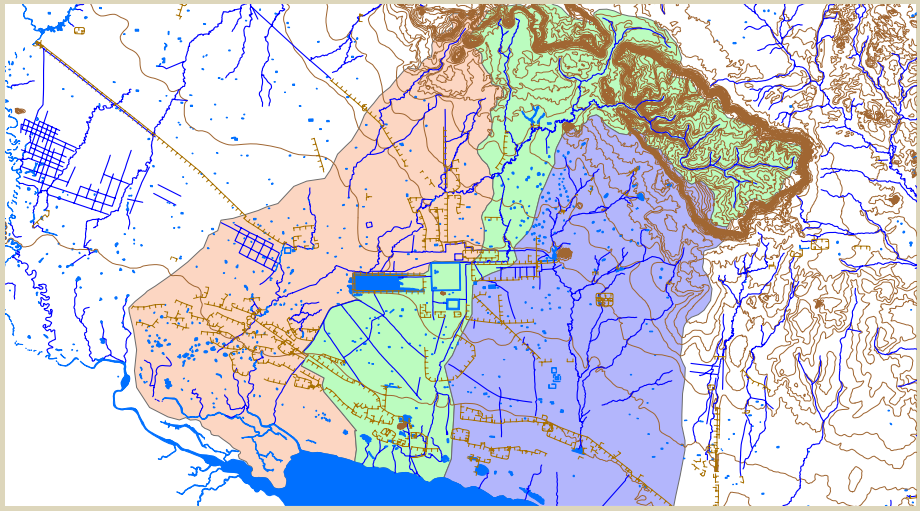
Back to the future

Nowadays, West Baray (56 million m^3), North Baray (5 million m^3), Angkor Thom moat (nearly 2 million m^3) and Angkor Wat moat (more than 1 million m^3) can already store more than 65 million m^3. During the flood of 2012, they played a very important role in absorbing water temporarily, facilitating flood management. APSARA plans to rehabilitate East Baray (more than 36 million m^3) and Lolei Baray (10 million m^3) – which are now both completely dry – to gain a total storage of 111 million m^3 and ensure overall water management and flood prevention as in the era of Angkor.

We have achieved an understanding of the Angkorian hydraulic system and have been able to authenticate many elements in the field. Further work is required to restore this system fully and ensure its continued maintenance.

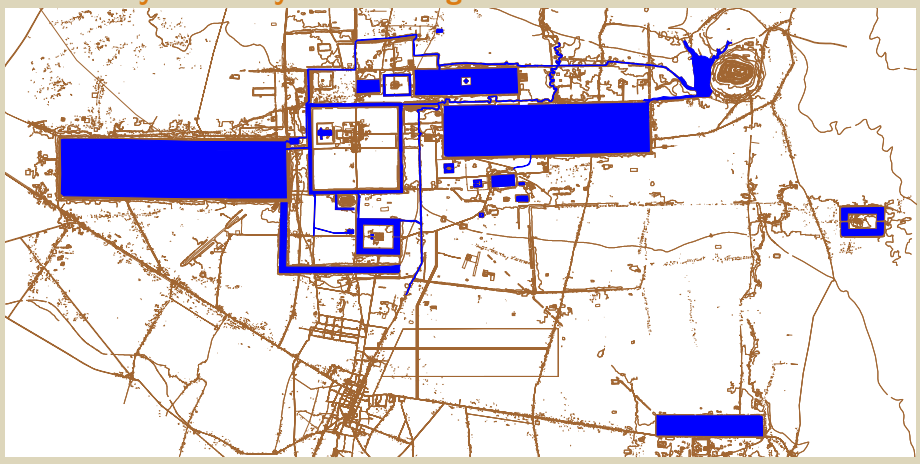
This programme is a model of conservation/rehabilitation. Updating the Angkorian hydraulic system appears to be the most efficient and cost-effective way to contribute to the development of the Angkor/Siem Reap region in a sustainable way, and to reduce poverty.

Phnom Kulen's three watersheds: Pourk, Siem Reap and Roluos Rivers (L to R)



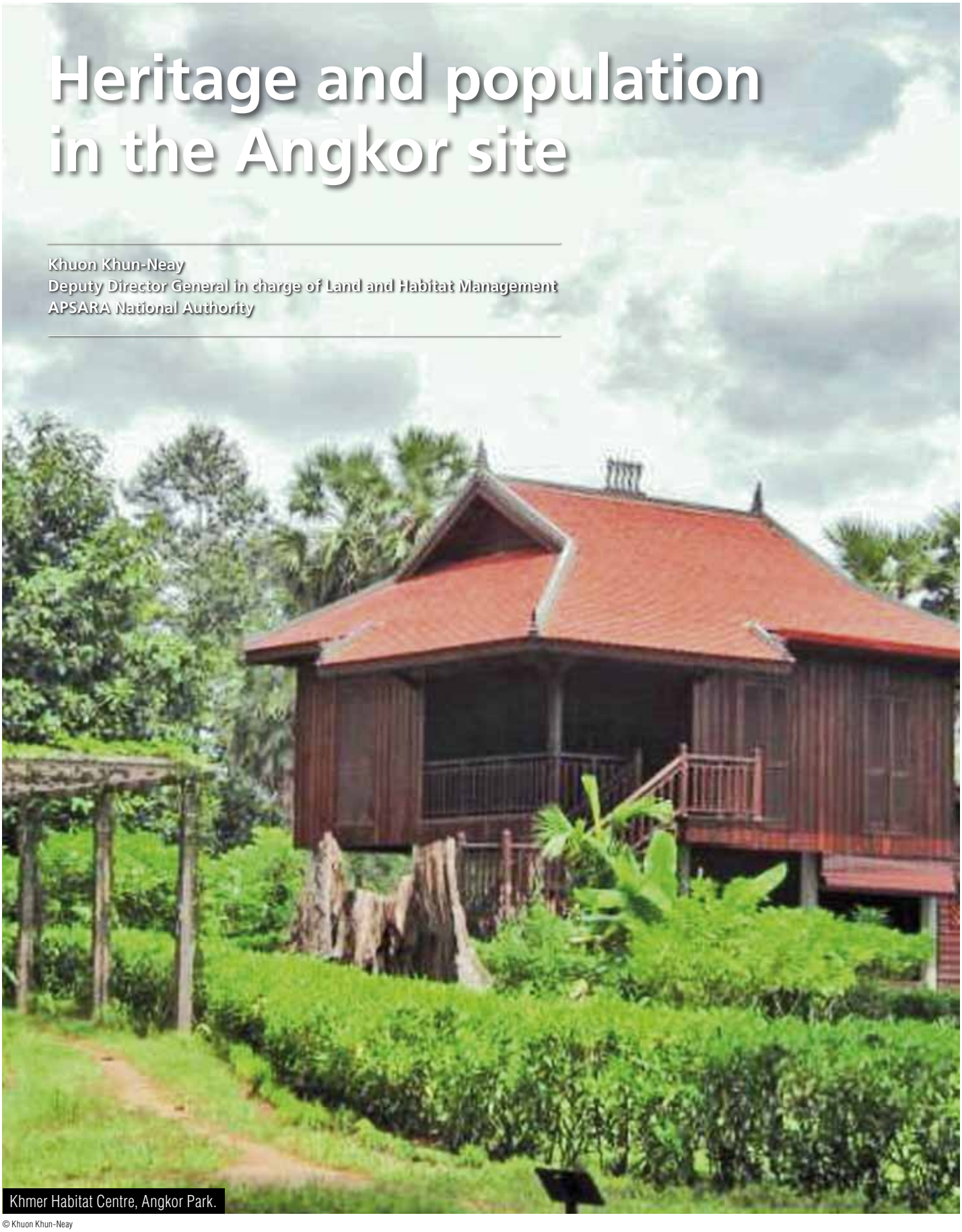
In 2012, the main part of this system was rehabilitated, allowing Angkor and Siem Reap city to avoid flooding during the rainy season of 2012.

Ancient hydraulic system of Angkor



Heritage and population in the Angkor site

Khuon Khun-Neay
Deputy Director General in charge of Land and Habitat Management
APSARA National Authority



Khmer Habitat Centre, Angkor Park.

A major archaeological site and collection of monuments, landscapes and natural environments, the home of true rural activities and human developments, and an internationally renowned tourist area together with a city, Angkor is unique.

Angkor Park, spread over an area of 40,100 ha, happily coexists with local settlements (112 villages scattered within the boundaries of the registered site and dating from before the inscription of the site as World Heritage) and a sizeable settlement outside – the town of Siem Reap, a mainly recent development south of Angkor, is the provincial capital with an international airport, over 100 hotels and guest houses, innumerable restaurants and cafes, markets and shops, to say nothing of administrative buildings. The Royal Cambodian Government is determined to keep this population, estimated at 120,000 in 2010, in its environment, considering the people themselves a part of the heritage of Angkor and its hundreds of years of customs and practices. However, this poses a huge challenge as regards the protection of the park. The aim is therefore to encourage the population to play an active part in the management process, with participation extending to profits from tourism being shared fairly among them. Therefore, the real and effective work of local communities is based on the principle of 'community-based development', which involves bringing the communities together at all stages of preparation of the management plan through to management of the park itself.

Several years ago, the APSARA National Authority, which runs Angkor Park, created three new departments whose task was to work with the population: the Department of Territorial Development and Housing Management; the Department of Water and Forestry, which since 2008 has been divided into two separate entities the Department of Water Management and the Department of Management of Forests and the Environment; and the Department of Demography and Agriculture.

Religious ceremonies and processions are still held today in Angkor Wat.

© Khuon Khun-Neay

The principle of 'community-based development' involves bringing the communities together at all stages of preparation of the management plan through to management of the park itself.

Local characteristics

The number of residents living in protected zones is increasing exponentially. Since the return of peace and stability to the kingdom, large numbers of villagers have moved from less prosperous areas to settle in Angkor Park to make a living from tourism in that area. Although the average birth rate in the country was only 3.1 per cent from1992 to 2009, the increase brought about by migration combined with births is 9.5 per cent.

The principal data on population growth in Angkor Park are as follows: census by United Nations mission in 1992, 22,000 residents; national census in 1998, 84,000 residents; APSARA census in 2005, 100,000 residents (18,500 families); and estimation for 2010, 120,000 residents (21,500 families). Although each resident has the right to an average of 1 ha of agricultural land, annual rice production is still insufficient for family consumption levels, especially in September and October.

The population of the park undertake various jobs, mainly collecting firewood (27 per cent), cultivating rice (20 per cent), other activities such as employment within the APSARA National Authority – guardians of monuments, manoeuvres, maintenance workers (36 per cent), or unskilled jobs (17 per cent). Most families, about 60 per cent, are poor. According to a 2007 study, the average monthly income per resident was US$24–30.

Run Ta-Ek ecovillage

In order to reduce the intense pressure on Angkor and keep the park and its cultural landscapes intact, the Royal Government is attempting to keep the population living in the park at its current number of residents or at least minimize their growth, by preventing the sale of land to people from outside the park and prohibiting the construction of new houses. However, how can this be achieved when the children of the current villagers grow, marry and need new houses for young households? The recommended

solution involves inviting these young households to set up outside the limits of the protected zones, on a voluntary basis. APSARA has acquired a total of 1,012 ha located in the settlement of Run Ta-Ek, east of the park, half an hour's drive from Siem Reap by national and provincial roads. The new village is planned so that future residents can maintain their original lifestyle with the same economic activities. Road and economic infrastructures (agricultural fields, irrigation networks, credit unions) and social centres (school, professional training centre, Buddhist monastery) are already in place or soon will be. The planning is based on environmental factors, hence the name Run Ta-Ek ecovillage for this new settlement: solar energy, windmills to pump water from lakes, biological agriculture and ecotourism networks.

The village is organized around small natural lakes, consisting of five residential sections. It is planned to house 850 families or about 5,000 people here. Each family is given 1 ha of land on which to build their house and carry on agricultural activities. At present, ninety households have been established, a school with five classrooms has been built, and a major agricultural station is already operating, The new residents have been recruited to work in this station, and are paid a salary and given technical training in organic farming, which they can apply on their own land.

Management of habitat

One characteristic aspect of the life of this population is the local architecture of their places of residence. It is therefore important to preserve this authentic architecture in Angkor Park.

APSARA, through its Department of Territorial Development and Housing Management, is establishing a kind of architectural consultation workshop to assist the local people and clergy in the repair, renovation and construction of houses and communal and religious buildings. This service has been offered free of charge since 2004.

In addition, a detailed study of traditional construction techniques has been produced for use as a guide to village residents. Four pamphlets on the residential area have been compiled and widely circulated in Zones 1 and 2 of the protected area in Angkor Park.

Tourists enjoy traditional ox-cart rides in Angkor Park.

© Khuon Khun-Neay

The construction of a Khmer Habitat Centre has a twofold objective. First, located in the village of Rohal, at the crossroads of accesses to the various temples, the centre provides the opportunity for tourists from all over the world to find out about the communities living in Angkor Park and discover the traditional Khmer way of life that is an essential ingredient of the cultural landscape. Second, the centre and its development keep the local population informed of the various ways of using their land to improve their daily life.

Community participation projects

Several community production projects have been set up to strengthen the population's capacity to participate in sustainable development and thus improve their quality of life while preserving the park.

First of all, the Angkor Participatory Natural Resource Management & Livelihood (APNRM&L) project was created in partnership with New Zealand. It aims to provide a fairer distribution of income and to enhance the value of local resources and economic diversity. A training programme for ancillary jobs in the field of cultural tourism is offered to residents, such as small industries or agriculture. Reducing the number of intermediaries between producers and consumers will help to move part of the income from tourism to the local population.

Next, APSARA has combined forces with the organization Agricultural Development Denmark Asia in the realization of the project known as Innovative Approaches to Food Insecurity for urban and peri-urban poor in Siem Reap (http://www.adda.dk/eng/infose_eng.html), financed principally by the European Community. Launched in March 2011, the project should be completed in August 2014, in thirty villages around Siem Reap, twenty of which are located in the Angkor Park protection area. What is anticipated is essentially an improvement in the living conditions of poor families, especially in terms of food and jobs.

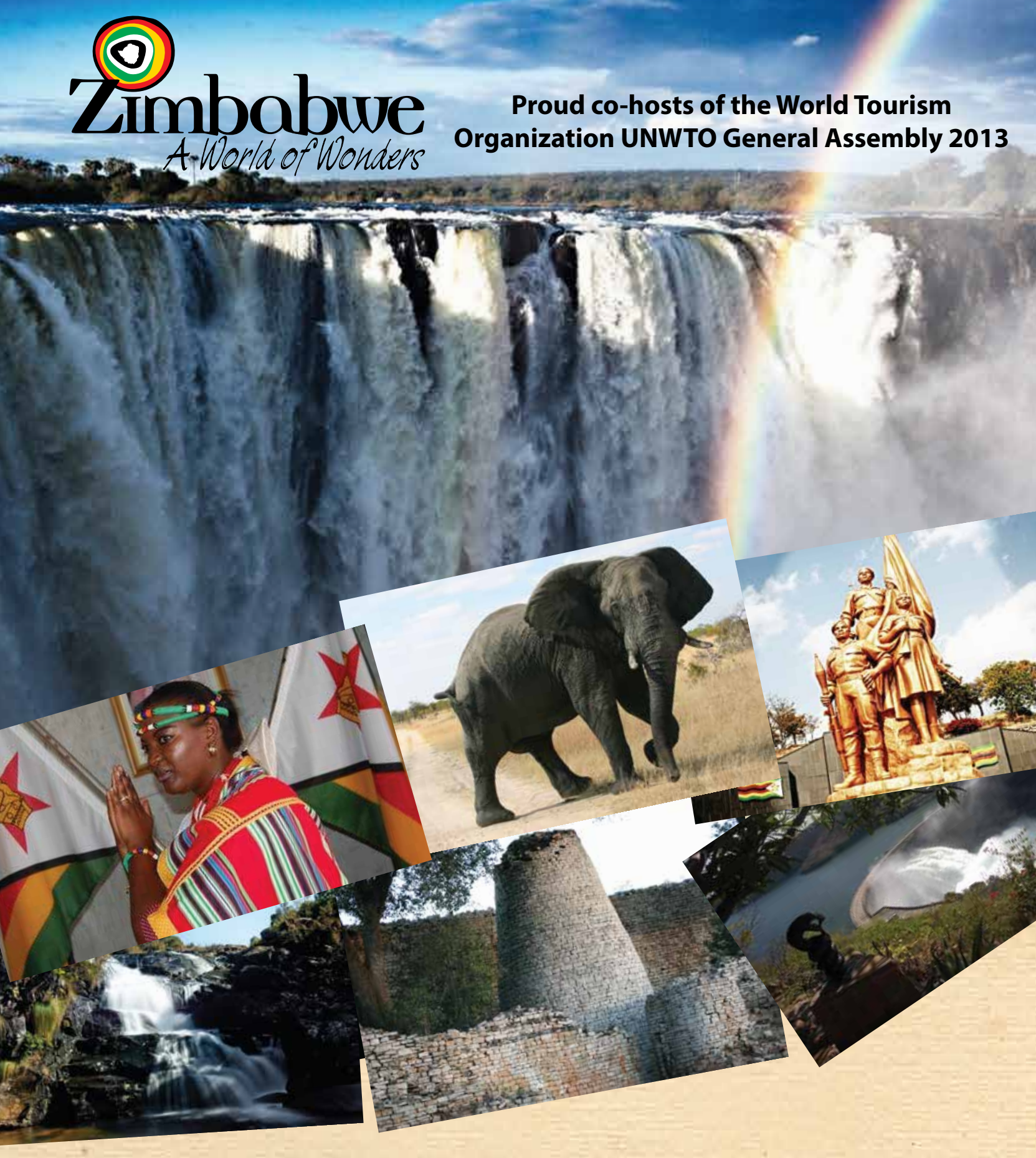
Finally, APSARA is working with the National Federation of UNESCO Associations in Japan to establish Community Learning Centres with the aim of developing and reinforcing the capacities of village communities by means of informal education and professional training.

Managing a park as large as Angkor is a huge challenge, especially for Cambodia, a small country that has suffered genocide (1975–79) and a quarter of a century of regional and international political and military crises. The destruction caused by these events did not simply affect the physical and economic infrastructure of the land, but also the human resources and social structures of the population.

The proximity of Angkor Park to the northern boundary of the rapidly expanding city of Siem Reap has caused serious additional problems of social and demographic management.

Zimbabwe
A World of Wonders

Proud co-hosts of the World Tourism Organization UNWTO General Assembly 2013



Zimbabwe Tourism Authority, Tourism House, 55 Samora Machel Avenue. PO Box CY 286, Causeway, Harare, Zimbabwe, Tel: +263 758712/14 774709, 774759, Fax: +263 4 758826/28, marketing@ztazim.co.zw, www.zimbabwetourism.net

tourismzimbabwe tourismzimbabwe

Mural paintings of Wat Bakong

Chau Sun Kérya,
Adviser to APSARA National Authority
Vittorio Roveda
Expert in Cambodian Buddhist paintings
Art and archaeology research associate of SOAS, University of London

Wat Bakong nestles alongside 9th-century Prasat Bakong.

The Buddha and his monks going to Kapillavastu – before restoration.

Most of the murals depict the life of the Buddha as told in the Jataka, as in other Cambodian *wats* (pagodas), but these at Wat Bakong are of outstanding clarity and homogeneity.

Wat Bakong was, 'probably from at least the 16th century, an active Buddhist *vihear* (temple) originally built as a wooden structure atop the archaeological site of the 9th-century Angkorian *prasat* (monument) of Bakong in Roluos district, 16 km east of Siem Reap. In order to carry out the restoration of Bakong by the École Française d'Extrême-Orient, in 1938 Wat Bakong was relocated and built in brick with a tile roof outside the walls to the north of the *prasat*. It was subsequently enlarged several times, and its walls and ceilings were decorated with intricate paintings.

Research has shown that the murals were painted during the 1940s by one Sam Chum and his family and other assistants. They were never previously retouched or repainted, and had survived the destructive forces of the Khmer Rouge. Nor had they been completely renovated or replaced as is common practice in Cambodia.

Most of the murals depict the life of the Buddha as told in the *Jataka*, as in other Cambodian *wats* (pagodas), but these at Wat Bakong are of outstanding clarity and homogeneity. Some include depictions of local landscape, daily life and events, including the presence of an aircraft, possibly an American 'Super Constellation' passenger plane, an aerial battle and soldiers armed with machine guns and revolvers. The murals, showing influences of Western and Islamic art styles, are painted in two horizontal registers, with a lower frieze of the mythical bird Garuda. On the wall behind the altar, mythical birds are replaced by humans with Western hairstyles and moustaches, while the ceilings depict a preponderance of bats, which are a natural feature of Siem Reap life.

Three panels have been selected for more detailed discussion here:

The Buddha and his monks going to Kapilavastu

This panel depicts a row of monks led by their Master, the Buddha, walking towards a group of aristocrats, possibly King Suddhodhana and Queen Maya seated in the palace, as indicated in the inscription below, '… the Buddha … is going to see his father at Kapilavastu', adding that the mural was sponsored by the village of Ka'Ek.

The Buddha returned to his native city, Kapilavastu, after seven years of absence. King Suddhodhana had sent an invitation to his son through messengers. The Buddha agreed to go to Kapilavastu, embarking on the long journey from Rajagriha. The Buddha's biographic texts narrate that according to the story, the king was still greatly disappointed with his son for having left him seven years before. The king was further troubled when he heard that some monks were begging in his city and that one of them could be his son. A loyal messenger and friend, Udayin, convinced the king that it was a great honour to be the father of such an enlightened person. The Universal Sovereign, King Suddhodhana, relented and organized a procession to welcome the Buddha home. The Master knew that certain protocol must be followed to meeting his father the king. He could not appear higher than the royal personages, nor could he bow because he was the Enlightened. He solved the problem by magically appearing

on a platform higher than the people. King Suddhodhana appreciated and loved his son more than ever.

The dream of Maya

The father and mother of the Buddha were King Suddhodhana and Queen Maya. The king was a warrior ruler from the modest Sākya tribe living in Kapislavatu in modern-day Nepal. The couple wished to have a child and one night Queen Maya dreamed that a white elephant had penetrated her side. The next day sixty-four Brahmans reassured the royal couple that a boy had been conceived and that he would become a Universal Monarch (Cakravartin) or a Buddha.

The preparation for Enlightenment; the gift of grass

Left alone after a day of rest in the woods, Siddhartha, the future Buddha, walked to a bodhi tree (pipal or *Ficus religiosa*). The naga King Mahakala heard his footsteps and told him that he would undoubtedly become the Buddha. Then, he met a Brahman who was cutting grass to be used for a Vedic ritual and the Brahman gave the grass to Siddhartha. He place the grass under a bodhi tree and sat down adopting a cross-legged position which is ideal for keeping the body motionless. He faced to the East and was determined to sit on the grass 'throne' without moving until he had achieved his goal of Enlightenment. Some accounts mention that he sat on a throne that miraculously had sprung from the earth. Indra, Brahma and many other gods made offerings and paid homage. They worshipped him accompanied by the sounds of celestial music.

Restoration of Wat Bakong and its mural paintings

Funding was generously provided by Holcim Ltd, and the restoration work was supervised by a team from Restaurateurs sans Frontières in association with APSARA, the Royal University of Fine Arts and a monk from Wat Bakong. The major architectural and engineering works were completed in 2010, while restoration of the murals continues. The wat was reopened in 2011 at an inauguration ceremony presided over by Deputy Prime Minister Dr Sok An, in his capacity as President of APSARA.

Panel showing aerial battle of the Second World War.

© Chau Sun Kérya

As the *wat* lies within Archaeological Zone 1 of Angkor Park, and is part of the World Heritage site, special precautions had to be taken before and during the restoration, including iconography, preventive archaeology, research and excavations. It was likewise essential to observe and respect traditional Khmer religious beliefs, and therefore a ceremony was organized with the local monks and community to obtain permission from the spirits which protect the sacred land on which the wat lies.

Much of the roof, foundations, walls and pillars of Wat Bakong had to be reconstructed as they were in dilapidated condition and were threatening the very survival of the precious murals, which were then dismounted and treated. Each panel needed to be painstakingly examined and cleaned, consolidated and retouched where possible before being repositioned on the walls, while the ceilings were similarly treated but *in situ*.

The combined efforts of APSARA and Holcim were able not only to save the monument from destruction and bring the murals back to life, but simultaneously to re-establish the function of Wat Bakong for the local community, for the monks and for future generations.

This example of cooperation and understanding between local people and an international organization is a showcase for future visitors and individuals who admire ancient art and architecture, have an interest in restoration work on a living piece of heritage or wish to see the return of a sacred place of worship and meditation to a community, who more often than not share their spiritual space with wandering tourists.

Panel showing the reunion of bodhisattvas (left) and the Dream of Maya (right) before and after restoration.

© Chau Sun Kérya


Concert by Oaxacan Musicians in Plaza de la Danza.

Heritage Cities, Sustainable Cities

Heritage cities. Sustainable cities

XII World Congress of the Organization of World Heritage Cities OAXACA 2013

An international platform for mayors, policymakers and experts to share knowledge and experiences in the joint quest for public policies, government action and alternatives to protect, safeguard, conserve and manage World Heritage Cities, and to promote consideration of Urban Sustainability as a requirement for continued inclusion on the UNESCO World Heritage List.

19 to 22 November 2013
Oaxaca City, Mexico

facebook.com/OaxacaCongress @oaxacacongress

Find out more and take part by visiting ocpmoaxaca2013.org

Key themes and speakers:

I The Environment.
Conservation of the environment and sustainability of Cultural Heritage

KEYNOTE SPEAKER
DR. JOSÉ SARUKHAN KERMEZ
National Coordinator
National Commission for Knowledge and Use of Biodiversity
Mexico City

DR. IVÁN RESTREPO FERNÁNDEZ
Director General of the Centre for Ecology and Development, CECODES
Mexico City

ARQ. RUBÉN OMAR PESCI
President of the Environmental Studies and Projects Centre Foundation, CEPA
Buenos Aires, Argentina

DR. LUIS FARÍAS MARTÍNEZ
President of the Private Sector Studies Commission for Sustainable Development, CESPEDES
Mexico City

II The Urban Environment (City and Territory).
Holistic Urban Planning in Heritage Cities

DR. FERNANDO CARRIÓN MENA
President of the Latin American and Caribbean Organisation of Historic Centres, OLACCHI
Quito, Ecuador

DR. EUSEBIO LEAL SPENGLER
Historian of the City of Havana, Cuba
Havana, Cuba

DR. JAN BAZANT
Lecturer / Researcher of the Metropolitan Autonomous University, Xochimilco Unit
Mexico City

DR. HORACIO CAPEL SÁEZ
Specialist in Urban Geography. Spain.
Barcelona, Spain

III Culture.
Cultural Heritage in the Context of Sustainable Development.

DR. NURIA SANZ GALLEGO
Chief of the Latin America and Caribbean Unit
UNESCO World Heritage Centre
Paris, France

DR. FRANCISCO JAVIER LÓPEZ MORALES
World Heritage Director of the INAH
Mexico City

DR. JORDI TRESSERRAS
Coordinator of the Post-Graduade Programme in Cultural Management and Member of the Doctorate in Management of Heritage and Culture Commission of the University of Barcelona
Barcelona, Spain

M. ARQ. OLGA ORIVE BELLINGER
President of ICOMOS Mexico
Mexico City

PROF. NALINI THAKUR
Head of the Architectural Conservation Department at the School of Planning and Architecture
Delhi, India

IV Society.
The value of Society in Preservation of Cultural Heritage

ARQ. LEONCIO ORELLANA
Director of International Workshops on Revitalisation of Historical Centres in Cities of Latin America and the Caribbean, SIRCHAL
Paris, France

DR. RENÉ COULOMB
Lecturer / Researcher of the Metropolitan Autonomous University of Azcapotzalco
México City

ARQ. PAULO ORMINDO DE AZEVEDO
Specialist in Cultural Heritage Conservation
Salvador de Bahia, Brazil

ARQ. NORMA BARBACCI
Program Director for Latin America, Spain and Portugal of the World Monuments Foundation
New York, USA

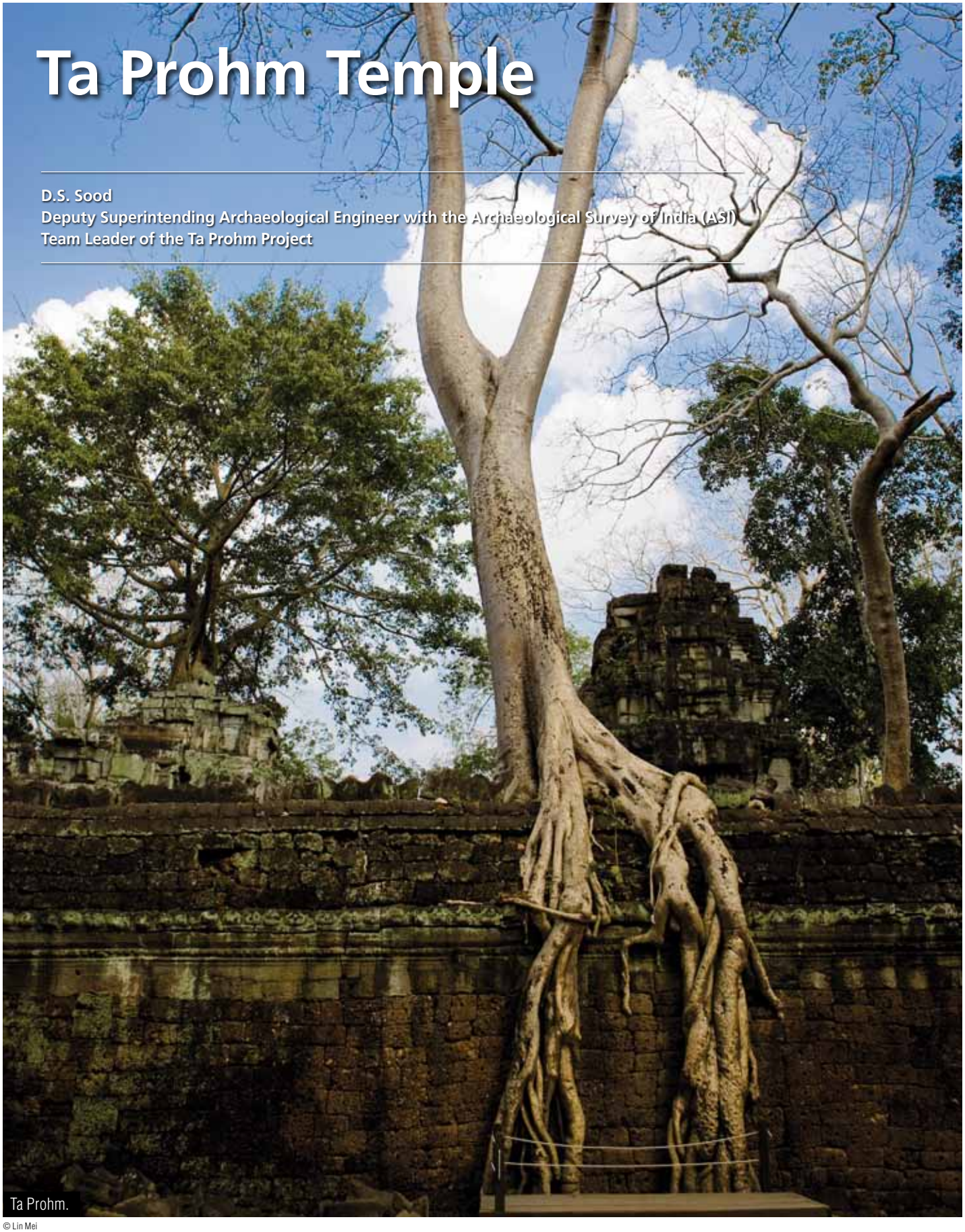
Mayor Workshop • Poster Session • Youth Forum • Journalist Workshop

oaxaca
Your own México!o
www.oaxaca.travel

México
visitmexico.com

Ta Prohm Temple

D.S. Sood
Deputy Superintending Archaeological Engineer with the Archaeological Survey of India (ASI)
Team Leader of the Ta Prohm Project



Ta Prohm.

Roots have penetrated into the Ta Prohm structure.

Popularly known as the tree temple, Ta Prohm is situated within a forest and surrounded by two moats.

The Ta Prohm Project was formally launched by the Archaeological Survey of India (ASI) in February 2004 with the aim of highlighting the authenticity, integrity and conservation of the unique coexistence of trees and built forms at Ta Prohm Temple in the Angkor complex and to pass on this legacy to future generations. Popularly known as the tree temple, it is situated within a forest and surrounded by two moats. Many trees have grown on top of the temple structure and their roots have penetrated into the foundation as well as the superstructure, resulting in dislodged masonry.

Maximum authenticity and integrity

The conservation of Ta Prohm Temple is very challenging due to environmental and site conditions. A multidisciplinary approach has been adopted for the conservation and restoration of the temple complex, involving several reputed organizations from India: the Forest Research Institute of India (FRI) for conservation and maintenance of trees, the Water and Power Consultancy Service Limited (WAPCOS) for hydrological studies, the Indian Institute of Technology (IIT) for structural interventions and Larsen & Tubro (L & T) for specialized equipment and scaffolding. The technique of 'anastylosis', which involves reassembling the existing dismantled parts, has been adopted while undertaking conservation and restoration works, with the aim of retaining maximum authenticity and integrity. The ASI has undertaken detailed stone by stone documentation of the various components of the temple complex.

Temporary reversible support has been installed at several places to ensure the safety of tourists as well as the stones and the trees, particularly where the structure was crumbling. Original stones have been used where possible, with a minimum of new stones introduced. The drainage system, wherever it was discovered during the scientific clearance and excavations, was preserved *in situ* to let visitors understand the ancient drainage system. After completion of the conservation works, post-conservation drawings were also prepared for comparative study.

Appropriate treatment of subsoil, and sand fill was carried out, and sandstone blocks of the floor and plinth were reset. The original broken stone elements of the floor, columns and roof were repaired, mended and joined with appropriate materials. It was ensured that all architectural components had achieved the desired structural strength before being reassembled. A detailed Ground Penetrating Radar Survey was conducted before scientific clearance and excavation at site to identify the network of the tree roots below ground level. Dangerously perched stones on the towers between the 2nd and 3rd enclosures along the central axis and on the 5th enclosure west were pushed back to their original places and anchored with plastic-coated wire rope to check further movement. Weather stations,


Causeway before restoration.
© D.S.Sood Dy.SAE, Team Leader, Archaeological Survey of India


Causeway after restoration.
© D.S.Sood Dy.SAE, Team Leader, Archaeological Survey of India

tilt and crack meters were fixed inside the temple complex for regular monitoring of any movement of the structure. Wooden walkways and staircases were constructed wherever it was necessary to cover the roots for the safety of the tree roots themselves as well as to facilitate the free movement of visitors. Workshops for the treatment of decayed trees were organized annually for APSARA staff with consultation by the FRI and certificates awarded to the participants by the representative of UNESCO. A range of other training has also been provided to the local archaeologists and draughtspeople.

To date, five of the six designated places for conservation and restoration work have been completed successfully, as follows:

3rd enclosure gallery, eastern side south wing

This gallery, rectangular in plan measuring 41.15 m by 4.85 m, together with its corner pavilions and roof, was in a state of total collapse. After consolidation and strengthening of the foundation, it has been restored using original stones and appropriately dressed new stones where necessary.

Causeway between 3rd and 4th gallery west

The undulated and ruined cruciform causeway connecting the entrance pavilion between the 3rd and 4th enclosures on the western side was given conservation treatment. The causeway has a length of 43.60 m, a breadth of 4.60 m and a height of 0.90 m. The stones of the causeway and foundation were dismantled systematically and assembled in bays for reuse. The Naga balustrade has also been restored, retaining the older stones wherever available.

Entrance gopura on 4th enclosure west

This gopura (entrance pavilion) was in a highly dilapidated condition. The vaulted roof over the southern and northern side galleries and the aisles of eastern and western porches had collapsed and the existing vaults on the east–west axis were on the verge of collapse as masonry blocks of the vault were completely dislodged. The broken architectural stones, pillars, beams, vault and semi-vault and floor stones have been carefully lowered and repaired and the gopura has been restored with stones in their original place after consolidation of the foundation.

Entrance gopura on 5th enclosure west

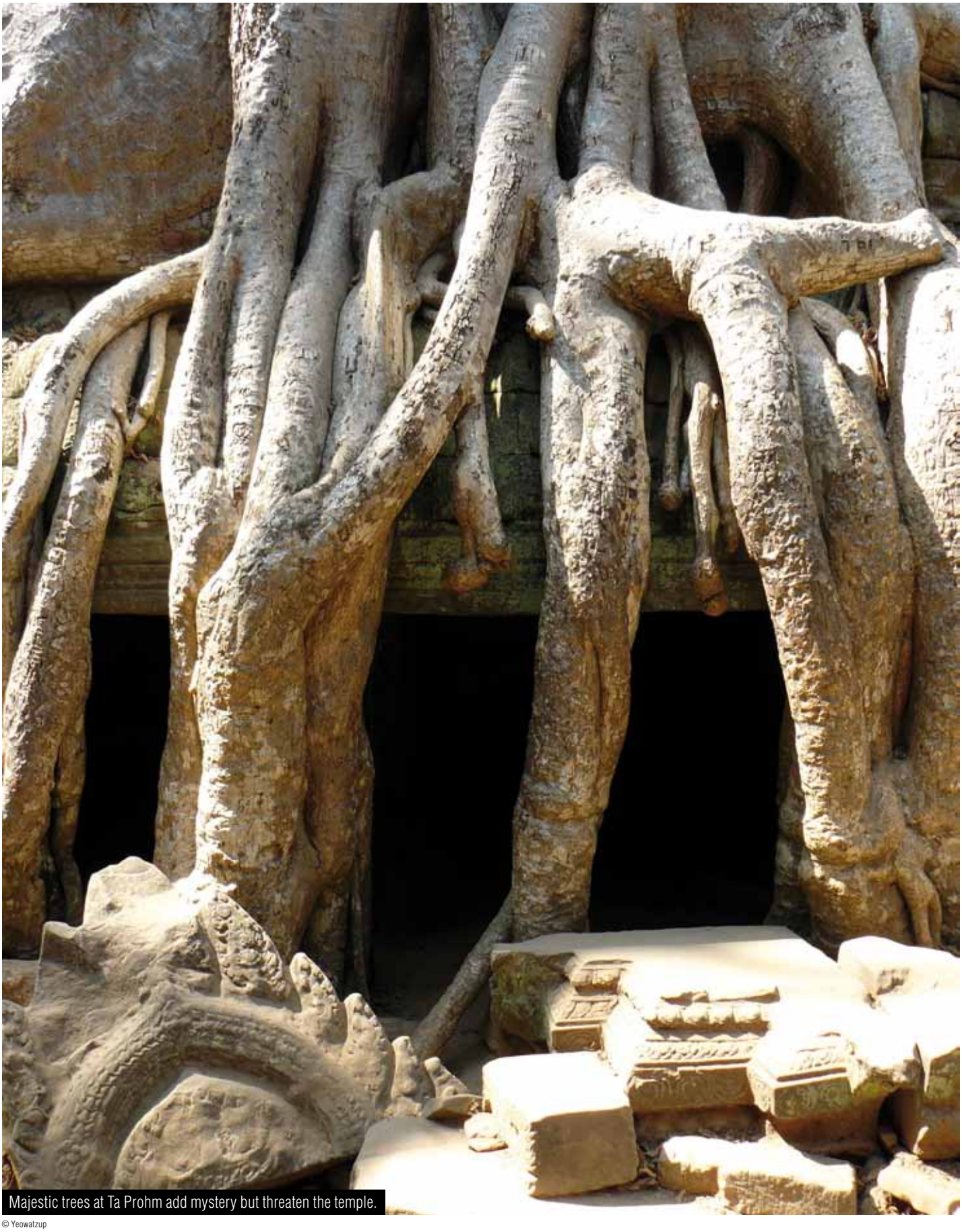
A detailed *in situ* documentation of the gopura has been carried out. The dangerously perched stones inside and outside the tower have been repaired and pushed back to their original place to stop further collapse. The stones have been clamped to each other. Reversible steel props have been fixed inside the gopura to stop any lateral movement. The laterite floor has also been rearranged in its original shape.

External enclosure wall

The foundation of the tilted and settled laterite wall has been carefully exposed. The foundation has been treated by filling fresh lime and sand with proper compaction to increase the bearing capacity of the subsoil. Original and new laterite blocks have been set in place of missing pieces, with proper alignment and levelling of the original height of the enclosure wall.

Hall of Dancers

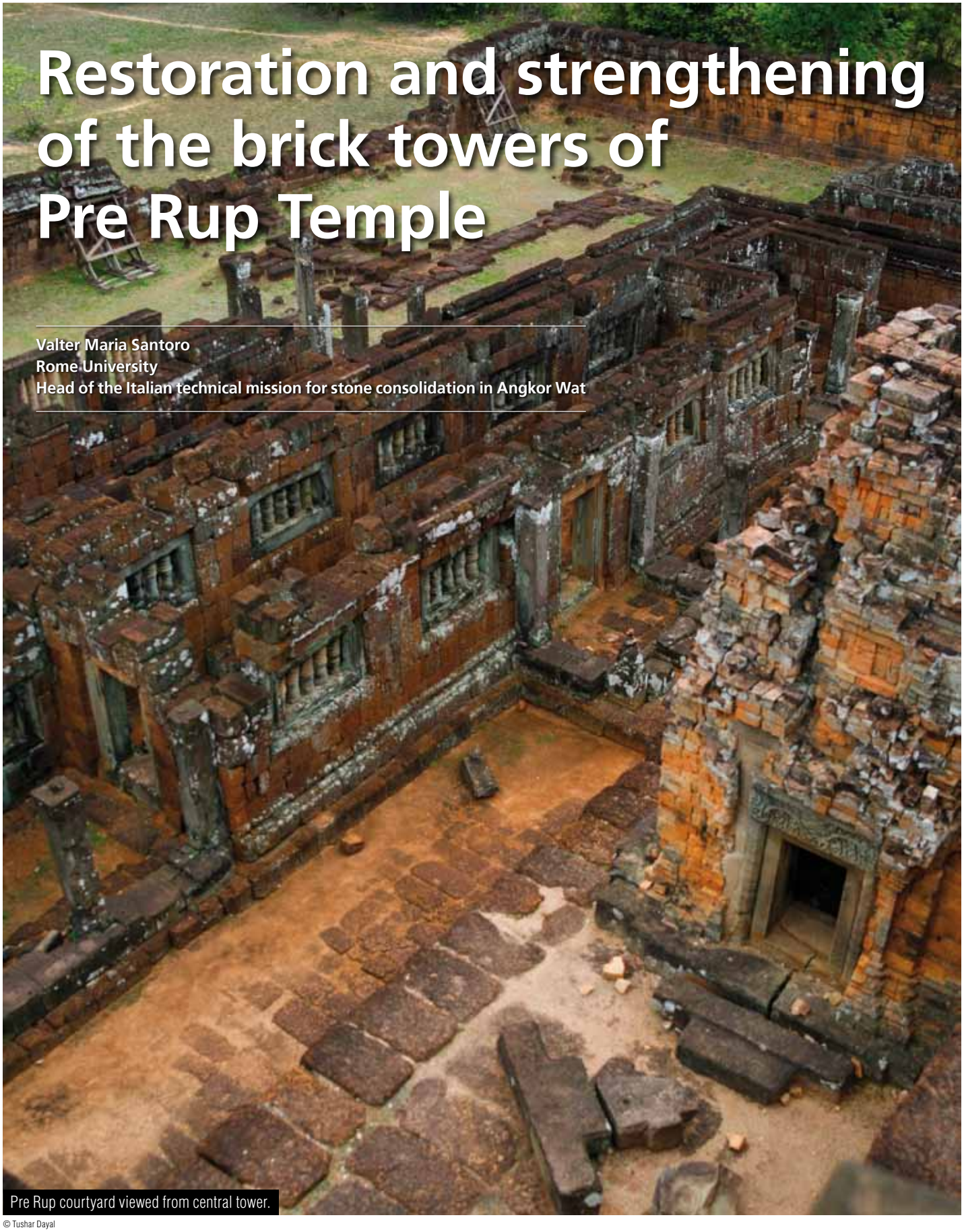
Conservation activity on the Hall of Dancers is continuing and work is in progress.



Majestic trees at Ta Prohm add mystery but threaten the temple.

Restoration and strengthening of the brick towers of Pre Rup Temple

Valter Maria Santoro
Rome University
Head of the Italian technical mission for stone consolidation in Angkor Wat



Pre Rup courtyard viewed from central tower.

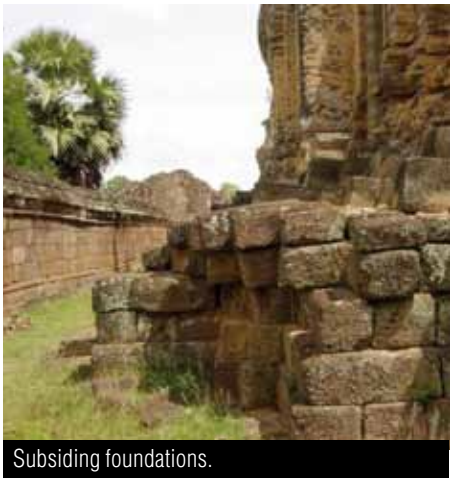
Restoration under way at Pre Rup.

Pre Rup Temple was built in AD 961 during the reign of the peaceful Rajendravarman king, intended as the capital of the rising Khmer Empire.

In the framework of the World Heritage Preservation Project, UNESCO/Italian Funds-in-Trust sponsored surveys on Pre Rup Temple from October 1995 until December 2004, focusing on the major towers. Initial research on the monument included geometrical surveys, damage analysis, monitoring of the displacements and materials testing. More detailed information was then available to design an intervention proposal, which consisted of a general structural strengthening through the reconnection of the elevation walls and foundation enlargement, and various local conservation measures. The preparatory studies resulted in site works, started in January 1999 and intended to pave the way for future interventions on similar constructions in the Angkor area.

Pre Rup Temple is located on the Greater Circuit of Angkor (as French literature refers to it) at the southern edge of East Baray reservoir, 15 km north of Siem Reap town. It was built in AD 961 during the reign of the peaceful Rajendravarman king, intended as the capital of the rising Khmer Empire. The temple complex is roughly square in plan, each side measuring about 120 m, and is realized according to the religious-architectural concept of the temple mountain, which characterizes the first period of Khmer temple construction. Inside the outer enclosure wall, along the east side, the temple comprises five brick towers, aside from the main entrance, with five brick towers standing on the upper level. The construction was never completed, as the unfinished sandstone carvings on the door lintels most clearly testify. For over a millennium, abundant rains have penetrated the soil and risen back up, according to the wet and dry seasons of the tropical climate, causing cyclic changes to the water level in the soil. Like most of the temples of the classical Khmer period, the structures now suffer from major damage resulting

Pre Rup courtyard.



Subsiding foundations.

Rods stabilizing the towers.

from a mixture of mechanical, physical and chemical actions. The damage is clearly visible and widespread (inclinations, cracks, missing sections, wearing away of the building materials, etc.).

The construction techniques adopted on the brick towers did not prove to be eternal, this possibly being the best testimony of the builders' creed. Continual interventions and updates were introduced in many of the temples of the Angkor area in the course of Khmer history. In the case of Pre Rup Temple, this resulted in an early abandonment of the premises, and carelessness over the centuries. Over time, primary damage to the Pre Rup site came from the differential settlement of the soil, and foundation subsidence mainly due to variations in groundwater level. Bricks have been damaged and weakened both chemically and mechanically, providing a favourable environment for further decay. Weeds have grown into large roots, pushing apart heavy walls; animals have nested in virtually every hole of the bricks, wearing away their microscopic constitution. The Khmer corbelled arch particularly suffered from the changed boundary conditions, and often accelerated detachment of the lintels, no longer aligned with the walls of the tower and not properly anchored to them.

The construction techniques adopted on the brick towers did not prove to be eternal, this possibly being the best testimony of the builders' creed.

Prior to the final design of the stabilization interventions and restoration, some preparatory studies were carried on in order to detect the local geological and geotechnical conditions of the site and the behaviour of the structure. These covered the stratigraphic and geotechnical characteristics of the site, geometrical, structural and damage survey monitoring of the towers, monitoring of the structural pattern of the towers, and finite element model and foundation analysis.

The purpose of the intervention on the towers was then aimed at restoring the lost stability of the foundation by providing an enlargement at the base, or alternatively an effective connection between the different sections of the tower masonry. For most of the damaged towers (south-east ones) these measures were achieved through some inner buried-shaft concrete works connected to the brick masonry walls. For the other towers (top and north-east ones) the connections were ensured by the use of innovative techniques and advanced materials, such as synthetic rods, inserted in very small diameter holes. The use of these new techniques allowed the designer to reduce the impact of the restoration measures to the monument, guaranteeing physical, chemical and mechanical compatibility with the original materials.

Pre Rup central staircase.

United Nations
Educational, Scientific and
Cultural Organization

World Heritage
in Switzerland

This is the first book to present the eleven World Heritage properties in Switzerland: It tells us about, and lets us discover, the many fascinating aspects of these places of outstanding universal value – imprints of history and harbingers of things to come.

Publisher: Swiss Commission for UNESCO | Text: Ernst Iten | 156 pages | 25 / 32 cm | CHF 50.–
Distribution: FOBL, Sale of Federal Publications | www.bundespublikationen.admin.ch Art.-Nr. 201.202.eng
ISBN 978-3-905782-73-8 | This publication is also available in German, French and Italian.

UNESCO
Destination Switzerland

Where history turns into an experience. 11 Swiss World Heritage properties, as well as the Biosphere Reserve Entlebuch.

Old City of Berne
This city, renovated in Baroque style in the 18th century, has retained its medieval character.

www.bern.com

Convent of St John at Müstair
Home to an important cycle of wall paintings from the age of Charlemagne.

www.muestair.ch

Convent of St Gall
An architectural ensemble from the Baroque age with one of the world's most valuable libraries.

www.st.gallen-bodensee.ch

Three castles of Bellinzone
The fortifications of Bellinzona are among the most important examples of medieval military architecture in the Alps.

www.bellinzonaturismo.ch

Swiss Alps Jungfrau-Aletsch
Provides an unrivalled source of knowledge about the formation of mountains and glaciers.

www.jungfraualetsch.ch

Monte San Giorgio
An exceptional record of marine life in the Triassic period (245–230 million years ago), notable for the quantity and quality of its fossils.

www.mendrisiottoturismo.ch

Lavaux, Vineyard Terraces
This cultural landscape is the expression of the extraordinary interplay of people and nature over nearly a thousand years.

www.lavaux.ch

Rhaetian Railway, Albula | Bernina
The 128 km route is a masterpiece from the pioneering age of railway construction.

www.rhb.ch/unesco

Swiss Tectonic Arena Sardona
An outstanding example of mountain-building processes, and a key site for understanding plate tectonics.

www.unesco-sardona.ch

La Chaux-de-Fonds | Le Locle
The striking layout and architecture of La Chaux-de-Fonds and Le Locle were shaped by the needs of watchmakers and the watchmaking industry.

www.watch-cities.ch

Prehistoric Pile Dwellings
The remnants of the prehistoric settlements provide a lively insight into the origin and development of early agricultural societies in the Alpine region.

www.palafittes.org

Biosphere Reserve Entlebuch
A hauntingly beautiful area of pristine moorland, alpine meadows and fascinating rock formations, full of natural treasures.

www.biosphaere.ch

„UNESCO Destination Switzerland" represents the tourism network of all Swiss World Heritage properties and Biosphere Reserves. New website, also for mobile devices:
www.unesco-destination-switzerland.ch

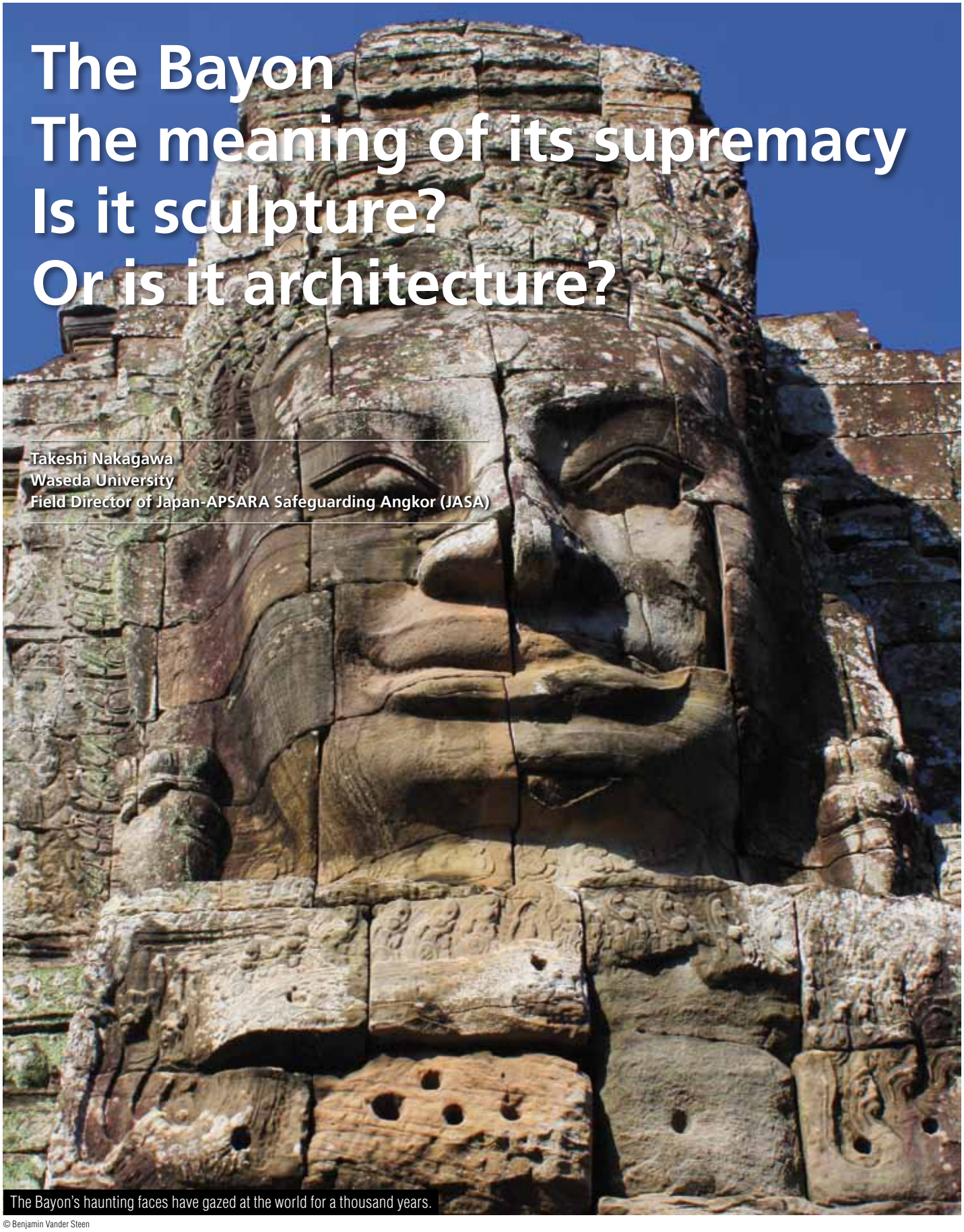
United Nations Educational, Scientific and Cultural Organization

World Heritage in Switzerland

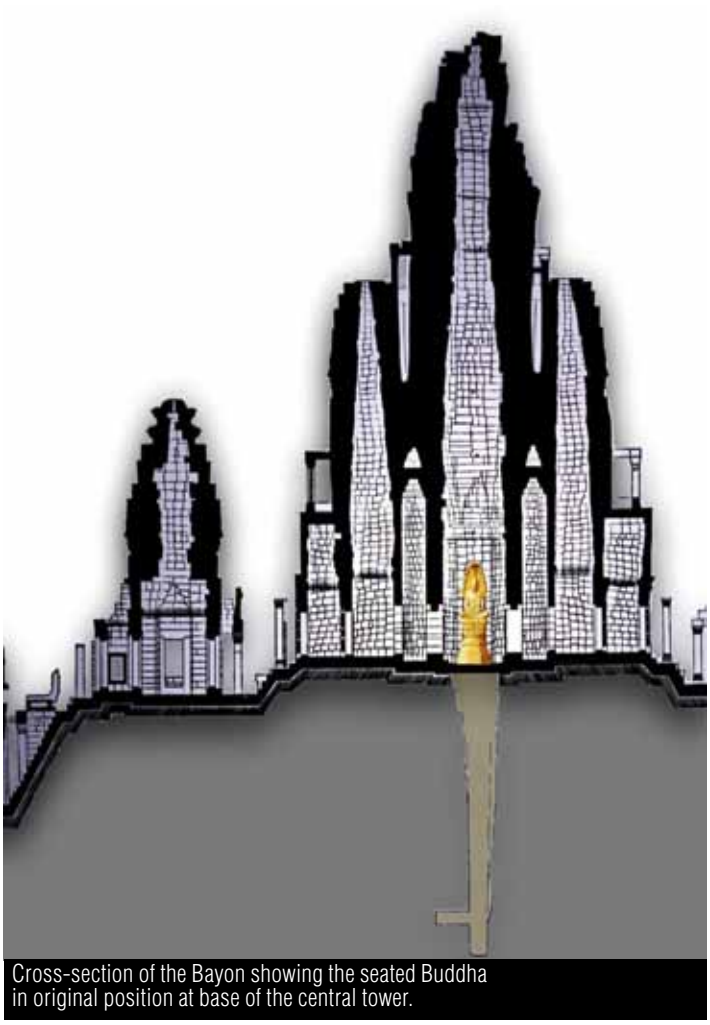
The properties included in the World Heritage List are of outstanding universal value to humanity. They reflect the richness and diversity of our planet.
www.worldheritage.ch | whc.unesco.org

The Bayon
The meaning of its supremacy
Is it sculpture?
Or is it architecture?

Takeshi Nakagawa
Waseda University
Field Director of Japan-APSARA Safeguarding Angkor (JASA)



The Bayon's haunting faces have gazed at the world for a thousand years.



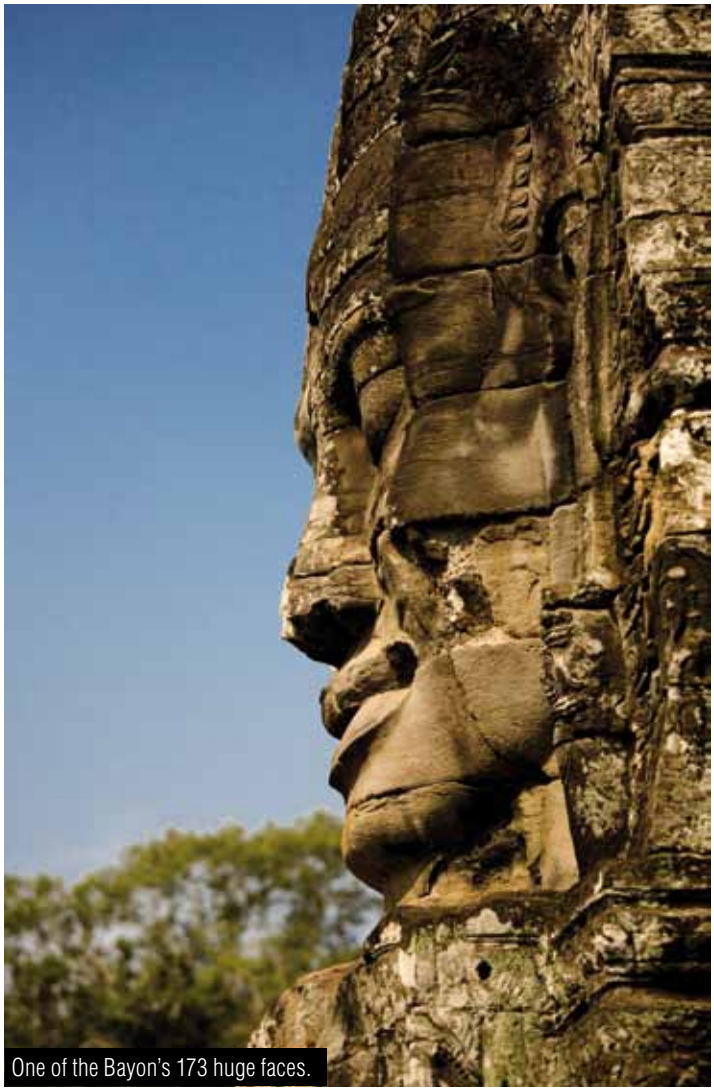
Cross-section of the Bayon showing the seated Buddha in original position at base of the central tower.

One of the Bayon's towers.

The vast numbers of massive deity faces are difficult to define as either sculpture or architecture. The highly dense, three-dimensional complex from which a condensed space almost seems to jump out; the picture scrolls of bas-reliefs that depict scenes of daily life and grand visions of history – there is no end to the fascinating features of the Bayon Temple. Neither are there words to quite describe the mysterious atmosphere inside the entire Bayon complex that suggests a fragile sense of balance between destruction and quietude. Almost half the stone masonry of the central tower has collapsed, but it nevertheless rises straight up into the sky and valiantly commands a broad view into the far distance. Indeed, throughout the intricate structure of the Bayon, roof and stone masonry walls are on the verge of collapse, bearing eloquent testimony to the fact that even stones do decay. Despite this, a certain sense of security is also felt in the air. This ambivalent feeling is a large source of intrigue, and it was precisely this intrigue that prompted the launch of our Bayon conservation and restoration project. We have studied the Bayon in cooperation with many experts. On the one hand, its mysteries continue to deepen, but on the other, we are also discovering its fascinations on a greater scale than ever before.

Overview and meaning of the Bayon

The Bayon is the central temple of Angkor Thom. The main structure of the temple has a large terrace projection on the east front and a rectangular ground plan that measures approximately 130 m wide along the front and 140 m along its sides. It is enclosed by the outer gallery, the cruciform gallery and the inner gallery, the last of which was built in later years and composed of corner galleries. The 43 m high central tower, having an oval ground plan, is joined by groups of numerous halls and towers on an elaborately structured three-tiered terrace, some arranged in orderly fashion in the four directions – north, south, east and west – and others with versatile flexibility. This characteristic is also evident in the atmosphere emanating from the 173 faces of Deva / Devata / Asura images (more than 181 faces at the time of initial construction) that are carved in a total of fifty-two deity-faced towers. Each face not only differs from the others in size, position, height and appearance, but also features widely varying stages of collapse. Their diversity and distinctiveness make visitors feel as though they have wandered into an infinite space. There is also an originality shown here for the first time during the Bayon period.


One of the Bayon's 173 huge faces.

© Lin Mei


Bas-reliefs at the Bayon.

© Tushar Dayal

Three guardian deities

The 'Churning of the Sea of Milk' in the gallery of Angkor Wat is a well-known bas-relief that illustrates the original Indian Khmer tradition of creating a new world through the cooperation of differing elements, but at the Bayon, the three deities of Deva, Devata and Asura, which symbolized the same tradition, were ingeniously arranged inside the complex and at the entrances to the temple to produce a new structural style that features these guardian deities. Moreover, the roles of the three deities were distinguished, with Devata as the deity to protect the main deity enshrined in the central tower of the Bayon, Asura as the deity to protect the perimeter of the temple, and Deva as a neutral deity, so that the Bayon represented a multilayered world protected in its entirety by the deities.

The bas-reliefs carved on the walls of the inner and outer galleries, which distinctly characterize the Bayon, also hold significant meaning.

Royal authority legitimized

The bas-reliefs carved on the walls of the inner and outer galleries, which distinctly characterize the Bayon, also hold significant meaning. Centred on the beliefs of Jayavarman VII himself (who ruled from around 1181 to 1219) and the royal family, the bas-reliefs on the front wall of the inner gallery show the succession of kings and their legitimacy of rule and authority, the north and west walls respectively depict stories that artfully contain motifs relating to the legends of Shiva and Vishnu, and the south wall is thought to have been planned around a Buddhist theme. They are bold statements, yet give sensitive consideration to the three main traditions that existed in the Angkor dynasty at the time. Scenes from daily life, in particular, which are rarely seen in temples, are carved in the outer gallery with an emotion filled with strength, love and humour. In sum, the unexpected unfolding of stories, the selection and portrayal of individual themes, and the originality of the picture composition, all come together as a source of the Bayon's convoluted yet fascinating appeal.

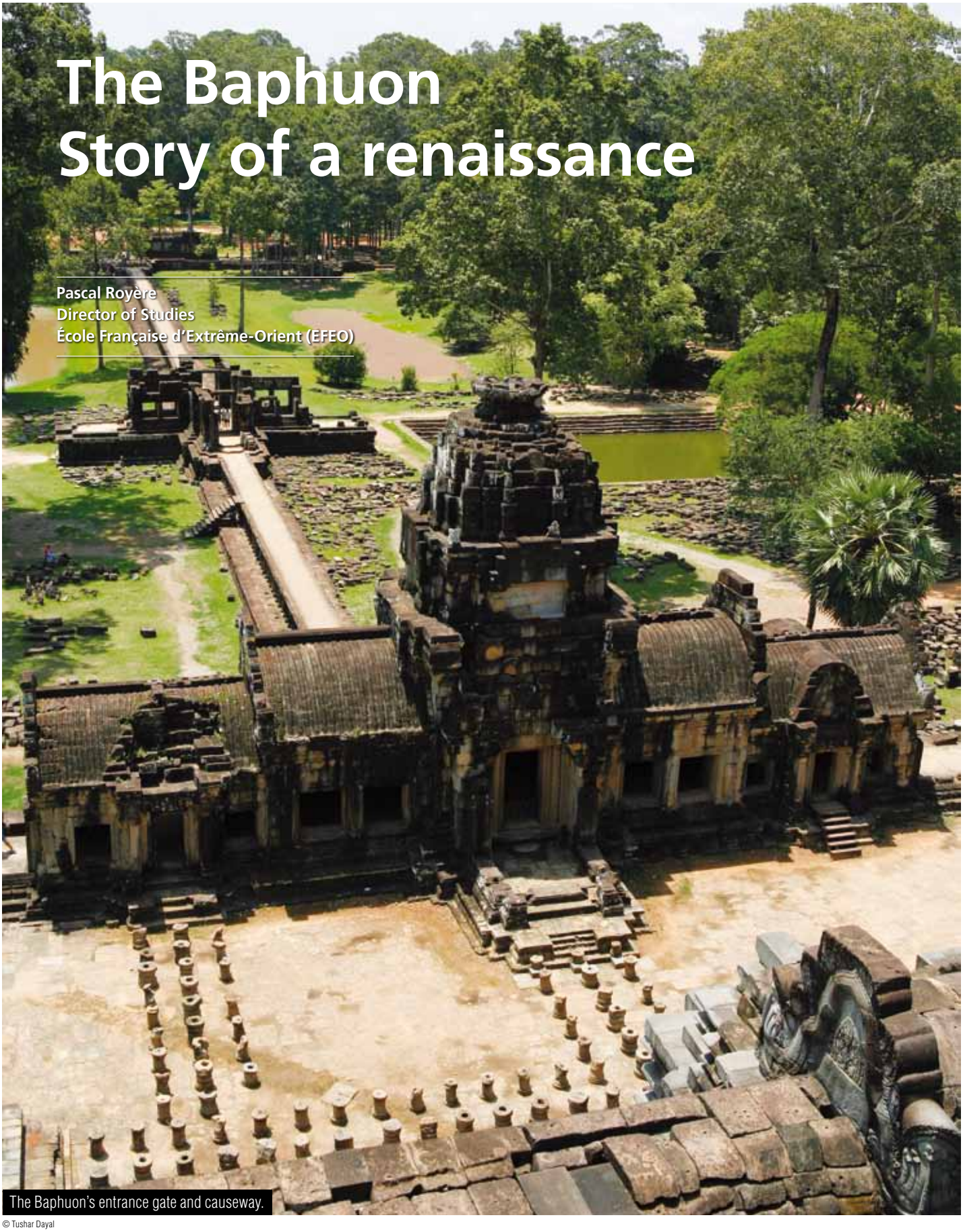
The Bayon with its fifty-two towers is frequently visited by Buddhist monks.

Aspirations towards a global empire

However, this is not to say that the Bayon had a complex nature and structure from the very beginning. With regard to the historical changes of the Bayon, the views presented by Professor Claude Jacques based on his long years of study of Khmer inscriptions deserve attention, but when taking into consideration the real traces found in the buildings, Professor Jacques Dumarçay's four-stage transition theory practically commands conviction. Judging by the traces around the central tower, the Bayon was a Hindu temple when it was first built, but was later altered to the Buddhist religion, then back to Hindu once again. Furthermore, the Angkor dynasty expanded its territory during the Bayon period to include almost half the entire region that constitutes today's South-East Asia, and built royal roads that connected the various areas of the dynasty to Angkor Thom. Large temples were built in regional core cities, and a comprehensive picture is gradually emerging of almshouses, post-town inns and other such facilities in some 102 locations across the kingdom. These developments show that the Angkor dynasty had been pursuing a path towards a global empire with an aspiration that was rare in the history of rival powers in South-East Asia. When thinking about the layered relationship between the global empire, the royal city of Angkor Thom, its central temple of the Bayon, and the seated Buddha image that is the temple's main deity, it is believed that particular significance was attached to the spirituality of Buddhism, the only belief in Asia to develop into a global religion, under the universal concept that forms the core of the sacred city of Angkor Thom and its sacred temple of the Bayon. Jayavarman VII sought a new universality even while holding to tradition. Perhaps he sought a harmonization of the two as the foundation of his rule over Angkor. Be that as it may, his design is evident in the eccentricity of the Bayon's location and in its ambiguous expression between chaos and order. Within the process of Jayavarman's pursuit and passage of time, the Bayon's facilities and various parts of those facilities were subject to bold alterations, including reductions, expansions and relocations, which ultimately led to the diversity and fascinating appeal that the Bayon exhibits to this day.

The Baphuon Story of a renaissance

Pascal Royère
Director of Studies
École Française d'Extrême-Orient (EFEO)



The Baphuon's entrance gate and causeway.

The monumental structure of the Baphuon restored.

The Baphuon consists of an impressive pyramidal structure that now forms a major part of Angkor city's landscape of monuments.

In early July 2011, His Majesty King Norodom Sihamoni and French Prime Minister François Fillon presided over the ceremony marking the end of restoration work at the Baphuon and the reopening of the monument to the general public. Thus ended the longest restoration programme undertaken in Angkor, since the inception of the Angkor Conservation project in the early 20th century. The Baphuon is a Shaivite temple of first importance dating from the 11th century, consisting of an impressive pyramidal structure that now forms a major part of Angkor city's landscape of monuments. It has now been saved from the ravages wrought by time, the weather and human beings.

Following a twenty-four-year break from 1971 to 1995, the resumption of work in 1995, under the high presidency of the late King Norodom Sihanouk, father of the present ruler, was not spared the demands and difficulties characteristic of such a venture. To understand them, we must form an idea of the context of the project from its inception.

A long-term project

In the early 20th century, clearance work revealed a monument with its main architectural lines quite different in every respect from its original morphological features. The three-storey pyramidal structure, the galleries, the angle towers, the gopuras, and finally the main sanctuary erected at the summit (and therefore at the centre of the structure) were in a very poor state of repair.

The cause of its ruin was easy to understand; the Baphuon had manifestly been badly built. The high sandstone plinths enclosed the quantity of sand filling needed to build the three-storey structure, but the proportion of the mix was not right and could not ensure long-term stability. The result was severe stress, which led to structural distortion, slanting walls and occasionally to the collapse of the structure at a very early stage. These problems were exacerbated by rainwater seepage and by alterations made over time. The great Shaivite temple, on the apex of which King Udayadityavarman II had installed a golden linga, was transformed in the 16th century by installing on the second storey's western façade a huge statue representing a reclining Buddha Parinirvana.

When J. Commaille, then curator of Angkor, undertook the first clearing work at the Baphuon in 1908, he revealed a structure that bore the obvious scars of all the mechanical stress and changes of purpose that had marked its history. The central tower had disappeared, the third storey had become detached from its gallery, its plinths had collapsed, and most of the second storey structures were in very poor shape. Apart from the east gopura, marking the principal access to the first storey of the temple, all the first-storey structures lay in ruins.

The head and shoulders of the huge reclining Buddha of the Baphuon.

The great Shaivite temple was transformed in the 16th century by installing on the second storey's western façade a huge statue representing a reclining Buddha Parinirvana.

J. Commaille's effort to uncover and preserve this structure set the tone for his successors who displayed the same degree of determination. Following the sudden death of this pioneer in 1916, others set their hearts on slowing the worrisome processes of decay that so badly marked the Baphuon. This did not prove easy and there were many incidents, some of which could better be termed disasters, including the catastrophic collapse of the north face in 1943, which brought down a quarter of the surface area of the monument in a single night, and the collapse of the east face in 1959, Despite all the gallant efforts, the Baphuon remained a seriously threatened structure, hence the doubts sometimes expressed in the conservation workers' activity reports.

On the occasion of the reorganization of Conservation of the Angkor Monuments in 1960, archaeologist B. P.Groslier synthesized the observations of his predecessors and thus laid the ground for the largest restoration project ever undertaken in Angkor. The scale of the resources applied was consistent with the scope of the problems encountered.The technical and scientific team of the École Française d'Extrême-Orient (EFEO) was reinforced with hundreds of qualified craftsmen and provided with suitable equipment. All this made it possible to launch the final attempt at saving the structure. It was conceived to strengthen the foundations weakened by shifting embankments by means of binding devices (reinforced concrete sheets) placed behind the stonework. To realize a project of this magnitude, all four façades of the monument had to be temporarily dismantled, with a register listing every single stone composing the structure. By 1970, the project had made good headway, but the war that had by now reached the temple region struck a fatal blow. The work was first interrupted briefly and brutally and then, after a brief resumption, it was effectively closed down in 1971.

Relaunching the impossible?

Not until 1995, with the joint efforts of the EFEO, the Ministry of Foreign Affairs and the French Ministry of Culture and in accordance with the wishes of the Royal Government of Cambodia, did this complex project finally start up again.

Of course the process was far from simple: the documentation put together during the sixties had been plundered and destroyed in the EFEO's premises in April 1975, turning the temple into a giant


Second-storey.
© Tushar Dayal


Restored entrance causeway.
© Lin Meil

After many months spent identifying all the stones strewn across 10 ha of forest surrounding the temple, teams specially trained on the site finally managed to restore the magnificent structure to its former glory.

three-dimensional jigsaw puzzle whose instructions for assembly had been forever lost. On top of that, nature had taken a further toll on the most unstable sections of the temple, with a huge collapse on the second and third storeys in its north-west quarter.

After many months spent identifying all the stones strewn across 10 ha of forest surrounding the temple and after considerable uncertainty, teams specially trained on the site finally managed to restore the magnificent structure to its former glory. Obviously the difficulty was considerable: how does one resume work on a site , all of whose original documents had been lost after a break of twenty-four years, when restoration techniques originally applied had been vastly improved in the interval ? How does one create a balance between the two historical phases of occupation of the temple (the Shaivite phase and the Buddhist overhaul), one of which tended by its very nature to the destruction of the other?

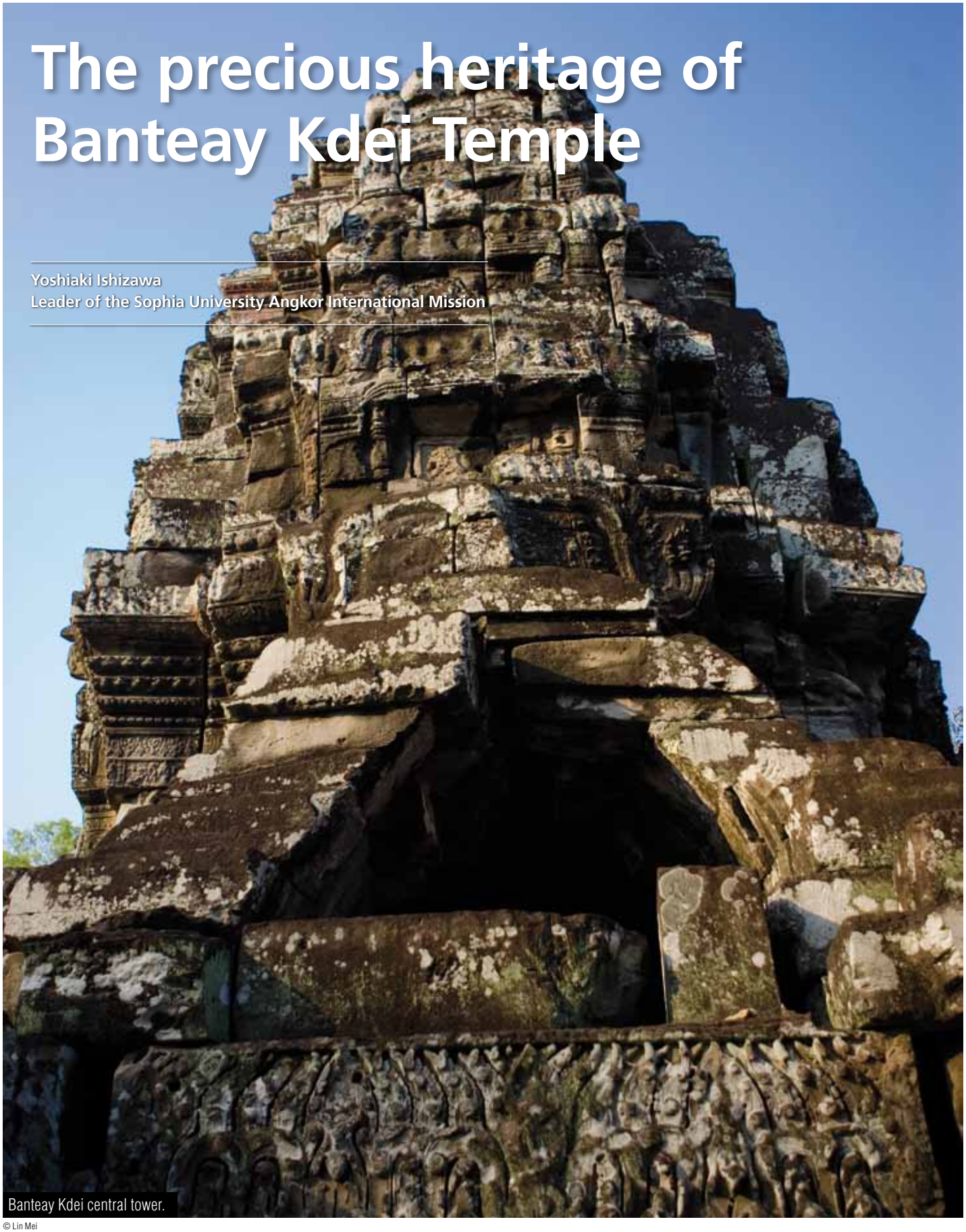
At the end of the sixteenth year, this undertaking, now more than a century old, has finally reached an end, as have, at least for now, the cost calculations. We can now take note of all the documentary interest of the structures that have finally been restored. The restoration of the initial pyramidal structure, with its typical decorative mouldings, was the most important part of the project. It marks a milestone in architectural development and the beginning of generalized use of sandstone in the art of Angkor-style building.

The restoration of the second-storey gopuras, the only structures truly spared by the Buddhist overhaul of the 16th century, is also of some interest. Arranged in panels, like a cartoon strip, the bas-reliefs that adorn their external façades and are undoubtedly the oldest testimony to this kind of narrative technique in Angkor, have found their place and reveal to the public the first attempts at this technique that would develop further in Angkor as the centuries passed.

In conclusion, it should be recalled that the daily monitoring of such a site over many years has been a great opportunity to see and understand the difficulties encountered by the builders of ancient Angkor. It has also shown how to succeed in presenting two successive historical phases at the same time, namely the Shaivite (11th to 16th centuries) and its Buddhist overhaul (16th century).

The precious heritage of Banteay Kdei Temple

Yoshiaki Ishizawa
Leader of the Sophia University Angkor International Mission



Banteay Kdei central tower.

Banteay Kdei, a Mahayana Buddhist temple built in the late 12th century, is located approximately 6 km north-east of Angkor Wat. Recent excavations at this temple conducted by Sophia University uncovered statues and images of the Buddha which were the first of their kind found in Cambodia. This precious collection of statues illustrates religious evolution from the 10th to the 13th centuries through changes of dynasties and rulers.

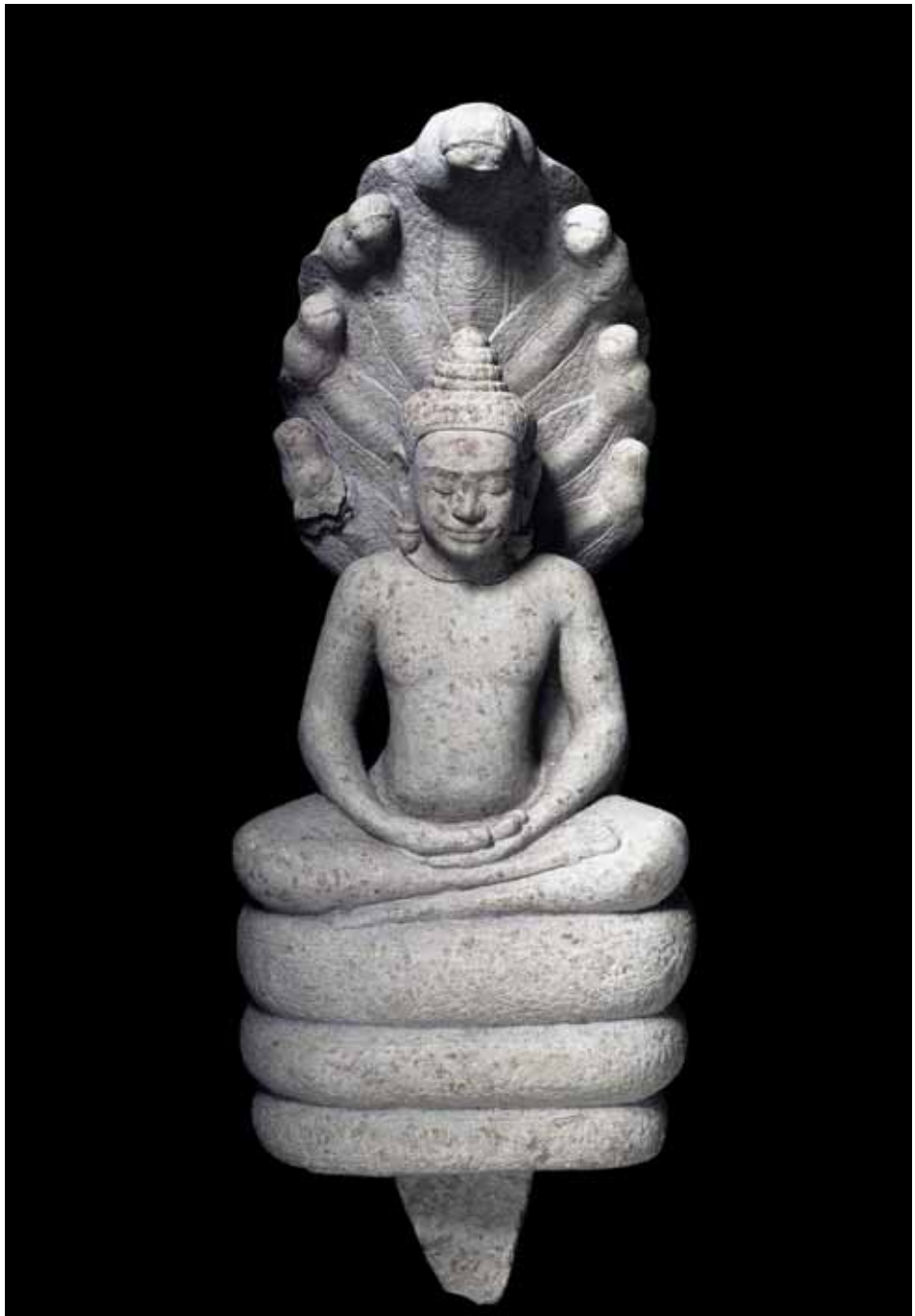
Buried for 800 years

An initial find of statues was made in a pit roughly 150 m from the entrance to the eastern causeway, in front of a small northern sanctuary on the side facing a cruciform terrace. These range in size from 20 cm to 1.8 m. Two small bronze Buddha images were also discovered.

The pit from which the statues were excavated was roughly 1.8 m deep and 2 m square. Several small whole statues of the Buddha and of the Buddha's head were unearthed, along with large stone artefacts including body segments. They appeared to have been thrown in from the top, and the images of the Buddha's head appeared to have been deliberately severed from their bodies before being discarded and buried, which unfortunately means that not many will be able to be restored to their original condition.

Although the statues were buried for approximately 800 years, they were in an environment with a constant level of temperature and humidity so their overall state of preservation is remarkably good and their noble features can still be admired today. These statues are believed to belong to the period spanning the 10th to 13th centuries. With regard to design, their faces and adornments incorporate features of the 10th-century Baphuon and the 12th-century Angkor Wat styles, and they also reflect to a certain extent the Bayon style of art from the 13th century. The complete statues possess the upper body of a naga (serpent deity), with its three coils and seven heads spread wide to protect the meditating Buddha.

Following this initial discovery, while conducting a survey we enlarged the side of the excavation pit and in doing so



Recent excavations at this temple conducted by Sophia University uncovered statues and images of the Buddha which were the first of their kind found in Cambodia.

The meditating Buddha protected by a naga.

uncovered a total of 274 Buddha images, including a stone pillar engraved on all four sides with 1,000 seated Buddhas.

Sheltering the Buddha from the rain

The 274 excavated images were mostly of a seated Buddha protected by a naga, and this style appeared to have been widespread in Khmer art. These statues denote a time when it was said to have rained like a waterfall for a week during the Buddha's seven-week period of meditation in order to be able to enter Nirvana. At that time, Mucalinda the serpent king arose from the earth and protected the Buddha, by spreading out his seven heads and coiling his body.

The principal image of the Buddha seated on a serpent had its head missing when the statue was unearthed, but the head was subsequently found and replaced. The placing of the right hand over the left palm while remaining seated with eyes closed indicates a meditative posture. The dimensions of the statue are 125 cm by 47 cm.

The stone pillar with 1,000 seated Buddha images.

When Buddhism entered Cambodia in the 6th century, several statues of the Buddha were carved, but this is the first discovery of a pillar with 1,000 Buddhas.

Although statues of the Buddha seated on a naga first made an appearance around the middle of the 10th century, they appear to have been influenced by images of the Hindu divinities of that time. This tendency to mix religious motifs may also be seen in the hairstyles of the Buddha, which changed from spider-like to plaited, with a cone-shaped topknot (*makuta*) hiding the *usnisa* (a growth on top of the head, or a diadem or crown). Some of the discarded Buddha images bore a resemblance to the Angkor Wat style, which suggest that they were influenced by the religious designs of that era.

1,000 seated Buddhas

When Buddhism entered Cambodia in the 6th century, several statues of the Buddha were carved, but this is the first discovery of a pillar with 1,000 Buddhas. In addition to the thousand small Buddha images, each side of the pillar is surmounted by a larger image of the Buddha triad. The pillar measures 120 cm by 45 cm. Similar examples are those of Bodhisattva Avalokitesvara or Lokesvara, which belong to the same period and were excavated from the Preah Khan temple of Kompong Svay. This statue expresses a desire on the part of the bodhisattva to disperse virtue and compassion to people far and wide.

Further examples of such artefacts in the history of art are the stone pillars of Vishnu, dating back to the last quarter of the 12th century. Here, the 1,020 images of Vishnu found on stone pillars are arranged in fifteen horizontal rows by seventeen vertical rows, and are engraved on all sides like the 1,000 Buddhas of Cambodia, indicating the influence of Hindu art. Additionally, in the engravings of Lokesvara discovered at the Preah Khan temple, small Buddhas are engraved in the section between the head and upper body, in a similar style to the 1,000 Buddhas.

Why were the Buddha images discarded? Jayavarman VII (c. 1181–1219) constructed most of the Buddhist temples of the Angkor dynasty, and brought about great prosperity. Jayavarman VIII (1243–1295), who ruled after Jayavarman VII, was thought to have been a devout Hindu and is likely to have ordered the Buddha images to be seized in his struggle for the throne.

It is now clear why the images of the Buddha were destroyed. Their unintended preservation gives archaeologists a unique insight into the history of the clashes between members of the ancient royal families and the victors who secured the throne in their name.

គង្គារអង្គរ
Kongkear Angkor

Royal Secret Path

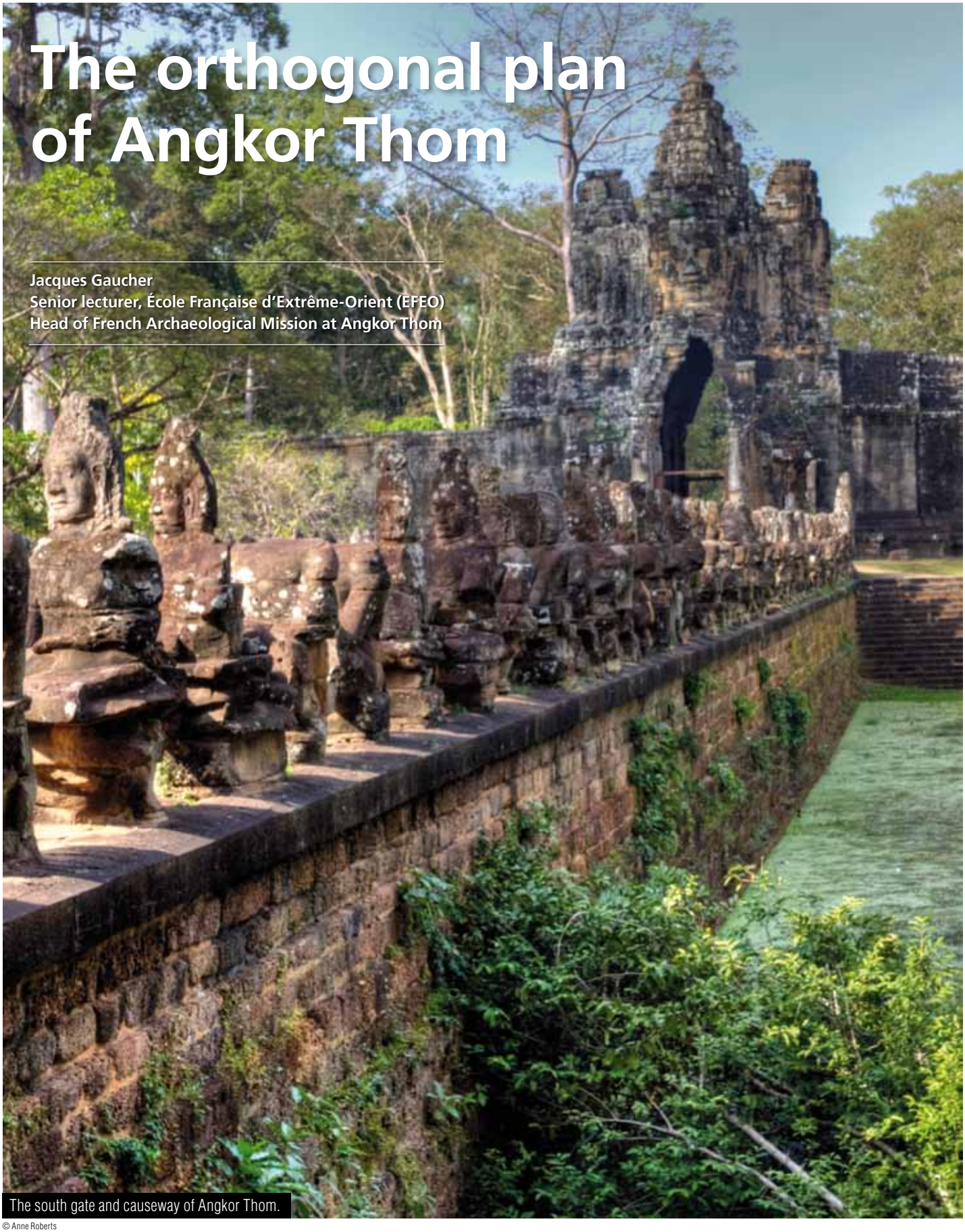
Angkor Thom City Guard Post

Kongkear Angkor *(known as Angkor Gondola)*
is a unique Khmer traditional boat service in
Siem Reap-Angkor Archaeological Park.
Travel along the waterway where history, nature and culture come alive.
You will enjoy and view the past and photograph along
the Great Wall of Angkor Thom, Royal Secret Path and City Guard Post.
You can also see the beautiful sunset at the Great Wall.

Tel: (855) 63 6550655 / (855) 88 8518822
Email: reservation@kongkearangkor.com Website: www.kongkearangkor.com

The orthogonal plan of Angkor Thom

Jacques Gaucher
Senior lecturer, École Française d'Extrême-Orient (EFEO)
Head of French Archaeological Mission at Angkor Thom



The south gate and causeway of Angkor Thom.

Angkor Thom (south section to right) delimited by the south moat, the Western Baray and the Hill of Bakheng; three monumental components of the Angkor development.

The Angkor plain went through a completely new kind of development phase between the 9th and 13th centuries AD.

Halfway between the Kulen mountains to the north and the Tonle Sap great lake to the south, the Angkor plain went through a completely new kind of development phase between the 9th and 13th centuries AD. The centralization and stability of the Khmer Empire allowed the development on the plain of a built-up area that in terms of size and geometric layout, and the monumental size of its architectural buildings and their composition and development over time, is quite exceptional for pre-industrial societies. Surrounded by a vast hinterland scattered about with villages typical of rich rice-growing areas, Angkor's development centred on the largest inhabited structure of the site: Angkor Thom, the 'Great City'.

Accomplishment of a great king

Since 1909, the work of archaeologists at the École Française d'Extrême-Orient (EFEO) brought about the first restoration of the arrangement of the principal structures of this built-up area. Angkor Thom then clearly looked the same as it does to modern-day visitors. The walled city presents a square plan 3 km long, surrounded by a 100 m wide lined moat cut across by five dykes providing access to five mighty city gates. Inside, the plan is based on a double centrality. On the one hand, at the geometric centre, the Buddhist temple of Bayon sets the cruciform structure of the city and its division into four quadrants by four avenues. On the other hand, from its location in the north-west quarter, the Royal Palace, combined with the avenue linking it to the oriental baray (reservoir) outside the walls, commands a second urban structure, symmetrical and at the origin of a great esplanade on which the order of the principal buildings in the city is based. Although the palace can be dated from the late 10th century, the moat, the surrounding walls and gates, and the central temple, all principal urban constructions, date from the reign of King Jayavarman VII (1181–1220). Angkor Thom thus appears to be an accomplishment of this great king, and the dramatic effect of its high towers with the city's monumental faces, its gods and demons perpetually replaying the creation of the world, made it a natural focus for the re-foundation of the Khmer Empire in the late 12th century.

A new plan of the city

Although this symbolic configuration, which can only be explained by the words of Indian cosmological myths, reigned as far as the confines of the kingdom, which were likened to those of the universe, it also ruled over a space of over 9 million m², bounded then by walls and now covered by forest and remaining unknown. What forms of material and non-material, morphological and social forms of organization, apart from the specific structure and enclosure of Angkor

Thom, were the driving forces behind the City of Angkor and its surrounding area? What methods of operation made them habitable? To what extent is the history of this site based on the foundation of a new city, the city of King Jayavarman VII, or an urban construction developed over a long period? These questions, for which there exist very few textual sources, are at the heart of an urban archaeology programme conducted, under the auspices of the EFEO and in association with the APSARA National Authority, by the French Archaeological Mission at Angkor Thom. The first systematic study of the archaeological deposits, involving the complete depth and area of the city grounds, has allowed a new plan of Angkor Thom to be produced. At a scale of 1:2,000, this plan maybe likened to a fossil frame to which the archaeological and sediment-study information of 300 sections taken from the city soil can be added.

Apart from the internal citadel area, and a 90 ha section within which the Royal Palace is combined with a huge water distribution complex, this new plan represents a series of traces, visible on the surface, of the four quarters of the city in the form of depressions. These rectangular depressions are residual forms; in the plan, they most often appear fragmented, and in section show the superficial profile of sunken or filled structures. They measure between 7 m and 20 m wide. The restored length of each of them is consistent with the dimensions of a quadrant, that is, some 1,400 m on average. Parallel, orthogonal and orientated along the cardinal points of the compass, these structures extend from one quadrant to another along the same alignment.

The orthogonal plan of Angkor Thom, as reconceived by Jacques Gaucher in 2007.

At the geometric centre, the Buddhist temple of the Bayon sets the cruciform structure of the city and its division into four quadrants by four avenues.

300 residential areas

The structure of Angkor Thom thus essentially follows a double section. The first involves a striation of the urban area, running from east to west. Generally speaking it is homogeneous, regular and based on a 90 m module. The striation is missing from the surface of the ground in the eastern section of the city, which faces the Royal Palace, where it gives way to a structure with a reduced number of units associated with the Baphuon state temple. Initial research strongly suggests, however, that striation was indeed present at this point, a hypothesis borne out by the latest work on a water distribution structure at a depth of 3 m along one of the theoretical axes of this striation. The second soil section in Angkor Thom was carried out along a partition running from north to south. The traces are noticeably fewer and irregular in appearance here, although some of them form a regular figure that corresponds to a module of 360 m, a multiple of the previous module. Overall, within these four quadrants, the cross-ruling pattern revealed on the surface of Angkor Thom consists of seventy-one structures (twenty-four north-south, forty-seven east-west) now established with certainty; six other sunken east-west sections have been suggested, making a total linear length of over 100 km marking off 300 separate residential areas.

Water distribution channels

The first archaeological studies carried out on a few of these residual traces revealed two types of urban infrastructure: streets and water distribution systems. Sometimes ditches and water channels of varying width, through which boats could not navigate, follow the streets. The functional distinction is operational. Some traces show a stable identity throughout their lifetime, while for others it should be explained that the precise archaeological explanation for their history is complex because of their material structure, their changes over time, possible changes of purpose during their lifetime, and variations in function during the same period and along the same length.

Streets and water channels of Angkor Thom.

These traces have been placed in a fragile sandy substrate, which is by nature changeable and survived in an urban environment that was transformed with the passing of centuries. Two probes carried out at each end of one of these traces revealed very different archaeological situations and profiles, showing a water channel at one end and suggesting a traffic route at the other. In addition, in a South-East Asian context, the distinction between a street, which channels rainwater, and a water channel, dried out for part of the year or at a certain moment in its history used for traffic, is not clear cut. The analysis of sedimentation conducted on selected probes is not in itself sufficient to infer a function; other contextual parameters must be taken into account to confirm the singular or compound identity of a trace throughout its history. However, whether the question is one of streets or water channels, all these traces ultimately reveal the multiple components of supply, distribution, drainage and water evacuation circuits within the city. Combined with updated elements of connection (road bridges, pipes and basins), they form a system that makes sense of the theoretical principles of the hydrological urban model used in Angkor Thom.

This plan, an expression of an urban development consistent with engineering skills, is the sum of the initial knowledge, a kind of first portrait of the identity of a city.

Urban model typical of the East

Although the square pattern of Angkor Thom specifically expresses the principal technical and functional structuring methods of an urban area, its design is based on other principles and ideals. At city level, the emergence of a regular shape based on the same dimensional module produces a regular frame that, despite certain imperfections, comprises sixty-four squares measuring 360 m square. This precise delineation is one of the characteristics of ideal models for Indian royal capitals (*rājadhāni*) based on a principle of regular 'draughtboard' design (*pāda*), which positioned each deity in an orthogonal site (*vastu*) always initially designed as a sacrificial area. This hypostasis, a substitute for a grid in a sacred site within an urban framework, added to the square form of Angkor Thom typical of the East, and its dimensions and fourfold monumental structure, the distribution of structures in the plan and their predominantly eastward orientation, is a basic urban characteristic of Indian living arrangements.

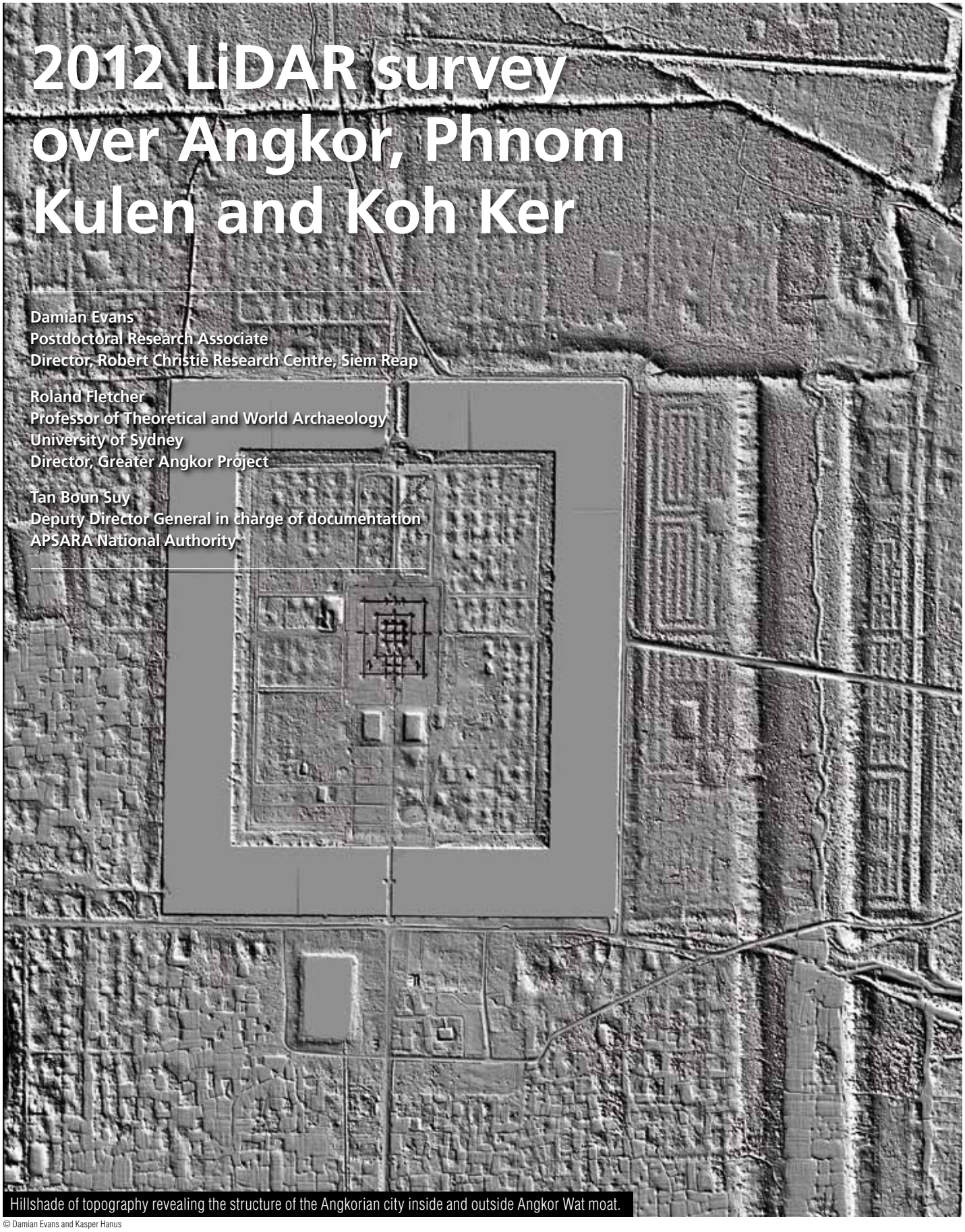
Although the regularity of the Angkor Thom plan is an established fact, it cannot be considered to be totally rigid, in the same way as Asian cities such as Chang'an or Nara. When analysed in detail, it reveals several irregularities. The square plan is not a perfect square, the north-south axis is not positioned in the city centre, several regular figures are involved, with some of them linked to different structures, and slight but significant differences in alignment are found. All these facts suggest that the squared plan of Angkor Thom is the result not of a single process but of several different planning operations. From this point of view, this plan, an expression of an urban development consistent with engineering skills, is the sum of the initial knowledge, a kind of first portrait of the identity of a city, which the archaeologist should improve upon with the passing of time.

2012 LiDAR survey over Angkor, Phnom Kulen and Koh Ker

Damian Evans
Postdoctoral Research Associate
Director, Robert Christie Research Centre, Siem Reap

Roland Fletcher
Professor of Theoretical and World Archaeology
University of Sydney
Director, Greater Angkor Project

Tan Boun Suy
Deputy Director General in charge of documentation
APSARA National Authority



Hillshade of topography revealing the structure of the Angkorian city inside and outside Angkor Wat moat.

In April 2012, a 300 km² LiDAR (Light Detection and Ranging) survey was completed to create a high-resolution, high-precision elevation record of central Angkor within the Angkor World Heritage Park, of Koh Ker and of part of the Phnom Kulen National Park. This is the first archaeological LiDAR survey in Asia and the largest archaeological LiDAR survey ever completed. LiDAR has produced remarkable results at several major archaeological sites around the world, notably at Mayan sites in the heavily forested lowlands of Belize, and is widely used in forestry, land use studies and water resource management. For the first time, an aerial remote sensing device allows researchers to create very precise, detailed maps of the landscape, any structures upon it, and also create 3D models of vegetation such as the triple canopy tropical forest cover that conceals central Angkor from view.

Angkor redefined

LiDAR uses a laser beam which is transmitted from a device carried in a plane or helicopter. During flight, laser beams are transmitted down to the ground and then reflected back to the device. The time they take to cover the distance there and back is used to calculate the distance between the flying platform and the surface. From huge numbers of these distance measurements, a 3D map can be drawn, both of the landscape and the vegetation growing on it. To obtain the accuracy required for mapping archaeological sites, satellite location systems such as GPS are required, as well as very precise flight paths and surveyed ground control points.

In 2012 eight international teams, the broadest technical research cooperation ever in Angkor, representing seven countries, formed the Khmer Archaeology Lidar Consortium (KALC) to fund and carry out the LiDAR survey (see box). The programme was designed and executed under the technical direction of Damian Evans from the University of Sydney (Australia), with governmental support provided by a team from the APSARA National Authority under the direction of H.E. Mr Tan Boun Suy. The aerial acquisition required a special exemption from the 'no fly zone' above the Angkor Archaeological Park and was contracted out to PT McElhanney, the Indonesian branch of a Canadian company, in liaison with Cambodia Air Traffic Services, Société Concessionaire d'Aéroport, and the State Secretariat of Civil Aviation. The helicopter was flown by the local Cambodian company, Helistar Cambodia.

The LiDAR survey was an absolute revelation, redefining the centre of Angkor, identifying severe erosion within the Angkorian period, revealing huge extensions to Angkor Wat, showing that Phnom Kulen was covered with numerous structures and embankments and exposing to view the agricultural and engineering topography of Koh Ker. In all three of these acquisition blocks, a large number of previously undocumented archaeological sites, including temples, quarries and urban structures, have been identified using the new data.

In 2012 eight international teams, the broadest technical research cooperation ever in Angkor, formed the Khmer Archaeology Lidar Consortium to fund and carry out the LiDAR survey.

KALC international research teams in LiDAR survey

- National Authority for the Protection and Management of Angkor and the Region of Siem Reap (APSARA)
- École Française d'Extrême-Orient, Siem Reap Centre (EFEO)
- University of Sydney, Robert Christie Research Centre (USYD), Siem Reap
- Société Concessionnaire de l'Aéroport (SCA)
- Hungarian Indochina Company (HUNINCO)
- Archaeology & Development Foundation Phnom Kulen Program (ADF)
- Japan-APSARA Safeguarding Angkor (JASA)
- World Monuments Fund (WMF)

LiDAR survey in numbers

- Duration of flight operations: 16 to 22 April 2012
- Total coverage area: 300 km²
- Total flight hours: 20
- Total flight length: 1,165 linear km
- Average flight height: 800 m above ground
- Instrument: Leica ALS60 with Class 4 laser. Safety parameters included an eye safe shut-off.
- Total number of points: 4 billion
- Accuracy: >15 cm horizontal + vertical
- Number of aerial photos: 5,000
- Spatial resolution of aerial photos: 10 cm
- Delivery of full, original dataset: 11 June 2012 to the Phnom Penh offices of APSARA

Predating Jayavarman VII's layout

In the Angkor acquisition block, one of the key outcomes is the revelation that the formally planned, rigorously structured urban core in the centre of Angkor extends north of Preah Khan, south to Angkor Wat and east beyond Ta Prohm. Previous work by a French/Khmer team led by Professor Jacques Gaucher had identified an orthogonal urban pattern of roadways and canals forming blocks containing groups of small ponds within Angkor Thom, but the new data reveal that this well-structured and densely populated urban space stretches far beyond the 'enclosure' walls of Angkor Thom. In some cases, the urban grid outside the walls of Angkor Thom does not match up precisely with the grid within the walls, and there is evidence that the formal grid network predates the construction of the enclosure walls of Ta Prohm and Banteay Kdei. This earlier grid has no boundary wall and merges seamlessly with the fabric of the extended, low-density urban landscape

of occupation mounds, *trapeang* (ponds), *prasat* (monuments) and fields which can be seen around Pre Rup and stretches far out across Greater Angkor. It seems, therefore, that Jayavarman VII's layout of Angkor Thom may be superimposed on a pre-existing grid layout of Central Angkor. There are also important topographic data in the LiDAR imagery. For example, the area immediately west of Ta Nei also displays disturbing signs of severe erosion by water at a time when the Siem Reap River (then a canal) was flowing at its original high level.

Radical new topographic data

Another key outcome is that the archaeological context of Angkor Wat is completely redefined. Instead of one enclosure, it is in fact an ensemble that consists of three adjacent enclosures. The main moated enclosure, which has been known to have some ponds and roadways, is now shown to have a complete road grid and rows of ponds. An enclosure lies to the east which also has a grid and rows of ponds. To the south of Angkor Wat moat lies an extraordinary feature of unknown function, of a rectilinear 'spiral' or 'coiled' form never before seen in Angkorian archaeology or iconography. This feature consists of rectangular sets of banks over 10 m wide with continuous channels between them, arranged around small ponds. There were originally three rows of these features but the middle row has been destroyed by the huge east–west canal that was once thought to be the moat of late 9th-century Yasodharapura. A further surprise from the LiDAR is therefore that detailed topographic data are providing radical new dating evidence. The great right-angled moat is now revealed as a feature postdating Angkor Wat and is probably part of the Angkor Thom remodelling. Also revealed, however, is that the road grid and pond arrangement is first associated with Angkor Wat and also occurs in Beng Mealea, preceding Angkor Thom by more than half a century. In addition, residential areas of mounds and ponds border Angkor Wat to the north and west and it is surrounded by several additional small shrines, some of which were previously undocumented. The nature of Angkor Wat and its vicinity is due for a complete reappraisal.

The sacred place of Mahendraparvata revealed

To the north on the Kulen a test survey of the area around Rong Chen shows that the topography of the plateau has been altered by substantial water management, an urban grid of embankments, by numerous rows of small mounds and by many previously unknown shrines of considerable size. Verification of the LiDAR results continues on top of Phnom Kulen under the direction of the Archaeology and Development Foundation, but already it is clear that a previously undocumented city – relating to the sacred place of Mahendraparvata frequently referred to in inscriptions – has been revealed on top of the sandstone massif. The plateau of Phnom Kulen is a major urban heritage site of world standing in its own right.

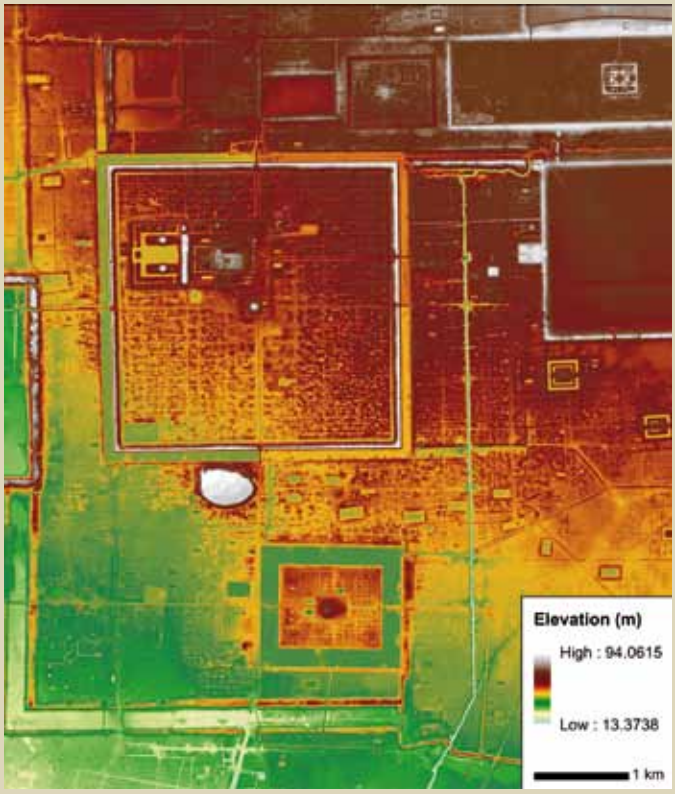
Around Koh Ker the LiDAR data show that the natural landscape was extensively re-engineered as part of a very significant, long-term investment in urbanism in what is now Preah Vihear province. For example, LiDAR helps to reveal the topography of the huge dam that runs between the river to the north and the centre of Koh Ker, showing evidence of multiple periods of construction. Also revealed is an extensive network of field walls that have been obscured until now by forest cover, adding to the indications that Koh Ker was not a transient centre but a substantial and long-lasting urban settlement. At Koh Ker, we can now clearly identify hydraulic engineering on a scale that rivals Angkor itself.

The Angkor LiDAR mission in 2012 has firmly established the value of airborne laser scanning as a vital method of archaeological prospection in Cambodia, and more broadly in mainland South-East Asia. It provides dramatic proof of the technology's capacity to illuminate trace archaeological features across a range of tropical environments, from the dense forest of Angkor Thom to open rice fields. Apparently well-known monuments such as Angkor Wat are redefined. Whole landscapes on the Kulen and around Koh Ker provide new insights and surprises. Many years of research opportunities in Angkorian archaeology have been opened up as a result of the mission. In particular, considering the wealth of new data now on hand, there is an urgent need to refine existing archaeological maps of Greater Angkor beyond the Heritage Park, in Phnom Kulen and around Koh Ker, both for research and for heritage management, in order to preserve the remarkable yet fragile traces of the civilization of Angkor that still persist in the landscape.

Coverage blocks of the 2012 LiDAR mission

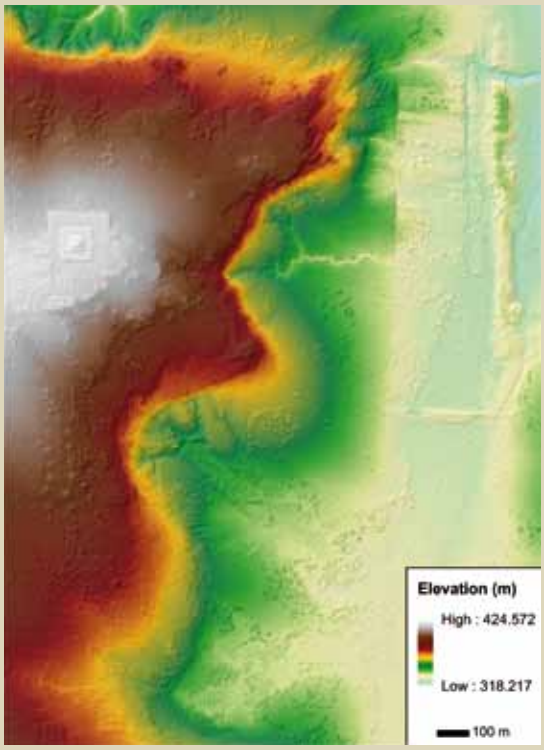
© Damian Evans

Topographic relief beneath the forest in the central temple area



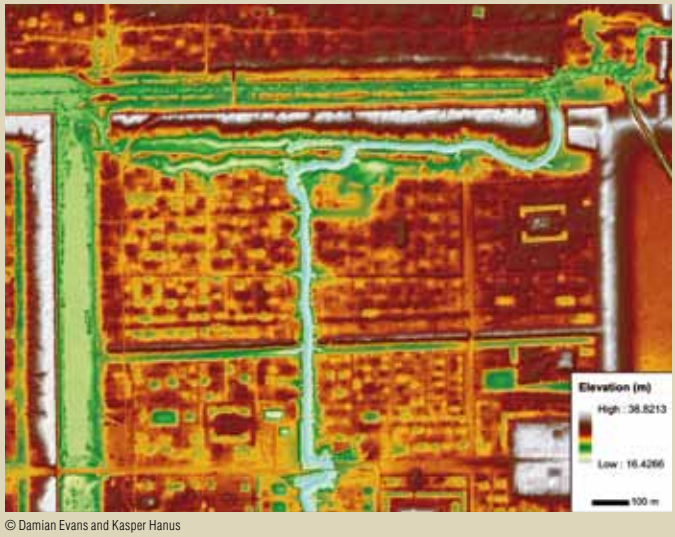
© Damian Evans and Kasper Hanus

Large-scale anthropogenic changes to the landscape around Rong Chen Temple, on Phnom Kulen



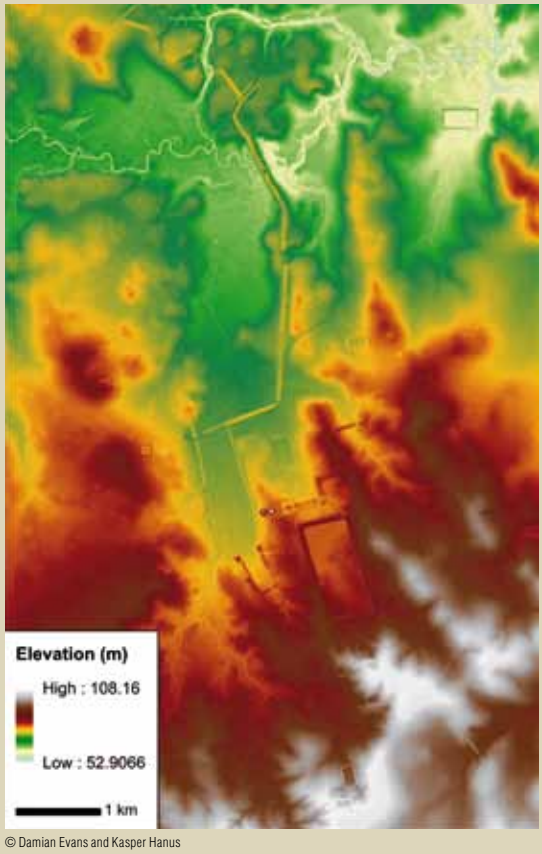
© Damian Evans and Kasper Hanus

Insights into Angkorian period hydrology near the north-east corner of Angkor Thom



© Damian Evans and Kasper Hanus

LiDAR coverage of Koh Ker, with vegetation removed from the image



© Damian Evans and Kasper Hanus

World tourism comes to Mexico

- In the last edition, we had over 2,600 exhibitors representing about 800 companies
- The fair was visited by more than 60 thousand people interested in the touristic sector
- The product segmentation was institutionalized through the creation of thematic pavilions; Fita Adventure, Fita LGTB, Fita Interactive, Fita Race, Fita Gourmet.

Expo Bancomer Santa Fe

@fitamx **www.fitamx.com** fitamx

Fita

Ciudad de México
International Tourism Fair of the Americas
26-29 sep 2013




***Fita 2013** opens its doors for you next september 26th to 29th.*
Come to participate in the best international tourism showcase

BBVA Bancomer

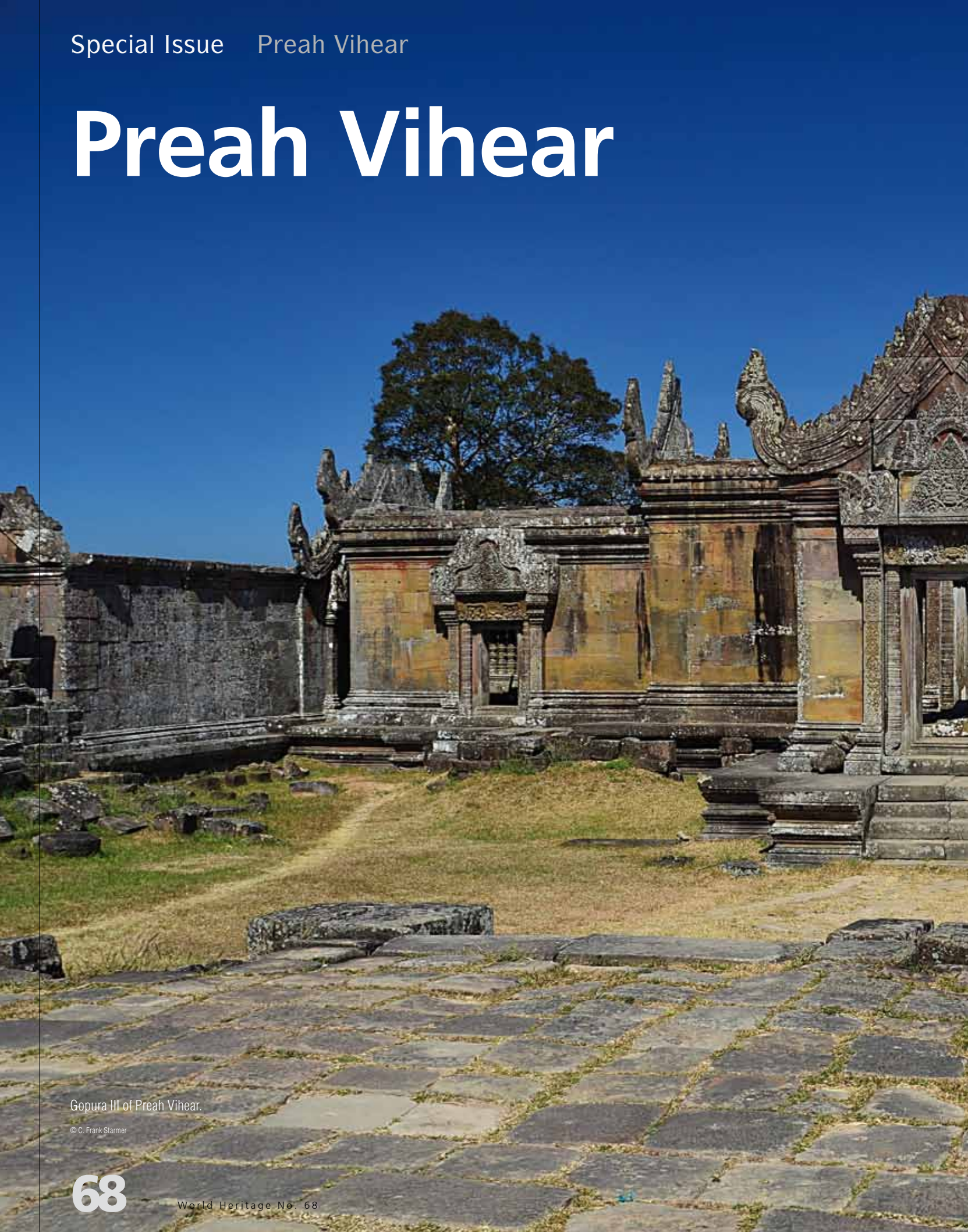
CIUDAD DE MÉXICO
Decidiendo Juntos

SECTUR

MÉXICO
www.visitmexico.com

GlobalTrade

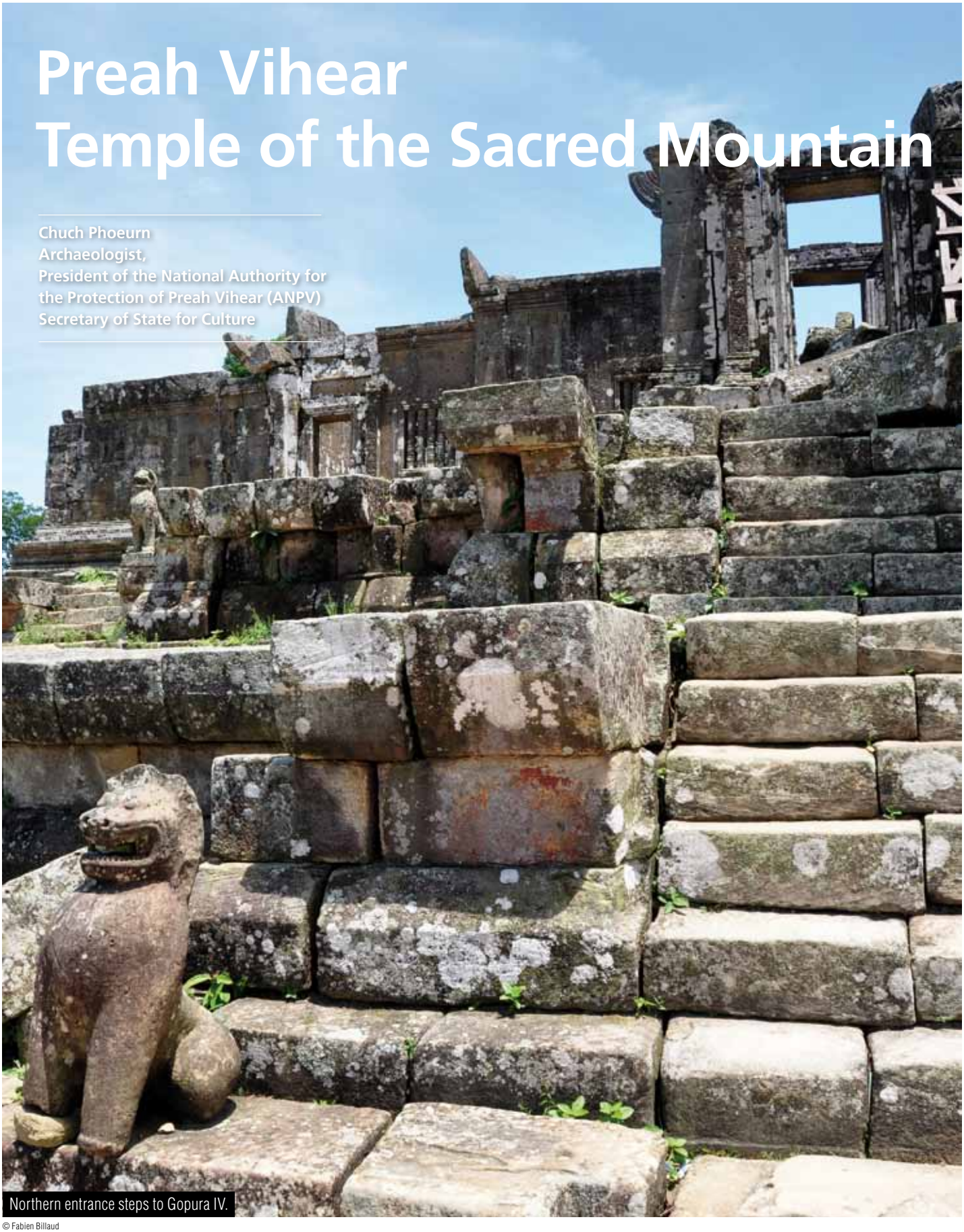
Preah Vihear



Gopura III of Preah Vihear.

Preah Vihear
Temple of the Sacred Mountain

Chuch Phoeurn
Archaeologist,
President of the National Authority for the Protection of Preah Vihear (ANPV)
Secretary of State for Culture



Northern entrance steps to Gopura IV.

Built on a plateau that dominates the Cambodian Plain, the Temple of Preah Vihear is dedicated to the Hindu god Shiva. Perched on the edge of a great cliff some 625 metres above sea level in a most attractive landscape, the temple lies slightly to the east of the Dângrêk mountains, in the north-east of Preah Vihear province, in Kantout commune and Choam Ksan district, about 414 km from the Cambodian capital Phnom Penh. Before mentioning the works and research conducted recently at the temple, we recall a few historical and archaeological details.

Distinctive pillars along Preah Vihear causeway.

Preah Vihear is considered a true cultural jewel in Cambodia, with a history that straddles the entire thousand years of the Khmer Empire.

Historical developments

Prasat Preah Vihear (which means 'Temple of the Sacred Mountain') is considered a true cultural jewel in Cambodia, with a history that straddles the entire thousand years of the Khmer Empire. For almost 1,200 years, Preah Vihear has dominated the surrounding plateaux. Its history dates back to the 9th century AD, when Prince Indrayadha, son of King Jayavarman II, started work on the original sanctuary, dedicated to the Hindu god Shiva as Çikareçvara (Lord of the Peak).

Here, he installed part of the immense linga (the phallic symbol of Shiva) taken from Vat Phou, a temple now located in the Lao People's Democratic Republic. In fact, inscription K58 (found in Angkor) teaches us that in the early 9th century, Indrayadha received from Shiva an instruction to take to the Preah Vihear site a linga extracted from the stone of the great linga of Mount Vat Phou (Indrapura). It was this linga that was given the name Shikhareshvara, 'Lord of the Peak'. Meanwhile, inscription K380 specifies that 'Sri Bhadresvara of Lingapura (Vat Phou) was reborn in Sri Shikhareshvara (Preah Vihear) … in order to manifest his power visibly, so that the entire world could see it'.

The origins of Preah Vihear probably date back to the previous establishment of a hermitage on the mountain site; the building erected by Indrayadha could have been a modest wooden structure. This work was the expression of spiritual advancement, increased political prestige, and economic growth in the Khmer Empire. However, the construction, repair and extension works lasted over 300 years, with numerous redevelopments during the reigns of King Suryavarman I (1002–1050) and his son Udayadityavarman II (1050–1068).

Four inscriptions in Khmer and Sanskrit, originating from the site, are of great value in establishing the dates, as they confirm the close link between King Suryavarman I and the construction of the present complex. In fact, the king erected engraved columns at various locations across his vast domain, bearing his name and title, Suryavarmeshvara (the god Suryavarman). One of these was created at Preah Vihear in the early 9th century, also in honour of Shiva. It was located close to the previous temple, which was soon reconstructed in sandstone as part of the overall programme to extend and renovate the temple.

Kings Jayavarman VI (1080–1107), Dharanindravarman I (1107–1112) and Suryavarman II (1113–1150) made additions to the temple. The intensification of work naturally transformed the little sanctuary into one of the greatest Khmer temples of all time.

Thus, in contrast to numerous other Khmer temples that were abandoned after the king who built them disappeared, Preah Vihear benefited from uninterrupted royal attention for over four centuries (9th to 13th) as indicated in the different phases of its construction and architectural evolution. This illustrates the particular importance of the site as a principal spiritual sanctuary in the kingdom.

In addition, unlike many Angkor temples that are built concentrically, the plan of Preah Vihear, taking account of natural contours, follows a linear progression. This means that the temple has four levels and four courts consisting of five gopuras (entry pavilions). Progressing towards the inner sanctum of the

Gopura IV.

temple, each level has its own architectural character, providing a series of differing sensations. The stylized representation of Mount Kailash, dwelling place of the Hindu god Shiva to whom the temple is dedicated, became a place of pilgrimage and worship both for the kings and for their subjects.

Of the inscriptions found at Preah Vihear, the most interesting, known as the Stele of Preah Vihear or Stele of Divakar, is written in both Sanskrit and Khmer; it probably dates from 1119 and 1121. This inscription, engraved on a stele, retells the order issued by Suryavarman II to the royal priest Guru Divakara to carry out ritual sacrifices and renovation and repair works in the temple. An inscription on the south door of Gopura IV tells the story of Sukarman, a local personage who worked as archivist in the sanctuary. Another inscription recalls the leader of a hermitage who made offerings in favour of Çikareçvara, the principal deity of the temple. Another inscription, also in the temple and dating from 1047, refers to Suryavarman I. It can currently be found in the Bangkok National Museum.

The origins of Preah Vihear probably date back to the previous establishment of a hermitage on the mountain site.

Two monumental staircases

The sacred area is located on a promontory in the Dângrêk mountain range, overlooking the Cambodian Plain from its elevation of 547 m close to the current Thai border. Its roughly triangular shape is marked out by steep cliffs. The southern end of the promontory forms a natural reinforcement, a holy place that overlooks a vast panorama, the great swathe of land extending southwards to Mount Kulen, cradle of the Khmer civilization. The northern section consists of an almost horizontal sandstone platform, about 100 m long from north to south and 50 m wide, giving access to the temple and the village of Phnom Kulen.

The temple itself consists of a series of sanctuaries linked by a system of causeways and stairs, aligned for 800 m along a north-south axis. This is unusual given that Angkor temples usually face eastwards.

The temple is accessed by two monumental staircases, one to the east and the other to the north. In this way, the temple is oriented both east-west and north-south. To the north, the 54 m monumental staircase consists of 159 steps, leading to a causeway 25 m long, flanked by enormous rampant nagas (serpents). From here, three steps provide access to the first of

Decorations on Gopura IV.

the gopuras, that is, Gopura V. Following a cruciform shape, it originally presented a steeply-sloping wooden roof supported by columns. Two routes, the staircase coming from the north and that coming from the east, starting from the Cambodian Plain, meet each other here. The second staircase, partly hewn into the rock and partly built of sandstone, 10 m wide and 1,400 m long, descends the roughly 400 m along the eastern flank of the promontory. It has recently been completely restored, mostly in wood.

Architectural decorations

The most complete decorations are found on the gopuras; mostly very well preserved, they remain clearly visible. The composition of the sculptures, especially on the lintels, columns and pillars, is variable, complex and highly detailed, and represents the principal Hindu deities Shiva and Vishnu, the ancient sky god Indra and Vishnu's most famous avatar Krishna.

The most complete decorations are found on the gopuras; mostly very well preserved, they remain clearly visible.

The quality of the architecture, the remarkable rendering of the decors and the symbolism of the landscape have earned Preah Vihear a place on the World Heritage List. The decision to include it indicates that its Outstanding Universal Value resides in its status as 'a great masterpiece of Khmer architecture, very pure in its configuration and in the fineness of its decors'.

Other treasures of the Preah Vihear region

The area surrounding the temple is populated by a local ethnic minority, the Kuy, who have a very distinctive lifestyle with traditional knowledge and know-how, including technical skills. As well as their own language, they also carry on distinctive music and dance traditions, including a warriors' dance, and vernacular architectural traditions and arts. The Kuy are also known for their special relations with the Khmer court as producers of arms and armour and for capturing and training wild elephants.

An ecomuseum at Preah Vihear

In the heart of the Kingdom of Cambodia, the cultural seat of the Preah Vihear Temple region has distinctive flora and fauna and a long natural history. A global museum, in which archaeological discoveries and ethnographic items will stand alongside a new presentation of this natural history, and which has benefited particularly from the contribution made by UNESCO, is currently being completed.

TRULY
INSPIRING

23–25 October 2013, itb-asia.com, Suntec Singapore

Supported By:

SINGAPORE EXHIBITION & CONVENTION BUREAU

Held in:

YourSingapore

ITB Asia

The Trade Show for the Asian Travel Market

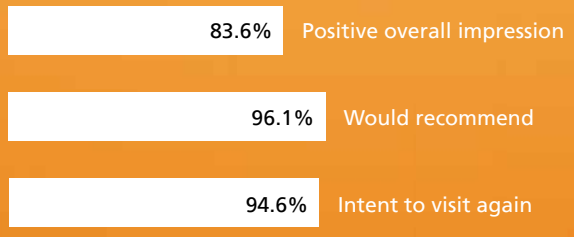
ITB Asia – Take part. Take advantage.

- Almost **8500** attendees from **92** countries (12% increase from 2011)
- **865** exhibitor organizations from **72** countries (15% increase from 2011)
- More than **750** buyers
- Over **3720** minutes of conference (24 % up from 2011)
- **12.000** sqm gross floor space

(2012)

Overall impression and outlook

94.6% of the visitors intend to participate in ITB Asia also in the future.



(2012)

ITB Asia will feature hundreds of exhibiting companies from all over the world, covering not only the leisure market, but also corporate and MICE travel.

ITB Asia 2013 will include exhibition pavilions of exhibitors from every sector of the industry, including destinations, airlines and airports, hotels and resorts, theme parks and attractions, inbound tour operators, inbound DMCs, cruise lines, spas, venues, other meeting facilities and travel technology companies are all expected to attend.

The sixth edition of ITB Asia is set to be even bigger and better as plans are underway to expand the show even further. Organizers are planning to take up two floors of exhibition space this year (across level 6 and level 4) when it returns to the newly refurbished Suntec Singapore Convention Centre.

What our clients are saying about ITB Asia:

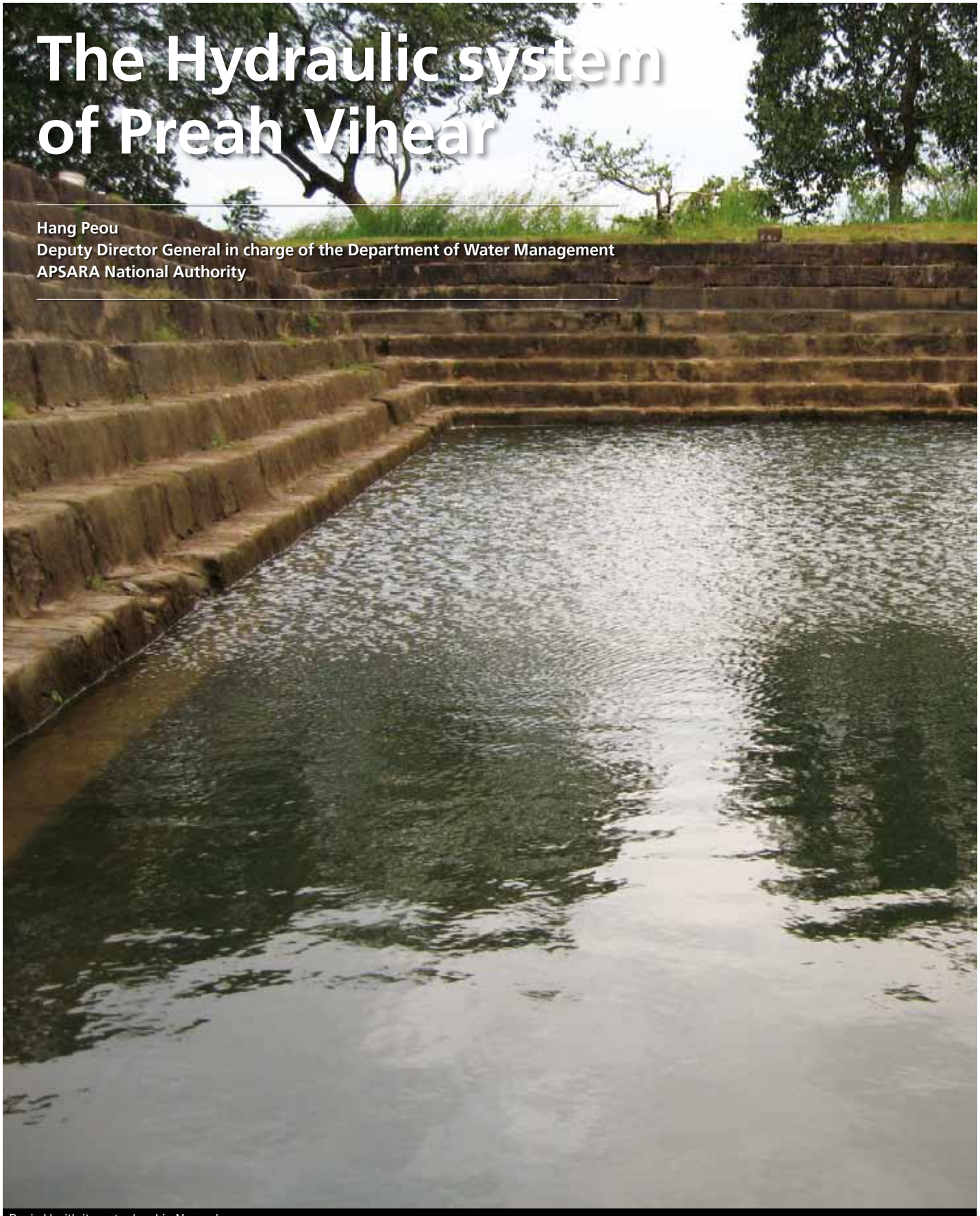
"Trade representatives come here from many countries from Asia, India, Australia, so we can evaluate opportunities in other markets. Singapore is a 'hub', and it's easy for every-one to come here. It's perfect for us." **Rocio Florián, Market Specialist – PromPerù**

"It is extremely impressive that a relatively new show such as ITB Asia has over 800 exhibitors. It shows you the name ITB is pretty powerful! It's in the early years, but I can imagine what it's going to be. I think it's a great success for ITB, what they're doing here." **Horst Schulze, Chairman and CEO – Capella Hotel Group LLC (Former President – Ritz-Carlton Group)**

MBS Messe Berlin Singapore

The Hydraulic system of Preah Vihear

Hang Peou
Deputy Director General in charge of the Department of Water Management
APSARA National Authority



Basin V with its water level in November.

Preah Vihear Temple is located on top of the Dângrêk mountain chain in northern Cambodia. Dedicated to Shiva, it was constructed during the 9th to 12th centuries, mainly during the reigns of the Khmer kings Suryavarman I (1002–1050) and Suryavarman II (1113–1150). This temple was inscribed as a World Heritage property in 2008 and is managed by the Preah Vihear National Authority (PVNA). Preah Vihear was built directly on the rock layer, unlike the other Khmer temples in the Angkor region or elsewhere on the plains which were built on the sand layer, making them very sensitive to changes in the level of groundwater or the degree of saturation of the sand. Nevertheless, the issue of water is still a major challenge for the management of this site, as it is indeed elsewhere in the world. In this article we focus on the water management system, including water use and drainage. How did the Khmers in ancient times consider water in relation to heritage, and how did they manage it?

Two main hydraulic systems were established for the site in ancient times, one on top of the hill (around the temple), the other at the foot of the hill (on the plain).

Erosion between Basin I and Gopura II.

© Hang Peou

Two main hydraulic systems were established for the site in ancient times, one on top of the hill (around the temple), the other at the foot of the hill (on the plain).

Reservoirs and the hydraulic system

Preah Vihear Temple does not need water for stabilization or decoration, but for site management and visitors. As this temple was built on the highest point of the mountain, no spring or other water sources could supply water for daily use.

To solve this issue, six basins were built to collect water during the rainy season, named following the direction of water flow from higher (south) to lower (north). All the basins have the same typology: the lowest part is cut directly into the rock, the walls are constructed from compacted soil, and the basins are lined with sandstone blocks to protect them from soil erosion and also to help users to assess the water level in the basin and to reach the surface at any point to take water for use. Vertical infiltration can be considered as null because these basins were built directly on the rock. Loss of water from the basin is mainly through horizontal infiltration because the walls have not been maintained for many years due to wars over the centuries and the drainage system has never been restored and/or maintained.

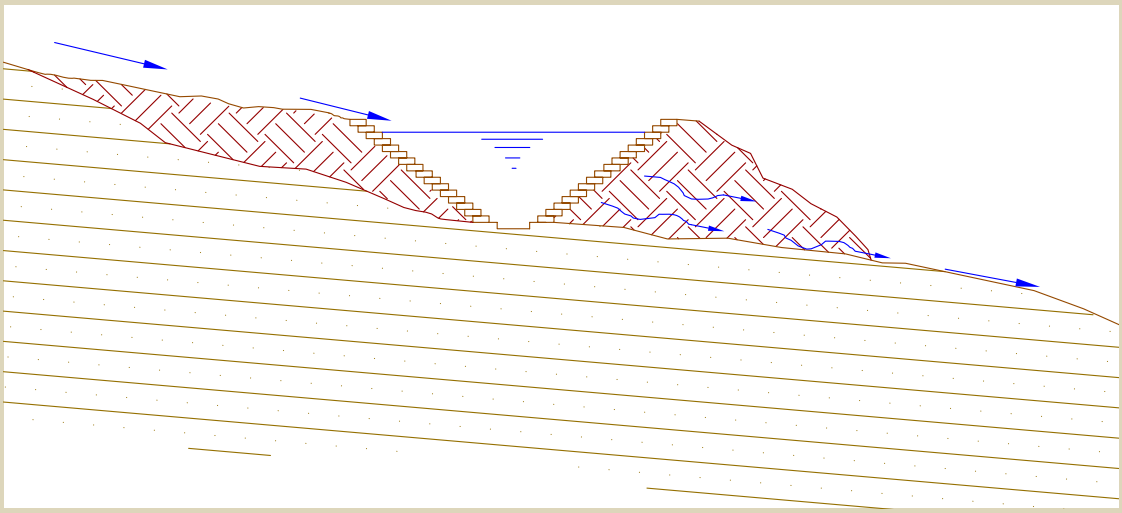
In addition to meeting the daily need for water, these basins serve to reduce runoff water from the temple in order to prevent erosion impacting on its stability. However, due to the collapsed drainage system, the runoff water flows uncontrolledly, with the result that some parts of the temple have already collapsed, and other parts have tilted and will eventually also collapse if the problem is not urgently addressed.

Preah Vihear Temple has five gopuras (entrance pavilions) also named from the highest point (south) to the lowest point (north). In Gopura I, the central tower has collapsed and the south-eastern gallery has been destroyed because the ancient drainage system was blocked, and rainwater can exit only by infiltration or evaporation. Some part of the drainage canal is still visible, but it is largely filled with soil. The PVNA is working on this problem.

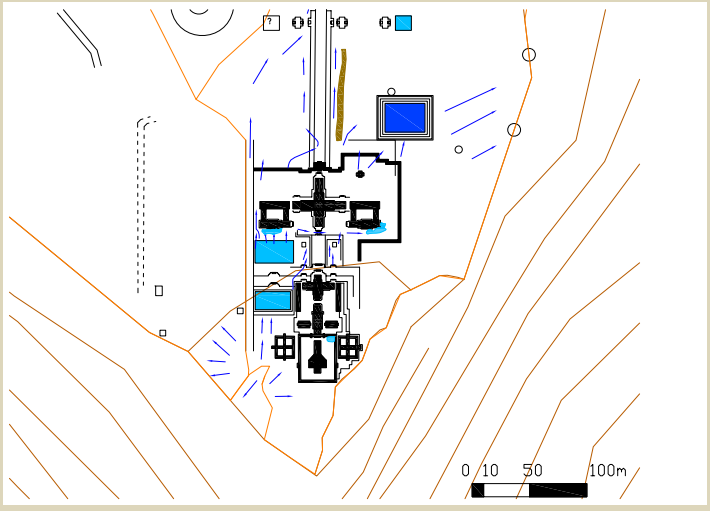
Basin I, to the west of Gopura II, is used to collect rain and runoff water from the area to the south and from a large part of Gopura I and appears to have been built later than the temple. It is possible that the basin was reconstructed by raising its sides to increase storage capacity to meet the demand for water for site management, and soil was then filled to make a gentle slope between the basin and the temple. But this solution was not enough to drain the rain water completely, and the hydraulic force on the foundations has shifted the basement by several centimetres and caused the upper part to collapse.

Basin II, north of Basin I, is used to collect rainwater and overflow from Basin I and to reduce the flow towards the libraries of

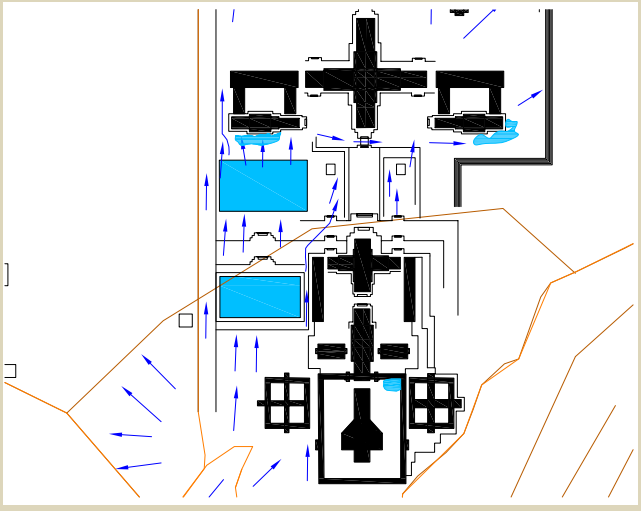
Typical cross-section of the ancient basins



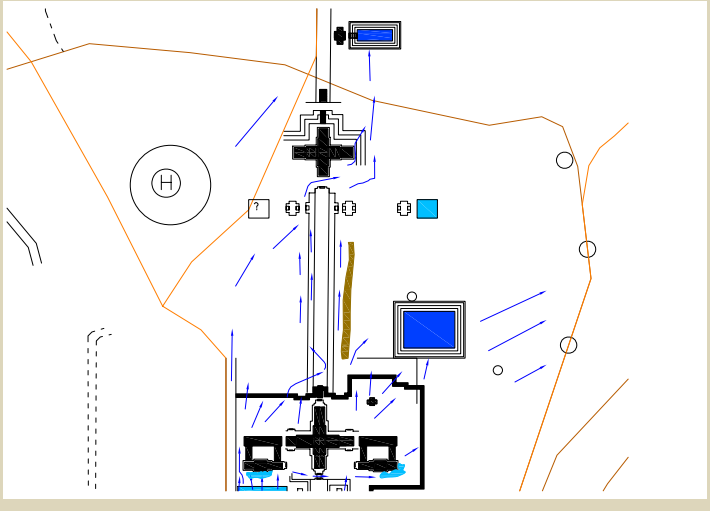
Locations and drainage system inside Gopura I



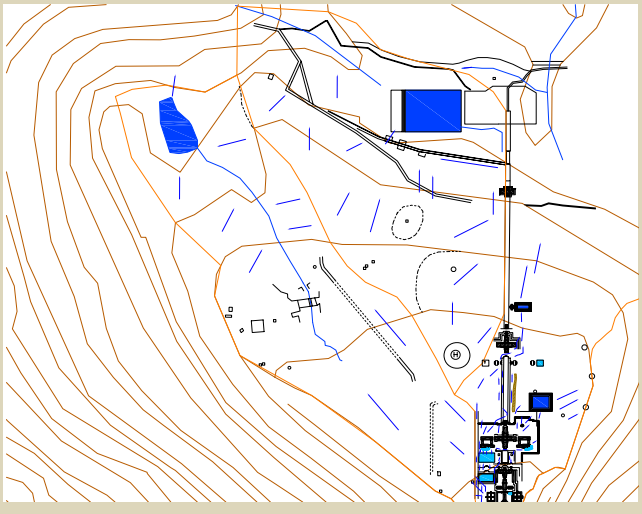
Flow direction, Basin I, Basin II and location of erosion



Flow direction and location of Basin III, Basin IV and Basin V



Basin IV and flow direction



Basin III and its landscape.

Gopura III. As there has been no restoration or maintenance for some considerable time, the sediment from upstream has blocked a quantity of water in front of both the Western and Eastern Libraries. This stagnant water has infiltrated into the basement and caused the libraries to tilt.

Basin III is used to collect rainwater and runoff from the eastern side of Gopura III. Runoff from the western side of Gopura III used to flow along the main causeway and grassy area, but that flow has been obstructed by the construction of a helicopter pad and so now deviates across the main causeway near Gopura IV to fill Basin V, causing this basin to hold more water than the others in the rainy season, although it cannot store water for any length of time because it leaks.

Most of the eastern runoff will reach Basin III and the remainder flows along the main causeway to Basin V. Only a small part of the runoff from the northern Basin III and direct rainfall can fill Basin IV.

Basin VI, to the north-west of Gopura V, is the biggest in Preah Vihear Temple and is used to collect the runoff water from the western part between Gopura IV and Gopura V. To be able to collect this runoff water, Khmer engineers in ancient times built a dyke in sandstone accompanied by a small channel to modify the flow direction, sending water across this dyke to Basin VI. The channel along this dyke is built with gaps cut into it to slow the velocity of the flow, to catch the sediment from upstream and so protect Basin VI from sedimentation and to allow access to remove this sediment. The dyke was used as the access road to the temple from the west, and is known as the ancient road. In the 1980s, as a lot of water flowed to this point, people who lived there built a concrete dam extending Basin VI a few metres downstream to store more water, instead of restoring the ancient basin.

A new reservoir near Keo Seka Kiri Svarak Pagoda was built in recent times by local people to collect runoff water from the south-west side of the temple. The flow direction in this basin is shown on page 78. As this watershed is covered by vegetation, it provides a flow for a longer period than other parts in this area.

Recently two barays (constructed reservoirs) have been discovered in the vicinity of the Preah Vihear temple site at the foot of the hill.

The baray network

Recently two barays (constructed reservoirs) have been discovered in the vicinity of the Preah Vihear Temple site at the foot of the hill; one on the west and the other to the east of the temple axis, known as the West Baray and the East Baray respectively. Both barays are fed by small streams from the hill. From this discovery we can conclude that Preah Vihear Temple had to provide for many visitors from all over the country, coming mainly as pilgrims to pray or to pay their respects to this temple.

The West Baray is located near the access road to the top of the hill west of Gopura V. The original water inlet is located at the north-east corner, as indicated by some laterite stone found there by PVNA archaeologists. As always in ancient times, the water inlet was located at the highest point of the baray to ensure maximum water collection and storage

The PVNA rehabilitated the West Baray in March 2011 by dredging the sediment

Basin IV and its surrounding.

from the bottom of the baray and making a dyke to divert water into it. To completely fill the West Baray, it should be possible to use water from a number of streams to the north-east of the baray. To design such a hydraulic system the rainfall and flow (water level and discharge) need to be observed for a few years at least in order to set up a database of hydrological records. Field visits lead to the conclusion that those small streams flow only in the rainy season. Currently, the PVNA uses two thalwegs (small streams) flowing under bridges on the access asphalt road to the temple. As we do not yet have any hydrological and meteorological data on the site, it is very difficult to describe the physical reaction of the small watersheds of these two thalwegs, whose flow or discharge varies according to rainfall intensity.

A topographical survey shows that the West Baray is not deep enough to hold water for a full year. After an archaeological survey, it is still difficult to determine the period when the baray dried up and how it was filled. Its current depth varies by around 2 m between the highest north-east corner and the lowest at the south-west and this means, depending on the actual situation and environmental conditions, that the amount of water stored is less than the amount lost through evaporation and infiltration.

The West Baray was constructed to store water for use throughout the year, meaning that it must have had permanent water input from the surrounding groundwater and from one or more feeder sources (thalwegs still flowing in the dry season). All these factors would have depended on a forest cover in the region inducing more humidity and reducing evaporation and infiltration from the surrounding area as well as from the baray itself. The forest helped to infiltrate more runoff water into the soil, leading to high levels of groundwater close to the surface and reducing water loss from the baray.

The East Baray is located near the Eastern Stairway used in ancient times, close to the welcome centre recently constructed by PVNA. This baray can also possibly be filled again with water from a nearby thalweg through the original water inlet at the north-west corner.

Changes in climate and land use make imperative the development of integrated water resources management for the Preah Vihear Temple site, taking into consideration some general recommendations:

- Meteorological stations should be installed on the site.
- Surveys of discharge and inlet of all basins and barays should be made in the rainy season.
- To ensure water sources to fill the barays, it is necessary to protect the forest and reforest the whole region. The forest can play the role of not only restoring water sources for the region but also contribute to the sustainable development of ecotourism.

This examination of the hydraulic system of Preah Vihear Temple shows that the Khmer ancestors knew very well the importance of water and how to manage it. The basins and barays were designed neither for landscaping and decorating the temple, and nor were they for temple stabilization as in Angkor or elsewhere on the plain. Rather, they were built to ensure the daily needs of people living at the site (managers and visitors) and can hopefully be restored to play such a role once again in this World Heritage site that is starting to attract increasing numbers of visitors.

Preah Vihear Eco-Global Museum

In the heart of the Kingdom of Cambodia, the cultural seat of the Preah Vihear temple region has distinctive flora and fauna and a long natural history. A global museum is now being completed, in which archaeological discoveries and ethnographic items will stand alongside a new presentation of this natural history of the region, which has benefited particularly from the contribution made by UNESCO.

Key archaeological finds from the region around Preah Vihear will be exhibited here. These already include a Head of Apsara, a lintel and a fronton from the Temple of Preah Vihear, a partially scuplted pre-Angkorian Nandin found nearby Preah Vihear and a rare inscription discovered in 2010 in Ta Krabey Temple in Oddor Meanchey Province. In addition, it is envisaged that other pieces, including from Koh Ker, now held elsewhere, will also be moved to grace this new museum, which has the formal name of the Samdech Akka Moha Sena Padei Techo Hun Sen Eco-Global Museum.

The Preah Vihear Museum presents recent anthropological findings showing the iron-smelting industry of the Angkorian period, whose masters were the Kuy, one of the ethnic groups in Cambodia, who come from this area.

The global scope of the museum, integrating culture, history, anthropology and nature is intended to represent the value and harmony between the World Heritage site of Preah Vihear and the natural beauty of the region and its people.

Preah Vihear Eco-Global Museum.

© Pheng Sam Oeurn

Female deity from Prasat Bei, Koh Ker.

© Pheng Sam Oeurn

Head of Apsara from Preah Bakan, Preah Khan Kampong Svay.

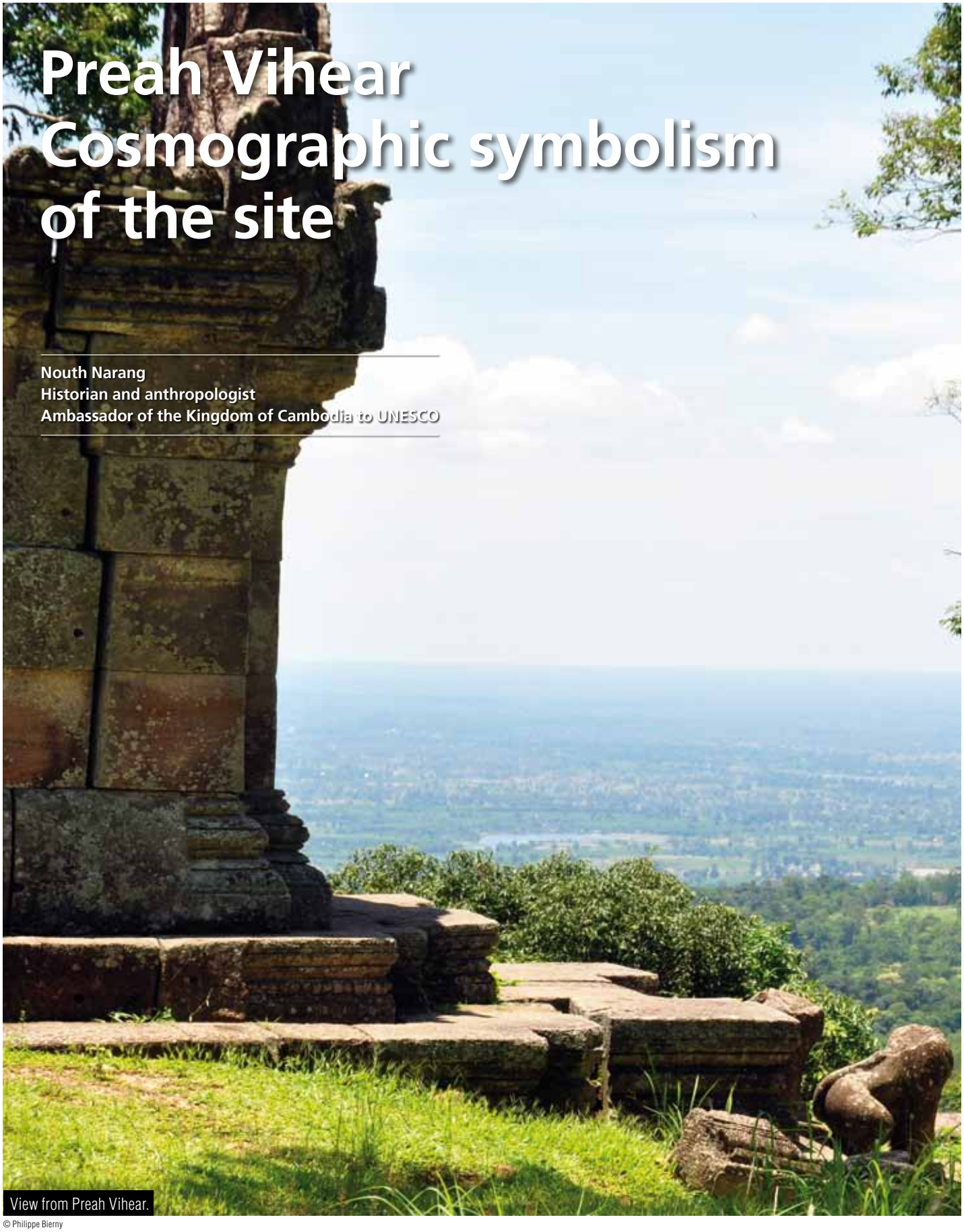
©Pheng Sam Oeurn

Unfinished Nandin, found in Or Angkrong, near the temple of Preah Vihear.

© Pheng Sam Oeurn

Preah Vihear Cosmographic symbolism of the site

Nouth Narang
Historian and anthropologist
Ambassador of the Kingdom of Cambodia to UNESCO



View from Preah Vihear.

The roughly S-shaped region of Preah Vihear consists basically of two separate areas, the low plains of the south and the mountainous plateaux of the north, which are linked by valleys and rivers that form parallel corridors running from north to south. This arrangement has been conducive to human settlement since ancient times. These rivers and valleys combine to form a bird's-foot formation originating in China's Yunnan province and eventually dividing into a number of rivers: the Red River to the east, the Mekong in the centre, and the Menam, Salouen and Irrawaddy to the west. The spaces between these rivers consist of plains and plateaux sloping gently southwards to form small gulfs. To the east is the Annamite cordillera, which runs alongside the coast and disappears in a gentle slope in the South Vietnam plain, combining with the mouth of the Mekong to create a delta zone excellently suited to aquatic farming and movement of people and produce.

The monsoon climate of South-East Asia has a distinct binary annual rhythm. The wind changes direction every six months and brings with it dry air from November to April and the humidity of the rainy season during the other half of the year. Originating in the Indian Ocean, the monsoon sweeps right across the peninsular area, helping to fashion it and perpetuate a social system characteristic of Austro-Asiatic civilization.

Within the Austro-Asiatic systems, specific geographical features additionally influence the social characteristics that they underlie, and as such have given rise to several major ancient civilizations known as the monsoon civilizations.

Northern stairway view from the top.

Originating in the Indian Ocean, the monsoon sweeps right across the peninsular area, helping to fashion it and perpetuate a social system characteristic of Austro-Asiatic civilization.

Cosmic geography

The annual cycles of Cambodia consist of two sharply different alternating cycles. One is marked by the presence of water; the monsoon waters the land, fills it to overflowing and transforms it into a vast lake. Eventually the rain ceases, giving way to a dry period during which the water vanishes and leaves behind vast stretches of terra firma. The most vivid expression of this state of affairs is the Mekong, the 'Mother of Waters', which expands and contracts as the weather changes, alongside the filling and emptying of Tonle Sap, the 'Great Lake' that acts as an overflow basin for the Mekong.

The heart of Cambodia thus beats to the binary rhythm of the seasons, and the whole country is based on a principle inspired by cosmic dualism. Cambodia and Khmer society, in fact, are based on the complementarity of the feminine (Mé) and masculine (Ba) elements, likened respectively to water and earth, a basic principle which remains very much alive to this day.

This marriage of earth and water has governed Khmer mentality, customs and beliefs from the cosmic dimension of royal power down to the smallest details of daily life, covering both private and public areas of life. The union of Mé and Ba has been immortalized through the totemic reptile known as the naga. This reptile, at once male and female, living both on land and in water, has a cyclic life that gives it immortality.

History guided by flows

Cambodia emerged at the very south of the Indochinese peninsula, within a former gulf the coastline of which was marked by the Dângrêk mountain range. What is now Cambodian territory was therefore once an expanse of salt water before its progressive drying created an area of which the characteristics described above led to the principal characteristics of Khmer life. The more recent Indianization process affected all aspects of this society without however affecting the fundamental aspects born of the geographic reality of its location.

The former coastline, the Dângrêk massif, which forms a steep cliff running for several hundred kilometres, divides the region into two separate principal and complementary geographical sections. The southern part, from where the sea retreated, is the lowland domain, a plain dominated by Tonle Sap, on which modern-day Cambodia is built. The northern section consists of gently sloping plateaux descending to the River Menam in the north and the River Salouen in the west.

These two regions, which complement each other, have been linked in the same way as a man and a woman since it was very first populated. People, families and Khmer societies evolved together with water (Mé) and earth (Ba), to produce a land based on distinctive norms and with its own ethos that have determined its evolution. In Cambodia, these constituent elements are found in the Neak Ta, the ancestors of the land who built the social edifice, have guided the organization of space, determined mental attitudes and ensured the continuation of generations of Khmers who have been capable of maintaining a large and powerful civilization since the 9th century. The heritage of this power has now become part of the World Heritage of humanity.

Angkor, a continuation of Chen La, was the high point of Khmer civilization in every respect (economic, political, ideological), and was based on a particularly effective structure inspired by the concept of *Devaraja* (god-king). This structure found material expression in stone temples with perfect decoration, unique beauty, sculpted according to iconographic themes that represent paradise on Earth. These mountain temples are the seats of kings with magic powers and echo the representation of Mount Meru, the axis of the world and the centre of the sacred Khmer city surrounded by square moats with respect for the principle of Mé-Ba.

These mountain temples are the seats of kings with magic powers and echo the representation of Mount Meru.

The link between north and south

Preah Vihear temple was built on the site of an ancient Shaivite temple known as Sri Shikhareshvara (Lord of the Peak). Construction of this sacred temple was carried out on the orders of King Yasovarman in 900, but it was under Suryavarman I (1002–1050) that it took its present form and under Suryavarman II (1113–1150) was finally completed. The works were directed by a celebrated guru who lived until the age of 80, from the reign of Suryavarman I to that of Jayavarman VI (1080–1107) he was

Preah Vihear Temple, Gopura III.

known as Acaryabrah Guru, Ta Guru or Sri Divakarapandita.

Preah Vihear was considered to be the seat of a deity known as the Lord of the Peak, and functioned as a 'sacred roof' that ensured the protection and well-being of the people and of the whole land through the intervention of royal power, represented in the form of the linga Bhadresvara brought from the capital of Angkor. All Khmer kings have regularly sanctioned the cult, either directly or through a pilgrimage. On each commemorative feast day, the name of Jayavarman II, who was the originator of Angkor, is invoked.

The Lord of the Peak concentrated all the symbolic powers of Cambodia around the new ideology of Shiva. The Preah Vihear temple was therefore constructed as an essential sacred site, a source of power bequeathed to future monarchs to enable them to continue the everlasting kingdom. In the same way of thinking, the Vat Phou inscription (now in Lao PDR) recommended that the Khmer kings should keep their lineage permanent and thus keep the royal linga intact. Accordingly, the Khmer kings continued to come in pilgrimage in order to call on the cult of ancestors, incarnated in the statue of Shiva, and thus make the Khmers everlasting.

This is the location of the highest summit of Shiva, the principal deity of a religion the essential function of which was to ensure the unity and continuity of the Kingdom of Cambodia, despite the geographical separation produced by the Dângrêk between the northern plateaux and the southern plains of the Tonle Sap. The Khmer architects determined a most suitable place to reproduce the symbol of unity in a special bridge linking Tonle Sap to Tonle Mun (Moul in Khmer).

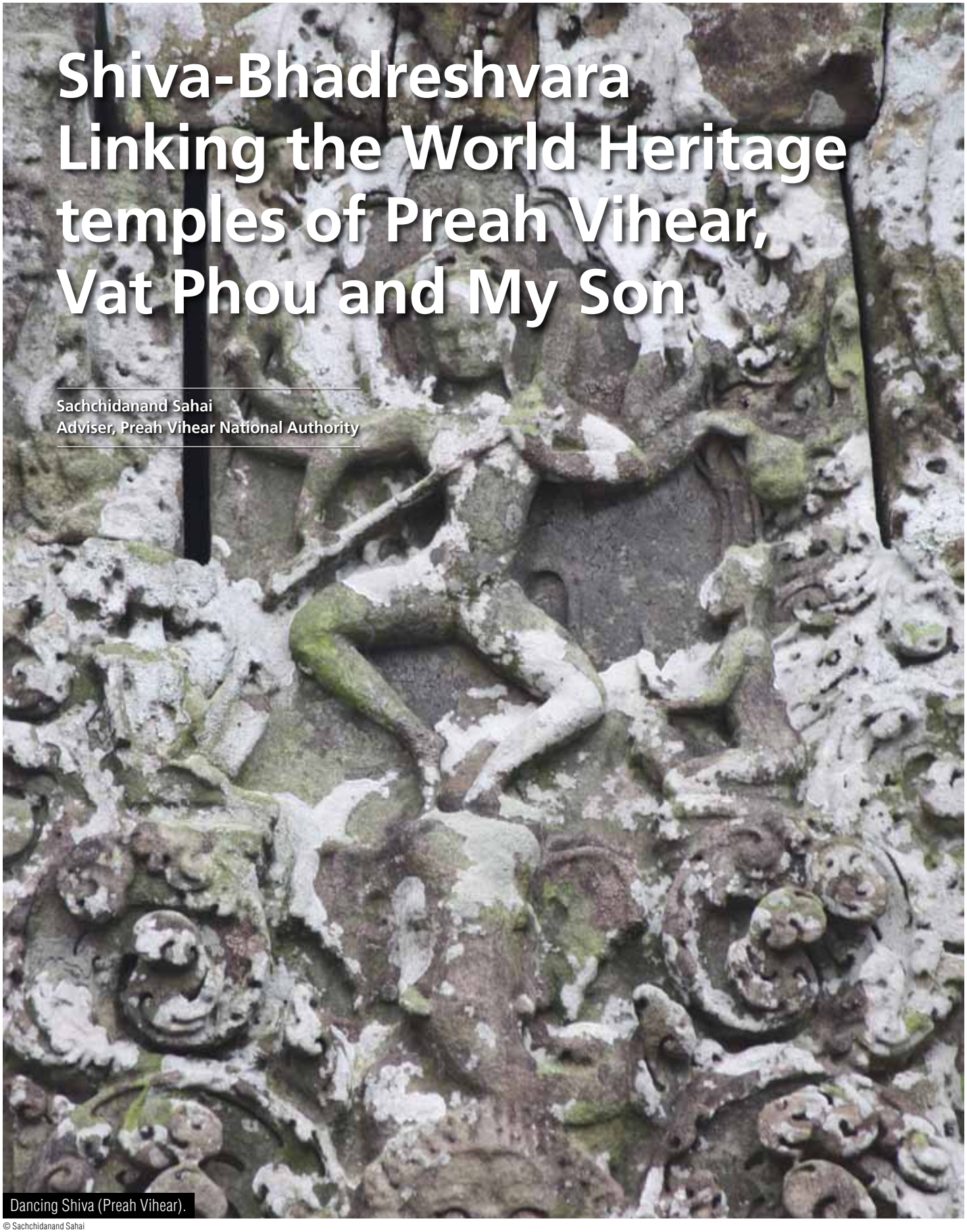
The temple thus sits in majesty along a gentle slope at the highest point in the Dângrêk, at the foot of the cliff dominating the plain running southwards to the city of Angkor. This arrangement resembles the recumbent Shiva, who magically combines northern and southern Cambodia into a unified whole. The royal preoccupation with the link between north and south is particularly evident in Gopura I, the principal sanctuary, which is completely enclosed. It confirms that Preah Vihear symbolizes the deity Shiva, his head resting towards Angkor, the city at the centre of the Southern Kingdom, and his body resting along the gentle slope with his feet pointing towards the north. Shiva's feet, located towards the north, are the principal entrance to the temple, which then extends progressively towards the principal sanctuary, the summit where Shikhareshvara has his seat.

Preah Vihear temple was therefore an essential anchorage for organizing the Angkor kingdoms at their high point, the shoulder support point of the yoke (the meaning of Dângrêk in Khmer), which provides the balance between the Tonle Sap to the south and the Korat plateau to the north.

Preah Vihear Temple was therefore an essential anchorage for organizing the Angkor kingdoms at their high point.

Shiva-Bhadreshvara Linking the World Heritage temples of Preah Vihear, Vat Phou and My Son

Sachchidanand Sahai
Adviser, Preah Vihear National Authority



Dancing Shiva (Preah Vihear).

Kala.

The presiding god of the World Heritage Temple of Preah Vihear is known as Shikhareshvara, which is just one of Shiva's thousands of names.

The presiding god of the World Heritage Temple of Preah Vihear is known as Shikhareshvara, which is just one of Shiva's thousands of names, meaning the Lord (*ishvara*) of the Peak (*shikhara*). In Indian literature, Shiva resides at Mount Kailasha, one of the loftiest peaks of the Himalayas. Khmer mythology presents the Dângrêk range as the Himalaya of the Angkor Empire and the cliff of Preah Vihear as the Kailasha where Shiva resides in his divine mansion. Preah Vihear was also the abode of Bhadreshvara, or the Gentle Lord, another very potent form of Shiva.

As a ruler, Shiva commands and to him the people pledge loyalty. Shiva is the lord of the entire universe. With his sole authority over the universe, Shiva is the one true god who commands (*shivajna*). Everything in the universe – the earth, mountains, rivers, oceans, stars, the other gods, celestials and all movable and immovable beings – exist by order of Shiva.

The command of Shiva is a recurrent theme at Preah Vihear. In AD 1038, according to an inscription at Preah Vihear (K 380) the god Bhadreshvara of Lingapura (Vat Phou) arrived miraculously at Shikhareshvara (Preah Vihear) to manifest the splendour of Shiva in the form of light. The Khmer verb *mok* is purposefully used to qualify the arrival of the god. The king ordered the people of various localities to take an oath of loyalty to the god. The members of the rebellious Pas Khmau groups were excluded from this oath-taking. These measures were taken in accordance with the command of Shiva.

Bhadreshvara was the powerful guardian deity of My Son Sanctuary, a Cham culture World Heritage site in present-day central Viet Nam. It appears that in the 5th century AD Devanika, one of the kings of Champa, came to Lingaparvata at Vat Phou (Lao PDR), and established the holy land of Kurukshetra on the bank of the Mekong. In the course of time, the cult of Bhadreshvara became popular at Vat Phou, now also a World Heritage site. Bhadreshvara became a kind of guardian deity of the pre-Angkorian Khmer kingdom, and Angkor kings continued to worship this powerful form of Shiva. The famous mountain temple of Pre Rup was dedicated to Rajendra-Bhadreshvara.

Bhadreshvara travelled from My Son to Vat Phou and from Vat Phou to Preah Vihear. These sites, linked together for the last 1,500 years, could be easily interlinked again in modern times through cooperative projects among these three World Heritage sites. Bhadreshvara's journey could be re-enacted on a perpetual basis in terms of exchange of ideas, mutual collaboration and flow of visitors. Initiatives could be taken to formalize the Preah Vihear–Vat Phou–My Son cultural axis at both governmental and non-governmental levels.


Dance of Shiva (Banteay Srei).


Sunset at Preah Vihear.

Kala

Kala is Absolute Time, an emanation of Shiva. In fact Maha Kala or Absolute Time is one of the many names of Shiva. Shiva is described also as the maker of Time. On the top of the Preah Vihear cliff Shiva is engaged in the dance of destruction, and below, under his control (Gopura IV) Vishnu is engaged in the process of creation.

Dancing Shiva

The pediment of the north-facing door of the porch (*mandapa*) leading to the main temple of Preah Vihear bears an image of a ten-armed Shiva dancing on the head of an elephant. The position of the elephant's head clearly shows that it has succumbed, as it is depicted face-on with ears flapped open and trunk rolled over the customary Kala; the iconography of the dancer is unquestionably that of Shiva. In fact, Shiva is shown here killing a demon that appeared as an elephant and on whose head the god is shown standing. It would appear that this fierce aspect of Shiva, overpowering the forces of evil, was worshipped at Preah Vihear as shown by the arrival of Bhadreshvara Shiva from Vat Phou to Shikhareshvara, the appearance of the splendour of Shiva as Shikhareshvara, the Pas Khmau rebellion in the Preah Vihear region, and finally the pacification of the Dângrêk area by an oath of loyalty to Shikhareshvara – all elements of the same nature.

Dance of Shiva in the sky

Shiva dances eternally in the clear sky and the yogis watch him. At Preah Vihear cliff Shiva dances on the head of the elephant virtually in the open sky. It is the vision of the cosmic dance of destruction in the infinite space that the artist has created by sculpting a ten-armed dancing Shiva on a tympanum that rises up to the sky.

While Shiva dances after killing the elephant demon in the glow of a setting sun, the whole world dances with him. For a millennium the sun has been setting with that primordial glow under which Shiva danced for the first time in a mythic past. His devotees had watched this dance of emancipation day after day in the crepuscule of the setting sun. I too have been privileged to watch the setting sun for many a day, awaiting the dance of Shiva on the cliff of Preah Vihear.

Banteay Srei's dancing Shiva

At Banteay Srei the ten-armed Shiva dances blissfully on a floral motif. The artist has portrayed him in a serene, peaceful mood, performing the Ananda Tandava (Dance of Bliss) in the hall of consciousness. After watching Shiva dancing at Banteay Srei, the message of his performance at Preah Vihear is quite clear – here the god is in his terrifying aspect, dancing the rhythms of destruction in a frightful cadence. In iconographic terms, this ten-armed dancing Shiva at Preah Vihear is the image on the forehead of the temple (*lalata bimba*). Before entering the cella where he would worship the phallic emblem, a visitor or devotee is warned about the form in which he will see the lord in the sanctum sanctorum. A vision of Shiva dancing as the destroyer of evil forces is the culmination of an arduous climb to the peak.

As the sun begins to descend along the other side of the cliff, ready to disappear in the unfathomable precipice, dark clouds gather over the dilapidated temple. The unending canopy of the dark sky gives rise to a strange hallucination. There is a lurking feeling about the figure of Shiva moving,

Hermit.

The figure of a hermit is a frequent motif in the bas-reliefs of Preah Vihear.

with his joined hands lifted up to the sky. The atmosphere seems to vibrate with the powerful beats of the drum that his faithful companion Nandin plays. The lord dances on the double pedestal of an elephant and a Kala head. In his dance, he is the Lord of Eternal Time and the destroyer of evil forces. With the last beat of the drum, the Master Dancer concludes his rhythm of annihilation and stands smiling in front of his lone spectator, beckoning him to read the writings on the walls of Preah Vihear to unravel the mystery of Shikhareshvara.

Preah Vihear is a highly charged place with the presence of Shiva in his four phallic forms – the descendant of a Nishkala linga, the Lord of Suryavarman (Suryavarmeshvara), Bhadreshvara and Shikhareshvara. In addition, the sacred site was dedicated to the fierce aspect of Shiva as the destroyer of evil forces, thus offering an exception to the general Khmer practice of worshiping Shiva in his pacific or peaceful form. This dedication is related to the special role of Shiva in the Dângrêk region to deal with the opposition to the rule of law as established by the Khmer civilization. The Pas Khmau rebellion explains the fierce aspect of Shiva. Bhadreshvara is the Gentle Lord, a boon-granting god to his devotees and a punishing-god to curb the evil forces.

The hermit

The foot of the hill of the Dângrêk range has developed as a place of meditation. The figure of a hermit is in fact a frequent motif in the bas-reliefs of Preah Vihear. King Suryavarman I claims that it was by the force of his asceticism (*tapovirya*) that the god Bhadreshvara of Lingapura came to rule at Shri Shikareshvara. The Dângrêk range was dotted with hermitages or meditating resorts at the time of Angkor.

Divakarapandita, the high priest of King Suryavarman II, installed a golden image of dancing Shiva at Preah Vihear, described not by the Sanskrit name of Nataraja, but by a purely Khmer paraphrase, *the Lord Who Dances, a golden image*. The primeval cosmic dance of the Angkor civilization (*Rabam Kailas* or the Dances of Mount Kailasa) could be revived and integrated in the landscape of Preah Vihear, and the cliff could emerge as an open-air theatre of cosmic dance to visitors to the sacred site.

In this open-air theatre, visitors could be introduced simultaneously to the beautiful pavilions of Preah Vihear Temple, to the sculpture-like living rocks, to the numerous caves as the symbols of human search for the inner strength and peace and to the wonderful waterfalls offering the background music for the cosmic rhythm of Shiva's dance. Introducing Preah Vihear solely as an archaeological site and an architectural style would not fulfil the aims of the masterminds of the Angkorian civilization, but, as proposed above, the past connections between these World Heritage sites of South-East Asia could be revived in their full panoply through collaborative programmes between the management of My Son, Vat Phou and Preah Vihear.

SPONSORED STATEMENT

Finland:

‘Common heritage - common management’

Suomenlinna fortress, a view from Susisaari island across Tykistölahti Bay.
Photo: Finland’s National Board of Antiquities / Soile Tirilä 2000.

Finland is focusing on World Heritage

Finland is in the process of drawing up a national World Heritage strategy to be completed by 2015. This strategy will incorporate the aims of Finland’s World Heritage policy and actions to be taken to develop sustainable and responsible administration and management of heritage sites. The goals of the strategy include increasing awareness of World Heritage among citizens, providing education on World Heritage issues and developing an integrated pedagogical approach where various subjects work together to use the sites as learning environments.

The Finnish work to protect World Heritage has three key objectives:
1) enhancing the protection and management of World Heritage sites,
2) supporting efforts to draw up a balanced World Heritage List and
3) increasing awareness of World Heritage.

Recognizing protected sites of national significance will also be important. In 2009, the government approved a list of cultural sites of national significance prepared by Finland’s National Board of Antiquities. Currently, the Ministry of Education and Culture has commissioned the National Board of Antiquities to draw up a list of sites of national significance based on the Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict from 1954. Finland has also recently ratified the UNESCO 2003 Convention for the Safeguarding of Intangible Cultural Heritage. Diverse cooperation focusing on cultural heritage also supports the work related to World Heritage sites. Recognizing and appreciating sites of national significance will help citizens understand better the importance of valuable cultural and natural heritage as a resource and responsibility that unites humankind, also in the international context.

Management training teaches appropriate methods

Following the guidelines issued on the management of UNESCO World Heritage sites, the sites on the World Heritage List should have an up-to-date operation and management plan that is monitored at regular intervals. This also is the aim of the Finnish World Heritage Strategy.

An ‘Enhancing Our Heritage Toolkit’ was designed by UNESCO, IUCN and partners for World Heritage Site Management Plans with the purpose of making the management of World Heritage sites more methodical and goal-oriented and evaluating its results. The toolkit is also intended for promoting and enabling the management of cultural and natural heritage sites at the national level.

The EoH Toolkit was originally designed for the management of natural heritage sites. However, Finland wished to take the lead in also applying the toolkit to the more efficient and systematic management of cultural heritage sites.

Representatives of the Finnish National Board of Antiquities took part in a workshop organized by the World Heritage Nordic Foundation in 2009. The workshop was persuaded of the toolkit’s potential for supporting the management of Nordic World Heritage sites. On the initiative of the Board of Antiquities and the Governing Body of Suomenlinna, a two-year process of preparing operation and management plans was launched in cooperation between all Finnish sites in 2010. The first step was translating the toolkit into Finnish to enable its use by national cultural and natural heritage sites.

The work to plan the introduction of the toolkit started in autumn 2010 by a training course in World Heritage site management. This training was the Finnish method for finding appropriate and controlled management techniques in which it was easy to provide guidance and for establishing diverse cooperation. As far as it is known, no joint efforts to plan the management process have been made in other countries. After one year’s training, the participants were ready for action.

When planning site management, particular attention is focused on preventing risks that threaten our cultural and natural heritage. In this, risks caused by humans and nature alike are taken into account. Climate change is a continuous threat to several World Heritage sites. Finding sustainable solutions in international climate talks is also important for fighting these threats.

The Kvarken archipelago, Strömmingsböda lighthouse, Maalahti.
Photo: Finland's National Board of Antiquities / Harri Nyman

Higher impact through management

While the World Heritage sites are all different, they are facing the same problems. The seven World Heritage sites in Finland comprise an old wooden town, a wooden church from the late 18th century, a groundwood and board mill from the 19th century, a Bronze Age burial site, a fortress going back to the 18th and the 19th centuries and a natural heritage site. Six station points of the Struve Geodetic Arc, which comprises land survey station points in the territory of ten states, are also found in Finland.

Different management techniques are required for sites of various types. There is no single correct solution, as each site has its own features, legal background and ownership arrangements. Many sites represent both cultural and natural values that need to be taken into consideration when planning their management. The EoH Toolkit is seen as an opportunity to ask the right questions and to find shared and general answers needed to achieve management objectives. Methodical management also offers opportunities for learning and improves the efficiency of managing cultural heritage at natural sites and, respectively, natural values at cultural sites.

The participants have found the toolkit an advanced and easy-to-use tool with a step-by-step approach. On the initiative of the National Board of Antiquities and the Governing Body of Suomenlinna, a management plan that is in line with the joint work programme will be prepared for all sites. The original target of completing the management plans for all sites as early as in 2011 was met with flying colours. A management plan for Suomenlinna fortress was completed recently, and the plans for other sites are being finalized or their preparation is well under way. A management plan for the Kvarken archipelago was completed at an earlier stage. While the operation and management plans currently focus on World Heritage sites, it would be useful to draw up similar plans for all protected sites.

The next steps will be networking, setting up national or Nordic working groups and strengthening the commitment of interest groups. The functioning of administrative systems will be ascertained, and responsibility for managing the sites will be clearly assigned. An effort will also be made to identify threats to which the sites are exposed.

Looking after our cultural heritage is everyone's job

The Constitution of Finland states that 'nature and its biodiversity, the environment and the cultural heritage are the responsibility of everyone'. This obligation laid down in the Constitution guides Finland's actions aiming to protect World Heritage. Looking after cultural heritage sites is not only up to the authorities. Involving local residents in this work boosts community spirit and reinforces local identity.

Local residents' possibilities of protecting their sites and sustainably benefiting from them must be supported. One way of doing this is cooperation that focuses on management. The awareness of and pride in their own cultural heritage and its global significance among local residents is a key element in protecting the sites. Managing the sites together will foster an understanding of their value and enhance local identity, and such cooperation should thus be encouraged and supported globally.

The management training implemented in Finland and experiences of using the toolkit could also serve as a good example of the proper management of World Heritage sites elsewhere. Preparing management plans together with local actors is vital. This will give rise to community spirit that helps the locals to understand the significance of their natural and cultural heritage, while both World Heritage sites and national sites will be experienced as locally and nationally significant building blocks of identity, not only tourist attractions.

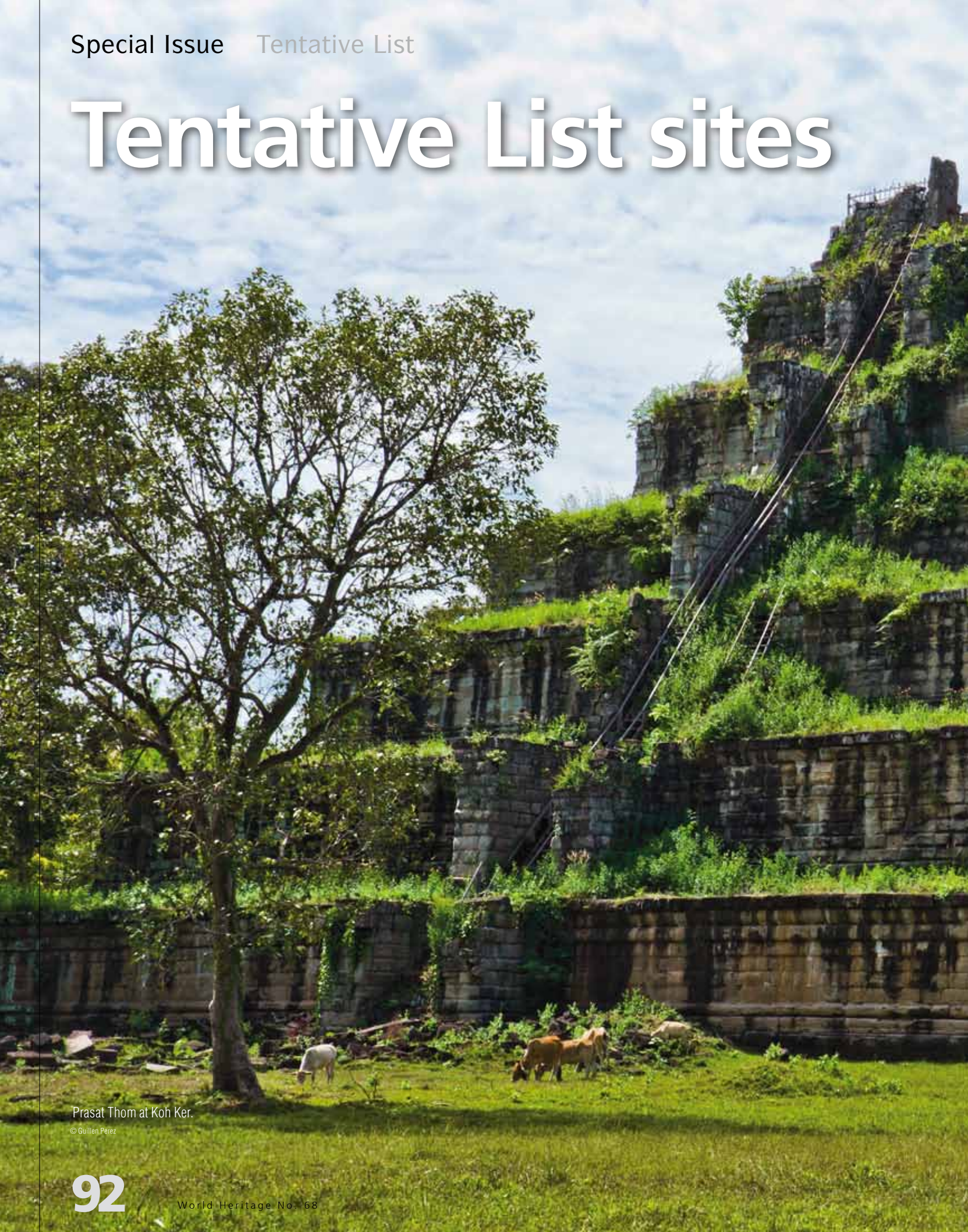
Juhani Kostet Ph.D., Director General

NATIONAL BOARD OF ANTIQUITIES

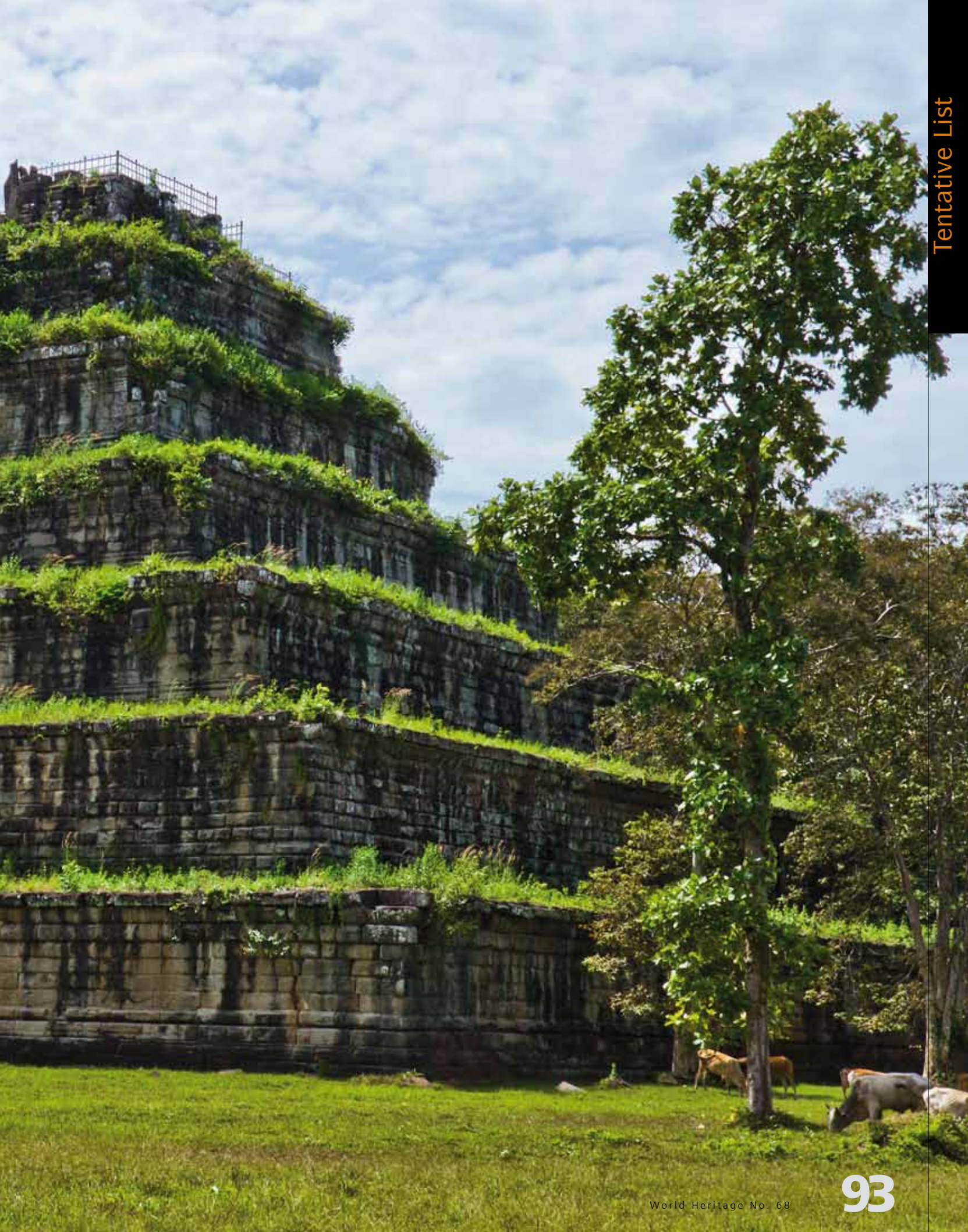
National Board of Antiquities
P.O.Box 913, FI-00101 Helsinki, Finland
Tel. +358 9 40 501

http://www.nba.fi

Tentative List sites

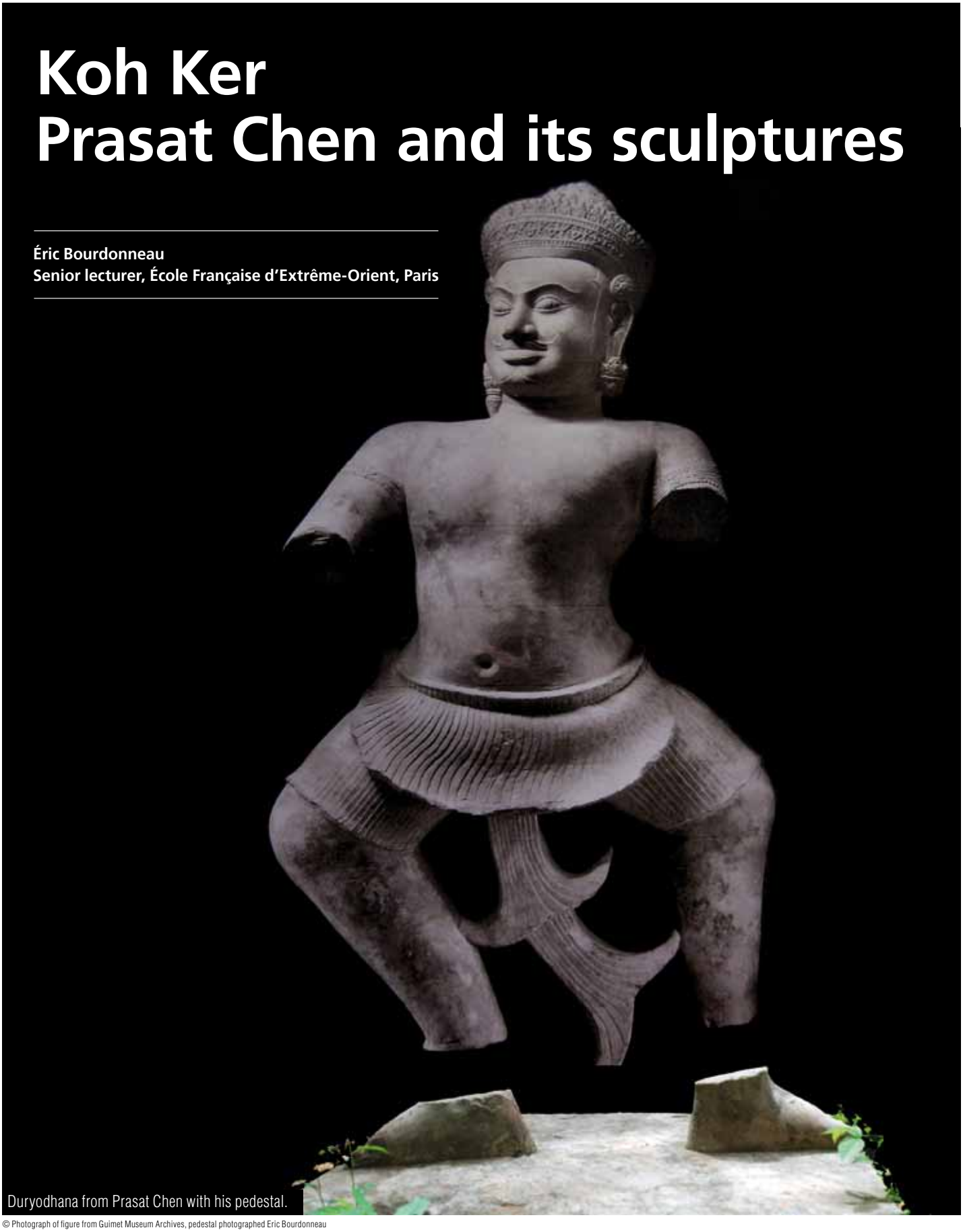


Prasat Thom at Koh Ker.
© Guillen Perez



Koh Ker
Prasat Chen and its sculptures

Éric Bourdonneau
Senior lecturer, École Française d'Extrême-Orient, Paris



Duryodhana from Prasat Chen with his pedestal.

Prasat Chen was the great Vishnu worship centre in the vast cultural complex of buildings erected in the ancient royal city of Chok Gargyar (Koh Ker), the capital that eclipsed even the magnificence of Angkor during its short lifetime for the twenty years of Jayavarman IV's reign (AD 921–941).

The sculptures of this temple are typical of this unusual movement of the centre of the kingdom away from the Siem Reap plain. They remained unrivalled throughout the Angkorian period. The narrative iconography, inspired by the great Indian epics, is not sculpted in bas-reliefs, as on the pediments and lintels of other monuments, but takes the form of round bosses on human, or should we say heroic, scale, which produces an irresistible feeling of 'reality'. The two entrance pavilions of the first enclosed area in Prasat Chen respectively house the representation of the battle in the *Rāmāyana* epic between the two monkeys Vālin and Sugrīva and the death struggle between Bhīma and Duryodhana, to be found in Book 9 of the great epic, the *Mahābhārata*.

In both cases, the sculpted set (painted in ancient times) completely fills the internal space of the structure, which is thus transformed into a theatre scene in which the stage is split into as many pedestals as there are actors to be represented. It is without doubt in the Western pavilion, where the images of Bhīma and Duryodhana, that the theatrical dimension of the Koh Ker structures is at its most innovative. In the centre of an assembly of seven figures (four Pāndava brothers plus Krishna, Balarāma and Dhṛṣṭadyumna), the two heroes are caught in the explosive moment of the dreadful struggle described in the *Mahābhārata*: Duryodhana is launching himself fiercely into the air while Bhīma, bearing down on one leg, in a dramatic twisting motion, is prepairng to break Duryodhana's thighs with a violent blow from a mace.

Attention must be paid at this point to the subtle play in the balance between the bodies and the lines on the costumes to appreciate fully the mastery of the Koh Ker sculptors. Nowhere else do the artists of this period provide a more vivid impression of movement than in the representation of

Bhīma from Prasat Chen, Koh Ker.

Bhīma's feet from Prasat Chen, Koh Ker.

Duel between Bhīma and Duryodhana witnessed by three kneeling Pāndavas (Arjuna, Sahadeva and Nakula), from Prasat Chen, Koh Ker.

Duryodhana launching himself into the air. Nowhere else does Angkorian sculpture appear closer to what it was probably the inspiration for – the theatre. It can be seen in the small step backwards, bearing down on one leg, which suggests the violence of the blow about to be struck; in the few centimetres by which Bhīma's toes overreach the surface of the pedestal, the full dynamism of the scene is summarized and condensed.

And nowhere else, it can be added, does the 'modern' pillage of the Angkor sculptures (or to be more precise 'contemporary' pillage, as the damage here was done in the 1970s during Cambodia's civil war) appear to have been as systematic and well informed. None of the statues from the sculpted Bhīma and Duryodhana group was found *in situ* (this was also the case for the images surrounding the struggle between Vālin and Sugrīva). All that is left today are the pedestals decapitated by the looters, sad remains indeed of what was certainly one of the masterpieces bequeathed by ancient Cambodia for the benefit of humankind. These remains are nevertheless precious, as they help to identify and locate beyond all possible doubt the lost statues. Bhīma is now in the Norton Simon Museum in Pasadena, California; Duryodhana is currently held by Sotheby's (New York) on behalf of a private collector and is the subject of a legal case filed by the US Attorney's Office in New York seeking its restitution to Cambodia; two Pandavas are in the Metropolitan Museum of Art in New York, while other figures are in various museums, including Cleveland and Denver, and in private collections.

News

On 3 May 2013, the Metropolitan Museum of Art in New York announced that it would repatriate to Cambodia two statues of the Pāndava brothers from the Prasat Chen ensemble described above that have been in its collection since the early 1990s. The Museum's Director, Thomas P. Campbell, stated that: 'This is a case in which additional information regarding the Kneeling Attendants has led the Museum to consider facts that were not known at the time of the acquisition and to take the action ….' The Cambodian government expresses its deepest appreciation for this gesture and appeals to other museums and art collectors who are holding the remaining figures to follow this example of returning plundered treasures to their rightful owners as part of the worldwide campaign for the protection of cultural heritage.

SENSATIONAL FEEL ACROSS CONTINENTS

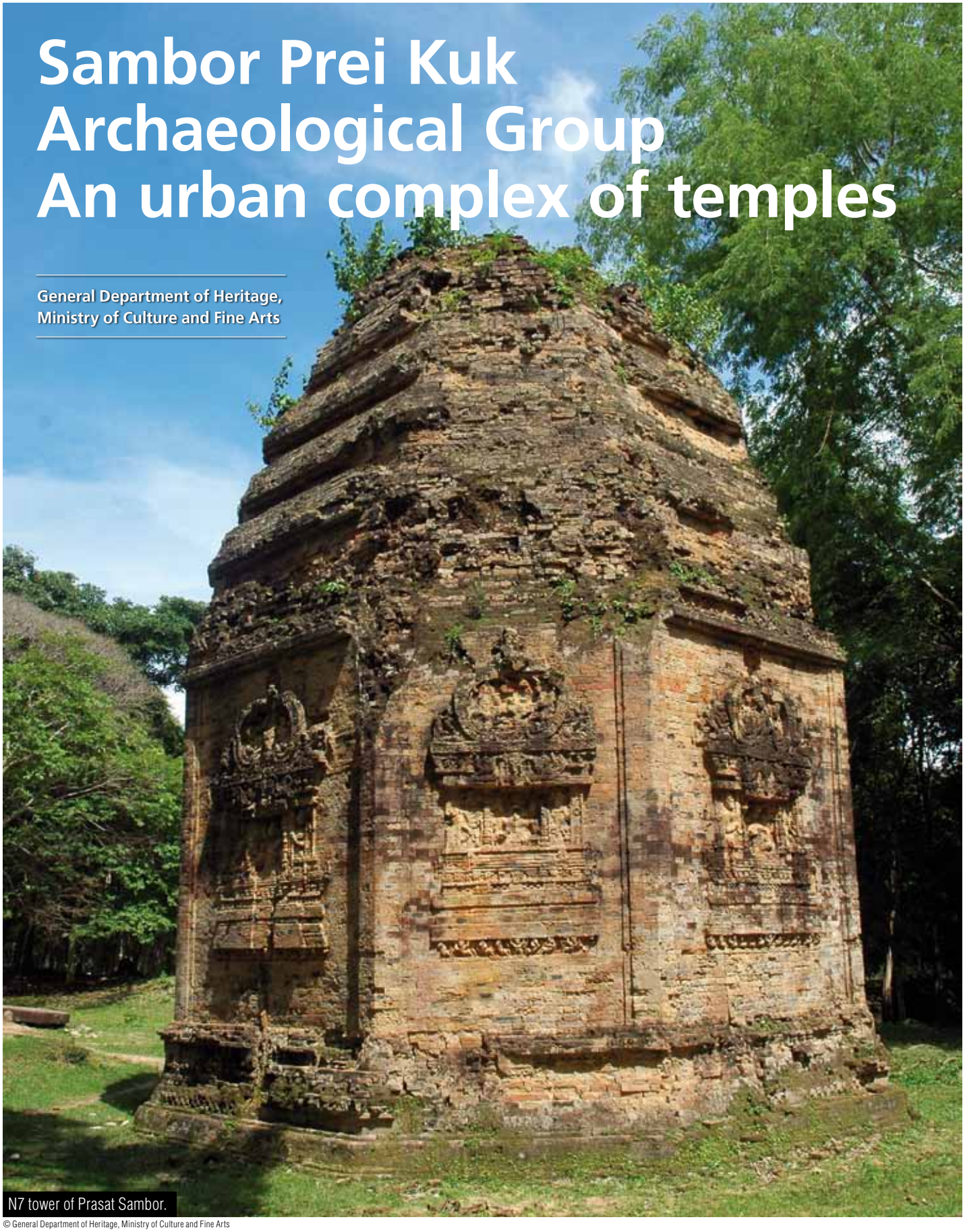
Let us together discover and experience a whole new world full of wonders. As a member of SkyTeam Alliance, we commit to be your trusted companion to more than 900 destinations around the world with a young fleet and world-class services.

Vietnam Airlines
fly and see

www.vietnamairlines.com

Sambor Prei Kuk Archaeological Group An urban complex of temples

General Department of Heritage,
Ministry of Culture and Fine Arts



N7 tower of Prasat Sambor.

The ancient city of Isanapura was the capital of the 7th-century Chenla dynasty and continued to be an important religious centre throughout the pre-Angkorian and Angkorian periods. Today, the remains of this city can be seen at the Sambor Prei Kuk Archaeological Group, which includes brick temples, the city's moat and rampart, and waterworks for irrigation, religious purposes and the residents' water supply. Set among tranquil forest, the site preserves buildings and artworks constructed over a 500-year period. Located near the provincial capital of Kampong Thom, approximately halfway between Phnom Penh and Siem Reap, the Sambor Prei Kuk Archaeological Group is included in Cambodia's Tentative List for inscription as World Heritage.

Indian and Chinese cultural exchanges

The site constitutes a vital source of information on South-East Asian history during the latter half of the first millennium AD. The inscriptions and archaeological remains give insights into the important period preceding the rise of the Khmer Empire. Sambor Prei Kuk fuses Indian religion, art and architecture with Chinese urban planning into a distinctive Khmer urban complex that laid the foundations for later Khmer cities. The site signals the birth of a uniquely complicated hydraulic city/state-religious complex, and is the precursor to the Angkor Khmer Empire.

Sambor Prei Kuk gained prominence under the reign of King Isanavarman I, who consolidated an extensive territory. During his reign, the main complexes of the Sambor Prei Kuk Archaeological Group were constructed. These monuments contain the most outstanding masterpieces of early Khmer art, including unique carved brick reliefs, octagonal buildings, motifs of stucco, and a martial art motif on some ornamental medallions. The size, number and quality of these temples testify to Isanapura's prominence and the extensive resources at the disposal of Isanavarman I. The vast waterworks are further evidence of the city's importance and of the technological accomplishments of its architects and engineers.

T1 Tower, Flying Palace.

Despite the capital having moved elsewhere, Sambor Prei Kuk persisted as a significant centre up to and throughout the Angkorian period, with further religious buildings constructed and existing ones renovated. The temples and statues of the Sambor Prei Kuk Archaeological Group span a lengthy period of change, encompassing the fall of the Chenla dynasty and rise of the Angkor Empire. The Sambor Prei Kuk architectural and artistic style provides invaluable evidence of the exchanges of culture between India and China.

Between the 11th and late 19th centuries, little is known about the function and importance of the Sambor Prei Kuk Archaeological Group as an urban complex, agricultural area and religious site. Today, the wooden houses of the ancient city have long since vanished, leaving only the temples, landscape features and waterworks as evidence. While many of the buildings have fallen, a significant number survive, even after centuries of encroaching jungle, harsh climatic conditions, war and neglect. These remaining temples continue to serve as an important religious site for local communities.

Post-conflict protection of a valuable asset

During the era of conflict in South-East Asia, the Sambor Prei Kuk Archaeological Group sustained damage from the many hostile forces engaged in the struggle. During this period, research, maintenance and protection of the monuments as well as movable artefacts suffered seriously. Only in 1992 did the Royal Government of Cambodia re-establish control over the area. The Ministry of Culture and Fine Arts, as well as other ministries, began the arduous task of identifying what actions were to be taken to protect this valuable asset. With little funding and a lack of trained conservation, restoration and managerial professionals, efforts were small and gradual, but in the end have amounted to something significant. The standing monuments, features and open spaces now available to visits by tourists and specialists alike are testament to the ambitions of the government in preserving and protecting the Sambor Prei Kuk Archaeological Group.

S1 Tower.

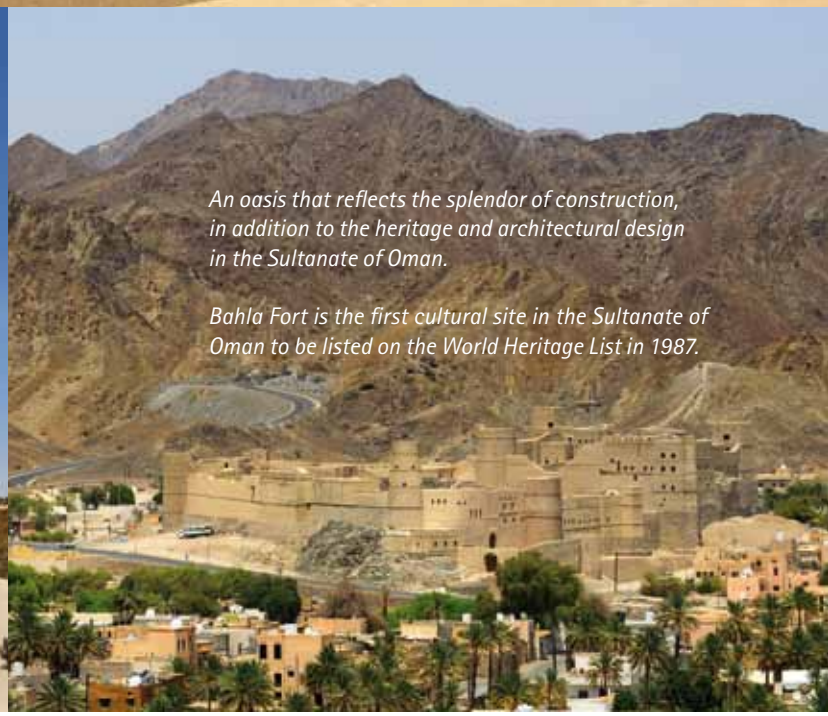
The site constitutes a vital record of the historical, cultural and religious developments which culminated in the flowering of the Khmer Empire.

The site constitutes a vital record of the historical, cultural and religious developments which culminated in the flowering of the Khmer Empire, offering a unique window into this history, spanning both the pre-Angkorian and Angkorian periods. The inscriptions, artefacts and buildings constitute the most important records of Khmer life during this period. Ongoing archaeological research continues to uncover new facets of this fascinating heritage site.

Bahla Fort

United Nations Educational, Scientific and Cultural Organization

Bahla Fort
Inscribed on the World Heritage List in 1987



An oasis that reflects the splendor of construction, in addition to the heritage and architectural design in the Sultanate of Oman.

Bahla Fort is the first cultural site in the Sultanate of Oman to be listed on the World Heritage List in 1987.

Bahla is considered as one of the most important historical areas in the Sultanate of Oman. The history of Bahla Fort dates back to the pre-Islamic era. Due to its historical importance and Outstanding Universal Value, UNESCO inscribed it on the World Heritage List in 1987.

The Fort consists of three buildings including Bait al-Jabal, Bait al-hadith and Bait al-Qaed. The Fort has six towers distributed along the walls for defensive and protection purposes, besides a number of wells and mosques. Moreover, the citadel (Al-Qasaba) is the oldest part of the Fort. It is a five-storey building comprised of integrated rooms, which together form a combined structural unit with a private entrance separated from the rest of the Fort. The citadel has three towers.

The adjacent historical Mosque (Masjid Jame), 30 metres from the Fort, dates back to the early period of Islam where the oldest written chronicles discovered in the Sultanate of Oman to date were found in a disc inside the Mosque dating back to the year 528 A.H. While the wall, the Holy Quran Schools, ancient mosques, aflajs (old irrigation system) were also discovered, as well as some old pottery centres in the Sultanate distinguished by a unique style; known by archaeologists as Bahla Pottery Style.

The Fort has witnessed different restoration and conservation periods, the last one was by the Ministry upon the inscription and under the supervision of the World Heritage Centre as per the international applicable restoration standards. All restoration works were completed and the fort was opened for the public at the end of May 2012.

SPONSORED STATEMENT

Ministry of Heritage and Culture
Directorate General of Archaeology and Museums
P.O. Box: 668 Code No: 113 - Muscat
Sultanate of Oman

Website: **www.mhc.gov.om**

Sultanate of Oman
Ministry of Heritage and Culture

Panasonic

PARTNERING TO PRESERVE A GLOBAL LEGACY

Strategic Partnership with the UNESCO World Heritage Centre

Under our global initiative programme, Panasonic aims to be the No. 1 Green Innovation company in the electronics industry by our centennial year in 2018. Among our multi-faceted company-wide activities and efforts toward that end, one of the most significant is our strategic partnership agreement with the UNESCO World Heritage Centre signed in May 2011. Recognised by the World Heritage Committee as possessing outstanding universal value, these natural and cultural sites represent our irreplaceable heritage which must be preserved. Leveraging Panasonic's visual technologies and global reach, this strategic partnership aims to help raise awareness of the importance of heritage and environmental preservation especially among the youth of our world.

Development of Worldwide Communication

Panasonic is working to develop its global communications, both to emphasize the importance of and build interest in protecting UNESCO World Heritage sites, and to also raise awareness of the thinking behind Panasonic's environmental innovation. Panasonic is making its efforts known worldwide through a combination of television commercials and print media campaigns. The celebrated Soprano Sarah Brightman appears in these campaigns in her role as a UNESCO Artist for Peace.

http://www.panasonic.net/promotion/worldheritage/

Sole Sponsorship of "The World Heritage Special" TV programme

NATIONAL GEOGRAPHIC CHANNEL

Specially edited 60-minute stories about various World Heritage sites were created and aired on the National Geographic Channel. Titles include "Ancient Megastructures of Machu Picchu", "The Secret of Taj Mahal" and "Mega Waterfalls of Brazil/Argentina". These TV programmes have been seen in many different countries and were the first exclusively sponsored global programmes for Panasonic as well as for the National Geographic Channel.

http://www.panasonic.net/promotion/worldheritage/program/

PANASONIC PRESENTS
THE WORLD HERITAGE SPECIAL

United Nations
Educational, Scientific and
Cultural Organization

World
Heritage

Panasonic supports sustainable development through UNESCO World Heritage conservation and education

Global Environmental Youth Education Programme

Panasonic has been conducting a number of environmental educational activities aimed at children. Every year, thousands of children from all over the world send their own unique ideas about how to best preserve the earth's natural resources. The 2012 Eco Picture Diary Contest ceremony was held in November in Kyoto coinciding with the closing ceremony of the 40th anniversary of the World Heritage Convention. It was extensively covered by local and global media. The ceremony was attended by Irina Bokova, Director-General of UNESCO, and UNESCO's Artists for Peace, Countess Setsuko Klossowska de Rola and Sarah Brightman, who were on the panel of judges. Over 300,000 entries have been received and winners were invited to the ceremony from all over the world.

pks.panasonic.co.jp/global/ecorelay

Panasonic UNESCO World Heritage Calendar

The cooperation between Panasonic and the UNESCO World Heritage Centre started in 1995 with The World Heritage Calendar. In addition to the large wall-hanging version, a smaller version of the same calendar has been produced as an educational tool and given to UNESCO associated schools worldwide. Responding to the wishes of UNESCO to make the calendar available to a much wider audience, Panasonic has, since 2008, featured a downloadable version of the calendar that can be enjoyed on PCs as wallpaper. Users can take the Calendar wherever they go with the World Heritage Calendar application.

http://panasonic.net/UNESCO_worldheritage_calendar/2013/en/index.html

Development of The World Heritage 3D Dive Experience

The more people experience the magnificence of World Heritage sites, the greater the interest in preserving them. Panasonic, in partnership with the UNESCO World Heritage Centre, created the 3D Dive Experience at UNESCO Paris headquarters using a multi-screen panoramic 3D display system. Visitors immerse themselves in the outstanding life-like 3D images of heritage sites. The 3D Dive was also installed at the final event commemorating the 40th anniversary of the UNESCO World Heritage Convention in Kyoto in November 2012.

ch.panasonic.net/special/worldheritage

For more information visit : http://www.panasonic.net/promotion/worldheritage http://www.panasonic.net/ http://whc.unesco.org/

Intangible Heritage

Photographs graciously provided by Anders Jiras

Sbek Thom

Royal Ballet of Cambodia

Cambodian Ministry of Culture and Fine Arts

Royal Ballet, Apsara Mera 2012.

Ynav & Bosba, Lakhaon Festival 2009.

The Royal Ballet of Cambodia, also known as Khmer Classical Dance, has been closely associated with the Khmer Court for over 1,000 years.

Renowned for its graceful hand gestures and stunning costumes, the Royal Ballet of Cambodia, also known as Khmer Classical Dance, has been closely associated with the Khmer Court for over 1,000 years. Performances would traditionally accompany royal ceremonies and observances such as coronations, marriages, funerals or Khmer holidays. This art form, which narrowly escaped annihilation in the 1970s, is cherished by many Cambodians, and was inscribed in 2008 on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity.

Infused with a sacred and symbolic role, the dance embodies the traditional values of refinement, respect and spirituality. Its repertoire perpetuates the legends associated with the origins of the Khmer people. Consequently, Cambodians have long esteemed this tradition as the emblem of Khmer culture. Four distinct character types exist in the classical repertoire: Neang the woman, Neayrong the man, Yeak the giant and Sva the monkey. Each possesses distinctive colours, costumes, makeup and masks. The gestures and poses, mastered by the dancers only after years of intensive training, evoke the gamut of human emotions, from fear and rage to love and joy. An orchestra accompanies the dance, and a female chorus provides a running commentary on the plot, highlighting the emotions mimed by the dancers, who were considered the kings' messengers to the gods and to the ancestors.

The Royal Ballet almost ceased to exist under the genocidal rule of the Khmer Rouge, who eliminated almost all master dancers and musicians. Immediately after the dictator Pol Pot's defeat in 1979, dance troupes re-emerged and performances of the ancient repertoire resumed. The ballet has regained much of its former splendour thanks to efforts of H.R.H. the Princess Bopha Devi and the Ministry of Culture and Fine Arts.

Sbek Thom, Khmer shadow theatre

Cambodian Ministry of Culture and Fine Arts

Sbek Thom, CLA Youth Festival 2010.

Sbek Thom, Flying Circus, Wat Bo, Siem Reap, 2010.

Sbek Thom is a Khmer shadow theatre featuring two-metre high, non-articulated puppets made of leather openwork. Dating from before the Angkorian period, Sbek Thom, along with the Royal Ballet and mask theatre, is considered sacred. Performances, dedicated to the divinities, could only take place on specific occasions, three or four times a year, such as at Khmer New Year, the king's birthday or for the veneration of famous people. The shadow theatre was weakened after the fall of Angkor in the 16th century. However, it then evolved beyond a ceremonial activity to become an artistic form, while retaining its ritualistic dimension. Sbek Thom was inscribed in 2008 on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity.

The puppets are made from a single piece of leather in a special ceremony for each character. Shiva and Vishnu, for example, are cut from the hide of a cow that has died accidentally or naturally and are finished in a single day following a specific ritual. The hides are dyed with a solution made from the bark of the Kandaol tree. The artisan draws the desired figure on the tanned hide, then cuts it out and paints it before attaching it to two bamboo sticks which allow the dancer to control the puppet.

The performances traditionally take place at night in the open air beside a rice field or pagoda.

The performances traditionally take place at night in the open air beside a rice field or pagoda. A large white backdrop is held between two tall bamboo screens in front of a large fire or, nowadays, projectors. The shadow of the puppet's silhouette is projected onto this white screen. The animator brings the puppet to life with precise and specific dance steps that produce a range of movements. The performance is accompanied by an orchestra and two narrators. Performances from the *Reamker*, the Khmer version of the *Rāmāyana*, might last several nights and require up to 160 puppets for a single session.

Sbek Thom was almost wiped out under the repressive Khmer Rouge regime but since 1979 has undergone a revival, thanks to the few surviving artists. The collections of puppets were mostly destroyed but are gradually being remade and troupes are reforming. However, the Ministry of Culture and Fine Arts has managed to ensure the transmission of knowledge, techniques and know-how, especially relating to the manufacture of the puppets.

Success story of Tonle Sap Biosphere Reserve

Paul Everingham
Centre for Wildlife and Environment, Koh Kong
(With thanks to Cambodian Ministry of Environment)

Tonle Sap flooded forest.

Tonle Sap (Great Lake) is South-East Asia's largest lake and one of the world's most significant wetland ecosystems due to its unique environmental qualities and exceptional biodiversity.

The extraordinary variety of life on Tonle Sap was documented as early as the 13th century by the Chinese scholar Zhou Daguan who noted the abundance of fish, frogs, tortoises, turtles, lizards, crocodiles and molluscs on and around the lake. The bas-reliefs of the Angkorian Bayon Temple depict several of the Great Lake's fauna, in particular fish, crocodiles, turtles and large waterbirds.

The immense diversity of its floral and fauna assemblages includes an exceptional number of globally threatened animals, birds and reptiles. Many of its plant species and forest types have developed unique characteristics in response to extreme seasonal and hydrological fluctuations.

A river in reverse

Each year with the onset of the rainy season the Mekong water level rises and overflows into Tonle Sap River which, instead of draining the lake as it does during the dry season, is forced to change direction and flow back 'up' into the lake, making it the world's only major river to flow in two directions at different times of the year. This annual flood raises the lake level from 1–1.5 m up to 8–10 m and to increase its area fivefold as it spills out over the floodplain.

Tonle Sap is recognized among the most productive freshwater fisheries in the world. A vast and complex migration of eggs, fry, juvenile and adult fish flow into and out of the lake with the annual flood pulse. These fish migrate from rivers and streams all across Cambodia's vast western and northern plains, from surrounding mountain ranges, and from the Mekong itself with its web of tributaries and massive delta.

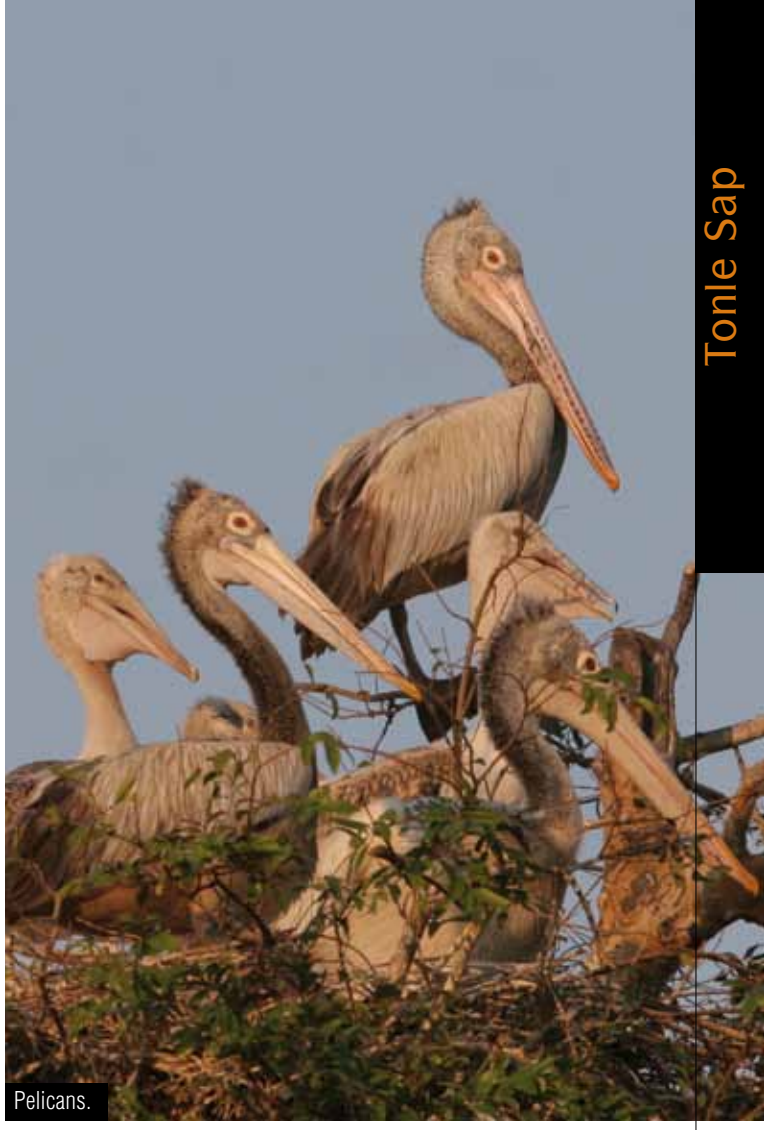
Two million Cambodians directly depend upon the Tonle Sap fishery's bounty for their livelihood and fully one half of Cambodia's protein requirements are provided by an annual fish harvest of over 250,000 metric tonnes.

Bird conservation

The reserve supports the largest remaining fragment of a bird megafauna that was once widespread across much of South-East Asia. At certain times of the year the reserve teems with tens of thousands of magnificent storks, cranes, ibis and pelicans. It supports internationally significant numbers of seventeen globally threatened birds, and many others of regional significance. The revival of these birds since intensive monitoring and protection efforts started in 1999 is one of the world's great conservation success stories.

Tonle Sap and its floodplain was listed as Tonle Sap Biosphere Reserve under UNESCO's Man and the Biosphere

Waterbirds, Doun Sdoeng village, Tonle Chmmar.



Pelicans.

Programme in October 1997 and enshrined under Cambodian law in 2001.

The biosphere reserve comprises three Core Areas (each representing unique ecosystems demarcated for long-term protection and conservation), six Fish Sanctuaries, four Biodiversity Conservation Zones and nine internationally recognized Important Bird Areas (IBAs), all of which are contained within an extensive area of buffer and transition zones.

The Biosphere Reserve framework

Biosphere Reserves are sites established by individual countries and recognized by UNESCO to promote innovative ways with which to reconcile sustainable development with biological and cultural diversity. Emphasis is placed upon comprehensive management, seeking to develop and co-ordinate good policy, effective management, community participation and sound science.

Tonle Sap is recognized among the most productive freshwater fisheries in the world.

This highly respected UNESCO designation has helped to attract valuable input by international NGOs, scientific institutions and donors. Crucial coordination among the relevant government departments, and between government instruments and outside organizations, has been greatly enhanced under the Biosphere Reserve framework. It has facilitated increased local management and implementation capacity, and ensured a high degree of community participation at all levels of decision-making.

The natural world everywhere is under great pressure from the rapidly expanding human population and its consumption requirements. This is especially true for complex, species-rich wetland environments that are particularly susceptible to over-exploitation of their high natural and economic productivity. Yet despite this trend, the Tonle Sap ecosystem has shown surprising resilience.

Fish production has started to decline due to the unsustainable level of harvesting but not to the degree that many other intensive fisheries have suffered elsewhere. Some mammal populations are still in decline but other species, notably of waterbirds, are prospering. Large areas of forest and other habitat types survive in relatively good condition.

UNESCO's World Network of Biosphere Reserves, with its emphasis on community participation, science and effective management, provides an invaluable framework for Cambodia to continue both meeting the needs of its people and protecting one of the world's greatest natural treasures.

Cambodia's Memory of the World

Helen Jarvis
Adviser to the Royal Government of Cambodia
Member of the International Advisory Committee of UNESCO's Memory of the World programme

Photographic exhibition.

UNESCO's Memory of the World (MoW) programme seeks to recognize, safeguard and make accessible the documentary heritage of humanity. Established in 1992, MoW complements UNESCO's two well-known heritage conventions (on World Heritage and the Intangible Cultural Heritage of Humanity).

Cambodia has a venerable tradition of writing, noted as early as the Funan period, 4th century AD. The earliest surviving stone inscriptions (in Sanskrit and in Old Khmer) date from the 6th century AD. It is thought that early texts may have been written on blackened animal hides, but these have not survived.

Although observed in use even during the Angkorian period, the oldest extant palm-leaf manuscripts and other, chiefly mulberry bark-based paper manuscripts, date only from the mid to late 19th century, but because they underwent a continual process of re-copying (involving some amendment as well), some of their content perhaps dates from the 12th century. These documents principally served to proclaim royal decrees, regulations and achievements on the one hand, and to preserve and pass on religious scriptures and texts on the other.

The Khmer script is believed to have descended from the Brahmi script of South India (as did Old Mon, Java, Cham, and then Thai, Lao which is based on Khmer script and Myanmar based on Mon script, and many other languages of India). Khmer has its own history as an independent script for more than 1,100 years.

Paper documents with ink handwriting are thought to have been created from around the early 19th century, mainly for palace records, while literary products began to appear in Phnom Penh from the first two decades of the 20th century. The first Khmer type fonts were cast in France in 1877.

In the 20th century, new forms of modern information technology came into the country, including microfilm, audiotape, videotape, film, television and comic strips. In the 1950s and 1960s the late King Father Norodom Sihanouk led a vibrant culture of film production, and the National Radio (and later Television) of Kampuchea also thrived.

As the war closed in around Phnom Penh, publishing succumbed like other enterprises. During the Khmer Rouge period (1975–79) there were almost no publications, although songs, poems and short stories did appear in the official journals, and some brave souls did apparently continue to pen short works in secret.

Following the overthrow of the Khmer Rouge on 7 January 1979, efforts began to reconstruct Cambodian society and infrastructure, including restoring its documentary heritage.

Archives.

© UNESCO Phnom Penh Office

Khmer Riunge Notebooks.

© UNESCO Phnom Penh Office

Negatives.

© UNESCO Phnom Penh Office

Tuol Sleng Archive on international MoW register

The Tuol Sleng Genocide Museum Archive has achieved iconic status internationally to represent the tragedy of the crimes that took place in Cambodia between 1975 and 1979.

Cambodia is in the process of establishing its National Committee for Memory of the World, but is already actively participating in related activities at the national, regional and international levels.

In July 2009 the Tuol Sleng Genocide Museum Archive was inscribed on the international register, following its inscription on the MoW Asia Pacific Register in 2008, and it is Cambodia's first and so far only MoW inscription.

The Tuol Sleng archive contains photographs and documents from the site's role as S-21 – the central prison and interrogation centre of the Khmer Rouge regime. It is estimated that over 15,000 prisoners were held in this former high school, and only a handful of them survived the ordeal. The archive contains photographs of over 5,000 of these prisoners, as well as 'confessions', many extracted under torture, and other biographical records of prisoners and prison guards and officials in the security apparatus.

The Tuol Sleng archive constitutes the most complete extant documentary picture of the Democratic Kampuchea prison system, a fundamental part of the regime under which perhaps 2–3 million people (25–30 per cent of the population) lost their lives in a period of three years, eight months and twenty days. Now being used to provide pivotal evidence in the trials of senior leaders and those most responsible for the serious crimes now under way in the Extraordinary Chambers in the Courts of Cambodia (ECCC), its significance stems from its testament to man's inhumanity to man and its documentation of one of the most extreme examples of crimes against humanity in the 20th century, with a major impact on world history.

The Tuol Sleng Genocide Museum Archive has achieved iconic status internationally to represent the tragedy of the crimes that took place in Cambodia between 1975 and 1979, being used widely on covers of books and DVDs, film posters, tourist brochures and exhibition catalogues. The archive and the museum itself are maintained by the Department of Museums of the Ministry of Culture and Fine Arts of the Royal Government of Cambodia.

SPONSORED STATEMENT

SLOVAKIA

Slovakia, a country of beautiful nature and diverse and extraordinary wealth of cultural heritage, has been inscribed on the World Heritage List for twenty years. This multicultural space in the very heart of Europe has been formed at the crossroads of ancient trade routes, in immediate contact with the Roman Empire and its northern border on the Danube River. Also thanks to that, nowadays Slovakia endowed with the spirit of cultural and natural diversity, enables you to encounter for example the highest Gothic wooden altar in the world (in St James Church in Levoča, height 18.6 m), the first technically oriented university in the world, the Mining Academy in Banská Štiavnica, the Mint of Kremnica functioning continuously since 1328 or the cold geyser of Herľany, to visit the largest karst area in Central Europe (about 1,100 caves and gaps), to experience the preserved phenomenon of traditional rafting on wooden rafts, even to climb the highest peak of the Carpathians (Gerlach 2,655 m), and many others. Wandering around historic towns, picturesque villages, national parks and protected areas can be complemented by visits to numerous museums and art galleries where among many other artefacts you can admire the precious sculpture of the Moravian Venus – a small female figurine from around 22,800 years B.C.

Levoča, Spišský hrad (Castle of Spiš) and the associated cultural monuments represent a unique medieval urban-architectural and landscape complex embodying the political, ecclesiastical and administrative power of Spiš, a significant historical region in northern Slovakia.

© Monuments Board of the Slovak Republic

© Monuments Board of the Slovak Republic

© Monuments Board of the Slovak Republic

The town of Banská Štiavnica and the unique technical monuments of mining works in its vicinity represent an exceptional and comprehensive urban landscape complex formed since the Middle Ages.

Vlkolínec is a remarkably continuously preserved type of medieval pastoral settlement with wooden architecture of log houses typical of hillside and mountain areas in the National Park Veľká Fatra.

The Primeval Beech Forests of the Carpathians and the Ancient Beech Forests of Germany These undisturbed, complex temperate forests exhibit the most complete and comprehensive ecological patterns and processes of pure stands of European beech.

Caves of Aggtelek Karst and Slovak Karst One of the most magnificent caves in Slovakia and one of the first electrically lit caves in the world is the Dobšinská Ice Cave. The character of its glaciation places this cave among the most important ice caves in the world.

© Miroslav Buraľ

© Michal Rengevič (Archive of the Slovak Caves Administration, Liptovský Mikuláš)

United Nations Educational, Scientific and Cultural Organization

Organizácia spojených národov pre výchovu a vzdelávanie, vedu a kultúru

Slovak Commission for **UNESCO**

Slovenská komisia pre **UNESCO**

Slovak Commission for UNESCO
Hlboká cesta 2
833 36 Bratislava –Slovakia
Tel.: +421 2 5978 3614, 3615
Fax: +421 2 5978 3659
e-mail: unesco@mzv.sk
website: www.mzv.sk

United Nations Educational, Scientific and Cultural Organization

World Heritage Convention

PFD PUBLISHING FOR DEVELOPMENT

Subscription Form

Dear supporter of World Heritage,

World Heritage magazine is published jointly by UNESCO and Publishing for Development and printed four times a year in English, French and Spanish. The publication presents and promotes the preservation of our World Heritage, with detailed feature articles and news items about the most outstanding cultural and natural sites around the world. This magazine is particularly designed to reflect and enhance UNESCO's dedication to World Heritage sites; our legacy from the past, our responsibility for the present and our duty to future generations.

By subscribing to *World Heritage* you will help to raise awareness about the need to preserve our common heritage.

ORDER FORM WORLD HERITAGE

subscription details:

duration: ☐ 1 year (four issues) ☐ 2 years (eight issues)

language: ☐ English ☐ French ☐ Spanish

The annual subscription rate is €27.00 (€54.00 for two years) for Europe and US$ 37.00 (US$ 74 for two years) for the rest of the world and includes postage.

delivery address:

Name _____ Telephone _____

Organization _____ Fax _____

Address _____ E-mail _____

_____

Postal code _____

City, Province _____

Country _____

payment:

☐ Cheque (Payable to DL SERVICES)

☐ Direct Bank Transfer

Account Name:	DL SERVICES
Account Number:	001-4460599-33
Bank Name:	FORTIS BNP
Swift Code:	GEBABEBB
Iban Code:	BE79 0014 4605 9933

☐ Credit Card Payment

Visa or Mastercard

Card N°: ...../...../...../...../

Exp. Date: ...../...../

Security Code: .....

Date and signature: .....

Where to send your order:

DL SERVICES
Avenue du Roi 202
B 1190 Brussels (Belgium)
Tel: +32 2 538 43 08 • Fax: +32 2 538 08 41
E-mail: subscriptions@dl-servi.com

TOURISM
CAPITAL ARAB
MANAMA 2013

BE ENCHANTED
BE SURPRISED
BE THRILLED
BAHRAIN IN 2013

سياحة رياضية

سياحة ترفيهية

سياحة ثقافية

سياحة بيئية

Bahrain is proud to have been awarded the Capital of Arab Tourism for 2013 - it's now time to explore our rich tapestry of Culture, Sports, Leisure and Eco Tourism.

Kingdom of Bahrain
Ministry of Culture

Cultural Landscape of Bali Province: The *Subak* System as a Manifestation of the *Tri Hita Karana* Philosophy (Indonesia).

Konso Cultural Landscape (Ethiopia).

In Focus: World Heritage and agricultural landscapes

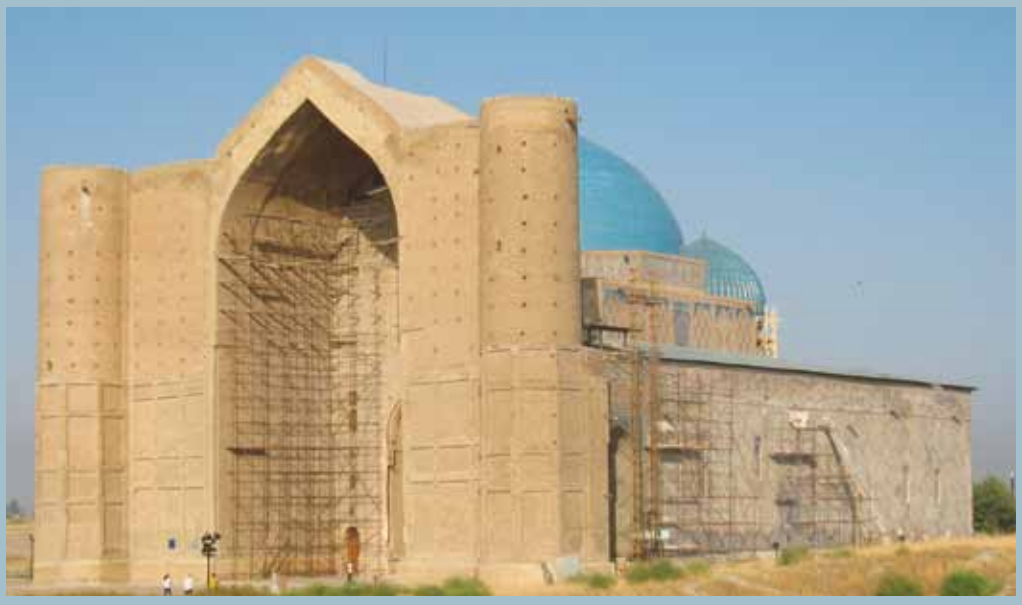
Agricultural landscapes are a testimony to humanity's long interaction with the land, often unique examples of people and nature coexisting and influencing each other. They demonstrate a rich cultural and landscape diversity, sustainable land-use systems and in some cases people's daily struggle for survival under extreme climatic and environmental conditions.

The 19th-century coffee plantations in Cuba; Stari Grad Plain in Croatia, where grapes and olives have been harvested since ancient Greek times; Konso Cultural Landscape in Ethiopia, where fortified settlements embody a living cultural tradition stretching back twenty-one generations and adapted to a harsh environment; and the *subak* water management system in Bali (Indonesia), where the spiritual, human and natural worlds are brought together in a philosophy that has shaped the landscape while ensuring prolific rice production – all of these are exceptional examples of an enduring and harmonious interaction.

This issue will also present the new World Heritage sites inscribed during the 37th session of the World Heritage Committee, to be held from 16 to 27 June 2013 in Phnom Penh, Cambodia.

SPONSORED STATEMENT

Cultural World Heritage sites in Kazakhstan and state measures on their safeguarding



Located in the heart of the Eurasian continent, Kazakhstan stands at thecrossroads of ancient civilizations, the intersection of major transport routes, world religions, economic, cultural and ideological relations between East and West. Numerous statehoods with distinctive histories emerged and developed on the territory of Kazakhstan leaving a rich treasury of historic monuments, cultural artefacts and ancient manuscripts comprising the deep spiritual legacy of modern Kazakhstan.

Since gaining independence in 1991, the Government of Kazakhstan started to elaborate legislative acts and state policies on the preservation and popularization of cultural heritage and adherence to relevant international instruments. Revival of the country's deep and diverse cultural heritage started with the adoption of the Convention concerning the Protection of the World Cultural and Natural Heritage (1972) by the Republic of Kazakhstan in 1994. Since then the Ministry of Culture and Information of Kazakhstan jointly with the national institutions, affiliated organizations, profound experts, researchers and communities involved started a close collaboration with UNESCO, ICOMOS and ICOM.

A revolutionary step was initiated by the President of Kazakhstan, Nursultan Nazarbayev, with the launch of the Cultural Heritage National Program 'Madeni Mura' in 2004–2011. In the framework of the programme, numerous research and restoration works, scientific field studies and archaeological expeditions were organized to the historic sites, monuments, museums and archives of Kazakhstan and foreign states. As a result of the works conducted a vast amount of literary volumes and music collections have been published, and numerous documentaries, TV and radio programmes broadcast via national and foreign media.

During the implementation of the programme, over 25,000 stationary historic and archaeological monuments have been registered in the territory of Kazakhstan; 218 of them were included in the State Register of Historic and Cultural Monuments of National Importance; museum funds and exhibits store more than 2.56 million cultural artefacts. As a summary of 'Madeni Mura' an online database comprising illustrative photographs, videos, archive materials, research works and information on restoration and archaeological works was launched by the Ministry of Culture and Information of Kazakhstan in Kazakh, Russian and English versions (www.madenimura.kz).

In the course of the National Program and cooperation between Kazakhstan and UNESCO, three prominent sites of cultural and natural heritage of Kazakhstan have been inscribed on the World Heritage List: The Mausoleum of Khoja Ahmed Yasawi (2003), Petroglyphs within the Archaeological Landscape of Tamgaly (2004), Saryarka – Steppe and Lakes of Northern Kazakhstan (2008).

The Mausoleum of Khoja Ahmed Yasawi represents a masterpiece of human creativity,an inspirational prototype of Central Asian traditional architecture of the Timurid period. The mausoleum and surrounding remnants of the ancient city of Turkestan (Yassy) serves the historic legacy of interconnected development of Central Asian civilizations, the spread of Islam and Sufism in the region and the majesty of the Great Silk Road.

Tamgaly is a unique archaeological landscape comprising a group of 5,000 petroglyphs – high-quality images of the early Bronze Age dating from nearly 1400–1300 BC. A wide repertoire of images range from big numbers, unique shapes, elements of traditional pastoral

http://unesco.natcom.kz

Қазақстан Республикасының ЮНЕСКО және ИСЕСКО істері жөніндегі Ұлттық Комиссиясы

National Commission of the Republic of Kazakhstan for UNESCO and ISESCO

Kazakhstan National Commission for UNESCO and ISESCO
Address: 31 Dinmukhamed Kunayev street, Astana 010000, Republic of Kazakhstan
Tel.: +7 7172 720327/ 720320/ 720197
Fax.: +7 7172 720327
Email: a.utegenova@mfa.kz (SG); b.khabibulla@mfa.kz; zh.shaimenova@mfa.kz

lifestyle to solar deities and animalistictcom.kz themes of zoomorphic creatures dressed in furs. The key masterpiece of rock iconography is an image of a seven-headed solar god.

The steppe and lakes of Saryarka constitute a mixed cultural and natural heritage of Kazakhstan as the territory encloses two state natural reserves, Naurzum and Korgalzhyn, with a total area of 450,344 hectares. The protected area is represented by numerous endangered and rare species of flora and fauna, such as pink flamingos, Saiga antelope, yellow herons, pelicans, white-headed ducks, martens, deer, elk and falcons.

Other than the UNESCO World Heritage sites, the territory of Kazakhstan is rich with outstanding historic monuments, natural and archaeological sites, such as Charyn Canyon – the second largest canyon in the world, Necropolis of Beket Ata, Mausoleums of Aisha Bibi and Babadja Hatun, ancient cities and settlements of the Silk Road – Sarayshik, Bozok, Otrar, natural resorts such as Burabay, Bayan Auyl and Karkaraly, as well as many other sites of magnificent views and universal values.

The national system of legal regulations on the preservation, research, protection and popularization of cultural heritage is founded on particular provisions of the Constitution, Civil Code regulating property issues; Land Code monitoring the use and status of designated areas, Law on Licensing defining procedures and conditions on licensing archaeological and restoration works, Administrative Violations Code and Criminal Code establishing the liability of crimes and offences in relation to cultural heritage.

In addition to the basic law there are several sub-legislative acts on protection of national heritage such as the Law on Specially ProtectedKazakhstan Natural Territories (2006), Law on Architectural, Urban Planning and Construction Activities (2001), Law on Culture (2006) and Law on Protection and Use of Historic and Cultural Heritage (1992). In terms of the execution and monitoring of particular programmes, regulations and instructions have been elaborated by state authorities in conjunction with the affiliated universities, intuitions, NGOs, profound experts and researchers as well as groups and communities concerned.

In recent years, due to the high urbanization rate, the Government of Kazakhstan has encouraged and financed large-scale archaeological and scientific projects aimed at discovering new traces of Kazakhstani history and culture. A system of licensing archaeological and scientific restoration serves as an efficient tool to ensure the wide participation of all parties involved. Accreditation of state institutions, expert groups and NGOs is processed in view of such factors as research staff, experience in the field, networking system with local communities and international partners, associated facilities and equipment.

Overall, state measures on revival, safeguarding and popularization of Kazakhstani cultural heritage, implemented in accordance with international and domestic legal instruments, provide a firm foundation for future development.

Corresponding author
Natalia Voyakina – lawyer, expert in the field of preservation and use of historic and cultural heritage of the Republic of Kazakhstan and the CIS; research scientist at the Margulan Institute of Archaeology.
email: nvoyakina@inbox.ru

Azerbaijan
Land of Fire

Baku, Atashgah

Since ancient times fire was considered sacred and fire worship has been always protected in Azerbaijan. The word Azerbaijan itself consists of two parts: "Azer" meaning fire and "baijan" meaning protector so Azerbaijan means the land of protecting fire.

One of the ancient symbols denoting Azerbaijan as a land of fire is "Atashgah" temple. The historical roots of the monument take us back to when the initial statehood of Azerbaijan was created and the ruling religion was Zoroastrianism. "Atashgah" temple, which was first developed in the 2nd and 3rd centuries in Surakhani settlement, on the Absheron peninsula, 30 kilometres from the centre of Baku, was built by people who believed in the Zoroastrian religion where the natural gas glowed on-site through eternal inextinguishable flames. Zoroastrians considered fire as sacred and prayed to it in order to be protected from disaster and tyranny and to live in happiness and peace.

The second period of the temple's development was from the 16th to the 17th centuries. As Azerbaijan was on the Great Silk Way, broad trade and cultural relations were established with other countries in this period. A lot of pilgrims came here and as the number of Zoroastrians and fire-worshippers was increased, the temple was restored. The whole building which is reminiscent of a caravanserai has a closed pentagonal form and consists of 24 cells and a central altar.

One of the symbols of contemporary Baku, the Flame Towers built in a shape of three tongues of flame, remind everyone that this country is the Land of Fire where hot-tempered and hospitable people live.

In photos were reflected "Icharisheher" (World Heritage Site of UNESCO), the Flame Towers, Baku Seaside Boulevard, as well as "Atashgah" fire temple. Author: Farid Khayrulin.