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SECRETARIA DE ESTADO DA
ARTE E CULTURA



United Nations
Educational, Scientific and
Cultural Organization



Protecting the Rock Art of Tutuala

Proteje Arte Fatuk Tutuala nian



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Organization (UNESCO)**

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Foreword

by the Secretary of State for Arts and Culture
Ministry of Tourism, Arts and Culture
Democratic Republic of Timor-Leste



SECRETARIA DE ESTADO DA
ARTE E CULTURA



**Maria Isabel de Jesus
Ximenes**

The cultural potential that exists in Timor-Leste is a “legacy” of a great historical wealth that was left by the ancestors. This cultural wealth exists throughout the country.

This cultural richness can be seen throughout the country, which reflects its own peculiarities; show how people live, their social relationships, how they dress, and their attitude against other objects that are sacred or worshiped.

They all are part of our cultural heritage diversity.

The existing rock art in the country is one of the most important artistic and cultural heritage, that we must be proud of, as through this wealth we can understand our history as a nation and people, and also how our ancestors lived at that time, their relationship with nature, their behavior and how they lived, etc.

The rock art should be preserved and protected, and it should be introduced to others so that they can learn and be interested in learning and exploring our history and become more familiar with our evolution process and the development of our people.

We can find the rock art of the painting on the rock at Nino Konis Santana National Park and that shows that people have long lived in this island as these paintings depict the customs and culture of our ancestors.

Each painting illustrates how people lived at that time, and how they related to the nature.

We can see how the community then carried out their daily activities as they lived together, and how they interacted with their environment and their relationship with nature through the images of stars, animals, and other objects.

In order to continue the preservation and conservation of the identified archaeological and cultural sites, and to consider the importance of the old history of the people and the identity of Timor-Leste, the National Parliament has ratified 3 UNESCO Conventions such as: (1): Convention concerning the Protection of the World Cultural and Natural Heritage of 1972; (2): Convention for the Safeguarding of the Intangible Cultural Heritage of 2003; and (3): Convention on the Protection and Promotion of the Diversity of Cultural Expressions of 2005.

I believe that this phase has helped to create conditions in order to provide greater motivation and interests to convey this ancient art for better preservation and safeguarding of our national heritage to our young generations in the future.

I appreciate this initiative of UNESCO that has promoted the rock art in Timor-Leste at Nino Konis Santana National Park, as well as of those that with their work have contributed to exploring and discovering the history of our ancestors.

I hope this publication becomes an important element for dissemination to all Timorese and it can represent the historical and cultural origin being also an important vehicle for the dissemination of the cultural and artistic potential of this country.

Hope this publication is enjoyed by all!

A handwritten signature in blue ink, consisting of a large, stylized initial 'G' followed by a series of loops and a long horizontal stroke extending to the right.

Liafuan

badak hosi Sekretáriu Estadu ba Arte no Kultura
Ministériu Turizmu, Arte no Kultura Repúblika
Demokrátika Timor-Leste nian



SECRETARIA DE ESTADO DA
ARTE E CULTURA



**Maria Isabel de Jesus
Ximenes**

Potensialidade kultural ne'ebé eziste iha Timor-Leste sai nudar 'legadu' riku soin istóriku ne'ebe bo'ot, ne'e be ita nia beiala sira husik hela mai ita. Rikusoin kultural sira ne'e namkari iha territóriu tomak.

Rikusoin kultural sira ne'e ita bele hetan iha Timor laran tomak, ne'ebé hametin-an ho espezifisidade rasik, hatudu oin sa ema moris, ema nia relasaun no konvivensia sosial, oin sa ema hatais, no oinsa ema nia lalaok kona ba objetu sira ne'ebé barak maka lulik no ema hamulak ba.

Buat hira ne'e halo parte ita nia rikusoin patrimonial no kultural ne'e be oioin.

Pinturas iha fatuk lolon, ne'ebé eziste iha ita nia rai, sai nudar ita nia patrimoniu kultural no artistiku ne'ebé importanti tebes, ita tenki iha orgulhu, tan liu husi rikusoin sira ne'e maka ita bele deskobre ita nia historia hanesan País no Povu, no mos oinsa ita nia beiala sira moris iha tempu uluk, sira nia relasaun ho natureza, sira nia hahalok no oinsa sira moris, nsst.

Pintura sira iha fatuk lolon sai hanesan ita nia riku soin ne'e be alein de ita tenki prezerva no proteje, ita mos tenki fo sai

(Divulga) ba ema seluk atu bele hatene ka iha interese ba hodi bele estuda no esplora ita nia istoria hodi nune'e bele hatene diak liu tan ita nia prosesu evolusaun no dezenvolvimentu ita nia povu.

Pinturas iha fatuk lolon no gravuras ne'e be ita haree iha Parke Nino Konis Santana, ho tinan rihun ba rihun hatudu katak ema abita (hela/moris) iha ita nia rai ne'e kleur tiha ona, tan pinturas sira ne'e revela lalaok no kultura no kostume ita nia beiala sira.

Pintura ida-idak hatudu mos oinsa comunidade sira moris iha tempu uluk, no mos oin sa sira relasiona sira nia-an ho natureza.

Ita bele haree nia oin sa comunidade sira uluk hala'o sira nia atividade lora-lora nian iha sira nia moris hamutuk, no mos oin sa sira nia haree ba espasu ne'ebé haleu sira no sira nia relasaun ho natureza liu husi deskrisaun fitun, balada, no objetu sira seluk.

Atu bele kontinua prezerva no konserva situ arkeolojiku no kultura ne'ebé identifika ona, no konsidera sira nia importansia ba istoria antiga povu no identidade Timor-Leste nian,

Parlamentu Nasional ratifika tiha ona konvensois 3 UNESCO nian: (1) Konvensaun 1972, kona ba Protesaun Patrimoni Kultural Mundial no Natural; (2) Konvesaun 2003, kona ba

Salvuarda Patrimoni Kultural Imaterial; no (3) Konvensaun 2005, kona ba Protesaun no Promosaun Diversidadi Espresaun Kultural.

Hau fiar katak ho hakat ida ne'e, fó ona tulun hodi kria kondisaun sira hodi bele fó motivasaun no interese ne'e be bo'ot liu tan hodi hamutuk ita bele haklaken arte antiga ida ne'e no halo prezervasaun no salvuarda ne'ebé diak tebes kona ba ita nia patrimóniu nasional ne'e, hodi hatutan ba jersaun tuir mai.

Hau apresia inisiativa UNESCO nian ida ne'e, halo promosaun ba pinturas sira iha fatuk lolon iha Timor-Leste, iha Parke Nino Konis Santana, no mos sira ne'ebé liu husi sira nia servisu fo kontribuisaun hodi esplora no deskobre istoria ita nia beiala sira nian.

Hau hein katak públikasaun ida ne'e sai nudar elementu importanti ida ba divulgasaun, ba Timoroan sira hotu iha ne'ebé deit, no mos sai hanesan orijein historika no kultural no hanesan mos veikulu indispensavel ida ba nia divulgasaun, potencialidadi kultura no artistika ita nia rai nian.

Haksolok ba ema hotu ne'ebe le públikasaun ne'e!



Foreword

Director and Representative
UNESCO Office, Jakarta



Shahbaz Khan, PhD

UNESCO is glad to present the publication “Protecting the Rock Art of Tutuala”, which highlights the importance of rock art in this region of Timor-Leste and the challenges it faces in terms of conservation.

Timor-Leste houses one of the richest and most diverse concentrations of rock art in Southeast Asia. This art possesses not only a high archaeological value, but local communities also consider it as sacred. Hence the importance to know it better and conserve it for future generations.

This publication is the result of a fruitful cooperation between the State Secretariat of Arts and Culture of Timor-Leste, the Federal Republic of Germany, UNESCO, international experts on rock art and on stone conservation, and local communities. It is also an example of complementarity between scientists and archaeologists.

The present document is published within the framework of a UNESCO project for the study and the conservation of rock art in Timor-Leste, generously financed by the Federal

Republic of Germany. This project produced significant results, including a survey of the state of conservation of the rock art together with recommendations, a workshop on the significance of rock art and conservation for local communities, road signs for visitors, a flyer on conservation and the present publication.

I would like to extend my gratitude to the authorities of Timor-Leste for their continuous cooperation with UNESCO in safeguarding and promoting their rich cultural heritage. Timor-Leste ratified in 2016 three UNESCO Cultural conventions: the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage; the 2003 Convention for the Safeguarding of Intangible Cultural Heritage; and the 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions. UNESCO Conventions are powerful means to allow state parties to better protect and promote their heritage in an international context.

I would also like to thank the Federal Republic of Germany for its generous support in the safeguard of the heritage of Timor-

Leste. The Federal Republic of Germany also finances since 2011 a UNESCO project for the conservation of the Borobudur Temple Compound World Heritage site in Indonesia.

My thanks are also for the experts who, through this publication, share their knowledge on rock art in Timor-Leste and conservation issues of the sites.

Finally yet importantly, I would like to thank the local communities in Timor-Leste for their support and guidance. Without their full participation, nothing would have been and will be possible.

I wish you a good reading.

A handwritten signature in black ink that reads "Shahbaz Khan". The signature is written in a cursive, flowing style.

Foreword

Director and Representative UNESCO Office, Jakarta



Shahbaz Khan, PhD

UNESCO solok tebes atu prezenta publikasaun “Protesaun ba Arte Rupestre husi Tutuala”, ne’ebé subliña importánsia kona-ba arte rupestre iha rejiaun ida-ne’e iha Timor-Leste no dezafiu sira ne’ebé hasoru kona-ba konsersasaun.

Timor-Leste hanesan país husi Sudeste Aziátiku ne’ebé iha arte rupestre ne’ebé riku liu no ho diversidade aas. Arte ida ne’e iha valór arkeolójiku boot maibé comunidade lokál sira konsidera mós nu’udar sagradu. Nune’e importante atu koñese di’ak liu tan no halo konsersasaun di’ak ba jersaun sira iha futuru.

Publikasaun ida ne’e hanesan rezultadu husi kooperasaun entre Sekretaria Estado Arte no Kultura Timor-Leste nian, Repúblika Federál Alemaña, UNESCO, peritu internasionál kona-ba arte rupestre, no konsersasaun, no comunidade lokál sira. Hanesan mós ezemplu husi komplementaridade entre sientista no arkeolojista sira.

Dokumentu ida-ne’e publika tuir projetu UNESCO nian kona-ba estudu no konsersasaun arte rupestre iha Timor-Leste,

ne'ebé implementa husi ONG Belun no hetan finansiamentu husi Repúblika Federál Alemaña. Projetu ida ne'e hetan rezultadu signifikativu, ne'ebé inklui levantamentu kona-ba konsersaun arte rupestre hamutuk ho rekomendasaun sira, semináriu kona-ba signifikadu husi arte rupestre no konsersaun ba comunidade lokál, sinál dalan ba vizitante sira, panfletu ida kona-ba konsersaun no publikasaun ida-ne'e.

Ha'u hakarak atu ható'o mós ha'u nia agradesimentu ba autoridade Timor-Leste nian ba sira-nia kooperasaun kontínua ho UNESCO iha salvaguarda no promosaun ba sira-nia patrimóniu kulturál ne'ebé riku. Timor-Leste ratifika iha tinan 2016 konvensaun Kulturál UNESCO tolu: Konvensaun Kona-ba Protesaun ba Patrimóniu Mundiál, Kulturál no Naturál husi tinan 1972; Konvensaun ba Salvaguarda Patrimóniu Kulturál Imateriál husi tinan 2003; no Konvensaun ba Protesaun no Promosaun husi Diversidade Espresaun Kulturál husi tinan 2005. Konvensaun UNESCO hanesan dalan ne'ebé forte atu fó dalan ba Estadu parte sira atu proteje no promove sira-nia patrimóniu iha kontestu internasionál.

Ha'u mós hakarak atu agradese ba Repúblika Federál Alemaña ba nia apoiu ba salvaguarda husi patrimóniu Timor-Leste nia. Repúblika Federál Alemaña fó finansiamentu mós, hahú hosi tinan 2011 ba projetu UNESCO ba konsersaun ba Kompleksu Patrimóniu Mundiál husi Templu Borobudur iha Indonézia.

Ha'u nia agradese mós ba especialista sira-ne'ebé, liu husi publikasaun ida ne'e, fahe sira nia koñesimentu kona-ba arte rupestre iha Timor-Leste no kestaun konsersaun husi fatin sira ne'e.

Ikus liu, maibé importante nafatin, ha'u hakarak atu agradese ba comunidade lokál iha Timor-Leste ba sira nia apoiu no orientasaun. Karik la iha sira-nia partisipasaun tomak, la iha buat ida ne'ebé bele halo.

Espera katak imi iha leitura di'ak.



Foreword

Ambassador of the Federal Republic of Germany
to Indonesia, ASEAN and Timor-Leste



**Michael Freiherr von
Ungern-Sternberg**

The Federal Republic of Germany supports and promotes the preservation of cultural heritage around the globe through the Cultural Preservation Programme of the Federal Foreign Office. We strongly believe that the protection and conservation of cultural heritage not only enables us to understand our own origins but also, beyond this purpose, helps us to promote respect for and generate important dialogues with other cultures. Through this approach, we can make a valuable contribution towards supporting peaceful coexistence and fostering mutual understanding. We have been engaged in the preservation of cultural heritage since 1981 and consider it a very concrete aspect of our foreign policy, which has in recent years become increasingly significant in the context of state stabilisation and crisis prevention.

After decades of conflict, the Democratic Republic of Timor-Leste's proclamation of independence in May 2002 marked a turning point. It has led Timor-Leste not only into a new era of peace and freedom, but also into the process of forging an identity as a nation and finding a place in the global community. Germany and Timor-Leste share a strong partnership. Therefore, we welcome the opportunity to contribute to the protection of the ancient Rock Art of Tutuala.

Rock art is one of the most ancient manifestations of human art and therefore a testament to early human cultural production and creativity. Timor-Leste has inherited one of the most stunning prehistoric sites in Southeast Asia. The delicate, yet powerful images are the cultural legacy of early Timorese settlers and to this day play a vital role in the cultural practice of local communities.

We are thankful that jointly the Government of Timor-Leste, UNESCO Office, Jakarta and the Cultural Preservation Programme of the German Federal Foreign Office have safeguarded this unique work of great historical merit for future generation.

A handwritten signature in black ink, reading "Michael v. Heyden-Steinberg". The signature is written in a cursive style with a long, sweeping tail on the final letter.

Prefásiu

Embaixadór Estraordináriu no Plenipotensiáriu husi Repúblika Federál Alemaña ba Indonézia, ASEAN no Timor-Leste



**Michael Freiherr von
Ungern-Sternberg**

Repúblika Federál Alemaña apoia no promove prezervasaun patrimóniu kulturál mundu tomak liu hosi Programa Prezervasaun Kultura nian husi Ministériu Federál Negósiu Estranjeiru. Ami fiar katak protesau no konservasaun ba patrimóniu kulturál fó dalan hodi hatene ita-nia orijen maibé mós, bele ajuda ita atu promove respeitu ba sira no kria diálogu ne'ebé importante ho kultura seluk. Liu husi aprosimsaun ida-ne'e, ita bele halo kontribuisaun hodi apoia koezistencia dame no hadi'a komprensaun ba malu. Ami envolve iha prezervasaun ba patrimóniu kulturál dezde tinan 1981 no konsidera hanesan aspetu konkretu tebes ami nia polítika esterna, ne'ebé iha tinan hirak ikus ne'e sai significativu liután iha kontestu estabilizasaun husi Estadu no prevensaun ba krize.

Hafoin tinan konflitu, proklamasan independénsia husi Repúblika Demokrátika Timor-Leste iha Maiu 2002 marka pontu mudansa. Ida ne'e lori Timor-Leste ba era foun husi dame no liberdade, maibé mós ba prosesu harii identidade nu'udar nasaun ida no hetan fatin iha comunidade globál. Alemaña no Timor-Leste iha parseria ida-ne'ebé forte. Tan ne'e, ami kontente ho oportunidade atu kontribui ba protesaun Fatin Arte Rupestre antigu iha Tutuala.

Arte rupestre hanesan manifestasaun ne'ebé antigu liu husi arte umanu, nune'e sai hanesan testamentu husi produsaun kulturál umanu no kreatividade uluk nian. Timor-Leste iha fatin pré-istóriku ne'ebé kapa'as liu iha Sudeste Aziátiku. Dezeñu ne'ebé delikadu, maibé forte sai hanesan eransa kulturál husi ema ne'ebé tama uluk iha Timor-Leste no to'o ohin loron sei iha kna'ar importante iha prátika kulturál sira husi comunidade lokál.

Ami agradese katak Governu Timor-Leste, hamutuk ho Eskrito'riu UNESCO, Jakarta no Programa Prezervasaun Kultura nian Ministériu Federál Negósiu Estranjeiru husi Alemaña fó protesaun ba arte ne'e ne'ebé hatudu méritu istóriku ba jersaun foun sira iha futuro.

A handwritten signature in blue ink that reads "Michael v. Heyden Steinhilber". The signature is written in a cursive style with a long, sweeping tail on the final letter.

Figure 3: Painted rock art at Suntaleo shelter. The small human figures are shown holding a variety of weapons including spears and a bow and arrow. They are painted in red pigment. (Photograph taken by Prof. Sue O'Connor)

Figura 3: Pintura arte rupestre iha Abrigu Suntaleo. Figura umanu ki'ik sira hatudu ho armas ne'ebé inklui lansa no rama ambon. Pintura ne'e halo ho pigmentu mean. (Fotografia husi Prof. Sue O'Connor)



Introduction

The current publication is a collection of 3 articles presenting the importance of Rock Art in Timor-Leste, its archaeological significance and conservation issues. These articles are introduced by a foreword of the main actors engaged in the project and explaining the context of the publication: UNESCO, the State Secretary of Arts and Culture of Timor-Leste, the Federal Republic of Germany, and the local communities.

The Nino Konis Santana National Park, in Timor-Leste, is remarkable by its natural and cultural heritage. The Park is noteworthy by its rich ecological habitat, flora and fauna, marine biodiversity and the distinctiveness of its landscape. The Park also contains one of the richest and most diverse concentrations of rock art in Southeast Asia. This rock art has an archaeological and sacred value. The Park has a national and international significance, and it is considered it could also contribute to the development of tourism in the country.

Some of these rock art sites were first documented and published in the 1960s by a team of Portuguese researchers, led by anthropologist António de Almeida. Professor Sue O'Connor, from the Australian National University, greatly contributed to a better knowledge of the sites. UNESCO Office, Jakarta also played a role in the identification and

Introdusaun

Publikasaun ne'e hanesan konjuntu husi artigu 3 ne'ebé apresenta importánsia husi Arte Rupestre iha Timor-Leste, ninia signifíkadu arkeolojia no kestaun konservasau. Artigu hirak ne'e introdús husi prefásiu husi atór prinsipál sira ne'ebé envolve iha projetu no esplika kona-ba kontestu publikasaun: UNESCO, Sekretáriu Estadu Arte no Kultura Timor-Leste nian, ba Repúblika Federál Alemaña, no comunidade lokál.

Parke Nasionál Nino Konis Santana, iha Timor-Leste, notável tanba ninia patrimóniu kulturál no naturál. Parke ne'e importante tanba ninia habitat ekolójiku, flora no fauna, biodiversidade tasi no ninia paizajen ne'ebé riku tebes. Parke iha mós arte rupestre ne'ebé riku liu no ho diversidade maka'as liu iha Sudeste Aziátiku. Arte rupestre ida-ne'e iha valór arkeolójiku no sagradu. Parke ida ne'e iha signifíkadu nasionál no internasionál, no konsidera katak bele kontribui ba dezentvolvimentu turizmu iha nasaun laran.

Fatin arte rupestre balu dokumenta no publika uluk iha 1960s husi ekipa husi peskizadór Portugés, ne'ebé lidera husi antropolojista António de Almeida. Profesór Sue O'Connor, hosi Universidade Nacional Austrália, fó kontribuisaun maka'as ba koñesimentu di'ak husi fatin sira ne'e. Eskritóriu UNESCO, Jakarta partisipa mós iha identifíkasaun no dokumentasaun

documentation of these rock art sites through the publication 'Rock Art in West Papua' (2004).

Timor-Leste organized exhibitions and campaigns on the importance of the rock art in Lautém that contributed to a recognition of its national and international significance.

Over 2013 and 2014, the State Secretariat of Arts and Culture, UNESCO, the NGO Many Hands International and communities in Tutuala, Lautém District worked closely together to implement a project on the protection and promotion of rock art in the Lautém District. The project produced significant results including the creation of information signs that have been placed at one of the rock art sites in the Nino Konis Santana National Park to explain its significance to visitors, as well as an exhibition that was displayed at the Lautém Cultural Centre.

In June 2015 and 2016, the Federal Republic of Germany offered its generous support to finance a UNESCO project for the safeguarding of the important body of rock art existing within the Nino Konis Santana National Park.

In the first phase of the project, Prof. Hans Leisen and Dr Esther von Plehwe-Leisen, experts on stone conservation from the Cologne Institute of Conservation Sciences, conducted a survey on the current state of conservation of selected rock art sites in the Park, and drafted an analytical report with recommendations. The conclusions and recommendations

husi fatin arte rupestre sira ne'e liu husi publikasaun 'Arte Rupestre iha Papua Osidental' (2004).

Timor-Leste organiza espozisaun no kampaña kona-ba importánsia husi arte rupestre, iha Lautém ne'ebé kontribui ba rekoñesimentu husi ninia signifikadu nasional no internasionál.

Durante tinan 2013 no 2014, Sekretaria Estadu Arte no Kultura, UNESCO, ONG Internasionál Many Hands ONG no comunidade sira iha Tutuala, Distritu Lautem servisu hamutuk atu implementa projetu ida kona-ba protesau no promosaun ba arte rupestre iha Distritu Lautem. Projetu ne'e prodús rezultadu signifikativu tebes ne'ebé inklui kriasau ba sinál informasaun ne'ebé tau ona iha fatin arte rupestre iha Parke Nino Konis Santana atu esplika ninia importánsia ba vizitante sira, no mós halo espozisaun ida ne'ebé hatudu iha Sentru Kulturál Lautem.

Iha fulan-Juñu tinan 2015 no tinan 2016, Repúblika Federál Alemaña fó ninia apoiu atu finansia projetu UNESCO nian ba salvaguarda ba fatin arte rupestre ne'ebé eziste iha Parke Nasionál Nino Konis Santana.

Iha faze dahuluk husi projetu, Prof. Hans Leisen no Dr. Esther von Plehve-Leisen, peritu sira kona-ba konsersasaun husi fatuk husi Institutu Siénsia Konsersasaun husi Kolónia, hala'o levantamentu kona-ba estadu konsersasaun husi fatin arte rupestre balu iha Parke, no prepara relatóriu analitiku ho rekomendasaun sira. Konkluzau no rekomendasaun sira

were presented during the same mission, in a training workshop on the significance and conservation of rock art in the Park, organized by UNESCO for community groups and local and national government representatives. A leaflet on rock art safeguarding and management for local stakeholders was also published.

A second phase allowed the development of additional road signs in the Nino Konis Santana National Park, containing information on some of the rock art sites, and the publication of this book, to support the safeguarding and the promotion of rock art sites within the Park.

In the first article, “Tutuala Rock Art: Potential World Heritage in Timor-Leste”, Dr. Nuno Vasco Oliveira, archaeologist, gives an overview of the relations between UNESCO and Timor-Leste, of the researches on rock art in Timor-Leste, explains the significance of rock art and gives recommendations to protect the rock art sites. In her article “The Rock Art of the Nino Konis Santana National Park”, Prof. O’Connor describes the types of rock art, the motives, their significance and approximate possible dates. “Four rock art sites in NKSP – endangerment and conservation possibilities” by Dr. Esther von Plehwe-Leisen & Prof. Hans Leisen, analyzes the geological setting of the rock art sites in Tutuala, the degradation process, and proposes recommendations for its safeguard.

ne’e apresenta iha tempu hanesan, iha semináriu formasaun kona-ba signifikadu no konsersasaun ba arte rupestre iha Parke, ne’ebé organiza hosi UNESCO ba grupu komunitáriu no ba representante husi governu lokál no nasionál. Halo mós publikasaun ba panfletu ida kona-ba protesasaun ba arte rupestre no jestaun ba parte interesada lokál sira.

Faze daruak permite dezvoltamentu ba sinál informasaun tan iha Parke Nasionál Nino Konis Santana, ne’ebé iha informasaun kona-ba fatin arte rupestre balu, no publika livru ida ne’e, hodi fó apoiu ba protesasaun no promosaun husi fatin arte rupestre iha Parke laran.

Iha artigu dahuluk, “Arte Rupestre husi Tutuala: Potensial Patrimóniu Mundiál iha Timor-Leste”, Dr. Nuno Vasco Oliveira, arkeolojista, fó observaun jerál kona-ba relasaun entre UNESCO no Timor-Leste, peskiza kona-ba arte rupestre iha Timor-Leste, esplika signifikadu arte rupestre no fó rekomendasau atu proteje fatin arte rupestre. Iha ninia artigu “Arte Rupestre iha Parke Nasionál Nino Konis Santana”, Prof. O’Connor deskreve tipu arte rupestre, dezeñu, nia signifikadu no data ne’ebé karik ida ne’e halo. “Fatin arte rupestre haat iha PNNKS – Posibilidade Ameasa no Konsersasaun” husi Esther von Plehwe-Leisen & Hans Leisen, halo análize ba jeolojia husi fatin arte rupestre iha Tutuala, prosesu degradasaun, no hato’o rekomendasau ba nia protesasaun.

Safeguarding the Tangible Heritage of Timor-Leste

Timor-Leste is South East Asia's most recent nation, having restored its independence on 20 May 20 2002. After many years of colonial rule and military occupation, Timor-Leste has finally been making progress in developing stable and sustainable government institutions, including the ones responsible for managing the country's Cultural Sector.

Having moved recently from under the Ministry of Tourism to the Ministry of Education, the government's Cultural Sector in Timor-Leste remains committed to protect the country's rich and diverse cultural heritage, both tangible and intangible. This is regularly done through the Department of Cultural Heritage and the existing legal framework, which includes the new Cultural Heritage Decree-Law, approved by Government in September 2017.

In recent years, besides creating a new law to protect its cultural heritage and ratifying UNESCO's 1972 and 2003 Conventions, the Government of Timor-Leste has also invested in capacity building, working with UNESCO and other international organisations to create opportunities to

train its staff, both in the Dili national office and in the districts. For the past decade and a half, the Department of Cultural Heritage has been active mapping expressions of tangible and intangible heritage across the country, supporting the reconstruction of sacred houses (the iconic Uma *Lulik*, around which all life in Timor evolves), protecting heritage buildings from its Portuguese colonial past, establishing and managing a national database of cultural properties, and promoting the country's heritage in schools and the community, through awareness raising campaigns and the publication of books and other promotional materials.

The challenges to safeguard and protect the cultural heritage of Timor-Leste, however, are still manifold. Despite recent progress, the Government's Cultural Sector lacks sufficient qualified staff in relevant technical areas, such as archaeology, architecture, anthropology and cultural heritage studies, and the existing budget is clearly insufficient to document, investigate and manage the country's cultural heritage properly.

The Government Program for the next five years (2017-2022) aims to continue the process of safeguarding and promoting the cultural heritage of Timor-Leste, making Culture a cross-cutting element in all areas of governance. Only in this role can this sector contribute to a growing sense of belonging and national identity of all Timorese, while contributing to the country's economic development and social balance.

Cecília Assis

Director General of Culture
Ministry of Education and Culture
Democratic Republic of Timor-Leste

Salvaguarda Patrimóniu Tanjível Timor-Leste nian

Timor-Leste hanesan nasaun foun liu iha Sudeste Aziátiku, ne'ebé hetan restaurasaun ba ninia independénsia iha loron 20 fulan maiu tinan 2002. Hafoin tinan barak ho domíniu koloniál no okupasaun militar, Timor-Leste hala'o dezenvolvimentu ba instituisaun governamentál sira ne'ebé ho estabilidade no sustentabilidade, inklui instituisaun sira ne'ebé responsavel ba jestaun husi setór kulturál país nian.

Hafoin mudansa resente husi Ministériu Turizmu ba Ministériu Edukasaun, Setór Kultura husi governu iha Timor-Leste sei iha nafatin kompromisu atu proteje patrimóniu kulturál tanjível no la tanjível ne'ebé riku no diversifikadu loos. Ida ne'e hala'o liu husi diresaun Patrimóniu Kulturál no kuadru legal ne'ebé iha, ne'ebé inklui Dekretu-Lei ba Patrimóniu Kulturál ne'ebé foun, ne'ebé governu aprova tiha ona iha fulan setembru tinan 2017.

Iha tinan hirak ikus, Governu Timor-Leste nian kria lei foun ida atu proteje sira-nia patrimóniu kulturál no ratifika Konvensaun sira husi UNESCO husi tinan 1972 no tinan

2003 no mós halo investimentu iha kapasitasaun, hamutuk ho UNESCO no organizaun internasionál sira seluk, atu kria oportunidade formasaun ba funsionáriu sira, iha Dili no iha distritu sira. Durante tinan sanulu ho balu ikus, Diresaun Patrimóniu Kulturál hala'o ona inventáriu no dokumentasaun kona-ba espresaun sira husi patrimóniu tanjível no la tanjível iha país laran tomak, no apoia rekonstrusaun ba uma lulik (Uma Lulik sira, ne'ebé sai sentru ba ema hotu-hotu nia moris iha Timor), no proteje edifísiu patrimonial sira husi pasadu koloniál portugés, no harii no halo jestaun ba baze dadus nasional husi fatin kulturál no promove patrimóniu país nian iha eskola no iha comunidade, liu husi kampaña sensibilizasaun no publikasaun ba livru no materiál promosaun sira.

Dezafiu sira atu salvaguarda no proteje patrimóniu kulturál Timor-Leste nian, sei barak nafatin. Maske progresu foin lailais, setór kulturál husi governu la iha funsionáriu kualifikadu iha número ne'ebé suficiente iha área téknika ne'ebé relevante, hanesan arkeolojia, arkitetura, antropolojia

no siénsia patrimóniu kulturál, no orsamentu ne'ebé eziste la sufisiente atu halo dokumentasaun, investigasaun no jestaun di'ak ba patrimóniu kulturál país nian.

Programa governu nian ba tinan lima (tinan 2017-2022) iha objetivu atu fó continuidade ba prosesu salvaguarda no promosaun husi patrimóniu kulturál Timor-Leste nian, no Kultura sai elementu ida ne'ebé transversál ba área hotu-hotu husi governasaun. Iha kna'ar ida ne'e bele kontribui atu aumenta sentimentu pertensa no identidade nasional timor-oan hotu-hotu nian, no kontribui ba desenvolvimentu ekonómiku no ekilíbriu sosiál país nian.

Cecília Assis

Diretóra Jerál Kultura

Ministériu Edukasaun no Kultura

Repúblika Demokrátika Timor-Leste

Remarks by Tutuala Speakers

Culture is part of life, and represents the knowledge passed from the ancestors to the next generation and therefore the dissemination of these ideas is very important in contributing to development of Timor-Leste through the affirmation of Timor-Leste's identity.

Myself as traditional custodian of Tutuala, I would like to thank all entities which have contributed and given importance to the Rock Art of Tutuala, in Tutuala's administrative post, in Lautem Municipality. The Tutuala Rock Art is located in the eastern part of the island, within what has already been recognized by Government of Timor-Leste as Nino Konis Santana National Park on August 3rd, 2007.

The information related to the Rock Art (Ili Kere-Kere) in Tutuala is a reference to the history of Timor-Leste, and comes from experts of different areas. This publication is important for us as it will help the future generation to know the tradition and the human presence in Timor-Leste following a scientific model.

As traditional custodian of Tutuala, we prepare for the development and safeguarding of the cultural heritage. It is

always open to all relevant entities which respect the tradition. Therefore, I would like to thank the Ministry of Tourism, Arts and Culture and the Secretary of State of Arts and Culture which are working in close cooperation with the United Nations Educational, Scientific and Cultural Organization (UNESCO) to implement many projects contributing to development of the country. We expect that the work and the positive ideas will continue in disseminating the knowledge of ancestors in different areas of knowledge through science, contributing to the economy and the identity of Timor-Leste.

We hope that all the ideas in this publication will help in disseminating the tradition on rock art particularly in Tutuala, and that you have a good reading!

Representative of Tutuala's Lian Na'in

Mr. Tomé Magalhães

Lian Lia-Nain Sira Tutuala Nian

Kultura nu'udar lalaok moris ita ema nian, ne'ebé sai nu'udar matenek beiala sira, ne'ebe hatutan ba jerasaun tuir mai, nune'e disenimasaun hanoin sira ne'e importante tebes ba kontribui dezenvolvimentu Timor-Leste liu hosi afirmasaun identidade Timor-Leste.

Nu'udar makaer sira lisan no toman iha Tutuala, agradese ba entidade sira hotu, ne'ebé tau hanoin no fó importansia ba fatuk makerek sira iha Tutuala, fatin sira hola iha postu administativu Tutuala, Munisipiu Lautem. Fatuk makerek sira iha Tutuala hola sorin seluk ida hosi fatin ne'ebé governu Timor-Leste rekonñese nu'udar Parke Nacional Nino Konis Santana, iha Loron 03 Fulan - Agostu 2007, fatin ida ne'e lokaliza iha sorin lorosa'e rai ne'e nian.

Informasaun sira ne'ebé relaciona ho fatuk makerek (Ili Kere-Kere) iha Tutuala nu'udar referensia ida kona-ba historia Timor-Leste, hanoin sira ne'e haktuir hosi matenek nain sira iha area oi-oin, nune'e publikasaun ida ne'e importante no sei tulun jerasaun foun sira atu bele hatene kona-ba lisan no toman, no prezensa humana iha Timor - Leste sientifikamente ba banati.

Hanesan Makaer Lisan no Toman ne'ebé iha rai Tutuala nian nafatin iha hanoin ba dezenvolvimentu no salvaguarda ba patrimóniu kultural, ho nune'e mak nakloke nafatin ba entidade sira hotu-hotu ne'ebé mak iha hanoin di'ak ba tane a'as lisan no toman sira. Nune'e agradese ba Ministério do Turismo, Artes e Cultura, Secretaria de Estado, Artes e Cultura ne'ebé servisu hamutuk ho United Nations Educational, Scientific and Cultural Organization (UNESCO) ba hala'o buat lubun balun ne'ebe kontribui ba dezenvolvimentu rai ida ne'e, no hein katak sevisu ho hanoin diak sira ne'e, sei kontinua bebeik ba hatutan matenek beial sira nian iha area matenek oi-oin liu hosi Ciensia, nune'e mos kontribui ba ekonomia no Indentidade Nasaun Timor-Leste.

Hanoin sira iha publikasaun ida ne'e, hein katak sei tulun ba hatutan lisan no toman sira kona-ba fatuk makerek iha Tutuala ho haksolok ba le !.

Reprezentante Lian Nain sira iha Tutuala

Sr. Tomé Magalhães



Lené Hara Cave, showing an anthropomorph with a bow and arrow and a geometric motif that interestingly uses green pigment (perhaps made from copper ore). (Photograph taken by Prof. Sue O'Connor)

Fatuk-Kuak Lené Hara, hatudu antropomorfu ida no rama ambon no motivu jeometriku ne'ebé uza pigment matak (karik halo husi minériu kobre). (Fotografia husi Prof. Sue O'Connor)

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Tutuala Rock Art: Potential World Heritage in Timor-Leste

Rock Art ka Arte-fatuk Tutala nian: Patrimóniu Mundiál ne'ebé Potensiál iha Timor-Leste

Nuno Vasco Oliveira¹

Introduction

On January 31, 2017, the 1972 Convention concerning the Protection of the World Cultural and Natural Heritage has entered into force in Timor-Leste. More than a decade ago, in June 2003, a few months after it had joined the United Nations and over a year since regaining independence, Timor-Leste had become UNESCO's 189th Member State. In a letter to that Organisation, then President Kay Rala Xanana Gusmão stated: "UNESCO has long been a reference to peace-loving peoples throughout the world. Accordingly, the time has come for Timor-Leste to become a Member State of UNESCO in our overall process of integration into the international community".

Introdusaun

Iha loron 31 fulan Janeiru tinan 2017, Konvensaun 1972 nian kona-ba Protesaun Kultura Mundiál no Patrimóniu Naturál nian vigora iha Timor-Leste. Iha dékada ida liubá, iha ful0an Juñu tinan 2003, fulan hirak depoizde hamutuk ho Nasoins Unidas no liu tiha tinan ida hafoin independénsia, Timor-Leste mós sai-nu'udar Estadu Membru ba-189 hosi UNESCO nian. Iha karta ida ba Organizasaun ne'e, Prezidente Kay Rala Xanana Gusmão deklara katak: UNESCO kleur ona sai referénsia ida ba povu ne'ebé hadomi-dame iha mundu tomak. Ho nune'e, tempu to'o ona ba Timor-Leste atu hodi sai Estadu Membru UNESCO nian iha ita-nia prosesu tomak ba integrasaun iha comunidade internasionál nian".

¹ The author is an Archaeologist and Cultural Heritage Consultant. Between May 2008 and December 2015, he worked as a Cultural Adviser to the Government of Timor-Leste. He is currently an Honorary Lecturer with the Australian National University and recipient of research grants from Gerda Henkel Foundation, in Germany, and the National Geographic Society.

² On 31 October 2016, Timor-Leste deposited with UNESCO's Director-General the instrument of ratification of this Convention. Thus, it entered into force in Timor-Leste three months later (http://portal.unesco.org/en/ev.php-URL_ID=49395&URL_DO=DO_TOPIC&URL_SECTION=201.html).

³ Timor-Leste became a Member State of UNESCO on 06-06-2003. The letter mentioned above is referred to in a press release published by UNESCO in 09-01-2003 (http://portal.unesco.org/en/ev.php-URL_ID=8723&URL_DO=DO_TOPIC&URL_SECTION=201.html).

¹ Autór mak Arkeólogo ida mak sai konsultór ba Patrimóniu Kultural nian. Entre fulan Maiu tinan 2008 no Dezembru 2015, nia serbisu nu'udar Asesór Kultural ida ba Governu Timor-Leste. Atualmente nu'udar Profesór Onoráriu (Honorary Lecturer) ho Unidersidade Nasionál Austrália no peskiza nian nebé fó hosi Fundasaun Henkel Gerda, iha timor-Leste, no Sosiedade Jeográfica Nasionál.

² Iha loron 31 Outubru 2016, Timor-Leste hamutuk ho Diretór Jerál UNESCO nian ba instrumentu ratifikasaun ba Konvensaun ida-ne'e. Mak tuir mai, vigora iha Timor-Leste iha fulan tolu ikus mai. (http://portal.unesco.org/en/ev.php-URL_ID=49395&URL_DO=DO_TOPIC&URL_SECTION=201.html).

³ Timor-Leste sai Estadu Membru ida ba UNESCO iha 06-06-2003. Karta ne'ebé mensiona iha leten mak referidu iha komunikadu imprensa ida ne'ebé publikadu hosi UNESCO iha 09-01-2003 (http://portal.unesco.org/en/ev.php-URL_ID=8723&URL_DO=DO_TOPIC&URL_SECTION=201.html).

UNESCO has been developing work in Timor since the end of the 1990s. As early as April 2001, staff from UNESCO's Office in Jakarta conducted their first studies on rock art in the Tutuala region, revisiting art sites that had been previously documented by Portuguese anthropologists (Cinatti 1963; Almeida 1967) and identifying new sites (Arifin and Delanghe 2004). At the same time, Australian scientists initiated extensive archaeological research in Timor leading to the identification of many rock art sites in Tutuala, making it one of the of the regions in Island Southeast Asia with the largest concentrations of such cultural sites known to date (Aubert et al 2007; Lape et al 2007; O'Connor 2003; O'Connor et al 2002; O'Connor et al 2010).

For the past decade, UNESCO worked in close collaboration with the Government of Timor-Leste to promote and protect this significant body of rock art, which is located within the Nino Konis Santana National Park . It is hoped that these sites, of invaluable importance to communities in Tutuala, may soon be classified as national monuments and properly protected and managed, so that they can be listed in the future as World Heritage and preserved for future generations around the globe.

⁴ The Nino Konis Santana National Park, a terrestrial and marine Park covering the entire eastern extremity of Timor Island and extending 3 nautical miles into the sea, was established in August 2007 to protect unique environmental, cultural and historical heritage of national and global significance.

UNESCO dezenvolve daudaun ona nia serbisu iha Timor dezde tinan 1990 nia rohan. Iha inísiu fulan Abril tinan 2001, staff hosi UNESCO Office Jakarta nian mai estabelese sira-nia estudu dahuluk kona-ba rock art (Arte-fatuk) nian iha rejiaun Tutuala, hodi halo vizita hikas ba fatin arte hirak-ne'ebé antes dokumenta ona hosi antropólogo sira Portugeza nian (Cinatti 1963; Almeida 1967) no identifika tan fatin foun sira (Arifin no Delanghe 2004). Iha tempu hanesan, sientista Australiana sira mós estabelese sira-nia peskiza ba arkeolojia iha Timor hodi halo identifikasaun ba fatin hirak-ne'ebé iha rock art/ Arte-fatuk barak iha Tutuala, ne'ebé sai rejiaun ida iha sudeste aziátiku ho konsentrasaun boot-liu hosi fatin kulturál hirak-ne'ebé koñesidu to'o ohin loron (Aubert et al 2007; O'Connor et al 2002; O'Connor et al 2010).

Iha dékada liubá, UNESCO serbisu ho kolaborasaun di'ak ho Governu Timor-Leste hodi promove no proteje fatuk-lolon makerek ne'ebé iha importánsia ne'e, ne'ebé lokalizadu iha Parke Nasionál Nino Konis Santana nian . Ita hein katak fatin sira-ne'ebé ho valór importánsia ba comunidade Tutuala ne'e, bele klasifika lalais nu'udar monument nasionál hodi bele proteje no jere ho didi'ak, ho nune'e fatin sira-ne'ebé bele rejista ba futuru nu'udar Patrimóniu Mundiál no hodi prezerva ba jersaun oinmai iha mundu.

⁴ Parke Nasionál Nino Konis Santana, Parke mariña no terrestrial ida hodi kobre estremidade orientál (ponta leste) iha Illa Timor nian no nia belar mak mile 3 ba tasi, mak estabesidu iha Agostu 2007 hodi proteje úniku meiu-ambientál, kulturál no patrimóniu istóriu kona-ba importánsia nasionál no globál nian.

Significance of the paintings

Most of the Tutuala rock art occurs within the Nino Konis Santana National Park, an extensive area created to protect outstanding natural and cultural heritage. The art exists in caves, shelters and cliff walls and documents the lives of communities who settled in Timor, or used the island during successive migration routes within the region. This body of rock art comprises nearly 40 sites and contains a significant diversity of images, including human and animal figures, scenes of everyday life, geometric motifs, boats, hand prints and stencils.

The archaeological sites of Tutuala, many of which contain dozens of rock art images, are critical to understand the human migrations that took place within Island Southeast Asia for the past thousands of years. They testify to a unique moment in the history of Mankind, when modern humans used the Island of Timor as a stepping-stone into the early settlement of the Australian continent (O'Connor 2007, 2010; Taçon et al 2014).

In addition to its scientific importance, the rock art of Tutuala plays a vital role in the lives of communities today. It is associated to their creation stories, and it helps to understand the relation between these groups of people and the landscape they inhabit (O'Connor et al 2013). The art bears testimony to long lasting living traditions and social practices; it continues to inspire the arts and crafts of the local men, women and children, and manifests through

Signifikadu hosi pintura sira

Maior parte hosi Arte-fatuk sira mak akontese iha Parke Nasionál Nino Konis Santana, área luan boot ida ne'ebé kria hodi proteje patrimóniu kulturál no naturál nian ne'ebé estraordináriu tebes. Arte makerek sira eziste iha gruta (fatuk-ku'ak), abrigo (fatuk-mahon), fatuk-lolon as no dokumenta comunidade sira-nia moris iha Timor, ka uza illa ne'e durante rute migrasaun tuituir malu iha rejiaun ne'e. Fatuk-lolon makerek sira-ne'e kompostu hosi kuaze fatin 40 no kontein imajen oioin ne'ebé significativa, inklui figura ema umana no balada sira, sena ka lala'ok moris loro-loron nian, modelu/ motivu jeométriku, bero, liman fatin no stensil sira.

Fatin arkeolójika sira iha Tutuala, barak mak kontein hosi Arte-fatuk ho imajen/figura sira, mak sai difisil atu kompriende migrasaun ema-umanu nian ne'ebé hela iha illa Sudeste aziátiku nian durante tinan rihun-ba-rihun liubá. Figura makerek sira-ne'e sai sasin (testifika) momentu úniku ida iha istória Mankind nian, bainhira ema modernu sira uza illa Timor nu'udar fatuk hodi hakat-liu ba-dahuluk hodi bá harii kontinente Australia nian (O'Connor 2007, 2010; Taçon et al 2004).

Aleinde nia importánsia espesífika, Arte-fatuk iha Tutuala mós iha papél importante ida ba comunidade nia moris ohin loron nian. Ida-ne'e kria tuir sira-nia kriasaun istória sira, no tulun atu kompriende relasaun entre ema grupu ida-ne'e nian no paizajen ba sira-nia hela fatin (O'Connor et al 2013). Arte ne'e sai-nu'udar sasin (testamuña) ba moris naruk tradisaun nian

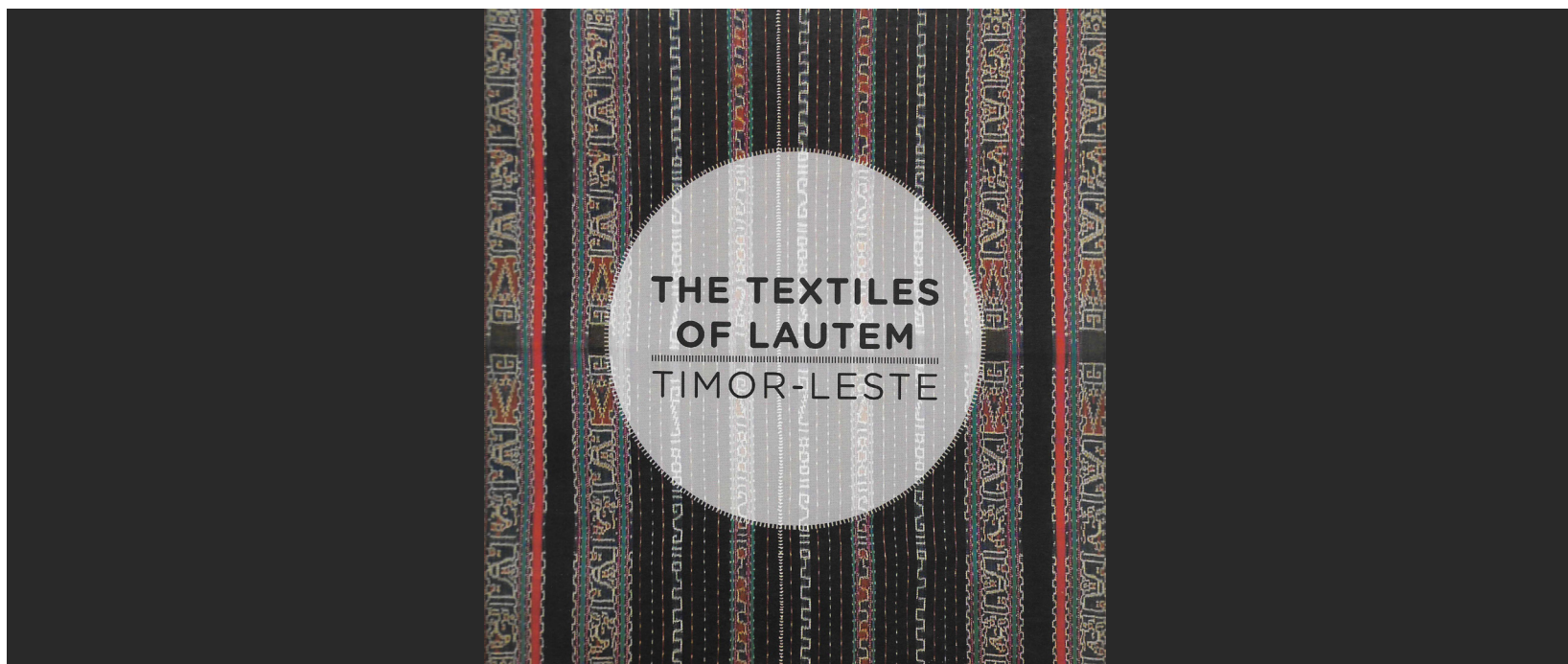


Figure 1: Cover of "Textiles of Lautém, Timor-Leste", produced by SSAC and Timor Aid, in 2016 (© SEAC & David Palazón).

Figura 1: Kapa livru nian hosi "Textile Lautém, Timor-Leste", prodús hosi SSAC no Timor Aid, iha tinan 2016 (© SEAC & David Palazón).

cultural expressions such as singing, dancing, and weaving (Soares 2005 – figure 1). Tutuala people respect and view rock art sites as sacred, and continuously protect them. Such customary practice should be encouraged and guided, to ensure that the images remain and are preserved for future generations.

The rock art of Tutuala is of national and international significance. With appropriate consultation, a shared management system between communities and the Government of Timor-Leste, and the continuous support of internationally recognised organisations such as UNESCO, these sites may be recognised nationally and internationally, contribute to the establishment of sustainable economies in cultural tourism and provide a much-needed additional income to communities in the region.

no prátika sosiál sira; nia kontinua inspira/ hamoris arte no artezanatu ema mane, feto no labarik lokál sira, hodi hatudu liuhosi espresaun kulturál hirak mak hanesan hananu, dansa (dahur), no estilus hatais nian (Soares 2005 – figura 1). Povu (emar) Tutuala repeita no haree fatin ne'ebé iha Arte-fatuk nu'udar fatin lulik (sagrada), no sira kontinua fó protesau nafatin. Prátika kostumáriu hanesan ne'e tenke enkoraja hodi halo tuir nafatin, hodi asegura katak imajen/makerek sira iha nafatin hodi prezerva nafatin ba jerasaun foun iha futuru oinmai.

Rock art ka Arte-fatuk iha Tutuala sai importánsia nasionál no internasionál. Ho konsulta ne'ebé apropiada, iha sistema jestaun ida-ne'ebé partilla ona entre comunidade no Governu Timor-Leste, no apoiu kontínuu internasionálmente rekoñese ona organizaun sira mak hanesan UNESCO, fatin sira-ne'e bele rekoñese nasionálmente no internasionálmente, ne'ebé kontribui ba estabesimentu ekonomia sustebtavel iha turizmu kulturál no fornese barak liután renda (income) adisionál ida ba comunidade iha rejiaun ne'e.

The Rock Art of Tutuala: brief history of research

Archaeological excavations in Tutuala have revealed a history of human occupation that extends back over 40,000 years. This region, located in the easternmost part of Timor-Leste is home to a rich and diverse culture, including one of the largest concentrations of rock art sites found in Island Southeast Asia.

Rock art sites in this region were originally documented by Portuguese anthropologists. Ruy Cinatti, an agronomist who had returned to work in East Timor in 1961 after enrolling for a Masters in Anthropology at Oxford (Stilwell 1995), was the first to mention the existence of Tutuala and Ili Kerekere cliffs and the Lene Hara cave, all containing rock paintings (Cinatti 1963). António de Almeida, who since the early 1950s led the Timor Anthropological Mission (Missão Antropológica de Timor – Lucas et al 1992; Schouten 2001), returned to East Timor for the last time in September 1963, where he visited these rock art sites described by Cinatti and found another one, the Sunu Taraleu escarpment, also located in the Tutuala region (Almeida 1967).

Years later, between 1966 and 1967, Ian Glover conducted three fieldwork seasons in Timor and spent ten months locating and excavating archaeological sites, while developing his doctoral research at the Australian National University (Glover 1972, 1986). In July 1966, in the company of Professor John Mulvaney, Glover surveyed for archaeological

Rock art ka Arte-fatuk iha Tutuala: istória badak hosi peskiza

Eskavasaun Arkeolójika (eskavasaun: ke'e rekursu arkeolójika hosi rai okos) iha Tutuala loke ona istória ida kona-ba okupasaun umana nian ne'ebé estende liu ona tinan 40,000 (rihun haatnulu) nia laran. Rejiaun ida-ne'e, situadu iha lora-sa'e (parte oriente) Timor-Leste nian sai-nu'udar uma ba kultura ne'ebé riku no iha forma oioin, inklui konsentrasaun boot ida kona-ba fatin ba Arte-fatuk ne'ebé hetan iha illa sira iha Sudeste Aziátiku nian.

Fatin sira ba Arte-fatuk iha rejiaun ne'e mak orijinalmente dokumenta ona hosi antropólogo sira Portugés nian. Rui Cinatti, agrónomu ida ne'ebé filafali mai serbisu iha Timor-Leste iha tinan 1961 depoizde ne'e nia bá hasai fali nia mestradu ba Antropolojia iha Oxford (Stilwell 1995), mak mensiona uluk ezisténsia Tutuala no Ilékérékééré cliffs (fatuk-mahon sira iha Ilékérékééré) no rai kle'an Lené Hara nian, sira hotu kontein ho pinturas makerek iha fatuk-lolon (Cinatti 1963). António de Almeida mak fofoun hahú lidera Misaun Antropolójika iha 1950 nia laran (Missão Antropológica de Timor – Lucas et al 1992; Schouten 2001), ne'ebé filafali mai Timor-Leste ba daikus iha fulan Setembru 1963, hodi mai vizita Arte-fatuk hirak-ne'e nu'udar deskreve ona hosi Cinatti ne'ebé nia hetan tan ida, fatuk-lolon Sunu Taraleu mós situadu iha rejiaun Tutuala (Almeida 1967).

Iha tinan ikus nian, entre 1966 no 1967, Ian Glover estabelese sesaun tolu ba serbisu-terrenu nian iha Timor no uza fulan

sites in the Tutuala region and visited the Lene Hara and Ili Kerekere sites, originally reported by Cinatti. Glover was the last archaeologist to work in Portuguese Timor prior to the Indonesian invasion, which took place in December 1975.

Following 24 years when no archaeological work was recorded and after the 1999 vote for Independence and subsequent UN transition period, the research environment in Timor changed dramatically. This period saw fundamental political change and allowed for wider research interest from Australia, Portugal and elsewhere.

The East Timor Archaeological Project (EATP), a joint project between the Australian National University and James Cook University, in Australia, was set up in 2000 by the same researchers who since 1995 had been involved in archaeological work in the Aru Islands, in eastern Indonesia (O'Connor et al. 2006). Between 2000 and 2002, ETAP members carried out four field seasons in Timor-Leste and their work resulted in the discovery of a diverse range of archaeological sites, including several caves and shelters in the Tutuala region with evidence of rock paintings. The first comprehensive account of ETAP's work was published in 2003, where information on some of the sites was detailed (Spriggs et al. 2003). Another early publication resulting from this project documents new and previously known rock art sites from Tutuala and other locations along the north coast of Timor (O'Connor 2003).

At the same time, a team from UNESCO Office in Jakarta – since 2001, the official focal point for UNESCO in Timor-Leste

sanulu ba fatin eskavasaun arkeolójika, hodi dezenvolve nia peskiza ba doutoramentu iha Universidade Nasionál Austrália (Glover 1972, 1986). Iha fulan Jullu 1966, iha kompañia Profesór John Mulvaney nian, Glover halo estudu ba fatin arkeolójika sira iha rejiaun Tutuala no ba vizita fatin sira iha Lené Hara no Ilékérékééré, mak orijinálmente relata hosi Cinatti. Glover mak arkeólogo ikus nian ne'ebé iha Timor-Portugés molok akontese invazaun Indonézia iha fulan Dezembru 1975.

Ikus-mai durante tinan 24 laiha serbisu arkeolójika mak rejistu, maibé depoizde 1999 vota ba Independénsia no tuir kedas ho período tranzisaun ONU nian, entaun peskiza ba meiu-ambiente iha Timor muda kedas dramátikamente. Iha período ida-ne'e iha mudansa polítiku fundamentál no permite ba interese peskizadór barak hosi Austrália, Portugál no seluktán.

Projetu Arkeolójika iha Timor-Leste - PATL [East Timor Archaeological Project - EATP]), mak projetu konjunta ida entre Universidade Nasionál Austrália hamutuk ho Universidade James Cook iha Austrália, ne'ebé harii iha tinan 2000 hosi peskizadór ne'ebé hanesan dezde tinan 1995 envolve iha serbisu arkeolójika iha Illa Aru nian, iha parte oriente hosi Indonézia (O'Connor et al. 2006). Entre tinan 2000 no 2002, membru sira PATL ka ETAP nian estabelese sesaun terrenu haat iha Timor-Leste no sira-nia serbisu konsege deskobre fatin lubuk ida ba arkeolójika, inklui gruta (fatuku'ak) no abrigo (fatuk-mahon) barak iha rejiaun Tutuala nian ho evidénsia mak pinturas iha fatuk-lolon sira. Relatu komprensivu dahuluk kona-ba serbisu PATL ka ETAP nian

- also conducted fieldwork in Tutuala to identify rock art sites. The survey, which included several field trips from April 2001 to September 2002 (Arifin and Delanghe 2004:139), resulted in the publication of one of the first corpus of rock art from that region (idem, 2004:239-253).

Despite the end of the ETAP in 2003, investigations into the Tutuala rock art continued until today. Over more than a decade, Sue O'Connor from the Australian National University has been documenting rock art sites and test excavating caves and rock shelters in that region (Aubert et al 2007; Lape et al 2007; O'Connor 2003; O'Connor et al 2002; O'Connor et al 2010). The age and significance of this body of art is discussed by O'Connor in a paper in this publication, who suggests that comprehensive recording and further investigations are still much needed. More recently, Hans Leisen and Esther von Plehwe-Leisen conducted the first preliminary assessment on the conservation needs of some of the Tutuala rock art sites. Their analysis and recommendations are put forward in another paper, below.

Although dating of rock art is still problematic and relies mostly on stylistic analysis, new methods based on direct Uranium-Series dating of calcite depositions covering pigment are being tested (Aubert et al. 2007; Aubert et al 2013; García-Diez et al 2015). This new line of research suggests that some of the East Timorese rock art may in fact be much older than initially predicted. In 2017, a new project has begun aiming at directly dating some of the paintings from Tutuala, using the Uranium-Series dating method. This will be done by sampling

mak publikadu iha tinan 2003, iha informasaun kona-ba fatin balun ho detallu (Spriggs et al. 2003). Publikasaun ida seluk ne'ebé hetan uluk hosi dokumentu projetu ida-ne'e mak antes liu koñesidu hanesan fatin sira ba Arte-fatuk [rock arts]) hosi Tutuala no fatin seluk iha parte kosta Timor nian (O'Connor 2003).

Ba biban hanesan, ekipa ida hosi UNESCO Office Jakarta - dezde tinan 2001, ofisiál pontu fokál ba UNESCO iha Timor-Leste - mós estabelese serbisu kampu ida iha Tutuala hodi identifika fatin sira ba Arte-fatuk [rock art]) nian. Peskiza ne'ebé inklui viajen barak ba kampu hosi fulan Abril 2001 to'o Setembru 2002 (Arifin no Delanghe 2004:139), kria duni publikasaun kona-ba korpu/órgaun dahuluk nian kona-ba Arte-fatuk hosi rejiaun ne'ebá nian (idem, 2004:239-253).

Maske finál ETAP nian iha tinan 2003, investigasaun sira ba Arte-fatuk sira iha Tutuala la'o nafatin to'o agora. Liu ona dékada ida, Sue O'Connor hosi Universidade Nasionál Austrália mak dokumenta daudaun ona fatin sira kona-ba Arte-fatuk no teste eskavasaun (teste ke'e rai) ba gruta no abrigo sira iha rejiaun ne'ebá (Aubert et al 2007; Lape et al 2007; O'Connor 2003; O'Connor et al 2002; O'Connor et al 2010). Idade no importánsia hosi korpu/órgaun arte nian mak diskute ona hosi O'Connor iha paper/dokumentu ida iha publikasaun ida-ne'e, ne'ebé sujere katak rejistu/gravasaun no investigasaun kompresivu seluktán sei prezisa halo nafatin. Foin dadauk ne'e, Hans Leisen no Esther von Plehwe-Leisen estabelese avaliasaun preliminar dahuluk kona-ba nesidade konservasaaun ba fatin balun ne'ebé eziste Arte-

calcite coatings that form on top of selected images. New archaeological excavations will also be conducted, aiming at finding ochre pieces that may have been used to produce the rock paintings. Portable X-ray fluorescence (pXRF) and other testing methods will be used to try and get a match between the rock art images and the ochre fragments that may be discovered in the archaeological excavations.

fatuk iha Tutuala. Sira-nia análize no rekomendasaun sira aumenta ba paper/dokumentu seluk tan iha kraik ne'e.

Maske datasaun (data hahú) ba Arte-fatuk sira sai problemátika hela no maioria bazeia liu ba análize estilística (análize tuir estilu), maibé iha métodu foun sira bazeia ba datasaun direta ba série-Urániu hosi dispozisaun kalsita ne'ebé kobre pigmentu mak oras-ne'e sei halo teste ona (Aubert et al. 2007; Aubert et al 2013; García-Diez et al 2015). Liña foun kona-ba peskiza ida-ne'e hatudu katak ema timoroan nia Arte-fatuk sira bele tuan liu duké previstu antes (inicialmente). Iha tinan 2017, projetu foun coméca ona ho objetivu atu halo datasaun diretamente ba pintura balun hosi Tutuala, utiliza métodu datasaun ba Série-Urániu nian. Ida-ne'e bele halo liuhosi foti sample (amostra) revestimentu (kamada) kalsita nian hosi imajen selesionadu nia leten. Sei estabelese mós eskavasaun ba arkeolójika foun, ho objetivu atu hetan fatuk rahun ne'ebé iha kór ka okre baluk sira ne'ebé dalaruma utiliza hodi prodús pintura ba fatuk-lolon sira. Portable X-ray fluorescence (pXRF) no métodu teste seluk mak sei utiliza hodi koko no bele identifika ligasaun entre imajen sira iha Arte-fatuk nian no fragmentu okre nian ne'ebé bele deskobre ona durante eskavasaun arkelójika.

Working towards national classification and World Heritage status

Since regaining independence, in May 2002, the Government of Timor-Leste has continuously supported researchers conducting archaeological investigations in Tutuala and elsewhere across the country. However, it was not until 2009 that Government hosted the first initiative to promote the rock art of this region, staging an international conference on cultural heritage and inaugurating an exhibition that showcased some of the most important rock art sites from Tutuala.

This exhibition – and an accompanying brochure – would later be reproduced and translated to Fataluko (the native, non-Austronesian language spoken by communities in Tutuala), to be used during an awareness raising initiative with communities in 2011, and the opening of the Lospalos Cultural Centre, in 2014.

⁵ Since 2010, a series of workshops and initiatives were jointly-organised by the two organisations, aiming at providing training and raising awareness. Because of such long-term advocacy and collaboration, the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage, and the 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions, were approved by the National Parliament of Timor-Leste for ratification in May 2016.

Serbisu hodi hetan klasifikasaun nasionál no estatutu Patrimóniu Mundiál nian

Dezde restaurasaun independénsia iha fulan Maiu tinan 2002, Governu Timor-Leste kontinua nafatin apoia peskizadór sira hodi estabelese investigasaun arkeológjika iha Tutuala no fatin seluktán iha rai laran. Maibé, la'ós to'o de'it 2009 tanba Governu hahú ho inisiativa dahuluk hodi promove Arte-fatuk iha rejiaun ida-ne'e, estabelese konferénsia internasionál ida kona-ba patrimóniu kulturál no inagurasaun ba ezibisaun ida hodi hatudu fatin importante balun kona-ba Arte-fatuk nian hosi Tutuala (fig. 2).

Ezibisaun ida-ne'e – no broxura akompañamentu ida – mak sei reproduz ikus no tradúz ba dalen Fataluku (dalen orijen nian, nu'udar lian naun-Austronézia ne'ebé komidade ko'alia iha Tutuala), mak uza ba inisiativa sensibilizasaun ida ho komidade iha tinan 2011, no abertura ba Sentru Kulturál Lospalos, iha tinan 2004.

⁵ Dezde 2010, série ida hosi workshop no inisiativa sira mak konjuntamente-organizadu hosi organizasaun rua, ho objetivu hodi fornese formasaun no hala'o sensibilizasaun. Tanba advokasia no kolaborasaun ba longu-prazu ne'e, Konvensaun 1972 nian Relasiona ba Protesaun ba Kultura Mundiál no Patrimóniu Naturál nian, no Konvensaun 2003 nian kona-ba Protesaun no Promosaun ba Espresaun Diversidade Kulturál sira, ne'ebé aprovalu hosi Parlamentu Nasionál TL nian ba ratifikasaun iha Maiu 2016.

The collaboration between Government of Timor-Leste and UNESCO to protect and promote the rock art sites from Tutuala was also strengthened during this period. Besides advocating for the need to establish a National Museum where the art and other heritage and cultural expressions could be showcased, UNESCO raised funding to promote the ratification of the 1972 and 2003 Conventions .

In June 2013, Government of Timor-Leste organised a visit to Kakadu National Park, in Australia (figure 2). This initiative, organised in collaboration with Parks Australia and researchers from the Australian National University , aimed at exposing Timor-Leste Government staff and Tutuala community members to the complexities of managing a national park and World Heritage site that is listed both for its environment and living culture – and, in particular, its rock art.

Kolaborasaun entre Governu Timor-Leste no UNESCO hodi proteje no promove fatin sira kona-ba Arte-fatuk hosi Tutuala ne'ebé hetan apoia ona durante período ida-ne'e. Aleinde defende nesesidade atu estabelese Museu Nasionál ida hodi bele hatudu arte ho patrimóniu no espresaun kulturál seluk, UNESCO mós buka fundus hodi promove retifikasaun ba Konvensaun sira iha tinan 1972 no 2003 nian⁵.

Iha fulan Juñu 2003, Governu Timor-Leste organiza vizita ida ba Parke Nasionál Kakadu, iha Austrália (fig.3). Inisiativa ida-ne'e organizadu bazeia ba kolaborasaun ho Parke sira

⁶ The trip to Kakadu, which included an official ceremony at the Park Headquarters, visits to Ubirr and Nourlangie rock art sites, and discussions with traditional custodians at the Warradjan Cultural Centre, was facilitated by Dr. Sally Brockwell and Ms. Tristen Jones, from ANU.

⁶ Viajen ba Kakadu, ne'ebé inklui serimónia ofisiál ida iha Koartél Parte nian, vizita bá fatin sira kona-ba arte fatuk-makerek nian iha Ubirr no Nourlangie, no diskusaun sira ho responsavel/mahein tradisionál sira iha Sentru Kulturál Warradjan ne'ebé fasilita hosi Dr. Sally Brockwell no Ms. Tristen Jones, hosi ANU.

Figure 2: Visit to Kakadu National Park, Australia, June 2013. (© Dr. Nuno Vasco Oliveira)
Figura 2: Vizita ba Parke Nasionál Kakadu, Austrália, Juñu 2013. (© Dr. Nuno Vasco Oliveira)



Following the trip to Kakadu, UNESCO supported yet another rock art project in Timor-Leste, this time with funding from the Netherlands Funds-in-Trust. The project, which aimed at protecting and promoting the rock art towards World Heritage, to help enhancing the livelihoods of local communities and strengthen their cultural identity, resulted in a two-day briefing session for rock art custodians in Tutuala, the opening of an exhibition in Tutuala, and the installation of panels with information on the rock art for visitors and community members alike (Figures 3-6)

Working with communities



Figure 3: Sketch of a panel on the Tutuala rock art, which was intalled inside a traditional house built for that propose (© SEAC, Almeida Genefabre).

Figura 3: Serimónia abertura kona-ba painél informasaun hosi António Fonseca, tuir fali hosi Xefe Suku Tutuala nian. (© SEAC, Almeida Genefabre).

iha Austrália no peskizadór sira hosi Universidade Nasionál Austrália⁶, ho objetivu atu hatudu ba pesoál Governu Timor-Leste nian no membru komunitária sira kona-ba kompleksidade atu jere parke nasional ida no fatin Patrimóniu Mundiál nian ne'ebé rejistu ona ba nia meu-ambiente no kultura moris nian – no, partikularmente, nia Arte-fatuk sira.

Tuir programa viajen ba Kakadu, UNESCO apoia fali projetu ba Arte-fatuk (rock art project) iha Timor-Leste, ba biban ida-ne'e orsamentu mai hosi Netherland Fund-in-Trust. Projetu ne'e ho objetivu atu hodi proteje no promove Arte-fatuk sira ba Patrimóniu Mundiál nian, hodi tulun haforsa comunidade lokál nia meus subsisténsia (meus hodi fila-liman) no hametin sira-nia identidade kulturál, ida-ne'e mak sesaun badak abertura ba ezibisaun ida iha Tutuala, no instalasaun ba painél ho informasaun kona-ba Arte-fatuk nian ba vizitór no membru komunitária sira hanesan iha (fig. 3-6)



Figure 4: Opening ceremony of information panels by Mr António Fonseca, then Head of Suko from Tutuala. (© Dr. Nuno Vasco Oliveira)

Figura 4: Serimónia abertura kona-ba painél informasaun hosi António Fonseca, tuir fali hosi Xefe Suku Tutuala nian. (© Dr. Nuno Vasco Oliveira).



Figure 6: Information panel at Lene Cece rock art site, in Tutuala. (© Ian Johnston, based on original digital enhancement by Prof. Sue O'Connor, ANU).

Figura 6: Painél informasaun iha fatin arte rupestre iha Lené Cecé, iha Tutuala. (© Ian Johnston, bazeia da dezeñu dijital husi Prof. Sue O'Connor, ANU).

For the past few years, UNESCO invited staff from the Government of Timor-Leste to take part in a series of trainings and workshops overseas. Some of such opportunities included training on museum management, illicit trafficking of cultural property, Disaster Risk Preparedness and Reduction, Intangible Cultural Heritage (ICH) and on preparing nomination dossiers for inscribing properties in the World Heritage List. At the same time, UNESCO organised a series of capacity building and awareness raising initiatives in Timor-Leste, several of which aimed at enhancing the country's capacity to protect and promote its rich cultural diversity and rock art manifestations.

A series of initiatives on ICH resulted in the publication of a book and the launch of an exhibition, in 2014. Exploring the link between rock art and living cultural traditions in Tutuala, a community based ICH workshop, a preliminary inventory of ICH expressions within Nino Konis Santana National Park, and a small exhibition of the project results were also conducted in 2015 (Figure 7).

In early 2016, the first of a series of projects on rock art conveyed by UNESCO and supported by the Foreign Office of the Federal Republic of Germany, took place. In the course of such

Iha tinan hirak liubá, UNESCO konvida pesoál sira hosi Governu Timor-Leste atu hodi hola parte iha série ida kona-ba formasaun no worokshop sira bá tasi-balu. Oportunidade balun hosi ida-ne'e inklui formasaun kona-ba jestaun muzeu, tráfiku ilegál ba propriedade kulturál, preparasaun/ prontidaun no Redusaun ba Risku Dezastre, Patrimóniu Kulturál Imateriál (PKI/ICH) no kona-ba prepara dokumentu nomeasaun nian hodi inskreve ka rejista propriedade sira iha Lista Patrimóniu Kulturál Imateriál nian. Durante biban hanesan, UNESCO organiza mós série ida ba inisiativa kapasitasaun no sensibilizasaun iha Timor-Leste, programa sira-ne'e ho objetivu atu hadi'a kapasitasaun nasional hodi proteje no promove riku-soin ba diversidade kulturál no manifestasaun ba Arte-fatuk (rock art) nian.

Série ida hosi inisiativa sira kona-ba PKI/ICH ba publikasaun livru ida no lansamentu ba ezibisaun ida iha 2004. Hodi kria ligasaun entre Arte-fatuk no tradisaun kultura moris nian iha Tutuala, workshop PKI nian ne'e bazeia-ba-komunidade ida, inventáriu preliminar ida kona-ba espresau PKI nian iha Parke Nasionál Nino Konis Santana, no ezibisaun ki'ik ida kona-ba rezultadu projetu nian ne'ebé estabelese mós iha tinan 2015 (fig.7)



Figure 7: Exhibition on ICH related to rock art in the Nino Konis Santana National park (© Many Hands International).

Figura 7: Ezibisaun kona-ba PKI (ICH) relasiona ba Arte-fatuk sira iha Parke Nasionál Nino Konis Santana (© Many Hands International [Liman Internasionál Barak]).

project, a preliminary survey of potential threats to the rock art in Tutuala was conducted (see paper in this volume by Plehwe-Leisen & Leisen), as well as a two-day workshop and the publication of a small brochure on the protection of the Tutuala rock art (Figures 8 and 9).

A second German-funded project resulted in the development of additional signage in proximity to rock art sites in Tutuala, to help improving the experience for visitors; and a third project is currently under discussion, with the aim of creating a Tentative List and initiating the Tutuala Rock Art nomination dossier.

The potential to list rock art in Tutuala as World Heritage should not be underestimated. These sites were recently presented as an example of a potential new World Heritage site during a training course with UNITAR (United Nations Institute for Training and Research), held in Hiroshima, Japan, in April 2015. There, it was asserted that archaeological caves and rock shelters in the Nino Konis Santana National Park, as well as the rock art manifestations they contain, are integral of the Outstanding Universal Value (OUV) proposed, in the sense that they convey the notions of early migration, ancient human occupation and modern living tradition. Their listing as a World Heritage property, thus, lies first and foremost in the ability to potentiate all the work done so far in effectively protect and efficiently manage the sites.

Iha inísiu 2016, iha série ida ba projetu dahuluk kona-ba Arte-fatuk nian ne'ebé hato'o hosi UNESCO no apoiu mai hosi Foreign Office - Repúblika Federál Jermán nian. Durante projetu hirak-ne'e, estabelese mós peskiza preliminar ida kona-ba ameasa boot sira ba Arte-fatuk nian iha Tutuala (haree paper/dokumentu iha volume ida-ne'e hosi Plehwe-Leisen & Leisen), nomós workshop liron-rua nian⁷ no publikasaun ba broxura ki'ikoan ida kona-ba protesaun ba Arte-fatuk sira iha Tutuala (Figura 8-9).

Projetu fundu-Jermán nian daruak kona-ba dezvoltimentu ba sinalizaun adisionál besik fatin Arte-fatuk nian iha Tutuala, hodi tulun aumenta esperiênsia ba vizitór sira; no projetu ida ba-datulok mak oras-ne'e sei diskute, nia objetivu atu kria Lista Tentativa ida no hodi kria dokumentu nomeasaun ba Arte-fatuk iha Tutuala.

Potensial ba lista Arte-fatuk nian iha Tutuala nu'udar Patrimóniu Mundiál ne'ebé labele haree hanesan objetu folin laek ida. Tanba fatin sira-ne'e foin daudauk sai-nu'udar ezemplu ida hosi fatin Patrimóniu Mundiál foun ida ne'ebé potensial durante kursu formasaun ida ho UNITAR (Instituto

⁷ The workshop was attended by H.E. Mrs. Maria Isabel de Jesus Ximenes, (State Secretary of Arts and Culture), Mr. Alexander Thielitz, (Second Secretary of the Cultural and Press Affairs of the German Embassy), Mr. Bernards A. Zako (Head of Culture Unit of UNESCO Office in Jakarta), Professor Hans Leisen and Dr. Esther von Plehwe-Leisen (experts on stone conservation), Ms. Gabrielle O'Loughlin, Senior Project Officer - Cultural Heritage, and Mr Jeffrey Lee, Traditional Owner, from Kakadu National Park; and the author.

⁷ Workshop ne'e partisipa hosi S.E. Maria Isabel de Jesus Ximenes, (Secretaria Estado Arte no Kultura), Mr. Alexander Thielitz, (Second Secretary of the Cultural and Press Affairs of the German Embassy), Mr. Bernards A. Zako (Xefe Unidade Kultura hosi UNESCO Ofice iha Jakarta), Prof. Hans Leisen no Dr. Esther von Plehwe-Leisen, especialista kona-ba konservasaun fatuk nian; Ms. Gabrielle O'Loughlin, Senior Project Officer - Patrimóniu Kulturál, no Mr. Jeffrey Lee, Tradisional Na'in, hosi Parke Nasionál Kakadu; no autór.

Nasoins Unidas nian ba Formasaun no Peskiza), ne'ebé estabelese iha Hirosima, Japaun, iha Abril 2015. Iha ne'ebá, afirma ona katak eziste fatuk-ku'ak no fatuk-mahon arkeolójika sira iha Parke Nasionál Nino Konis Santana, nomós manifestasaun sira ba Arte-fatuk sira-ne'ebé kontein arte, sai parte integrante hosi Valór Universál Epsilonal (VUE) ne'ebé propoin ona, ho sentidu ida katak sira mak tranzmite nasaun sira hosi inísiu migrasaun nian, hosi okupasaun umana antiga no moris tuir tradisaun moderna nian. Sira-nia lista nu'udar propriedade Patrimóniu Mundiál ida, ho nune'e, hetan uluk oportunidade ho kapasidade atu haforsa serbisu hotu-hotu ne'ebé feito to'o agora hodi proteje efikazmente no jere fatin sira efisientemente.



Figure 8: Opening of the two-day “Workshop on the Conservation and Management of Rock Art Sites”, Lospalos Cultural Centre, January 2016 (© Dr. Nuno Vasco Oliveira).

Figura 8: Abertura ba “Workshop loron-rua nian kona-ba Konvensaun no Jestaun ba Fatin sira Arte-fatuk nian”, Sentru Kulturál Lospalos, Janeiro 2016 (© Dr. Nuno Vasco Oliveira).



Figure 9: Brochure “Protecting the Rock Art of Tutuala” (©SEAC & UNESCO Office, Jakarta).

Figura 9: Broxura “Protesaun ba Arte-fatuk Tutuala nian” (©SEAC & UNESCO Office, Jakarta).

What can be done to help protect the Tutuala rock art

Rock art is an important part of community life in Tutuala. Its protection for present and future generations calls for a joint-effort between different stakeholders, including Government, communities, rock art experts and specialized institutions such as UNESCO and ICOMOS. From a management perspective, this work requires detailed documentation, conservation and continued investigation of existing and new sites. The Government of Timor-Leste has a key role in providing legal protection and other management tools, in developing appropriate infrastructure, in facilitating access to sites by trained experts, and by providing training to and maintaining good communication with communities and traditional custodians of rock art sites.

There is, however, considerable work lying ahead at national level. In Timor-Leste, a national heritage framework that provides legal protection to cultural and heritage sites has just been approved. In addition to legal provisions, relevant Government authorities should have at their disposal a dedicated budget line and qualified human resources to investigate, protect and manage cultural heritage sites – especially those of greater significance, such as the caves and rock art sites in Tutuala, which should be classified as national monuments.

In the last few years, significant documentation work has been conducted in Tutuala by both communities,

Saida mak bele halo atu hodi tulun proteje Arte-fatuk sira iha Tutuala

Rock art ka Arte-fatuk sai-nu'udar parte importante ida hosi moris komunidadade nian iha Tutuala. Ninia protesau hosi jersau ohin-loron ho aban-bainrua ezije esforsu-konjuntu ida entre parte-interesada oioin, inklui Governu, komunidadade, instituisaun espesializadu no matenek-na'in ka espesialista sira ba Arte-fatuk nian mak hanesau UNESCO no ICOMOS. Haree hosi perspetiva jestaun ida, entaun serbisu ne'e prezisa dokumentasaun detalladu, konservasaun no investigasaun ne'ebé kontínuu ba fatin foun sira-ne'ebé eziste. Gov Timor-Leste iha papél xave ida hodi fornese protesau legál no mekanizmu jestaun seluk, atu dezenvolve infraestrutur ne'ebé apropriadu, atu fasilita asesu ba fatin sira liuhosi espesialista formadu sira, no liuhosi fó formasaun no hodi mantein komunikasaun di'ak ho komunidadade no responsavel/mahein tradisionál nian ba fatin sira ne'ebé iha Arte-fatuk ne'e.

Iha, maibé serbisu konsideravel depende ba nivel nasional. Iha Timor-Leste, enkuadramentu patrimóniu nasional ida mak fornese protesau legál ba kultura no fatin patrimóniu nian foin dadauk ne approva ona. Aleinde ba dispozisaun legál, autoridade Governu relevante sira tenke iha, iha sira-nia dispozisaun, liña orsamentu dedikadu ida no rekursu umanu ne'ebé kualifikadu hodi investiga, proteje no jere fatin patrimóniu kulturál sira – espesialmente sira-ne'ebé iha importánsia boot, mak hanesan fatuk-ku'ak no Arte-fatuk sira iha Tutuala, ne'ebé tenke klasifikadu nu'udar monumentu nasional.

any prohibited areas, not touching or wetting the paintings for better pictures, not scratching or grafting cave walls and not breaking and/or removing any stone pieces, and avoiding making fire, cooking, smoking or littering in or around rock art sites.

benefísiu boot ba comunidade maibé, bele mós kria ameasa ba konservasaun. Labele bá vizita mesak, ka laiha vizita ne'ebé la'o mesak no tuir ema matadalan ruma hosi membru comunidade lokál ne'ebé iha autorizasaun. Vizitór sira ne'ebé bá vizita tenke observa mós prinsípiu sira ho loloos mak hanesan hatudu respeitu ba fatin ne'ebá (maioria hosi fatin Arte-fatuk sira nu'udar fatin lulik/sagrau ba comunidade lokál rasik), la'o tuir loos de'it dalan no labele tama ba área balun ne'ebé bandu atu tama bá, labele kaer ka habokon fatin pintura sira halo sai imajen ne'ebé di'ak-liu fali, labele koi kanek fatuk-ku'ak lolon no labele harahun ka hatohik no ka muda tiha fatuk baluk balu ba fatin seluk, no evita keta sunu ahi, keta te'in, keta fuma ka keta tohik iskeiru iha ka besik Arte-fatuk sira.

Conclusion

Despite its establishment a decade ago, the Nino Konis Santana National Park still awaits effective implementation in the field, in the form of sufficient human and financial resources. The rock art sites known in Tutuala today, which constitute one of the most significant and diversified bodies of rock art across Island Southeast Asia, are all located within the Park. The art and the archaeological sites in which the art was produced are of much significance to communities in the region. However, these sites are barely known to Park authorities and have not yet been protected at a national level.

Further documentation, research and conservation of the Tutuala rock art is required. A framework to legally protect the sites also needs to be established, alongside management, conservation and tourism plans, and training on documentation, conservation and maintenance for Government staff and community members. In addition,

Konkluziun

Maske nia estabesimentu iha dékada ida liubá, Parke Nasionál Nino Konis Santana sei hein hela implementasaun efikáz iha terrenu, eintérmuzde rekursu umanu no rekursu finanseiru ne'ebé sufisiente. Fatin sira kona-ba Arte-fatuk nian oras-ne'e koñesidu ona iha Tutuala, no sai-nu'udar rekursu ida ne'ebé importante liu ho iha makerek oioin iha fatuk-lolon ne'ebé eziste iha Sudeste Aziátiku, fatuk sira hotu eziste iha Parke laran duni. Fatin sira ba arte no arkeolójika ne'ebé prodús ona arte sai importante ba comunidade sira iha rejiaun ne'e. Maibé, fatin hirak-ne'e seidak koñesidu ba autoridade Parke nian no seidak proteje tuir nivel nasionál ida.

Halo tan dokumentasaun, peskiza no konsersasaun ba Arte-fatuk sira iha Tutuala tuir nesesidade. Presiza enkuadramentu ida hodi proteje legalmente ba fatin sira nomós presiza atu estabese, hala'o hamutuk ho jestaun di'ak, planu sira ba konsersasaun no turizmu, no formasaun kona-ba

appropriate management and protection of these sites should be achieved by conducting regular awareness raising initiatives, by developing visitor facilities and producing promotional materials on the rock art, and by hiring and training guards and guides.

If the Tutuala rock art is to be listed as World Heritage one day, the Government of Timor-Leste needs to take a decisive leading role, working closely with communities and national and international organisations, so that effective protection and safeguarding of these important sites is achieved and they can contribute to improve the lives of custodians and communities in the region.

dokumentasaun, konsersaun no manutensaun ba pesoál Governu nian no membru komunitária sira. Aleinde-ne'e, jestaun no protesaun ne'ebé apropriadu ba fatin hirak-ne'e tenke alkansa liuhosi estabelese inisiativa sira ba sensibilizasaun regulár, hodi dezenvolve fasilidade sira ba bainaka (vizitór) no prodús materiál promosaun nian kona-ba Arte-fatuk nian, no liuhosi fó kontratu no formasaun ba guarda no guide/matadalan sira.

Karik Arte-fatuk iha Tutuala sei rejista nu'udar Patrimóniu Mundiál iha loron ida, entaun Governu Timor-Leste presiza asume papél prinsipál ida ne'ebé desizivu, presiza serbisu hamutuk ho comunidade sira no organizasaun nasionál ho internasionál, hodi nune'e protesaun no salgaguarda sai efikás ba fatin importante sira atu bele alkansa no bele kontribui hodi hadi'ak moris mahein/ responsavel no comunidade sira iha rejiaun ne'e.

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The Rock Art of the Nino Konis Santana National Park

Rock art ka Arte-fatuk iha Parke Nasionál Nino Konis Santana

Sue O'Connor¹

Introduction

Timor-Leste has some of most diverse and well preserved rock art sites in Island Southeast Asia, and the caves and shelters containing the art are largely concentrated at the eastern end of the island in the Nino Konis Santana National Park (NKS National Park). The rock art of the NKS National Park takes two forms; painted and engraved art. Most of the art in the caves and shelters is painted and includes a variety of visually engaging diminutive human figures shown in active poses, often wearing elaborate head-dresses and holding weapons or ritual regalia. Boats, geometric motifs and arm and hand prints are also well represented. The human figures are depicted in profile and frontal

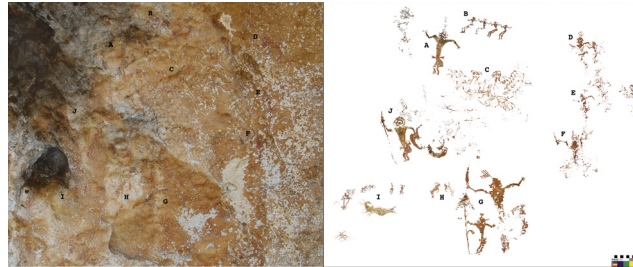


Figure 1: Ilé Kéré Kéré. Dynamic human figures are depicted in partial profile and frontal stance with birds (possibly owls) and crustacean (Photograph taken by Prof. Sue O'Connor).

Figure 1: IléKéréKéré. Figura umana ne'ebé dinámika reprezenta iha perfil parsiál no hamriik se oin ba manu-fuik sira (hanesan ho kaku'uk) no animál tasi (mak hanesan: kadiuk no boek nst) (Fotografia husi Prof. Sue O'Connor)

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Autora ne'e Profesór Arkeolojia iha Koléjiu Ázia no Pasífiku iha Universidade Nasionál Austrália nian. Dezde tinan 2000 nia hala'o peskiza kona-ba arkeolojia no arte rupestre iha Timor-Leste. Nia mós investiga arkeolojia husi rai no illa husi Sudeste Aziátiku no Austrália.

Introdusaun

Timor-Leste fatin oioin barak mak importante ne'ebé prezervadu hela iha illa Sudeste Aziátiku, no fatin sira ba gruta (fatu-ku'ak) no abrigo (fatuk-mahon) sira ne'ebé kontein arte mak butuk konsentradu hela iha estremidade orientál (ponta leste) illa ne'e nian mak Parke Nasionál Nino Konis Santana (Parke Nasionál NKS). Rock art ka Arte-fatuk iha Parke Nasionál NKS iha forma rua mak hanesan: arte pintura no arte gravura (gravura:ukiran [bhs.ind.]). Maioria hosi arte sira iha gruta no abrigo ne'e mesak pintadu inklui variedade ida hosi figura ema ki'ikoan sira ne'ebé vizualmente atraente (fúrak no atrait) ne'ebé hatudu ho pose ativa, sempre hatais kompletu bobar lensu baulun no kaer kilat ka

stance, with the profile figures more finely executed and dynamic (Figure 1). These small active figures are often shown in groups engaged in activities such as dancing and fighting (Figure 2). Animal motifs also occur but are less common and include fish, birds and horses (eg. Figure 1, motif group C). One group of motifs in a shelter known as Moa Mimi Raka includes what appears to be a crustacean; possibly a lobster or shrimp (Figure 1, motif group I). Interestingly, the Portuguese anthropologist Almeida (1957:239) who worked in Timor-Leste in the 1950s and 60s noted that in some regions a type of large shrimp is found in the rivers and is “reverenced before they are caught”.



Figure 2. Suntaleo art showing figures engaged in fighting (Photograph taken by Prof. Sue O'Connor).

Figura 2. Arte Suntaleo nian hatudu figura sira envolve iha luta / funu nian (Fotografia husi Prof. Sue O'Connor)

sasán rituál nian. Iha bero, iha modelu/ motivu jeométriku liman kabun no liman sira mak representa ho didi'ak. Figura umana nian representa ho perfil no pozisaun frontál, ho figura perfil sira-ne'ebé fina/ lotuk loos no dinámika (figura1). Figura ativa ki'ikoan sira-ne'e sempre hatudu iha grupu sira ne'ebé envolve iha atividade hirak hanesan dansa no luta/ baku-malu (figura2). Motivu kona-ba animál sira mós iha, maibé ladún komún no inklui ho ikan, manu-fuik no kuda sira (ezemplu iha figura 1, motivu grupu C) nian. Grupú ida hosi motivu iha abrigo ida ne'ebé koñesidu nu'udar Moa Mimi Raka inklui modelu ne'ebé hanesan ho krustáseu (animal bee no tasi nian): kuaze hanesan ho kadiuk ka boek ida (figura1, motivu hosi grupu I). Interessantemente, iha antropólogu Portugeza ida naran Almeida (1957:239) ne'ebé serbisu iha Timor-Leste iha tinan 1950 no 1960 (rihun-ida atus-sia limanulu - rihun-ida atus-sia neennulu) nia laran, nia observa katak iha rejaun balun, mak iha tipu ida hosi boek boot ne'ebé hela iha mota-boot “molok atu kaer sei hamulak uluk lai”.



Figure 3. Ilé Kéré Kéré poko motif (Photograph taken by Prof. Sue O'Connor).
 Figura 3. Motiv u polo IléKéréKéré nian (Fotografia husi Prof. Sue O'Connor).

Figures combining geometric and human attributes also occur in some of the sites. The most common geometric paintings are of rayed stars or suns motifs and others featuring concentric circles, half circles, cups and scrolls.

The painted art occurs in a variety of colours. Paintings are mostly in monochrome red pigment, but black, yellow and brown pigments occur, sometimes as polychrome images. Good examples can be seen in the limestone sea cliff shelter known as Ilé Kéré Kéré where one motif that the locals call a poko is carefully executed in red, yellow and black pigment (Figure 3). This imposing shelter looks out to the coast and over Jaco Island (Figure 4).

One of the geometric motifs in Lené Hara Cave even includes a faded green infill. The green pigment is likely derived from natural sources of copper rich rocks on the island. Hand and arm stencils also occur in many of the sites (O'Connor 2003).



Figure 4. Ilé Kéré Kéré looking out over Jaco Island (Photograph taken by Prof. Sue O'Connor).
 Figura 4. IléKéréKéré hateke ba illa Jaco (Fotografia husi Prof. Sue O'Connor)



Figura sira liga-malu/ kombinadu ho atributu jeométriku no atributu umanu mós akontese iha fatin balun. Pintura jeométriku ne'ebé komún mak raius hosi motivu fitun ka loromatan nian ne'ebé nabilan no seluk fali karakteriza sírklukonséntriku, meiu-sírkulu (sírklu-baluk) kopu no rolu sira.

Arte pintura nian iha kór oiain. Pintura sira maioria ho pigmentu mean ho kór ida de'it (monochrome), maibé iha mós kór metan, kinur, no kór-kafé, dalabarak tanba imajen ho kór barak (polychrome). Bele haree ezemplu di'ak iha abrigo husi kalkáriu iha enkosta ne'ebé koñesidu hanesan Ilé Kéré Kéré iha ne'ebé dezeñu ida ne'ebé ema lokál bolu poko halo ho kuidadu ho pigmentu mean, kinur no metan (figura 3). Abrigo ka Fatuk-mahon Ida-ne'e hateke ba parte kosta liuhosi illa Jako nian (figura 4).

Dezeñu jeométriku iha fatuk-Kuak Lené Hara inklui mós preenximentu ho matak ne'ebé kamutis ona. Pigment matak karik mai hosi fonte naturál husi fatuk ne'ebé iha kobre barak. Dezeñu hale'u liman no brasu iha mós iha fatin arte rupestre barak (O'Connor 2003).

History of research on the Nino Konis Santana National Park rock art

When Almeida visited Tutuala and discovered a few of the cave sites he interviewed local people about the subjects and activities that the paintings depicted. Almeida (1967) stated that the people he interviewed appeared to have no direct knowledge about the content or execution of the art. However, our research indicates that Almeida may have been asking the wrong people or the wrong questions, as the current senior land owners have names for some of the motifs. However, they do not ascribe the paintings to human action; instead believing that they ‘appeared’ at the time when the earth first emerged (Pannell and O’Connor 2012: 321). The exceptions to this are the numerous boat paintings (eg. Figure 5, and see Lape et al. 2007), which are said to depict the craft of arriving foreigners who were welcomed by the first ‘lord of the land’. Their boats were reproduced on the walls of the caves and shelters to show that the people who had arrived and been given permission to settle (Pannell and O’Connor 2012:321). Exactly who reproduced the boats on the walls is somewhat vague and usually meets with the response, ‘the ancestors’. Today some the rock art designs found in the sites in the NKS National Park are reproduced on ceremonial woven cloth “in accordance with the ancestors”.

Boat symbolism features prominently in the culture of the islands of Southeast Asia with boat designs woven into the cloths and parts of boats sometimes incorporated into houses (Ballard et al. 2004). In the Tanimbar Islands of eastern

Istória peskiza nian kona-ba Arte-fatuk nian iha Parke Nasionál Nino Konis Santana

Bainhira Almeida halo vizita ba Tutuala no deskobre fatin uitoan kona-ba gruta, entaun nia entrevista populasaun lokál sira kona-ba sujeitu no atividade sira hosi espresaun pinturas nian. Almeida (1967) deklara katak populasaun ne’ebé nia konsege entrevista ne’e haree hanesan sira mós laiha koñesimentu direta ida kona-ba konteúdu ka kriasaun arte sira-ne’e rasik. Maibé, ami-nia peskiza hatudu katak dalaruma Almeida entrevista sala ema ka pergunta mak sala, tanba ema katuas sira ne’ebé sei moris no sai na’in ba rai ne’e hanaran duni ba motivu sira-ne’e. Maibé sira la konsidera pintura sira ba asaun umana nian; embora sira fiar katak figura makerek sira-ne’e mosu bainhira rai ne’e hahú forma an (Pannell no O’Connor 2012: 321). Anaunsér iha pintura lubun balu bero nian (porezemplu figura 5 nian, no haree ba Lape et al. 2007), ida-ne’ebé hodi esplika kona-ba ema estranjeiru sira to’o mai no ‘Lulik na’in rai ne’e nian’ mak simu sira. Sira prodús/pinta fali sira-nia bero ba gruta no abrigo lolon sira hodi hatudu katak ema ne’ebé to’o ona iha-ne’e hetan duni lisensa hodi hela (Pannell no O’Connor 2012: 321). Ezatamente ema sé mak prodúz fali figura sira iha gruta lolon halo malahuk hela baibain sira hetan reasaun hosi “beiala sira”. Agora ne’e hetan fali pintura Arte-fatuk balun iha fatin Parke Naional NKS, entaun iha esforsu hodi prodúz fali ba tais sira tuir duni “lala’ok beiala” nian.

Indonesia, large stone boats mark the cosmological and physical center of the village. At these remarkable stone arrangements, villagers met, danced and made sacrifices to the ancestors (de Jonge and van Dijk 1995: 78-9; McKinnon 1988: 152-160). Within the NKS National Park 'stone boats' mark the landscape and are said to be the boats of the immigrant ratus which turned to stone after they settled (Pannell and O'Connor 2012). Most of the Timor-Leste stone boats are natural limestone outcrops, but one recorded in the Park is a stone arrangement constructed of massive limestone blocks carried or dragged to a high point in the landscape overlooking the sea.



Figure 5 Lené Cécé boats. Upper boat shows small people inside the hull. This rock art site in the National Park can be easily visited and has interpretation signage (Photograph taken by Prof. Sue O'Connor).

Figura 5. Bero sira iha Lené Cécé. Iha bero nia leten ne'ebé aas-liu, hatudu ema ki'ikoan sira iha laran ne'ebá. Fatin Arte-fatuk ida-ne'e eziste iha Parke Nasionál ne'ebé bele bá vizita ho fasil no iha sinalizasaun ba interpretasaun (Fotografia husi Prof. Sue O'Connor)

Simbolizmu ró-ahi ka bero nian okupa fatin furak ida ba kultura iha illa sira Sudeste Aziátiku, hamutuk ho dezeñu sira kona-ba embarkasaun bero nian ne'ebé pinta ba hena sira no parte sira hosi bero nian mak dalaruma hamutuk ho uma sira (Ballard et al. 2004) Iha illa Tanimbar parte leste hosi Indonézia nian, eziste bero ne'ebé halo ho fatuk boot (bero-fatuk) mak marka sentru kozmolójiku no fíziku kona-ba aldeia ida. Arranju ba fatuk notavel hirak-ne'e, ita bele haree populasaun aldeira nian mak bá hasoru, dansa no halo sakrifísiu ba beiala sira. (de Jonge no van Dijk 1995: 78-9; McKinnon 1988: 152-160;). Iha Parke Nasionál NKS nian, iha mós 'fatuk no bero sira' ne'ebé marka paizajen no bero sira-ne'e mai hosi imigrante sira-ne'ebé nakfilak tiha sai fatuk depoizde sira tama mai hela. (Pannell no O'Connor 2012). Maioria hosi bero-fatuk sira iha Timor-Leste forma hosi fatuk naturál sira ho kalkáriu, maibé ida ne'ebé rejistu ona iha Parke laran ne'e mak fatuk ida ne'ebé konstrui ho masa ho blok fatuk-ahu nian ne'ebé lori bá harii iha pontu altu (rai aas) nian hodi hateke tuun ba tasi.

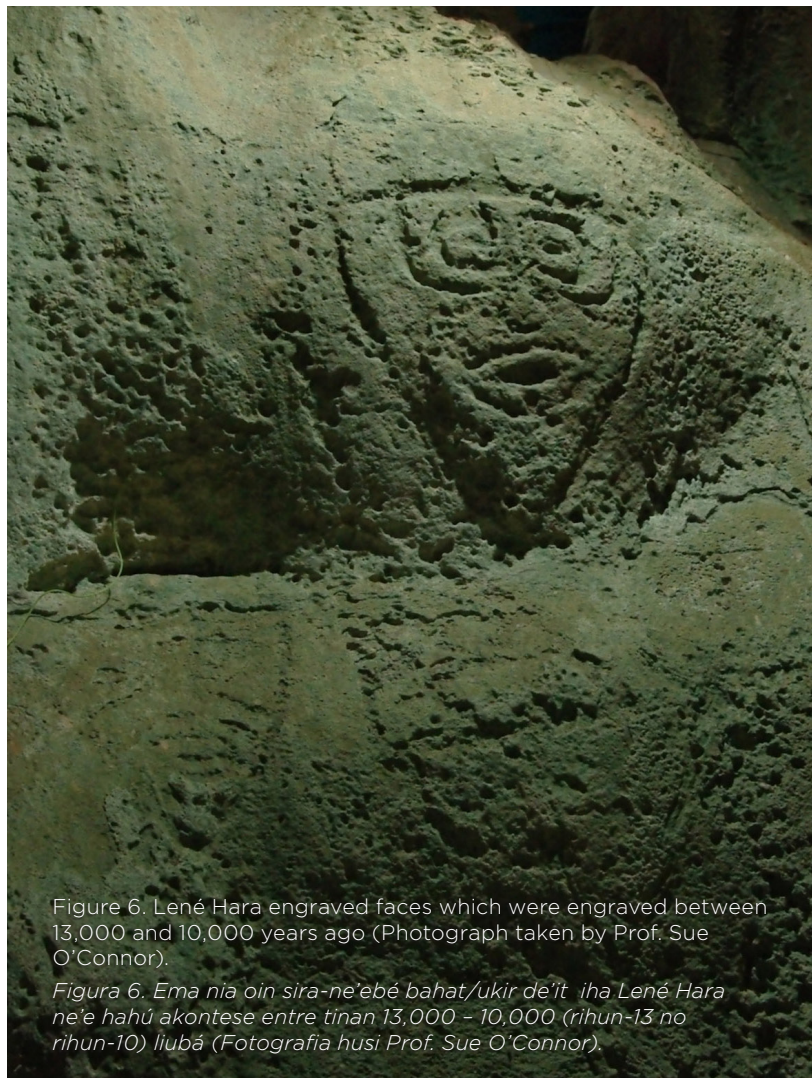


Figure 6. Lené Hara engraved faces which were engraved between 13,000 and 10,000 years ago (Photograph taken by Prof. Sue O'Connor).

Figura 6. Ema nia oin sira-ne'ebé bahat/ukir de'it iha Lené Hara ne'e hahú akontese entre tinan 13,000 - 10,000 (rihun-13 no rihun-10) liubá (Fotografia husi Prof. Sue O'Connor).

How old is the rock art in the Nino Konis Santana National Park?

To date none of the painted rock art of Timor-Leste has been directly dated. A number of unique highly weathered engravings of human faces were discovered in Lené Hara Cave in 2009 and dated using the Uranium Thorium method to between 10,000 and 13,000 years ago (O'Connor et al. 2010a). They were made by pecking and abrading into the hard flowstones surfaces of stalagmites and stalactites and are unlike any other art thus found in Timor-Leste (Figures 6 and 7). One appears to be wearing a rayed head-dress and the others form a group of triangular shaped faces with deeply carved eyes and mouths with various degrees of weathering. Engravings generally are rare in Island Southeast Asia making the Timor-Leste examples all the more significant and important to conserve for the future.



Tinan hira ona ba rock art /Arte-fatuk sira iha Parke Nasional Nino Konis Santana?



Figure 7. Lené Hara Cave showing enormous size of the floor area that could be used for occupation and the stalagmite columns (Photograph taken by Prof. Sue O'Connor).

Figura 7. Gruta Lené Hara nian hatudu tamañu boot tebetebes hosi área rai-leten nian ne'ebé parese uza ba okupasaun no koluna estalagtita sira (Fotografia husi Prof. Sue O'Connor).

To'o ohin leron laiha pintura hosi rock art / Arte-fatuk ruma iha Timor-Leste mak iha kedas ho data akontesimentu. Figura ne'ebé bahat (ukir) de'it mak lubun ida kona-ba ema nia oin barak ne'ebé lahuk ona mak konsege deskobre iha gruta Lené Hara nian iha tinan 2009 no halo ho métodu tóriku urániu nian mak akontese ikus iha tinan 10.000 no 13.000 (rihun-10 no rihun-13) (O'Connor et al. 2010a). Figura sira ne'e kria atravezde bahat/pika no kadi ka lixa fatuk lolon toos sira hosi stalagmite no estasite sira no maneira ida-ne'e úniku no la hanesan ho arte seluk ne'ebé eziste iha Timor-Leste (figura 6 no 7). Iha figura ida mak haree hanesan ema futu helaulun ho lensu ne'ebé nabilan no sira seluk fali mak grupu ida ho oin ne'ebé triángulár ho matan no ibun sira bahat (ukir) hotu maibé kulapur tanba kleur ona. Gragura (ukiran) sira-ne'e jeralmente ladún eziste iha illa Sudeste Aziátiku, entaun ida-ne'e sai ezemplu sira iha Timor-Leste ne'ebé signifikativu no importante liután atu hodi konserva ba futuru oinmai.

Based on stylistic features the paintings of human figures, boats and geometric motifs which are characteristic of the galleries of the NKS National Park are believed to have been introduced into the islands after about 3,500 years ago by newly arriving immigrants. Ballard (1992) demonstrated that these distinctive figures appear in the art of the islands throughout the western Pacific from Timor in the east to Tonga in the west, and are most prevalent in areas with Austronesian-speaking populations. This led him to propose that the art was introduced by, and spread with, Austronesian-speaking mariners as they settled the Wallacean Archipelago and moved out into the Pacific (1992: 98). He used the term “Austronesian Painting Tradition” (APT) to describe this distinctive body of art. Wilson (2002) demonstrated that the earliest painted art in Vanuatu largely conformed to the APT and that it could be directly dated to c. 3000 cal. BP, supporting Ballard’s association of this iconography with an early Austronesian dispersal (Wilson 2002: 216).

This theory also receives some support from the paintings in the NKS National Park. For example, one scene in *Ilé Kéré Kéré* illustrates a cock fight. The two cockerels are airborne above a ring, engaged in battle, their tail feathers flying and almost touching their owners who stand behind them watching the fight (Figure 8). Such a scene would not be out of place in Timor-Leste today where cock fighting is still a popular past time for the men and takes place in a cleared area where the onlookers watch and wager money on the winner. The chicken was only introduced into Island Southeast Asia in the

Bazeia ba karaterístika estilístika sira, pintura kona-ba figura umana nian, bero no motivu jeométriku sira-ne’ebé sai karaterístika ba galeria Parke Nasionál NKS nian ne’e fiar katak iha ona introdusaun iha illa ne’e depoizde kuaze tinan 3.500 (rihun-tolu atus-lima) liubá durante imigrante sira mai fofoun. Ballard (1992) hatudu katak figura sira ne’e ne’ebé espesífiku, mosu iha arte husi illa sira iha Pasífiku osidental hosi Timor iha parte leste to’o Tonga husi parte oeste, no iha liu iha área sira ne’ebé ho populusaun ne’ebé ko’alia lian Austronezia. Ida-ne’e mak hatudu katak arte hirak-ne’e introdúz no habelar ona hosi mariñeiru sira ne’ebé ko’alia lian-Austronézia ne’ebé konsege hela iha Arkipélagu Wallace ida no muda sai fali ba Pasífiku (1992: 88). Nia uza termu “Austronesian Painting Tradition (APT)” ka “Tradisaun Pintura Austronézia (TPA)” nian hodi deskreve korpu/órgaun ba arte espesífiku ida-ne’e. Wilson (2002) hatudu ona katak arte pintura ne’ebé antiga liu iha Vanuatu mak barak-liu hanesan ho APT ka TPA no nia esplika mós katak ida-ne’e bele kria data direktamente ba c.3000 cal. BP, hodi apoia asosiasaun Ballard nian kona-ba iknografia ho dispersaun Austronézia (Austronézia namkari lemo-lemo) hosi inísiu (Wilson 2002: 216).

Teoria ida-ne’e mós hetan apoiu balun hosi pintura sira iha Parke Nasionál NKS. Nu’udar-ezemplu, sena (senáriu) ida iha *IléKéréKéré* mak hatudu/ilustra jogu manu-futun ida. Iha manu-aman nurak rua ne’e semo aas hodi tebe malu iha kampu laran (fatin manu-futun) nian, sira na’in-rua tebe malu, sira-nia fulun naklosu sai no kuaze kona fali sira-nia



Figure 8. Ilé Kéré Kéré, scene of a cock fight
(Photograph taken by Prof. Sue O'Connor).

Figura 8. Fatin futu manu nian iha IléKéréKére
(Fotografia husi Prof. Sue O'Connor).

Neolithic when pottery and other domestic animals such as dogs and pigs were also introduced so this scene must have been painted sometime in the last 3,500 years. In many parts of Southeast Asia cock fighting has a ritual function being closely associated with male blood-letting, having replaced various forms of traditional warfare and head hunting. (Maxwell 19990:150).



na'in ne'ebé hamriik iha sira-nia kotuk hodi asisti sira na'in-rua tebe malu (figura 8). Nu'udar sena (senáriu) ida, entaun jogu ne'e sei labele lakon hosi fatin sira iha Timor-Leste ohin loron, tanba manu-futun sai ona tempu populár ida hori uluk nanis ba ema hotu-hotu no futu duni iha fatin nakloke ida bainhira ema sira sei taru no manán-na'in (vensedór) sira sei manán osan. Manu aman koñesidu ka introdúz de'it iha illa sira iha Sudeste Aziátiku iha tempu Neolítiku bainhira introdúz mós serámika no animál doméstika seluk hanesan asu no fahi, tanba-ne'e mak ema pinta sena ida-ne'e e iha tinan 3500 (rihun-tolu atus-lima) ikus ne'e. Iha parte barak hosi Sudeste Aziátiku, futu-manu iha funsaun rituál ida ne'ebé kuaze relasiona ho hasai ema mane-nia-ran, hodi troka tiha tipu barak hosi funu tradisionál nian no bá soro hodi tesi ema nia ulun. (Maxwell 1990:150).

In examining the distribution of painted rock art in Island Southeast Asia with the distinctive set of characteristics outlined by Ballard, O'Connor et al. (2015) pointed out that although the art showed shared features across the vast stretch of the Wallacean Archipelago, there was little or no evidence for this style in the Philippines or Taiwan and thus suggested instead that the style with its emphasis on boats and signaling may have developed in the Banda Sea region of Indonesia some time after Austronesian communities had moved into and settled in the islands. This theory also receives support from the iconography in the NKS National Park art panels.

Weapons pictured in the rock art include spears, daggers, bows and arrows and elaborate ceremonial axes (Indonesian Candrasa) (Figures 1 and 2). The age of the bow and arrow has not been archaeologically or historically documented in Timor-Leste, however the oldest metal tools found in ISEA are the bronze axes found in burials at Harimau Cave in Sumatra where they are dated on the basis of their contexts to about 2,500 years ago (Fauzi et al. 2016). Metal axes are thought to originate in Java and to have been traded into the islands (van Hekeren 1958). Other paintings also suggest a Metal Age origin. For example, one large boat in Léné Cécé is shown with x-ray features and small human figures inside and on the deck (Figure 5). This painting resembles the war canoes depicted on the shoulders or mantles of Dong Son bronze drums (Kempers 1988). Dong Son drums originate from production centers in Vietnam where they were first made

Atu ezamina distribuissaun kona-ba rock art / Arte-fatuk nian ne'ebé pinta ona iha illa Sudeste Aziátiku ho konjuntu espesífiku kona-ba karaterístika ne'ebé esplika ona hosi Ballard, O'Connor et al. (2015) hatudu katak maske arte karaterístika sira-ne'ebé hatutan kedas mai hosi arkipélagu Wallacean ne'ebé luan tebe-tebes mai ita, iha evidénsia uitoan ka laiha ba estilu ida-ne'e iha Filipinas ka iha Tailândia no ho nune'e kuaze iha estilu ho énfaze iha bero laran no dalaruma sinalizasaun kala dezenvolve ona iha rejiaun tasi Banda Indonézia nian iha tempu balun depoizde comunidade Austronézia nian muda no hela metin iha illa sira. Teoria ida-ne'e mós hetan apoiu hosi ikonografia iha painél arte Parke Nasionál NKS nian.

Pintura kona-ba kilat sira ne'ebé ita haree iha Arte-fatuk nian inklui diman, tudik/ surik, rama ho rama-isin no baliuk sira ba serimónia (eziste iha Candrasa Indonézia) (figura 1 no 2). Idade hosi rama no rama-isin sira mak dokumenta arkelójikamente ka istórikamente iha Timor-Leste maibé ferramenta metál (besi) sira-ne'ebé antigu liu mak hetan iha ISEA hanesan baliuk bronze (baliuk perunggu) sira ne'ebé hetan iha rate sira iha gruta Harimau nian iha Sumatra ne'ebé tau data akontesimentu tuir baze sira bazeia ba sira-nia kontestu hosi kuaze tinan 2,500 (rihun-rua atus-lima) liubá (Fauzi et al. 2016). Baliuk metál sira-ne'e parese halo iha Java no faan/ troka ba illa sira (van Hekeren 1958). Pintura balun mós iha Idade Metál ida ho orijen. Porezemplu, bero boot ida iha Léné Cécé hatudu ho karaterístika raiu-x no figura ema ki'ikoan balun iha laran no iha konvé/dek leten (figura5). Pintura ida-

about 2,000 years ago, but they were traded throughout eastern Indonesia and have been found as far east as the Bird's Head of Papua (Spriggs and Miller 1988). The boats on the drums sometimes include standing or seated figures with elaborate plumed head-dresses. The boats themselves are depicted as long slim craft with high raked prows featuring elaborate decorations. Interestingly, in the last few years two Dong Son drums have been discovered on the north coast of Timor-Leste in Lautém district, not far from the rock art sites in the NKS National Park (Oliveira 2015). Although the Timor-Leste drums have not been dated, other drums found in eastern Indonesia have been argued to date to the third century AD on the basis of inscriptions and the style of their decorations (Spriggs and Miller 1988). Perhaps the Dong Son drums were carried by boat by elite traders wishing to establish client-patron exchange relationships with people in Timor-Leste and the other island communities. The motifs on these valuable trade goods may have then been copied onto the rock art panels.

Horses with riders can also be seen in the rock art at Ilé Kéré Kéré (Figure 9). Horses are not native to Timor so these images show that at least some of the art was produced after Chinese or Portuguese traders began to visit Timor to acquire sandalwood—for which the island was famous. The sandalwood trade was initially established by the Chinese; from perhaps as early as 900 years ago (Hirth and Rockhill 1911:208). In exchange for sandalwood the Chinese traded silver, iron, ceramics and cloth (Ptak 1983). Although it is not

ne'e hanesan bo bero funu nian ne'ebé marka iha kabás ka iha manta/kapa sira ba tambór broze (perunggu) Dong Son nian (Kempers 1988). Tambór Dong Son nian hahú kria hosi sentru produsaun sira iha Vietname bainhira sira prodúz fofoun iha kuaze tinan 2,000 (rihun-rua) liubá, maibé faan/troka ona ba illa sira iha Indonézia leste nian no hetan fali ona iha Papua (Spriggs no Miller iha 1988). Figura ró-ahi ka bero iha tambór lolon sira dalaruma inklui mós figura sira ne'ebé hamriik ka tuur, hatais kompletu ho lensu bobar ulun. Bero sira-ne'e rasik reprezenta artezanatu ne'ebé mihis no riin aas rebo-rebo ho dekorasaun sira. Kuriozamente, iha tinan balu ikus ne'e, Dong Son nia tambór rua mak deskobre ona iha kosta norte Timor-Leste nian iha distritu Lautém, la dook hosi fatin sira Arte-fatuk nian iha Parke Nasionál NKS (Oliveira 2015). Embora tambór sira ne'ebé eziste iha Timor-Leste ne'e seidauk tau data, maibé tambór seluk ne'ebé hetan iha Indonézia Leste nian ne'e diskute ona atu tau data ba sékulu III nian bazeia ba inskrisaun no tipu/estilu dekorasaun nian (Spriggs no Miller 1988). Parese tambór Dong Son nian ne'ebé tula ba bero hosi negociante élitu sira ne'ebé hakarak halo belun hodi kria relasaun ho ema Timoroan no comunidade hosi illa seluk. Motivu sira kona-ba negósiu valioza di'ak sira-ne'e dalaruma bele kópia tan ba painél Arte-fatuk nian.

Kuda ho kavaleiru (ema ne'ebé sa'e kuda) sira bele haree mós iha Arte-fatuk nian iha Ile Kerékeré (figura 9). Kuda la'ós orijen iha Timor tanba-ne'e imajen sira-ne'e hatudu katak pelumenus arte balun prodúz depoizde negociante Xineza no Portugeza sira hahú vizita Timor mai buka ai-kameli - tanba-

recorded in written records, some of the Chinese junks may have brought pack horses to carry their goods inland and to bring the sandalwood back to the coastal ports.

Much older art, including hand stencils and large paintings of endemic animals such as wild boar depicted in a naturalistic style, has been dated in the Maros region of Sulawesi back to about 40,000 years ago using the Uranium Series method (Aubert et al. 2014). Interestingly this art is reminiscent of the Upper Palaeolithic art of Europe with its large naturalistic horses, bisons and lions. These latest results from Sulawesi demonstrate the presence of a painting tradition coinciding with the first known human occupation of the islands. This shows that in some circumstances paintings can endure in limestone caves for tens of thousands of years, even in tropical environments. It seems probable that paintings of this age also exists in Timor-Leste as archaeological research has shown that modern human occupation first occurred at Lené Hara Cave and other sites in the National Park by at least 42,000 years ago, as evidenced by dating of the excavated deposits which contain stone artefacts, ochre, shell tools and abundant food remains (O'Connor et al. 2010b; O'Connor et al. 2011).

Research on a spalled fragment of the rock wall found on the floor of Lené Hara Cave adds support to this idea. Analysis of this wall fragment has revealed layers of calcite lamination bracketing layers of red haematite paint. The calcite on either side of the pigment layers has been sampled using laser ablation and dated using the Uranium Thorium method.

ne'e mak illa ne'e antes sai koñesidu tebe-tebes. Negosiante Ai-kameli foun mosu hosi Xineza; dalaruma hosi inisiu tinan 900 (atus-sia) liubá (Hirth no Rockhill iha 1911:208). Mudansa hosi ai-kameli, Xineza sira muda fali negósiu ba osan-mutin, besi, serámika no rupa (Ptak 1983). Maske ida-ne'e la rejista iha dokumentu eskrita maibé ema Xineza balun lori sasán uzadu mai troka sasán, dalaruma lori kuda hodi tula sira-nia sasán iha foho no tula fali ai-kameli bá portu sira iha tasi-ibun.

Arte ne'ebé antiga liu mak inklui hakerek ka estensil/hanehan ho liman no pintura boot sira kona-ba animál endémiku sira mak hanesan fahi-fuik ne'ebé representa estilus naturalístiku ida, mak hakerek ona data akontesimentu iha rejiaun Maros, Sulawesi filafali ba maizumenu tinan 40.000 (rihun-haatnulu) liubá uza métodu Série Urániu nian (Aubert et al. 2014). Kuriozamente, arte ida-ne'e fó-hano in fali ba arte sira durante era Antes Paleolítiku iha Europa ho nia naturalistia boot sira ba kuda, bisón no leaun sira. Rezultadu ikus hirak-ne'e hosi Sulawesi ne'ebé demonstra kona-ba prezensa tradisaun pintura nian ida ne'ebé akontese hamutuk ho okupasaun umana nian ba dahuluk iha illa sira-ne'ebé koñesidu. Ida-ne'e hatudu katak iha sirkunstánsia balun, pintura bele dura iha gruta fatuk-ahu nian durante tinan rihun-sanulu-resin ba leten, mezmú iha ambiente tropikál. Ita haree katak dalaruma pintura sira ho idade ida-ne'e mós eziste iha Timor-Leste nu'udar peskiza arkeolójika ne'ebé hatudu ona katak okupasaun umana moderna nian ba dahuluk akontese iha Gruta Lené Hara no fatin seluk iha Parke Nasionál. Dalabalu ita heree katak pintura hosi idade ida-ne'e eziste mós iha

Although we do not know what was painted, this scientific research has shown that the earliest layers of pigment were applied to the rock surface between 30,000 and 25,000 years ago. A further layer of pigment is dated in the last 6,000 years (Aubert et al. 2007).



Figure 9. Ilé Kéré Kéré horses and riders
(Photograph taken by Prof. Sue O'Connor).
Figura 9. Kuda no kavaleiru sira iha IllelKereKere
(Fotografia husi Prof. Sue O'Connor).

Timor-Leste nu'udar peskiza arkipélagu ne'ebé hatudu ona katak okupasaun umana moderna nian ba-dahuluk akontese iha Gruta Lené Hara no fatin seluk iha Parke Nasionál hosi pelumenus tinan 42000 (ruhun-haatnulu resin-rua) liubá, nu'udar evidénsia liuhosi datasaun iha dipózitu ne'ebé ke'e sai ona, ne'ebé kontein ho fatuk artefatu (mak hanesan: sanan/ buli-rai, nst), okre (fatuk-uut ho kór oioin), sipu-kulit sira ho aihán restu ne'ebé barak tebe-tebes, (O'Connor et al. 2010b; O'Connor et al.2011).

Peskiza kona-ba fragmentu fatuk nian (ka fatuk rahun sira) hosi didin fatuk sira ne'ebé hetan iha rai-leten iha Gruta Lené Hara nian aumenta tan apoiu ba ideia ida-ne'e. Análize sira ba didin ne'ebé tohik rohan-rohan hatudu ona kamada kalsita baluk hosi kamada ne'ebé nakloke sai hosi tinta hematita ho kór-mean. Halo ona sampel (amostra) ba kalsita hosi parte kamada nian, utiliza laser hodi leno halo datasaun ne'e uza Métodu Uranium Thorium. Embora ita la hatene dezeñu saida mak pinta ona, maibé peskiza sientífika ida-ne'e hatudu ona katak kamada sira uluk nian ne'ebé aplika ba superfísie fatuk nian hahú kria entre tinan 30.000 no 25.000 (rihun-tolunulu no rihun-ruanulu resin-lima) liubá. Kamada seluk-tán mak akontese iha último tinan 6000 (rihun-neen) nia laran (Aubert et al. 2007)

The art and connections with other regions

The distribution of the Timor-Leste sites is difficult to reconcile with Ballard's model for the co-occurrence of painting sites with Austronesian (AN)-speaking areas. The language spoken in the NKS National Park today is Fataluku, a Non-Austronesian (NAN)-language with affinities to languages spoken in New Guinea (Hajek and Himmlemann 2001). However when Almeida visited the village of Tutuala, he was told that the area had previously been occupied by speakers of a language known as Makua. Recent linguistic research has confirmed the status of Makua as an Austronesian language (Hajek and Himmlemann 2001). Thus it would appear that the Tutuala region was previously occupied by AN-language speakers and that the movement of NAN languages into this region occurred in historic times. Similar motifs to those in Tutuala occur in Kisar to the north east of Timor, in the Kai Islands of southeastern Maluku (Ballard 1988) and even as far afield as the MacCluer Gulf of Papua. One figure in Lené Hara Cave shows a fish with x-ray spine interlocked with what appears to be a flying fox (Figure 10 original image upper panel, and a). Remarkably similar paintings are found in the MacCluer Gulf region of Papua (Figure 10 b) and c) lower panel) (Röder 1959: 144, pl. 17), suggesting contact between Timor-Leste and this region in the past (O'Connor 2003).

Arte no ligasaun ho rejiaun seluk

Distribuisaun ba fatin sira iha Timor-Leste sai difisil atu rekonsilia ho modelu Ballard ba akontesimentu kona-ba fatin pintura sira ho área ba ema ne'ebé koalia lian Austronézia (AN). Lian ne'ebé ko'alia iha Parke Nasionál NKS oras-ne'e mak Fataluku, Lian Naun-Austronézia ida (NAN) iha relasaun ho lian sira ko'alia iha Nova Giné (Hajek no Himmlemann 2001). Maibé bainhira Almeida bá vizita aldeia sira iha Tutuala, ema konta ba nia katak fofoun loos área ne'e okupadu hosi populasaun ne'ebé ko'alia lian ida ne'ebé koñesidu ho naran Makua. Peskiza linguística ida foin lalais ne'e konfirma ona katak estatutu Makua nian hanesan ho lian Austronézia ida (Hajek no Himmlemann 2010). Ho nune'e hatudu katak rejiaun Tutuala uluk-liu okupa hosi ema ne'ebé ko'alia lian - AN no katak movimentu hosi lian NAN mai rejiaun ida-ne'e akontese iha tempu istóriku sira. Motivú ne'ebé hanesan ho lian sira iha Tutuala ne'ebé mai hosi Kisar hosi parte norte Timor-Leste nian, iha illa Kai hosi Maluku Sudeste (ka Maluku Tenggara) (Ballard 1988) no tama to'o Golfu ka Teluk MacLuer iha Papua. Figura ida iha Gruta Lené Hara nian hatudu ikan ida ho raiu-x ho ruín ne'ebé interligada no hanesan laku ida haksoit hela (figura 10 imajen orijinal iha painél leten, no a). Pintura sira ne'ebé hanesan loloos de'it mak hetan iha Golfu/ Teluk MacCluer iha rejiaun Papua (figura 10b no c - painél kraik) (Röder 1959: 144,pl.17), hatudu iha kontaktu entre Timor-Leste no rejiaun ida-ne'e iha pasadu (O'Connor 2003).

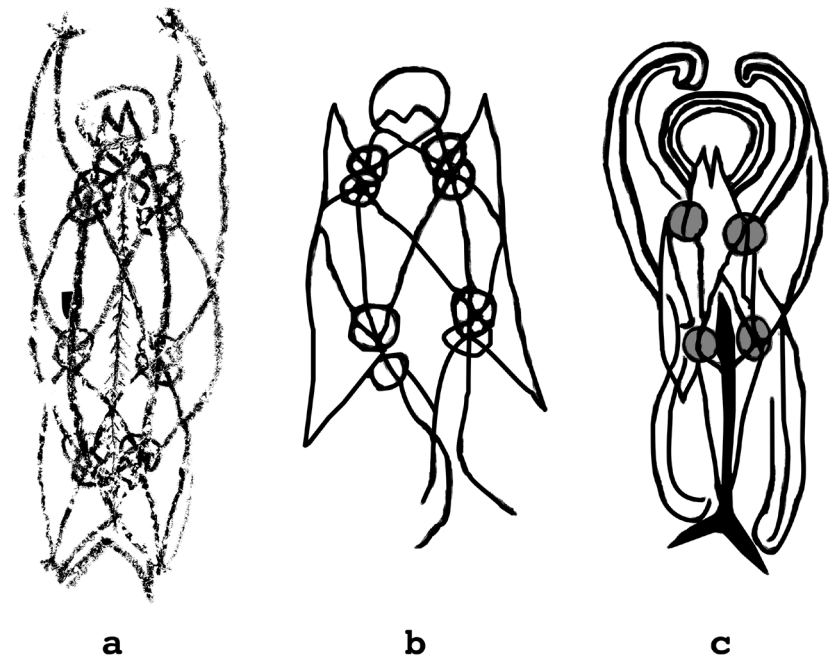


Figure 10. Lené Hara Cave motif combining a fish in x-ray style with the spine shown and a flying fox (original image upper panel and a) in lower panel) (Photograph taken by Prof. Sue O'Connor), and very similar motifs recorded during Josef Röder's expedition in the MacCluer Gulf of Papua b) and c) lower panel (Röder 1959).

Figura 10. Motivu Gruta Lené Hara nian iha kombinasau ida hamutuk ho ikan ida tuir estilu raiu-x, ho ruu kotuk hatudu laku ida haksait hela (imajen orijinal iha painél leten no) iha painél kraik (Fotografia husi Prof. Sue O'Connor), no motivu ne'ebé hanesan tebe-tebes mak rejista/grava hela durante espedisaun Josef Röder nian iha Golfu/Teluk MaxCluer, Papua b no c) painél kraik nian (Röder 1959).

The rock art as a form of symbolic signaling

The potential for symbolic signaling in the painted art of ISEA was originally raised by Ballard (1992; Ballard et al. 2004) who as already noted, recognized a characteristic set of features as common to the painted rock art of the Western Pacific region from Timor in the west through to Tonga/Samoa in the east (2004). One of the shared features was the location of some paintings high on the walls of sea cliffs or shelters overlooking the sea. Ballard (1992) proposed that this positioning suggested that the art had a role in signaling. The height of some motifs and lack of ledges or platforms on which to stand to paint indicates that scaffolding must have been constructed from below or ropes used from above to paint the panels in many caves. Although the paintings on the walls of the caves and sea cliffs of the NKS National Park are too small to have been seen from boats at sea, they may have been mnemonics understood by mariners visiting from other islands that shared the same symbolic language.

Rock Art ka Arte-fatuk nu'udar sinalizasaun simbólíka ida

Potensiál hosi sinalizasaun simbólíka ba arte pintura hosi ISEA nian mak orijinálmente hato'o hosi Ballard (1992; Ballard et al. 2004) ne'ebé observa uluk ona, nia rekoñese ona konjuntu ida hosi karaterístiku kona-ba karaterístika komún ba Arte-fatuk nian hosi rejiaun Pasífiku Osidental iha Timor hosi parte oeste nian liu to'o Tonga/Samoa parte leste nian (2004). Rekursu ida entre sira mak sai-nu'udar koleasaun hosi pintura balun ne'ebé aas iha abrigu/ fatuk-mahon aas iha tasi-ibun ne'ebé hateke ba tasi. Ballard (1992) propoin katak pozisionamentu ida-ne'e husu atu arte tenke iha ona papél ida ba sinalizasaun. Motivu balun ne'ebé aas-liu mak ladún iha borda ka plataforma hodi hamriik atu hodi pinta, nia indika katak tenke harii ona andaime (aldame) hahú hosi kraik ka tali sira ne'ebé kesi hosi leten atu hodi pinta painél sira iha gruta sira. Maske pintura sira iha gruta lolon ne'ebé aas hosi tasi-ibun iha Parke Nasionál NKS sai ki'ikoan liu ba bero atu haree hosi tasi, maibé mariñeiru sira ne'ebé mai vizita bele dekór no kompriende tanba sira mai hosi illa seluk ne'ebé kompriende hela lian simbólíka ne'ebé hanesan.

Conclusion

The rock art in the NKS National Park contains remarkable images of small human figures which document the activities and concerns of people who lived in Timor-Leste thousands of years ago. Many are faded, exfoliating or being obscured by lichen growth or calcite flows. Thorough investigation of the limestone caves and shelters within the NKS National Park is urgently required in order to ensure a comprehensive recording of the full corpus of art. This will form a baseline study which can be used to monitor natural or cultural damage to the art over time. Investigating the age of the Timor-Leste paintings should also be a priority for the future and will help us to understand relationships between communities in Timor-Leste and the surrounding islands and changes through time in art styles. Ideally this will be contextualized within the broader framework of the archaeology of the park.

Konkluziun

Rock art ka Arte-fatuk iha Parke Nasionál NKS kontein imajen notável sira kona-ba figura ema ki'ikoan nian ne'ebé dokumenta atividade no preokupasaun povu ne'ebé hela iha Timor-Leste hosi tinan rihun-ba-rihun liubá. Barak mak malahuk ona, kulit nakloke ka la moos ona tanba lumut moris ba leten ka nakonu ho kalsita. Liu hosi investigasaun ba fatuk-ruin iha gruta no abrigo sira iha Parke Nasionál NKS nian mak urjentemente presiza atu asegura rejistu komprensivu ida kona-ba korpu/órgaun tomak kona-ba arte nian. Ida-ne'e mak sei forma estudo ida hahú hosi liña baze ne'ebé bele uza hodi monitoriza estragus naturál ka kulturál ba arte durante tempu tomak. Investigasaun ba idade kona-ba pintura sira iha Timor-Leste tenke sai mós prioridade ida ba futuru no sei tulun ita hodi kompriende relasaun entre comunidade sira iha Timor-Leste no illa sira-ne'ebé besik malu no mudansa hirak durante tempu tuir estilu arte nian. Idealmente ida-ne'e mak sei kontestualiza iha enkuadramentu ne'ebé luan liu ba arkeolojia iha parke laran.

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Four Rock Art Sites in NKSP – Endangerment and Conservation Possibilities

Fatin arte rupestre haat iha PNKS – Possibilidade Ameasa no Konservasaun

Esther von Plehwe-Leisen & Hans Leisen¹

Introduction

Timor-Leste is blessed with a wealth of very important rock art sites. The images are mostly rock paintings but also a few petroglyphs are known. The exact age of all rock art depictions is still in discussion. New dating techniques shed light on the human colonization of Island Southeast Asia and the early peopling of northern Australia.

The following contribution presents a first assessment of four rock art sites in the Tutuala area under the scope of endangerment and possibilities of conservation. The sites of Lene Cece, Lene Hara, Lao Rai and Moa Mimi Raka are situated in the Nino Konis National Park.

Some pictograms are already considerably deteriorated. Others are in a stable condition. The decay has multiple reasons, and different decay mechanisms are responsible for the fading of the rock art images.

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Introdusaun

Timor-Leste hetan grasa ba rikusoin ida ho fatin sira ne'ebé importante tebe-tebes ba rock art ka arte-fatuk nian. Imajen sira mak prinsipalmente pintura sira iha fatuk lolon maibé iha mós petróglifu koñesidu balun. Sei halo diskusaun kona-ba idade ezatu hosi pintura furak sira ba Arte-fatuk hotu-hotu. Tékniku foun sira kona-ba datasau (deside data akontesimentu) nian mak hatudu ona iha kolonizasaun umana hosi illa Sudeste Aziátiku nian no povoamentu uluk-liu iha norte Austrália. Kontribuisaun tuirmai apresenta avaliasaun dahuluk ida ba fatin haat ne'ebé eziste Arte-fatuk nian iha área Tutuala tuir ámbitu ameasa nian no possibilidade sira ba konservasaun.

Piktograma (imajen) balun mak konsidera lakon ona. Seluk mak sei eziste ho kondisaun estavel nafatin. Nia estragus tanba razaun barak, no mekanizmu kulapur sira ne'ebé diferente mak responsavel ba imajen sira ne'ebé lakon ona hosi Arte-fatuk ne'e.

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1. Geological setting of the rock art sites

The very complex geological development of Timor is controlled by active plate tectonic movements. The deformation and uplift of Timor is the result of the Neogene collision of the Australian continental plate with the volcanic Banda arc (Audley-Charles 1986, 161, Tate et al. 2014, 1090-3). The collisional phase, which started in Timor at < 3 Ma is associated with high uplift and erosion rates.

1. Konfigurasaun jeolójika ba fatin Arte-fatuk nian

Dezenvolvimentu jeolójika ne'ebé kompleksu tebe-tebes iha Timor ne'e kontrola hosi movimentu tetóniku plaka ativa nian. Deformasaun no rai hi'it-an (bok-an sa'e) iha Timor ne'e sai rezultadu hosi xoke-malu / kolisaun plazma foun entre plaka kontinentál Austrália nian ho Vulkánika rahun hosi Banda (Audlev-Charles 1986, 161, Tate et al. 2014, 1090-3). Faze kolisionál (xoke malu) nian, mosu hahú iha Timor at <3 Ma mak hamosu ho taxa erozaun no rai hi'it-an.

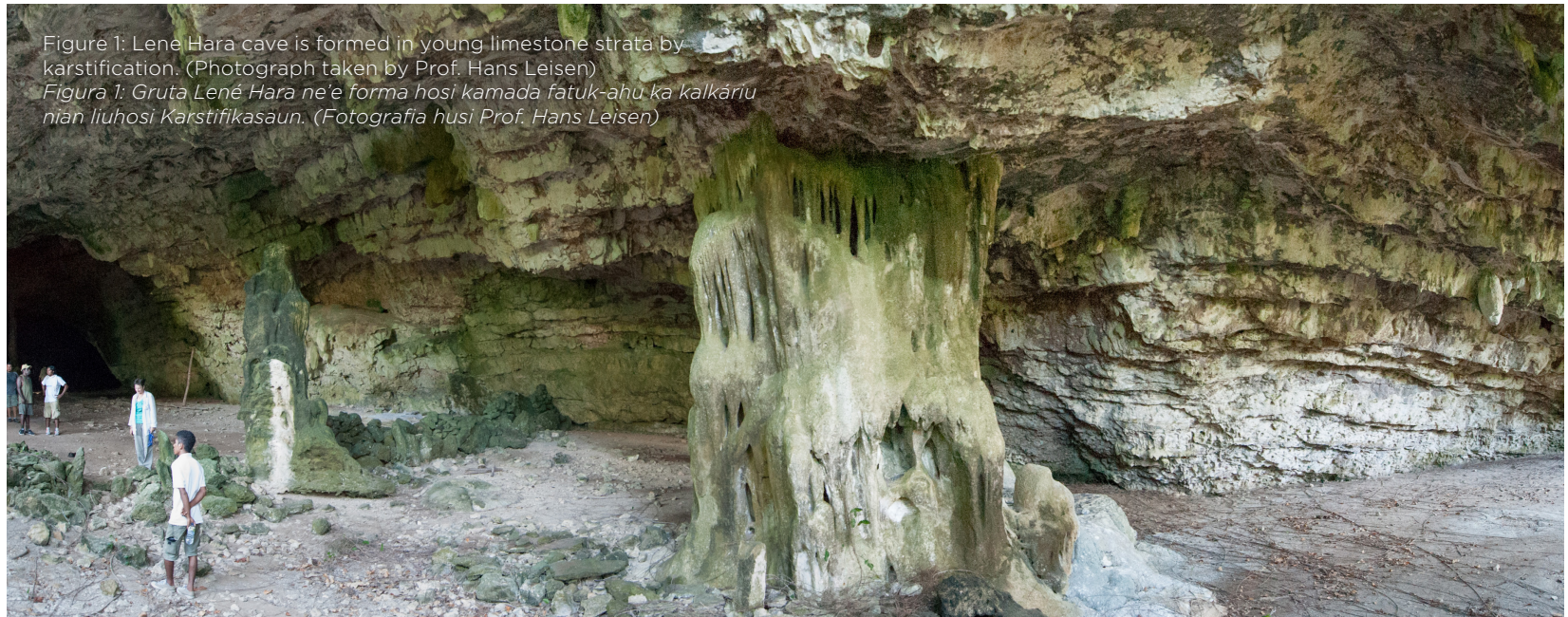


Figure 1: Lene Hara cave is formed in young limestone strata by karstification. (Photograph taken by Prof. Hans Leisen)
Figura 1: Gruta Lené Hara ne'e forma hosi kamada fatuk-ahu ka kalkáriu nian liuhosi Karstifikasaun. (Fotografia husi Prof. Hans Leisen)

The stratigraphy of Timor's stone formations is discussed since the first geological survey. Villeneuve et al. (2005, 300) compiled eight different competing stratigraphic columns from eight authors. The individual stone formations can be attributed to maximum six different phases of Timor's geological history. Most sequences show extreme folding, thrusting and tectonic disruption. Only the younger synorogenic megasequence is less deformed. The rock art sites of Tutuala are situated in young (Cenozoic) limestone strata and coral terraces (Harris 2011, 174, 188, Standley & Harris 2009, 68).

During the island's uplift fringing coral reefs grew at the northern coast of Timor-Leste. Corals can only survive in depths up to 25 m (Cox 2009, 8). By recording the uplifted reef terraces and the estimation of erosion, uplift rates for the reef lime stones can be calculated. The investigations have been completed by uranium series datings of the limestones. Cox (2009, 77) determined uplift rates for Ponte Tei near Tutuala of ca. 1.2 m per 1000 years. It is evident that due to the uplift of the terraces the recent positions of the rock art sites are not the same as during their inhabitation and decoration with rock art.

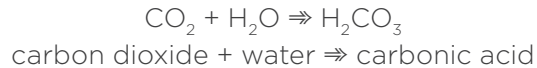
Estratigrafia hosi formasaun fatuk iha Timor mak diskute ona dezde peskiza jeolójika dahuluk. Villeneuve et al. (2005, 300) Tau-hamutuk koluna estratigráfica diferente walu hodi kompete hosi autór na'in-8. Formasaun fatuk individuál sira bele atribui ba máximu faze diferente neen hosi istória jeolójika

Timor nian. Maioria sekuénsia hatudu falun an, dudu no doko tektónika ho makaas tebes. Só sinorojéniku nurak ho sekuénsia boot mak ladún harahun. Fatin Arte-fatuk sira iha Tutuala situadu iha kamada fatuk-ahu (kalkáriu) ne'ebé nurak (Cenozoic) no fatuk-ahu ne'ebé hada malu (Harris 2011, 174, 188 Standley & Harris 2009, 68)

Durante illa hi'it-an sa'e mai, fatuk ahu-ruin ninin foti sa'e iha kosta norte Timor-Leste nian. Ahu-ruin sira só bele aguenta de'it iha kle'an to'o 25 m (Cox 2009, 8). Lihosi rejista kona-ba ahu-ruin ne'ebé forma-an sa'e no estimasaun kona-ba erozaun, taxa kona-ba rai hi'it-an hosi fatuk ahu-ruin sira bele kalkula hetan. Investigasaun sira kompletu ona liuhosi série sira urániu nian hodi halo datasaun ba fatuk ahu-ruin nian. Cox (2009, 77) ne'ebé determina taxa kona-ba rai hi'it-an sa'e mai iha Ponte Tei besik Tutuala hosi ca. 1.2 m kada tinan 1000 (rihun-ida). Ida-ne'e hatudu katak bazeia ba rai hi'i-an nakfilak sai terrás sira, pozisaun foin daudaun ne'e hosi fatin sira iha Arte-fatuk nian la hanesan durante sira hela metin no halo dekorasaun ho Arte-fatuk sira.

2. Karstification processes

Shelters and caves with rock art in Timor-Leste are housed in limestone formations. Limestone is mainly composed of calcium carbonate: CaCO_3 . CaCO_3 is very little soluble in pure water. But CO_2 gas present in the atmosphere reacts with water and forms carbonic acid.



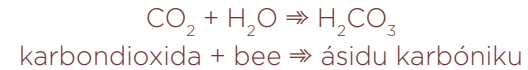
In an acid environment CaCO_3 can be transformed into water soluble Ca^{2+} ions. The solubility is dependent on the CO_2 content of the dissolving water. The higher the CO_2 content of the water the more carbonate can be dissolved.

Due to this process, huge caves and underground cave and river systems can be formed during geological times. This process called karstification also formed the cave of Lene Hara (fig. 1)

After precipitation rainwater is migrating through the overlying soil, taking up more CO_2 and then percolating through the limestone formations in Timor-Leste on cracks and joints dissolving CaCO_3 . By mixing of different karstic waters mixing corrosion additionally boosts dissolution (Bögli 1964, 113). When the CaCO_3 saturated water comes out of the roofs and walls in the caves and shelters where a lower CO_2 content is in the air, the dissolved calcite precipitates, and so-called calcite sinters are formed. If the waters run out along cracks, beautiful sinter curtains develop like in the

2. Prosesu karstifikasaun

Abrigu (fatuk-mahon) no gruta (fatuk-ku'ak) ho Arte-fatuk iha Timor-Leste sai-nu'udar fatin hodi halo uma hosi formasaun fatuk-ahu nian. Fatuk-ahu ne'e maioritariamente kompostu hosi calcium carbonat (karbonatu kálsiu): CaCO_3 . CaCO_3 mak nabeen kahur malu uitoan iha bee ne'ebé moos. Maibé gas CO_2 nian mosu iha reasaun atmosfera ho bee no kria ka forma ásidu karbóniku (carbonic acid).



Iha ambiente ásidu ida, CaCO_3 bele transforma ba bee soluvel (larutan:bhs.indo.) katak kontein ho bee iha Ion Ca^{2+} sira. Solubilidade (kelarutan) depende ba CO_2 ne'ebé kontein ho bee disolusaun (bee larutan). Bainhira akontese CO_2 hosi bee mak barak-liu, entaun karbonatu sei nabeen liután.

Bazeia ba prosesu ida-ne'e, entaun gruta furak sira iha rai-leten, no gruta sira iha rai-okos no sistema bee-mota nian bele forma durante tempu jeolójiku sira. Prosesu ida-ne'e mak naran kárstifikasaun ne'ebé forma mós gruta iha Lené Hara (fig. 1)

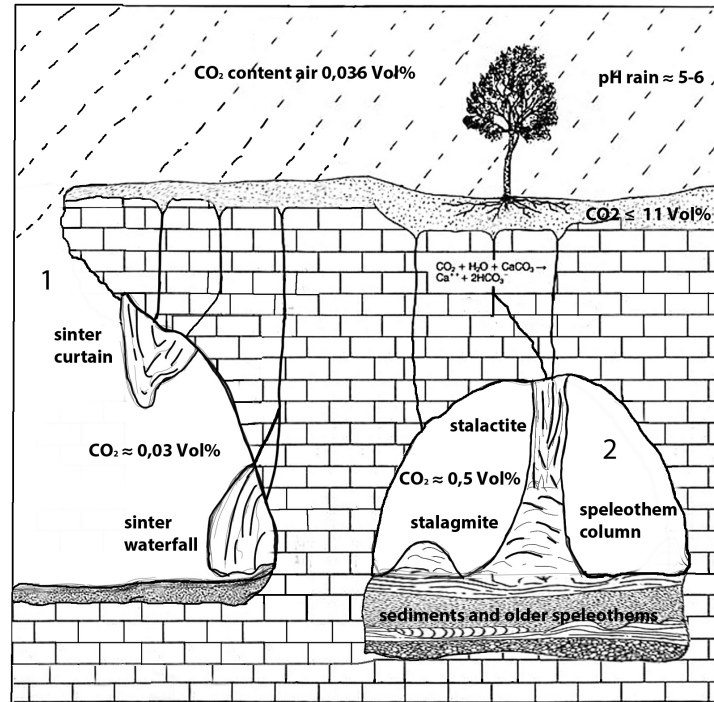
Depoizde presipitasaun (udan-been mout) tama rai okos liuhosi rai leten, iha CO_2 mak barak liután no ta'es tama rai-okos liuhosi formasaun fatuk-ahu sira ita Timor-Leste hosi parte rai naklaan/nakfera tama hamutuk hodi dissolve/kahur CaCO_3 . Lihosi misturasaun bee kárstika ne'ebé diferente ne'ebé kahur hamutuk tanba estragus/nakfera sira adisionalmente ne'ebé aumenta ka dudu sa'e tan disolusaun (larutan rai nian) (Bögli

Lao Rai Shelter. These new calcite layers can also build up sinters like frozen stone waterfalls as in Moa Mimi Raka and the stalagmites and stalactites in the Lene Hara Cave (Fig. 2).

1964, 113). Bainhira CaCO_3 nakonu kahur malu ho bee ne'ebé suli tuun hosi gruta no abrigo nia kakuluk no didin sira ne'ebé iha fatin kle'an-liu kontein CO_2 kontein ar (udara), kamada kalsita nian, no entaun buat ne'ebé naran kalsita sínteze hahú forma-an. Karik bee suli tuun liuhosi dalan naklaan/nakfera nian, entaun kortina bonita sira sei dezenvolve hanesan ho Fatuk-mahon/ abrigo Lao Rai nian. Kamada hosi kalsita foun sira-ne'e bele mós kria fali kortina sira hanesan kaskata (air terjun [bhs.indo]) suli tuun hosi fatuk leet mak hanesan iha Moa Mimi Raka nian no stalagmite ho estalactite sira iha Gruta Lené Hara nian (fig.2).

Figure 2: Sketch of a shelter (1) and a karst cave (2) with the development of speleothem formations (Field 2002). Modified after Kempe (1982) and adapted to the Rock Art Sites in Timor-Leste. (Sketch by Dr. Esther von Plehwe - Leisen)

Figura 2: Ezbosu / esketsa kona-ba fatuk-mahon ka abrigo ida (1) no kárstika hosi gruta ida (2) ho dezenvolvimentu ba formasaun espeleotema nian (Kempe 2002). Modifika depoizde Kempe (1982) no adapta hikas ba Fatin sira Arte-fatuk nian iha Timor-Leste. (Pinta husi Dr. Esther von Plehwe - Leisen)



The described processes are very slow. Curtains like we find in Lao Rai might have developed during several 10 - 100 thousands of years. If they are broken, it is not sure whether mankind will ever be able to see them completed again. These marvelous natural decorations in Timor-Leste rock art sites have to be included into protection plans.

Apart from these very spectacular formations, calcite sinter layers can also cover the surface of the cave or shelter walls and roofs forming more or less complete surface coatings. Thus the described processes of dissolution and re-deposition of calcite can also have a protective effect on the painted rock art. Where the dissolved calcite crystallizes on top of the rock paintings it forms a protective sinter layer over the paint layers. Even if this layer becomes so thick that the underlying paintings cannot be seen any more, they are still there and safe.

Also scientific investigations profit from the formation of the sinter coatings on top of the paintings. These newly formed calcite layers can be dated by the uranium-series dating method (Aubert et al. 2007, 994). Thus, the minimum age of the underlying rock paintings in the Tutuala rock art sites are determined by this radiometric dating technique.

Prosesu ne'ebé deskreve mak neineik liu. Kortina ka lensól sira hanesan ita hetan ona iha Lao Rao dalaruma dezenvolve ona durante tinan 10.000 - 100.000 (rihun-10 to'o rihun-100). Karik sira hetan estragus hotu ona, bainhira la konfia loloos, ita ema kriatura mak sei bele haree sira kompletu filafali. Dekorasaun naturál ne'ebé furak tebes (maravilloza) iha fatin sira ba Arte-fatuk iha Timor-Leste hirak-ne'e tenke ser inklui ba planu protesaun.

Maske formasaun hirak-ne'e sai espetakulár tebe-tebes, kalsita sinter bele mós kobre superfisie didin sira iha gruta ka abrigo (fatuk-ku'ak ka abrigo) no kakuluk sira forma tan ka kamada superfisie nian ladún kompletu. Ho nune'e prosesu sira-ne'ebé deskreve ona kona-ba disolusaun no re-dipozisaun kalsita bele mós iha efeitu produtivu ida kona-ba Arte-fatuk ne'ebé pinta ona. Bainhira kalsita nabeen no kristaliza tiha iha fatuk ne'ebé pinta ona nia leten, nia sei forma kamada sinter protetora ida ba kamada tinta nian. Mezmu kamada ne'e sai mahar liu ona no taka tiha pintura sira, maibé pintura sira sei iha nafatin no seguru hela.

Nomós investigasaun sientífika fó benefisiu ba formasaun kamada sinter nian iha pintura sira-nia leten. Kalsita sira ne'ebé foin forma ne'e bele halo datasaun liuhosi métodu datasaun ba série-urániu sira (Aubert et al. 2007, 994). Ho nune'e, idade mínimu hosi pintura sira iha fatuk iha fatin Arte-fatuk nian iha Tutuala mak determinandu hosi téknika datasaun radiométrika ida-ne'e nian.

3. Description of four Rock Art Sites in the Tutuala Region

Four Rock Art Sites in a karst terrain near Tutuala were visited and examined under conservation aspects. Three sites: Lene Cece, Moa Mimi Raka and Lao Rai are housed in rock shelters, and only Lene Hara is a cave.

The geological limestone layers on the north side of TL are undergoing uplift due to tectonic movements. Moa Mimi Raka and Lao Rai developed as wave-cut notches during the Quaternary uplift. The actual position of the caves and shelters vary in height and distance to the coast from the time of habitation.

The description of the four sites is based on a visit in 2016. They were examined without ladder and without proper artificial lighting. Thus, this report can only be a summary of first investigations.

3.1 Lene Cece

The overhang of Lene Cece is situated only ca. 2.5 km from Tutuala near to the road leading to Valu Beach.

The pictograms of Lene Cece lie high up at the stone wall on a massive and smooth stone surface. They were painted upon a thin ochre weathering crust on the stone support. The most impressive pictogram is a big ship described as a Dong Son x-ray style boat by O' Connor (2003, 114).

3. Deskrisaun kona-ba Fatin haat hosi Rock art / Arte-fatuk nian iha Rejiaun Tutuala

Fatin haat hosi rock art/ Arte-fatuk nian iha kárstika mak área luan ida besik Tutuala ne'ebé hetan ona vizita no ezaminasaun tuir aspetu konservasaun. Fatin tolu hanesan: Lené Cecé, Moa Mimi Raka no Lao Rai mak eziste fatin hodi hela iha abrigo (fatuk-mahon) sira, no só Lené Hara de'it mak iha gruta (fatuk-ku'ak).

Kalkáriu / fatuk-ahu jeolójiku nian iha parte norte TL ne'ebé hi'it-an sa'e tanba movimentu tetóniku nian. Moa Mimi Raka no Lao Rai mak dezenvolve ona nu'udar fatik ki'ik sira ne'ebé lalorantesi kotu durante rai okos hi'it-an sa'e/ levantamentu kuatenáriu (fulan-3) nian. Pozisaun atuál hosi gruta no abrigo sira-nia aas no distánsia mak la hanesan ba área kosta nian durante tempu abitasaun (ema hela).

Deskrisaun kona-ba fatin haat ne'e bazeia ba vizita ida iha 2016. Fatin hirak-ne'e hetan ezaminasaun ne'ebé la uza odan/ eskada no la uza ahi naroman naturál ruma. Tanba-ne'e, relatóriu ne'e só bele sai de'it sumáriu ida hosi investigasaun dahuluk nian.

3.1 Lené Cecé

Lokál Lené Cecé nian situadu de'it ca. 2.5 km hosi Tutuala besik ba estrada ho direasaun ba Tasi-ibun Valu nian.

Piktograma sira iha Lené Cecé hetan fali iha didin aas leten ne'ebá iha superfísie fatuk boot no kabeer sira-nia lolon. Figura sira ne'ebé pinta iha okre ne'ebé kulapur ona iha krosta

The Lene Cece limestone was exposed to major tectonic stress during geological times. In the lower part of the hangover a huge fault plain with polished slickensides is visible. This could also be a reason why the floor of the overhang today lies several meters below the paintings. Nearly the complete wall of the shelter consists of disrupted or brecciated bedrock. One of the few larger intact stone parts was used by the ancestors for the rock paintings (Fig. 3).

ne'ebé mihis hosi fatuk apoiu nia leten. Piktograma ne'ebé impresivu /furak liu mak bero boot ida ne'ebé deskreve nu'udar bero estilu raiu-x Dong Son nian, O'Connor (2003, 114).

Fatuk-ahu (kalkáriu) Lené Cecé nian hetan presau tetóniku ne'ebé boot durante tempu jeolójiku sira. Iha parte kraik monu tanba falla hosi rai-maran / planísie boot ida ne'ebé kose no dudu kona sorin sira mak oras-ne'e ita bele haree hetan. Ida-ne'e mós bele sai razaun ida tansá mak oras-ne'e rai-leten sira monu tuun metru barak mai ba pintura sira-nia okos. Kuaze didin tomak hosi abrigo mak konsiste hosi fatuk abut sira ne'ebé interrompe netik ho bresikatu (fatuk furak). Parte balun hosi fatuk tomak ne'ebé boot-liu mak beiala sira utiliza ba pintura sira. (Fig. 3).

Figure 3: The limestone walls of Lene Cece are completely fragmented. The pictograms lie high up on one of the few larger intact stone surfaces. In front of the sign: Mr António Fonseca, former Head of Suko from Tutuala and one of the traditional custodians of Lene Cece. (Photograph taken by Prof. Hans Leisen)

Figura 3: Piktograma sira hela metin iha superfísiu / fatuk tomak boot nia leten aas ne'ebá. Parte oin hosi sinál nian: Sr. António Fonseca, antigu xefe suku Tutuala nian no ema responsavel / mahein tradisionál ida iha Lené Cecé nian. (Fotografia husi Prof. Hans Leisen)



3.2 Moa Mimi Raka

In the shelter Moa Mimi Raka a sacred pole was built marked by a specific structure like an altar. Fataluku people believe that in these sites non-human beings live and influence people's action (McWilliam 2011, 69; O' Connor et al. 2013, 213).

The site is a long shelter with very well-developed karst phenomena like sinter waterfalls and calcite draperies and curtains. The shelter shows highly interesting rock art images like a headhunting scene with a warrior holding the head of his beaten enemy in the left hand and, interestingly, what seems to be a metal axe from the metal age in the other hand. (Fig. 4).



3.2 Moa Mimi Raka

Iha abrigu Moa Mimi Raka nia riin lulik (sagradu) ne'e konstrui ho estrutura espesífiku ida hanesan altár. Ema Fataluku sira fiar katak iha fatin hirak-ne'e ema fuik sira ne'ebé moris iha-ne'e mak influensia asaun ema nian (McWilliam 2011, 69, O'Connor et al., 2013, 213) Fatin ne'e mak abrigu ida ho fenómenu hosi kárstika naruk ne'ebé mak dezenvolidu di'ak tebe-tebes hanesan kaskata sinter no kortina hosi kalsita sira. Abrigu ne'e hatudu imajen sira-ne'ebé interesante tebe-tebes kona-ba Arte-fatuk nian nu'udar fatin boot ida ba atividade kasa/soro nian ho soldadu ida kaer hela inimigu ida niaulun-fatuk iha liman karuk, no kuriozamente, buat ne'ebé ita haree hetan mak baliuk metáliku ida hosi idade metál nian iha nia liman sorin. (Fig. 4).

Figure 4: The interesting head hunter scene depicted in the shelter of Moa Mimi Raka was painted upon the ochre weathering crust on the limestone surface. (Photograph taken by Prof. Hans Leisen)

Figura 4: Fatin kasador niaulun ne'ebé deskreve iha abrigu Moa Mimi Raka ne'ebé pinta iha kosta okre ne'ebé kulapur ona iha superfisie kalkáriu nian. (Fotografia husi Prof. Hans Leisen)

3.3 Lao Rai

The shelter of Lao Rai is mainly interesting for its beautiful karst curtains and sinter waterfalls (Fig. 5). Lao Rai is not known as rock art site even though one figure can be seen besides a cooking place with calcite sinter curtains. The pictogram is covered with a thick flowstone coating with distinct ochre color maybe due to the near vicinity with the hot cooking temperature. Many man made scratches are seen on the figure, possibly caused by inappropriate cleaning attempts.

A double-row sequence of holes in a small protrusion is explained by the Fataluku guides as a board for playing congklak. A similar structure in New Caledonia was interpreted as a counting tool (Sand 2012, 170).

3.3 Lao Rai

Abrigu iha Lao Tai nian mak maioria interesante ba nia kortina kárstika furak no sinter kaskata (ka air terjun [bhs.ind.]), (fig.5). Lao Rai la koñesidu nu'udar fatin ba Arte-fatuk nian embora iha figura ida mak bele haree hetan maske iha fatin te'in ida ho kortina sinter kalsita sira. Piktorgama ne'ebé kobre ho kamada mihis fatuk-abut ida ho kór okre ne'ebé oin seluk tiha ne'e dalaruma akontese tanba viziñansa besik malu ho temperatura te'in nian ne'ebé manas. Iha liman fatin barak hosi badaen sira mak hetan iha figura ne'e dalaruma kauza tanba tentativa limpeza ne'ebé la adekuadu.

Fileira dupla (double) rua kompostu hosi ku'ak sira iha fatuk fukun ki'ik ida ne'ebé mak esplika ona hosi matadalan (durubasa) Fataluku nian nu'udar tabuleiru ida hodi joga congklak (jogu ne'e ema na'in-2 mak halimar, uza meius ai-ku'ak 12, no fatuk musan tolu-tolu kada ku'ak ida [esplikasaun hosi tradutór]). Estrutura ida mak hanesan iha Nova Kaledónia ne'ebé interpreta ona nu'udar ferramenta kontajen ida. (Sand 2012, 170).

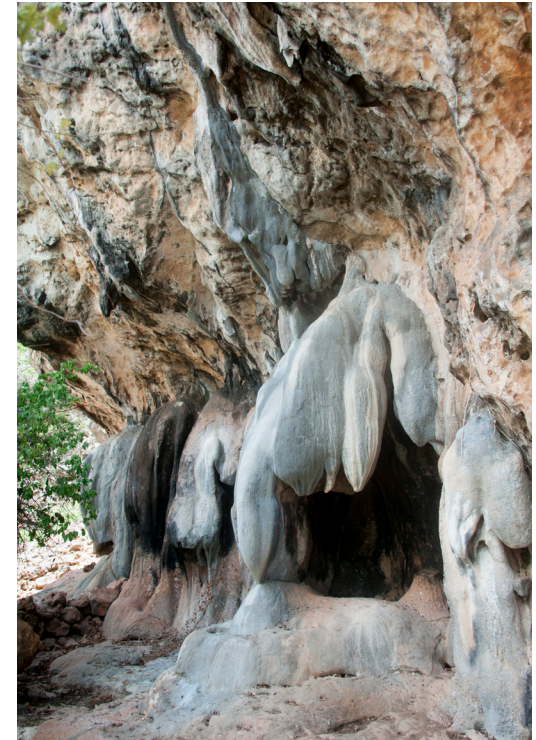


Figure 5: Marvelous speleothems like sinter draperies and curtains or sinter waterfalls developed in the Lao Rai Shelter. These karst formations are of extreme natural value and have to be protected. (Photograph taken by Prof. Hans Leisen)

Figura 5: Espeleotema furak /maravilloza sira nu'udar kortina ka sinter waterfall (sinter kaskata [air terjun]) ne'ebé dezenvolidu iha Abrigu Lao Rai nian. Kriasaun sira ba kárstika iha valór naturál boot ida no tenke ser protejidu. (Fotografia husi Prof. Hans Leisen)

3.4 Lene Hara

In contrast to the other rock art sites described here, Lene Hara is a large karst cave. The cave is today situated ca. 100m above sea level and over 1 km inland from the coast. Due to the tectonic uplift of Timor the cave presumably was always situated near to the coast during the time of habitation even during Last Glacial Maximum with lower sea-level (O' Connor et al. 2010b, 31).

The limestone of Lene Hara Cave shows distinct layering. The roof of the cave displays brecciated areas healed with cement consisting of a whitish matrix and smaller mostly black fragments. Black and red chert nodules and pieces of different size are included in the limestone layers. On the cave walls and roof dark karst relict breccias are also obvious. A few intact and also partly destroyed speleothem columns are developed inside the cave.

Rock paintings decorate mainly the roof and the wall of the exterior part in the south part of the cave. Several motives like X-ray fishes and hand stencils and many others more are to be seen (Arifin & Delanghe 2003, 223-5). Most probably due to the different climatic conditions in a cave environment the brownish crust common in the shelters is present here. Pictograms are lying directly on the stone surface (Fig. 6).

3.4 Lené Hara

Diferente ho fatin seluk kona-ba Arte-fatuk ne'ebé espliika ona iha-ne'e, Lené Hara mak iha gruta kárstika boot ida. Gruta ne'e lokalizadu iha ca. 100m (metru rihun-1) bainhira sukat hosi nivel tasi leten no 1 km (kilómetru-1) liu ba kosta interiór. Tanba elevasaun tetóniku iha Timor mak gruta ne'ebé kuaze tuur besik kosta (tasi-ibun) durante tempu abitasaun (momentu beiala sira hela), mezmu durante zelu tasi-okos nian ne'ebé sai máximu da-ikus nian ho nivel badak liu iha tasi. (O' Connor et al. 2010b, 31).

Fatuk kalkáriu iha Gruta Lené Hara nian hatudu hetan kamada sira ho momoos. Gruta nia kakuluk eziste área bresiatu (fatuk musan kór oiain) sira ne'ebé taka ho simente ho matriz kór-mutin uitoan, maioria ho fragmentu kór metan. Fatuk musan oan sira ho kór-metan no mean no fatuk baluk sira ne'ebé ho tamañu diferente mak inklui hotu iha kamada kalkáriu nian. Iha didin gruta no kakuluk kárstika iha de'it bresiatu sira ne'ebé bele haree ho momoos. Koluna espeleotema balun ne'ebé nakfera mós sei kompletu hela mak dezenvolve fali ona iha gruta laran.

Pintura ne'ebé dekoradu ba fatuk lolon prinsipálmente kakuluk no didin hosi fatin interior nian iha parte súl gruta nian. Modelu ka motivu balun hanesan ikan hosi raiu-x nian, estensil (liman fatin) ho liman rua no barak tan mak sei haree hetan (Arifin & Delanghe 2003, 223-5). Dalabarak liu tanba kondisaun klimátika

mak la hanesan iha ambiente gruta ida nian tanba krosta kór-kafé uitoan ne'ebé komún iha abrigo laran mak la haree hetan iha-ne'e. Piktograma sira ne'ebé iha nanis superfisie fatuk leten nian (Fig. 6).

Figure 6: In Lene Hara Cave the compact ochre crust is missing on top of the limestone surfaces. By peeling of the paint layers a perforated look is produced. New formed sinter coatings seem to spread over the pictogram along the crack in the right side of the picture. (Photograph taken by Prof. Hans Leisen)

Figura 6: Iha Gruta Lené Hara nian ne'e krosta tomak hosi okre mak lakon ona iha superfisie fatuk kalkáriu nian. Bainhira ita loke kamada tinta nian sira, ita sei haree hetan ku'ak sira-ne'ebé akontese ona. Sinter foun sirane'ebé forma ona sai namkari iha piktograma tuir nakfera/ naklaan sira hosi parte liman-loos figura nian. (Fotografia husi Prof. Hans Leisen)



4. Degradation phenomena of the pictograms

The degradation factors of the pictograms in the different sites are variable. They concern the stability of the bed rock, the deterioration of the support directly underlying the paintings or the paint layers themselves (Fig. 6+7). Surface deposits like calcite sinters, micro-biological films or artificial coverings like soot can hide the pictograms (Fig. 6+8).

The most prominent deterioration patterns of rock paintings in the visited sites are the detachments of the uppermost stone layers, of the brownish crust or the paint layers. In all cases the depictions first show a perforated appearance, become unreadable and are completely lost in the end.

In the shelters exposed to weathering like Lene Cece, Momi Momi Raka or Lao Rai the bed rock walls are covered by an old natural crust of brownish color. The pictograms are painted on this crust. The crust in places detaches from the stone and can fall off and the pictograms are lost (Fig. 7).

In the climatically more protected cave of Lene Hara such a crust is developed. Here in contrast, the paint layers tend to peel off and the paintings degrade as well (Fig. 6).

In a tectonically active area like Timor-Leste the bedrock itself can be endangered as well due to faulting, breakage and crumbling like in the site of Lene Cece. Continued exposure to rain and temperature changes enlarges existing tectonic cracks and boosts the decomposition of the bedrock as painting support (Fig. 3).

The sacred character of the sites and the recent history of Timor-Leste brought up another endangering influence deriving from open fires at the rock art places. Besides the risk of destructive bush fires, soot from normal campfires covers and hides the pictograms (Fig. 8). The heat of the flames can damage the calcite sinter layers and bedrock considerably (Fig. 9).

Other man-made decay factors are well-intentioned but incompetent cleaning or conservation activities. Any intervention bears serious risk of damage or even loss of the images. Rock art sites in Timor-Leste are very significant as cultural and natural heritage and earn the best and most skillful preservation treatment possible. Bad interventions have irreversible consequences.



Figure 7: The compact ochre weathering crust as support of pictograms tends to detach and finally falls off (Momi Momi Raka). (Photograph taken by Prof. Hans Leisen)

Figura 7: Krosta okre tomak ne'ebé kulapur sai nu'udar apoiu ba piktograma ne'ebé kuaze atu husik-an no ikus mai sei monu tun (Momi Momi Raka). (Fotografia husi Prof. Hans Leisen)

4. Fenómenu degradasaun nian hosi piktograma sira

Fatór degradasaun ba piktograma sira iha fatin ne'ebé la hanesan mak variabel. Sira preokupa ba estabilidade fatuk nian, ba deteriorasaun/estragus neineik ba apoiu direktamente hahú hosi pintura ka figura sira rasik (fig. 6+7). Superfísie depóztu nian hanesan ho kalsita sinter sira, film sira ba mikrobiolójika ka tampaun ne'ebé halo rasik (tampaun artifiisial) hanesan ahu bele helik tiha piktograma sira. (Fig.6+8).

Deteriorasaun /estragus ne'ebé haree hetan liu ba pintura sira iha fatuk lolon hosi fatin hirak-ne'ebé hetan vizita ona mak ita haree iha kamada fatuk nian ne'ebé aas liu, hosi krosta ne'ebé kór-kafé naroman ka kamada tinta nian. Iha kazu hotu-hotu, representasaun sira mak fofoun sei hatudu aparénsia ho ku'ak, labele lee hetan no ikus mai lakon kompletamente.

Iha abrigo sira-ne'ebé mak hetan fatin ne'ebé kulapur ona mak hanesan Lené Cecé, Moa Mimi Raka ka Lao Rai nian ne'ebé hanesan didin fatuk sira ne'ebé kobre/hadulas hosi krosta naturál ida ho kór-kafé naroman. Piktograma hirak-ne'ebé pinta ona iha krosta ida-ne'e. Krosta iha fatin sira ne'ebé hada ho fatuk no bele monu entaun piktograma sira sei sai lakon hotu (Fig. 7).

Klimátikamente gruta Lené Hara sai protejida liu hanesan krosta ida ne'ebé la dezenvolidu. Iha-ne'e oin seluk fali, tanba kamada tinta sira kuaze nakloke tiha no pintura mós degrada/ menus hotu hanesan ho (fig.6) nian.



Figure 8: Soot and heat from man-made fires spoil and endanger rock art depictions (Lene Cece). (Videomicroscope photo: long side = 8 mm. Photograph taken by Dr. Esther von Plehwe-Leisen)

Figura 8: Ahi-funan no manas mai hosi hahalok ema nian bele semo no amesa representasaun Arte-fatuk nian (Lené Cecé). (Foto videomikroskope: sorin naruk = 8 mm. Fotografia husi Dr. Esther von Plehwe-Leisen)

Área ativa tetónicamente hanesan Timor-Leste, aliserse rasik bele hetan ameasa tanba falla, ruptura/nakfera no rahun hanesan fatin sira iha Lené Cecé. Espozisaun kontínua ho mudansa temperatura nian no udan aumenta nakfera tetóniku no aumenta dekompozisaun ba aliserse sira ne'ebé sai nu'udar suporte ba pintura (fig.3).

Karater lulik (sagradu) hosi fatin sira no istória foin-daudaun kona-ba Timor-Leste ne'e lori tan influénsia ameadora ida ne'ebé mai hosi ahi-livre hosi fatin sira Arte-fatuk nian. Aleinde risku hosi ahi-funan semo, ahi-funan hosi ahi-inan (fogeira) normál ne'ebé kobre ho hadulas piktograma (fig.8). Ahi nia manas bele estraga kamada kalsita sinter no fatuk sira iha kamada rai okos nian (fig.9).

Fatór degradasaun seluk ne'ebé sai kulapur (pembusukan [bhs. indo]) hosi ema sai-nu'udar atividade ho intensaun-di'ak ida maibé inkompeténsia ba atividade limpeza ka konsersasaun sira. Kualkér intervensaun iha risku sériu ba estragus ka bele mós lakon imajen sira. Lokál sira ba rock art / Arte-fatuk iha Timor-Leste sai significativu tebe-tebes nu'udar patrimóniu kulturál no naturál no hetan tratamentu ba prezersasaun ne'ebé di'ak-liu no ábil ho posivel.

Figure 9: This calcite sinter surface is completely altered and cracked by the high temperature of the adjacent cooking place. Scratches in the surface show an inappropriate cleaning attempt. (Photograph taken by Prof. Hans Leisen)

Figura 9: Superfísie sinter kalsita ida-ne'e kompletamente muda-an no nakfera sira ho temperatura aas hosi dapur /fatin te'in ne'ebé besik. Naklaan sira iha superfísie hatudu tentativa limpeza ida ne'ebé la apropiada. (Fotografia husi Prof. Hans Leisen)



5. Conservation Approach

Rock art sites undergo natural decomposition. It is not possible to conserve all sites and all existent depictions. Therefore, a systematic documentation is the first inevitable step. The sites have to be properly localized by GPS coordinates and mapped. Proper names have to be fixed, and the owners should be noted. A quality photographic documentation and a sampling and archiving of older shots have to be carried out for photo monitoring. The condition and endangerment of the sites and the rock art has to be recorded. All photos and data should be entered into a data base.

Common preservation conceptions for rock art sites mainly consist of preventive interventions like roofing, draining profiles etc.

Conservation interventions must be preceded by proper investigations into the materials and the state of endangerment of the sites and the individual depictions. Appropriate conservation materials and application methods have to be developed and tested. Only well trained conservators should be allowed to carry out interventions at the precious rock art images and engravings.

5. Abordajen ba Konservasaun

Lokál rock art/ Arte-fatuk nian sofre ona dekompozisaun natural. La posivel atu conserva fatin hotu-hotu no representasaun hirak-ne'ebé eziste. Portantu, dokumentasaun ida ne'ebé sistimátika mak sai pasu dahuluk ida ne'ebé la evita ona (pasu inevitavel). Fatin sira mak tenke lokaliza ho didi'ak (apropriadu) hosi GPS ne'ebé kordenada no halo mapa (mapeadu). Naran própriu sira tenke hadi'a/korriji kedas ona ho loloos, no proprietade na'in (proprietáriu) sira tenke ser observadu. Dokumentasaun fotográfika ida ne'ebé ho qualidade no amostrajen (samping) ida no arkivamentu ba foto antiga sira mak tenke ser ralizadu ba monitoramentu foto nian. Kondisaun no perigu ba fatin sira no Arte-fatuk nian mak tenke ser gravadu. Foto no dadus hotu-hotu tenke hatama ba baze-de-dadus ida. Konsepsaun ba prezervasaun komún ba fatin Arte-fatuk nian prinsipálmente konsiste intervesaun preventiva sira mak hanesan kakuluk, perfil drenajen nian, nst.

Intervensaun ba konservasaun tenke ser hahú hosi investigasaun ne'ebé apropiada ba materiál no estadu-de-perigu ba fatin sira no ba representasaun individuál sira. Materiál konservasaun ho apripiada no métodu aplikasaun sira mak tenke dezenvolidu no testadu (ezaminadu). Só konservadór bein-treinadu ne'ebé di'ak mak tenke ser hetan autorizasaun atu realiza intervensaun sira ba imajen no Arte-fatuk no gravura sira ne'ebé iha valór boot (gravura:ukiran [bhs.indo]).

In the four sites described an adapted conservation conception should cover a careful cleaning in selected areas and the stabilization of crust and paint layer in painted areas and a maintenance concept and regular control of the sites.

6. The Unique Petroglyphs at Lene Hara Cave

Only Lene Hara cave houses petroglyphs showing heads engraved into the karst columns and other speleothems (Fig. 10). These carved faces were only discovered in 2009 on two speleothem columns (O' Connor et al. 2010a, 650). One column is located at the outer rim of the cave. Here only the lower part (stalagmite) is preserved. The upper part of the column (stalactite) was maybe broken during the collapse of parts of the cave's outer roof. Three engravings of human faces are discernible on the interior surface of this stump. According to O' Connor et al. (2010a, 653) there could be even six portrayals. Inside the cave there is another huge speleothem column which shows two depictions of faces.

Iha fatin haat ne'ebé deskreve ona konsepsaun kona-ba konservasau ida ne'ebé adaptadu ne'e tenke kobre ho limpeza ida ne'ebé kuidadu iha área selesionadu sira no estabilizasaun ba krosta no kamada tinta nian iha área pintura sira no konseitu manutensaun no kontrolu regulár ba fatin sira.

6. Petróglifu úniku ida iha Gruta Lené Hara

Só petróglifu sira iha uma gruta Lené Hara nian mak hatudu figura kona-ba ema nia ulun sira iha koluna kárstika sira no espeleotema seluk (fig.10). Gravura (ukiran) sira kona-ba ema nia oin hetan de'it iha tinan 2009 iha koluna espeleotema rua nian (O'Connor et al., 2010^a, 650). Koluna ida mak lokalizadu iha gruta ninin li'ur nian. Ida-ne'e parte kraik de'it (estalagmite) mak prezerva ona. Parte leten hosi koluna (estalaktite) parese hetan estragus ona durante rai monu/ kolapsu hosi parte kakuluk li'ur gruta nian. Gravura (ukiran) tolu kona-ba ema nia oin mak ita haree iha superfísie interiór nian. Bazeia ba O'Connor et al., (2010^a, 653) katak bele iha tan to'o retratu neen. Gruta laran iha tan koluna espeleotema boot ida mak hatudu representasaun rua kona-ba ema nia oin.

Concerning the techniques of execution more detailed study with good artificial light is necessary. The reliefs seem to be made by scratching and also by picking with a point tool.

The face on the intact speleothem column inside the cave is dated to a period of 12.5 ka and 10.2 ka by high precision U-series age determinations (O' Connor et al. 2010a, 656).

Ongoing carbonate dissolution and re-precipitation processes in karst systems turn speleothem phenomena into actively growing or passively weathering formations. Both mechanisms endanger petroglyphs. Precipitation of calcite sinters can cover the petroglyphs with newly formed sinter layers and make them invisible. Dissolution processes on the other hand endanger engravings even more as they irreversibly destroy them.

A very common natural deterioration pattern on surfaces in cave environments is pitting. It is due to dissolution mechanisms combined with micro-biological activity (Cañveras et al. 2001, 236). Pitting is defined as “millimetric shallow cavities that are normally not interconnected” (ICCROM-ISCS Glossary 2008, 46). Due to the special cave situation the pits in Lene Hara are sometimes deeper and connected. This natural pitting has to be distinguished from

Figure 10: Petroglyph face on the speleothem column in Lene Hara Cave shows considerable surface deterioration by pitting. (Photograph taken by Prof. Hans Leisen)

Figura 10: Petróglifu nia oin iha koluna espeleotema nian iha Gruta Lené Hara hatudu superfisie ne'ebé hetan estragus tanba hahú mosu ku'ak oan sira (pitting). (Fotografia husi Prof. Hans Leisen)



artificial perforation also used for creating the petroglyphs. The engravings on the intact speleothem column in Lene Hara are extremely altered by pitting. The remaining depictions on the broken column suffer much less from this form of decay.

But the faces on the stump of a former column are more endangered by the destruction of the stone support. Here huge areas of the surface zone are subject to exfoliation. A big part of the speleothem surface is detached from the underlying stalagmite and some areas are already lost (Fig. 11).

For the conservation of the petroglyphs the extension of the detached surface area on the speleothem stump in the outer zone of the cave has to be examined and loose parts have to be protected by re-attaching. The hollow area behind the detached flowstone layer has to be filled with an adapted lime mortar in order to stabilize the whole system.

The growth rate of the pits can be monitored by photo monitoring with included scale. Only fast progression of pitting would call for a protective intervention like filling the holes by lime mortar and applying a protective lime wash.

Kona-ba téknika ezekusaun ho estudu ne'ebé detalle liután ho ahi-oan naroman artifisiál (artifisiál: halo rasik). Relevu sira-ne'e haree hanesan ema halo uza sasán ne'ebé tutun kro'at.

Ema nia oin sira iha koluna espeleotema ne'ebé sei tomak iha gruta sorin ne'e tau ona data ba período ida hosi 12.5 KA no 10.2 KA hosi determinasaun idade série-Urániu nian ne'ebé ezatu no kuidadoza tebe-tebes. (O' Connor et al. 2010a, 656).

Prosesu disolusaun karbonatu ne'ebé la'o daudaun no re-presipitasaun (nakosar-hikas) hosi sistema kárstiku transforma fenómenu espeleotema hodi transforma ativamente sa'e-boot tan ka pasivamente forma sai kulapur. Mekanizmu rua ne'e fó-ameasa ba petróglifu. Persipitasaun (nakosar) ba sinter kalsita sira bele kobre petróglifu sira ho kamada sinter nian ne'ebé foin forma daudaun no sai invizivel tiha (la haree hetan/lakon tiha). Hosi parte seluk, prosesu disolusaun fó perigu makaas ba gravura (ukiran) sira tanba bainhira kontinua nafatin bele estraga hotu tiha gravura sira.

Padraun ida hosi deteriorasaun/estragus naturál ne'ebé komún ka sempre akontese iha superfisie sira iha ambiente gruta nian mak ku'ak-ku'ak ona (pitting). Ida-ne'e tanba mekanizmu disolusaun sira kombinadu ho mikrobilójika (Cañveras et al. 2001,236). Pitting sai definidu nu'udar "kavidade superfisiál milimétrica ne'ebé normálmente la'ós interligada" (ICCROM-ISCSS Glossary 2008, 46). Tanba situasaun gruta espesiál nian, pit (ku'ak) sira iha Lené Hara ne'e dalabarak kle'an-liu no ligadu. Pitting naturál ida-ne'e tenke ser haketak /distinge hosi plataforma artifisiál ne'ebé mós utiliza hodi kria petróglifu sira. Gravura (ukiran) makerek sira iha koluna espeleotema mak sei



tomak nafatin iha Lené Hara ne'ebé muda makaas ona tanba pitting ka perfurasaun. Representasaun restante sira iha koluna ne'ebé hetan estragus ona mak ladún sofre hosi forma kulapur/dekaimentu ida-ne'e.

Maibé ema nian oin sira iha koluna antiga ida mak sai perigu liután tanba hetan estragus hosi fatuk ne'ebé tane/apoia nia. Iha-ne'e, iha tan fatin furak sira iha zona superfísie nian ne'ebé atu nakloke ona. Parte boot ida hosi superfísie espeleotema nian mak separadu hosi estaglamita okos nian no área balun mak lakon tiha ona (fig.11)

Ba konservasaun petróglifu sira, estensaun (habelar tan) área superfísie ne'ebé izoladu tiha iha fatin espeleotema nian iha parte li'ur hosi gruta mak tenke ser ezamina no parte luan sira atu hadi'a hikas fali. Área kotuk fatuk lolon (flowstone) ne'ebé nakonu ho fatuk mak haketak malu ona tenke prenxe fali kahur masa ahú nian hodi estabelese fali sistema hotu-hotu.

Taxa kreximentu ba fosa sira tenke monitoriza liuhosi monitorizasaun foto ho eskala ne'ebé inklui ona. Só progressaun rápida kona-ba pitting (ku'ak oan sira) mak sei ezije intervensaun protetora ida mak hanesan prenxe fali ku'ak sira ho masa ahú nian no aplika lavajen ba ahú protetora nian.

Figure 11: A petroglyph face is still clearly discernible on the stalagmite stump near the cave entrance. The crack and the missing part on the right side are part of the exfoliation of the support. (Photograph taken by Prof. Hans Leisen)

Figura 11: Petroglifu husi ema nia oin sei bele haree iha estalagmite besik fatin tama iha fatuk-kuak. Nia rahun no parte ne'ebé lakon iha liman loos hanesan parte husi esfoliasaun husi suporte. (Fotografia husi Prof. Hans Leisen)

7. Recommendations

As already mentioned, a full documentation of already known rock art sites is very important. Therefore, the documentation of the sites has to be completed and stored. Setting up of a data base for photos, reports, publications etc. is highly recommended. A small info center where all data are gathered should be established in the region.

The value of the visited sites is not only historical but also natural. Besides safeguarding the rock art depictions also the natural karst phenomena have to be protected. The sites have to be understood as unique ensembles with outstanding natural and cultural value. Of course there are other items like flora and fauna that must be part of the holistic approach of protection.

The sites need trained guards and guides for tourists. In order to prevent vandalism, access permission to the sites should be bound to the guiding of an appropriate guard. All sites need maintenance and a regular control by specialized members of the communities or the authority.

Employed and authorized members of the communities have to be instructed in compiling important site data: real name, owner, geographic localization, etc. and in monitoring the sites.

A detailed concept for conservation of the individual sites has to be developed. Conservation materials and procedures must be compiled and tested and local conservators need to be trained in rock art conservation.

7. Rekomendasaun sira

Nu'udar mensiona ona, dokumentasaun kompleta ida kona-ba fatin sira ba Arte-fatuk koñesidu sira mak sai importante tebe-tebes. Portantu, dokumentasaun ba fatin sira tenke ser konkluida no armazenada/ rai-metin. Kriasaun ba baze-dadus ida ba fotografia, relatóriu, publikasaun, nst., ida-ne'e rekomena tebe-tebes. Sentru ki'ik ida ba informasaun ne'ebé dadus hotu-hotu rekolla ona tenke estabelese iha rejiaun ida-ne'e.

Valór hosi fatin sira ne'ebé hetan vizita ona laós sai istóriu de'it, maibé naturál mós. Aleinde fó salvaguarda ba Arte-fatuk ne'ebé representa, fenómenu kárstika naturál sira mós tenke ser protejida. Lokál/fatin sira tenke entende nu'udar konjuntu úniku sira ho valór naturál no kulturál. Naturalmente iha iten seluk nu'udar flora no fauna ne'ebé tenke ser sai parte hosi abordajen olístika ba protesau.

Lokál / fatin sira-ne'e presiza iha guarda no matadalan bein-treinau sira ba turista. Atu hodi evita vandalizmu (atitude hakarak estraga de'it), iha autorizasaun atu asesu fatin sira mak tenke iha relasiona orientasaun ba protesau adekuada ida. Fatin lokál hotu-hotu presiza manutensaun ba kontrolu regulár ida hosi membru espesializadu sira hosi komidade ka autoridade.

Empregadu no membru autorizadu sira iha komidade tenke hetan instrusaun hodi halibur ka rekolla dadus importante sira iha lokál kona-ba: naran loloos, propriedade na'in (proprietáriu), lokalizasaun jeográfika, nst., no hodi monitoriza fatin sira.

Tenke ser dezenvolve konseitu detallu ida ba konsersasaun ba fatin individuál sira. Materiál konsersasaun no prosedimentu sira tenke halibur no halo teste nomós konservadór lokál sira presiza hetan treinu/formasaun kona-ba konsersasaun ba Arte-fatuk.

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Figure Captions

Figure 1: Lene Hara cave is formed in young limestone strata by karstification. (Photograph taken by Prof. Hans Leisen)

Figure 2: Sketch of a shelter (1) and a karst cave (2) with the development of speleothem formations (Field 2002). Modified after Kempe (1982) and adapted to the Rock Art Sites in Timor-Leste. (Sketch by Dr. Esther von Plehwe - Leisen)

Figure 3: The limestone walls of Lene Cece are completely fragmented. The pictograms lie high up on one of the few larger intact stone surfaces. In front of the sign: Mr António Fonseca, former Head of Suko from Tutuala and one of the traditional custodians of Lene Cece. (Photograph taken by Prof. Hans Leisen)

Figure 4: The interesting head hunter scene depicted in the shelter of Moa Mimi Raka was painted upon the ochre weathering crust on the limestone surface. (Photograph taken by Prof. Hans Leisen)

Figure 5: Marvelous speleothems like sinter draperies and curtains or sinter waterfalls developed in the Lao Rai Shelter. These karst formations are of extreme natural value and have to be protected. (Photograph taken by Prof. Hans Leisen)

Figure 6: In Lene Hara Cave the compact ochre crust is missing on top of the limestone surfaces. By peeling of the paint layers a perforated look is produced. New formed sinter coatings seem to spread over the pictogram along the crack in the right side of the picture. (Photograph taken by Prof. Hans Leisen)

Figure 7: The compact ochre weathering crust as support of pictograms tends to detach and finally falls off (Moa Mimi Raka). (Photograph taken by Prof. Hans Leisen)

Figure 8: Soot and heat from man-made fires spoil and endanger rock art depictions (Lene Cece). (Videomicroscope photo: long side = 8 mm. Photograph taken by Dr. Esther von Plehwe-Leisen)

Lista kona-ba Figura sira

Figura 1: Gruta Lené Hara ne'e forma hosi kamada fatuk-ahu ka kalkáriu nian liuhosi Karstifikasaun. (Fotografia husi Prof. Hans Leisen)

Figura 2: Ezbosu / esketsa kona-ba fatuk-mahon ka abrigo ida (1) no kárstika hosi gruta ida (2) ho dezvoltamentu ba formasaun espeleotema nian (Kempe 2002). Modifika depoizde Kempe (1982) no adapta hikas ba Fatin sira Arte-fatuk nian iha Timor-Leste (Pinta husi Dr. Esther von Plehwe - Leisen).

Figura 3: Piktograma sira hela metin iha superfísio / fatuk tomak boot nia leten aas ne'ebá. Parte oin hosi sinál nian: Sr. António Fonseca, antigu xefe suku Tutuala nian no ema responsavel / mahein tradisionál ida iha Lené Cecé nian. (Fotografia husi Prof. Hans Leisen)

Figura 4: Fatin kasador nia ulun ne'ebé deskreve iha abrigo Moa Mimi Raka ne'ebé pinta iha krosta okre ne'ebé kulapur ona iha superfísie kalkáriu nian. (Fotografia husi Prof. Hans Leisen)

Figura 5: Espeleotema furak /maravilloza sira nu'udar kortina ka sinter waterfall (sinter kaskata [air terjun]) ne'ebé dezvoltidu iha Abrigo Lao Rai nian. Kriasaun sira ba kárstika iha valór natural boot ida no tenke ser protejidu. (Fotografia husi Prof. Hans Leisen)

Figura 6: Iha Gruta Lené Hara nian ne'e krosta tomak hosi okre mak lakon ona iha superfísie fatuk kalkáriu nian. Bainhira ita loke kamada tinta nian sira, ita sei haree hetan ku'ak sira-ne'ebé akontese ona. Sinter foun sirane'ebé forma ona sai namkari iha piktograma tuir nakfera/ naklaan sira hosi parte liman-loos figura nian. (Fotografia husi Prof. Hans Leisen)

Figura 7: Krosta okre tomak ne'ebé kulapur sai nu'udar apoiu ba piktograma ne'ebé kuaze atu husik-an no ikus mai sei monu tun (Moa Mimi Raka). (Fotografia husi Prof. Hans Leisen)

Figura 8: Ahi-funanno manas mai hosi hahalok emanian belesemo no amesa representasaun Arte-fatuk nian (Lené Cecé). (Foto vídeomikroskope: sorin naruk = 8 mm. Fotografia husi Dr. Esther von Plehwe-Leisen)

Figure 9: This calcite sinter surface is completely altered and cracked by the high temperature of the adjacent cooking place. Scratches in the surface show an inappropriate cleaning attempt. (Photograph taken by Prof. Hans Leisen)

Figure 10: Petroglyph face on the speleothem column in Lene Hara Cave shows considerable surface deterioration by pitting. (Photograph taken by Prof. Hans Leisen)

Figure 11: A petroglyph face is still clearly discernible on the stalagmite stump near the cave entrance. The crack and the missing part on the right side are part of the exfoliation of the support. (Photograph taken by Prof. Hans Leisen)

Figura 9: Superfísie sinter kalsita ida-ne'e kompletamente muda-an no nakfera sira ho temperatura aas hosi dapur /fatin te'in ne'ebé besik. Naklaan sira iha superfísie hatudu tentativa limpeza ida ne'ebé la apropiada. (Fotografia husi Prof. Hans Leisen)

Figura 10: Petróglifu nia oin iha koluna espeleotema nian iha Gruta Lené Hara hatudu superfísie ne'ebé hetan estragus tanba hahú mosu ku'ak oan sira (pitting). (Fotografia husi Prof. Hans Leisen)

Figura 11: Petroglifu husi ema nia oin sei bele haree iha estalagmite besik fatin tama iha fatuk-kuak. Nia rahun no parte ne'ebé lakon iha liman loos hanesan parte husi esfoliasaun husi suporte. (Fotografia husi Prof. Hans Leisen).

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