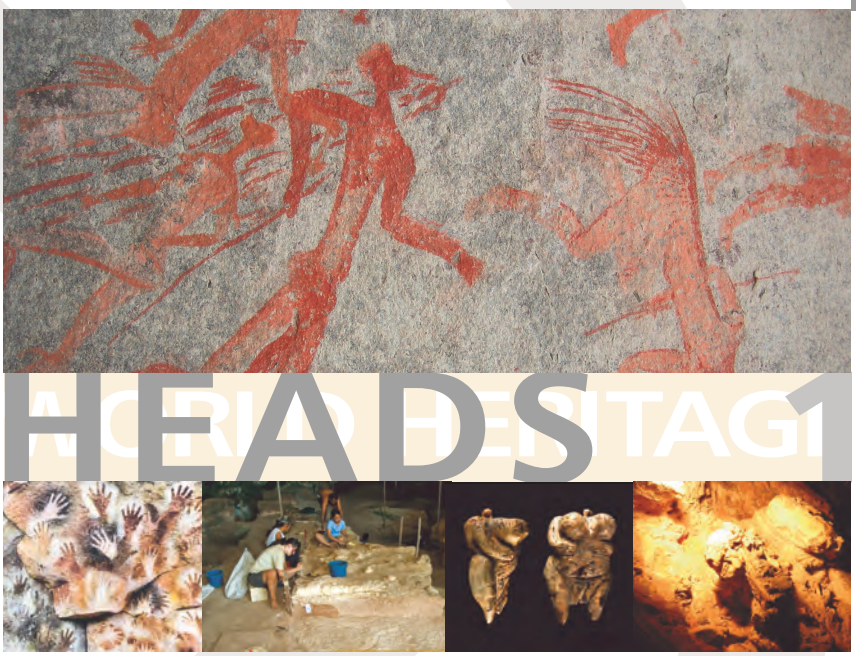
World Heritage papers 29



Human Evolution: Adaptations, Dispersals and Social Developments (HEADS)

World Heritage Thematic Programme

Evolución Humana: Adaptaciones, Migraciones y Desarrollos Sociales

Programa Temático de Patrimonio Mundial

United Nations Educational, Scientific and Cultural Organization

Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura

World Heritage Convention

Convención del Patrimonio Mundial

GOBIERNO DE ESPAÑA MINISTERIO DE CULTURA

FONDOS EXTRAPRESUPUESTARIOS ESPAÑOLES

Human Evolution: Adaptations, Dispersals and Social Developments (HEADS)

World Heritage Thematic Programme

Evolución Humana: Adaptaciones, Migraciones y Desarrollos Sociales

Programa Temático de Patrimonio Mundial

Editors:
Nuria Sanz, *UNESCO World Heritage Centre*
Penelope Keenan, *UNESCO World Heritage Centre*

Coordination of the World Heritage Papers Series:
Vesna Vujicic Lugassy, *UNESCO World Heritage Centre*

Cover photos:
Top: uKhahlamba/Drakensberg Park (WHL), South Africa. Photo: Frans Prins
from left to right: • Cueva de las Manos, Río Pinturas, Argentina. © WHC/UNESCO • The Tabon Cave Complex and all of Lipuun excavation. Photo: Eusabio Z.Dizon • Hohle Fels Venus. Photo: H.Jensen. © University of Tübingen • Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs (WHL), South Africa. Photo: Nuria Sanz (UNESCO)

Published in June 2011 by UNESCO World Heritage Centre.

Disclaimer

The ideas and opinions expressed in this publication are those of the authors and are not necessarily those of UNESCO and do not commit the Organization. The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Renuncia de responsabilidad

Las opiniones aquí expresadas son responsabilidad de los autores, las cuales no necesariamente reflejan las de la UNESCO y no comprometen a la Organización. La terminología utilizada y la forma en que se presenta la información en esta publicación no suponen juicio alguno de la UNESCO respecto de la condición jurídica de ningún país, territorio, ciudad o región, o de sus autoridades, ni respecto del trazado de sus fronteras o límites.

UNESCO World Heritage Centre
7, place de Fontenoy
75352 Paris 07 SP France
Tel : 33 (0)1 42 68 15 71
Fax : 33 (0)1 45 68 55 70
E-mail : wh-info@unesco.org
http://whc.unesco.org

Table of Contents • Índice

ANNEXES

Melka Kunture, Simbiro, Ethiopia.
Photo: Nuria Sanz

In Memoriam of María Jesús San Segundo

María Jesús San Segundo

María Jesús San Segundo came to UNESCO as Ambassador and Representative of Spain to UNESCO in January 2008. By that time her academic career had followed a systematic, solid and orderly course, very much reflecting her character. After receiving her Ph.D from Princeton in 1985, she had been a lecturer, professor, Deputy Rector and Minister of Education and Science in Spain. Every step in her career bore witness to her determination and firmness of purpose in defence of education systems capable of building fairer and freer societies.

Her experience in fields such as the financing of education or the evaluation of education systems did not affect her unremitting predisposition to advocate an enriching approach to science in every one of the subjects that she was called on to deal with in our Organization. In the case of Human Evolution, far from being 'just one of the programmes' immediately became one of her favourite projects. I remember the meeting where we discussed the aspects that Spain would be proposing to address during the Spanish Chair of the World Heritage Committee. Her conviction of the rightness of promoting a multidisciplinary dialogue to deliberate on what it is that makes us culturally, anatomically and intellectually human persuaded everyone that UNESCO was where that debate should take place.

I had the opportunity to work closely with her. The HEADS Programme and the work of World Heritage profited from her conciliatory attitude. She was a firm advocate of multilateralism and an enthusiastic defender of the 1972 Convention goals. We enjoyed her company and we profited from her far-sightedness and counsel in Paris, Spain, South Africa, Brazil and in numerous other work sessions.

Her work as Chairperson of the 32nd session of the World Heritage Committee has been praised as an effective and always respectful form of management. She gave the necessary leadership, firmly but always with profound respect for the cultural sensibilities underlying the Outstanding Universal Value of all sites included in the World Heritage List.

María, as she was known to so many friends at UNESCO, has left us with the same discretion by which we had become accustomed in our day-to-day work with her. Tireless, quiet, straightforward and competent, she was quick to gain one's trust. We were always made aware of the satisfaction that she found in doing her work, a professional academic of tremendous human warmth and quality.

We respected her silence during her final months, but her memory and fine record of work remain. Let these words serve as thanks for the generosity and enthusiasm with which she did everything. Many of the pages that follow have been inspired by her counsel, which will undoubtedly continue to guide this project to the conclusion that she considered essential – to bring the World Heritage Convention into closer contact with scientific research.

Nuria Sanz
General Coordinator of the World Heritage Thematic Programme, Human Evolution: Adaptations, Dispersals and Social Developments (HEADS), UNESCO World Heritage Centre

En memoria de María Jesús San Segundo

S. Excma. Sra. María Jesús San Segundo, Presidenta de la 33ª Sesión del Comité de Patrimonio Mundial, Sevilla, España, de 22 a 30 de Junio de 2009. Foto: UNESCO/WHC

María Jesús Sansegundo, llega a UNESCO como Embajadora, Representante de España, en Enero de 2008. Por aquel entonces su carrera académica había recorrido todos los peldaños de un currículo sistemático, sólido y ordenado, vivo retrato de su carácter. Desde recibir su doctorado en Princeton en 1985, fue profesora, catedrática, Vicerrectora y Ministra de Educación y Ciencia de España. Cada tramo de su carrera fue avalando su determinación y constancia en la defensa de sistemas educativos capaces de construir sociedades más justas y libres.

Temas de su experiencia como la financiación de la Educación o la evaluación de sistemas educativos no empañaron una predisposición constante por reclamar un acercamiento fecundo a la ciencia en todos y cada uno de los temas que le tocó abordar en nuestra institución. El caso de la Evolución Humana, lejos de ser « uno de los programas » se convirtió inmediatamente en uno de sus proyectos favoritos. Recuerdo la reunión en la que se discutía sobre los aspectos que España iba a proponer desarrollar durante la Presidencia del Comité de Patrimonio Mundial. Su convencimiento sobre la pertinencia de avanzar una reflexión multidisciplinar para deliberar sobre lo que nos hace humanos, cultural, anatómica e intelectualmente, persuadió a todos de que UNESCO era el solar de esa reflexión.

Tuve ocasión de trabajar con ella de forma cercana. El programa HEADS y los trabajos de Patrimonio Mundial se beneficiaron de su actitud conciliadora. Era una convencida del multilateralismo y entusiasta defensora de los objetivos de la Convención del 72. Disfrutamos de su compañía y nos beneficiamos de su visión y consejos en París, en Burgos, en África del Sur, en Brasil y en tantas otras sesiones de trabajo.

Su labor al frente del Comité de Patrimonio Mundial ha sido alabada como una forma de gestión eficaz, siempre respetuosa. Acompasó el liderazgo necesario con firmeza, pero sin dejar de lado un profundo respeto por las sensibilidades culturales que hay detrás de cada uno de los valores universales excepcionales inscritos en la Lista.

María, como era conocida para tantos amigos en UNESCO, se ha marchado con la misma discreción con la que estábamos acostumbrados a conocerla en su trabajo del día a día. Incansable y silencioso. Generaba confianza rápidamente con su sencillez y competencia. Nos hizo percibir en todo momento la satisfacción con la que desempeñaba sus funciones, gracias a un profesionalismo académico de enorme calidez y calidad humanas.

Desde hace meses respetamos su silencio. No por ello queda apagado su recuerdo. Sirvan estas líneas para agradecer su forma de hacer, generosa y entusiasta. Muchas de las páginas que prosiguen están escritas al socaire de sus orientaciones, que sin duda van a seguir guiando este proyecto, con el objetivo de llevar a buen puerto lo que para ella resultaba fundamental: acercar la Convención de Patrimonio Mundial a la investigación científica.

Nuria Sanz
Coordinadora principal del Programa Temático de Patrimonio Mundial, Evolución Humana: Adaptaciones, Migraciones y Desarrollos Sociales (HEADS), Centro del patrimonio mundial de la UNESCO


Francesco Bandarin

Foreword

Since 1950, UNESCO has been the main defender of the unity of the human species and the ontological parity of all of the world's cultures. For decades, the international community has developed a constant reflexion which continues to harbour questions about our forms of remote and contemporary otherness in accordance with the scientific responsibility of universality.

The contents addressed here raise arguments calling for the rethinking of all of the manifestations of a complex relationship, that of man with his environment through the human and natural sciences owing to methodologies which allow us to identify the intent of human behaviour. Following the collective acceptance of human evolution thanks to the The Origin of the Species *and parietal Palaeolithic art, research has completed the cartography of our forms of populating the planet. Today, genetic studies have corrected the geography of migrations, and confirm once again that everything published by the UNESCO Courier from 1950 about taking a stand against unfounded forms of racism and ethnocentrism was not a working hypothesis or a code of best practices, but rather a scientific argument.*

These pages bear witness to the benefits of implementing the World Heritage Convention for the purpose of preserving all traces of civilization allowing for interdisciplinary ways of interpreting our behaviours, ways of learning and cultural decisions. All of this baggage has made us what we are today, a species that continues investigating how each human community contributes to the common heritage of everyone; a common heritage of skills and possibilities combined to the infinite degree of our cultural diversity.

Francesco Bandarin
Assistant Director-General for Culture, UNESCO

Prólogo

Desde 1950, UNESCO ha sido la casa de defensa de la unidad de la especie humana y de la paridad ontológica de todas las culturas del mundo. La comunidad internacional ha desarrollado durante décadas una reflexión que ha estado siempre vigente y que sigue almacenando interrogantes sobre todas nuestras formas de alteridad remota y contemporánea, de acuerdo al deber científico de universalidad.

Los contenidos aquí abordados van tejiendo argumentos para repensar hoy todas las manifestaciones de una relación compleja, la del hombre con el medio, a través de un recorrido por las ciencias humanas y naturales, gracias a metodologías que nos permiten identificar la intencionalidad del comportamiento humano. Después de la aceptación de la evolución biológica de lo humano tras El Origen de las Especies *y del arte parietal paleolítico, la investigación ha ido completando la cartografía de nuestra forma de poblar el planeta. Hoy los estudios genéticos corrigen geografías de migraciones y confirman una vez más que todo lo publicado por el Correo de la UNESCO desde 1950 para hacer frente a formas de racismos y etnocentrismos infundados, no era una hipótesis de trabajo sobre un código de buenas prácticas sino un argumento científico.*

Estas páginas dejan constancia del beneficio de la implementación de la Convención de Patrimonio Mundial a la hora de preservar todas las trazas que permiten formas de lectura interdisciplinares sobre nuestros comportamientos, formas de conocimiento y decisiones culturales. Todo ese bagaje nos han traído hasta lo que somos hoy, una especie que sigue investigando cómo cada comunidad humana contribuye al patrimonio común de todos; un patrimonio común de destrezas y de posibilidades, combinadas hasta el infinito de nuestra diversidad cultural.

Francesco Bandarin
Subdirector General de Cultura de la UNESCO


Kishore Rao

Preface

The World Heritage Thematic Programme 'Human Evolution: Adaptations, Dispersals and Social Developments' (HEADS) comes at a pertinent time in the history of the World Heritage Convention, when there is a call for a broader, more multidimensional concept of heritage. These challenges, which the World Heritage Committee has underlined in recent years, bring to the forefront the significant steps to be taken in the future evolution of the Convention*. The HEADS Programme was launched in the context of the Global Strategy for a Representative, Balanced and Credible World Heritage List, initiated by the World Heritage Committee in 1994 to broaden the definition of World Heritage as well as the framework and implementation of the World Heritage Convention.*

Since its approval in 1972, the World Heritage Convention has proven to be one of the most successful binding international agreements, providing a permanent legal, economic and administrative framework for multilateral cooperation in the protection of our planet's shared natural and cultural heritage. The foundations of the Convention *are centred on international cooperation, and its success reflects the basis that protection depends on: humanity.*

Having recognized that sites linked to the course of our development as anatomically and culturally modern humans are under-represented on the World Heritage List, as approved by the 32nd session of the World Heritage Committee in Quebec, the World Heritage Centre undertook a process of consultation with the generous financial and technical support of the Spanish Government. The period of consultation evaluated the priorities in this area and their bearing on the context of the Convention*, with a view to presenting recommendations for subsequent implementation of the initiative at the 33rd session of the World Heritage Committee, in Seville, Spain.*

For a decade now, the Spanish Government has consistently supported cooperation initiatives within the framework of the Spanish Funds-in-Trust for World Heritage, and it has remained resolute that this initiative should focus particularly on the very foundations of human behaviour and on the earliest vestiges of our cultural diversity.

Human evolution is a phenomenon that needs to be addressed in the present tense; it is a worldwide event reflecting a process of evolutionary development that took place over a vast period of time. The values of the related sites are therefore not geographically exclusive. They express the universal nature of humankind and contain crucial information that can help us better understand our history and the early stages of human life. If we are to preserve all this knowledge for future generations, we need to try to design sophisticated means of conservation that take into account the vulnerability of the archaeological records. Such a goal requires worldwide cooperation and a suitable framework that combines all the advantages of a multidisciplinary approach to nature and culture.

Reflecting the global scope of HEADS, a worldwide community has contributed generously to this venture, including members of the World Heritage Committee, representatives of States Parties and Advisory Bodies, site managers, international experts, researchers and our colleagues in the UNESCO field offices. I wish to extend my sincere thanks to all of them for their cooperation and having shared their knowledge and experience with us.

It gives me great satisfaction that the World Heritage Centre is able to carry forward a Programme that enables us to collectively recognize the roots of our cultural diversity, and to question, enlarge and develop our understanding of human history.

Kishore Rao
Director of the World Heritage Centre

Prefacio

El programa Temático del Centro de Patrimonio Mundial «Evolución Humana: Adaptaciones Migraciones y Desarrollos sociales» (HEADS) se produce en un momento propicio de la historia de la Convención del Patrimonio Mundial, pues actualmente nos hallamos ante un concepto más amplio y multidimensional del patrimonio. Son desafíos sobre los que se ha hecho hincapié en años recientes por parte del Comité y pertinentes a la luz del futuro de la propia Convención. El programa HEADS se inició en el contexto de la Estrategia Global para una Lista de Patrimonio Mundial representativa, equilibrada y creíble, iniciada por el Comité de Patrimonio Mundial en 1994 con la finalidad de ampliar la definición de Patrimonio Mundial al igual que el marco y la implementación de la Convención de Patrimonio Mundial.

Desde que, en 1972, se aprobara la Convención del Patrimonio Mundial, este tratado se ha convertido en uno de los acuerdos internacionales vinculantes de mayor éxito, que proporciona un marco legal, económico y administrativo para la cooperación multilateral en materia de protección del patrimonio natural y cultural de valor universal de nuestro planeta. Los fundamentos cruciales de la Convención se basan en la cooperación internacional y su éxito es reflejo del principio según el cual la protección depende y concita el interés colectivo de toda la Humanidad.

Tras reconocerse que los sitios ligados a seguir la pista a nuestro desarrollo como humanos, anatómica y culturalmente modernos, se hallan infrarrepresentados en la Lista del Patrimonio Mundial, y de acuerdo con lo aprobado durante la 32ª Sesión del Comité del Patrimonio Mundial en Quebec, el Centro de Patrimonio Mundial emprendió un proceso de consulta con el generoso apoyo financiero y técnico del Gobierno de España. El periodo de consulta evaluó las prioridades de esta área y su relación con el contexto de la Convención, con el objetivo de presentar las recomendaciones para el desarrollo posterior de la iniciativa en la 33ª reunión del Comité del Patrimonio Mundial, en Sevilla (España).

El Gobierno de España ha apoyado de forma sostenida durante ya una década trabajos de cooperación en el marco del Fondo Extra-presupuestario en materia de Patrimonio Mundial, y ha considerado muy relevante el que esta iniciativa se centre de manera especial en los cimientos mismos de nuestro comportamiento humano y en los vestigios más antiguos de nuestras diversidades culturales.

La evolución humana es un fenómeno que se debe conjugar siempre en presente; es un fenómeno mundial y representa un proceso de crecimiento evolutivo que se fue desarrollando a lo largo de un vasto período de tiempo. Los sitios prehistóricos carecen, por ende, de exclusividad geográfica. Expresan el carácter universal de la humanidad y contienen datos cruciales para comprender mejor nuestra historia y las etapas iniciales de la vida humana. El poder preservar para generaciones futuras todo ese conocimiento implica aventurarse en diseñar formas de preservación sofisticadas, acordes con la vulnerabilidad de los registros arqueológicos. Este objetivo requiere de la cooperación mundial y de un marco propositivo que combine las ventajas de una mirada cruzada entre naturaleza y cultura.

De acuerdo al alcance global de HEADS, la comunidad internacional en su conjunto: miembros del Comité de Patrimonio Mundial, representantes de los Estados Partes y Organizaciones consultativas, gestores de sitio, expertos internacionales, investigadores y nuestros colegas de las Oficinas de la UNESCO fuera de la sede, han colaborado con generosidad a esta aventura. Deseo expresar mi agradecimiento sincero a todos ellos por haber compartido su saber y su experiencia con nosotros.

Supone para mí una gran satisfacción que el Centro de Patrimonio Mundial pueda desarrollar un programa que implica reconocer colectivamente la raíces de nuestra diversidad cultural e interrogar, ampliar y desarrollar nuestra comprensión de la historia humana.

Kishore Rao
Director del Centro de Patrimonio Mundial


Ángeles Albert de León

Preface

During the 32nd session of the World Heritage Committee in Quebec, Canada, in July 2008, the Kingdom of Spain confirmed its wish to contribute to a discussion on Prehistory and the World Heritage Convention. As part of the programme of Spanish extra-budgetary funds for World Heritage, the Ministry of Culture supported a systematic series of consultations with the international scientific community, the Convention's Advisory Bodies, and particularly with managers of related sites included in the World Heritage List and the Tentative List of States Parties, to focus cooperative efforts on this thematic initiative during the Spanish Chair of the World Heritage Committee.

Working closely with the Ministry of Culture, the World Heritage Centre has succeeded in bringing together scientific knowledge and day-to-day practice in the conservation of related sites throughout more than 10 international meetings held between November 2008 and May 2011. This intense period of consultation has made it possible to define priorities and forms of multilateral and bilateral cooperation, which will undoubtedly help to see that places associated with the beginnings of that long process whereby our forebears produced the first cultural traces of our history are better represented.

Spain could not ignore the need for a debate on the process of hominization or new inclusions of sites, which – although devoid of monumental remains – contain a fundamental message that contributes to our knowledge of the dawn of our cultural and creative diversity.

Inclusion in the List of such sites as Cave of Altamira and the Palaeolithic Cave Art of Northern Spain, Rock Art of the Mediterranean Basin on the Iberian Peninsula, and Archaeological Site of Atapuerca, are illustrative of a well-defined national resolve to promote sites of such Outstanding Universal Value that require multiple scientific disciplines to preserve them from the ravages of time, as well as a great deal of regulation to maintain their authenticity and integrity so that future generations may enjoy their legacy, while furthering knowledge about our origins.

All this international work will have its domestic counterpart, thanks to the Ministry of Culture's initiative to set up a Network of Spanish Overseas Archaeological Institutes, in cooperation with Spain's Consejo Superior de Investigaciones Científicas (National Science Research Council), of which I should like to highlight the proposal to create a centre based in Tanzania for research into fossil records of human evolution in East Africa.

In its decision to support the inclusion of assets related to human evolution in the World Heritage List for all the above-mentioned reasons, the Ministry of Culture has begun carrying out a feasibility study in aid of creating a UNESCO Category 2 Centre in Spain devoted to study and research in the field of Rock Art, as part of the World Heritage HEADS Programme. The aim of the Centre is to become a platform for international scientific and technical exchange, and to develop and realize the proposals, ideas and needs generated by the Programme's Action Plan.

It is with satisfaction that the Spanish Government welcomes all the results that have already been achieved, as outlined in this publication. We are thus firmly resolved to pursue the course set out in our road map up to 2013.

I wish to congratulate the States Parties and the World Heritage Centre on the results so far and to renew our commitment, once more demonstrating our faith in the success of the World Heritage Convention.

Ángeles Albert de León
Director General of Fine Arts and Cultural Assets, Ministry of Culture of Spain

Prefacio

Durante la 32ª Sesión Plenaria del Comité de Patrimonio Mundial, celebrada en Quebec, Canadá, en Julio de 2008, el Reino de España confirmó su voluntad de contribuir a una reflexión sobre Prehistoria y la Convención de Patrimonio Mundial. Desde entonces, y en el marco del programa de los Fondos extra-presupuestarios españoles para Patrimonio Mundial, el Ministerio de Cultura decidió avanzar un proyecto sistemático de consultas con la comunidad científica internacional, con los Organismos Asesores de la Convención, y especialmente con los gestores de sitios inscritos en la Lista o bien inscritos en las Listas Indicativas de los Estados Parte, y centrar en esta iniciativa temática los esfuerzos de la coopera-ción durante la Presidencia española del Comité de Patrimonio Mundial.

El Centro de Patrimonio Mundial, en estrecha colaboración con el Ministerio de Cultura, ha conseguido reunir el conocimiento científico y la práctica cotidiana de la conservación, en las diez reuniones internacionales celebradas entre noviembre de 2008 y mayo de 2011. Todo este intenso periodo de consultas ha permitido definir prioridades y formas de cooperación multilateral y bilateral, que sin duda van a contribuir a una mejor representación en la Lista de lugares asociados a los inicios de ese largo episodio temporal que llevó a nuestros antepasados a producir las primeras trazas culturales de nuestra historia.

España no podía permanecer ajena a la necesidad de reflexionar sobre el proceso de hominización, sobre las nuevas inscripciones de sitios, que aún sin trazas monumentales, contienen un mensaje fundamental para avanzar nuestroconocimiento sobre los albores de nuestra diversidad cultural y creativa.

La inscripción en la Lista de sitios como Altamira y las cuevas de arte paleolítico del Norte de España, el arte rupestre del arco mediterráneo, o Atapuerca, dan buena cuenta de un propósito nacional explícito de apostar por lugares cuyo Valor Universal Excepcional necesita de muchas disciplinas científicas para conservarse en el tiempo y de considerables regulaciones normativas para mantener su autenticidad e integridad, a fin de que las generaciones futuras puedan disfrutar del legado y contribuyan, a su vez, a avanzar en el conocimiento de nuestros orígenes.

Toda esta labor internacional va a verse correspondida nacionalmente gracias a la iniciativa del Ministerio de Cultura de constituir una Red de Institutos Españoles de Arqueología en el Exterior, en cooperación con el Consejo Superior de Investigaciones Científicas de nuestro país, y entre los cuales me gustaría destacar el proyecto de creación de un centro radicado en Tanzania dedicado a la investigación de los registros fósiles de la evolución humana en África Oriental.

Por todas las razones antes esbozadas, y con el firme convencimiento de apoyar la presencia de bienes relacionados con la Evolución Humana en la Lista de Patrimonio Mundial, el Ministerio de Cultura ha iniciado los trabajos para iniciar un estudio de viabilidad y crear un Centro de Categoría 2 UNESCO en España, dedicado a los estudios e investigaciones en el ámbito del ARTE RUPESTRE, en el marco del Programa HEADS de Patrimonio Mundial. El Centro contempla como objetivo convertirse en una plataforma de intercambio científico y técnico internacional, desde donde desarrollar y convertir en realidad los propósitos, ideas y necesidades que vayan a surgir del Plan de Acción del proyecto.

El Gobierno de España se recibe con satisfacción todos los resultados ya alcanzados que se recogen en esta publicación. Sirvan esta líneas para dejar constancia de nuestra determinación para continuar de forma decidida con las etapas futuras previstas en la hoja de ruta trazada hasta 2013.

Quiero felicitar a los expertos, a los Estados Partes y al Centro de Patrimonio Mundial por los resultados obtenidos y renovar nuestro compromiso para demostrar una vez más nuestra convicción por el buen hacer de la Convención de Patrimonio Mundial.

Ángeles Albert de León
Directora General de Bellas Artes y Bienes Culturales, Ministerio de Cultura de España

Introduction

Human Evolution: Adaptations, Dispersals and Social Developments (HEADS)

World Heritage Thematic Programme


Nuria Sanz

World Heritage of Human Evolution and the commitment of International Cooperation

Nuria Sanz
General Coordinator of the HEADS Programme,
UNESCO World Heritage Centre

« …La diversité des cultures humaines est derrière nous, autour de nous et devant nous. La seule exigence que nous puissions faire valoir à son endroit (créatrice pour chaque individu des devoirs correspondants) est qu'elle se réalise sous des formes dont chacune soit une contribution à la plus grande générosité des autres ».

Claude Lévi-Strauss, *Le Courrier de l'UNESCO, Juin, 1952, Vol V.*

« …l'universalité ne peut être dans les réponses, mais dans les questions que les hommes se posent ».

Maurice Godelier, *1989*

This is a story with no beginning and no end, a journey that encompasses a vast trajectory of experience. Some 10 million years ago in tropical Africa, primates embarked on two separate paths, and only 4 million years ago, what are now considered hominids emerged into more open environments. The *Homo* genus would appear subsequently some 2.6 million years ago, after which the population would disperse not only in Africa but throughout Eurasia. This advance was matched by a wide array of biological and cultural developments in our genus. For more than 200 years now, we have been able to begin situating the remotest variations of our existence as modern humans in every corner of the planet and to learn from them. This experience does not end with the deciphering of fossil records, however.

Although the human life form can be viewed as a whole, we have been fragmenting the onward progression of history in order to grasp its complexity, to gain a better understanding of processes. Thus, we have been isolating significant times and places when and where differences arose for the first time. Prehistoric archaeology has developed a vast array of technologies to interpret the documentary record of the human past. The narrative of becoming human is a means of investigating ourselves and requires us to seek out our remotest origins, with the nature of our present existence as the starting point. The aim, then, is to understand the forms of knowledge and thought, reasoning, cosmologies and differing moralities of humanity, which has shared origins but took different paths to development (Renfrew, 2008).

All learning processes turn the object of our study into a genuinely intellectual adventure and use its heritage as a means of preserving from loss the knowledge of everything that has led us to become what we are today. The history of such learning began in time immemorial. The origins of our human behaviour date back to the Palaeolithic.

The Thematic Programme does not rely on linear explanations that pursue a single, univocal narrative, but endeavours, through the unique pathways followed in each place, to explore the universal significance of changes that have left their mark on the intellectual development of the human species.

Human evolution and the World Heritage Convention

The mission of the UNESCO World Heritage Centre is to protect natural and cultural heritage, work with States Parties to implement the World Heritage Convention on their national territory and secure all possible forms of international cooperation, as laid down in the text of the *Convention Concerning the Protection of the World Cultural and Natural Heritage*, an international treaty adopted by the General Conference of UNESCO in 1972.

The ultimate goal of the World Heritage List is to include all forms of cultural and natural diversity that are of Outstanding Universal Value in the world. The earliest cultural stages of human evolution cover a long period that is vital to the history of humanity, reflecting the origins of cultural diversity. However, the importance of this process is not matched by its representation in the UNESCO World Heritage List.

In its endeavour to continue to raise the level of representation of under-represented categories and to improve geographical coverage, the World Heritage Committee adopted Decision 32 COM/10A at its 32nd session, held in Quebec City in July 2008. In that Decision, the Committee called for research on the presence and potential of cultural representations linked to prehistoric archaeology to be initiated under the Global Strategy for a Representative, Balanced and Credible World Heritage List.

Pursuant to that request and owing to a generous contribution from Spain's World Heritage Fund, the UNESCO World Heritage Centre launched a wide-ranging consultation with the international scientific community, the Convention's Advisory Bodies, national experts identified by the States Parties to the Convention and persons directly responsible for the conservation of sites on the World Heritage List and the respective national Tentative Lists.

The Convention is considered to be one of the most successful of all international instruments in the conservation of heritage sites. This success is reflected not only by the number of signatories, with coverage being nearly universal (187 of UNESCO's 193 Member States), but also by the large number of protected properties (911 properties in 145 countries as at May 2011). The Convention is approaching two milestones in its history, namely the 40th anniversary of its entry into force in 1972 and the inclusion of the thousandth property in the World Heritage List.

The World Heritage List initially rested on a 'monument-based' conception of cultural heritage, but in recent decades people's perception and interpretation of the history of human societies, scientific knowledge and intellectual attitudes towards the idea of cultural and natural heritage have undergone change, as has the way in which societies perceive themselves, their values, their history and their past relations with other societies and cultures. In 1972, the concept of cultural heritage was largely confined to built heritage. However, the history of art, architecture, archaeology, anthropology and ethnology, ecology and genetics have since been moving away from the study of isolated monuments and have begun to take complex, multidimensional cultural phenomena into account. By adopting the Global Strategy in 1994, the World Heritage Committee sought to broaden the definition of 'World Heritage' in order to reflect the full diversity of the planet's cultural and natural wealth more effectively, while establishing a global framework and an operating methodology so that the Convention can be implemented to the full.

To ensure that the future World Heritage List would concomitantly be representative, balanced and credible, the group of experts convened on that occasion considered not only that the number of under-represented cultural properties by type, by region and by period should be increased, but also that the new heritage concepts that had arisen in recent decades should be taken into account. Spanish extrabudgetary funds included a generous contribution from the Spanish Ministry of Culture for the conduct (between August 2008 and May 2009) of a whole range of activities relating to the detailed study of the World Heritage List and the Tentative List in order to set priorities for site representation, conservation and management and to establish a system of twinning and collaboration among sites. In August 2008, the World Heritage Centre initiated a study of prehistoric sites included in the World Heritage List and Tentative List and drafted some documents for subsequent analysis thereof.

The World Heritage Committee officially adopted the Thematic Programme in Seville in 2010. More than 10 international meetings have been held in the last three years on the basis of those considerations, thus affording the scientific community, governments and civil society opportunities to express themselves and set priorities for the drafting of the **Action Plan on Human Evolution: Adaptations, Dispersals and Social Developments (HEADS),** which was submitted to and approved by the World Heritage Committee in Brasilia in 2010. The process, initiated in 2008 when Spain chaired the World Heritage Committee, yielded its first results when the Committee recognized the potential and urgent need for the formulation of a specific thematic programme on the earliest stages of our anatomical and cultural diversity.

Our journey began 2.6 million years ago, giving rise to millions of different artefacts, cultural expressions of all kinds, numerous types of human settlements or funerary sites and different forms of spatial colonization in the most extreme geographical regions of the planet. This period extends even further into time if the long evolution of the human lineage is taken into account. The Thematic Programme spans a long period of time, from which a very substantial amount of knowledge about cultural, social and biological processes linked to human evolution is to be extracted.

In studying these periods, archaeological and applied research methodologies must be used to interpret the nature and behaviour of the earliest stages in the human record, integrating culture and nature. The challenge now is to remain alert to the way in which technologies can continuously reveal new information about the authenticity and integrity of heritage property dating back to our remotest past. The places that record the earliest foundations of human history are the ones least represented in the World Heritage List, even though they exist in every region of the world. The values of such properties are not sufficiently recognized by the international community and it is often difficult for States Parties to preserve them and to manage their particular vulnerabilities properly.

Defining the framework for reflection

From the beginning of the consultation, we worked within an interdisciplinary and international framework, seeking to move from a backward-looking to a forward-looking approach that would enable us to turn ideas swiftly into action. Our initial position was one of respect for regional interpretations and the historiography of scientific research, without losing sight of the substantive universality of each of the phenomena that explain our forms of 'humanity'. Every site was treated as the focus of local, situated practices that constantly bespoke the universality of phenomena. From the outset, we advocated a non-dissociative archaeological methodology for defining Outstanding Universal Value without first studying epistemological traditions as inputs into an analytical methodology. Radiocarbon techniques, botanical and zoological research, genetics and phytolithic analysis have been used to define multiple polygeneses that are essential in explaining the origin of human behaviour.

Why is the 1972 Convention a necessary reference for all of these disciplines? What is these sites' significance to the UNESCO World Heritage List today? On the basis of the consultations, a list of needs was compiled and a whole family of disciplines was incorporated, with genetics as the keystone in the reconciliation of theories about settlement processes and dynamics, interaction and migration. Prehistoric archaeology was supported by an array of technologies for taking up the scientific challenges inherent in the precision required to meet the conditions of authenticity in interpretations of the past. Our remotest history is thus ceasing to be the most unknowable.

If all current and future technologies are to continue to yield scientific answers, the records on which hypotheses can continue to be tested and new technological refinements experimented must be preserved. World Heritage sites must be regarded as potential stores of information for questions that cannot yet be answered, which entails keeping them available for science and protecting their value for future generations.

In terms of physical appearance, the places to which our analysis was applicable were no longer monuments and archaeological sites, but hidden, underground places, with few visible signs of habitability or occupation. The entire underground world, unrecognizable to less practised eyes, could enable specialists to read the cognitive advances of our species in a fossil record. Those accumulations of earthy deposits of varying thickness, containing lithic artefacts and organic remains such as pollens or remains of fauna compacted by time, were used as meaningful and sometimes remarkable records, although the layman could see nothing of importance in them. Only careful, almost surgical, interpretation and rigorous and systematic protection of the seemingly banal can enable us to understand why we have become what we are today and to realize that such forms of 'vulnerability' must be given priority attention on all continents and that this can make a decisive contribution to the geographical balance of the World Heritage List.

During the Middle and Late Pleistocene, a human anatomical form, capable of adapting to environmental diversity, colonized the world. Prehistoric archaeology permits the behaviours and discernments of 'modern' humanity to be distinguished within the vast array of evidence in the fossil record. Patterns of behavioural evolution can now be interpreted from lithic and organic remains, by using them to determine subsistence patterns, technologies, types of settlement, forms of communication and artistic expression and to conduct a taphonomic analysis of all facets of preservation/destruction conditions, which is essential for interpreting the depositional history of sites and for finding means of preserving vulnerable deposits for the future. Suffice it to consider Schöningen (Germany), Monte Verde (Chile) and Laetoli (Tanzania) to find good reasons to step up research into ways and means of preserving fragile sites.

The results of the first few international meetings alerted us to various needs that should be met under the Programme:

- the need to focus on cognition, to analyse how modern humans dealt with choices and how hundreds and thousands of years of observing nature have made it possible to turn challenges into forms of adaptive security;
- evidence of the past existence of many epicentres of human creativity and the need to avoid identifying the most ancient as the most outstanding – the point here is to give significance to these chronological landmarks when they also bring out the plural and diverse character of phenomena, especially as the cradle of humanity is always a cradle on wheels and the origins can always be sought further and further back;
- the need to find in the records, even the least visible of them, the will to leave the mark of different forms of human presence in a territorialized space;
- the world's best-studied archaeological sites have not been included in the national Tentative Lists or the World Heritage List; the sites that feature most prominently in the scientific literature, namely Uruk, the Caune de l'Arago, Fontana Menuccio, Tell Halaf, Ras Shamra, Sesklo, Dimini, Remedello, Paracas, Huaca Prieta, Kotosh, La Venta, among others, being conspicuous omissions; the best-studied sites have not always been considered in the analysis of Outstanding Universal Value;
- the need to establish methodological and ethical standards and guidelines for research and action relating to the preservation of some depositional forms, such as in caves;
- the need for the Convention's day-to-day operations to include forms of taphonomic analysis and thus new methods of analysis to halt the deterioration of sites excavated a long time ago, whose records can now yield much more information if they are analysed by means of the full scientific battery of modern practices;
- the need to identify the best means of providing for the integrated conservation of immovable and movable heritage in sites where form and content are inseparable for the purposes of defining Outstanding Universal Value, justifying and preserving their conditions of authenticity and integrity;
- the potential for turning the World Heritage Convention into a tool for guaranteeing the production and transmission of knowledge about what makes us human;
- the need to develop working assumptions, to explore opportunities and categories such as serial properties and cultural landscapes more effectively and to examine the human aspect in greater depth, as per criterion (viii);
- the urgent need to formulate assumptions about migration and, thus, to rethink the physicality of sites from our remotest history and to build working assumptions for rethinking such concepts as territory, migration and iteration.

1-2. *Pleistocene occupation sites of Klasies River, Border Cave,Wonderwerk Cave and comparable sites relating to the emergence of modern humans (Tentative List), South Africa. Photo: Nuria Sanz (UNESCO/WHC)*

3. *Swabian Jura. Excavations at Hohle Fels (HF) and Geißenklösterle (GK) cave, Germany. Photo © Tübingen University*

1

2

3

ACADEMIC STANDPOINTS

Human evolution

Heritage sites connected with 'human evolution' are properties relating to natural and human processes in the human lineage. Processes relating to human evolution include biological and cultural changes that attest to the remarkable success of our predecessors, who adapted constantly to the changing circumstances of their environment and whose dispersal throughout the world is proof of their adeptness at surviving even under the most extreme conditions.

Spread over several million years, the heritage of human evolution narrates the emergence of human anatomical, cognitive and behavioural characteristics. It therefore helps us to appraise diachronically the biological and sociocultural characteristics inherent in the extraordinary unity and diversity of our species, its wealth of behaviour and our ability to modify and artificialize our own surroundings.

'Human evolution' accounts for the origins of human life and social development from their beginnings. The processes involved may date back to the earliest forebears of humanity's lineages and include the production of tools for at least the last 2.6 million years. We believe that this record is an extremely valuable one, as it represents our inherited store of knowledge about the bases and diversity of human life, experience and social behaviour.

Related sites contain evidence of the natural and cultural processes of human lineages as part of the record of life and history on Earth. Consequently, sites relating to human evolution are also geological and palaeontological properties for the purposes of establishing the site's Outstanding Universal Value. Processes relating to human evolution include biological and cultural changes attesting to the remarkable success of our predecessors, who adapted constantly to changing environmental circumstances and whose dispersal throughout the planet proves their adeptness at surviving even under the most extreme conditions. It is therefore vitally important to take an interdisciplinary approach to the study of such properties, situated as they are at the crossroads of the natural and cultural heritage, so that they can be interpreted and their authenticity and integrity properly appraised.

The associated sites encompass more than 99.9% of human existence and many innovations in culture, behaviour, adaptation and technology that have set the future course for humanity as we know it today. Practically everything is rooted in its origins. This long process transformed human experience gradually and has been marked throughout by a multiplicity of responses, ranging from the hunter-gatherer's way of life to the present day when, for the first time in history, the majority of humankind lives in an artificially constructed city environment, while some modern hunter-gatherer communities continue to live in modern periurban areas. The question thus arises as to the conditions required to preserve those ways of life, themselves the best outcome of a more successful form of subsistence.

Sites investigated through prehistoric archaeology

These are the sites that retain and conserve the records of the greater part of the human past. If properly studied by means of techniques developed by archaeological science, they yield information on the ways in which human lineages evolved and adapted to differing geographical contexts, variable resources and a constantly changing climate. The remains accumulated as a result of human behaviour and interaction with the natural environment, whether in daily life or in special circumstances. Social organization, religious rites and beliefs, acquired technologies and skills have all left traces in the archaeological record; the same holds for human capacity to spread out into new territories and the necessity of leaving certain zones, for contact between different groups and for interaction among different cultures. Systematic study of the tangible record is key to understanding past events and their contributions to the present. However, many previously emergent sites have been buried, eroded or destroyed with the passage of time. Surviving sites are invaluable, but extremely fragile, and should be preserved for future generations.

Throughout this extremely long time-span, human lineages repeatedly displayed a remarkable adaptability that enabled them to spread from the tropics to a wide variety of constantly changing environments, from the equatorial regions to the Arctic, from the continents to islands, from lowlands to high regions, from deserts to swamps. The diversity of the human heritage is highlighted at archaeological sites all over the world, which preserve the invaluable record of humanity's earliest history.

While recognizing that most sites can fall into several categories, the Scientific Committee has identified some **types of property** that ought to be included in our context of analysis:

- deposits useful for reconstructing palaeo-environments;
- deposits containing human remains, including intentional ones, such as burial sites, funeral mounds and megalithic tombs;
- vestiges of human settlements, in the open or in caves, whether temporary or long-lasting, such as tells, with or without additional structures, and whether large or barely visible such as abattoirs and quartering sites;
- mining, quarrying and waste disposal sites;
- hoards of raw materials or deliberately buried artefacts;
- settlements associated with systems of hunting, fishing or gathering;
- settlements associated with food production and stores;
- artificial alterations to the landscape, or drainage works, ditches and enclosed areas;
- places where salt or pottery was produced;
- places of sacred or spiritual value, as per criterion (vi), or forming part of associative cultural landscapes;
- cultural palaeo-landscapes;

4

5

4-5. *Natufian camp, Mount Carmel complex, Israel. Photo: Nuria Sanz (UNESCO/WHC)*

- rock art sites;
- sites of importance to the history of science, such as Zhoukoudian, Cro-Magnon, Balzi Rossi and Altamira;
- seasonal sites/settlements associated with various types of territorial movements;
- sites linked to the provision of raw materials;
- sites associated with commercial/trading activities;

Sites especially linked to human evolution:

- properties linked to biocultural processes relating to the human lineage, as part of the record of life and the history of Earth;
- processes that include biological and cultural changes, dispersal, migration and knowledge, and any related adaptation at the global level;
- origins and diversity of the *Homo* genus (genetically, biologically and anatomically) and its forms of social organization;
- notable changes reflecting cognitive milestones (e.g. speech or the use of symbols) when technological innovations occurred (e.g. control of fire and tool production);
- colonization of new environments and dispersal, such as islands and deserts;

For rock art sites, values such as the following may be included:

- state of conservation;
- aesthetic quality;
- quantity and spatial distribution;
- rarity and exemplary value of images and subject matter;
- evidence of a long artistic tradition;
- research on the site and potential for future research;
- archaeological interpretation;
- understanding the cultural development of the artists and their cultures;
- long-standing traditions;
- rock art traditions that have been transmitted to modern times;
- contemporary significance to the direct descendants of the original artists in association with the oral history of the communities concerned;
- continuity of contemporary artistic production.

Objectives and scope

The main objectives of the Thematic Programme are to:

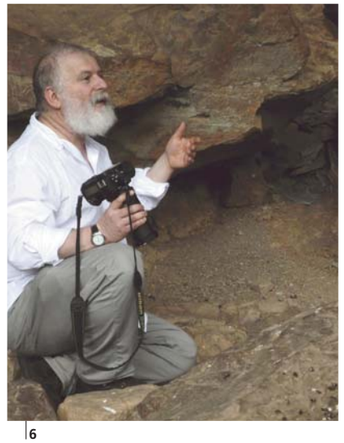
- forge links between scientific research and conservation by achieving recognition of the scientific value of properties linked to human evolution;
- act under the Global Strategy initiated by the World Heritage Committee in 1994 to broaden the definition of 'World Heritage' in order to contribute to equitable representation of all of the natural and cultural diversity of our planet since its origins;
- achieve recognition for sites containing important traces of interaction, dating back to the earliest times, between humans and the earth, early cultural behaviour, cognitive milestones and creative expressions;
- preserve listed properties from gradual deterioration on account of their antiquity and the vulnerability of their component materials;
- preserve the future research potential of records.

The World Heritage Centre has expressed its interest in working with leading international scientific organizations with which cooperation agreements can be signed to ensure the continuity of this initiative in collaboration with the World Heritage Committee, States Parties' representatives, the Convention's Advisory Bodies, national experts and specialized institutions with a view to enhancing the implementation of the Action Plan.

Rock art

The HEADS Programme has proven particularly beneficial to rock art sites on the World Heritage List. For the purposes of this Programme, rock art is evidence of the way in which various societies used art and graphical representations to transmit human thoughts and beliefs over time. Under the Thematic Programme, and to determine Outstanding Universal Value, prehistoric rock art sites will be considered in the same way as forms of rock art that are still being produced today or are meaningful to the communities of their contemporary descendants.

Rock art, in the form of paintings and engravings, is a clear and lasting relic of the transmission of human thoughts and beliefs through art and graphical representation. It is difficult to interpret without ethnographic data and requires special conservation and protection. The meeting held at uKhahlamba/Drakensberg Park (South Africa), a World Heritage site, gave managers of rock art sites on the World Heritage List and the Tentative List an opportunity to compare conservation priorities. The experiential data shared by the rock art site managers covered a wide variety of topics such as the spiritual significance of rock art, the need for multidisciplinary research and the importance of participation by the original artists' descendants in management and decision-making and in sharing the proceeds from tourism. Several delegates said that they had understood for the first time the global importance of the World Heritage site that they managed and realized that they faced the same problems that others encountered at the furthest ends of the world. Some delegates requested assistance in drafting guidelines that would enable them to negotiate with the stakeholders involved, in promoting low-impact tourism, in improving understanding of the effects of natural atmospheric processes and in establishing and maintaining documentation and oversight systems. The meeting laid the foundations for international cooperation that will undoubtedly enhance the representativeness and credibility of rock art on the World Heritage List.



6

7

6. *Prof. Aron Mazel, during the meeting, Rock Art and the World Heritage Convention, uKhahlamba/ Drakensberg Park, South Africa, 3 to 8 April 2009. Photo: Nuria Sanz (UNESCO/WHC)*

7. *Profs. Janette Deacon and Emmanuel Anati, Kimberley, South Africa. Photo: Nuria Sanz (UNESCO)*

Rock art speaks a universal language and the distribution of its expressions has already shown clearly how all aspects of Article 7 of the Convention can be explored internationally. Rock art has functioned as an international language, employing geographically universal terms, throughout human existence. In terms of their forms of analysis and the justification of their value, rock art sites are no longer seen as examples of subjective self-expression but as scenes of shared cultural experience and collective symbolism. Expressions of rock art are present in all regions of the world, often in places with a high concentration of representations where the factor of durability over time is at its greatest. In a significant number of such places, the sites have remained part of the imaginative world of the communities for centuries or even millennia. The expressions of rock art/culture resist clear and precise geographical, technical or conceptual classification. They do not fit easily into static codification or under thematic or geographical headings. It is difficult to find standardized criteria for their study or cataloguing. Singularities leave the most seasoned experts bemused. Despite international attempts at classification, the wording of the definition of 'unity of the site', 'unity of landscape', 'forms of documentation' and 'cataloguing' varies so widely that they seem to defy any rigid compartmentalization which is valid worldwide, in much the same way as 'artistic forms'.

The variety of techniques – geoglyphs, high and low reliefs, paintings and engravings – and of decorative/functional surfaces – caves, shelters or open-air places – found in the most diverse geographical areas, ecological tiers and latitudes of all continents confirm the view that we are in an exploratory phase, only beginning to understand their value and to identify sound methods for the integrated conservation of such diversity in its entirety. The lessons learnt at rock art sites already on the List have thus highlighted the need for greater international cooperation. Owing to daily reports of disappearances, urgent support must be provided for research, action and advocacy, a point to which the World Heritage Committee should not be indifferent.

The international community knows that, owing to the impact of vandalism and the foreseeable and future effects of climate change, this unique art form, one of the first used by humans to narrate and transmit messages, is endangered. The Outstanding Universal Value on the basis of which rock art sites were included in the List should harden international resolve to enhance and protect them under an urgent and necessary worldwide ownership campaign.

In each case, in justifying the claim of Outstanding Universal Value, the site's distinctive features must fall within one or more of the six cultural criteria laid down in the 1972 Convention, on the basis of the appraisable visual components, and archaeological records or ethnographic studies may be submitted in support of the applicability of the criteria selected. Many rock art sites have been selected for their aesthetic quality while the primary criterion in other cases, apart from technique, has been the anthropological universality of creativity. In most recent inclusions, the formulation of value has rested on past or contemporary ways of life that have lent significance to those expressions. Artistic works and nominations are supported by rhetoric that is not designed to be explanatory, but to set them in a meaningful and significant context (Jiménez, 2002). Conceptual and methodological work must indeed be done on such views and the criteria, grouping them together in order formulate objective opinions. Art is never self-sufficient as the positivists claim. Apart from being seen as a historic world of timeless beauty, the rock art included in the List requires a global community, the 'artworld', to quote Danto (1964), to ensure coherence of views and set clear parameters for use in comparing rock art sites in order to determine why their components are outstanding.

Under all latitudes, rock art functions as a major repository of memory, enabling each society's specific history to be revealed. This art form enables cultures to speak about themselves and their origins in all geographical settings. It is thus a historical archive of peoples that have no writing systems and covers a wide range of time and space. It is indeed an enormous compendium of heritage expressed in some 40 sites of Outstanding Universal Value.

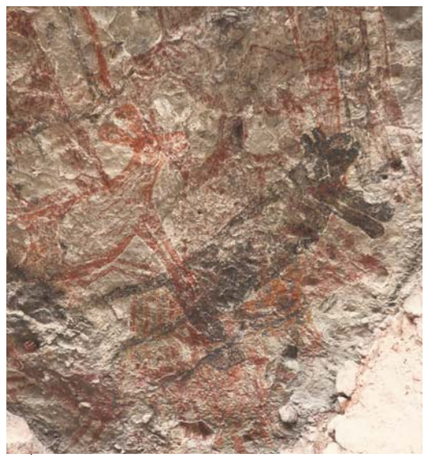
The Outstanding Universal Value of rock art sites already on the List comprise:

- a high concentration of expressions, as in the case of Tsodilo, where 4,500 paintings, scattered over 10 square kilometres and covering a time span of 100,000 years, have been recorded, or of petroglyphs, as at Twyfelfontein or /Ui-//aes in Namibia;
- testimonies of profound changes in animal life, flora and human lifestyles, as in the Ecosystem and Relict Cultural Landscape of Lopé-Okanda in Gabon, or uKhahlamba/Drakensberg Park in South Africa;

8. *Serra da Capivara (WHL), Brazil. Photo: Nuria Sanz (UNESCO)*

9-10-11. *Rock Paintings of the Sierra de San Francisco (WHL), Mexico. Photo: Nuria Sanz (UNESCO)*

8



9

10

11

- representations of ceremonies, rituals and economic practices that reveal community lifestyles and forms of symbolic and production-related control of the territory, as in the case of Chongoni Rock-Art Area in Malawi and Matobo Hills in Zimbabwe, still in use to this day;
- places connected directly with forms of animal migration, which provide proof of human cultural adaptability in geographical areas of significant seasonal change, as in Tassili n'Ajjer in Algeria;
- places at which a substantial number of techniques, types of sites and human settlements are found, such as Kakadu National Park in Australia;
- geologically picturesque sites, for example Purnululu National Park in Australia;
- places where rock art representations, owing to their technical precision, number and quality, are no longer deemed ancestral but regarded as part of the imagination of today's people, who reproduce the images at home or use them in contemporary ceremonies, as is the case of Rock Shelters of Bhimbetka in India;
- a large number of associated archaeological sites, such as in the Mapungubwe Cultural Landscape in South Africa, where 400 recorded settlements coexist with rock art sites on 30,000 ha of land;
- the exceptional nature of open-air Palaeolithic art, given that the scientific community had, until the 1990s, believed that early human artistic expression was confined to caves

Through various seminars and international expert working groups, the World Heritage Centre has made progress in the detailed study of issues relating to rock art sites already on the List. This wide-ranging approach has encompassed recently included sites to those listed more than 20 years ago, from archaeological sites where local communities (indigenous or other) play a vital role in preserving the contemporary cultural life of the site to places where visitors constitute the only significant community in the protected area, and from the best-known and accessible places to some of the world's remotest sites.

A review of all sites already on the List suggests that:

- the rock art of archaeological cultures, such as the Mayan culture, which are well-represented on the List but whose cave rock art has not been taken into consideration, as in the case of the Naj Tunich Cave in Guatemala, must be included;
- cooperation must be promoted to secure the inclusion of serial properties, in view of the linkages between artistic expressions that transcend institutional and political bounds, as in the case of Mediterranean rock art in Spain and in any potential transnational nomination of Atlantic megalithism;
- consideration must be given to the enactment of integrated sectoral legislation for the protection of rock art sites in order to ensure their integrity and safeguard their values;
- international cooperation must be provided when documentation and research required for the preparation of nominations exceed national technical and financial capacities;
- rock art must be recognized in places undergoing change on a large scale, such as the Amazon Basin;
- it is necessary to 'listen' to art and acknowledge the necessity of narration; it is of the essence to record oral expressions relating directly to production and/or belief systems in places where, owing to cultural change, there is no guarantee that such practices will endure in the medium term. Furthermore, the ethnographic/anthropological aspects of rock art must be taken urgently into consideration for the purposes of heritage conservation and in view of the implications of ancestral lifestyles still practised today, nomadism by contemporary hunter-gatherers and issues relating to the conservation of the rock art of deliberately isolated population groups. It would not be unreasonable to begin including oral recordings in World Heritage files as evidence of the practice and significance of rock art in contemporary societies.

Outstanding expressions of rock art are found very often in protected natural areas that have been included in the List as natural sites and, in their conservation, both their natural and their cultural values must be taken into account. Such a balance must be monitored carefully to ensure that measures introduced to protect one aspect do not detract from the other.

Owing to the visual magnificence of rock art expressions and their capacity to reflect human cultural experience, archaeological and anthropological links were not studied in depth during the first 15 years of the Convention, on account of concepts and theories prevailing in the associated scientific disciplines. It was generally considered that studies based on the fine arts and their registration process sufficed to justify the authenticity, integrity and proclamation of the importance of the sites and their Outstanding Universal Value. However, the conservation of rock art entails a collaborative effort to which archaeologists, ethnographers, anthropologists, linguists, curators, the local

12-13. *Rock art engravings, hunter-gatherer site, Kimberley, South Africa. Photo: Nuria Sanz (UNESCO)*

12

13

14

15

14. *HEADS Scientific Working Group, UNESCO Headquarters. (From left) Prof. Ofer Bar-Yosef, Prof. Nicholas Conard, Nuria Sanz, Prof. Margherita Mussi, Prof. François Sémah. Photo: UNESCO*

15. *Prof. Ronald Clark at Sterkfontein, South Africa. Photo: Nuria Sanz (UNESCO/WHC)*

population and international technical advisers must contribute. For the time being, the experts who process nomination files examine methodological bridges between rock art expressions, anthropology and archaeology and request assistance from applied conservation research institutions. Despite the experience gained from implementing the Convention for more than 30 years, the geographic universality of the expressions, the related practices that have evolved and the progress achieved in terms of registration, documentation and cataloguing, urgent consideration must be given to other aspects such as applied conservation research, readily applicable and cost-effective preventive conservation methodologies and ways and means of identifying adaptive management mechanisms for use in extremely diverse cultural and geographical realities.

We have therefore sought to take the site managers' experience into account, acknowledging significant differences in their understanding and implementation of the management plans. In light of that experience, together with professionals who will be - or already are - processing nomination files, we wish to highlight some aspects in which procedures insufficiently addressed to date should be strengthened:

- techniques for rapid assessment of impacts on the cultural and physical condition of the sites;
- ways and means of gauging the social, cultural and economic impacts on sites once they have been nominated;
- ensuring that improvement, conservation and management processes are socially and culturally participatory;
- provision of cooperation in order to identify the best methods in use in sustainable data storage and sharing;
- advisability of linking natural conservation values to the cultural values of some properties that have been included in the List, such as cultural landscapes and mixed or natural sites.

A management system driven by universal values should be based on a broader approach, drawing on new theoretical and methodological lines of emphasis:

- an understanding of the territory (site/sites) as a social/cultural space that should be described in geological, geographical, geomorphological and bioclimatic terms (past and present conditions), thus stating explicitly the cultural purpose of action on the landscape;
- settlement studies and archaeological maps, permitting diachronic understanding of the cultural forms of settlement on official maps of a significant scale, to determine the extent, unity, and coherence of the cultural identity of the human group responsible for the rock art expressions;
- establishment of a hierarchy among a site's rock art expressions;
- topographical and geomorphological links and how they can be taken into account in defining the limits of the site;
- relations between the property and communication routes;
- access to biotic and non-biotic resources;
- use of art as a territorial threshold or marker;
- ethnographic models of production and meaning of the art;
- the role of traditional authority in relation to rock art expressions and the decision-making procedures adopted in management strategies.

Moreover, ethnography brings other major events to light, thus showing that rock art formed part of real life. The cultural significance of the links between rock art expressions and ritual practices, ceremonies and pilgrimages must therefore be taken into account, and solutions must be found as trade-offs between the social purposes of the site and international conservation agendas.

Content outline

This publication is the first in a series of compilations of contributions submitted by members of the scientific community, the Convention's Advisory Bodies, site managers and national experts and discussed at international meetings held by the World Heritage Centre. This first instalment will outline the topics covered by the Thematic Programme and the consensus achieved to date in respect of the themes, geography and methods of cooperation.

This introduction is followed by five contributions in the framework of the primary issues that have been debated and agreed as key topics of the World Heritage community's reflection:

- Professor Nicholas Conard identifies the traces through which the archaeological record yields information about the cultural traits of modern human beings;
- Professor Janette Deacon unravels relations between hunter-gatherer communities and rock art, still best interpreted through anthropology and oral history, which give insights into remote and contemporary forms of subsistence that may be regarded as one of the best adaptive achievements in our biocultural history.
- Professor Ofer Bar-Yosef, drawing on new discoveries at either end of Asia, gives insights into the effects of domestication and food production processes and the associated sedentary lifestyles;
- Professor Margherita Mussi interprets the vulnerability of the archaeological record and points to the urgent need to find means of preserving such fragile properties of Outstanding Universal Value and to explore the cultural landscape category for HEADS;
- Professor François Sémah analyses the anatomical and biological evolutionary characteristics of the *Homo* genus and thus the need to think about sites in terms of processes.

After carefully reading their contributions, I should like to highlight some special features, namely the earliest modern humans' capacity for expression, the effects of settling in a fixed place of abode and the importance of cultural control over territory.

16

17

16. *Museum of Addis Ababa, mobile heritage,* Australopithecus afarensis.
Photo: Nuria Sanz (UNESCO)

17. *Swabian Jura, Germany*
Photo : N.J. Conard

The arts are a body of different practices that came into being at the very outset of human life. For a long time, the arts focused on enhancing beautiful, unique and decorative objects. In far remoter times, however, beauty, decorativeness and originality were probably regarded as values secondary to others connected no doubt with another type of spiritual exaltation. The earliest geometric carvings on ochre betokened a need to express human sentiment more than 70,000 years ago. The production of signs was inseparable from the emergence of a cognizant animal, the human being. The purpose of signs is to establish safe areas in which we feel secure and give meaning to our existence. The Venus figurines and other representations of other movable Palaeolithic art are thrilling on account of the quality of their workmanship but they are captivating mainly because of their connectivity which, although this may seem paradoxical, can provide the clue that leads away from archaeology of the image. Despite the dearth of background knowledge about those figurines, there is something that makes them naturally quite acceptable; far from prompting disquiet, their perfection actually makes us feel closer to them. Their unexpected perfection nonetheless raises many questions about their function and the need for such expression in societies on the brink of survival.

These images, perfect from the outset, were the fruit of the labour of the conscious mind and of a human group that, feeling the irresistible need to look outwards, turned those forms into vantage points from which they projected their world views, as if those early images embodied the ongoing invention of a new way of life in the world. Their perfection seems completely unexpected, at a time when the human sphere began to break away from the world of nature, and that break had been triggered paradoxically by thorough observation and knowledge of the natural world, as a result of having 'learnt to look'. Moreover, this form of expression did not involve the technical improvement of drawing but was a means of capturing that close bond of kinship between human and animal life. Such perfection probably reflected deep-seated respect between hunters and animals. In some places, the images reproduced began to represent permanence in the world, while nature began to be somewhat ephemeral (Azúa, 2010). The sophistication of the early modern humans' expressive response in ornamental, figurative and funerary work stemmed from their capacity for rapid emotional connectivity that strikes a chord with present-day forms of expression.

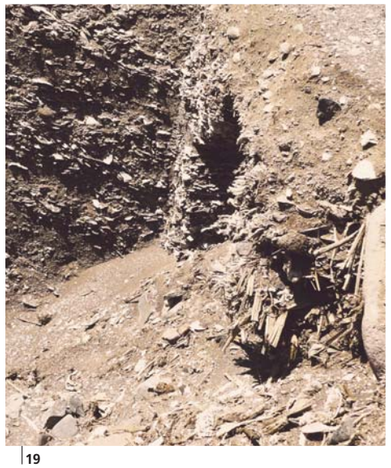
The mutability of lifestyles is an epistemological and practical challenge in relation to the Convention. Lifestyles generate highly varied ways of establishing a permanent spatial presence. Owing to the mutability of lifestyles during the Palaeolithic, the identification of spatial presences in places where all was predominantly ephemeral is quite challenging. At the end of the Palaeolithic, hunter-gatherers began to become sedentary, which implies that the archaeological record will reveal diets increasingly composed of plant foods. Archaeological deposits contain clear evidence of plant selection. The sequence continued until plants and animals were completely and effectively domesticated. The Neolithic required yet another anthropic response to the natural environment, in which forms of social organization, kinship, power strategies, territorial control, use of symbols and the practice of rituals were adopted gradually to form the full complement of models through which archaeology seeks means of interpretation, drawing, with varying degrees of caution, on anthropological parallels for that purpose.

Sedentarization entailed living differently in a community, even generating close relations between life and death, filiation, continuity and permanence in short. The decision to switch from a nomadic life to a sedentary one brought different forms of specialization and spatialization into play. Cognitively, it meant taking cultural decisions after millennia of observation and experimentation with nature. The transition from a world of immediacy to a world of storing, with a seasonal calendar and a growing population, now seems to be the result of reaping the benefits of agriculture (Guilaine, 2011).

As a result of recent research, maps have been completed to show the various epicentres from which the domestication of maize, bananas, wheat, rice and so on began to spread. Owing to the precise topographical location of these sites, the time sequences of achievements now known as inventions have been blurred. The site distribution maps provide an X-ray of the spatial situation, but account must be taken of the trial and error time sequence, failed attempts and revolutionary achievements. A scientific approach makes it possible to qualify matters and, above all, to identify in seemingly fortuitous developments the key to deliberate action taken, for generations, to deal with intellectual and cognitive challenges and thus succeed in experimenting with new community lifestyles.

18-19-20-21. *Sites of the Chinchorro Culture, Chile. Photo: Nuria Sanz (UNESCO/WHC)*

18



19

20

21

22

22. *(From left to right) Prof. Edward Swenson, Prof. Danielle Stordeur, Prof. Gary Urton, Prof. Bernardo Arriaza, Prof. Mike Smith. International Meeting,* The Chinchorro Culture from a Comparative Perspective, *Arica, Chile, 5-8 January, 2010. Photo: Nuria Sanz (UNESCO/WHC)*

In view of the ecological processes involved in the transition from the nomadic life of hunter-gatherers to the sedentary life of producers, a detailed study of all of the intermediate steps in the transition must be conducted. From regular returns by Palaeolithic peoples to base camps to seasonal settlements such as those which might have been a feature of Natufian life in the Middle East, there is a range of practices that cannot be explained away by simple answers as to why people could not or would not continue to be mobile hunter-gatherers. Mobility can be explained by the desire to find waste-free areas for health reasons, to obtain fresh resources, to regroup, to resolve conflicts, to compete for land or to visit ceremonial sites, while sedentarization may have been caused by all of the foregoing and by the reduction of the area in which they could gather resources or move around. Groups specialized in the gathering of marine resources, as were members of the Chinchorro culture on the Pacific coast of northern Chile, who practised a stable 'seasonal' land-holding system, and unexpectedly pioneering proto-urban communities involved in the challenging construction of Jericho, Çatalhöyük or Caral, all reflect the variety of lifestyles possible between a nomadic and a sedentary existence. Sedentarization had implications such as use of land closer to home, a growing population, the need to store, preserve and systematize all nearby resources and to shorten supply distances generally, while making the requisite changes to the local environment. From the transitional period between the Middle Palaeolithic to the Upper Palaeolithic, that is from around 40,000 BC to about 10,000 BC, *Homo sapiens* developed a tendency to maintain multifaceted social relations with plants and animals in a process that spread over time and led to yet another form of integration between culture and nature (Mithen, 1996).

From 2.6 million years ago to 10,000 BC, the balance of power between culture and nature began to shift and, for that reason, the World Heritage Convention constitutes a suitable framework for analysing arguments and preserving a part of that transition, which raises so many hitherto unanswered questions.

After at least five millennia during which a very wide variety of patterns of sedentary settlement and food production were tested, yet another stage has been added in the classic textbooks to close the Neolithic period, when the record begins to show evidence of metalworking, as urban centres sprang up, leaving traces of economic and spatial systems of specialized production and distribution, accompanied by the practice of writing. Then, too, a variety of geographical changes occurred, with multiple sequences and a wide range of cultural responses for every taste, again mirrored by the introduction of new means of exploiting nature entailing different ways of socializing territory and a prolific range of construction methods used to transform the natural environment. Until 70,000 BC, a 'natural history' of human beings developed. Between the first emergence of our genus outside Africa and the beginnings of food production, there were numerous major ice ages covering more than 1.5 million years during which the species demonstrated its adaptability to conditions outside the tropics. Hominization, a process unbroken to this day, is a response to a way of life that reflects the potential for change. We are the expression of sustainable change and reproductive success, and we must now show that our cultural decisions can ensure our successful and sustainable survival. This context constitutes the culture medium on which the World Heritage Convention draws in order to fulfil its humanistic and scientific obligation of universality under a blueprint for humanity – our Organization's source of inspiration.

Acknowledgements

I should like to take this opportunity to express my deep gratitude and personal and professional esteem to the members of the Scientific Committee of this project. They have shared their expertise unstintingly and have ventured boldly into the recesses of the World Heritage Convention, persuaded of the need to link human evolution more closely to public international law. They may all be assured of my greatest appreciation and respect. I wish to thank the representatives of the Delegation of Spain to UNESCO and the Spanish Ministry of Culture for being ever ready to take up new challenges and to embark upon this process of reflection, now much matured, against the backdrop of the Convention's fortieth anniversary celebrations.

I also thank the representatives of the Convention's Advisory Bodies, to all national and international experts and all site managers who attended all of the meetings.

I cannot end without thanking Francesco Bandarin, UNESCO Assistant Director-General for Culture, and Kishore Rao, Director of the World Heritage Centre, for their support, interest and the freedom that I was granted to explore this field, which is so close to my academic experience. This compilation could not have been done without the enthusiasm and professionalism of my colleagues Penelope Keenan and Nuria Ametller.

My heartfelt gratitude to them all.

Bibliography

Please see Ms Sanz's contribution in Spanish.

Evolución Humana: adaptaciones, migraciones y desarrollos sociales

Programa Temático de Patrimonio Mundial


Nuria Sanz

El Patrimonio Mundial de la evolucion humana y el compromiso de la cooperacion internacionala

Nuria Sanz
Coordinadora principal del programa HEADS,
Centro de Patrimonio Mundial de la UNESCO

« …La diversité des cultures humaines est derrière nous, autour de nous et devant nous. La seule exigence que nous puissions faire valoir à son endroit (créatrice pour chaque individu des devoirs correspondants) est qu'elle se réalise sous des formes dont chacune soit une contribution à la plus grande générosité des autres ».

Claude Lévi-Strauss, *Le Courrier de l'UNESCO, Juin, 1952, Vol V.*

« …l'universalité ne peut être dans les réponses, mais dans les questions que les hommes se posent ».

Maurice Godelier, *1989*

Esta es una historia sin principio ni final. Se trata de un itinerario que recorre un enorme trayecto de experiencia. Hace 10 millones de años en África tropical los primates se separaron en dos direcciones y sólo hace 4 millones de años los homínidos se enfrentaron a medioambientes más despejados. La posterior aparición del género homo llegará en torno a 2.6 millones de años, momento desde el cual la dispersión de poblamiento deja de ser sólo africana para alcanzar toda Eurasia. Acompasa a este avance toda una importante gama de desarrollos biológicos y culturales de nuestro género. Desde hace más de doscientos años somos capaces de comenzar a situar las diversidades más remotas de nuestra existencia de humanos modernos en todos los rincones del planeta y a aprender de ellas. Pero esta experiencia no termina en la lectura del registro fósil.

A pesar de que la forma de vida humana puede ser tratada como totalidad, vamos fragmentando la historia de su devenir a fin de comprender la complejidad, con la idea de facilitar un entendimiento de los procesos. Con ello, hemos venido aislando momentos y lugares significativos donde las diferencias ocurrían por primera vez. La arqueología prehistórica ha desarrollado toda una enorme batería tecnológica para interpretar el registro documental del pasado humano. La narrativa de hacernos humanos es una forma de investigarnos a nosotros mismos y eso requiere una aproximación a lo más remoto de nuestro origen pero desde la naturaleza de nuestra existencia actual. Se trata entonces de comprender las formas de conocimiento y de reflexión, las lógicas, las cosmologías, las distintas moralidades, de una Humanidad de orígenes compartidos pero con diferentes trayectorias de desarrollo (Renfrew, 2008).

Todos los procesos de aprendizaje convierten el objeto de nuestro estudio en una auténtica aventura intelectual, y hacen que su patrimonio se convierta en una forma de preservar la pérdida del conocimiento de todo lo que nos ha traído a ser como somos hoy. La historia de ese aprendizaje comenzó desde siempre. Desde el paleolítico se inician los orígenes de nuestro comportamiento humano.

Este programa temático no confía en las linealidades explicativas que intentan encontrar una narrativa única, univoca, sino que trata de explorar a partir de las trayectorias singulares de cada lugar el significado universal de las mutaciones inscritas en el desarrollo intelectual de la especie humana.

Evolución humana y Convención de Patrimonio Mundial

La misión del Centro del Patrimonio Mundial de la UNESCO es garantizar la protección del patrimonio natural y cultural, colaborar con los Estados Partes en la implementación de la Convención del Patrimonio Mundial dentro de su territorio nacional, y garantizar todas las formas posibles de cooperación internacional, tal y como queda recogido en el texto del tratado internacional *Convención sobre la protección del patrimonio mundial*, cultural y natural, adoptado por la Conferencia General de UNESCO en 1972.

La intención de la Lista del Patrimonio Mundial es reflejar todas aquellas formas de diversidad cultural y natural de nuestro planeta caracterizadas por su Valor Universal Excepcional. Las primeras etapas culturales en el curso de la evolución humana representan un largo período, fundamental de la historia de la humanidad, reflejo de los orígenes de la diversidad cultural. Sin embargo, la

importancia de este devenir no se corresponde con su representación en la Lista del Patrimonio Mundial de la UNESCO.

El Comité del Patrimonio Mundial, en su empeño por seguir ampliando las categorías infrarrepresentadas y mejorar la cobertura geográfica, aprobó —durante la 32ª reunión del Comité del Patrimonio Mundial, celebrada en Quebec en julio de 2008— la Decisión 32 COM/10A. Mediante dicha Decisión el Comité solicitó en esa ocasión iniciar estudios sobre el potencial de las representaciones culturales ligadas a la arqueología prehistórica, su presencia y potencial en el marco de la « Estrategia Mundial para establecer una Lista del Patrimonio Mundial más equilibrada, representativa y creíble ».

De acuerdo a la solicitud, el Centro del Patrimonio Mundial de la UNESCO emprendió, gracias a la generosa contribución del Fondo Español para Patrimonio Mundial, el desarrollo de todo un proceso de consultas con la comunidad científica internacional, con los Organismos Asesores de la Convención, con los expertos nacionales identificados por los Estados Parte en la Convención y con los responsables directos de velar por la conservación de sitios inscritos en la Lista de Patrimonio Mundial y en las respectivas Listas Tentativas nacionales.

La *Convención* está considerada como uno de los instrumentos internacionales de mayor éxito en la conservación de los sitios patrimoniales. Su éxito se refleja no sólo en el número de socios, casi universal (187 de los 193 Estados Miembros de la UNESCO), sino también en el elevado número de bienes incluidos bajo su protección (911 bienes en 145 países, en Mayo 2011). La *Convención* se acerca a dos hitos en su historia: el 40 aniversario de su entrada en vigor en 1972 y la inscripción del milésimo bien en la Lista del Patrimonio Mundial.

En sus comienzos, la Lista del Patrimonio Mundial se basaba en un concepto « monumental » del patrimonio cultural mientras que, en las últimas décadas, han cambiado la percepción y la interpretación de la historia de las sociedades humanas, así como el conocimiento científico y las actitudes intelectuales con respecto a la noción de patrimonio cultural y natural. También ha variado el modo en el que las distintas sociedades se perciben a sí mismas: sus valores, su historia y las relaciones que mantuvieron con otras sociedades y culturas. En 1972, el concepto de patrimonio cultural se reducía en gran parte a la idea de patrimonio construido. Desde entonces, sin embargo, la historia del arte, la arquitectura, la arqueología, la antropología y la etnología, la ecología, la genética van alejando su mirada del estudio de monumentos aislados, para empezar a tomar en consideración fenómenos culturales de carácter complejo y multidimensional. Con la adopción de la « Estrategia Global » en 1994, el Comité del Patrimonio Mundial quiso ampliar la definición de Patrimonio Mundial para reflejar mejor toda la diversidad de las riquezas culturales y naturales de nuestro planeta y al mismo tiempo establecer un marco global y una metodología de funcionamiento que asegurara poder implementar la Convención en todo su potencial.

Para garantizar que la futura Lista del Patrimonio Mundial sea al mismo tiempo representativa, equilibrada y creíble, el grupo de expertos invitados en esa fecha consideró necesario no sólo aumentar el número de tipos, regiones y períodos de bienes culturales infrarrepresentados, sino también tener en cuenta los nuevos conceptos de patrimonio que han surgido en las últimas décadas. Entre los Fondos Extrapresupuestarios españoles figuraba una generosa aportación del Ministerio de Cultura de España para llevar a cabo, entre agosto de 2008 y mayo de 2009, toda una serie de actividades relacionadas con el estudio pormenorizado de la Lista del Patrimonio Mundial y la Lista Indicativa, conducentes a determinar las prioridades en términos de representación, de conservación y de gestión de los sitios, así como a crear un sistema de hermanamiento y colaboración entre ellos. En agosto de 2008, el Centro del Patrimonio Mundial inició un estudio de los sitios prehistóricos inscritos en la Lista del Patrimonio Mundial y en la Lista Indicativa y elaboró unos documentos para su análisis posterior.

El Comité de Patrimonio Mundial adopta oficialmente el Programa Temático en Sevilla en 2010. Sobre la base de estas reflexiones se han organizado en los tres últimos años más de 10 reuniones internacionales que permitieron dar voz y definir prioridades a la comunidad científica, a los Gobiernos y a la sociedad civil, a fin de construir un **Plan de Acción sobre Evolución Humana: adaptaciones, migraciones y desarrollos sociales, HEADS,** que fue presentado y aprobado por el Comité de Patrimonio Mundial en 2010 en Brasilia. La andadura comenzada en 2008 durante la Presidencia española del Comité de Patrimonio Mundial daba los primeros resultados cuando el Comité reconoció la potencialidad y la urgencia en desarrollar un programa temático específico sobre las primeras etapas de nuestra diversidad anatómica y cultural.

Comenzábamos la andadura hace 2.6 millones de años, y nos enfrentábamos con ello a millones de artefactos diferentes, manifestaciones culturales diversas, numerosos tipos de asentamientos humanos o emplazamientos funerarios y formas de colonización espacial en las regiones geográficas más extremas de nuestro planeta. Este período se dilata aún más en el tiempo si consideramos el largo proceso de evolución del linaje humano. El programa temático comprendía un período de tiempo muy extenso, del que extraer una cantidad muy significativa y relevante de conocimiento sobre procesos culturales, sociales y biológicos ligados a la evolución humana.

El acercarse a estos periodos obliga a utilizar metodologías arqueológicas y de investigación aplicada con el fin de interpretar la naturaleza y comportamiento de las etapas más tempranas del registro humano, integrando cultura y naturaleza. Hoy en día el desafío es permanecer atento a cómo las tecnologías pueden generar en permanencia nuevas respuestas a las condiciones de autenticidad e integridad de los bienes patrimoniales de nuestro pasado más remoto. Los lugares que registran ese primer andamiaje de historia humana son los menos representados en la Lista del Patrimonio Mundial, pese a que se encuentran en todas las regiones del planeta. El valor de estos bienes no está suficientemente reconocido y es frecuente que a los Estados Partes les resulte difícil conservar este patrimonio y gestionar adecuadamente su especial vulnerabilidad.

A la hora de definir el marco de reflexión

Desde el inicio del periodo de consultas nos guiaba un interés interdisciplinario, un marco internacional, y caminar desde lo retrospectivo a un plano prospectivo que nos permitiera convertir reflexión en acción sin dilaciones. Partíamos del respeto por lecturas regionales y por la historiografía de la investigación científica, pero sin perder de vista la universalidad de los significados de cada fenómeno que explica nuestras formas de « humanidad ». Cada sitio se entiende como un lugar de prácticas situadas, locales, que no dejan de hablar de la universalidad de los fenómenos. Abogábamos desde el principio por una metodología arqueológica no disociativa, que nos permitiera definir valores universales excepcionales sin entrar en tradiciones epistemológicas y poder así avanzar desde su instrumentalización como metodología de análisis. Desde la aplicación de las técnicas radio-carbónicas, los estudios botánicos y zoológicos, la genética, los análisis de fitolitos, hemos podido llegar a definir muchas poligénesis, esenciales para poder explicar el origen del comportamiento humano.

¿Por qué es necesaria la Convención del 72 para todas estas disciplinas? ¿Cuál es el significado de esos sitios para la Lista de Patrimonio Mundial de UNESCO hoy?. Las consultas nos llevaron a generar un listado de necesidades, e incorporar toda una familia de disciplinas entre las cuales la

genética era la pieza fundamental para encajar hipótesis de poblamiento y de sus dinámicas, del mestizaje y de la migración. La arqueología prehistórica se acompañaba de todo un arsenal tecnológico que amplía los desafíos científicos con una precisión que permite justificar condiciones de autenticidad en las interpretaciones del pasado. Con ellas, nuestra historia más remota deja de ser la que tiene menos posibilidades de ser conocida.

Para que todo este despliegue tecnológico, y el que vaya a seguir desarrollándose, continúe dando respuestas científicas se necesita asegurar la preservación de registros que permitan seguir probando hipótesis y ensayar nuevas precisiones tecnológicas. Los sitios de Patrimonio Mundial necesitan concebirse como reservas potenciales a las preguntas que aún no pueden ser respondidas y permitir al sitio seguir siendo propositito para la ciencia y asegurar la protección de su valor para las generaciones futuras.

En términos de apariencia física, los lugares de aplicación de nuestro análisis dejaban de ser sitios arqueológicos monumentales, se trata más bien de lugares subterráneos, escondidos, con trazas poco visibles de habitabilidad o de ocupación. Todo ese mundo subterráneo, insignificante para los ojos menos avezados, podía permitir a los especialistas entender en la lectura de un registro fósil los avances cognitivos de nuestra especie. En esas acumulaciones de depósitos terrosos, de mayor o menos espesor, donde artefactos líticos, restos orgánicos como pólenes o restos faunísticos quedan compactados por el tiempo, permitían convertir en registro significativo, a veces extraordinario, lo que a los ojos de los no practicantes pudiera haber parecido banal. Sólo con una lectura atenta, casi quirúrgica, y una protección rigurosa y sistemática de estas « banalidades » es posible llegar a entender el porqué hemos llegado a convertirnos en lo que hoy somos y a entender que esas formas de « vulnerabilidad » deben ser atendidas como prioridades en todos los continentes y que con ello se puede contribuir de forma decisiva al equilibrio geográfico de la Lista del Patrimonio Mundial.

Durante el Pleistoceno Medio y Final, una forma anatómica humana y su capacidad de adaptación a la diversidad medioambiental permiten colonizar el orbe. La arqueología prehistórica nos permite ir distinguir los comportamientos y discernimientos de lo humano moderno en toda una enorme disparidad de trazas en el registro fósil. Hoy podemos interpretar los patrones de la evolución de comportamiento a través de lo lítico, lo orgánico y leer desde allí patrones de subsistencia, tecnologías, tipos de asentamientos, las formas de comunicación y de expresión artística, y de analizar en toda su complejidad cuáles han sido las condiciones de preservación/destrucción gracias a la tafonomía, esencial para interpretar la historia deposicional de los sitios y encontrar las formas de preservar a futuro la vulnerabilidad de los depósitos. Basta pensar en Schöningen (Alemania), en Monte Verde (Chile), o en Laetoli (Tanzania), para encontrar buenas razones de profundizar en investigaciones sobre formas de conservación aplicada a su fragilidad.

Los resultados de las primeras reuniones internacionales nos pusieron en clave de alerta sobre distintas necesidades que el Programa debía abordar:

- la necesidad de ir a lo cognitivo, de analizar cómo los humanos modernos se confrontan a elecciones, de qué manera cientos y miles de años de observación de la naturaleza han permitido convertir desafíos en seguridades adaptativas;
- la evidencia de los muchos epicentros de creatividad humana y la necesidad de no identificar especialmente lo más antiguo con los más excepcional. El interés recae en poder hacer significativos estos hitos cronológicos cuando permiten desentrañar además el carácter plural y diverso de los fenómenos, sobre todo porque la cuna de la humanidad es siempre una cuna con ruedas, que puede retrasar lo originario una y otra vez;
- la necesidad de leer en los registros, incluso en los menos visibles, la voluntad de marcar distintas formas de presencia humana en un espacio territorializado;
- las ausencias de los sitios arqueológicos mejor estudiados del planeta tanto en las Listas Tentativas nacionales como en la Lista de Patrimonio Mundial. Los sitios más presentes en las bibliografías científicas brillan por su ausencia: Uruk, Cueva D'Aragó, Fontana Menuccio, Tell Halaf, Ras-Samra, Sesklo, Dimini, Revedello, Paracas, Huaca Prieta, Kotosh, La Venta, … En ocasiones lo mejor estudiado no ha sido considerado a la hora de abordar el análisis del Valor Universal Excepcional.
- la necesidad de establecer orientaciones, estándares metodológicos y éticos para desarrollar investigaciones e intervenciones ligadas a la preservación en algunas formas deposicionales, como en el caso de las cuevas;
- la necesidad de inscribir en la cotidianidad de la Convención formas de analizar la tafonomía y con ello cómo las nuevas metodologías de análisis pueden frenar deterioros en lugares excavados desde antiguo y cuyos registros hoy pueden dar mucha más luz si son analizados con toda una batería científica de prácticas renovadas;
- la necesidad de identificar la mejor forma de conjugar conservaciones integradas del patrimonio inmueble y el patrimonio mueble: en sitios en los que continente y contenido resultan indisociables para definir el Valor Universal Excepcional, así como en la justificación y preservación de sus condiciones de autenticidad e integridad;
- la oportunidad de convertir a la Convención de Patrimonio Mundial en el garante de la producción y transmisión de conocimiento sobre lo que nos hace humanos;
- la necesidad de desarrollar hipótesis de trabajo y mejor explorar las oportunidades y categorías de bienes como lo seriado, los paisajes culturales, y la necesidad de ahondar en lo humano del criterio viii;
- la urgencia de hipotizar sobre movilidades y con ello, repensar la fisicalidad de los sitios de nuestra historia más remota y construir hipótesis de trabajo para repensar el territorio, la movilidad, y la iteración.

1

2

3

1-2. *Ocupaciones del Pleistoceno en Klasies River, Border Cave y Wonderwerk Cave y otros sitios relacionados con al emergencia de los humanos modernos (Lista Indicativa), África del Sur. Foto: Nuria Sanz (UNESCO/WHC)*

3. *Swabian Jura. Excavaciones en Hohle Fels (HF) and Geißenklösterle (GK), Alemenia. Foto © Tübingen University*

PERSPECTIVAS ACADÉMICAS

Evolución humana

Los sitios patrimoniales relacionados con la « evolución humana » son bienes relacionados con procesos naturales y culturales del linaje humano. Los procesos relacionados con la evolución humana incluyen cambios biológicos y culturales que atestiguan el notorio éxito de nuestros predecesores, que se fueron adaptando sin cesar a las circunstancias cambiantes de su entorno y cuya dispersión por todo el planeta es prueba de cómo sobrevivieron incluso en las condiciones más extremas.

Distribuido a lo largo de varios millones de años, el patrimonio de la evolución humana narra la aparición de las características anatómicas, cognitivas y conductuales del ser humano. Nos ayuda, por lo tanto, a valorar en el tiempo las características biológicas y socioculturales que sientan las bases de la extraordinaria unidad y diversidad de nuestra especie, la riqueza de su comportamiento y nuestra capacidad para modificar y artificializar nuestro propio entorno.

La **« Evolución Humana »** explica orígenes de la vida humana y del desarrollo social desde sus orígenes. Los procesos relacionados pueden remontarse a los primeros antepasados de los linajes humanos e incluyen la elaboración de herramientas desde al menos 2,6 millones de años. Consideramos que se trata de un registro altamente valioso, pues representa el cúmulo heredado de nuestro conocimiento sobre las bases y la diversidad de la vida humana, la experiencia y la conducta social.

Los sitios a ella relacionados contienen huellas de los procesos naturales y culturales de los linajes humanos, como parte del registro de la vida y la historia de la Tierra. Por lo tanto, los sitios ligados a la evolución humana son también bienes geológicos y paleontológicos, cuando se trata de establecer el Valor Universal Excepcional (VUE) de un yacimiento. Los procesos relacionados con la evolución humana incluyen cambios biológicos y culturales que atestiguan el notorio éxito de nuestros predecesores, quienes fueron adaptándose sin cesar a las circunstancias cambiantes de su entorno y cuya dispersión geográfica por todo el planeta es prueba de cómo lograron sobrevivir incluso en las condiciones más extremas. De ahí la crucial importancia de emplear un enfoque interdisciplinar para el estudio de estos bienes situados en la encrucijada del patrimonio natural y cultural, para así poder interpretarlos y valorar adecuadamente su autenticidad e integridad.

Los sitios asociados comprenden más del 99,9 % de la existencia humana, así como muchas de las innovaciones en cultura, comportamiento, adaptación y tecnología que trazaron el curso futuro de la humanidad, tal y como hoy la conocemos. En sus orígenes se halla la raíz de casi todo. Este largo proceso ha ido transformando de modo paulatino la experiencia humana. En todo ese devenir la multiplicidad de respuesta se repite en cualquier latitud, desde el estilo de vida del cazador-recolector, hasta llegar a la actualidad, cuando por primera vez en la historia la mayoría de la humanidad vive en un entorno artificialmente construido, como es el de la ciudad. Mientras tanto algunas comunidades modernas de cazadores- recolectores siguen viviendo en zonas hoy periurbanas. Y nos cabe entonces preguntarnos por cuáles son las condiciones de preservación de estas formas de vida, que en sí, significan el mejor resultado de la forma de subsistencia más exitosa.

Sitios investigados a través de arqueología prehistórica

Se trata de los sitios que guardan y conservan los registros de la mayor parte del pasado humano. Si se estudian adecuadamente mediante el uso de las técnicas desarrolladas por la ciencia arqueológica, nos dan información sobre cómo evolucionaron los linajes humanos y se adaptaron a los distintos contextos geográficos, a unos recursos variables y a un clima en constante cambio. Los vestigios acumulados son fruto de la conducta del ser humano y de su interacción con el medio natural, ya sea en ocasiones cotidianas o en circunstancias especiales. La organización social, las creencias y los ritos religiosos, las tecnologías y las habilidades adquiridas, todo dejó huellas que se reflejan en el registro arqueológico; lo mismo cabe afirmar de la capacidad de expandirse a nuevos territorios o de la necesidad de abandonar ciertas zonas, del contacto entre diversos grupos y de la interacción entre culturas distintas. El estudio sistemático del registro material resulta clave para comprender qué ocurrió en el pasado y qué de ello ha conformado el presente. Sin embargo, muchos de los sitios que fueron surgiendo han sido enterrados, erosionados o destruidos con el paso del tiempo. Los que aún se mantienen en la actualidad son lugares de gran valor, pero muy frágiles, que merecen ser preservados para las generaciones futuras.

A lo largo de este dilatadísimo espacio de tiempo, los linajes humanos han demostrado una y otra vez una notable capacidad de adaptación, que les ha permitido extenderse desde los trópicos hasta una amplia variedad de entornos en continua transformación, desde las regiones ecuatorianas hasta las regiones árticas, desde los continentes a las islas, desde tierras bajas hasta alturas considerables, desde zonas desérticas a zonas pantanosas. La diversidad del patrimonio humano se hace patente en los sitios arqueológicos de todo el mundo, que conservan el inestimable registro de la historia más temprana de la humanidad.

Aún reconociendo que la mayoría de los sitios pueden incluirse en múltiples categorías, el Comité Científico identificó algunos **tipos de bienes** que cabe incluir en nuestro contexto de análisis:

- Depósitos útiles para la reconstrucción de paleo-ambientes.
- Depósitos con restos humanos, incluidos los intencionales, como enterramientos, túmulos funerarios y tumbas megalíticas.
- Vestigios de asentamientos humanos, al raso o en cuevas, ya fueran efímeros o de larga duración, tales como los tells, con o sin estructuras adicionales, grandes o apenas visibles como, por ejemplo, los sitios de matanza o despiece de animales.
- Sitios de minería, cantería y depósitos de desechos.
- Acumulaciones de materias primas o artefactos elaborados, deliberadamente enterrados.
- Asentamientos asociados a sistemas de caza, pesca o recolección
- Asentamientos asociados a la producción de alimentos y a la acumulación de *stocks*.
- Modificaciones artificiales del paisaje, o drenaje, zanjas y recintos,
- Lugares de producción de sal o cerámica.

4

5

4-5. *Campamento natufiense Conjunto de Mount Carmel, Israel. Foto: Nuria Sanz (UNESCO/WHC)*

- Lugares con valor sagrado o espiritual, relacionados con el criterio (vi), o bien formando parte de paisajes culturales asociativos.
- Paleo-paisajes culturales.
- Yacimientos de arte rupestre.
- Sitios importantes para la historia de la ciencia, tales como Zhoukoudian, Cro-Magnon, Balzi Rossi o Altamira.
- Lugares/asentamientos estacionales asociados a diferentes tipos de movilidad territorial
- Sitios ligados al aprovisionamiento de materias primas
- Sitios asociados a actividades comerciales/de intercambio.

Sitios especialmente vinculados a la evolución humana:

- Bienes ligados a procesos bioculturales relacionados con el linaje humano, como parte del registro de la vida y la historia de la Tierra.
- Procesos que incluyen cambios biológicos y culturales, de dispersión, migración y conocimiento y cualquier adaptación relacionada a nivel global.
- Orígenes y diversidad del género Homo (genética, biológica y anatómicamente) y sus organizaciones sociales.
- Cambios notables que se corresponden con hitos cognitivos (p. ej. el habla o los trazos simbólicos) frente a las innovaciones tecnológicas (p. ej. dominio del fuego, producción de herramientas).
- Colonización de nuevos entornos y dispersión: medios insulares, desiertos

Los sitios de arte rupestre pueden incluir valores como:

- Estado de Conservación
- Calidad estética.
- Cantidad y distribución espacial.
- Rareza y valor ejemplar de las imágenes y los temas.
- Vestigios de una larga tradición artística.
- Investigaciones sobre el sitio y potencial para futuras investigaciones.
- Interpretación arqueológica.
- Comprender el desarrollo cultural de los artistas y sus culturas.
- Tradiciones de larga duración.
- Tradiciones del Arte Rupestre que han llegado a épocas contemporáneas.
- Significación contemporánea para los directos descendientes de los artistas originarios en asociación con la historia oral de las comunidades.
- Continuidad de producción artística contemporánea.

Objetivos y ámbito de aplicación

Los principales objetivos de este programa temático son:

- Establecer vínculos entre la investigación científica y la conservación mediante el reconocimiento de los valores científicos de los bienes ligados a la Evolución Humana.
- Actuar en el marco de la Estrategia Global, iniciada por el Comité del Patrimonio Mundial en 1994, para ampliar la definición de « Patrimonio Mundial », a fin de contribuir a una representación equitativa de toda la diversidad natural y cultural de nuestro planeta desde sus orígenes.
- Prestar reconocimiento a sitios con huellas importantes de la interacción más antigua entre el hombre y la tierra, conductas culturales tempranas, hitos cognitivos y expresiones creativas.

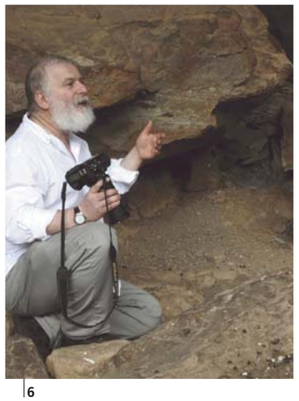
- Preservar los bienes registrados del progresivo deterioro que se deriva de su antigüedad y la vulnerabilidad de los materiales.
- Preservar la potencialidad de los registros en pro de investigaciones futuras.

El Centro del Patrimonio Mundial expresó su interés por trabajar con organizaciones científicas internacionales señeras con las que firmar acuerdos de colaboración que garanticen la continuidad de esta iniciativa en colaboración con el Comité del Patrimonio Mundial, representantes de los Estados Partes, Órganos Consultivos de la Convención, expertos nacionales e instituciones especializadas, a fin de fortalecer la puesta en marcha del Plan de Acción.

Arte rupestre

El Programa HEADS ha resultado especialmente beneficioso para los sitios y yacimientos de arte rupestre de la Lista de Patrimonio Mundial. Para el propósito de este Programa las manifestaciones rupestres constituyen una prueba de cómo las diversas sociedades fueron transmitiendo a lo largo del tiempo pensamientos y creencias humanas a través del arte y de las representaciones gráficas. En el marco de este Programa Temático, y para determinar el Valor Universal Excepcional, se prestará la misma consideración a los sitios de arte rupestre prehistóricos que a aquellas formas de arte rupestre que hoy continúan produciéndose o generando una relación significativa con las comunidades descendientes contemporáneas.

El arte rupestre, en forma de pinturas y grabados, constituye en vestigio claro y duradero de la transmisión de pensamientos y creencias del ser humano a través del arte y las representaciones gráficas. Resulta difícil interpretarlo sin datos etnográficos y requiere una conservación y protección específicas. La reunión celebrada en uKhahlamba-Parque de Drakensberg (Sudáfrica), sitio declarado Patrimonio de la Humanidad, permitió que los gestores de los yacimientos de arte rupestre de la Lista del Patrimonio Mundial y de la Lista Indicativa contrastaran prioridades de preservación. Las experiencias compartidas por los gestores de sitios de arte rupestre versaron sobre una amplia variedad de temas, tales como el significado espiritual del arte rupestre, la necesidad de investigaciones multidisciplinares y la importancia de que los descendientes de los artistas originarios participen tanto en la gestión como en la toma de decisiones y en el reparto de los beneficios derivados del turismo. Varios delegados comentaron que entendían por primera vez la importancia que en el contexto global poseía el sitio del Patrimonio Mundial que ellos gestionaban, y advirtieron asimismo que los problemas a los que tenían que hacer frente eran recurrentes en los extremos más



6

7

6. *Prof. Aron Mazel, durante la Reunión Internacional: Arte Rupestre y la Convención del Patrimonio Mundial, uKhahlamba/ Drakensberg Park, Africa del Sur, 3 al 8 de Abril de 2009.*
Foto: Nuria Sanz (UNESCO/WHC)

7. *Profs. Janette Deacon y Emmanuel Anati, en Kimberley, Africa del Sur.*
Foto: Nuria Sanz (UNESCO/WHC)

remotos del planeta. Algunos delegados solicitaron ayuda para establecer directrices que les permitieran tratar con los agentes implicados, para fomentar un turismo que causara el menor impacto posible, para comprender mejor los efectos de los procesos atmosféricos naturales y para crear y mantener documentación y sistemas de vigilancia. Esta reunión sentó las bases para una cooperación internacional que, indudablemente, servirá para mejorar la representatividad y credibilidad del Arte Rupestre en la Lista del Patrimonio Mundial.

El arte rupestre habla de manera universal, y la distribución de sus manifestaciones ya han dado buena cuenta de cómo explorar en todas su dimensiones internacionalmente el Artículo 7 de la Convención. El arte rupestre se comporta como un idioma mundial en términos de universalidad geográfica, a lo largo de todo el periodo de la existencia humana. En sus formas de análisis y justificación de su valor, los yacimientos de arte rupestre han pasado de ser concebidos como manifestaciones de auto-expresión subjetiva, a ser conceptualizados como escenarios de experiencias culturales compartidas y de simbolismos colectivos. Las manifestaciones de arte rupestre están presentes en todas las regiones del mundo, en muchas ocasiones en lugares que registran una enorme concentración de representaciones, y donde el factor de durabilidad registra las máximas amplitudes diacrónicas. En un número significativo de esos lugares, los sitios rupestres han permanecido en el imaginario de las comunidades durante siglos e incluso milenios. Las manifestaciones culturales/artísticas rupestres se resisten a una clasificación geográfica, técnica o conceptual neta y precisa. No aparentan docilidad frente a las codificaciones estáticas, ni a las distribuciones temáticas o geográficas. Es difícil encontrar criterios estandarizados para su estudio o catalogación. Las singularidades despistan al más avezado de los expertos. A pesar de los intentos internacionales de clasificación, la definición de unidad de sitio o de su unidad de paisaje, o las formas de documentación y catalogación, resultan tan diversas en su formulación, que parecen asumir la misma rebeldía de las formas artísticas, en constante resistencia a encajar en rígidos parámetros de validez mundial.

La variedad de técnicas –geoglifos, alto y bajo relieves, pinturas, grabados...–, junto a la variedad de superficies decorativas/funcionales –grutas, abrigos o parajes al aire libre– y su presencia en las más diversas geografías, pisos ecológicos y latitudes de todos los continentes, nos confirman que estamos en una fase todavía exploratoria, en los inicios de la comprensión de su valor y en los albores de la identificación de metodologías válidas que permitan la conservación integrada de toda esa diversidad. En este sentido, las lecciones aprendidas en los lugares rupestres ya inscritos en la Lista permiten identificar las claves de la necesidad de una cooperación internacional más intensa. Las noticias cotidianas de su desaparición obligan con urgencia a apoyar acciones de investigación, intervención y sensibilización, cuyo mensaje no debería ser ajeno al Comité de Patrimonio Mundial.

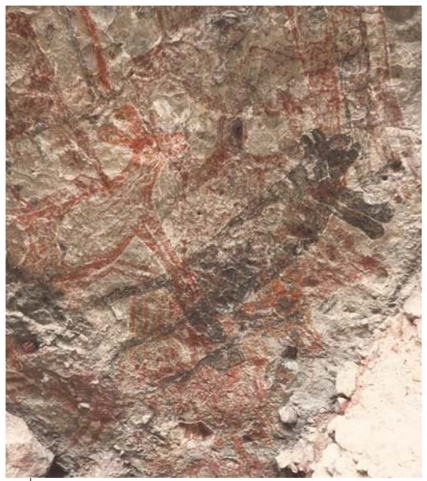
La comunidad internacional es consciente de que los impactos antrópicos derivados del vandalismo, y los impactos previsibles y venideros debidos al cambio climático, atentan contra una presencia irrepetible, la de las primeras formas humanas de narrar y transmitir mensajes. Los valores universales excepcionales por los que los sitios rupestres de la Lista han sido inscritos deberían contribuir de forma decidida a generar una voluntad internacional de valoración y tutela a través de una campaña de apropiación mundial, tan urgente como necesaria.

Cada proceso de justificación de Valor Universal Excepcional ha hecho encajar sus singularidades en uno o varios de los seis criterios culturales de la Convención de 1972, a partir de los componentes visuales sensibles acompañados o no por registros arqueológicos o estudios etnográficos que sustentan la aplicabilidad de los mencionados criterios. Muchos lugares rupestres han sido elegidos por su calidad estética, mientras que otros, más allá de la técnica, han dejado prevalecer la universalidad antropológica de la creatividad. En la mayoría de las recientes inscripciones, la formulación de su valor depende de las formas de vida pasadas o contemporáneas que dan o dieron significado a esas manifestaciones. Las obras y propuestas artísticas van de la mano de una retórica de acompañamiento, cuya función no es explicarlas, sino situarlas en un contexto de sentido y de significación, (Jiménez, 2002). Sin duda es necesario un trabajo conceptual y metodológico que permita agrupar miradas con criterios para objetivar los juicios. El arte nunca se bastó a sí mismo, como pretenden los positivistas. El arte rupestre que se inscribe en la Lista, independientemente de poder ser visto como un universo histórico de belleza intemporal, requiere una comunidad mundial (Artworld, en palabras de A. Danto) que asegure la coherencia en la mirada y que defina claramente los parámetros de comparación entre sitios de arte rupestre, a fin de determinar por qué sus componentes son excepcionales.

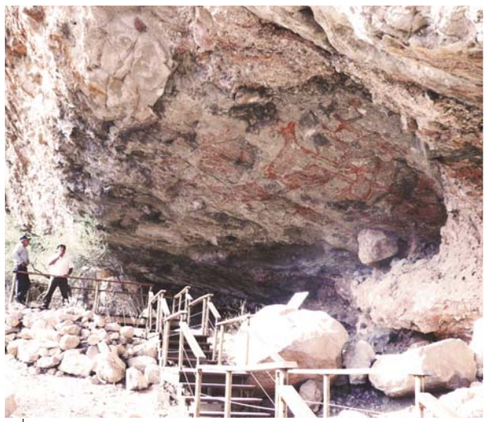
8. *Serra da Capivara, Sitio inscrito en la Lista de Patrimonio Mundial, Brasil. Foto: Nuria Sanz (UNESCO/WHC)*

9-10-11. *Caral, Perú, Sitio de Patrimonio Mundial y Pinturas rupestres de la Sierra de San Francisco, sitio inscrito en la Lista de Patrimonio Mundial de México. Foto: Nuria Sanz (UNESCO)*

8



9



10

11

En cualquier latitud el arte rupestre se comporta como un gran portador/receptor de memoria, permitiendo descubrir historias originarias propias. Este arte permite hablar a las culturas de sí mismas, de sus orígenes, en cualquier geografía. Se trataría entonces de un archivo histórico de los pueblos sin escritura que abarca un enorme abanico espacio-temporal. Se trata sin duda de una enorme entidad patrimonial tan sólo expresada en alrededor de 40 sitios de Valor Universal Excepcional.

Entre los valores universales excepcionales del arte rupestre ya inscritos en la Lista, destacamos:

- La enorme concentración de manifestaciones, como en el caso de Tzodilo, donde se registran 4.500 pinturas dispersas en 10 kilómetros cuadrados, que prueban una diacronía de 100.000 años de historia; o bien, la concentración de petroglifos en Twyfelfontainor /Uillaes, en Namibia.
- El hecho de ser testimonios de profundas transformaciones de la vida animal, la flora y las formas de vida humana, como en el Ecosistema y paisaje cultural relicto de Lopé-Okanda, en Gabón, o en el Parque Ukhahlamba/Drakensberg, Sudáfrica.
- La representación de ceremonias, rituales y prácticas económicas que revelan formas de vida en comunidad y formas de control simbólico y productivo del territorio, como en el caso del Arte Rupestre de Chongoni y Matobo Hills, en Zimbabwe, en uso hasta hoy.
- Los lugares directamente relacionados con formas de migración animal, que prueban la adaptabilidad cultural humana en geografías de cambio estacional significativo, como en Tassilli n'Ajjer, en Algeria.
- Los lugares que convocan una considerable profusión de técnicas, formas de emplazamiento y asentamientos humanos, como en el caso del Parque Nacional/Reserva Etnográfica de Kakadu, en Australia.
- Los sitios geológicamente pintorescos, como el Parque Nacional de Purnululu, en Australia.
- Los lugares donde la precisión de la técnica, la acumulación y la calidad de las representaciones de las formas artísticas rupestres dejan de ser ancestrales para pasar a formar parte del imaginario de poblaciones actuales, reproduciendo imágenes en sus espacios domésticos o ceremoniales contemporáneos, como en el caso de los Abrigos Rocosos Bhimbetka, en India.
- La enorme cantidad de sitios arqueológicos asociados, como en el caso del paisaje cultural de Mapungubwe, en Sudáfrica, donde se registran 400 asentamientos que conviven con manifestaciones rupestres en 30.000 hectáreas.
- La singularidad de representar arte paleolítico al aire libre, frente al mundo de la investigación, que hasta la década de los años noventa había confinado las primeras manifestaciones artísticas humanas en cuevas.

A lo largo de diversos seminarios y grupos de trabajo de expertos internacionales, el Centro de Patrimonio Mundial ha avanzado en el estudio pormenorizado de las problemáticas asociadas a sitios de arte rupestre ya inscritos, desde lugares que se inscribieron recientemente a otros que lo fueron hace más de veinte años; desde yacimientos arqueológicos donde las comunidades locales (indígenas o no) son esenciales para conservar una vida cultural contemporánea del lugar, hasta lugares donde los visitantes son la única comunidad significativa en el área protegida; desde lugares muy conocidos y en áreas accesibles hasta lugares situados en algunas de las geografías más remotas de nuestro planeta.

Y después de analizar todo lo ya inscrito cabe destacar:

- La necesidad de contar con candidaturas de arte rupestre de algunas culturas arqueológicas muy bien representadas en la Lista, como la maya, pero donde las manifestaciones rupestres en cueva no han dado pie a un expediente, como es el caso de la cueva de Naj Tunich en Guatemala.

- La necesidad de fomentar formas de cooperación que permitan inscribir sitios seriados, atendiendo al carácter vinculante de manifestaciones artísticas que no entienden de fronteras institucionales o políticas, como en el caso del arte rupestre mediterráneo en España; o como podría ser el caso de una posible nominación transnacional del megalitismo atlántico.
- La necesidad de pensar sobre la protección de los sitios rupestres desde legislaciones sectoriales integradas, que permitan garantizar la integridad y salvaguarda de sus valores.
- La necesidad de colaborar internacionalmente en nominaciones que requieren un esfuerzo de documentación e investigación que excede la capacidad nacional en términos de recursos técnicos y financieros.
- La necesidad de que el arte rupestre tome carta de naturaleza en lugares sometidos a transformaciones territoriales de amplia escala, como en el caso de Amazonía.
- La necesidad de escuchar al arte, la necesidad del relato, lo esencial que es poder registrar las interpretaciones orales directamente relacionadas con la producción y/o culto, en lugares donde la transformación cultural no permite garantizar una perduración de esas prácticas a medio plazo. Todo ello combinado con la necesidad de plantear una reflexión urgente sobre la etnografía/antropología del arte rupestre en términos de conservación del patrimonio y las implicaciones derivadas de formas de vida ancestrales contemporáneas, de la práctica del nomadismo por parte de cazadores-recolectores contemporáneos o de las circunstancias derivadas de la conservación del arte rupestre en poblaciones en aislamiento voluntario. No parece descabellado comenzar a integrar registros orales en los expedientes de Patrimonio Mundial como testimonio de la práctica y significación de las manifestaciones rupestres para las sociedades contemporáneas.

Las manifestaciones excepcionales de arte rupestre se encuentran con mucha frecuencia en áreas naturales protegidas que se han inscrito en la Lista como propiedades naturales, y su conservación debería tener en cuenta tanto los valores naturales como culturales de un yacimiento. Este balance debería supervisarse estrechamente para asegurar que las medidas implantadas protegen un aspecto pero no obstaculizan el otro.

La magnificencia visual de las manifestaciones de arte rupestre y su capacidad para recordar la experiencia cultural humana han sido las responsables de que no se estudiaran a fondo las conexiones arqueológicas-antropológicas durante los primeros quince años de la Convención, de acuerdo con los marcos de trabajo conceptuales y teóricos de las disciplinas científicas asociadas. Principalmente, se entendió que los estudios basados en bellas artes y sus procedimientos de registro eran suficientes fundamentos para justificar la autenticidad, integridad de los yacimientos y el Valor Universal Excepcional (OUV) de los mismos. La conservación del arte rupestre es un esfuerzo de colaboración que requiere la contribución de arqueólogos, etnógrafos, antropólogos, lingüistas, conservadores, población local y asesoría técnica internacional. Actualmente, los expertos responsables de procesos de nominación en marcha examinan los puentes metodológicos entre las manifestaciones de arte rupestre, la antropología y la arqueología, y solicitan ayuda de institutos de investigación aplicada a la conservación.

A pesar de la experiencia ya acumulada en más de treinta años de implementación de la Convención, a pesar de la universalidad geográfica de las manifestaciones y de las prácticas en ellas desarrolladas, y a pesar de los avances realizados en términos de registro, documentación y catalogación, otros aspectos reclaman una reflexión urgente, a saber: la investigación aplicada a la conservación, las formas de seguimiento preventivas de fácil aplicación y de bajo costo, y las formas de identificar mecanismos de gestión adaptativa para realidades culturales y geográficas de enorme diversidad.

En este sentido, hemos querido escuchar la experiencia de los gestores de estos sitios, en la que se reconocen diferencias significativas en la comprensión y puesta en práctica de los planes de gestión. De esa experiencia, y de cara a los profesionales que van a desarrollar o ya están desarrollando un proceso de candidatura, nos permitimos destacar algunos aspectos en los que convendría fortalecer procedimientos hasta ahora débilmente abordados:

- La necesidad de desarrollar formas de evaluación rápida de los impactos que afectan a la integridad cultural o física del yacimiento.
- La necesidad de identificar formas de medir impactos sociales, culturales y económicos sobre estos yacimientos cuando el sitio haya sido nominado.
- Asegurar que los procesos de valorización, conservación y gestión deben ser social y culturalmente participativos.
- La necesidad de cooperar para identificar las mejores metodologías al uso para almacenar y compartir los datos de forma fiable.
- La pertinencia de entrelazar valores de conservación natural con valores culturales de algunas propiedades que han sido inscritas en la Lista como paisajes culturales, sitios mixtos o lugares naturales.

Un sistema de gestión impulsado por valores universales debería basarse en un enfoque más amplio que se apoye en una nueva orientación teórica y metodológica:

- El entendimiento del territorio (yacimiento/yacimientos) como un espacio cultural/social que debería describirse en sus términos geológicos, geográficos, geomorfológicos y bioclimáticos (condiciones pasado/presente), y explicar así la intención cultural para intervenir en el paisaje.
- Estudios de poblamiento, cartas arqueológicas, que permitan la comprensión diacrónica de las formas culturales de asentamiento, sobre cartografías oficiales y a una escala significativa, a fin de identificar la extensión, unidad y coherencia de la identidad cultural del grupo humano responsable de las manifestaciones rupestres.
- La posible jerarquía entre las manifestaciones de arte rupestre en el yacimiento.
- Los vínculos topográficos-geomorfológicos y la forma en que se van a tener en cuenta para definir los límites del yacimiento.
- La relación entre la propiedad y las rutas de comunicación.
- El acceso a recursos bióticos y no bióticos.
- El uso del arte como un umbral o marcador territorial.
- Los modelos etnográficos de producción y significado del arte.
- El papel de la autoridad tradicional en relación con las manifestaciones de arte rupestre y los procedimientos de toma de decisiones adoptadas en la estrategia de gestión.

La etnografía también señala otros hechos importantes, demostrando que el rupestre es un arte que está situado dentro de la vida real. Es necesario, por tanto, tener en cuenta la importancia cultural de los vínculos de las manifestaciones rupestres con las prácticas rituales, ceremonias o peregrinaciones rituales, y encontrar soluciones de compromiso entre el uso social del sitio y las agendas internacionales sobre conservación.

A modo de presentación de contenidos

Iniciamos con esta publicación una serie de compilaciones que agrupan las contribuciones provenientes de los miembros de la comunicad científica, los organismos Asesores de la Convención, los gestores de sitio, los expertos nacionales y que han sido discutidas en el curso de las reuniones internacionales organizadas por el Centro de Patrimonio Mundial. Esta primera entrega trata de presentar el campo de reflexión del programa temático y los consensos hasta ahora conseguidos en cuanto a temas, geografías y metodologías de cooperación.

Siguen a esta introducción cinco contribuciones que ayudan a enmarcar cuestiones fundamentales debatidas y consensuadas como campos inevitables de reflexión por parte de la comunidad de Patrimonio Mundial:

- El profesor Nicholas Conard identifica las trazas que permiten hacer hablar al registro arqueológico sobre los rasgos culturales de los humanos modernos.
- La Profesora Janette Deacon desentraña las relaciones entre las comunidades de cazadores-recolectores y el arte rupestre, para lo cual la antropología y la historia oral siguen siendo la clave interpretativa que nos permite aproximarnos a formas de subsistencia remotas pero también contemporáneas, de lo que puede ser considerado como uno de los mejores logros adaptativos de nuestra historia biocultural.
- El profesor Ofer Bar-Yosef nos ayuda a adentrarnos, gracias a los nuevos descubrimientos en los dos extremos de Asia, en las repercusiones de los procesos de domesticación, producción de alimentos y formas de sedentarización a ellos aparejadas.

12-13. *Grabados, campamento de cazadores-recolectores, Kimberley, África del Sur. Foto: Nuria Sanz (UNESCO)*

12

13

14

15

14. *Grupo de trabajo científico, HEADS, en la Sede de UNESCO en París. (De izquierda a derecha) Prof. Ofer Bar-Yosef, Prof. Nicholas Conard, Nuria Sanz y Prof. Margherita Mussi, Prof. François Sémah. Foto: UNESCO*

15. *Prof. Ronald Clark en el sitio Patrimonio Mundial de Sterkfontein, África del Sur. Foto: Nuria Sanz (UNESCO/WHC)*

- La Profesora Margherita Mussi interpreta la vulnerabilidad del registro, la necesidad urgente de encontrar formas de preservar esas fragilidades de Valor Universal Excepcional y de explorar la categoría de paisajes culturales para HEADS.
- El profesor François Semah analiza los caracteres evolutivos anatómicos y biológicos del Genero Homo y con ello la necesidad de pensar en sitios en términos de procesos.

De una atenta lectura de sus contribuciones me interesa resaltar algunos aspectos particulares, entre los que elijo: la capacidad expresiva de los primeros humanos modernos, la repercusión se fijar un lugar de residencia y la importancia controlar culturalmente territorios.

Las artes en plural constituyen un conjunto de prácticas diversas que nacen en el origen mismo del humano. Durante mucho tiempo las artes se ocuparon de ensalzar objetos decorativos, únicos, bellos. Sin embargo en períodos de tiempo muchísimo más remotos probablemente la belleza, el preciosismo y la originalidad, fueron considerados como valores secundarios frente a valores quizá ligados a otro tipo de exaltación espiritual. Las primeras entalladuras geométricas en ocre hablan ya hablan de una necesidad de expresar formas de sentir humanas hace más de 70.000 años. La producción de signos es indistinguible de la aparición de un animal consciente, el ser humano. Con los signos se pretende crear ciertos espacios de seguridad y procuran un sentido a nuestra existencia. Las Venus, las piezas de arte mueble paleolíticas, pueden hacernos temblar por su calidad de factura pero principalmente por nos cautivan por su calidad de conexión y eso, aunque parezca lo contrario, es lo que puede darnos la pista para salir de una arqueología de la imagen. Sin saber prácticamente nada sobre esas imágenes hay algo que nos hace aceptarlas con una normalidad total; su perfección lejos de expresar inquietudes, refuerza más bien el acercamiento. Se sigue tratando de una forma de perfección súbita que genera muchos interrogantes sobre su función y la necesidad de esa expresión en sociedades al límite de la supervivencia.

Estas imágenes, que nacieron perfectas, fueron el fruto del trabajo de la mente consciente y de un grupo humano que siente la irresistible necesidad de ver hacia fuera, de manera que convirtieron esas formas en un lugar desde donde mirar, un lugar desde donde proyectaron sus formas de comprender el mundo, como si esas primeras imágenes plasmarán la manera en la que se fue inventando una nueva forma de estar en el mundo. Su perfección parece algo completamente inesperado, y es entonces cuando comienza la escisión del ámbito de la naturaleza y el de los humanos, una ruptura que paradójicamente parte de una profunda observación y conocimiento del mundo natural. Es el resultado de un « aprender a mirar ». Y en esa forma de expresar no intervino el perfeccionamiento técnico del dibujo, se trataba de reflejar esa relación íntima de parentela entre lo humano y lo animal. Probablemente la perfección refleja un respeto profundo entre cazadores y animales. Y en determinados lugares, las imágenes recreadas empezaron a ser lo permanente del mundo, y lo natural comenzó a ser algo efímero, (Azúa, 2010). Esta sofisticación de la respuesta expresiva de los primeros humanos modernos en el ornato, en lo figurativo y en lo funerario proveen de una capacidad de conexión emocional rápida, instintiva con nuestras formas de expresión contemporáneas.

La movilidad de las formas de vida plantea un desafío epistemológico y práctico a la Convención. Las formas de habitar generan muy distintas maneras de establecer permanencias espaciales. Durante el paleolítico la movilidad de las formas de vida genera un desafío a la hora de desentrañar presencias espaciales donde sólo ha predominado lo efímero. Al final del paleolítico los cazadores recolectores comienzan a sedentarizarse, lo que implica encontrar en el registro arqueológico una dieta que generalmente fue ganando en componentes vegetales. Los depósitos arqueológicos contienen trazas explícitas que evidencian la selección de plantas. La secuencia fue ultimándose hasta completar la domesticación efectiva de plantas y animales. El neolítico impone otra respuesta antrópica al medio natural. Con ello, las formas de organización social, de parentesco, las estrategias de poder, las formas de control territorial, el uso de símbolos y la práctica de los rituales van completando toda una batería de modelos en los que la arqueología trata de buscar formas de interpretar, para lo cual utiliza parangones antropológicos con distintos grados de prudencia.

Sedentarizarse implicaba vivir la vida en comunidad de otra manera, incluso generar una relación entre vida y muerte de proximidad, de filiación, en suma, de continuidad y de permanencia. La decisión de cambiar la forma de desplazarse por la se asentarse implicaba formas de especialización y de espacialización diversas. Desde lo cognitivo, significó tomar decisiones culturales después de milenios de observación y de ensayos con la naturaleza. El paso de un mundo de la inmediatez, al mundo de la reserva, al del calendario estacional, y al de una demografía en aumento, hoy por hoy parece el resultado de los beneficios de agricultura (Guillaume, 2011).

Las investigaciones recientes rellenan mapas con distintos epicentros desde donde comenzaron domesticaciones diversas del maíz, banana, trigo, arroz… La precisión topográfica de los emplazamientos empaña las secuencias temporales durante las cuales se llegaron a los logros que hoy conocemos como invenciones. Los mapas de distribución de yacimientos hacen la función de radiografía de la situación espacial, a lo que debe sumarse la secuencia temporal de los ensayos y errores, de los intentos fallidos o de los logros revolucionarios. Una mirada científica nos sitúa en posición de relativizar y sobre todo de encontrar en lo que parece fortuito la clave de lo deliberado, que durante generaciones ha debido enfrentar desafíos intelectuales y cognitivos, que han permitido dar respuestas exitosas a nuevos ensayos de formas de vida en comunidad.

Los procesos ecológicos de transición entre la vida nómada de los cazadores-recolectores a la vida sedentaria de los productores necesitan un pormenorizado estudio de todas las escalas intermedias de esa transición. De los retornos regulares a los campamentos base, en el caso de las poblaciones paleolíticas, a los sedentarismos estacionales, como pudo ocurrir en los poblados natufienses del Próximo Oriente, encontramos un abanico de prácticas que no se explican con respuestas simples sobre porqué fue imposible o no deseado seguir siendo cazador-recolector. La movilidad puede explicarse en términos de salubridad por buscar otros lugares libres de depósito, bien para conseguir otros recursos, por razones de re-agrupamiento del grupo, por resolución de conflictos, por competición por la tierra, por acudir a sitios ceremoniales, y la sedentarización implica todo lo anterior

16

17

16. *Museo de Addis Ababa, patrimonio mueble, Australopithecus afarensis. Foto: Nuria Sanz (UNESCO)*

17. *Swabian Jura, Germany Foto: N.J. Conard*

además de reducir el espacio de captación o de movilidad. Algunos de los recolectores más especializados en recursos marinos como los pobladores de la cultura Chinchorro en el la costa Pacífica del norte de Chile con un sistema de ocupación de espacio estable « a temporadas » a las inesperadas y primigenias comunidades proto-urbanas y/o a los desafíos constructivos de Jericó, de Catalhoyuk o de Caral, muchos otros tipos de asentamientos dan buena cuenta de la variabilidad de formas de vida posibles entre lo nómada y lo sedentario. La sedentarización incluye implicaciones: territorios de explotación más cercanos, la demografía creciente, la necesidad de acumular provisiones, preservar, sistematizar todos los recursos próximos, de acortar distancias de aprovisionamientos genéricos y con ello la transformación de las inmediaciones medioambientales. Desde la transición entre el Paleolítico Medio hasta el Paleolítico Superior en torno a 40.000 años B.P. hasta fechas en torno al 10.000 antes de la Era, se va generando una propensión del sapiens a desarrollar una relación social diversa con plantas y animales, un proceso dilatado en el tiempo cuya consecuencia es otra forma de integración entre cultura y naturaleza, (Mithen, 1996).

Desde 2.6 milllones de años hasta el 10.000 antes de la era, la relación de fuerzas entre cultura y naturaleza comienza su transición, es por ello que la Convención de Patrimonio Mundial resulta el terreno propicio para desmenuzar argumentos y preservar una parte de esa transición a la que le quedan tantos interrogantes por resolver.

Después de que durante al menos 5 milenios se hayan ensayado patrones de sedentarización y producción de alimentos muy diversos, los manuales clásicos introducen otra etapa y dan por finalizado el periodo neolítico al inaugurarse el registro con las evidencias de las prácticas metalúrgicas, con el inicio de las aglomeraciones urbanas, con trazas de sistemas económicos y espaciales de producción y distribución especializadas, acompañados de la práctica de la escritura. Y de nuevo nos instalamos en cambios de geografía variable, en diversificaciones y secuencias múltiples de gamas de respuestas culturales para todos los gustos. Todo ello de nuevo funciona como detonante de otra forma de explotación de la naturaleza a través de distintas maneras de socializar el espacio, en una gama prolífica de formas de transformación del medio natural construido. Hasta el 70.000 se desarrolló una historia « natural » del ser humano. Entre la primera aparición de nuestro género fuera de África y la producción de alimentos se registraron numerosas glaciaciones que van demostrando la adaptabilidad de la especie durante 1,5 millones de años fuera de los trópicos. La hominización, ininterrumpida como proceso hasta hoy, responde a un curso de vida de acuerdo a posibilidades de cambio. Somos la expresión de la perdurabilidad del cambio y de éxito reproductivo, Ahora nos queda demostrar que nuestras decisiones culturales van a asegurar un modo exitoso y sostenible de perdurar. La Convención de Patrimonio Mundial encuentra en este contexto el caldo de cultivo para su obligación humanística y científica de universalidad, con un proyecto de Humanidad que es el inspira a nuestra Organización.

Agradecimientos

Sirvan estas líneas para subrayar mi agradecimiento y estima personal y profesional hacia los miembros del Comité Científico de este proyecto. Ellos han compartido con enorme generosidad sus conocimientos y se han aventurado de forma decidida en los entresijos de la Convención de Patrimonio Mundial, convencidos de la necesidad de acercamiento entre la Evolución Humana y el derecho internacional público. A todos ellos mi más alta muestra de consideración y aprecio. Deseo agradecer a los representantes de la Delegación española ante UNESCO y al Ministerio de Cultura de España su confianza en ampliar los desafíos e instalar esta reflexión, ahora mucho más madura, en el marco de la celebración del 40a. Aniversario de la Convención.

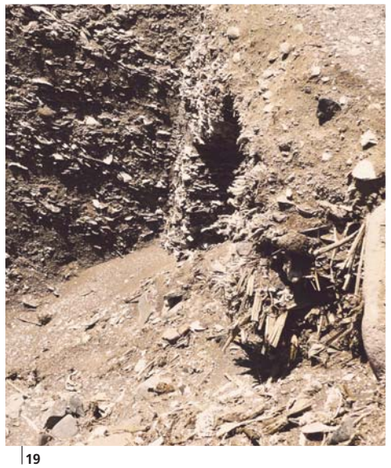
De igual manera se extiende mi reconocimiento a los representantes de los Órganos Consultivos de la Convención, a todos los expertos nacionales e internacionales y a todos los gestores de sitio que nos acompañaron en cada uno de los encuentros.

No puedo cerrar estas páginas sin agradecer al Sr. Francesco Bandarin, Director Adjunto para la Cultura de UNESCO y al Sr. Kishore Rao, Director del Centro de Patrimonio Mundial su apoyo, su interés y la libertad con la que me dejaron avanzar en este campo, tan próximo a mi experiencia académica. Este trabajo no se habría podido realizar sin el entusiasmo y profesionalidad de mis compañeras Penelope Keenan y Nuria Ametller.

A todos ellos mi más profundo agradecimiento.

18-19-20-21. *Sitios de la Cultura Chinchorro, Chile. Foto: Nuria Sanz (UNESCO/WHC)*

18



19

20

21

22

22. *(De izquierda a derecha) Prof. Edward Swenson, Prof. Danielle Stordeur, Prof. Gary Urton, Prof. Bernardo Arriaza y Prof. Mike Smith. Reunión Internacional, La cultura Chinchorro desde una perspectiva comparativa, Arica, Chile, 5-8 Enero, 2010. Foto: Nuria Sanz (UNESCO/WHC)*

Bibliografia

Anderson, B. 2007. *Comunidades imaginadas. Reflexiones sobre el origen y la difusión del Nacionalismo.* México, Fondo de Cultura Económica.

Aurégan, P. 2001. *Terre Humaine. Des récits et des hommes.* Nathan/HER.

Azúa, F de. 2010. *Autobiografía sin vida.* Barcelona, Literatura Mondadori.

Barich, B.E. 2010. *Antica Africa Alle Origini delle Società.* Rome, L'Erma di Bretschneider.

Bateson, G. 1977. *Vers une écologie de l'esprit.* Paris, Editions du Seuil.

Berque, A. 2009. *Écoumène. Introduction a l'étude des milieux humains.* Paris, Editions Belin.

Bradley, R. 2000. *An Archaeology of Natural Places.* London, Routledge.

Cadelo, E. 2008. *Idea di natura. 13 scienziati a confronto.* Venice, Marsilio, Saggi.

Cadena, M de la. and Starn, O. (eds.) 2007. *Indigenous Experience Today.* Oxford, Berg Publishers.

Chollier, A. 2009. *Autour du Cairn*. Geneva, Héros-Limite/ Geographie(s).

Clavir, M. 2002. *Preserving What Is Valued: Museums, Conservation, and First Nations.* Vancouver, UBC Press.

Cruz, M. and Brauer, D. 2005. Compilators : *La comprensión del pasado. Escritos sobre filosofía de la historia.* Spain, Editorial Herder.

Daly, R. and Lee, R.B. (eds.) 2004. *The Cambridge Encyclopedia of Hunters and Gatherers.* New York, Cambridge University Press.

Danto, A. 1964. The Artworld. *The Journal of Philosophy,* Vol. 61, No. 19, pp. 571–574.

Descola, P. and Pálsson, G. (coords.) 2001. *Naturaleza y Sociedad. Perspectivas antropológicas.* Mexico, Siglo XXI Editores.

Dillehay, T.D. (ed.) 2011. *From Foraging to Farming in the Andes: New Perspectives on Food Production and Social Organization.* New York, Cambridge University Press.

Frangipane, M., Hauptmann, H., Liverani, M., Matthiae P. and Mellink, M. (eds.) 1993. *Between the rivers and over the mountains: archaeologica anatolica et mesopotamica, Alba Palmieri dedicate.* Rome, Università degli studi di Roma "La Sapienza".

Glowczenski, B. and Rosita, H. 2007. *Le défi indigène.* Montreuil, Éditions Aux lieux d'être.

Godelier, M. 1989. Preface. S. Price. *Arts primitifs; regards civilisés.* Paris, École Nationale Supérieure des Beaux-Arts, pp.15.

Gosden, C. 2004. *Archaeology and Colonialism: Cultural Contact from 5000 BC to the Present.* Cambridge, Cambridge University Press.

Gruzinski, S. 1999. *La pensée métisse.* Paris, Librairie Arthème Fayard.

Guilaine, J. 2011. *Caïn, Abel, Ötzi, L'héritage néolithique.* Éditions Gallimard.

Hernando, A. 2002. *Arqueología de la Identidad.* Madrid, Akal.

Herskovits, M.J. 2007. *El Hombre y sus obras.* Mexico, Fondo de Cultura Económica, Sección de Obras de Antropología.

Jiménez, J. 2002. *Teoría del arte.* Madrid, Tecnos Alianza.

L'Institut de Paléontologie Humaine et coll. 2010. *L'Institut de Paléontologie Humaine: Fondation scientifique Albert 1er Prince de Monaco, activités scientifiques et collections, Le Centenaire 1910-2010.* Mercuès, C.P.I. France Quercy.

Levi-Strauss, C. 1952. Race et Histoire. *Le courrier de l'UNESCO,* Vol. 5. Paris, UNESCO.

Loubes, J.-P. 2010. *Traité d'architecture sauvage. Manifeste pour une architecture située.* Île de France, Éditions du sextant.

Lowenhaupt Tsing, A. 2005. *An Ethnography of Global Connection.* New Jersey, Princeton University Press.

Mithen, S. 1996. *The prehistory of the mind: a search for the origins of art, religion and science.* London, Phoenix.

Reichholf, J.H. 2009. *La invención de la agricultura: Por qué el hombre se hizo sedentario.* Barcelona, Crítica.

Renfrew, C. 2008. *The Making of the Human Mind.* London, Phoenix.

Scarre, C. and Scarre, G. (eds.) 2008. *The Ethics of Archaeology.* Cambridge, Cambridge University Press.

Severi, C. 2007. *Le principe de la chimére: une anthropologie de la mémoire.* Paris, Éditions Rue d'Ulm.

Smith, L. 2006. *Archaeological theory and the politics of cultural heritage.* London, Routledge.

Torre Sáinz, I de la. 2008. *La Arqueología de los Orígenes Humanos en África.* Madrid, Akal.

Trigano, S. (dir.) 2010. *L'universel et la politique des identités.* Paris, Éditions de L'Éclat.

Vanier, M. (dir.) 2009. *Territoires, territorialité, territorialisation. Controverses et perspectives. Actes des Entretiens de la Cité des Territoires, Grenoble, Juin 2007.* Rennes, Presses Universitaires de Rennes. (Collection Espaces et Territoires.)

1

Human Evolution: Adaptations, Dispersals and Social Developments (HEADS)

Lower Mushroom Shelter, uKhahlamba/Drakensberg Park (WHL), South Africa. Photo: Aron Mazel

PROCESSES

The HEADS Programme was initiated in the framework of the *Global Strategy for a Representative, Balanced and Credible World Heritage List,* launched by the World Heritage Committee in 1994, and as a special programme for the Spanish Chair of the 33rd session of the World Heritage Committee in 2009. In recognizing that sites related to the Programme are under-represented on the World Heritage List, a reflexion on Prehistory and World Heritage was requested by the World Heritage Committee at its 32nd session in Quebec, July 2008 in Decision 32 COM 10A.

Financed by the Spanish Funds-in-Trust, from August 2008 to June 2009 a very demanding process of consultation was undertaken with academic experts, scientific institutions, Advisory Bodies' representatives, members of the World Heritage Committee, site managers and policymakers to identify priorities for cooperation in the framework of the Global Strategy.

At its 33rd session in June 2009 in Seville, Spain, the Committee adopted the World Heritage Thematic Programme on Prehistory in Decision **33 COM 5A** and a calendar of activities to structure developments was launched.

Following the recommendations of the Committee, the Programme was further defined to fully encapsulate the interdisciplinary nature of the area of study, its global geographical scope and the consideration for continuing communities. A draft Action Plan was prepared for submission to the 34th session of the World Heritage Committee in June 2010 in Brasilia, Brazil.

The Action Plan for the Programme was approved in Decision **34 COM 5F.1**, with a prioritized list of actions for implementation, and the title of the Programme was changed to *Human Evolution: Adaptations, Dispersals and Social Developments (HEADS)*.

Operating within the framework of the Global Strategy, the Action Plan on HEADS supports a move away from a primarily architectural view of cultural heritage towards one which is more anthropological, multi-functional and universal. The consideration of these complex properties in turn supports the upstream process of World Heritage, and considers the products of culture by means of several new thematic approaches to include modes of occupation of land and space, including nomadism and migration, technology, subsistence strategies, heritage routes for peoples and goods, traditional settlements and their environments. In order to fully address the values of these nominated properties and, indeed, associated challenges, consideration needs to be given to applying the appropriate processes needed to evaluate the credibility of such properties.

The nature of the properties concerned demands an inclusive and interdisciplinary approach, and a strong overarching cooperation between the fields of natural science and culture. The value of science has remained an underpinning agent in the development of the Programme, informing applied research activities, applications of ICTs, evaluations of credibility, conservation methodologies and multidisciplinary cooperation between institutions. The evaluation of the critical early stages of human evolution requires the collaboration of a range of disciplines, each of which has its own distinctive contribution to make.

This exploration of the interface between science and culture informs a deeper understanding of our cultural origins and the crux of human identity, interaction, development, creative expression and innovation. Through this approach, the aim is to foster the understanding of sequences of change within the context of the environment, and the recognition of entities through its combined archaeological attributes, such as dwellings, grave sites, lithic and bone industries, ground stone tools, ornamentation and art objects. In many cases, the sites' most valuable palaeontological and cultural content is scarce, often still partly unknown, and in all cases far from being fully deciphered. These challenges will continue to be addressed throughout the implementation of the Action Plan.

The implementation of the Action Plan has benefited from the expertise and committed cooperation of a core group of five international experts, the majority of whom were involved in the consultation process prior to the Committee's approval of the Action Plan. The World Heritage Centre appreciates the experts' enthusiasm, initiative and generosity in their collaboration, and dedication to preserving these sites for current and future generations, new scientific investigation, conservation and memory. The group of experts work primarily in three scientific committees, analogous with the three key thematic lines of the Programme (1) human evolution and sites related to early human origins; (2) rock art; and (3) early archaeological sites and the beginning of cultural diversity. In each implementation phase of the Action Plan, these thematic areas will provide the undercurrent thematic structure of the Programme.

The Advisory Bodies ICOMOS and IUCN have provided much valued input since the inception of the Programme, and their collaboration emphasizes the importance of developing the interface between nature and culture in direct relation the Programme, as well as fostering potential future opportunities for working ties between the Advisory Bodies, scientific committees and the World Heritage Centre.

HEADS has benefited from the strong support of States Parties, UNESCO Field Offices and international institutions in the activities that have taken place in direct relation to the Programme. Throughout the international meetings, a platform of exchange of diverse areas of knowledge and expertise has been fostered, which has served to inform approaches to conservation, management and research, as well as the broader context of the associated challenges. Moreover, the global scope of the Programme allows for a wide and varied community of policy-makers, experts, institutions and local communities to share challenges, priorities, best case studies, and build local, national and global networks and capacities.

Archaeological excavation site at The Tabon Cave Complex and all of Lipuun (TL), Philippines.
Photo: Eusebio Z. Dizon

OUTCOMES

The Programme aims to achieve the following results through the implementation of the Action Plan in the period of the Medium Term Strategy 2010 – 2013:

1. **Credibility.** Ensure scientific credibility of the Thematic Programme actions based on a solid support framework of applied and interdisciplinary research to develop comparative analysis, and assessment of authenticity, integrity and Declaration of OUV of sites; Update and revise national and regional Tentative Lists based on thematic studies undertaken by the Advisory Bodies;
2. **Conservation.** Create twinning initiatives between World Heritage properties to share best practice methodologies for conservation and management and to develop applied research to provide long-term preservation of early sites;
3. **Capacity-building.** Foster close cooperation between international and national experts, universities, research institutions, Advisory Bodies and the World Heritage Centre to develop capacity-building programmes on management and conservation for related World Heritage sites;
4. **Communication.** Launch a web page on the World Heritage Centre website to establish a resource database, a global network of information exchange and an online forum. Monographic issues will be published as part of the *World Heritage Papers* Series and co-financed and co-published with research institutions;
5. **Communities.** Set up a World Heritage community to develop cooperation through the creation of a roster of experts, site managers, Advisory Bodies and the World Heritage Centre. The Action Plan is foreseen to strengthen cooperation with local communities, and assess participatory methodologies for the initial stage of the nomination process or for already inscribed sites.

The outcomes of the Programme since August 2008 have been summarized as follows:

International meeting, *Prehistory and the World Heritage Convention: Towards an Action Plan and the related thematic studies*, 3 to 4 November 2008, UNESCO Headquarters, Paris. The meeting established the foundations for the future development, strategy and implementation of the initiative, based on discussions between 18 international experts and representatives of the Advisory Bodies ICCROM, IUCN and ICOMOS. Three core thematic areas of the Programme were identified based on: human evolution, rock art and early archaeological properties.

Meeting and Workshop, *The re-evaluation of the Tentative List of Israel*, 26 to 29 December 2008, Mount Carmel, Israel, was organized in collaboration with the Israel National Commission for UNESCO, site managers, national experts and the World Heritage Centre, and focused on updating the Tentative List of Israel related to sites of early human origins, to establish the necessary foundations to implement actions at national level and provide guidance for comparative studies.

International Meeting, *Human Evolution and the World Heritage Convention*, 21 to 25 March 2009, Burgos, Spain, considered sites containing hominid findings, both inscribed or yet to be inscribed on the World Heritage List, as well as evaluated the thematic area of human evolution within the context of the Convention. Twenty three participants took part in the meeting.

International Meeting, *Rock Art and the World Heritage Convention*, 3 to 8 April 2009, uKhahlamba/Drakensburg Park, South Africa, was organized and financed by UNESCO WHC, the Government of South Africa and the Spanish Funds-in-Trust, and involved the participation of 44 governmental delegates, Advisory Bodies' representatives, international experts and site managers. The meeting aimed to identify key values, issues and priorities in the area of rock art, particularly concerning its management, conservation and documentation in relation to World Heritage status.

International Meeting, *Prehistoric Sites and the World Heritage Convention*, 10 to 14 May 2009, Manama, Bahrain, included the participation of 20 participants from 15 States Parties and the Advisory Bodies, and focused on the cultural phenomena of hunter-gatherer societies, Neolithic, Megalithic, Bronze Age and Late Prehistoric periods. UNESCO WHC organized the meeting in cooperation with the Government of Bahrain and the Spanish Funds-in-Trust.

International Meeting, *Preparation of the Action Plan, Scientific Working Group*, 12 to 14 September 2009, UNESCO Headquarters, Paris. An international meeting to review the recommendations of the World Heritage Committee at its 33rd session, and to address the direction of the Programme in preparation of the finalization of the Action Plan for submission to the 34th session of the World Heritage Committee in 2010. The five members of the Scientific Working Group considered the Committee's recommendation in Para. 13 of Decision **33 COM 5A**, in terms of: (1) the title of the Thematic Programme to better synthesize the core thematic areas of the Programme with the World Heritage Committee's recommendations; (2) recognition of continuing cultures of indigenous communities; and (3) worldwide lisibility of the Thematic Programme.

Meeting, *Action Plan, Drafting Committee* 33 COM 5A, 22 October 2009, UNESCO Headquarters, Paris. Discussions focused on the recommendations of the World Heritage Committee concerning Decision **33 COM 5A** related to the Programme between the representatives of the six Delegations involved in drafting the Decision (Australia, Bahrain, Israel, Kenya, Spain and the USA).

Meeting, *Action Plan, Advisory Bodies*, UNESCO Headquarters, 27 October 2009. As a follow up to the 2009 meetings, the results and conclusions were discussed with the Advisory Bodies IUCN, ICOMOS and ICCROM in relation to foreseen thematic studies and the participation of the Advisory Bodies in future actions.

International Meeting, *World Rock Art Archive*, UNESCO Headquarters, 22 December 2009. In response to the request of international experts, Advisory Bodies and States Parties to create an international digital archive on rock art, six international experts working in the digital documentation of rock art met with the World Heritage Centre to begin the process of establishing an inter-institutional cooperation system to launch and develop the archive. The participants included representatives of Consejo Superior de Investigaciones Científicas (CSIC, Spain), Rock Art Research Institute (South Africa), Centro Camuno di Studi Preistorici (Italy), International Union of Prehistoric and Protohistoric Science (UISPP), Instituto Politécnico de Tomar (Portugal) and the Swedish Archive for Rock Art Research (Sweden). The archive will be accessed through the World Heritage Centre web page.

International Meeting, *Action Plan Scientific Working Group*, UNESCO Headquarters, 17 to 18 May 2010. Concluding recommendations from the previous 10 months' consultation were brought together to finalize the Action Plan for submission to the 34th session of the World Heritage Committee. A revised programme title was agreed upon, Human Evolution: Adaptations, Dispersals and Social Developments (HEADS), as well as defining and prioritizing areas of future development.

International Meeting, *World Rock Art Archive Working Group*, UNESCO Headquarters, 5 to 6 July 2010. Seven international experts and representatives of international institutions came together to discuss approaches in addressing the objectives of the digital archive, particularly in terms of the requirements of the nomination process, sustainable conservation following inscription of World Heritage sites, and creating a means of support for the comparative analysis of sites for future nomination.

International Meeting, World *Rock Art Archive Working Group*, at the Rock Art Research Institute (RARI), University of the Witwatersrand, Johannesburg, South Africa, 17 to 19 November 2010. In the framework of preparing the International Rock Art Archive, discussions between 13 international experts and representatives of international institutions were focused on the cooperation and technical requirements of sustaining the archive, as well as approaches to incorporating intangible elements of rock art practice. The meeting was organized and financed by UNESCO WHC, the Spanish Funds-in-Trust and the Rock Art Research Institute.

Meeting on the World *Rock Art Archive Metadata Model*, UNESCO Headquarters, 22 December 2010. The World Heritage Centre met with three representatives of Consejo Superior de Investigaciones Cientificas de España (CSIC) for a meeting to evaluate a potential metadata model for the creation of the International Rock Art Archive.

International Meeting, *African Human Origin Sites and the World Heritage Convention*, National Museum of Ethiopia, Addis Ababa, Ethiopia, 8 to 11 February 2011, was organized to support a platform of exchange in aid of launching a road map for the future conservation of human origin sites in Africa and to establish a solid working framework and the necessary research documentation for substantiating a feasible nomination of African human evolution-related sites to the World Heritage List. The meeting involved the participation 55 participants from 15 States Parties, and was organized and financed by the UNESCO World Heritage Centre, the Spanish Funds-in-Trust for World Heritage, the African World Heritage Fund (through the contribution of Agencia Española de Cooperación Internacional para el Desarrollo, AECID), the Government of Ethiopia and the UNESCO Office in Addis Ababa.

International Workshop, *Preparation of the Management Plan of Tchitundo-Hulu Rock Art Site,* Virei, Angola, 14 to 23 March 2011. Organized by the African World Heritage Fund, in cooperation with the World Heritage Centre of UNESCO, the Spanish Funds-in-Trust, the Angolan Ministry of Culture, Namibe Provincial Government, the Spanish Agency for International Development Cooperation (AECID) Office in Luanda, the University of the Witwatersrand (South Africa), the Trust for African Rock Art and the Advisory Bodies, the Workshop comprised of a 10-day on-site training session for 50 participants in Portuguese language. The Workshop resulted in the training of 50 national and international site managers and in establishing the preliminary steps for the preparation of the site's Management Plan.

Web page, *Human Evolution: Adaptations, Dispersals and Social Development*. A web page for the Programme was launched in April 2011 as part of the World Heritage Centre web portal, designed to provide a platform for knowledge resource and exchange, to reinforce the established international cooperation and maintain information channels in the current and future developments of the Programme. http://whc.unesco.org/en/activities/604

International Meeting, World *Rock Art Archive Working Group*, Tanum, Sweden, 13 to 15 May 2011. As the third meeting of the Working Group, a consensus was reached for the base metadata model of the archive, and case studies were agreed upon for presentation to the 35th session of the World Heritage Committee at UNESCO Headquarters, Paris, June 2011. Eleven members of the working group participated in the meeting, organized by the UNESCO WHC, the Spanish Funds-in-Trust and the Swedish National Heritage Board.

International Meeting, *HEADS Scientific Working Group*, 6-7 May 2011, Tubingen, Germany. In cooperation with Tubingen University, the World Heritage Centre, with funding by the Spanish Funds-in-Trust, organized a meeting between the WHC and three international experts of the Programme's core working group. In preparation for the 35th session of the World Heritage Committee, the experts evaluated the results of the implementation of the Action Plan of HEADS in its first phase, the lessons learned and discussed the developments to follow. Cooperation for the planned UNITWIN Network was also addressed.

A UNITWIN Network between the World Heritage Centre, National Commissions and specialized institutions is under development. The project will primarily involve an interdisciplinary cooperation dealing with the natural history and cultural diversity related to human evolution: nature, human and conservation sciences (palaeoecology, archaeology, palaeoanthropology, heritage conservation). It will focus on fostering North-South-South cooperation and intersectoral collaboration with social anthropology, primatology, museology and educational sciences.

Since August 2008 close cooperation with scientific institutions of interdisciplinary research and applied research for conservation has been developed, including: Rock Art Research Institute/ University of Witwatersrand (South Africa), Muséum national d'Histoire naturelle (France), Università degli studi di Roma La Sapienza (Italy), Harvard University (USA), Consejo Superior de Investigaciones Científicas (CSIC, Spain), and University of Tübingen (Germany), among others.

Over 70 Permanent Delegations to UNESCO have been contacted in relation to providing information on the site managers and/or management authority of related properties on the World Heritage List and the Tentative List in order to establish cooperation and complete a questionnaire of the state of conservation the sites. Throughout the activities of the Programme, the Centre has been working in close cooperation with experts from Algeria, Angola, Argentina, Australia, Azerbaijan, Bahrain, Bolivia, Botswana, Brazil, Burkina Faso, Canada, Chad, Chile, China, Croatia, Denmark, Ethiopia, France, Georgia, Germany, India, Indonesia, Israel, Italy, Japan, Kenya, Korea, Namibia, Philippines, Russian Federation, South Africa, Spain, Sweden, Tanzania, U.K., USA, Zambia and Zimbabwe. An international roster of national experts and site managers of related sites has been established and is being developed to promote coordination between the World Heritage Centre, Advisory Bodies, experts, international institutions and site managers.

2

Action Plan on HEADS

The Bodo partial cranium (partial braincase and face).
Homo rhodesiensis, *National Museum of Ethiopia, Addis Ababa.*
Photo: Nuria Sanz (UNESCO/WHC)

The Action Plan on Human Evolution: Adaptations, Dispersals and Social Developments (HEADS) was approved at the 34th session of the World Heritage Committee in Brasilia, Brazil in 2010.

Objectives and Priority Actions

OBJECTIVE 1

CREDIBILITY

Scientific research underpins the actions of the Programme in evaluating conditions of authenticity and integrity, and Outstanding Universal Value (OUV) at World Heritage sites as well as yet-to-be inscribed sites, in order to ensure the future conservation of these vulnerable properties. The nature of the properties necessitates a strong cooperation between the fields of natural science and cultural science.

During the consultation process considerable emphasis was placed on the desirability of serial nominations of sites, site extensions and cooperation between sites to encourage local authorities and States Parties to collaborate and widen the responsibilities of nomination, conservation, research, documentation and management.

In addition to formal serial nomination, informal interaction can be encouraged by 'twinning' similar sites and exchanging information and skills.

PRIORITY ACTIONS

Action 1.1
Authenticity, integrity and justification of OUV

i. Facilitate support for the nomination process and preparatory International Assistance Requests.
ii. Elaborate methodologies for comparative analysis.
iii. Formulate specific guidelines for serial nominations.
iv. Explore all the possibilities of the application of criteria (i) to (vi) related to human evolution, as well as including extending the interpretation of criteria (viii).
v. Foster the collaboration of scientific institutions and Advisory Bodies in setting up scientific partnerships.

Action 1.2
Tentative Lists

i. Develop quality of inventories and available information to update and support the preparation of Tentative Lists, and promote the regional harmonization of Tentative Lists.
ii. Develop partnerships with special focus in under represented regions.
iii. Identify and prioritize serial nominations that will add to the credibility, representivity and balance of the World Heritage List for nomination before 2013, e.g. archaeological cave sites, or serial sites that have contributed to a better understanding of human evolution.

Action 1.3
Thematic Studies

i. Support the Advisory Bodies in updating their thematic studies on human evolution.
ii. Develop thematic studies according to the needs of the Programme and related World Heritage Committee decisions.

OUTCOMES

- Increased protection of sites related to human evolution through greater international attention and collaboration.
- Developed partnerships with a special focus on under-represented regions.
- Production of scientific and technical material to support the World Heritage Committee in taking well-informed decisions.

PERFORMANCE INDICATORS

- Number of nominations submitted.
- Number of researchers and research institutions involved.
- Number of technical discussion documents prepared for meetings.
- Number of international meetings.
- Number of international research congresses in which human evolution and World Heritage is presented.

BENCHMARKS

- 3 nominations submitted by 2013.
- 1 serial nomination by 2013.
- 1 applied research for conservation workshop.
- 3 international meetings.
- Participation in 3 international congresses.

OBJECTIVE 2

CONSERVATION

PRIORITY ACTIONS

Action 2.1
Conservation

i. Develop archaeological impact assessment guidelines for sites.
ii. Foster low-cost methodology to monitor OUV *in situ*.
iii. Promote applied research for conservation: research and technology.
iv. Develop protocol and/ or international standards of intervening in sites such as caves.
v. Support of programmes to improve the conservation of related sites and ensure their long-term safety through guidelines and best practice manuals for conservation, and implementation of new technologies.
vi. Develop mechanisms to evaluate feasible tourism impact for related sites.
vii. Proactive application of the World Heritage Convention to promote large-scale conservation methodologies.
viii. Provide case studies of advanced research for conservation and increase access to best practice case studies in cooperation with related institutions.

OUTCOMES

- Increased protection of vulnerable sites (both inscribed and yet-to-be inscribed).
- Updated and developed scientific research to extend knowledge and understanding of human origins.
- Advancement of conservation methodologies.
- Implementation of conservation protocols/guidelines for related sites.
- Establishment of guidelines for intervening in caves
- Formulate guidelines for archaeological impact assessment.

PERFORMANCE INDICATORS
- Number of guidelines finalized and published.
- Number of sites implementing low-cost methodology to monitor OUV *in situ*.
- Number of case studies in conservation at sites.
- Number of curators and conservation institutions involved.
- Number of international meetings.
- Number of institutions associated to the initiative; number of users of the web portal.
- Number of completed archaeological impact assessments on related sites.

BENCHMARKS
- 1 set of guidelines for intervening in caves.
- 1 set of guidelines for archaeological impact assessment.
- 1 applied research for conservation workshop.
- 2 international meetings.
- 5 sites implementing low-cost methodologies to monitor OUV *in situ*.

OBJECTIVE 3

CAPACITY BUILDING

Strengthen support within the relevant global, regional, national and local institutions to develop management capacity, training initiatives and information exchange, in concordance with the broader mandate of UNESCO as the UN intellectual arm, in particular for establishing global knowledge networks and developing national capacities.

PRIORITY ACTIONS

Action 3.1
Management training
i. Strengthen the capacity of World Heritage property managers to ensure management effectiveness for related sites.
ii. Implement management regional programmes for site managers.
iii. Explore opportunities in all regions concerning related sites in the framework of the Periodic Reporting Exercise.

Action 3.2
Cooperation in training
i. Explore joint private-public sector practices to identify best training practices and ensure funding sustainability.
ii. Develop training twinning initiatives between sites.
iii. Promote inter-institutional cooperation between international higher learning institutions, National Commissions and UNESCO Category 2 Centres to foster current and potential expertise and research exchange, North-South-South cooperation, and information dissemination and application.

Action 3.3
Training and awareness-raising initiatives
i. Develop national capacities through up-to-date training initiatives to foster awareness-raising policies, guided by the Advisory Bodies, World Heritage Centre and academic institutions.

Action 3.4
UNITWIN
i. Implement training and research initiatives in the framework of the UNESCO UNITWIN network in collaboration with international and national institutions and National Commissions.

OUTCOMES
- Increased global, North-South-South, and inter-institutional cooperation.
- Strengthened national and regional capacities.
- Identification of funding opportunities to support sustainability of Programme activities.

PERFORMANCE INDICATORS
- Number of training workshops, number of trainers and trainees.
- Number of resource materials.
- Level of expertise involved and extent of regional balance.
- Number of institutions involved.

BENCHMARKS
- Launch of a UNESCO UNITWIN network and organization of at least 3 on-site training workshops.
- Number of trained people.
- Number of exchanges between site managers and partners through the web site of the Programme.
- 2 training courses through a UNESCO Category 2 Centre.
- E-learning modules developed in collaboration with the academic institutions and the Advisory Bodies.

OBJECTIVE 4

COMMUNITIES

The promotion and development of communities at international, national and local levels is a vital constituent in supporting the implementation of the Programme and ensuring complementary actions, synergies and sustainability.

PRIORITY ACTIONS

Action 4.1
Scientific communities
i. Establish a core interdisciplinary Working Group of experts as the source of ongoing scientific reflexion, information exchange and future actions of the Programme to work in close collaboration with the World Heritage Centre.

Action 4.2
Local communities
i. Strengthen the role of local communities in and around properties and encourage their active participation in maintenance, conservation and management.
ii. Explore the possibilities of pilot projects on the relation between conservation and sustainable development at local level.
iii. Cooperation with indigenous communities.
iv. Develop community engagement strategies; explore the relationship with a wider range of heritage values.
v. Develop participatory methodologies with local communities.
vi. Integrate the potential for the development of sites through sustainable cultural tourism for the benefit of local communities.
vii. Ensure management systems include proactive and cooperative community involvement.
viii. Evaluate the benefit of World Heritage status for related sites.

Action 4.3
National communities
i. Develop greater cooperation between States Parties, National Commissions and private and public national institutions, particularly in the updating of Tentative Lists.

Action 4.4
Global community
i. Development of a World Heritage community for the Programme at international level to promote collaboration between site managers and States Parties for research, capacity-building, training courses, field schools, exhibitions and exchange programmes at sites.
ii. Development of actions for greater public involvement.
iii. Explore the possibility of World Heritage youth initiatives in the framework of Programme objectives.
iv. Encourage participatory methodologies to improve knowledge and appreciation of non-monumental and vulnerable World Heritage sites, and diversify the range of evaluation methods of sites.

OUTCOMES
- Increased cooperation with local communities in all decision-making processes for conservation and management activities of sites.
- Updated Tentative Lists of States Parties.
- Greater flexibility in exchange of conservation methodologies and technical expertise.
- Increased awareness for early sites related to human evolution and their ties to cultural diversity.

PERFORMANCE INDICATORS
- Number of training workshops.
- Number of resource materials.
- Participatory level of local population.
- Number of participants in international exchange programmes.
- Number of local practitioners participating in decision-making processes.

BENCHMARKS
- 2 on-site pilot project in community participation.
- 1 educational programme in conjunction with World Heritage in Youth Hands.
- Exchange of information between scientific community, local communities and the World Heritage community through the website.

OBJECTIVE 5

COMMUNICATION

Launch a broad-reaching communications strategy, with scientific rationale as the core objective, seeking to strengthen knowledge dissemination and enlarge the awareness of the values of the properties.

The strategy will be aimed at building bridges between the scientific/academic communities and the wider general public.

PRIORITY ACTIONS

Action 5.1
i. Implement a broad international communication strategy, focused on highlighting the scientific values and integrity of related properties.
ii. Prepare an International Campaign in 2013.

Action 5.2
i. Launch of web page for Programme and related activities.

Action 5.3
i. Development of website and Rock Art World Archives, for conservation and comparative analysis in the nomination process (via Programme website). The website will also serve as an accessible networking system with information on the preparation of a nomination file or management plan, and available training and funding opportunities.

Action 5.4
i. Monographic HEADS publications as part of the World Heritage Papers series.

Action 5.5
i. Maintain and develop an international Scientific Working Group to support the dissemination of results.

Action 5.6
i. Awareness-raising programmes to encourage a platform of exchange of knowledge.

OUTCOMES
- Increased visibility of the Programme and its activities by the web page, international-regional campaigns, and publications.
- Greater public awareness of the authenticity, integrity and OUV of related sites.
- Permanent exchange of information between the World Heritage Committee and the human evolution research community.

PERFORMANCE INDICATORS
- Number of media outlets employed.
- Number of users of Programme web page (WHC portal).
- Number of users of Rock Art World Archives (WHC portal).
- Number of publications.

BENCHMARKS
- 2 media partnership projects.
- 4 publications.
- 1 international communication campaign created by 2013.

OBJECTIVE 6

COOPERATION

PRIORITY ACTIONS

Action 6.1
i. Cooperation with UNESCO Category 2 Centres to strengthen programme outreach and development of training and research initiatives at regional and international level.
ii. Cooperation with UNESCO Regional Offices.
iii. Signed collaboration agreements with research institutions.

OUTCOMES
- Increased access to and exchange of different methodologies, with greater emphasis on inclusive and contextualized approaches to nature/culture.

PERFORMANCE INDICATORS
- Number of management plans updated.
- Number of new conservation methods implemented following training.
- Number of Centres and Regional UNESCO Offices involved.
- Number of agreements signed with research institutions.

BENCHMARKS
- 2 training workshops held at Category 2 Centres.
- 3 Category 2 Centres involved.
- 4 regional UNESCO Offices involved.
- 3 contracts established with related institutions.

3

Conclusions and Recommendations

Aerial view, Swabian Jura, Germany
Photo : N.J. Conard

Human Evolution and the World Heritage Convention

Burgos, Spain, 21 to 25 March 2009

Prof. Ronald Clarke, Director of Excavations at Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs (WHL), South Africa. Photo: Nuria Sanz (UNESCO)

Criteria for evaluating human evolution sites

The discussion of Outstanding Universal Value (OUV) began with the identification of processes and related adaptations at the global level which need to be considered in the OUV of human evolution sites that could be nominated for inscription on the World Heritage List. The most contentious issue was whether or not the sites must include evidence for tool making capacity and/or tool use. It was generally agreed that in cases where artefacts were absent, other evidence of human biological or cultural evolution should be present. The starting date was placed provisionally at 2.6 million years ago, but there are no reasons for excluding older sites if they have the necessary evidence of human activity. Even relatively recent sites like Peştera cu Oase, Romania, have human fossils and no artefacts.

Human evolution sites in natural heritage properties. Beyond the questions about whether only humans possess culture, or whether or not the related sites can be seen as a record of cultural 'progression', the debate has a bearing on the difference between 'natural' and 'cultural' sites. Olduvai and Laetoli, for example, at the time of inscription, were part of the natural property of the Ngorongoro Conservation Area and have been renominated under cultural criteria. An important change seems to occur with the emergence of the genus *Homo*, but that should not imply that sites related to earlier ancestors should not be included in the category of human evolution as the World Heritage List needs to involve the broader picture. Collaboration with IUCN and ICOMOS is beneficial for evaluating sites or assessing the state of conservation of inscribed sites where human evolution properties are considered under both nature and culture criteria.

It was suggested that joint natural and cultural evaluations are needed for proposals containing significant data on fossil hominid sites. Environmental data from archaeological sites may be of great importance to evaluate the natural history of the site and to identify the OUV.

In later stages of human development, evidence for mobility and technology linked to pulses of colonization and territorial expansion and contraction are important in the broader context of human evolution, as well as material evidence of major biological changes and symbolic communication.

On the one hand, the World Heritage List should include a representative range of sites with evidence for key phenomena of Outstanding Universal Value. Uniqueness, on the other hand, can be relevant for human evolution sites with only one fossil specimen or for sites where new scientific breakthroughs have been made. Sites where no fossils remain, or where there is nothing left *in situ* for visitors to see, can retain OUV if the materials are documented and the information is made available to the public.

Authenticity and integrity are linked to scientific recognition (e.g. publications in international journals) and/or formal recognition by the scientific community after due presentation in regular international scientific congresses. The nomination file should provide evidence of the protection of the integrity of the site based on up-to-date scientific standards. Scientific research activity has to be an integral part of site interpretation. The nomination should promote further international collaborative work. Multidisciplinary research, as a part of the site's value, has to be taken into account as such for nomination. Palaeoecological studies, for example, are essential as human adaptation and evolution are highly dependent on climate and landscape changes. Interdisciplinary concerns are a priority for site interpretation, and should be reflected in nomination files. Such a concern is the best warranty to ensure the protection of the site's integrity.

Serial nominations. Some sites can stand by themselves. Serial nominations should be grounded on the narrative when a single site is not enough to justify OUV and when, considered together, the sites create a coherent whole of OUV. The nomination can include findings that are no longer connected with the sites themselves. The findings can be scattered around the world. Here it could be useful to form coalitions of institutions that house materials. Such collaborations could be formalized and supported.

Management plans must include interpretation of the site and clear information concerning material heritage conservation and access, as well as international and multidisciplinary collaboration. Ideally, there should be an interpretation centre with associated material heritage presentation and *in situ* didactic material. The nomination file, and especially the management plan, must show the clear commitment of local communities to ongoing projects as a warranty of their involvement in future development. Land ownership and traditional land rights must be clearly stated in the application (official documents, together with an estimation of potential future risks and impacts). They must be recognized and respected. The nomination file should reflect a respect towards the study of any traditional interpretation/use of the heritage.

(left to right)

Participants of the meeting, Human Evolution and the World Heritage Convention, 21 to 25 March 2009, Burgos, Spain. Photo: Kasman Setiagama © UNESCO

(from left to right) Prof. François Sémah, Her Exc. María Jesús San Segundo, Prof. Raymonde Bonnefille, Mr José Jiménez during Human Evolution and the World Heritage Convention, 21 to 25 March 2009, Burgos, Spain. Photo: Kasman Setiagama © UNESCO

Narratives and related thematic studies

The central narratives of human evolution to be represented in the World Heritage List include:

- Origins and diversity of hominins including the genus *Homo*, particularly values relating to biology and physical anthropology, genetics and social organization;
- Fossil traces of major cognitive steps;
- Fossil traces of technological innovations;
- Colonization of new environments; and
- Main dispersals in human history.

The following priorities were identified for thematic studies for comparative analysis:

- The oldest ancestors of human lineage (studies of extant great apes in relation to the oldest fossil hominins from Chad, Kenya, and Ethiopia);
- The colonization of new ecological niches;
- Adaptive capacities of hominids to severe environmental and climate changes, such as:
  - **2.6 million years:** Stone tool making, e.g. for the consumption of meat and bone marrow;
  - **1.8 million years:** Adaptive capacity to disperse into temperate environments;
  - **0.8 million years and 0.13 million years:** Hominins may have adapted to the use of caves, fire and systematic hunting, and had the ability to adapt to extreme environments (e.g. glaciation);
  - **Last Glacial Maximum then following global change:** Beginning of food production, and broad spectrum diet.

Recommendations for human evolution site nominations

The following recommendations were made regarding future studies on feasible nominations for human evolution sites:

IN EUROPE

- Earliest sites in Europe
  Main related sites (inclusive list): Spain (Atapuerca TD6, Sima del Elefante), Italy (Ceprano, Monte Poggiolo, Pirro Nord), Bulgaria (Kozarnica), United Kingdom (Happisburgh/Pakefield), Russian Federation (Rodniki, Bugatryi), France (Pont-de-Lavaud);
- *Homo heidelbergensis* consortium
  Main related sites (inclusive list): Spain (Atapuerca Sima de Los Huesos), Germany (Bilzingsleben, Mauer, Steinheim), France (Arago), United Kingdom (Boxgrove, Swanscombe), Greece (Petralona), Italy (Altamura);
- Neandertal consortium
  Main related sites (inclusive list): France (La Chapelle-aux-Saints, Le Moustier, La Ferrassie), Spain (El Sidron, Gorham's cave, Castillo cave, Zaffaraya), Germany (Neandertal valley), Italy (Saccopastore, Mount Circeo), Croatia (Krapina), Israel (Mount Carmel, Amud), Iraq (Shanidar cave), among others;
- Cro-Magnon consortium (anatomically modern humans in Europe)
  Main related sites (inclusive list): France (Cro-Magnon), Czech Republic (Mladec cave, Dolní Vestonice), Portugal (Lagar Velho), Romania (Peştera cu Oase), Russian Federation (Sungir), United Kingdom (Kents Cavern);

IN AFRICA-LEVANT

- South Africa: sites with early modern human fossils already on the Tentative List include Pleistocene occupation sites of Klasies River, Border Cave, Wonderwerk Cave and comparable sites relating to the emergence of modern humans;
- East African Great Rift Valley
  Main related sites sites (inclusive list): Ethiopia and Tanzania (Awash: Hadar, Gona, Dikkika, Galili, Melka Kunture, Konso, Omo and Feijej), Eritrea (Buya), Kenya: (East and West Lake Turkana), Tugen Hills, Kapsomin Hills, Chesowanja, Olorgesaillie, Tanzania: Peninj, Eyasi;

IN NORTHERN END OF RIFT VALLEY

- Israel (Ubeidiya);

IN ASIA AND THE PACIFIC

- Early modern humans in extreme environments of northern Asia
  Main related sites (inclusive list): Siberia, Altai (Denisova cave, etc., Mal'ta Buret'), China (Shuidonggou National Park, Zhoukoudian – Upper Cave Loc. 4 and 15 – Tianyuandong), South Korea (Sokchangui and Suyanggae);
- Early marine navigation of early and modern human dispersals
  Main related sites sites (inclusive list): Australia – New Guinea (Mungo), Indonesia (Java: Punung), Flores (Timor-Leste), Malaysia (Niah), Philippines (Tabon), Japan (Okinawa, Iwajuku). New Britain, Papua New Guinea;

IN THE AMERICAS

- Population of the America Continent. Main related sites:
  Brazil (Pedra Fourada, Santa Elina), Chile (Fell and Pali Aike Caves, Archaeological sites of the Chinchorro culture, Monte Verde), United States of America (Clovis).

(left to right)

Dmanisi Hominid Archaeological Site (TL), Georgia. Photo: David Lordkipanidze/ Georgian National Museum

Skara Brae (part of the World Heritage site, Heart of Neolithic Orkney), UK. Photo: Bernard Smith

On-site visit to Archaeological Site of Atapuerca (WHL), during Human Evolution and the World Heritage Convention, 21 to 25 March 2009, Burgos, Spain. Photo: Kasman Setiagama © UNESCO

Geoarchaeological excavation in the Middle Pleistocene Kapthurin Formation, Kenya. Photo: Gail Ashley




Thematic serial nominations

- The earliest food production
  Main related sites (inclusive list): The Levant – Southwest Asia, China, Meso-America. Later centres were northeast Africa, western Africa, Indus-Ganges Valley, Peru, Pacific (e.g. New Guinea).
- Early food production and environmental transformation in southeast Asia: agriculture
  Main related sites (inclusive list): south China (Hemudu, Pengtoushan, Bashidang, Shangshan, Kuahuqiao, Tianluoshan, LiangZhu site), northern China (Cishan, Niuheliang, Peiligang, Xinle, Xinglongwa, Yangshao), Japan (Sannai Maruyama).
- Coastal adaptation and maritime culture
  Colonization of the Pacific:
  Main related sites (inclusive list): Austronesian and Lapita Sites, Japan (Osanni), Korea (Amsa-dong), Philippines (Itbayat, Batan and Sabtang Sites, Nagsabaran Sites, Cagayan Valley), Indonesia (Minangsipakau, Sulawesi), New Caledonia, Japan (early Jomon sites).

Documentation, conservation and management

The Working Group insisted upon the importance of gathering and circulating information about management initiatives and strategies of World Heritage sites for the mutual benefit of good practice, links and contacts between different sites, exchange of experiences in site policies to improve management quality, and to highlight initiatives. The reinforcement of links and diffusion of scientific results through existing international academic networks, including universities, international societies (multidisciplinary) relating to quaternary geology, primatology, anthropology, archaeology, and funding agencies was also underlined. Documentation should be developed for education and training purposes, and information on what material is available and where it can be obtained should be made available.

Communication and collaboration

The experts proposed to improve communication by distributing a documentation form specific to World Heritage sites, Tentative List sites and other important sites. They suggested encouraging the establishment of a special website to be launched as part of the UNESCO web portal devoted to human evolution, World Heritage sites for scientific, conservation and dissemination purposes, with links to UNESCO Category 2 Centres for World Heritage, scientific communities (including funding agencies), and scientific journals. Special attention should be given to discrepancies in access to new technologies (IT, computers) in various countries, especially in Africa. UNESCO Category 2 Centres could help with documentation, website development, facilities, and diffusion of information within countries and between different Regions.

Organization of field schools on an international scale at specific sites was considered a crucial issue by the Working Group to collaborate with **training programmes**, including museology, to make profitable use of links with existing international programmes developed by ICOM, ICCROM, ICMAH, AFRICOM, AFRICA 2009 and others.

Travelling exhibitions are of special interest and impact, and could focus on World Heritage sites or on more general topics of educational interest (e.g. Darwin and human evolution).

Such actions can ensure publicity and visibility and provide information on the Committee's efforts to improve public awareness, related conservation or educational programmes, and provide specific opportunities for international collaboration as well.

The recommendations suggest the establishment of a Working Group, with close interdisciplinary connections with primatology and social anthropology; two scientific fields whose collaboration seems essential to develop current action in favor of human evolution sites.

Rock Art and the World Heritage Convention

uKhahlamba/Drakensberg Park, South Africa, 3 to 8 April 2009

uKhahlamba/ Drakensberg Park (WHL), South Africa. Photo: Aron Mazel

Criteria for evaluating Outstanding Universal Value

Rock art, the manifestation of human conceptual thought and beliefs by traditional societies, has endured for longer than any other global artistic tradition with the time range extending back more than 30,000 years on the walls of caves or shelters, and as much as 75,000 years on portable rocks. Rock art is present on every continent except Antarctica, and is found on small islands as well as large land masses, from the Arctic Circle to the tropical forests of Africa and South America. As Professor Emmanuel Anati from Italy said on the opening day of the meeting, 'Rock art is fundamental to World Heritage as the major archive of the history of humankind. It concerns ourselves as thinking people in a personal way that is nevertheless universal. Rock art is a vulnerable patrimony; what remains today is just a fraction of what existed'.

The World Heritage List should therefore reflect its importance and diversity worldwide in a representative, balanced and credible List. UNESCO, in turn, could exercise its mandate to recommend best practice management by all States Parties. Transfrontier nominations and serial nominations within countries are favored.

The generic criteria identified as important for the evaluation of Outstanding Universal Value of rock art sites for World Heritage listing are similar to those listed for human evolution sites. Criteria with more particular emphasis on rock art included the state of preservation of the physical environmental setting in which the rock art is found which is also an important aspect of the ambience and spiritual value for many cultures. While aesthetic quality and state of preservation of the rock art has value, it does not fully encapsulate the meaning of the art.

In evaluating the **distribution, quantity, quality and rarity** of rock art themes and traditions, it was strongly recommended that rock art sites be assessed in the context of the ideology and history of the people who created the rock art, the fabric of the site, its archaeological history and

its link with the landscape. An essential step in this process is the development of a database for each site. Research and documentation are essential requirements for inter-site comparison of OUV and to start and finalize the conservation and management plans.

Assessment of **authenticity and integrity** of narratives and themes in rock art highlighted the difference in values between rock art sites (with and without ethnographic records), oral history and the continued significance of the place. All sites should be evaluated in relation to the content of the rock art, the archaeological context, recording and documentation that demonstrates repeated use of particular images and themes (a tradition), and evidence for development of the painting tradition/s (e.g. monochrome to polychrome or changes in content of the manifestation). Sites with ethnographic information, oral history, or continued significance can include additional documentation, such as the continuity of beliefs and practices through time in descendant communities, continuity of the spiritual significance of the place, knowledge of the motivations and/or belief or ideological systems that inspired it, the socio-economic context of the rock art, and involvement of the descendant communities and/or artists in conservation management.

Recommendations to Advisory Bodies and the World Heritage Centre

- Involvement of ICOMOS scientific committees in future rock art research;
- Pre-nomination guideline document with special focus on comparative analysis of rock art sites and related standards for documentation, including authenticity;
- Scientific committee(s) for thematic subjects should work closely with the Advisory Bodies and the World Heritage Centre within the framework of the Action Plan;
- Revitalization of the work of the World Archive of Rock Art (WARA) for the purpose of adaptation to the work of the World Heritage Convention.

Thematic studies

The following thematic studies were proposed:
- Rock art in North America;
- Horn of Africa: Djibouti, Ethiopia, Somalia, Somaliland and Eritrea. There is a gap in knowledge of the rock art in these countries;
- Rock art and pastoralist/farmer traditions;
- The origins of rock art; and
- Interaction between contemporary traditional peoples and rock art.

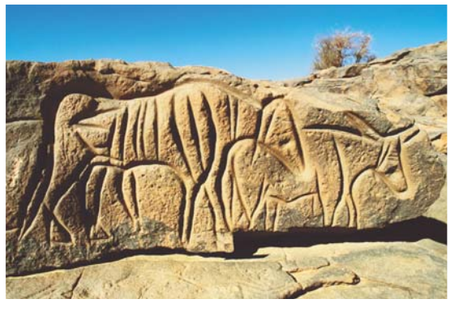
Other recommended studies:
- Ethics of management of rock art in relation to indigenous communities (sacred sites, contemporary hunter-gatherer societies, etc.);
- Re-evaluation of inscribed World Heritage natural sites with good examples of rock art manifestations which were not well recorded at the time of inscription, and provide case studies to improve integrated management for the site;
- Minimum standards for conservation of rock art (monitoring systems, low-cost tools);
- Register of threatened World Heritage rock art sites;
- Comparative analysis of methodology for the special purposes of rock art nominations.

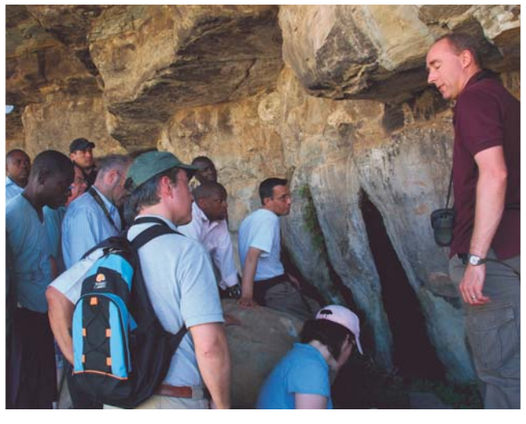
Further research of rock art sites

Serial nominations

Serial nomination and the extension of existing sites can be considered both within countries and across borders. Site extensions automatically increase the number of stakeholders and a strategy for relationships and resources is therefore needed. Similarly, joint management of sites can be problematic and the challenge is to harmonize legal frameworks, research background and policies.

Suggestions for further research:
- North Africa: recommendations based on the ICOMOS thematic study for the region could include serial transnational nominations in the Sahara and Sahel region, an extension of Tassili n'Ajjer linking Burkina Faso, Mali and other neighboring countries in the same geological and ecological region with rock paintings; and rock engraving sites in Algeria and Morocco;
- USA – sites in the southwest such as California, Utah and Pecos River sites that cut across into Mexico;
- Italy – extension of Valcamonica;
- Norway and Sweden – extension of Rock Carvings in Tanum;
- Chile and Argentina – extension of Cueva de las Manos in Patagonia;
- The Caribbean – serial transnational nomination in English, Spanish and French-speaking countries;
- Amazonia: Arawaq nomadic people have a link to the rock art. The inventory of rock art in Amazonia is spectacular. However, more information is needed on rock art distribution and context in this large area that spans five countries;
- Possible transnational serial extension of Archaeological Landscape of Tamgaly Kazakhstan to include sites such as Seymuli Tash and Syuleyman Too in Kyrgyzstan;
- Central Asia – petroglyphs in Siberia;
- Saudi Arabia – collective effort for Ha'il (including Shuwaymash) and Najran (Jabal Qara) near the border of Yemen, with a possible transnational extension into Yemen;
- India: Daraki-Chattan and Chatturbhatan Nala;
- China: Huashan in Guangxi Province, Helanshan in Ningxia Province;
- Australia: Dampier Cultural Precinct, Woodstock-Abydos-Spear Hill complex Kimberley, and Tasmanian Rock Art.





(left to right)

Engraved bulls, Messak Sattafet, Libyan Arab Jamahiriya.
© David Coulson / TARA

Participants of the meeting, Rock Art and the World Heritage Convention, 3 to 8 April, uKhahlamba/ Drakensberg Park, South Africa.
Photo: courtesy of Aron Mazel

On-site visit to Lower Mushroom Rock Shelter, uKhahlamba/Drakensberg Park during Rock Art and the World Heritage Convention, 3 to 8 April, uKhahlamba/ Drakensberg Park, South Africa.
Photo: Aron Mazel

Prof. Janette Deacon and Nuria Sanz during Rock Art and the World Heritage Convention, 3 to 8 April, uKhahlamba/ Drakensberg Park, South Africa.
Photo: Aron Mazel

Additional studies proposed

SOUTH AFRICA

- Possible extension of uKhahlamba/Drakensberg Park site to include a transfrontier agreement with Lesotho for an international serial nomination of the mixed site that will include rock art to the west of the current western boundary. The buffer zone needs redefinition, and areas to the north of the current boundary could include the Upper Tugela Valley, Golden Gate National Park and significant palaeontological sites. The southern and south-eastern part of the Drakensberg region will enrich the existing values linking biodiversity to rock art;
- Farmer rock art sites in the Makgabeng Mountains in Limpopo Province, as this tradition is missing from the current range in southern Africa and includes oral histories that assist in interpretation and understanding;
- Consider including rock art as a criterion in the Cederberg as part of the Cape Floral Kingdom.

ZIMBABWE AND BOTSWANA

- Zimbabwe and Botswana will be part of a recommendation to extend the Mapungubwe Cultural Landscape from neighboring South Africa.

MOZAMBIQUE

- The initial suggestion to nominate rock art in the Vumba area has been withdrawn in favor of a larger area that includes farmer art sites in the north.

ZAMBIA

- It might be possible to identify sites close to the border with Zaire at a later date once research has been done, and to identify the relationship with Chongoni Rock-Art Area in Malawi.

TANZANIA, KENYA AND UGANDA

- Newly-discovered sites in north-central Tanzania could be linked to Kondoa-Irangi;
- Nyero in Uganda could be linked to the hunter-gatherer and pastoral art tradition in the Lake Victoria zone of Tanzania, Uganda and Kenya.

ARAB STATES AND WEST AFRICA

- It was proposed that the North African sub-region of the Arab States Region, which includes at least Tunisia, Morocco, Libya, Sudan, Mauritania, Central African Republic, Cameroon, Mali, Niger, Chad, Egypt, Burkina Faso and Gabon, should be regarded as a single entity for the purposes of identifying rock art sites for future research. The reason is that they share the same geological formations, landscape and history of the same nomadic people responsible for much of the rock art produced over the past 10,000 years. The traditions were spread along ancient routes, such as the Salt Route.

- The following sites are recommended for further research:
  Morocco: Moroccan Atlas;
  Algeria: Saharan Atlas, Ahaggar;
  Mauritania: Adrar region;
  Niger: Aïr, Djado, Kawar, Niger River Valley;
  Mali: Adrar des Ifaros;
  Libya: Messak;
  Egypt: Giff el-Kebir, Nubie and Upper Egypt;
  Sudan: Engravings in Nubie;
  Burkina Faso: Revise the existing sites of Markoyu to be extended to the north; Ouen Pea Doketi to be extended to the west.

LEVANT

Israel: Mount Kharkom.

ARAB STATES

- Saudi Arabia: possible cluster of sites to the east and south of Ha´il, including Showaymas. All sites in the vicinity of Najran, especially at Jabal Qara to cover adjacent sites there.

ASIA AND THE PACIFIC

- India: Daraki-Chattan, Madhya Pradesh and Chaturbajan Nala, Madhya Pradesh;
- China: Huashan painting site, Guangxi Province; possibly Helanshan, Ningxia Hui Province;
- Australia: Dampier Cultural Precinct, Western Australia; cluster of Abydos-Woodstock-Spear Hill complexes, eastern Pilbara, Western Australia; Kimberley painting traditions (Wandjinas and Gwion-Gwion); representative sites of Tasmania.

EUROPE AND NORTH AMERICA

- ICOMOS thematic studies on rock art should prioritize studies of sites in North America which are well documented, recorded and researched, e.g. in western USA and in Canada;
- Finland: Finnish rock paintings could be connected to sites in Russia, Sweden and Norway;
- Possible extension of Tanum in Sweden to Begby in Norway;
- Possible extension of Valcamonica to Valtellina, both in Italy;
- Possible extension could be considered for Gobustan Rock Art Cultural Landscape, Azerbaijan;
- USA: Hawaii, cluster of several representative sites.

LATIN AMERICA AND THE CARIBBEAN

- Peru: consideration is needed to be given to the Lines and Geoglyphs of Nasca and Pampa de Jumana as sites related to rock art;
- Argentina: Quebrada de Humahuaca as a rock art site and cultural landscape;

(left to right)

uKhahlamba/Drakensberg Park (WHL), South Africa. Photo: Frans Prins

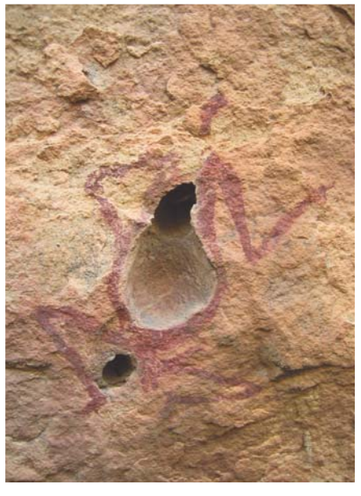


Image of goddess Alia with zoomorphs, Jabal Qara, north of Najran, Saudi Arabia. Photo: Robert G. Bednarik

Cave of Altamira and Paleolithic Cave Art of Northern Spain (WHL), Spain. © WHC/UNESCO

- Full understanding of rock art sites in areas nominated for natural values, for example, Ichigualasto – Talampaya (Argentina), Noel Kempff Mercado National Park (Bolivia), Pantanal Conservation Area (Brazil) and San Pedro de Atacama on the Tentative List (Chile);
- Serra da Capivara (Brazil): a possible extension is under consideration. Unify sites within the Parque Nacional da Serra das Confusões which includes 120 sites in an intermediate area between the two parks;
- Fuerte de Samaipata (Bolivia): extend the natural and archaeological values by 256 ha to join with the natural values of the Valles Cruceños, Parque Nacional Amboró, under consideration;
- Cueva de las Manos (Argentina): Extend the area of Cueva Las Manos encompassing sites of the Pinturas River and others on the central plateau of Sta. Cruz (Estancia La María), under consideration;
- Possible joint transfrontier nomination for the rock art of Patagonia (Chile and Argentina).

Recommendations for good practice

Conservation and training

The importance of conservation is clear, but we need a proper strategy for conservation that considers both the rock art and the rock on which it is placed in order to preserve the physical properties of both. One method is to control access to sites or close them to the public. Examples that show the value of controlled access were cited in Spain, Portugal and in Malawi (Chongoni Rock-Art Area) where different angles had to be considered. Lower visitor numbers can mean less income for management. Visitors have to be persuaded to agree to the protocol for behaviour at rock art sites. Implementation needs more rock art specialists and cooperation is required to train the new generation and to pass technical skills on to custodians, especially people in local communities. This will raise awareness so they can teach others, but even people who have been in positions for a long time need capacity-building and re-training. It was recommended that robust guidelines for excavations in rock art sites be developed to ensure conservation of the art. Sites should be kept as 'virgin' as possible by using recyclable and reversible materials with wind or solar power, as at Twyfelfontein in Namibia. It was agreed that although boardwalks can be helpful, on-site infrastructure must be carefully planned. Protected areas need to have a policy for the use of natural resources by stakeholders and local communities.

Documentation and interpretation

On-going research is essential to keep the information at World Heritage sites fresh and interesting for public use. Experiences in rock art conservation, management and preservation can also be documented and shared. Holistic interpretation of rock art is required to understand the interaction between the past and the present and to communicate the value of the site to the public. Loss of spirituality and sense of place reduces authenticity at rock art sites and the placement and type of information provided should be carefully considered to put rock art in the context of the archaeology and the site as a whole. Interpretation is site-specific and this should be documented and explained to visitors.

Management and tourism

The World Heritage Operational Guidelines make management plans essential in the short and long term, but are they enough? Does the generic system for management plans need rethinking? We need generic and site-specific management plans for rock art, and management plans came under intense scrutiny during discussion. Many management plans are written according to a formula and are often not fully implemented. Some participants thought that insufficient attention was paid to clarifying management and personnel structures, and how the individual management partners are coordinated. Proper communication and synergy are needed, especially where different departments for nature and culture are involved. Managers should therefore think positively and constructively about how to overcome the legacy of a wilderness area in the management of the uKhahlamba/Drakensberg Park so that the cultural heritage is managed on an equal basis with the natural values. Management plans must help managers to face daily problems, including issues such as solid and liquid waste and pollution. Local communities must be involved in management and decision-making and the same applies to descendant indigenous communities whose views on the management of rock art should be considered. While the participation of local communities is good, we should also help local people to be independent entrepreneurs. Managers often need training in tourism management. Many site managers are frustrated that heritage is not properly resourced, even at World Heritage level. Perhaps strategists and fundraisers for World Heritage sites also need training. Consider ways in which people with disabilities can enjoy the sites – websites and interpretation centres are useful in this regard. In general, we need better quality control mechanisms to critique the work being done and managers can help the World Heritage Committee to identify how difficult their task is on a daily basis. There is no doubt that there is need for a management system that follows a broader approach with fresh theory and methodology.

In terms of methodologies and guidelines, site managers would benefit from techniques for rapid assessment of impacts on the cultural and physical condition of rock art sites, as well as guidance on the ways of gauging social, cultural and economic impacts. It seems to help management if the intention to intervene in the landscape is explained by understanding the territory as a socio-cultural space described in terms of past and present geology, geography, geomorphology and bioclimate, and how topographic and geomorphological links have been taken into account in defining the limits of the site.

It would be beneficial if management plans for World Heritage rock art sites indicate precisely how the rock art sites are to be protected to: maintain their integrity and avoid vandalism; regulate the use of the sites, whether or not they are open for public use; and specify limitations or prohibitions related to responsibilities of institutional staff with regard to research, protection and conservation, together with the means of regulating such prohibitions.

(left to right)

Kaafjord covering,
Rock Art of Alta (WHL), Norway.
© Alta Museum IKS

Prof. Hugh Brody,
Dr Nuria Sanz and
Prof. Emmanuel Anati with
JD Roberts-Pager Collection
of San rock art copies,
Rock Art Research Institute,
the University of the Witwatersrand,
South Africa.
Photo: Eric Esquivel (UNESCO)

Áísinai'pi/ Writing-on-Stone (TL),
Canada.
Photo: Julie MacDougall

Prehistoric Properties and the World Heritage Convention

Manama, Bahrain, 10 to 14 May 2009

Mount Carmel, Pre-historic Sites: Ubadiyya, Sha'ar Hagolan, Mount Carmel (TL), Israel. Photo: Nuria Sanz

Criteria for evaluating Outstanding Universal Value

The related area of study accounts for the vast majority of human existence. So do the many biological, behavioural and technological changes which then shaped the future course of humanity as we know it today. Very few of those started recently, in historic times: the area of study actually holds the root of almost everything. This long process has increasingly transformed the human experience from life in a natural environment to life in a largely built environment, from a hunter-gatherer lifestyle, through the more settled ways of life of farmers, herders, and fishermen, to the present day – when for the first time a majority of human populations now live in the artificial built environment of cities.

Over this immense span of time, human lineages have exhibited again and again a remarkable capacity to adapt, expanding from the tropics to a wide range of ever-changing environments, from equatorial regions to Arctic ones, from continents to islands, from lowlands to high altitudes, from deserts to wetlands. The diversity of human heritage is represented in these sites across the world that preserve the invaluable record of early human history.

A recurrent pattern in the related sites is a sequence of events, when an innovation in one domain has large consequences in others. They do not imply superiority of one group or domain over another, but rather the human ability to innovate and adapt. Among examples of major innovations are:

Hunter-gatherer adaptations

A key early step – still uncertainly dated – was the stage when human beings became active hunters, rather than scavenging meat from the bodies of animals dead by other means. Another was the skill of gathering, of knowing just where and how to find plant foods. And these early skills were sequentially augmented by more effective and productive skills and technologies in preserving and storing food, in gathering, hunting and fishing; the last linked in turn with the arts of boats and navigation. The success of this adaptive flexibility is shown by the extension of human settlement to all the regions of the world, including the cold and hostile, by hunter-gatherers, even before extra possibilities were opened up by the domestication of plants and animals.

Stone-workers' skills

The stone artefact record, beginning more than 2 million years ago, shows a developing skill in working stone, alongside a better knowledge of the properties of different stones. Better skills enabled new uses of stone tools and their greater efficiency. Better knowledge prompted the exploitation of varied and exotic types of stone, their specialized uses, and the transport and movement of stones from remote places. All these changes had major consequences for human contact, social exchange, and social differentiation.

Seafaring

The ability to organize navigation is a step opening up the water alongside the land to controlled access – navigation, more extensive fishing, transport and exchange of goods over long distances, access to islands and far continents, and the emergence of cultures more united by maritime features than by the land component.

Plant domestication

Hunter-gatherer life-ways are almost invariably mobile, and so are most herding economies. Because growing plants do not move as animals do, plant domestication prompts people to settle in one place, in a newly sedentary way of life where they build permanent structures, develop a different kind of social structure, and take steps towards urban life.

Participants of the meeting, Prehistoric Properties and the World Heritage Convention, 10 to 14 May 2009, Bahrain. Photo: courtesy of Margherita Mussi

Megalithic engineering – 'megalithism'

The skill of building with great stones is an engineering craft. The constraints of mechanics direct the engineering options, so there are strong similarities, even identities, between megalithic constructions in ages and regions far separate from each other. And those similar constructions may not have equally similar cultural meanings. Megalithic constructions, importantly, have 'presence' and visual impact on visitors today which gives them a place in the modern response to archaeological traces, and a value therefore for the List today which goes beyond what their strict research merit may offer.

The craft of the metalsmith

Alongside the changing skills in using natural materials (such as stone, see above) are the completely new skills of making artificial materials, such as ceramics and metal. In turn, metalworking prompts the quarrying of raw materials and long-distance transport. Metal objects also lead to new symbolic meanings, the recycling of raw materials and new techniques for warfare.

Integrity, rarity, quality, research

The integrity of the sites can be identified by their social-functional, historical-structural and/or visual aesthetic integrity. Sites of hunters and gatherers are found all over the world, but in varied regions they show early evidence of differentiated social forms and technical systems for hunting, shaped by such factors as climatic conditions, location, natural resources and contacts with other societies.

Some types of sites are widespread and numerous, some are narrowly distributed and rare. Their integrity and quality depends, above all, on their physical conditions. Only a very few sites are well preserved in very dry or waterlogged environments. And those environments are easily impacted, so the fragile site is lost. Sites with exceptional preservation are rare and precious.

Above all, then, the record is varied showing traces of very different types: the unusual – even unique – and the commonly repeated, settlements, ritual places, burials and cemeteries, defended and undefended sites, traces of mobile ways of life as well as settled villages by the rivers, remnants of cultures leaving rich material traces and of cultures which leave little physical trace, evidence of high engineering like the megalithic sites, and those using the simplest physical means.

The way of life of the hunter-gatherers barely survives in the modern world. Yet it can be remembered over a vast spatial and temporal span from this record.

Since they have greatly deteriorated over very long periods of time, these vulnerable, small-scale and fragile sites are in urgent need of specialized and multidisciplinary research and conservation efforts. Sites with preserved bone material, either as food remains or used for tools, can be rare. Interdisciplinary research including archaeology, anthropology, ethnographic and ethnohistorical studies, palaeontology, palaeobotany, palaeozoology, and other allied sciences is essential to understanding the totality of the behaviour.

Useful features in evaluating quality and rarity include:

- Scientific value and potential of the property. This often needs a multidisciplinary approach for full investigation;
- Rarity of the type of remains;
- Chronology. Some periods are well represented and others are ill represented in the known record;
- Long or repeated cultural record. As the area of focus covers a long time-span, the depth to understanding sites which, in themselves show a long-term record, have extra merit;
- Quality of the physical environment in which the site(s) is/are placed. It may show minimal change over time or it may be entirely transformed;
- Material quality of the site. A broader notion of 'aesthetics' must be used than our contemporary responses to our own culture;
- Management status and conservation plans.

Visibility

The archaeological traces are often slight. Ancient hunter-gatherers most often leave only pieces of broken stone scattered enduringly on the land.
Any remains of impressive, large structures have usually been eroded away. Only a few stones may survive where there was a busy and crowded village. The organic materials – wood, textiles, basketry, leather, bone – are not directly visible in the remains we now have.

A few sites have 'presence' – the grandeur of an engineered monument like Stonehenge, the mound tens of metres high where an ancient village flourished for millennia, or the military defenses which still impress today.

But these are exceptions. Most sites were never monumental, and today they are hard to see, or visible only to the expert eye, or become clear only when the cultural layers are interpreted by research science.

Good interpretation and presentation is essential for these sites to be understood today – either at the site or in a museum. An on-site museum or information centre is often a good solution. Reconstruction of ancient structures and re-enactment of ancient crafts and technologies are a vivid and proven method of making the sites come alive today. Education is key.

Our cultural world today builds great structures, and that is what our eyes are accustomed to. In recognizing the importance of these sites, we must be ready to respect places and cultures which speak more quietly than ours does. Inscription on the List is an opportunity to recognize some kinds of sites which are of first importance but are not visually compelling.

Diversity

Many types of sites have been identified in documentation systems. Acknowledging that most sites fall into multiple categories, the following list can be used as a general guideline for the diversity. They highlight the need to establish a dialogue between conservation and research that will lead to a pragmatic classification for operational purposes.

- Deposits useful for the reconstruction of paleo-environments;
- Deposits with human remains, including intentional ones such as burials, burial mounds, megalithic graves;
- Evidence of human settlement in the open and in caves, be it ephemeral or long-lasting as in tells, with and without added structures, monumental, or scarcely visible as in kill and butchering sites;
- Mining sites and quarries, refuse deposits;
- Caches, abandoned or lost equipment;
- Artificial modification of the environment, as in hunting, fishing and drainage systems, ditches and enclosures, salt working sites, pottery production;
- Places with sacred or spiritual value related to criterion (vi) and associative cultural landscapes;
- Cultural paleo-landscapes;

Archaeological sites of the Chinchorro culture (TL), Chile.
Photo: Nuria Sanz (UNESCO)

- Sites important for the history of science, as Zoukhoudian, Cro-Magnon, Balzi Rossi, Altamira;
- Human mobility: traces of long-term repeated human movement;
- Sites with evidence of trade.

For the purpose of the Action Plan, we also take into account related archaeological sites included in natural World Heritage properties, which should be properly managed and conserved.

Geographical distribution

As the sites are very diverse, and because that diversity means they are found in every Region of the world, adding more sites to the List also provides an opportunity for the Committee to adjust its regional balance. Beyond the associated values and collective mainstay of the historical record, other alliances could also be envisaged.

Because the frontiers of modern nation-states were fixed in modern times, regional groupings in relation to the Programme only coincide rarely with national boundaries. There is a great opportunity here for the List to demonstrate its world concerns by transfrontier and transnational nominations which group together sites which in their own time formed a coherent ancient grouping but are now separated between different countries. A case in point would be the traces of the Lapita culture, a maritime phenomenon distributed across the shore-lines of a dozen nation-states in the western Pacific.

Serial nominations

For many sites related to human evolution in particular, a set of World Heritage values cannot be properly represented by one site, or by one or more sites in one country. Similarly, small sites of significance that provide one important piece of a larger puzzle are better grouped with others to justify the OUV collectively and share the benefits of World Heritage listing. Transnational or national serial nominations in such instances complete the body of evidence for OUV.

The following issues on the benefits of serial nomination were raised during discussions at the meeting:

- Concerning serial nominations, collaborating governments need to share the same interests with their collaborators and have a common philosophy to avoid the pressure of commercial interests vs. the ownership and commitment of local communities at individual sites;
- It was recommended that each of the sites within one or more countries contributing to a serial nomination should have its own conservation plan (more than the effective management system requested in the Operational Guidelines) as well as develop a common conservation policy for the property as a whole..

The process of serial nomination could implicate:

i. Conceptualizing the broader context of inscribed sites to enable other sites to be added, as has been done for Hadrian's Wall that was inscribed in 1987 and is now one of the series of sites included in the World Heritage property, Frontiers of the Roman Empire (Germany, UK);
ii. Compiling thematic studies and then selecting representative sites. The following suggestions were made for possible thematic studies and serial nominations:
    - Human evolution and the dispersal of modern humans;
    - Introduction of metallurgy;
    - Early trade in the Middle East and the Mediterranean;
    - The spread of farming;
    - Human development and adaptation in the Palaeolithic;
    - Megalithic phenomena (including Out of Europe);
    - Dispersal of early cultures in the Pacific Islands (partly addressed in Lapita and other thematic studies).

The benefits of serial nominations include the following:

- Questions that need to be answered by research to broaden understanding, according to thematic studies and needs identified by IUCN and ICOMOS, can be addressed with a shared research programme either within the country or internationally. This might involve the shared use of expensive equipment, cartography, dating facilities, personnel, expertise, analytical procedures, conservation and research support:
- Serial nominations have the power to improve management as the countries have to work together. The management plan process starts bottom-up and mobilizes resources. Each State Party could identify a team of appropriate people appointed to put the nomination together. The collective responsibility improves the likelihood of efficient and effective management that will keep the resource safe for the future.

Case Study: **Process of nomination of the Burial Ensembles of Dilmun and Tylos**

The serial property, formed by 11 sites, was included in the revised version of the Tentative List of Bahrain, submitted to the World Heritage Centre in May 2008.

i. The text of the Tentative List has been examined by the group and some elements have been discussed:
    - OUV of the property is expressed through the selection of the 11 sites which cover the defined period of time (Dilmun and Tylos);
    - Comparative analysis has been identified as the part which will certainly need to be carefully developed in the nomination file;
    - Limits of the 11 sites will correspond to the archaeological areas which are currently in process of registration as national heritage which will provide them with a legal protection;
    - Buffer zones will be a complex component to deal with since they will be different from a site to another, not necessarily being defined to face the same threats.

ii. Concerning the future development of the project of nomination, the ongoing phase of establishment of official maps showing the delineation of each of the 11 sites is a crucial step. Once finalized, these maps will be registered by the urban planning services and will be raised to the highest level of the Government with reference to the decision of the Council of Ministers which approved the nomination of the Burial Ensembles of Dilmun and Tylos for inscription on the World Heritage List, on the basis of the text of the Tentative List.

    The following step, once the legal protection is ensured, will be to work on the definition of the buffer zones in order to launch the necessary negotiations in view of their official registration.

    The issue of the immense quantity of elements gathered at the sites and stored for many years will need to be addressed: how to treat the data and manage the information made available?

    The study of the archives and the publication of the results of years of investigations will also need to be seriously addressed.

iii. The issue of the involvement of the local communities is also very complex in this project. These local communities are multiple, due to the number of components and their location in the territory of Bahrain. The important interpretation work which will need to be put in place will rely on staff essentially hired at local level.

(left to right)

Prehistoric Properties and the World Heritage Convention, 10 to 14 May 2009, Bahrain. Photo: Wilfredo Ronquillo

Burial Ensembles of Dilmun and Tylos (TL), Bahrain. Photo: Wilfredo Ronquillo

Recommendations

Documentation priorities

The UNESCO Operational Guidelines request documentation for all nominations, but the Working Group felt it necessary to emphasize the need for full documentation of the related sites. They are a special case because the archaeological investigation process often destroys the evidence. Documentation is therefore one of the main pillars of the OUV as it keeps the values alive. When gathered together and harmonized, full documentation of all research results is invaluable for comparative analysis of archaeological sites.

High standards for documentation send a clear message from the World Heritage Committee that the fieldwork of scientists and conservation specialists must be integrated and documented, particularly when publication of the excavation results is not enough.

Apart from aiding in comparative analysis, documentation also contributes to the understanding and management of sites. It is therefore good practice to update the documentation and add the results of continuing research. New sites can be found even at well-known World Heritage sites and it might be necessary to alter management plans accordingly.

Long-sequence sites are particularly vulnerable to natural erosion and to accelerated erosion from visitors walking close to open sections or into excavated areas. Such damage can seriously diminish the value of a site if sections collapse or layers are eroded away forever. Because of the large variety of related sites and their individual needs, it would be useful to investigate case studies and recommend tested methodologies for preserving the long sequences of caves and open sites. Site managers working on typologically comparable sites could meet to discuss problems related to taphonomy and deposit conservation.

Documentation of all conservation interventions is essential when preparing a management plan, and plans for conservation of the site should be built into the earliest stage of planning to improve the documentation system. Guidelines for documentation of the related sites, based on several case studies, would be useful. The guidelines could include a common system of documentation, possibly based on CIDOC or UNESCO databases, to manage data and the state of conservation.

Documentation systems benefit from cooperation and interchange of expertise. Successful documentation programmes may serve as examples of good practice and might include:

- Scientific committees regularly working with representatives from similar sites;
- Operational training structure;
- Site managers from similar sites working with a scientific committee to identify the documentation needs, training needs and target groups;
- Exchange of best practice through email without expensive physical meetings;
- Identification of actions to be taken at a site-to-site level.

(left to right)

On-site visit toBurial Ensembles of Dilmun and Tylos during Prehistoric Properties and the World Heritage Convention, 10 to 14 May 2009, Bahrain. Photo: Wilfredo Ronquill

Documenting a Quarry site in the Canadian Arctic. Photo: Daniel Arsenault

Conservation

Recognizing the value, fragility and low visibility of the sites require an active conservation programme, particularly associated with visitor impact, ongoing erosion and decay.

It is recommended that a conservation plan be submitted together with the management plan, or be incorporated into it, at the time of nomination. Ideally, a conservation plan should at least include a thorough condition report, an assessment of threats, and plans for conservation of the OUV of the site[1].

The preparation of conservation plans is not yet standard practice at sites. It would therefore be helpful to refer to one or more case studies and identify what to address in a conservation plan for a related site. Examples could be drawn from Stonehenge, Head-Smashed-In Buffalo Jump, Rapa Nui National Park, and others.

Conservation and documentation are key factors for intellectual rather than physical access. Long sequences need long-lasting conservation methods to preserve the remaining *in situ* deposits. Interpretation should be provided to show visitors what the significance is. Best practice is needed for the protection of sections (exposed and covered), middens, open sites with scatters of artefacts, tells, mounds and graves.

At some sites, conservation plans need to address the treatment and conservation of human remains. Research guidelines should specify what sampling methods will be preferred. It is recommended that whenever relevant, human remains be treated according to the preferences and habits of the local and/or descendant community and their spiritual proscriptions must be given precedence in the conservation plan.

A conservation plan could also address values identified in the vicinity of the site. This would include the views of and from the sites themselves, and it is recommended that these be measured and prescribed in the nomination file.

As multidisciplinary research is needed for the conservation, each site will need a different set of expertise. Expert advice could be obtained from site managers, scientific institutions, UNESCO, Advisory Bodies and academic and practical training institutions. Ideally, multidisciplinary research should be linked to teaching or mentoring programmes designed to meet the needs arising from problems identified at sites of a similar type. The target groups should be carefully identified so that those who need the training are indeed available to attend and the programme can focus on learning outcomes for the individual participants. This could lead on to individual programmes for exchange of personnel site-to-site and between institutions.

The sites concerned are also remarkable in terms of the World Heritage criteria and OUV because of the movable objects and evidence recovered during research. The special value of the associated material heritage should therefore be included in training as it helps the site managers to ensure OUV and dissemination of knowledge. This was well illustrated during the meeting in the example from Lithuania. The location for re-enactments and use of replicas should be carefully chosen and documented.

Management

Special needs are required with regards to management. Although the Operational Guidelines and the guidelines for management plans for World Heritage sites are clear and comprehensive, there are some management issues that are specific to these sites or that need to be considered differently from others.

Stakeholders

By definition, the types of sites that are dealt with in the Programme are rarely used for the same purpose today as in the distant past. Local communities are often unaware of the OUV and may have no interest in, or relationship to, the ancient inhabitants. Conflicts may therefore occur out of misunderstandings and perceptions of value, particularly when land ownership, land use and

1. See Operational Guidelines for the Implementation of the World Heritage Convention (2008), pp. 108–118. http://whc.unesco.org/archive/opguide08-en.pdf

financial matters are involved. In other cases, descendant communities still have strong ties to the land and their traditional knowledge and ownership must be respected. The following comments were made by delegates at the meeting to highlight some of the issues faced when dealing with the related sites either on the World Heritage List or proposed for nomination. As one participant remarked, managers of World Heritage sites might be caring for sites that are not of their culture, but are part of their history.

- Identification of stakeholders is a challenge. In such cases, it is necessary to identify the relationships between stakeholders and values and ensure that the OUV is respected;
- Public awareness and education is necessary to prevent destruction and maintain integrity, but this must be done in collaboration with the local community to discover their values and perceptions so that both parties understand each other. Impoverished people should be given alternative resources in compensation for what they might lose through protection;
- Some form of local government or community regulatory system and policy must be in place to ensure the preservation of the site for the future.

Visitation and visitor management

World Heritage sites are frequently developed as tourist nodes and their management becomes increasingly focused on visitor income rather than maintenance of the OUV. The low visibility and fragility of many of the related sites can lead to further erosion of the significance of the place and delegates made the following remarks in this context.

- Monitoring and condition reporting is essential for the preparation of visitation policies and public access. Decisions should be based on the condition of the site, needs and requirements of stakeholders and the OUV. All stakeholders must have clear and continuous involvement from the earliest stage of application;
- Vulnerability and public safety should guide decisions on infrastructure for visitors.

Movable artefacts

Surface artefacts such as stone tools, bone and pottery are found at many of the sites, adding to the interest of the site as they are clearly visible, but are also vulnerable to removal and destruction. They need special consideration in conservation and management plans.

- The management plan should include regulations protecting surface items from unauthorized collection as these are an integral part of the value of the site. Protection of the integrity of all the layers is equally important;
- Legislation in some countries gives ownership of surface and subsurface artefacts to the State. Application of the law is sometimes difficult to enforce and has been modified by regulations that allow people to pick up and legally keep an artefact if information, such as the place of collection, is recorded and registered. In other countries, there is an alarming trade in antiquities and sites can be stripped by illegal collectors. Resources therefore need to be in place to implement the law and protect artefacts that contribute significantly to the OUV of a site.

Impact of interventions

The sites concerned are particularly vulnerable to the impact of interventions for tourism, interpretation and infrastructure, as well as activities such as mining. Insensitive action can seriously affect the OUV of a World Heritage property, the buffer zone and the viewshed. In addition, the following issues were raised at the meeting:

- It is recommended that the visual context that contributes to the OUV be defined and mapped in the nomination file and the management plan;
- It was noted that Article 172 of the Operational Guidelines allows for the World Heritage Centre to intervene if an intervention could affect the OUV. Civil society often alerts the World Heritage Centre to developments that will impact adversely on the OUV of World Heritage sites. It could be suggested that site managers should be the primary monitors and report to higher authorities. The World Heritage Committee should act accordingly.

Funding and resources

Delegates at the meeting had experiences of inadequate resources and funding for the implementation of management plans at World Heritage sites. It was suggested that Paragraph 111(d) of the Operational Guidelines could be strengthened. At present it states that the management plan/system could include adequate resources and budget to ensure the conservation of the site. It would be preferable to say 'must ensure' instead.

The Implementation of the Action Plan, Scientific Working Group

UNESCO Headquarters, Paris, 12 to 14 September 2009

The members of the Scientific Working Group considered the World Heritage Committee's recommendations in Decision 33 COM 5A, whose relevancy was considered largely in terms of:

- **The title of the Thematic Programme to better synthesize the core thematic areas of the Programme with the Committee's recommendations;**
- **Recognition of continuing cultures of indigenous communities;**
- **Worldwide lisibility of the Thematic Programme.**

Conceptualization of the Programme

During the consultation process, the experts resisted the inherited differentiation between societies with writing and those without, and maintained the view that the related properties are increasingly precious as our inherited storehouse of knowledge about the foundations, variety and diversity of human lives and experience and social behaviour.

Recognition of the continuing cultures of local communities

a. Strengthen the role of local communities in and around the properties and encourage their active participation in maintenance, conservation and management;
b. Develop community engagement strategies; explore the relationship with a wider range of heritage values;
c. Foster awareness-raising programmes for local communities and vice-versa;
d. Integrate the potential of these sites through sustainable development for the benefit of the local communities;
e. Ensure management systems include involvement of the community in a proactive and cooperative way.

Ensure a global representation in the identification and conservation of the related properties

a. Suggest that the Advisory Bodies collaborate together to update and/ or undertake thematic studies and evaluate the possibility of extending the interpretation of criteria (viii);
b. Encourage the relevant States Parties to include properties on their Tentative Lists;
c. Request the World Heritage Centre to assist States Parties in the harmonization of the Tentative List of geo-cultural regions in the framework of the Action Plan.

Towards an Action Plan

The key components to the Programme strategy are:

1. Credibility
2. Conservation and Monitoring
3. Communication
4. Capacity-building
5. Communities
6. Cooperation

1. Credibility

- Research and justification of the OUV. To elaborate guidelines for comparative analysis of sites;
- Develop guidelines to define authenticity and integrity for related World Heritage sites;
- Develop approaches to improve the decision-making process within the Committee for new nominations;

- Develop guidelines for inventories, database and information availability to support the preparation of a Tentative List;
- Global strategy: regional harmonization of the Tentative List mainly focused on Africa, Latin America and the Caribbean, and the Asia Pacific regions;
- Facilitate support for nominations in the framework of Preparatory International Assistance.

2. Conservation and Monitoring
- Promote conservation plans for sites prior to inscription;
- Research and protection. International conferences on applied research for conservation: research and technologies;
- Develop intervention methodologies and research of caves for standard-setting texts;
- Enlarge methodology to monitor OUV *in situ*;
- Learn from best practices for documentation and SOC reporting;
- Carry out methodologies (best practice) and archeological impact assessments for sites;
- Integrate regulations for buffer zones and archaeological reservoirs around the sites;
- Develop applied research for climate change at related World Heritage sites;
- Undertake studies for combining conservation and a World Heritage Preparedness Plan at related sites.

3. Communication
- Launch Programme website as part of the World Heritage Centre website, to enable information exchange and an online platform for dialogue;
- Apply the use of ICTs and new technologies through the use of a digital archive;
- Promote the dissemination of research and information through publications, including World Heritage Papers series, and regular information booklets;
- Develop a wide-reaching communication plan for the Programme;
- Create training manuals, ourses for e-learning and awareness-raising kits.

4. Capacity-building
- Build a management policy for scientific research at the site as an integral source for site development;
- Identify best practices linked to developing low-cost and consistent conservation indicators;
- Define qualifications and technical standards for people working at World Heritage sites;
- Promote national capacities in heritage conservation for human evolution-related heritage;
- Initiate life-long training and capacity-building for site managers, as well as participation in global and regional programmes;
- Work in collaboration with local and indigenous communities in capacity-building and participatory decision-making processes for World Heritage;
- Support international cooperation for SIDS capacity-building, e.g. a transnational nomination of Rock Art in the Caribbean.

5. Communities
- Promote collaborative archaeological or ethnographic research relevant to local communities;
- Develop a World Heritage community for the Programme, including States Parties, NGOs, institutions, National Commissions, UNESCO Field Offices and World Heritage sites, and the private sector;
- Acknowledgment of indigenous and local communities, and modern hunter-gatherers and their role in moving forward the nomination process;

(left to right)

Prof. Nicholas J. Conard. Photo: Penelope Keenan (UNESCO)

Prof. Margherita Mussi. Photo: Penelope Keenan (UNESCO)

- Explore the possibilities of pilot projects dealing with the relation between conservation and sustainable development at local level;
- Carry out studies to evaluate a World Heritage site in terms of revenue, synergies with communities, and present and future opportunities for people.

6. Cooperation
- Promote academic, bilateral, multilateral and intergovernmental agreements;
- Support the establishment of research centres and institutes, networks and twinning initiatives between sites, academic institutions, States Parties, Advisory Bodies, UNESCO Category 2 Centres and UNESCO Chairs or UNESCO networks such as UNITWIN;
- Develop agreements with multilateral agencies to bring together and launch a World Archive of Rock Art.

Thematic Studies proposed

1. Adaptive capacity of modern humans

2. Environmental change and early human adaptations
   - How early humans populated the world: environmental changes and cultural adaptations;
   - Environment and cultural evidence for human expansion.

3. Comparative analysis for rock art

A World Archive on Rock Art to enable researchers to compare the relative significance of rock art in different regions and different time periods to assessment of OUV.

4. Recent / last / social organization / evolution / sustainability of hunter gatherers – continuity.

Sustainability of hunter-gatherer societies through time:
- Anthropology/ ethnography;
- Plant genetics;
- Palaeopathology;
- Hunter-gatherer communities;
- Sustainable development experts;
- Global change and deforestation;
- Ecology and palaeoecology;
- Archaeozoology.

Hunter-gatherer sites:
- Continuity;
- Concept of continuous indigenous development, ways of accumulation of acquired knowledge to race rapid global changes;
- Benefit for World Heritage Convention;
- Hunter-gatherers in climate change;
- Small-scale communities in natural areas vulnerable to deforestation;
- Communities and voluntary isolation;
- Contemporary subsistence strategies.

5. Origins of food production

Begin with Late Pleistocene hunter-gatherers with low-level food production from plants, e.g. Jomon (Japan), maize in eastern USA, Ituri, Near East. Three aspects to consider: identification of plants, process and chronological changes. The reason for undertaking this area as a study case is based on the need to identify the beginning of carbonized grains as well as the weeds that grow with them to identify the first farming villages. Villages were developed amongst early farming communities that were often territorially confined and competing for space, leading to the beginning of the settled built environment.

Action Plan, Scientific Working Group

UNESCO Headquarters, Paris, 17 to 18 May 2010

Concluding recommendations from the previous 10 months' consultation were brought together to finalize the Action Plan for submission to the 34th session of the World Heritage Committee. A revised Programme title was agreed upon, the focal areas of the Programme were defined, and the future developments of the Programme were outlined.

In addressing the recommendations of the World Heritage Committee, discussions were elaborated resulting in the Programme title. **'Human Evolution: Adaptations, Dispersals and Social Developments (HEADS)'.**

Definitions of focal areas of Programme

Human Evolution reports the origins of human life and social development. The related processes can be traced back to the earliest ancestors of human lineages, and include toolmaking at least 2.6 million years ago. This record is increasingly precious as our inherited storehouse of knowledge about the foundations and diversity of human life, experience and social behaviour.

Properties related to the Programme account for the vast majority of human existence. So do the many biological, behavioural and technological changes which then shaped the future course of humanity as we know it today. This long process has increasingly transformed the human experience from life in a natural environment to life in a largely built environment, from a hunter-gatherer lifestyle, through the more settled ways of life of farmers, herders, and fishermen, to the present day – when for the first time a majority of human populations now live in artificial urban environments.

Over this immense span of time, human lineages have exhibited again and again a remarkable capacity to adapt, expanding from the tropics to a wide range of ever-changing environments, from equatorial regions to Arctic ones, from continents to islands, from lowlands to high altitudes, from deserts to wetlands. The diversity of human heritage is represented in archaeological sites across the world that preserves the invaluable record of early human history.

Sites linked specifically to Human Evolution can include:

- Properties that are related to bio-cultural processes regarding the human lineage as part of the record of life and of earth's history;
- Processes that include biological and cultural changes, dispersion, migration, cognition, and all the related adaptations at a global level;
- Origins and diversity of the genus *Homo* (genetically, biologically, anatomically) and its social organizations;
- Major changes corresponding to cognitive steps (e.g. speech, music, beliefs, dance and art) versus technological innovations (e.g. domestication of fire, tools production);
- Colonization of new environments and dispersion.

Human evolution-related sites can fall into multiple categories, including some of the following identified **types of properties:**

- Deposits useful for the reconstruction of palaeo-environments;
- Deposits with human remains, including intentional ones such as burials, burial mounds and megalithic graves;
- Evidence of human occupation, use and modification of caves or rock shelters, be it ephemeral or long-standing, such as in tells, and monumental or scarcely visible, such as kill and butchery sites;
- Mining sites, quarries and refuse deposits;
- Caches, campsites and abandoned or lost equipment;
- Artificial modification of the environment, as in hunting, fishing and drainage systems, ditches and enclosures, salt working sites, pottery production;
- Long-sequence evolutive landscapes related to hunter-gatherer communities;
- Places with intangible values related to criteria (vi) and associative cultural landscapes, such as paleo-landscapes and rock art sites;
- Sites important for the history of science, such as Neanderthal, Zoukhoudian, Trinil, Cro-Magnon, Balzi Rossi, Altamira;
- Sites related to human mobility and traces of long-term repeated human movement;
- Sites related to trade.

Concerning Rock Art, for the purpose of the Thematic Programme, it is understood in the form of paintings and engravings as clear and long-lasting evidence for the transmission of human conceptual thoughts and beliefs through art and graphic representations. Experiences shared by site managers and international experts have highlighted a wide range of issues such as the spiritual significance of rock art, the need for multidisciplinary research, and the value of involving the descendants of the original artists both in management and decision-making, as well as assistance to develop guidelines for dealing with stakeholders, to understand natural processes of weathering and to initiate and maintain documentation and monitoring systems for World Heritage sites.

(left to right)

Dr Nuria Sanz (UNESCO/WHC)
Photo: UNESCO/WHC

Prof. Janette Deacon.
Photo: Penelope Keenan (UNESCO)

Prof. François Sémah.
Photo: Penelope Keenan (UNESCO)

World Rock Art Archive Working Group

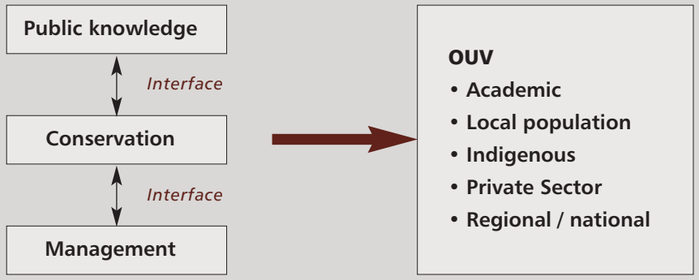
UNESCO Headquarters, Paris, 5 to 6 July 2010

The World Heritage Centre put forward the following three main axes to be identified and elaborated throughout the meeting discussions:

1. Recording living traditions;
2. Metadata profile;
3. Minimum standards protocol for state of conservation.

The World Heritage Centre stressed the importance of steer heading discussions with an awareness of its working context, the World Heritage Convention, the concept of territory and setting for rock art as a core reference for site nomination. The interface between (1) values and (2) conservation and management was outlined as below.

Table 1



The Working Group underlined the need for a new approach to knowledge; one that maintains the basics of modern science, but incorporates different sorts of knowledge or subjectivities to find a common field of understanding. In this context there is a need:

- To widen and defend the existing methodology to develop modern knowledge;
- To formulate 'a new model of knowledge' to bring communities together- a new kind of knowledge that combines academic knowledge and technical practice with different approaches;
- To explore all the possibilities of the ten criteria and see what it means in terms of rock art as testimony to the OUV of one rock art site;
- Fill the gap between science and management;
- To bring together the researchers and managers;
- To correspond actions to a need: identify values and then develop conservation actions to preserve them at the interface between knowledge and action – knowledge includes traditional/ local, national, regional and international.

The Working Group agreed that the archive should with World Heritage sites as a starting point, and emphasized the importance of updating bibliographic records, e.g. in nomination files in terms of research. Using records in cases where a society has recently decided to reconnect with their origins could also be studied.

The database needs to be useful to indigenous groups for the transmission of traditional knowledge well as researchers and heritage specialists. The database is needed as a useful tool for background and conservation to avoid losing information and for comparative analysis with categories relevant for analysis by the international community at large.

As a preliminary step, the Working Group proposed to take a small sample of sites as case studies to evaluate how the archive could function, e.g. one site per Region. The following case studies were put forward:

- Hadza, Sandawe, Tanzania;
- South Africa trans-frontier issues at Mapungubwe Cultural Landscape and ukhahlamba/ Drakensberg Park;
- Malawi – agriculturist, farmer tradition;
- Chiapas, Mexico;
- India in southern Pradesh, Dravidian tradition;
- Lapland people;
- Inuit;
- Native Americans;
- Maya communities;
- Dogon in Mali;
- Samoyed and Saami people.

Results of rock art site questionnaire

A synthesis of results from a questionnaire sent in 2009 to site managers of rock art properties on the World Heritage List and Tentative List was presented and discussed.

The questionnaire requested the following categories of information:

1. General information about the property and the nomination;
2. The Outstanding Universal Value of the property;
3. Factors affecting the property;
4. Protection, management and monitoring of rock art;
   a. Boundaries and buffer zone;
   b. Measures to protect rock art;
   c. Management system and plan;
   d. Financial and human resources;
   e. Scientific studies and research projects;
   f. Education, information and awareness-raising;
   g. Visitor management;
   h. Monitoring;
5. General issues about rock art and World Heritage.

Questionnaires were sent to 35 site managers or management authorities, and responses were received from 15 sites, representing just over 50% of States Parties with inscribed rock art sites and 10% of States Parties with sites on the Tentative List.

1.	Argentina	Cueva de las Manos
2.	Australia	Kakadu National Park
3.	Azerbaijan	Gobustan Rock Art Cultural Landscape
4.	Bolivia	El Fuerte de Samaipata
5.	Botswana	Tsodilo
6.	Brazil	Serra da Capivara
7.	Burkina Faso	Rock Art Engravings of Pobe Mengao
8.	Italy	The Sassi and the Park of the Rupestrian Churches of Matera
9.	Malawi	Chongoni Rock-Art Area
10.	Namibia	Twyfelfontein
11.	Norway	Rock Art of Alta
12.	South Africa	Mapungubwe Cultural Landscape
13.	South Africa	uKhahlamba/Drakensberg Park
14.	Sweden	Rock Carvings in Tanum
15.	Zambia	Mwela Rock Paintings

The selected responses were analysed in relation to the following:

- Main issues raised by site managers, or that are evident from their responses to the questionnaire;
- Possible actions to address them;
- Comments relevant to an international database or archive;
- Guidelines for recording of living traditions relating to rock art.

The responses reflected an even distribution of sites with paintings/ pictograms (11) or engravings/ petroglyphs (10), with six sites containing both. The time period covered by more than 8,000 individual sites in the sample extends over the past 50,000 years. The managers of 11 out of the 15 sites regard the current state of authenticity of the properties to be predominantly intact, and 9 out of 15 regard the current state of integrity to be predominantly intact.

The main threats are perceived as coming from natural erosion factors such as water, humidity, fire, vegetation, mineralization and general degradation of rock surfaces, as well as environmental and climate change. Human-induced threats are related to agriculture, commercial development, roads, wind farms, mining and the impact of tourism. However, 10 out of the 15 respondents reported that inscription of rock art sites on the World Heritage List has not made them more vulnerable to damage because investment in public awareness and education has had a positive effect.

Although 6 out of the 15 responses stated that the **legal framework** protecting the properties has some deficiencies, 11 were satisfied that it is adequate and 13 acknowledged that it needed enforcement.

Site management plans are in place at 11 of the sites, and 12 include rock art management as part of the general management plan. The plan has been only partially implemented in 11 of the properties, with only two reporting full implementation. It is a concern that only 5 regarded the management plan as being fully adequate to maintain the Outstanding Universal Value of the rock art on the property, and 4 reported that there was either no system or plan in place to implement the management plan or that it was not adequate.

The **monitoring** programme for a rock art property is often a good barometer of the dedication to conservation and implementation of the management plan. Four of the sites have not implemented a monitoring programme and monitoring is done only intermittently at a further 6 sites. It is done regularly by 7. In 7 cases, condition reports, monitoring forms and photographs are not kept on the property, but are lodged at another facility. Conservation interventions have been implemented at 11 sites mainly by a maintenance or professional staff member, but also by qualified consultants or researchers at a few sites. Written records of these interventions are available in all cases. This summary indicates a potential risk to the Outstanding Universal Value of some rock art sites where condition reporting and monitoring is not being done regularly. Whether this is as a result of lack of funds or lack of expertise would need to be investigated further and addressed accordingly.

(left to right)

High resolution digital images acquisition, Serra da Capivara (WHL, Brazil)
Photo: FUMDHAM

Dr Ulf Bertilsson (Sweden).
Photo: Eric Esquivel (UNESCO)

Research and documentation of the rock art is kept at the property in only half of the cases. This could be an indication that the staff component responsible for research, record-keeping, condition reporting, monitoring and interventions to maintain the Outstanding Universal Value of the property is not permanently on site. Eleven of the properties have digital databases for their rock art sites, but only 8 are linked to a geographic information system (GIS). However, 14 have paper files and digital photographs and 12 have slides and prints. Only six keep original rock art records at the World Heritage properties and the rest are kept at other facilities. A general lack of planned research on rock art is evident. Although 10 respondents indicated that research is being done, 8 said that it was not planned, and only four reported a comprehensive, integrated programme of research. Research needs to be integrated by site managers. Sometimes external researchers come in but it this is not integrated into the plan.

The lack of trained **staff** is a problem at almost every site. Ten of the properties employ fewer than 50 people, and in all cases 5 or less have been trained in rock art conservation and management. In most cases there are job opportunities for local people.

Most of the properties are aware of the need to involve local communities when they live in the vicinity and nine responses show that **local communities** contribute to decisions. Issues were identified concerning training for rock art conservation, and the involvement of the local and indigenous populations in activities. There appears to be less cooperation with industry, including tourism.

Concerning the practice of **living traditions** at sites, the questionnaire asked respondents to rank the relationships they had with various stakeholders, including indigenous groups and descendants of the artists. Three of the responses recorded 'not applicable' to the indigenous group category, and 9 recorded 'not applicable' to the descendants of the artists' category. Two ranked the cooperation with descendants of the artists as 'excellent', one as 'average' and two as 'poor'.

A result of only partial implementation is that the **budget** allocated for rock art is regarded as inadequate by 9 out of the 15 respondents- and as 'acceptable but could be improved' by a further 5. Additional funding from international sources has been received by 10 of the properties in the period 2005-2008, although in most cases it was less than US$ 1,000.

Public awareness-raising and education programmes have been implemented at 7 sites, but have been neither planned nor implemented at 5. Nevertheless, guided tours to rock art are already offered at 11 out of the 15 properties, 10 have information pamphlets and 11 have on-site signage. The least common public awareness medium is displays at an interpretation centre with this offered at only 5 sites. Despite the apparently low priority, rock art images are valued and have been used to brand 13 of the 15 properties, mostly on posters and clothing.

(From left to right)
Dr Nuria Sanz,
Prof. Benjamin Smith and Prof. Emmanuel Anati, Rock Art Research Institute, South Africa.
Photo: Eric Esquivel (UNESCO)

There is overwhelming agreement amongst the site managers (13 out of 15) that the inscription of rock art sites on the World Heritage List has helped to increase public awareness and appreciation of rock art. Nine agreed that the inscription of properties has not made rock art more vulnerable to damage, 3 felt that it had, and 1 was uncertain. Two did not answer the question.

Visitor statistics are available at 10 of the properties and visitor books are kept at 7 sites. The trend in visitor numbers to rock art sites (rather than to the properties as a whole) between 2004 and 2008 has been variable (Table 2).

Table 2. **Numbers of visitors to rock art sites within larger properties**

Property	2004	2005	2006	2007	2008
Australia* Kakadu Nat. Pk		202,507	209,506	225,576	228,899
Bolivia El Fuerte de Samaipata	16,000	17,000	18,000	25,000	20,000
Botswana Tsodilo	9,510 92% to rock art	10,362 94% to rock art	8,709 90% to rock art	8,205 96% to rock art	9,191 93% to rock art
Brazil** Serra da Capivara	7,107	7,350	9,505	9,256	7,464
Namibia Twyfelfontein			50,200	53,149	58,606
Norway Rock Art of Alta	57,429	55,372	55,512	55,946	49,702
South Africa Mapungubwe Cultural Landscape	15	19	20	60	150
Sweden Rock Carvings in Tanum	Figures not given, but general decrease reported				160,000
Zambia *Mwela* Rock Paintings	478	255	821	634	739

* These figures are for visitors to the Park who would not necessarily have visited rock art sites.
** Visitors to the Park only.

With particular reference to a digital rock art archive, **technical facilities and access** are key in order for the information to be uploaded. Seven of the 15 respondent properties have their own website, 11 properties have a digital database for their rock art, 8 are linked to GIS, 14 have hard-copy files and digital photos, 12 have slides and prints, 6 keep records on the property and 9 store them elsewhere.

The questionnaire was not designed to gauge database and archive needs, but some general points were made with reference to the benefits of creating an international rock art database, including:

- To raise the profile of rock art. Respondents to the questionnaire were almost unanimous in agreeing that the awareness of rock art generated by World Heritage listing has had a positive effect that has reduced the vulnerability to damage through ignorance;
- Managers and staff may be inspired to implement management plans more efficiently by sharing best practice case studies;
- Opportunities for e-learning;
- The results of interventions to deal with conservation problems would be invaluable, if only to emphasize that interventions should only be done by qualified and experienced people;
- The results of research – both for interpretation and conservation of rock art – can be more widely disseminated, building communication among scholars and researchers through patterns and decoding of rock art, and accessed by a wider range of people;
- Offer a new dimension and awareness of the knowledge of the past for our society today and to renew contemporary culture;
- Reinforcement of a theoretical basis of the discipline, to be referenced and easily implemented by States Parties;
- A platform for cooperation in which the research is a tool to avoid losing knowledge;
- Although the availability of electricity, hardware and bandwidth (only 7 of the 15 properties have their own website) might be limited at some of the World Heritage properties, the responses show that records are kept at places where trained staff and facilities are available. The records could therefore be shared in the international archive;
- Living traditions associated with rock art should be part of the database as they can assist with interpretation both now and in the future. It would provide a platform for records of living traditions and intangible heritage relating to rock art. This would include belief systems of descendants of the original artists that might assist with interpretation of rock art, and development of 'public science' for conservation. The archive could also provide research and good practice case studies on incorporating indigenous management practices into the management structure, modern views on preservation of culture and conservation, and incorporating indigenous values into conservation methodologies;
- Examples of visitor use policies and guidelines that can be adapted to individual sites would be helpful. Although 9 of the respondents said they had such guidelines, 5 did not;
- About 40% of the respondents saw deficiencies in their legal frameworks that might affect the safety of rock art. The international database could include case studies of successful and unsuccessful prosecutions or other legal cases that could supply precedents and solutions;
- Photographic records from sites not on the World Heritage or Tentative Lists will allow for the identification and appreciation of rock art traditions that could be regarded as candidates.

A revised questionnaire will be re-submitted to site managers, as well as to be used as a retrospective exercise. Based on the preliminary questionnaire, the revised questionnaire will be adapted to include the following recommendations:

- Increase scope for the elaboration of information;
- Reduce questionnaire and provide more opportunity for comment;
- Request statistics on the availability of computers and technical facilities;
- Update status of regular on-going monitoring methods and affects on OUV, the kinds of interventions at sites, including the impact to a site over the years and the techniques to address this;
- Provide information on the current conditions of reporting;
- Report methods of record keeping;
- Identify ways for recording living traditions;
- Acknowledge that the physical location of rock art sites often governs the number of visitors.

Metadata to be included in a standard framework for information coming from institutions could include location and GIS data, site record forms, text descriptors, associated archaeological material, research results, publications, images, infrastructure, history of the site, condition reports, conservation interventions, current MoUs with other institutions, OUV, nomination dossiers, etc.

Recording living traditions

While some of the rock art sites on the World Heritage List are not linked directly to current indigenous groups, those that do have connections are of considerable significance, and the recording of living traditions associated with rock art is becoming increasingly urgent. The records that exist should be part of the international database.

Recording living traditions (intangible heritage) should not be limited to those of the descendants of the original artists. In many cases the current residents in an area have absorbed some of the spirituality associated with rock art sites and have adapted it in their own belief system with modern overlays. Mwela in Zambia is one example of such a practice where Christians today use rock art sites and the area around them for worship. In the uKhahlamba/Drakensberg Park some rock art sites are used by Zulu sangomas (healers) who draw on the power of the rock paintings to heal the sick and communicate with the spirit world. In other cases, there are various forms of re-connection and revitalization, such as in the USA where Native American communities have renewed interest in the spiritual power of rock art sites, and in Australia where some paintings have been ritually repainted to keep the practice alive. As these beliefs adapt to cultural and social changes, it is important to record the memories and observations of people in a range of age groups. Interviews should preferably be conducted and recorded in the vernacular and translated later to avoid misunderstandings and errors in different stages of translation. In all cases this intangible heritage adds value to the authenticity and integrity of rock art sites.

World Rock Art Archive Working Group

Johannesburg, South Africa, 17 to 19 November 2010

Four feasible case studies were agreed upon by participants as preliminary models for co-operation for the Archive in support of applied research, management, conservation and comparative analysis.

1. Southern Africa;
2. Chongoni Rock Art Area (Malawi), property inscribed on the World Heritage List in 1996 under criteria (iii)(vi);
3. Serra da Capivara, Brazil (WHL), property inscribed on the World Heritage List in 1991 under criteria (iii);
4. Rock Carvings in Tanum (Sweden), property inscribed on the World Heritage List in 1994 under criteria (i)(iii)(iv).

1. SOUTHERN AFRICA AND SARADA

SARADA is the largest Rock Art Archive in Africa and houses 100,000 images of existing and feasible World Heritage sites in Africa. The objective of SARADA is to increase accessibility for comparative information to access the OUV, integrity and authenticity of sites, and to provide information and best practice on management, conservation and protection methods and research, and incorporate continuing communities. SARADA is based at the Rock Art Research Institute, Origins Centre, University of the Witwatersrand.

The following attributes were put forward by participants with regards to the construction of a metadata profile in relation to South Africa.

Metadata categories:

i. Site location;
ii. Site status and description;
iii. Rock art and associated archaeology;
iv. Indigenous knowledge;
v. Research results;
vi. Management structure and planning;
vii. Structure and security.

Recommendations:

i. A permanent home and staff;
ii. Technical and financial resources;
iii. Agreement on metadata categories;
iv. MoUs with other archives;
v. Training programmes;
vi. Protocols and permission for access;
vii. Integration of intangible heritage and involvement of indigenous/ traditional communities;
viii. Development of conservation skills and practises.

2. CHONGONI ROCK ART AREA (MALAWI)

The site houses a poor information base with no computerized site database or maps. Metadata already exists, however, the challenge is in its organization. The site represents a rich intangible heritage for both Pygmy (rain-making, fertility divination) and local farmer art (carries on hunter-gatherer original uses and initiation). In the original nomination 127 sites are listed, however, about 40 new sites have been noted since nomination. It would also be a useful case study, therefore, for retrospective inventorying and monitoring.

Recommendations:

i. Consolidated research and on-going recording and monitoring;
ii. Information base;
iii. MoU with Malawi Department of Antiquities under the Ministry of Tourism;
iv. Current use of site and dissemination of results.

3. SERRA DA CAPIVARA (BRAZIL)

The database of Serra da Capivara constitutes 60,000 high resolution digital images and slides, tridimensional documentation and georeferenced database integration of archaeological sites of the property. Three-dimensional technology has been used to record and monitor the rock. The advantages are accuracy, resolution, density, measurability and control; allowing for all data to be georeferenced, and monitored in terms of the degradation process.

Recommendations:

i. Emphasis for more information on why they do the rock art;
ii. Contemporary knowledge needs to be connected;
iii. Clarification of research categories;
iv. Conservation techniques and training to assist site managers;
v. Monitoring for OUV;
vi. Methodologies for digging.

(left to right)

Participants of the meeting, World Rock Art Archive Working Group, Rock Art Research Institute, University of the Witwatersrand, Johannesburg, South Africa, 17-19 November 2010
Photo: UNESCO/WHC

Participants of the meeting, World Rock Art Archive Working Group, Johannesburg, South Africa
Photo: UNESCO/WHC

4. ROCK CARVINGS IN TANUM (SWEDEN)

Swedish Rock Art Archives is the official rock art reseach centre of Göteborg University, Sweden. At national level, the Swedish have already documented all the rock art at Tanum. As a best practice case study, the Swedish Rock Art Archives houses comprehensive records, and a detailed record of management and conservation of the site, particularly in response to climate change. The structure of the database aligns closely with the concerns of the Convention.

Identified 'hubs' for the archive

1. SARADA – Malawi and Tassili N'Ajjer
2. Swedish Rock Art Archives – Tanum and Valcamonica
3. Spain (CSIC/ UNESCO Category 2 Centre)
4. Serra da Capivara – Latin America and the Caribbean
5. Asia and the Pacific (Australian achives; Chinese archives; India archives)

The following feasible case studies incorporating intangible elements were proposed by the experts:

Intangible/ living heritage

- SA – !Xam and #Khomani. Later: Namibia – Tsumkwe and Etosha/Brandberg;
- Malawi.

Other rock art sites with orality:

- Canada: Peterborough, Ontario; British Columbia;
- Brazil – Xingu; Amazonia;
- Australia – Arnhem Land.

Related recommended case studies:

- Henan Shan, China;
- Bhimbekta, India;
- Saami – Alta, Norway;
- Maori rock art, New Zealand;
- Fraser River, Canada;
- Agawa, Canada; North of Lake Superior.

(left to right)

Teaching in the girl's initiation ceremonies of Malawi and Zambia is done today through using clay figurines and earthen designs on the ground. In the past, rock art was used. Photo: Benjamin Smith, Rock Art Research Institute, University of the Witwatersrand, South Africa.

Chongoni World Heritage Site, Malawi, is one of the few places in the world where you can view a masked dance in a village and then see the same mask depicted in nearby rock art sites. The masks belong to the nyau secret society and are still an active part of the living heritage of this area. Photo: Benjamin Smith, Rock Art Research Institute, University of the Witwatersrand, South Africa.

African human origin sites and the UNESCO World Heritage Convention

National Museum of Ethiopia, Addis Ababa, Ethiopia, 8 to 11 February 2011

Criteria for evaluating Outstanding Universal Value: significance, quality, authenticity

As a basis for evaluating any nomination of a human evolution property, participants proposed the following essential components: name, location, time span, hominids if present and what type, artefacts and type, other material culture, fauna and number of taxa, dating and what method and when they were made, environmental evidence and types, organic preservation and art, publications and their scientific standards, capacity of the site to develop public awareness of human evolution, why it is critical to human evolution, what protection measures are in place and what applied research has been done for its protection and curation of the movable heritage.

In addition, the following considerations should be acknowledged in the process:

- Past and present environments can be as important as artefacts and fossils;
- Human bones are not the only valuable trace – qualified research is a priority;
- Living communities of apes and their habitats are of great significance for the HEADS Programme;
- Integrated conservation and curation of mobile and non-mobile resources should be advocated;
- Geological and geomorphological conditions are equally important for OUV;
- Scientific argumentation is primary over practical issues, such as management and protection;
- Attributes are not ranked or numerical, and reviewers should have access to all information to make a well-informed decision.

Serial nominations, conservation, communication, capacity-building and communities

i. Serial nominations

In the context of serial properties the participants discussed the Rift Valley as an example. The participants appreciated the African Rift Valley as an important thematic issue, yet in consideration of the extensive area, the numerous countries involved and political issues, they favoured focusing on individual sites in the short term, with the potential to incorporate sites in a serial nomination at a later stage.

ii. Conservation

Throughout the discussions on conservation, the experts referred to three African properties: Tiya (World Heritage List, Ethiopia), The African Great Rift Valley – Olorgesailie Prehistoric Site (Tentative List, Kenya), and Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs (World Heritage List, South Africa). Sterkfontein was proposed as an ideal example of addressing problems encountered at cave sites (e.g. roof collapse). Aksum (World Heritage List, Ethiopia) was proposed as a potential best case study for assessing long-term change.

Recommendations

- Employ use of detailed laser scanning programmes, allowing for the assessment of change/degradation at diverse sites, including collapse or erosion of stellae at Tiya, loss or movement of artefacts at Olorgesailie, degradation of rock art, or cave wall erosion;
- Increase funding for equipment and training in laser scanning to evaluate site preservation issues;
- Assess ways of conserving existing sites through the promotion of 'paleotourism';

- Provide expertise and training to assess conservation needs and to stabilize endangered sites. Particularly important are buffer zones and dealing with related archaeological traces now on communal and agricultural lands;
- Support long-term assessment of existing World Heritage sites in Africa to model management and conservation plans for newly-nominated sites;
- Raise awareness of the sites, in terms of their history and implementing best practices for conservation;
- Collaborate with site managers, tour guides and site focal points to foster paleotourism and inform visitors of site history and conservation;
- Produce a physical guide that summarizes the importance and required behaviour for visitors;

iii. Capacity building

The experts underlined the need to foster the creation of platforms and networks for site managers in Africa. They noted Olduvai Gorge (part of the World Heritage property, Ngorongoro Conservation Area, Tanzania) and Koobi Fora (part of the World Heritage property, Lake Turkana National Parks, Kenya) as examples of protection resulting from natural conservation (rather than solely cultural heritage).

Recommendations

Develop training for:
- Data archiving for laser scanning to monitor site degradation and change;
- Guides at existing and feasible World Heritage sites;
- Heritage and community liaison officers;
- African heritage site managers;
- Evaluation of criteria and OUV, the World Heritage nomination process, and the sustainability requirements of inscribed sites. This could include short-term training specific to a particular site and/or higher education;
- Organize workshops to train teachers in the values of World Heritage and sites related to human evolution. Teachers provide the basic point of contact for much of the population, and education lays the foundation for long-term commitment for the importance of heritage. This could be conducted in conjunction with National Museums of Kenya.

iv. Communities

There was universal agreement that maintaining strong and close relationships with the communities living in or near UNESCO World Heritage sites is fundamental. The foreseen establishment of a Heritage and Communities Liason Office in Kenya by the National Museums of Kenya will be specifically focused on community concerns, and the participants proposed that this could be a solid best case study in this regard.

Recommendations

- To carry out a workshop in conjunction with the National Museums of Kenya and the planned Heritage and Communities Liason Office in Kenya, as a case study in the benefits and challenges of such an initiative;
- Request that UNESCO, in conjunction with States Parties, underline the importance of keeping museum access affordable and accessible to all and reinforce the relationship between the movable heritage and collections with their related World Heritage sites.

v. Communication

Recommendations

- Develop radio programmes as a viable alternative for wider information dissemination on World Heritage issues and its relevance to local communities. Web-based knowledge is often insufficient in Africa, and internet access is not universally available. Educational radio programmes already exist in Ethiopia, Tanzania, Kenya, and South Africa, and could be adapted to this purpose;
- Assist in web-based information dissemination. Web-based information should target both local as well as international audiences. A 'virtual museum exhibit' could be a means of reaching a wider audience, allowing people who cannot easily visit the site to experience it online, and with site manager consultations available for any questions from tourists and local communities;
- Request States Parties to establish a link between their own web pages and those of UNESCO sites so that people know who to ask if they have further interests or questions;
- Establish links with local tourism providers to promote the values of sites. This has proved effective in South Africa.

(left to right)

Participants of the meeting, African Human Origin Sites and the World Heritage Convention, Addis Ababa, Ethiopia, 8 to 11 February 2011.
Photo: Penelope Keenan (UNESCO)

On-site visit to Melka Kunture (Simbiro III), Ethiopia.
Photo: Penelope Keenan (UNESCO)

Prof. Robin Dennell (left), Melka Kunture, Ethiopia.
Photo: Penelope Keenan (UNESCO)

Narratives and human evolution sites in Africa

The participants drafted a list of narratives for 'filling in the gaps' of existing knowledge of the long process of human evolution on the African continent.

1. Palaeontology, biology and physical anthropology: hominids among primates and genetic studies
- The oldest ancestors of the human lineage, including great apes;
- The oldest ancestors of the human lineage in relation to morpho-functional anatomy;
- Neurological evolution;
- Genetics and palaeogenetics of great apes and the human lineage.

2. Fossil traces of cognitive steps: cognitive changes and human biological and cultural evolution
- Artefact manufacturing;
- Conceptual ability and transmission, including symbolic behaviour, ochre use, art and burial.

3. Fossil traces of technological and subsistence innovations – economic and cultural adaptation to changing environments
- Control of fire, behavioural changes from scavenging to animal domestication via hunting and marine resources, and plant/animal preservation in the environment;
- Artefact technological progress from simple flakes to pottery via prepared cores and composite tools;
- Habitat patterns.

4. Colonization of new environments – records of expansion in new niches
- From tropical woodland to open woodland and grassland;
- From tropical to temperate areas;
- Specific or extreme environments.

5. Dispersals and migrations
- Within Africa, pan-African settlements including arid and elevated regions;
- 'Out of Africa' dispersals – early Pleistocene and *Homo sapiens* dispersal;
- Pulses of colonization, territorial and demographic expansions and contractions, noticeably in connection with climatic changes, environmental collapses, and resource availability or reduction. Special attention needs to be paid to the major climatic events of the Quaternary including the Last Glacial Maximum and subsequent Holocene climatic change in Africa.

Narratives that apply to the African continent were identified by participants at sites in the following countries (Table 3). The numbers at the end of each site description refer to the narratives numbered above.

(left to right)

Dr Hassan Wario Arero (Kenya). Photo: Penelope Keenan (UNESCO)

Dr Nuria Sanz (UNESCO/WHC). Photo: UNESCO/WHC

Table 3. **Narratives that apply to the African continent**

Narrative	State Party / Site	Region
1. Palaeontology, biology and physical anthropology: hominids among primates and genetic studies	**Chad** Djourab: primate and hominid fossils, fauna. Narratives 1, 2. Ennedi/Ounanga: geological and environmental values. Narrative 1.	Sahara
	Ethiopia Chorola: 10 myr early hominoid/ape fossils. Narrative 1. Serial nomination of Omo, east side of Fajej: LSA to Miocene with hominids at 4 and 2 mya, continuous sequence of stone tools. Narratives 1, 2.	East Africa
	South Africa Site of Australopithecus sediba: needs to be added to Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs (WHS, South Africa) at Gladysvale. Narrative 1.	South Africa
2. Fossil traces of cognitive steps: cognitive changes – human biological and cultural evolution	**Morocco** Atlantic coastline cave sites: Casablanca sequence from 5 cave sites – Acheulean at 1 mya to 100,000 – threatened by urban development with early hominids. Narratives 2, 3. Djebel Irhoud: archaic H. sapiens – open site – Middle Palaeolithic Mousterian – 130,000. Narratives 2, 3. Taforalt: Upper Palaeolithic burial site 22,000. H. sapiens. Narratives 2, 3. Salè, near Rabat: earliest H. sapiens in North Africa. Narratives 2, 3.	North Africa
	Ethiopia Afar: boundary extension for a palaeonthropological site extending 250 km from Dubti in the north of the main Afar rift to Kessem-Kebena in the south. Narratives 1, 2, 3.	East Africa
	Serial nomination of Melka Kunture, Goda-Mota and Lake Zwai. Narratives 1, 2, 3. Konso Gardula: stand alone site. Pertinent threats in terms of conservation and population encroachment. Narratives 1, 2, 3.	East Africa
	Eritrea Buia: H. erectus – Acheulian tools 1 mya. Narratives 2, 3.	
	Kenya Kapthurin: hominid site. Narratives 1, 2, 3. East and West Turkana: should be joined and included together. Narratives 1, 2, 3.	

Narrative	State Party / Site	Region
	Tugen Hills: oldest hominid sites. Narratives 1, 2, 3. **Tanzania** Olduvai and Laetoli: currently part of Ngorongoro Conservation Area (WHS, Tanzania). Narratives 1, 2, 3. Peninj: Acheulean and hominid mandible. Narratives 1, 2, 3. Lake Eyasi: early hominid site. Narratives 2, 3. Mumba Cave: MSA-LSA sequence, human remains, fauna. Narratives 2, 3.	
3. Fossil traces of technological and subsistence innovations – economic and cultural adaptation to changing environments	**Mauritania** Adrar Bous: open air sites – sequence Acheulean to Neolithic – fauna. Narrative 3. **Tunisia** Sidi Zin: Late Acheulean – Mousterian open site less than 200,000 mya – fauna. Narrative 3. **Algeria** Ain Hanech: Oldowan to Acheulean and Late Palaeolithic, including Ain Boucherin. Narratives 2, 3. Tighenif (Ternifine): 3 mandibles, parietals and isolated teeth. 700,000 mya. Earliest H. ergaster/erectus in North Africa. Narratives 2, 3. Afalou-Taza Cave Complex: over a distance of about 30 km, modern human burial. Sequence from Middle Palaeolithic to 10,000 – North African modern humans. Baked clay figurines 15-11,000. Narratives 2, 3, 5. **Libya/Sudan/Egypt** Jebel Ouenat transboundary site (Libya, Egypt and Sudan): significance ranges from geology to art and early pastoralism: an island in the desert. Narratives 2, 3, 5. **Libya** Haua Fteah Cave: long Palaeolithic sequence Dabban – Neolithic – fauna – human behavioural change through time. Narrative 3. **Egypt** Nabta / Bir Kiseiba: complete Holocene climate sequence with early domestication – cattle believed to be there at 9,000 BC, certain at 6,000 BC. Narratives 3, 5. Sodmein Cave, Eastern Desert: Middle Palaeolithic sequence and early domestication with earliest sheep/ goats with pottery at 6,200 BC. Narratives 3, 5.	North Africa

Narrative	State Party / Site	Region
	Wadi Sura: cave site with unusual rock art – landscape with archaeological chronology from hunter-gatherers to pastoralism. Narratives 3, 5. Nazlet-Ikhate: Upper Palaeolithic stone technology with mining – raw material exploitation and transportation – 130,000. Narrative 3. **Djibouti** Baroghli: 1 mya Early Stone Age Elephas butchering site. Narrative 3. **Ethiopia** Porc Epic and surroundings: MSA-LSA sequence in cave sites – fauna – H. sapiens – rock paintings. Narratives 2, 3. **Kenya** Olorgesailie: open air Acheulean site with artefacts, fauna and homind remains. Already open to the public. Narratives 2, 3. **South Africa** Wonderwerk Cave: long sequence from Acheulean to Later Stone Age – mobiliary art, fauna, possible early traces of fire. Narratives 2, 3. Various Middle Stone Age sites with a variety of examples of complex symbolism. Klasies River, Border Cave (with early modern human fossils and already on the Tentative List), Blombos, Diepkloof, Sibudu. Narratives 2, 3, 5. **Namibia** Apollo 11 Cave: Middle Stone Age with mobile art. Narrative 3.	East Africa Southern Africa
4. Colonization of new environments – records of expansion in new niches	No sites suggested. Although there is evidence for climatic change and people adapting to it, for example in the Sahara, but there is little evidence for people migrating into new niches.	
5. Dispersals and migrations	**Libya** Messak: open sites with rock art in the desert showing major climatic change during the Holocene. Narratives 2, 5.	North Africa

Possible 'GAPS'	
Geographical gaps	Gaps in hominid dispersal in West and Equatorial Africa; between Chad and Morocco; between Tanzania and South Africa.
Time gaps	Need to close gap between 10 mya and 6 mya in Ethiopia.
Fluctuating climates	Environmental changes in the Sahara.
Economic gaps	Sites demonstrating early domestication of plants and animals.
Technological gaps	Sites demonstrating early mining and metalworking.
Belief systems and art	Religious practices associated with art, such as Nok in Nigeria.
Dispersals and migrations	Expansion into new niches.

Interdisciplinarity, collective efforts

Scientific understanding and innovation plays a central part in the transformation of perception of the built, archaeological and natural heritage environment. To meet future challenges, the site managers and experts underlined a need to develop effective, adaptable management and decision-making policies and methodologies that utilize the latest scientific and technological developments in conservation and research, and increase the involvement of local communities.

The heritage environment has undergone repeated transformational pressures, the survivors of the past demonstrating resilience against many cycles of changing natural environments, cultural preference, economic conditions and conservation practice. The heritage environment will be subject to substantial transformational drivers over the coming decades – by economic, governance and sustainability pressures, linked to climate change impacts as well as mitigation and adaptation across a range of scales.

The interdisciplinary approach is of the utmost importance in the identification, study, management and evaluation of the sites. In Africa, any scientific and conservation project must be balanced in a way to involve many disciplines across the natural and social sciences. Beyond such multidisciplinary considerations, the discussion among participants was more focused on the actual interdisciplinary dialogue and synergies.

The participants recalled the conclusions of the Burgos meeting (March 2009). With special reference to African sites, it seems that attention must be paid, prior to any study or nomination file, to the systematic analysis across the full range of existing and potential stakeholders. Cultural and legal dimensions are fully part of the collective approach.

(left to right)

Dr Yonas Beyene (ARCCH), Mr Jara Hailemariam (ARCCH) and Dr Hassan Wario Arero (National Museums of Kenya) during the meeting, African Human Origin Sites and the World Heritage Convention, Addis Ababa, Ethiopia, *8 to 11 February 2011.*
Photo: Penelope Keenan (UNESCO)

Prof. Yves Coppens.
Photo: UNESCO/WHC

Interdisciplinarity, as stated during former meetings is an important aspect to ground the assessment of the sites' OUV and of their scientific potential.

Interdisciplinarity can help to approach the concept of 'human evolution' that transcends the natural vs. cultural sites division. Identified sites may be shaped by humans but, especially in the case of human evolution, include territories which are influenced by human behaviours, and also sites that allow to reconstruct palaeolandscapes which constrained human behaviour in the past.

Dynamic natural phenomena may lead, for instance, to erosion, deflation, burial and flood. Human action may lead to physical changes: land use (e.g. pastoralism, agriculture and other intensive development aspects, which are often critical in Africa), and site management projects. Transformation processes may affect narrative, conceptual and scientific value of the site's approach and their understanding may require reference to emerging technologies. Owing to development initiatives or conceptual/ideological changes, the socio-cultural and scientific value of the site may also change. Understanding patterns and processes of such transformations is a mandatory task in which interdisciplinarity plays a crucial part.

Recommendations

- Evaluate and periodically review OUV and authenticity and integrity within an interdisciplinary framework to assess change and development in the attributes;
- Incorporate interdisciplinary evaluations of the buffer zones of sites and scope of serial sites to reflect the nature and scale of the cultural phenomena under consideration, and be open to revision;
- Assess and define a site's potential value by multiple disciplines, including less visible material proxies and its potential to yield future information;
- Develop a programme for baselining heritage resources at sites. They can be used in the prioritization of resources and intervention strategies;
- Stimulate a reappraisal of Neogene and Quaternary Studies in terms of World Heritage, especially towards the treatment of human evolution;
- Explore possibilities of how criteria (viii) could be incorporated into expressing the role of landscape and landscape history in relation to human history, through the cooperation of the UNESCO World Heritage HEADS Programme, Advisory Bodies and related active networks;
- Enlarge the spectrum and evaluate alternative designations complementary to that of World Heritage status with the active participation of the UNESCO World Heritage HEADS Programme;
- Create new mechanisms for implementation which overcome fragmentation in the research base and create new synergies by bringing together researchers and research users in an expert multi-disciplinary and multi-institutional grouping. Such a group or groupings could apply itself to consideration of themes such as 'Resilience and Adaptation' and the 'Nature of Transformation', in relation to built and natural heritage. Included in this could be the development of responses to current and predicted climate change episodes.

Preparation of the Management Plan for Tchitundo-Hulu Rock Art Site

Virei, Angola, 14 to 23 March 2011

Recommendation:

- Compile all existing documentation on research and interventions related to the site (National Archives, universities and research institutions in Angola and overseas);
- Prepare the nomination file of Tchitundo-Hulu Rock Art Site for inscription on the UNESCO World Heritage List;
- Define site boundaries (core and buffer zones) and assess the possibility of including Welwitchia plant as part of the nomination;
- Survey and map the core and buffer zones;
- Carry out comprehensive recording of sites with paintings and engravings;
- Define the legal status of the site;
- Institutionalize the participatory methodology for stakeholders involved in the drafting of the Management Plan and nomination file;
- Prepare a stakeholders-driven Management Plan;
- Assess the state of conservation of the paintings and engravings and identify best practices for conservation methods to be used.

On-site evaluation, 'Preparation of the Management Plan for Tchitundo-Hulu Rock Art site', Virei, Angola, 14 to 23 March 2011. Photo: Graciela González Brigas/AWHF

Working Groups, 'Preparation of the Management Plan for Tchitundo-Hulu Rock Art site', Virei, Angola, 14 to 23 March 2011. Photo: Graciela González Brigas/AWHF

World Heritage and the evolution of modern human behaviour

Nicholas J. Conard
Dept. of Early Prehistory and Quaternary Ecology, Eberhard-Karls-University, Tübingen, Germany

Introduction

When over the long course of human evolution did people become like ourselves? This question, which helps to define our species, warrants examination in the context of defining cultural World Heritage sites. Which sites and groups of sites providing key evidence for documenting the path toward the development of people with our cultural capacities should be considered for candidacy for the status of World Heritage? Or, in the framework of the World Heritage Convention, which sites or groups of sites are of 'Outstanding Universal Value'? This paper considers several key issues related to the evolution of modern humans and discusses a number of sites and regions that have provided key evidence in documenting this evolution.

Before turning to the archaeological record we first need to define terms and establish a few parameters relevant to the following discussion. What is cultural modernity? Simply put, this term is used to imply a point in human evolution when people became like us. The study of the evolution of 'modernity' has been at the centre of recent debate in palaeoanthropology. The key component of fully modern cultural behaviour is communication within a symbolically organized world and the ability to manipulate symbols in diverse social-economic contexts.

Implicit in this definition is the view that all living people are cognitively equal regardless of their physical appearance or the kind of technology they use. This view of the unity of humankind forms the cornerstone of cultural anthropology and the basis of how civilized society deals with cultural diversity (Antweiler, 2007). This view is closely related to the observation that the cultural patterns of modern humans reflect traditions and learned behaviours rather than genetically dictated predispositions. Thus how people live today is, above all, a function of social and cultural reproduction and learning, in connection with environmental conditions, rather than a result of innate biological differences between human populations.

The main focus of this review will be the Middle and Late Pleistocene, when people with our anatomical form evolved and colonized much of the world. The record of fossil human evolution clearly points to Africa as the continent where anatomically modern humans evolved. At present the best evidence for the appearance of modern humans comes from sites including Omo Kibbish and Herto in East Africa (McDougal et al., 2005; White et al., 2003), but one can easily speculate on scenarios in which other regions of Africa contributed to this key phase of evolution.

While there is no consensus about when modern behaviour can first be identified in the archaeological record, by no later than about 40,000 years ago diverse evidence for many forms of advanced technology, as well as the production of personal ornaments, musical instruments and figurative representations, provides undisputed evidence for cultural modernity. These and other archaeologically visible indicators of cultural modernity point to a patchy development of complex cultural behaviour and symbolic communication across the Old World. While some regional patterning is becoming visible, the evidence in hand has been put through a selective taphonomic filter and reflects diverse regional histories of research. These biases hinder the location of convincing centres of origin and dispersal for many of the key features considered here.

At present we see diverse points of view regarding the origins of cultural modernity, and current interpretations include but are not limited to the following models: (a) gradual African origin (McBrearty and Brooks, 2000); (b) coastal origin in connection with new dietary patterns during the early Late Pleistocene (Parkington, 2001); (c) punctuated late African origin (Klein, 1999; Klein and Edgar, 2002); (d) gradual origins across multiple human taxa and multiple continents (d'Errico et al., 2003; d'Errico and Stringer, 2011); and (e) relatively late origins among multiple human taxa including 'Neanderthals' own Upper Palaeolithic revolution' (Zilhão, 2001, pp. 54). Here I argue for gradual polygenetic origins of cultural modernity within a dynamic relationship between anatomically archaic and modern humans (Conard 2007, 2008). The evolution toward behavioural modernity accelerated during the Late Pleistocene, and culturally modern behaviour with diverse regional signals and local innovations can be seen in many parts of Africa, Europe, Asia and Australia by about 40,000 BP. While archaic and modern humans must have interacted in many regions in the context of diverse social and ecological settings (Conard, 2006), ultimately modern humans were at a demographic advantage in all regions and replaced archaic humans with a degree of interbreeding (Green et al., 2010).

This presentation will of necessity be brief and in no way attempts to be encyclopaedic. For a more complete list of references, readers should consult the publications cited. Here I consider examples to illustrate the overall pattern of behavioural evolution. These examples are often drawn from regions where I have worked and know the data best. The subject matter is divided into two main sections. The first focuses on lithic and organic artefacts, and patterns of subsistence and settlement. The second section deals more with data that provide more direct access to the Palaeolithic world of symbols, beliefs and communication, and reviews data for burials, ornament, figurative and non-figurative representation and music as means of defining modern cultural patterns. My concern here is not in developing trait lists or single signatures for modernity, but rather to look at the evolutionary contexts of diverse classes of data that help us to identify patterns of behavioural evolution. This record of innovation and cultural change allows researchers to identify key processes and events that define the narrative of becoming human and thereby point to potential sites of Outstanding Universal Value.

Technology, settlement and subsistence and the evolution of modernity

Lithic technology

The earliest lithic artefacts have been recovered in East Africa and date to 2.6 Myr ago. Stone artefacts are robust and often survive the many kinds of taphonomic processes that destroy much of the record of human evolution. In this regard they are a major source of data on early human behaviour. In many Palaeolithic settings worked stone is the most abundant class of artefacts. These attributes of lithic artifacts make them the most broadly applicable means of defining Palaeolithic cultural groups and tracing the course of human evolution over the last 2.6 Myr.

Over this immense period we see the evolution and spread of diverse Oldowan, Acheulean, Mousterian and blade and microlithic assemblages over much of the Old World. While the specific terminology can vary from region to region, in Africa researchers refer to the Early, Middle and Later Stone Age (ESA, MSA and LSA) to organize the vast lengths of time before the advent of metals. In Eurasia, the Old Stone Age or Palaeolithic is customarily divided in a Lower, Middle and Upper Palaeolithic. Both the MSA and Middle Palaeolithic begin roughly 300,000 and end about 40,000 years ago. Thus this is the critical period during which anatomically modern humans evolved in Africa and modern human behaviour appears to have gradually evolved in a mosaic pattern across much of the Old World (Conard, 2007; d'Errico and Stringer, 2011).

Lithic assemblages of the MSA and Middle Palaeolithic do not provide the evidence needed to define precisely when modern patterns of human behaviour developed. They do, however, clearly show a heterogeneous pattern of technological development and transmission that often shows a degree of continuity between the MSA and LSA and the Middle and Upper Paleolithic. This

transition saw change and the further development of new technologies, but while more advanced forms of lithic technology came into broader use in the LSA and Upper Palaeolithic, most of these technologies have well-documented precursors in earlier periods. These precursors include, among many other examples, the highly standardized Howiesons Poort segments from southern Africa (Fig. 1) and examples of early blade technology in Africa and Europe (Fig. 2). Additionally, researchers have documented abundant evidence for the manufacture of mastic, hafting and projectile technology in many regions of Africa, the Near East and Europe during the MSA and Middle Paleolithic (Boëda et al., 1998; Wadley et al., 2009; Meller, 2003).

Organic technology

The development of organic technology shows a pattern analogous to that of lithic technology. While the LSA and Upper Palaeolithic are defined on the basis of new artefact forms that occur in easily detectable numbers, organic artefacts have antecedents extending into the ESA and Lower Palaeolithic. Thus the beginnings of the LSA and Upper Palaeolithic reflect legitimate archaeological divisions, but the changes represent a further elaboration and intensification of technologies that in some cases existed earlier.

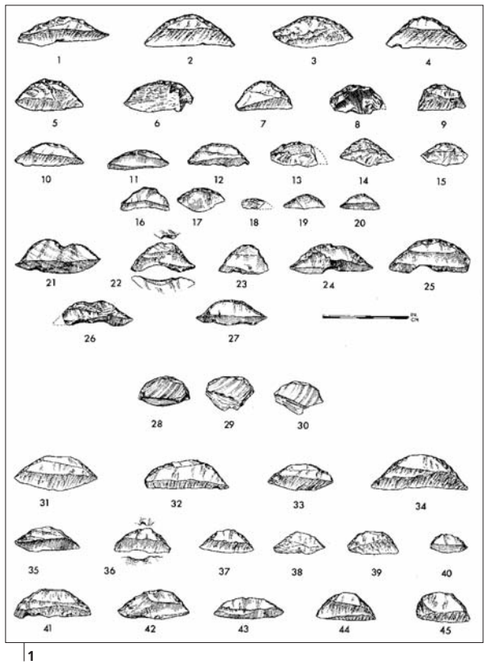
With regard to this question some of the most important discoveries of the last decades are the finds from Schöningen in northern Germany, where Thieme's excavations have yielded eight wooden spears as well as other wooden tools (Thieme, 1997, 1999) (Fig. 3). These tools are of the highest workmanship and lend support to the importance of wooden tools from Clacton-on-Sea (Oakley et al., 1977) and Lehringen (Thieme and Veil, 1985). Unless we postulate that this part of Germany enjoyed a privileged position in human cultural evolution, we must conclude that organic technology and diverse well-made wooden tool assemblages played an important role in the daily life of the Lower and Middle Palaeolithic inhabitants of Europe. These sites provide a highly favourable setting for preservation that cannot be matched in other sedimentary settings, but occasional finds of preserved wood in Africa and the Near East leave room for optimism that future work may uncover comparable wooden artefacts outside Europe.

Much has been made of the development and elaboration of bone, ivory and antler tools in recent years (d'Errico, 2003; d'Errico et al., 2003; d'Errico and Springer, 2011; Gaudzinski, 1999). MSA assemblages from sites including Apollo 11 (Vogelsang, 1998), Klasies River (Singer and Wymer, 1982), Blombos (Henshilwood et al., 2001) and Sibudu (Wadley, 2006) have produced a wealth of bone artefacts (Fig. 4). Many examples are sharpened bones and bone splinters. Other bone tools show series of notches or more enigmatic forms. An exceptional case is the elaborately made harpoons from Katanda in D. R. Congo, former Zaire (Brooks et al., 1995). Certainly by the Late Pleistocene simple bone tools were widespread in the MSA.

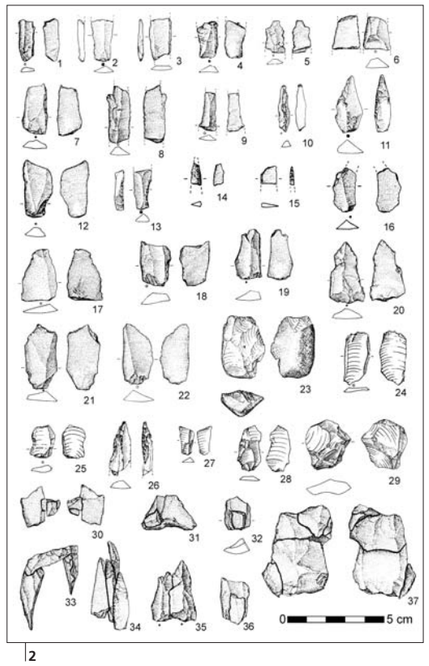
The European Lower Palaeolithic also documents early examples of bone tools including carefully manufactured handaxes (e.g. Segre and Ascenzi, 1984; Gatti, 1993). Similarly, bone tools are well documented at Middle Palaeolithic sites including Salzgitter-Lebenstedt (Gaudzinski, 1999), Große Grotte (Wagner, 1983) and Vogelherd (Riek, 1934) (Fig. 5). Bone, ivory and antler tools are by no means as common or complex as those of the Upper Palaeolithic, but they no doubt existed in Middle Palaeolithic assemblages (d'Errico and Stringer, 2011). Bone tools were clearly used by late archaic humans in many settings, and they have occasionally been documented in large numbers (d'Errico et al., 2003). These tools tend to be less standardized and less elaborate than the organic tools of the Upper Palaeolithic, which begin to appear in large numbers around 40,000 years ago (Albrecht et al., 1972; Hahn, 1977).

Finally, the Late Pleistocene sees further evidence for cultural innovations that should be mentioned here. These innovations include the wide-spread use of grinding technology during the MSA and Middle Palaeolithic of North and East Africa (Wendorf et al., 1993; Van Peer et al., 2004). The large assemblage of ground stone tools from the MSA of Mumba Cave in Tanzania is particularly impressive in this context (Fig. 6). Over the Late Pleistocene evidence for more advanced pyrotechnology can be seen over much of the Old World including, for example, fire-making technology in the Swabian Aurignacian (Riek, 1934; Weiner and Floss, 2004). Finds documenting water transport technology in the form of perforated ostrich eggshells suggest the advent of storage and transport of water in arid parts of southern Africa (Vogelsang, 1998; Parkington et al., 2005; Texier et al., 2010). As these and other less well-studied categories of finds and behavioural innovations become topics of more systematic research, they will play a more prominent roll in the discussions about the evolution of cultural modernity.

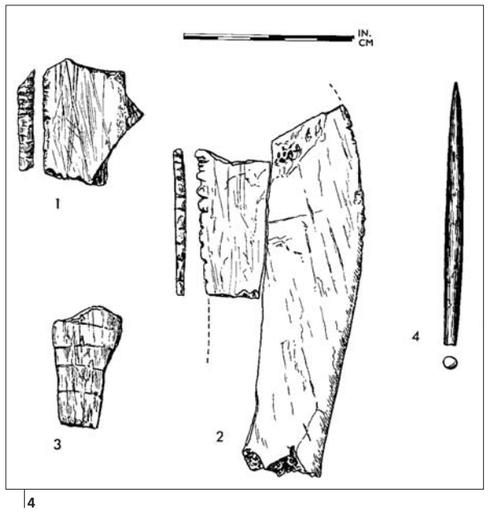
1. *Klasies River Mouth, South Africa. Highly standardized lithic artefacts from the Howiesons Poort assemblage ca. 75,000 years old. © R. Singer and J. Wymer, 1982*



2. *Tönchesberg 2B, Germany. Middle Paleolithic assembleage with blades, bladelets, backed points and backed bladelets and imported lithic materials, age ca. 100,000 years old. © N.J. Conard, 1992*



3. *Schöningen, Germany. Late Lower Palaeolithic wooden spear and horse bones, age ca. 300,000 years old. Photo: N.J. Conard*



4. *Klasies River Mouth, South Africa. Bone artefacts from Middle Stone Age deposits ca. 75,000 years old. © R. Singer and J. Wymer, 1982*

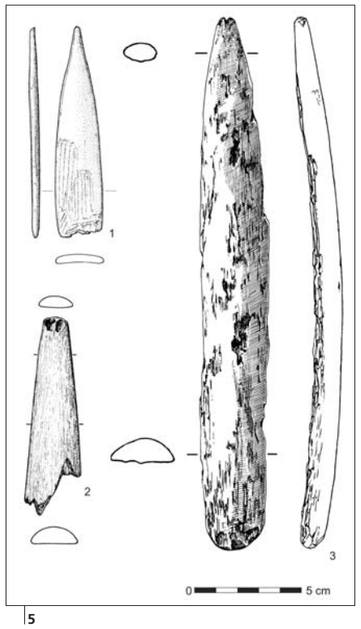
Subsistence

Patterns of subsistence vary in time and space due to changing environmental conditions and changes in technology combined with changing social and settlement strategies. Although most sites do not contain preserved botanical remains, there is every reason to assume that plants played an important part in the diet of all hominids, just as they do for all ethnographically documented societies (Owen, 2005). The diet of Neanderthals as reflected in stable isotope data indicates a relatively high component of animal resources (Bocherens, 2011). These results, however, do not preclude the use of plants in the diet, and even in the harshest arctic and desert environments, plants are seasonally available and nutritionally important.

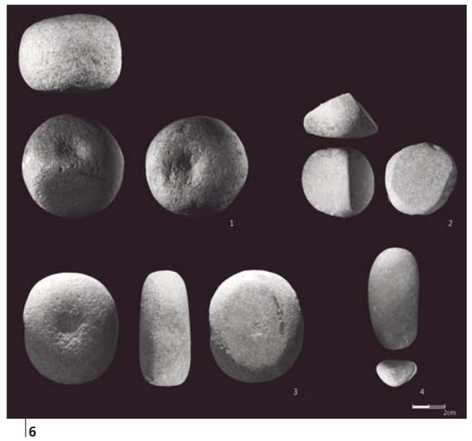
Many case studies have provided convincing evidence that both later archaic and anatomically modern humans practised systematic hunting of large, medium and small game. These data by no means suggest that patterns of subsistence are homogeneous over whole continents or subcontinents, but the advocates of subsistence forms based on scavenging or ineffective forms of hunting (Binford, 1989; Stiner, 1990, 1994) seem to have overstated the case against the existence of reliable hunting economies within MSA and Middle Palaeolithic societies (Marean and Kim, 1998; Marean and Assefa, 1999; Gaudzinski and Roebroeks, 2000).

Again in this context the finds from Schöningen are of central importance and have redefined the discourse on Lower Palaeolithic subsistence. Thieme's (1997, 1999) team recovered eight spears from Schöningen in direct association with the bones of about 20 horses in deposits dating to between 300 and 400 kyr ago. These discoveries of the mid-1990s brought the more extreme assessment of Lower and Middle Palaeolithic subsistence based on obligatory scavenging to an end. As far as I am aware the implications of these remarkable finds for documenting hunting of large game by archaic hominids and the implications of the recovery of a yew wood spear with the skeleton of an Eemian ages forest elephant at Lehringen have not been questioned in recent years. These finds do not demonstrate that hunting large game was a universal phenomenon in the late Middle and Late Pleistocene, but they do document the existence of well-planned and successfully executed hunting of large and fast game.

More mundane sources of information tend to support this view. Numerous faunal assemblages indicate that late archaic and early modern humans had frequent early access to game. In most



5



6

5. *Vogelherd and Große Grotte, Germany. Organic artefacts from the late Middle Paleolithic, age ca. 45,000 years. © N.J. Conard, 2011*

6. *Mumba Cave, Tanzania. Ground stone tools from the Middle Stone Age from archaeological horizons V, ca. 100,000 years old. Photos: Y. Hilbert. © University of Tübingen*

settings, the possibility of scavenging cannot be completely excluded, but active hunting is the most parsimonious explanation for the faunal assemblages at sites including, for example, Salzgitter-Lebenstedt (Gaudzinski and Roebroeks, 2000), Tönchesberg (Conard, 1992) and Wallertheim (Gaudzinski, 1995; Conard and Prindiville, 2000). In other contexts in many parts of Eurasia and Africa, similar evidence for the role of hunting in the diet of Middle Palaeolithic and MSA people is present (Gaudzinski, 1996; Marean and Kim, 1998; Marean and Assefa, 1999; Burke, 2000). A series of influential publications by Stiner and colleagues (1999) have argued for resource intensification and increased human predation of small and fast game over the course of the Paleolithic. Finally, it must be stressed that scavenging fresh carcasses is an attractive economic option in contemporary hunting and gathering societies (O'Connell et al., 1988). Thus there is no reason to stigmatize Palaeolithic scavenging as a pre-modern adaptation.

In southern Africa, Klein and Parkington have developed new approaches and hypotheses for the development of subsistence practices during the MSA. Parkington (2001) stresses the key role of the exploitation of coastal resources for brain development and the origin of cultural modernity in coastal settings. He has also suggested that similar processes may have driven human evolution in other coastal environments, including the circum-Mediterranean region. Klein (1999) has looked at small game such as tortoises and marine resources as playing an important role in MSA and LSA subsistence. He argues that until ca. 50 kyr ago hunting was limited to comparatively easily hunted game and that people only started systematically hunting dangerous animals including suids and buffalo in the late MSA and LSA. Klein sees this shift in subsistence as an indication of the rise of cultural modernity in connection with genetic mutations and the appearance of fully developed language. Both Parkington's and Klein's hypotheses have been received with considerable scepticism (Faith, 2008), but both hypotheses present entirely welcome, refutable models for the rise of cultural modernity. Given the general lack of clearly formulated models that provide causal explanations for the rise of behavioural modernity, these hypotheses, even if they are later demonstrated to be incorrect, have fostered considerable new research. This is certainly the case of the critical assessment of the early evidence for hunting by Binford and colleagues in the 1980s and 1990s.

Like the other data we have considered thus far, the evidence on subsistence during the Middle and Late Pleistocene shows a pattern of advanced adaptations at an early date. With the possible exception of Parkington's model for increased use of marine resources in the Late Pleistocene, the data on subsistence tend to argue against a revolutionary change in economic and social behaviour that defines the appearance of cultural modernity.

Settlement

Reconstructing patterns of settlement and the organization of space is one of the more elusive ways of trying to define modern patterns of behaviour. This relates to the general difficulty of reconstructing settlement dynamics in any period and particular problems associated with the Palaeolithic, where the amount and quality of data are generally poorer than in later periods. The analysis of Palaeolithic settlement in the contexts of defining modern behavioural forms has two major approaches: intra-site and regional.

Binford (1998), Wadley (2001) and others have argued that spatial organization within a find horizon can be used to define cultural modernity. Binford, for example, sees repetitive modular units of hearths and bedding areas in rock shelters as a hallmark of modern spatial organization. In his view this pattern of spatial organization is not present before the LSA or Upper Palaeolithic. Wadley sees a marked increase in spatial organization during the late MSA of Rose Cottage Cave in the Free State of South Africa as a further indication that the final stages of the MSA may reflect the period in which cultural modernity developed. Recent work at Sibudu near the eastern coast of South Africa has identified remains of bedding and evidence for regular maintenance of the site that also suggest a degree of complex spatial organization during the later part of the MSA (Goldberg et al., 2009).

In Europe, Kolen (1999) has pointed to the lack of clear evidence for architecture as an indication that neither Lower nor Middle Palaeolithic groups regularly built shelters as centres of social and economic interaction, as are known in many later archaeological periods. Instead archaic humans used what Kolen refers to as 'nests' to provide shelter. If correct, this would indicate that settlement

dynamics of archaic humans, including Neanderthals, fell outside the range of culturally modern people. Several researchers have questioned this model and suggest that even if clear architectural features other than hearths are generally lacking before the Upper Palaeolithic, late Middle Palaeolithic sites document spatially structured activity areas similar to those one would expect in sites of modern hunters and gatherers (Conard, 2001*a*; Vaquero et al., 2001; Vaquero et al., 2004). As with many of the criteria considered here, it is unclear to what extent taphonomic factors and the quality of data affect our interpretations. Kolen, however, is certainly correct to note that clear evidence for anthropogenic shelters and dwellings is extremely rare prior to the Upper Palaeolithic.

At a larger scale of analysis, we see more tantalizing, yet largely inconclusive evidence for the use of space and distant resources as indicators of behavioural modernity. Important work by Geneste (1988), Roebroeks, Kolen and Rensink (1988), Floss (1994), Féblot-Augustins (1997), among others, examines the use of distant raw materials as a source of information on Palaeolithic economic and spatial organization. Especially in the context of the continental European approaches to the study of patterns of lithic reduction and technology (Hahn, 1988; Geneste, 1988; Boëda, Geneste and Meignen, 1990) much research has been aimed at linking patterns of lithic technology to systems of mobility and settlement. These and other studies show the nearly universal pattern that more distant raw materials are present at sites in more reduced form than local raw materials. This applies for all Palaeolithic periods. In later periods more raw materials from distant sources are transported to sites, but there is no specific moment that reflects a quantum shift from non-modern to modern patterns of behaviour. Also, the 'provisioning of place' (Kuhn, 1995) – that is, the movement of quantities of raw material to sites for future use – is documented on sites of both modern and archaic hominids (Conard and Adler, 1997).

Examination of the abundance of distant raw materials as a reflection of the size of territories and long-distance economic and social relationships has also provided ambiguous results. Middle Palaeolithic assemblages document the use of raw materials from 100 km or more away (Floss, 1994; Féblot-Augustins, 1997). Nonetheless, such long-distance transport of tools and raw materials are still more common in the Upper Palaeolithic, and the difference is more one of degree than of kind. So far these kinds of data have not led researchers to devise a reliable means of distinguishing between archaic and modern behavioural forms. These lithic data also suggest mosaic, context-dependent systems of adaptations with considerable variability, rather than a black-and-white world of unilinear evolution, in which quantum leaps between archaic and modern behaviour can be readily identified.

Finally, an analysis of site types and links between sites within settlement systems shows considerable diversity in MSA and Middle Palaeolithic systems of settlement, but no easily recognisable criterion for defining behaviour modernity (Conard, 2001*b*, 2004*b*). Here, as in other areas, I doubt whether the search for a holy grail of cultural modernity is a productive way of defining a research programme (Shea, 2011). Scholars continue to struggle to identify the origins of a settlement system that reflects a symbolically mediated landscape inhabited by culturally modern people.

The archaeology of symbolic communication

As the discussion above suggests, identifying clear criteria for behavioural modernity is probably more likely in the realms of ideology and symbolic communication than in the nuts and bolts archaeology of chipped stone and faunal remains. Here I consider several lines of argument and sets of data that lie outside the pragmatic economic concerns of day-to-day subsistence.

Burials

Despite arguments to the contrary by Gargett (1989, 1999) and other colleagues, there are a wealth of Middle Palaeolithic human skeletons that seem to have been buried deliberately (Solecki, 1971; Trinkaus, 1983; Defleur, 1993). Such burials could be motivated by purely practical factors like the need to dispose of undesirable cadavers, but I think it is more likely that the numerous burials of Neanderthals and anatomically modern humans of the Middle Palaeolithic reflect the deliberate burial of kin and are linked to personal and emotional ties between the living and the dead. Defleur (1993) has summarized much of the evidence for Middle Palaeolithic burials and points to a number of convincing cases in Europe and the Levant. The question of the deliberate inclusion of grave goods and the identification of specific ritual practices is more contentious and difficult to demonstrate beyond doubt. Although Border Cave in South Africa may be one example of MSA burial practices (Bird et al., 2003), such evidence is rare in sub-Saharan Africa. In Egypt, however, the site of Taramsa provided evidence for burial of the dead in the Nile Valley around 70 kyr ago (Van Peer et al., 2010).

In the Upper Palaeolithic the data are unambiguous, and many burials preserve opulent grave goods that reflect the status of the individuals and perhaps the needs of the dead in the afterlife. Examples of burials from Sungir', Dolní Věstonice, the Grimaldi Caves and other sites suggest that the system of beliefs in association with death and the afterlife were much more elaborate in Upper Palaeolithic than Middle Palaeolithic societies. These Upper Palaeolithic burials document the presence of religious beliefs and clear evidence for people living in a world mediated by symbolic communication similar to that of all living people today.

Pigments

In recent years there have been a number of reports of early occurrences of pigments and discussions of the importance and meaning of the use of pigments (Barham, 1998; McBrearty and Brooks, 2000; d'Errico and Soressi, 2002; Hovers et al., 2003). Based on this work, it has become clear that pigments were used in some MSA contexts during the later Middle Pleistocene and in numerous MSA and Middle Palaeolithic settings of the Late Pleistocene (Watts, 1998). Southern Africa has yielded particularly abundant evidence for the use of pigments during the MSA. Barham's (1998) work at Twin Rivers in Zambia is a noteworthy example of the presence of many pieces of pigments in Middle Pleistocene contexts, and numerous MSA sites dating to the Late Pleistocene including Klasies River (Singer and Wymer, 1982), Diepkloof, Peers Cave, Hollow Rock Shelter (Watts, 2002), Apollo 11 (Vogelsang, 1998), Blombos (Henshilwood et al., 2001) Hoedjiespunt and Mumba Cave (Fig. 7 & 8) have produced much evidence for grinding pigments. Parkington has argued that the use of pigments provides additional indications of the advent of behavioural modernity in the MSA, particularly in more coastal settings, where Howiesons Poort and Still Bay assemblages are concentrated. Watts (1998, 2002) has reviewed the evidence for the use of pigments in the MSA and concludes that ochre is extremely common at many MSA sites and reflects a widespread ability to structure the world into a symbolically organized whole. Watts rejects the hypothesis that pigments were primarily used for strictly utilitarian purposes, including tanning hides; while Wadley (2005; Wadley et al., 2009) emphasizes the practical uses of ground ochre, for example, in hafting lithic artefacts.

In the Levant and Europe, Hovers, d'Errico, Soressi and colleagues also see strong evidence for the use of ochre by both early modern humans and Neanderthals at Middle Palaeolithic sites including Qafzeh (Vandermeersch, 1969; Hovers et al., 2003), Pech de l'Azé (Bordes, 1972; d'Errico and Soressi, 2002), Cueva de Los Aviones (Zilhão et al., 2009) and others. The potential uses of ground ochre include body painting, rock painting, drawing, ritual, medicinal, as well as more practical purposes such as hafting. Although we rarely have reliable information on the specific use of these

7

8

7. *Blombos, South Africa. Engrave ochre from the Still Bay, ca. 75,000 years ago.*
Photo: C. Henshilwood

8. *Mumba Cave, Tanzania. Pigments from archaeological horizons V and VI, ca. 100,000 years old.*
Photos: Y. Hilbert.
© University of Tübingen

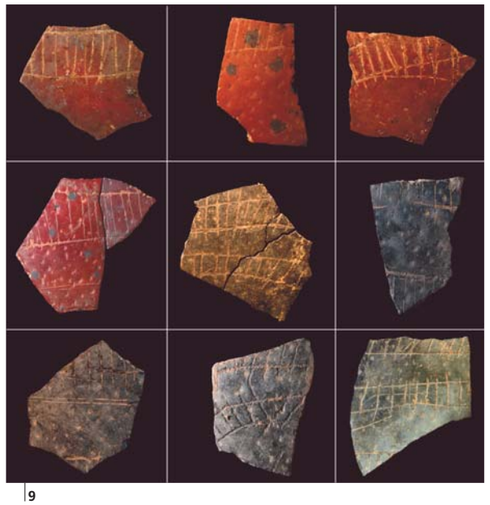
early occurrences of ochre, they are presumably, at least in some settings, such as in Middle Palaeolithic burials, connected with religious beliefs that speak for a high level of cultural development and a significant degree of symbolic communication (Hovers et al., 2003). As with other potential indicators of advanced cultural attributes discussed above, the use of ochre does not appear to reflect a quantum leap signifying the shift from archaic to modern patterns of behaviour. Both anatomically modern and archaic humans used pigments and presumably at times attached symbolic meaning to red, black and perhaps other ground mineral pigments. Given the well-documented use of mineral pigments during the Middle Palaeolithic and MSA, the use of organic pigments is likely, even if difficult, to demonstrate with direct archaeological observations.

Decorated objects and non-figurative representation

There is a long history of claims for deliberate non-utilitarian modification of objects in Palaeolithic contexts. These include finds from the Lower Palaeolithic, such as incised bones from Bilzingsleben (Mania, 1990; Steguweit, 2003), and many finds from later periods. These objects are often controversial and are usually not accepted as demonstrating complex symbolic communication and cultural modernity. Following other lines of argument, colleagues have suggested that the perfect symmetry of some handaxes indicates an advanced aesthetic development, but Wynn (1995) and Haidle (2004) argue that handaxes do not necessarily reflect symbolically based communication or language. Over the course of the Middle Palaeolithic and MSA larger numbers of enigmatic objects have been published, including the cross-incised stone and modified fragment of a mammoth tooth from Tata, Hungary (Vértes, 1964), and the so-called 'mask' from La Roche-Cotard (Lorblanchet, 1999). Some researchers have included evidence for collected fossils or curated natural products as indicators of advanced aesthetic and behavioural patterns (Schäfer, 1996).

Particularly in recent years, the MSA has produced a number of incised objects that have been taken as evidence for symbolic communication and a high degree of cultural development. Important examples of these finds include engraved linear and cross-hatched patterns on pieces of ochre from Still Bay deposits at Blombos dating to ca. 75 kyr ago (Henshilwood et al., 2002), and incised pieces of ochre from, for example, Peers Cave. Current excavations at Diepkloof have produced fragments of numerous engraved ostrich eggshells from Howiesons Poort contexts including a decorated piece of an ostrich eggshell flask (Parkington et al., 2005; Texier et al., 2010) (Fig. 9). Similar finds have also been recovered from MSA contexts at sites including Apollo 11 (Vogelsang, 1998). These finds bear repeated standardized decorative motifs that are unquestionably the result of deliberate manufacture. They also document the desire of their makers to convey symbolic content and aesthetically meaningful information to members of his or her social group. There can be little doubt that such carefully produced decorated objects and the non-figurative

9. *Diepkloof Rock Shelter, South Africa. Engraved ostrich eggshell fragments from MSA deposits, age ca. 60,000 years. Photos and photomontage: P-J. Texier, UMR 5199-PACEA, CNRS*



9

10. *Grotte des Pigeons, Morocco. Personal ornaments made from marine shells, age ca. 82,000 years. Photo: M. Vanhaeren, F. d'Errico*

10

representations they carry communicated information from the maker to the people who used or saw these objects. Deciphering the specific meaning broadcast through these finds is not easy, and few specific explanations for their meaning have been presented. With increasing amounts of carefully executed fieldwork during the MSA, there is reason for optimism that contextual information will help archaeologists to develop hypotheses to explain the meaning of these finds. Many colleagues accept these finds as definitive evidence of cultural modernity with fully developed symbolic communication, modern cognitive abilities including language (Henshilwood et al., 2002; d'Errico et al., 2003; Texier et al., 2010).

Ornaments

The manufacture and use of personal ornaments convey social information about individual identity and group affiliation. This potential for assertive individual style or emblemic style reflecting social affiliation within a larger demographic group (Wiessner, 1983) is an important characteristic of modern behavioural patterns and has been the focus of much recent research (Vanhaeren, 2002). The archaeological distribution of ornaments provides a clearer signal than many of the classes of finds considered above.

Early evidence for the use of marine shells as ornaments comes from burial contexts from Qafzeh and Skhul Cave in Israel and dates to as far back as 120 kyr ago (Bar-Yosef and Vandermeersch, 1993; Bar-Yosef Mayer et al., 2009; Vanhaeren et al., 2006). Additional evidence for early personal ornaments in the form of perforated marine shells comes from Grottes des Pigeons and other sites in the Maghreb dating to around 80 kyr ago (Bouzouggar et al., 2007; Vanhaeren et al., 200x; d'Errico et al., 2009) (Fig. 10). Slightly younger examples of perforated marine shell ornaments come from Still Bay deposits at Blombos and Sibudu Caves dating to about 75 kyr ago (Henshilwood et al., 2004; d'Errico et al., 2008). Starting roughly 40 kyr ago, personal ornaments have been documented in many parts of the Old World. Early ornaments include ostrich eggshell beads from early LSA contexts in Enkapune Ya Muto rockshelter, Kenya, with associated radiocarbon measurements between 30 and 40 kyr ago (Ambrose, 1998). AMS radiocarbon dates directly on ostrich eggshell beads from deposits representing the transition from the MSA to LSA at Mumba Cave in Tanzania (Fig. 5) (Weiß, 2000; Conard, 2004*a*) have yielded multiple dates between 29 and 33 kyr ago and lend support to the early dates from Enkapune Ya Muto. There is every reason to believe that these early personal ornaments from Africa were made by anatomically and culturally modern people.

Excavations at Ksar Akil in Lebanon (Azoury, 1986) and at Üçagizli in the Hatay Province of Turkey (Kuhn et al., 1999; Kuhn et al., 2001) have produced rich assemblages of perforated marine shells from Initial Upper Palaeolithic contexts dating to about 40 kyr ago. Similar finds have been recovered from other Mediterranean early Upper Palaeolithic contexts, including Riparo Mochi on the Ligurian Coast of Italy (Kuhn and Stiner, 1998; Stiner, 1999).

Elsewhere in Europe there is considerable evidence for a rapid spread in the use of ornaments with the beginning of the Upper Palaeolithic. Neanderthals apparently created a wide range of perforated and incised ornaments in Châtelperronian contexts such as at Grotte du Renne at Arcy-sur-Cure (Leroi-Gourhan and Leroi-Gourhan, 1964; Baffier, 1999; d'Errico et al., 1998). At more or less the same time, numerous examples of early Aurignacian ornaments have been recovered from several regions including the Swabian sites such as Vogelherd, Geißenklösterle and Hohle Fels (Conard, 2003*a*) (Fig. 11). In addition to incised and perforated natural forms such as teeth, these artefacts include diverse ornaments made of mammoth ivory. It is noteworthy that many of the oldest forms of ornaments in Europe are not only perforated shells or teeth, but also completely carved, three-dimensional ivory beads, pendants, and figurines in which the maker completely dictated the form of the artefact (Conard, 2008).

Although earlier examples of personal ornament are known, by around 40 kyr ago examples of ornaments are well documented across much of the Old World. These data are consistent with the hypothesis that modern cultural behaviour spread rapidly between roughly 40 and 50 kyr ago. Shell beads from Mandu Mandu Creek Rock Shelter in Western Australia dating to more than 30 kyr ago (Morse, 1993) suggest that the use of personal ornaments was indeed widespread at an early date. Here I should emphasize that the colonization of Sahul was an event in prehistory that

required crossing the vast open water of Wallacea with rafts or other forms of boats. The best available dates for the colonization lie in the range of ca. 42 to 45 kyr ago and fit with the pattern suggesting the rapid spread of modern humans with advanced behavioural patterns about this time (O'Connell and Allen, 1998, 2004).

Figurative representations

The presence of figurative art has been universally accepted as an indication of behavioural modernity. In Africa the earliest figurative art is from the late MSA of Apollo 11, dating between 25,500 and 27,500 radiocarbon years ago, or roughly 30,000 calendar years ago (Vogelsang, 1998). These examples of painted mobile art depict a number of animals, geometric forms and a possible therianthrope (Fig. 12). The Middle Pleistocene aged, anthropomorphic-shaped stone from Tan Tan, Morocco (Bednarik, 2003), much like a similar object from Berekhat Ram, Israel (Goren-Inbar, 1986; Goren-Inbar and Peltz, 1995; d'Errico and Nowell, 2000), appears to be a modified natural form rather than a deliberately carved figurine. In the Levant there is little or no evidence of figurative art before 30 kyr ago.

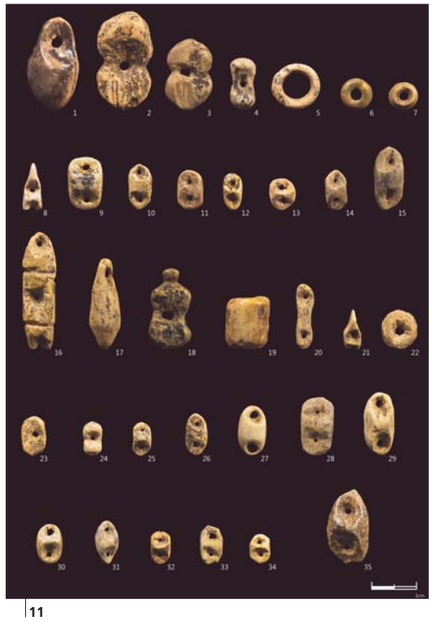
The situation in Europe is very different in that several sites have provided evidence of figurative representation between 30 and 40 kyr ago. The earliest figurative art includes the mammoth ivory figurines from four caves in Swabia in south-western Germany (Hahn, 1986; Schmid, 1989; Conard and Bolus, 2006) and several red monochrome paintings from Fumane in northern Italy (Broglio, 2002, Broglio and Dalmeri, 2005). The Swabian Caves of Vogelherd, Hohlenstein-Stadel, Geißenklösterle and Hohle Fels have produced several dozen, often fragmentary and mostly very small, ivory figurines and figurative representations in bone and stone (Floss and Rouquerol, 2007). These small sculptures date well in excess of 30,000 radiocarbon years, which corresponds to closer to 40 kyr in calendar years. Due to the noisy radiocarbon signal in this period and above-average 14C production, the radiocarbon ages at the Swabian Caves and the similarly aged deposits from Fumane significantly underestimate the age of these artworks. The Swabian ivory figurines include depictions of lions, mammoths, horses, bison, bears, a water bird and two or perhaps three therianthropes that combine features of lions and humans (Hahn, 1986; Conard, 2003) (Fig. 13). These artworks are small and beautifully carved. They stand in sharp stylistic contrast to the highly schematic paintings of animals, unknown forms and a possible therianthrope from Fumane (Broglio, 2002). Geißenklösterle has also produced a painted rock from this period that preserves traces of red, yellow and black pigments (Hahn, 1986).

Most recently a finely carved, headless, female figurine with prominent sexual features has been recovered from the basal Aurignacian deposits at Hohle Fels Cave in the Ach Valley (Conard, 2009, 2010) (Fig. 14). This remarkable find is probably the earliest of the many figurines from the Swabian Jura and extends the record of these so-called Venus depictions back to the beginnings of Paleolithic figurative representation.

Cave paintings also have spectacular beginnings as documented at Grotte Chauvet in the Ardèche region of southern France (Clottes, 2001) (Fig. 15). Here numerous depictions of animals date back as far as 32,000 radiocarbon years ago. The selection of animals depicted in Chauvet, with an emphasis on dangerous, strong and large animals, shows remarkable similarities to the Aurignacian figurines from Swabia (Floss and Rouquerol, 2007) and no stylistic similarities to the simple depictions from Fumane. Other important sites in this context include Stratzing in Lower Austria, where a human figurine of stone has been dated to between 30 and 32 kyr ago. Abri Cellier, La Ferrassie, Abri Blanchard and Abri Castanet in south-western France have produced representations of animals and vulvas dating to about 30,000 radiocarbon years ago (Leroi-Gourhan, 1995).

These figurative depictions from European contexts are the earliest known worldwide. They all date to the early Upper Palaeolithic and were presumably made by modern humans, however, as far as we can tell, Neanderthals still occupied parts of Europe at this time (Conard et al., 2004*a*).

The specific context in which figurative art developed has been the subject of considerable discussion of late and will not be elaborated upon here (Lewis-Williams, 2002; Conard and Bolus, 2003). Regardless of the specific social-cultural mechanisms that led to the development and spread of figurative art, there is a consensus among archaeologists and palaeoanthropologists that the makers of these early artistic traditions were culturally modern people (Churchill and Smith, 2000). While many other advanced behavioural forms have precursors in earlier periods, there is no convincing evidence for figurative depictions prior to the beginnings of the European Upper Palaeolithic (Conard, 2008).



11

12

13

14

15

11. *Geißenklösterle, Hohle Fels and Vogelherd, Germany. Three dimensionally formed personal ornaments made from mammoth ivory, age ca. 35,000 years old.*
© N.J. Conard

12. *Apollo 11 Cave, Namibia. Figurative painting from Middle Stone Age, age ca. 30,000 years.*
© R. Vogelsang, 1998

13. *Vogelherd (1-5), Hohle Fels (6), Germany. Figurative art made from mammoth ivory, age ca.35,000 years old.*
© N.J. Conard

14. *Hohle Fels, Germany. Female figurine carved from mammoth ivory and flute from the radius of a griffon vulture from the Early Aurignacian, age ca. 40,000 years ago.*
Photo: H. Jensen

15. *Grotte Chauvet, France. Early Upper Palaeolithic parietal art, age 32,000 years old.*
Photo: Michel Kneubühler, DRAC Rhône-Alpes

Music

Perhaps because of the long research tradition and favourable taphonomic conditions, the earliest examples of musical instruments have been recovered from early Aurignacian contexts in Swabia (Hahn and Münzel, 1995; d'Errico et al., 2003; Conard et al., 2004; Conard et al., 2009). As is the case with figurative representations, evidence for music and musical instruments can be seen as an indication of fully developed cultural forms based on symbolic communication. The assumption in this context is that where there is figurative art and music, there must have been fully developed language, by which Palaeolithic people assigned specific concrete and abstract meaning to words and could efficiently communicate information about the past, present and future. Thus, where there is figurative art and music, there must have been behaviourally modern people.

While speech, song, music and dance presumably existed still earlier, the oldest musical instruments known are four bone flutes and four mammoth ivory flutes from archaeological horizon II at Geißenklösterle (Hahn and Münzel, 1995; Conard et al., 2004), from the re-excavations at Vogelherd (Conard and Malina, 2006), and from the lowest Aurignacian find horizons (AH Vb) at Hohle Fels. The earliest of these finds is a well-preserved flute carved from the radius of a griffon vulture, which was found in the basal Aurignacian layer of Hohle Fels less than one metre from the female figurine from the same layer (Conard et al., 2009). Archaeological horizon II at Geißenklösterle has been dated by thermoluminescence to about 37,000 BP and to several thousand years younger with radiocarbon (Richter et al., 2000). Here excavators recovered a well-preserved bone flute made from the radius of a swan. The same stratigraphic unit also produced a well-preserved example of a flute carved from mammoth ivory (Conard et al., 2004). This instrument reflects a remarkable piece of musical engineering, since the process of manufacturing a flute from massive ivory is much more complex and time consuming than carving a flute from a hollow bird bone. One advantage that an ivory flute provides is that its size and its tonal qualities are not predetermined by the raw material itself.

Reconstructions of these instruments produce a diverse and rich tone quality and pleasing music (Seeberger, 2002, 2004). These flutes can be played without a reed and they are clearly flutes rather than a reed- or trumpet- voiced instrument as suggested by d'Errico and colleagues (2003). The bone flute from Hohle Fels has a V-shaped mouth piece that makes it possible to play any melody one wishes on this instrument. All of the flutes from the Swabian Jura were recovered in strata which include a wide range of lithic artefacts, organic artefacts, and burnt and unburnt faunal remains. Thus it seems that the instruments were used and discarded within a context of everyday life. The flutes from the Ach and Lone Valleys of south-western Germany suggest that music played a diverse and varied roll in the lives of early modern humans in Europe.

Other sites, most notably Isturitz in the French Pyrenees, have produced additional flutes and indicate that wind instruments were in fairly wide use during the early Upper Palaeolithic (Buisson, 1990; d'Errico et al., 2003). Of course, there are countless other less conspicuous forms of percussion and wind instruments that could have existed during the early Upper Palaeolithic or still earlier, yet they remain to be identified. Claims for earlier examples of Middle Palaeolithic flutes have generally been met with scepticism in archaeological circles, as was the case with recent claims for a Middle Palaeolithic flute made from a cave bear bone from Divje Babe in Slovenia (Turk, 1997; Albrecht et al., 1998). Thus as far as we have empirical data at present, the earliest musical instruments have been documented in the early Upper Paleolithic of Europe. They date to the period in which populations of anatomically modern humans expanded across Europe at the expense of the indigenous Neanderthals. Like figurative art and other innovations in symbolic communication, musical traditions directly or indirectly contributed to the success of our species and helped placed them at a demographic advantage in their competition with Neanderthals (Conard, 2006).

Conclusions

This paper has reviewed some of the evidence for advanced cultural behaviour and argues for a variable pattern of development depending on specific historical and evolutionary contingencies. The development of modern behaviour does not in my view represent a one-time-only quantum leap, but rather a complex pattern of innovation, spread and local loss of new traits through cultural selection and social reproduction. Demographic trends and patterns of intra- and inter-societal contacts led to mosaic patterns of cultural development that resulted from specific historical and ecological conditions during the Pleistocene. The current archaeological record provides glimpses of these evolutionary processes, but it would be naïve to think that our current data on the fleeting material remains of the development and spread of modern behaviour provide a one-to-one indication of where and when advanced technology, highly developed patterns of settlement and subsistence, ornaments, music, abstract and figurative representation evolved. The question of why fully modern cultural behaviour evolved is still more difficult to answer, but recent years have begun to see attempts to address the thorny questions of causality (Klein, 1999; Parkington, 2001; Shennan, 2001; Lewis-Williams, 2002; Conard and Bolus, 2003). Much more work is needed that addresses the potential causes of cultural evolution and develops testable hypotheses. In this context monogenetic and polygenetic models need to be formulated and tested explicitly.

This short overview of the topic of the evolution of modern cultural behaviour shows that most of the regions of the Old World that have been studied carefully have made important contributions to our understanding of this topic. Many countries in Africa, Europe and Asia have sites and collections of sites that would warrant status as World Heritage sites. In the past these countries have usually focused their nominations too narrowly on architectural heritage sites of recent millennia and have often failed to nominate more important and more unique heritage sites related to prehistory, cultural adaptations and human evolution. Whether in the area of human biological evolution or cultural evolution, this deficit needs to be corrected to provide a more balanced and scientifically better justified view of the entire course of human development, instead of perpetuating the over-emphasis on the built heritage of the recent past.

Finally, a stronger focus on the areas of prehistory and human evolution could help to create a more balanced geographic distribution of heritage sites since many of the key sites are located in countries that are thus far under-represented on the UNESCO World Heritage List.

Acknowledgements

I am grateful to Dr Nuria Sanz for the invitation to contribute to this volume. I thank Penelope Keenan and Andreas Taller for editorial assistance, and Wieland Binczik, Maria Malina and Sibylle Wolf for their help with the figures. I am also indebted to many colleagues, particularly Profs. Michael Bolus and Harald Floss for scientific support.

Bibilography

Albrecht, G., Hahn, J. and Torke, W.G. 1972. Merkmalanalyse von Geschoßspitzen des mittleren Jungpleistozäns in Mittel- und Osteuropa. *Archaeologica Venatoria 2*. Stuttgart, Verlag W. Kohlhammer .

Albrecht, G., Holdermann, C.-S., Kerig, T., Lechterbeck, J. and Serangeli, J. 1998. Flöten" aus Bärenknochen – die frühesten Musikinstrumente? *Archäologisches Korrespondenzblatt* (Mainz), Vol. 28, pp. 1–19.

Ambrose, S.H. 1998. Chronology of the Later Stone Age and food production in East Africa. *Journal of Archaeological Science* (Amsterdam), Vol. 25, pp. 377–392.

Antweiler, C. 2007. *Was ist den Menschen gemeinsam?* Darmstadt, Wissenschaftliche Buchgesellschaft.

Azoury, I. 1986. Ksar Akil, Lebanon. A Technological and Typological Analysis of the Transitional and Early Upper Palaeolithic Levels of Ksar Akil and Abu Halka. *BAR Int. Ser.*, 289. Oxford, Vol. I: Levels XXV – XII.

Baffier, D. 1999. *Les derniers Néandertaliens. Le Châtelperronien.* Paris, La Maison des Roches.

Bar-Yosef, O. and Vandermeersch, B. 1993. Modern Humans in the Levant. *Scientific American* (New York), Vol. 268, pp. 94–99.

Bar-Yosef Mayer, D., Vandermeersch, B. and Bar-Yosef, O. 2009. Shells and ochre in Middle Paleolithic Qafzeh Cave, Israel: indications for modern behavior. *Journal of Human Evolution* (Amsterdam), Vol. 56, pp. 307–314.

Barham, L.S. 1998. Possible early pigment use in south-central Africa. *Current Anthropology* (Chicago), Vol. 39, pp. 703–720.

Bednarik, R.G. 2003. A figurine from the African Acheulian. *Current Anthropology* (Chicago), Vol. 44, pp. 405–413.

Binford, L.R. 1989. Isolating the transition to cultural adaptations: an organizational approach. E. Trinkaus (ed.), *The Emergence of Modern Humans. Biocultural Adaptations in the Later Pleistocene*. Cambridge, Cambridge University Press, pp. 18–41.

____. 1998. Hearth and home: the spatial analysis of ethnographically documented rock shelter occupations as a template for distinguishing between human and hominid use of sheltered space. N.J. Conard and F. Wendorf (eds.), *Middle Palaeolithic and Middle Stone Age Settlement Systems. Proceedings of the XIII Congress of the International Union of Prehistoric and Protohistoric Science.* Forli, Italy, pp. 229–239.

Bird, M.I., Fifield, L.K., Santos, G.M., Beaumont, P.B., Zhou, Y., di Tada, M.L. and Hausladen, P.A. 2003. Radiocarbon dating from 40 to 60 ka BP at Border Cave, South Africa. *Quaternary Science Reviews* (Amsterdam), Vol. 22, pp. 943–947.

Bocherens, H. 2011. Diet and ecology of Neanderthals – Implications from C and N Isotopes. N.J. Conard, and J. Richter (eds.), *Neanderthal Lifeways, Subsistence and Technology: One Hundred and Fifty Years of Neanderthal Study*. Heidelberg, Springer.

Bocherens, H., Billiou, D., Mariotti, A., Patou-Mathis, M., Otte, M., Bonjean, D. and Toussaint, M. 1999. Palaeoenvironmental and palaeodietary implications of isotopic biogeochemistry of last interglacial Neanderthal and mammal bones in Scladina Cave (Belgium). *Journal of Archaeological Science* (Amsterdam), Vol. 26, pp. 599–607.

Bocherens, H., Billiou, D., Mariotti, A., Toussaint, M., Patou-Mathis, M., Bonjean, D. and Otte, M. 2001. New isotopic evidence for dietary habits of Neanderthals from Belgium. *Journal of Human Evolution* (Amsterdam), Vol. 40, pp. 497–505.

Boëda, E., Geneste, J.-M. and Meignen L. 1990. Identification de chaînes opératoires lithiques du Paléolithique ancien et moyen. *Paléo* (Les Eyzies), Vol. 2, pp. 43–80.

Boëda, E., Connan, J. and Muhesen, S. 1998. Bitumen as hafting material on Middle Palaeolithic artifacts from the el-Kowm Basin, Syria. T. Akazawa, K. Aoki and O. Bar-Yosef (eds.), *Neanderthals and Modern Humans in Western Asia.* New York, Plenum Press, pp. 181–204.

Bon, F. 2002. *L'Aurignacien entre Mer et Océan: Réflexion sur l'unité des phases anciennes de l'Aurignacien dans le sud de la France.* Toulouse, Société Préhistorique Française, Mémoire XXIX.

Bordes, F. 1961. Mousterian cultures in France. *Science* (Washington D.C), pp. 803–810.

____. 1972. *A Tale of Two Caves*. New York, Harper and Row.

Bosinski, G. 1967. Die mittelpaläolithischen Funde im westlichen Mitteleuropa. *Fundamenta A/4*. Köln/Graz, Böhlau-Verlag.

____. 1982. The transition Lower/Middle Palaeolithic in northwestern Germany. A. Ronen (ed.), *The Transition from Lower to Middle Palaeolithic and the Origin of Modern Man*. Oxford, BAR International Series 151, pp. 165–175.

Bouzouggar, A., Barton, N., Vanhaeren, M., d´Errico, F., Collcutt, S., Higham, T., Hodge, E., Parfitt, S., Rhodes, E., Schwenninger, J.-L., Stringer, C., Turner, E., Ward, S., Moutmir, A. and Stambouli, A. 2007. 82,000-year-old shell beads from North Africa and implications for the origins of modern human behavior. *Proceedings of the National Academy of Sciences of the USA* (Washington D.C.), Vol. 104, pp. 9964–9969.

Brooks, A.S., Helgren, D.M., Cramer, J.M., Franklin, A., Hornyak; W., Keating J., Klein, R. G., Rink, W.J., Schwarcz, H.P., Smith, J.N.L., Steward, K., Todd, N.E., Verniers, J. and Yellen, J.E. 1995. Dating the context of three Middle Stone Age sites with bone points in the upper Semliki Valley, Zaire. Science (Washington D.C.), Vol. 268, pp. 548–553.

Broglio, A. 2002. Palaeolitico e Mesolitico. A. Aspes (ed.), *Preistoria Veronese*. Verona, Memorie del Museo Civico di Storia naturale di Verona, pp. 11–56.

Broglio, A. and Dalmeri, G. (eds.). 2005. P*itture paleolitiche nelle Prealpi venete. Grotta di Fumane e Riparo Dalmeri*. Memorie Museo Civico di Storia Naturale di Verona. Sez. Scienze dell'Uomo, No. 7.

Buisson, D. 1990. Les flutes paléolithiques d'Isturitz (Pyrénées atlantiques). *Bulletin de la Société Préhistorique Française* (Paris), Vol. 87, pp. 420–433.

Burke, A. (ed.). 2000. Hunting in the Middle Palaeolithic. *International Journal of Osteoarchaeology,* Special Issue 10, pp. 281–406.

Churchill, S.E. and Smith, F.H. 2000. Makers of the Early Aurignacian of Europe. *Yearbook of Physical Anthropology* (Saint Louis), Vol. 43, pp. 61–115.

Clark, J.D. 1982. The cultures of the Middle Palaeolithic/Middle Stone Age. J.D. Clark (ed.), *The Cambridge History of Africa*, Vol. 1: From the Earliest Times to 500 B.C. Cambridge, Cambridge University Press, pp. 248–341.

____. 1988. The Middle Stone Age of East Africa and the Beginnings of Regional Identity. *Journal of World Prehistory* (Heidelberg), Vol. 2, pp. 235–305.

Clottes, J. (ed.) 2001. *La Grotte Chauvet. L'Art des origines.* Paris, Éditions du Seuil.

Conard, N.J. 1990. Laminar lithic assemblages from the last interglacial complex in Northwestern Europe. *Journal of Anthropological Research* (University of New Mexico), Vol. 46, pp. 243–262.

____. 1992. *Tönchesberg and its Position in the Palaeolithic Prehistory of Northern Europe.* Bonn, Habelt, Römisch-Germanischen Zentralmuseums.

____. 2000. Flint artifacts from the 1988/1989 Excavations at Giza. *Mitteilungen des Deutschen Archäologischen Instituts*, Abteilung Kairo, Vol. 56, pp. 21–41.

____. 2001*a*. River terraces, volcanic craters and Middle Palaeolithic settlement in the Rhineland. N.J. Conard (ed.), *Settlement Dynamics of the Middle Palaeolithic and Middle Stone Age*. Tübingen, Kerns Verlag, Tübingen Publications in Prehistory, pp. 221–250.

____. (ed.) 2001*b*. *Settlement Dynamics of the Middle Palaeolithic and Middle Stone Age*. Tübingen, Kerns Verlag, Tübingen Publications in Prehistory.

____. 2001c. The future of archaeology. Z. Kobyliński (ed.), *Quo vadis archaeologia?* [Whither Archaeology?] *Proceedings of the European Science Foundation Exploratory Workshop, Mądralin near Warsaw, 12–13 October 2001*. Warsaw, Institute of Archaeology and Ethnology, Polish Academy of Sciences, pp. 106–117.

____. 2003*a*. Eiszeitlicher Schmuck auf der Schwäbischen Alb. S. Kölbl and N.J. Conard (eds.), *Eiszeitschmuck. Status und Schönheit.* Museumsheft 6, Blaubeuren, Urgeschichtliches Museum, pp. 15–49.

____. 2003*b*. Palaeolithic ivory sculptures from southwestern Germany and the origins of figurative art. *Nature* (London, New York, Tokyo), Vol. 426, pp. 830–832.

____. 2004*a*. Die Entstehung der kulturellen Modernität. N.J. Conard (ed.), *Woher kommt der Mensch?* Tübingen, Attempto Verlag, pp. 188–218.

____. (ed.) 2004*b*. *Settlement Dynamics of the Middle Palaeolithic and Middle Stone Age II.* Tübingen, Kerns Verlag, Tübingen Publications in Prehistory.

____. (ed.) 2006. *When Neanderthals and Modern Humans Met.* Tübingen, Kerns Verlag.

____. 2009. A female figurine from the basal Aurignacian of Hohle Fels Cave in southwestern Germany. *Nature* (London, New York, Tokyo), Vol. 459, pp. 248–252.

____. 2007. Cultural Evolution in Africa and Eurasia during the Middle and Late Pleistocene. W. Henek and I. Tattersall (eds.), *Handbook of Paleoanthropology.* Berlin, Springer, pp. 2001–2037.

____. 2008. A critical view of the evidence for a southern African origin of behavioural modernity. M. Lombard, V. Ward and C. Sievers (eds.), *Current themes in Middle Stone Age research* (Cape Town), South African Archaeological Society, Goodwin Series, Vol. 10, pp. 175–179.

____. 2010. *Die Venus vom Hohle Fels.* Fundstücke 1, Blaubeuren, Urgeschichtliches Museum Blaubeuren, pp. 72.

Conard, N.J. and Adler, D.S. 1997. Lithic reduction and hominid behavior in the Middle Palaeolithic of the Rhineland. *Journal of Anthropological Research.* University of New Mexico, Vol. 53, pp. 147–175.

Conard, N.J. and Bolus, M. 2003. Radiocarbon dating the appearance of modern humans and timing of cultural innovations in Europe: new results and new challenges. *Journal of Human Evolution* (Amsterdam), Vol. 44, pp. 331–371.

Conard, N. J. and M. Bolus. 2006. The Swabian Aurignacian and its Place in European Prehistory. O. Bar-Yosef and J. Zilhão (eds.), *Toward a Definition of the Aurignacian.* (Lisbon), Trabalhos de Arqueologia, Vol. 45, pp. 209–237.

Conard, N. J. and Fischer, B. 2000. Are there recognizable cultural entities in the German Middle Palaeolithic? A. Ronen and M. Weinstein-Evron (eds.), *Toward Modern Humans: Yabrudian and Micoquian, 400–50 k years ago.* Oxford, BAR International Series, Vol. 850, pp. 7–24.

Conard, N.J. and Prindiville, T.J. 2000. Middle Palaeolithic hunting economies in the Rhineland. *International Journal of Osteoarchaeology* (Hoboken), Vol. 10, pp. 286–309.

Conard, N. J. and Richter, J. 2011. *Neanderthals Lifeways, Subsistence and Technology.* Dordrecht, Heidelberg, London, New York, Springer Verlag, pp. 293.

Conard, N.J., Grootes, P.M. and Smith, F.H. 2004*a*. Unexpectedly recent dates for human remains from Vogelherd. *Nature* (London, New York, Tokyo), Vol. 430, pp. 198–201.

Conard, N.J., Malina, M., Münzel, S.C. and Seeberger, F. 2004*b*. Eine Mammutelfenbeinflöte aus dem Aurignacien des Geissenklösterle: Neue Belege für eine Musiktradition im frühen Jungpaläolithikum auf der Schwäbischen Alb. *Archäologisches Korrespondenzblatt*, Vol. 34, pp. 447–462.

Conard, N.J. and Malina, M. 2005, 2006. Schmuck und vielleicht Musik, Ergebnisse der neuen Nachgrabung am Vogelherd im Lonetal. *Archäologische Ausgrabungen Baden-Württemberg* (Stuttgart), pp. 21–24.

Conard, N. J., Bolus, M., Goldberg, P. and Münzel, S. 2006. The last Neanderthals and first modern humans in the Swabian Jura. N.J. Conard (ed.), *When Neanderthals and Modern Humans Met.* Tübingen, Kerns Verlag, pp. 305–341.

Conard, N. J., Malina, M. and Münzel, S.C. 2009. New flutes document the earliest musical tradition in southwestern Germany. Nature (London, New York, Tokyo), Vol. 460, pp. 737–740.

Deacon, H.J. and Deacon, J. 1999. *Human Beginnings in South Africa: Uncovering the Secrets of the Stone Age*. Cape Town, David Philip Publishers, pp. 224.

Defleur, A. 1993. *Les sépultures moustériennes*. Paris, CNRS Éditions, pp. 325.

Delporte, H. 1998. *Les Aurignaciens* – premiers hommes modernes. Paris, Maison Des Roches, pp. 125.

d'Errico, F. 2003. The invisible frontier. A multiple species model for the origin of behavioral modernity. *Evolutionary Anthropology* (Hoboken), Vol. 12, pp. 188–202.

d'Errico, F., Zilhão, J., Julien, M., Baffier, D. and Pelegrin, J. 1998. Neanderthal acculturation in Western Europe? A critical review of the evidence and its interpretation. *Current Anthropology* (Chicago), Vol. 39, pp. 1–44.

d'Errico, F. and Nowell, A. 2000. A new look at the Berekhat ram figurine: implications for the origins of symbolism. *Cambridge Archaeological Journal* (Cambridge), Vol. 10, pp. 123–167.

d'Errico, F. and Soressi, M. 2002. Systematic use of pigment by Pech-de-l'Azé Neanderthals: Implications for the origin of behavioral modernity. Palaeoanthropology Society Meeting, 19-20 March, Denver. *Journal of Human Evolution* (Amsterdam), Vol. 42.

d'Errico, F., Henshilwood, C., Lawson, G., Vanhaeren, M., Tillier, A.-M., Soressi, M., Bresson, F., Maureille, B., Nowell, A., Lakarra, J., Backwell, L. and Julien, M. 2003. Archaeological evidence for the emergence of language, symbolism, and music – an alternative multidisciplinary perspective. *Journal of World Prehistory* (Heidelberg), Vol. 17, pp. 1–70.

d'Errico, F., Vanhaeren, M. and Wadley, L. 2008. Possible shell beads from the Middle Stone Age layers of Sibudu Cave, South Africa. *Journal of Archaeological Science* (Amsterdam), Vol. 35, pp. 2675–2685.

d'Errico, F. and Stringer, C. 2011. Evolution, revolution or saltation scenario for the emergence of modern cultures? *Philosophical Transactions of the Royal Society B: Biological Sciences*, Vol. 366 (London), pp.1060–1069.

Faith, J.T. 2008. Eland, buffalo, and wild pigs: were Middle Stone Age humans ineffective hunters? *Journal of Human Evolution* (Amsterdam), Vol. 55, pp. 24–36.

Féblot-Augustins, J. 1997. *La circulation des matières premières au Paléolithique*. Liège, ERAUL 75.

Floss, H. 1994. Rohmaterialversorgung im Paläolithikum des Mittelrheingebietes. *Monographien des Römisch-Germanischen Zentralmuseums* (Mainz), Vol. 21. Bonn, Habelt.

Floss, H. and Rouquerol, N. (eds.) 2007. *Les chemines de l'art aurignacien en Europe / Das Aurignacien und die Anfänge der Kunst in Europa*. Aurignac, Éditions Musée Forum Aurignac.

Foley, R. 1987. Hominid species and stone-tool assemblages: how are they related? *Antiquity* (York), Vol. 61, pp. 380–392.

Foley, R., Lahr, M.M. 2003. On stony ground: lithic technology, human evolution and the emergence of culture. *Evolutionary Anthropology* (Hoboken), Vol. 12, pp. 109–122.

Gargett, R.H. 1989. Grave shortcomings. The evidence for Neandertal burial. *Current Anthropology* (Chicago), Vol. 30, pp. 157–190.

____. 1999. Middle Palaeolithic burial is not a dead issue: The view from Qafzeh, Saint-Césaire, Kebara, Amud and Dederiyeh. *Journal of Human Evolution* (Amsterdam), Vol. 37, pp. 27–40.

Gatti, S. (ed.) 1993. Dives Anagnia – *Archeologia nella valle del Sacco*. Rome, 'L'Erma' di Bretschneider.

Gaudzinski, S. 1995. Wisentjäger in Wallertheim. Zur Taphonomie einer mittelpaläolithischen Freilandfundstelle in Rheinhessen. *Jahrbuch des Römisch-Germanischen Zentralmuseums* (Mainz), Vol. 39, pp. 245–423.

____. 1996. On bovid assemblages and the consequences for the knowledge of subsistence patterns in the Middle Palaeolithic. *Proceedings of the Prehistoric Society* (London), Vol. 62, pp. 19–39.

____. 1999. Middle Palaeolithic bone tools from the open-air site Salzgitter-Lebenstedt (Germany). *Journal of Archaeological Science* (Amsterdam), Vol. 26, pp. 125–141.

Gaudzinski, S. and Roebroeks, W. 2000. Adults only. Reindeer hunting at the Middle Palaeolithic site Salzgitter-Lebenstedt, Northern Germany. *Journal of Human Evolution* (Amsterdam), Vol. 38, pp. 497–521.

Geneste, J.- M. 1988. Les industries de la grotte Vaufrey: technologie du débitage, économie et circulation de la matière première lithique. J.-P. Rigaud (ed.), *La grotte Vaufrey à Cénac et Saint-Julien (Dordogne). Paléoenvironnements, chronologie et activités humaines*. Mémoires de la Société Préhistorique Française, Vol. 19, pp. 441–517.

Goldberg, P., Miller, C.E., Schiegl, S., Ligouis, B., Berna, F., Conard, N.J. and Wadley, L. 2009. Bedding, hearths, and site maintenance in the Middle Stone Age of Sibudu Cave, KwaZulu-Natal, South Africa. *Archaeological and Anthropological Sciences* (Heidelberg) Vol. 1, pp. 95–122.

Goren-Inbar, N. 1986. A figurine from the Acheulean site of Berekhat Ram. *Mitekufat Haeven* (Jerusalem), Vol. 19, pp. 7–12.

Goren-Inbar, N. and Peltz, S. 1995. Additional remarks on the Berekhat Ram figurine. *Rock Art Research* (Caulfield South), Vol. 12, pp. 131–132.

Green, R.E., Krause, J., Briggs, A.W., Maricic, T., Stenzel, U., Kircher, M., Patterson, N., Li, H., Zhai, W., Hsi-Yang Fritz, M., Hansen, N.F., Durand, E.Y., Malaspinas, A.-S., Jensen, J.D., Marques-Bonet, T., Alkan, C., Prüfer, K., Meyer, M., Burbano, H.A., Good, J.M., Schultz, R., Aximu-Petri, A., Butthof, A., Höber, B., Höffner, B., Siegemund, M., Weihmann, A., Nusbaum, C., Lander, E.S., Russ, C., Novod, N., Affourtit, J., Egholm, M., Verna, C., Rudan, P., Brajkovic, D., Kucan, Z., Gušic, I., Doronichev, V.B., Golovanova, L.V., Lalueza-Fox, C., de la Rasilla, M., Fortea, J., Rosas, A., Schmitz, R.W., Johnson, P.L.F., Eichler, E.E., Falush, D., Birney, E., Mullikin, J.C., Slatkin, M., Nielsen, R., Kelso, J., Lachmann, M., Reich, D. and Pääbo, S. 2010. A Draft Sequence of the Neandertal Genome. *Science* (Washington D.C.), Vol. 328, No. 5979, pp. 710–722.

Hahn, J. 1977. *Aurignacien, das ältere Jungpaläolithikum in Mittel- und Osteuropa.* Köln/Wien, Böhlau-Verlag.

____. 1986. *Kraft und Aggression. Die Botschaft der Eiszeitkunst im Aurignacien Süddeutschlands?* Tübingen, Verlag Archaeologica Venatoria.

____. 1988. *Die Geißenklösterle-Höhle im Achtal bei Blaubeuren I. Fundhorizontbildung und Besiedlung im Mittelpaläolithikum und im Aurignacien.* Stuttgart, Konrad Theiss Verlag.

Hahn J. and Münzel, S. 1995. Knochenflöten aus dem Aurignacien des Geißenklösterle bei Blaubeuren, Alb-Donau-Kreis. *Fundberichte aus Baden-Württemberg* (Stuttgart), Vol. 20, pp. 1–12.

Haidle, M.N. 2004. Menschenaffen? Affenmenschen? Menschen! Kognition und Sprache im Altpaläolithikum. N.J. Conard (ed.), *Woher Kommt der Mensch?* Tübingen, Attempto Verlag, pp. 69–97.

Henshilwood, C.S., Sealy, J.C., Yates, R., Cruz-Uribe, K., Goldberg, P., Grine, F.E., Klein, R.G., Poggenpoel, C., van Nierkerk, K. and Watts, I. 2001. Blombos Cave, Southern Cape South Africa: Preliminary report on the 1992–1999 excavations of the Middle Stone Age levels. *Journal of Archaeological Science* (Amsterdam), Vol. 28, pp. 421–448.

Henshilwood, C.S., d'Errico, F., Yates, R., Jacobs, Z., Tribolo, C., Duller, G.A.T., Mercier, N., Sealy, J.C., Valladas, H., Watts, I. and Wittle, A. 2002. The emergence of modern human behavior: Middle Stone Age engravings from South Africa. *Science* (Washington D.C.), Vol. 295, pp. 1278–1280.

Henshilwood, C.S., d'Errico, F., Vanhaeren, M., van Niekerk, K. and Jacobs, Z. 2004. Middle Stone Age shell beads from South Africa. *Science* (Washington D.C.), Vol. 304, pp. 404.

Hovers, E., Ilani, S., Bar-Yosef, O. and Vandermeersch, B. 2003. An early case of colour symbolism: ochre use by modern humans in Qafzeh Cave. *Current Anthropology* (Chicago), Vol. 44, pp. 491–522.

Hublin, J.-J., Barroso Ruiz, C., Medina Lara, P., Fontugne, M. and Reyss, J.-L. 1995. The Mousterian Site of Zafarraya (Andalucia, Spain): dating and implications on the palaeolithic peopling processes of Western Europe. *Comptes Rendus de l'Academie des Sciences Paris*, Vol. 321, Ser. IIa, pp. 931–937.

Hublin, J.-J., Spoor, F., Braun, M., Sonneveld, F. and Condemi, S. 1996. A late Neanderthal associated with Upper Palaeolilithic artifacts. *Nature* (London, New York, Tokyo), Vol. 381, pp. 224–226.

Hughen, K., Lehman, S., Southon, J., Overpeck, J., Marchal, O., Herring, C. and Turnbull, J. 2004. ^{14}C activity and global carbon cycle changes over the past 50,000 years. *Science* (Washington D.C.), Vol. 303, pp. 202–207.

Jacobs, Z., Wintle, A.G. and Duller, G.A.T. 2003. Optical dating of dune sand from Blombos Cave, South Africa: I – multiple grain data. *Journal of Human Evolution* (Amsterdam), Vol. 44, pp. 599–612.

Jacobs, Z., Duller, G.A.T. and Wintle, A.G. 2003. Optical dating of dune sand from Blombos Cave, South Africa: II – single grain data. *Journal of Human Evolution* (Amsterdam), Vol. 44, pp. 613–625.

Jöris, O. 2002. Die aus der Kälte kamen... Von der Kultur Später Neandertaler in Mitteleuropa. *Mitteilungen der Gesellschaft für Urgeschichte* (Blaubeuren/Tübingen), Vol. 11, pp. 5–32.

Klein, R.G. 1999. *The Human Career: Human Biological and Cultural Origins*, 2nd Edn. Chicago, University of Chicago Press.

Klein, R.G. and Edgar, B. 2002. *The Dawn of Human Culture*. New York, Nevramont.

Kölbl, S. and Conard, N.J. (eds.) 2003. *Eiszeitschmuck. Status und Schönheit.* Museumsheft 6. Blaubeuren, Urgeschichtliches Museum.

Kolen, J. 1999. Hominids without homes: on the nature of Middle Palaeolithic settlement in Europe. W. Roebroeks, and C. Gamble (eds.), *The Middle Palaeolithic Occupation of Europe.* Leiden, University of Leiden, pp. 139–175.

Kuhn, S. L. 1995. *Mousterian Lithic Technology: An Ecological Perspective.* Princeton, N.J., Princeton University Press.

Kuhn, S. L. and Stiner, M.C. 1998. The Earliest Aurignacian of Riparo Mochi (Liguria, Italy). *Current Anthropology* (Chicago), Vol. 39, Supplement, pp. 175–189.

Kuhn, S.L., Stiner, M.C. and Güleç, E. 1999. Initial Upper Palaeolithic in south-central Turkey and its regional context: a preliminary report. *Antiquity* (York), Vol. 73, pp. 505–517.

Kuhn, S.L., Stiner, M.C., Reese, D.S. and Güleç, E. 2001. Ornaments of the earliest Upper Palaeolithic: New insights from the Levant. *Proceedings of the National Academy of Science of the USA* (Washington D.C.), Vol. 98, pp. 7641–7646.

Leroi-Gourhan, A. 1995. *Préhistoire de l'art occidental*. Paris, Éditions d'art Lucien Mazenod.

Leroi-Gourhan, Arl. and Leroi-Gourhan, A. 1964. Chronologie des grottes d'Arcy-sur-Cure (Yonne). *Gallia Préhistoire* (Nanterre), Vol. 7, pp. 1–64.

Lewis-Williams, D. 2002. *The Mind in the Cave*. London, Thames and Hudson.

Lorblanchet, M. 1999. *La naissance de l'art*. Genèse de l'art préhistorique dans le monde. Paris, Éditions Errance.

Mania, D. 1990. *Auf den Spuren der Urmenschen. Die Funde aus der Steinrinne von Bilzingsleben.* Berlin, Deutscher Verlag der Wissenschaft.

Mania, D. and Toepfer, V. 1973. *Königsaue. Gliederung, Ökologie, mittelpaläolithische Funde der letzten Eiszeit.* Berlin, Deutscher Verlag der Wissenschaften.

Mania, D., Thomae, M., Litt, T. and Weber, T. 1990. *Neumark – Gröbern. Beiträge zur Jagd des mittelpaläolithischen Menschen*. Berlin, Deutscher Verlag der Wissenschaften.

Marean, M. 2005. From the tropics to the colder climates: contrasting faunal exploitation adaptations of modern humans and Neanderthals. F. d'Errico and L. Blackwell (eds.), *From Tools to Symbols: From Early Hominids to Modern Humans.* Johannesburg, Witwatersrand University Press, pp. 333 –371.

Marean, C.W. and Kim, S.Y. 1998. Mousterian large-mammal remains from Kobeh Cave. Behavioral implications for Neanderthals and early modern humans. With comments. *Current Anthropology* (Chicago), Vol. 39, Supplement, pp. 79–113.

Marean, C.W. and Assefa, Z. 1999. Zooarchaeological evidence for the faunal exploitation behavior of Neandertals and early modern humans. *Evolutionary Anthropology* (Hoboken), Vol. 8, pp. 22–37.

McBrearty, S. and Brooks, A.S. 2000. The revolution that wasn't: a new interpretation of the origin of modern human behavior. *Journal of Human Evolution* (Amsterdam), Vol. 39, pp. 453–563.

McBurney, C.B.M. 1967. *The Haua Fteah (Cyrenaica) and the Stone Age of the South-East Mediterranean*. Cambridge, Cambridge University Press.

McDougal, I., Brown, F. H. and Feibel, J. G. 2005. Stratigraphic placement and age of modern humans from Kibish, Ethiopia. *Nature* (London, New York, Tokyo), Vol. 433, pp. 733–736.

Meller, H. (ed.) 2003. Geisteskraft. *Alt- und Mittelpaläolithikum. Begleithefte zur Dauerausstellung im Landesmuseum für Vorgeschichte Halle 1*. Halle (Saale), Landesamt für Archäologie – Landesmuseum für Vorgeschichte Sachsen-Anhalt.

Morse, K. 1993. Shell beads from Mandu Mandu Creek rock-shelter, Cape Range peninsula, Western Australia, dated before 30,000 b.p. *Antiquity* (York), Vol. 67, pp. 877–883.

Oakley, K.P., Andrews, P., Keeley, L.H. and Clark, J.D. 1977. A reappraisal of the Clacton spear-point. *Proceedings of the Prehistoric Society* (London), Vol. 43, pp. 13–30.

O'Connell, J.F. and Allen, J. 1998. When did humans first arrive in Greater Australia and why is it important to know? *Evolutionary Anthropology* (Hoboken), Vol. 6, pp. 132–146.

O'Connell, J.F. and Allen, J. 2004. Dating the colonization of Sahul (Pleistocene Austalia-New Guinea). A review of recent research. *Journal of Archaeological Science* (Amsterdam), Vol. 31, pp. 835–853.

O'Connell, J.F., Hawkes, K. and Blurton Jones, N.G. 1988. Hadza scavenging: Implications for Plio/Pleistocene hominid subsistence. *Current Anthropology* (Chicago), Vol. 29, pp. 356–363.

Owen, L.R. 2005. *Distorting the Past: Gender and the Division of Labor in the European Upper Palaeolithic*. Tübingen, Kerns Verlag.

Parkington, J. 2001. Milestones: the impact of systematic exploitation of marine foods on human evolution. P.V. Tobias, M.A. Raath, J. Moggi-Cechi and G.A. Doyle (eds.), *Humanity from African Naissance to Coming Millenia*. Firenze, Firenze University Press, and Johannesburg, Witwatersrand University Press, pp. 327–336.

Parkington, J., Poggenpoel, C., Rigaud, J.-P. and Texier, P.-J. 2005. From Tool to Symbol: the behavioural context of intentionally marked ostrich eggshells from Diepkloof, western Cape. F. d'Errico and L. Blackwell (eds.), *From Tools to Symbols: From Early Hominids to Modern Humans*. Johannesburg, Witwatersrand University Press, pp. 475 –492.

Révillion, S. 1994. Les industries laminaires du Paléolithique moyen en Europe septentrionale. *Publications du Cerp 5*. Lille, Université des Sciences et Technologies de Lille.

Richter, D., Waiblinger, J., Rink, W.J. and Wagner, G.A. 2000. Thermoluminescence, electron spin resonance and 14C-dating of the Late Middle and Early Upper Palaeolithic site of Geißenklösterle Cave in Southern Germany. *Journal of Archaeological Science* (Amsterdam), Vol. 27, pp. 71–89.

Riek, G. 1934. *Die Eiszeitjägerstation am Vogelherd im Lonetal I: Die Kulturen*. Tübingen, Akademische Buchhandlung Franz F. Heine.

Roebroeks, W., Kolen, J. and Rensink, E. 1988. Planning depth, anticipation and the organization of Middle Palaeolithic technology: the 'archaic natives' meet Eve's descendants. *Helinium*, Vol. 28, pp. 17–34.

Rust, A. 1950. *Die Höhlenfunde von Jabrud (Syrien)*. Neumünster, Karl Wachholz Verlag.

Schäfer, J. 1996. Die Wertschätzung außergewöhnlicher Gegenstände (non-utilitarian objects) im Alt- und Mittelpaläolithikum. *Ethnographisch-Archäologische Zeitschrift* (Berlin), Vol. 36, pp. 173–190.

Schmid, E. 1989. Die altsteinzeitliche Elfenbeinstatuette aus der Höhle Stadel im Hohlenstein bei Asselfingen, Alb-Donau-Kreis. With contributions by J. Hahn and U. Wolf. *Fundberichte aus Baden-Württemberg* (Stuttgart), Vol. 14, pp. 33–118.

Schmidtgen, O. and Wagner, W. 1929. *Eine altpaläolithische Jagdstelle bei Wallertheim in Rheinhessen*. Notizblatt des Vereins für Erdkunde und der Hessischen Geologischen Landesanstalt zu Darmstadt für das Jahr 1928. Darmstadt, V/11.

Seeberger, F. 2002. *Steinzeit selbst erleben! Waffen, Schmuck und Instrumente – nachgebaut und ausprobiert.* Stuttgart, Württembergisches Landesmuseum.

____. 2004. Klangwelten der Altsteinzeit. CD edited by Urgeschichtliches Museum Blaubeuren.

Segre, A., and Ascenzi, A. 1984. Fontana Ranuccio: Italy's Earliest Middle Pleistocene Hominid Site. *Current Anthropology* (Chicago), Vol. 25, pp. 230–233.

Shea, J.J. 1988. Spear points from the Middle Palaeolithic of the Levant. *Journal of Field Archaeology* (Boston), Vol. 15, pp. 441–450.

____. 1993. Lithic use-wear evidence for hunting in the Levantine Middle Palaeolithic. P.C. Anderson, S. Beyries, M. Otte and H. Plisson (eds.), *Traces et fonction: les gestes retrouvés. Actes du colloque international de Liège 8–9–10 décembre 1990.* ERAUL 50. Liège, Université de Liège, pp. 21–30.

____. 1998. Neandertal and Early Modern Human Behavioral Variability. A Regional-Scale Approach to Lithic Evidence for Hunting in the Levantine Mousterian. *Current Anthropology* (Chicago), Vol. 39, Supplement, pp. 45–78.

____. 2003. Neandertals, competition, and the origin of modern human behavior in the Levant. *Evolutionary Anthropology* (Hoboken), Vol. 12, pp. 173–187.

____. 2011. Homo sapiens Is as Homo sapiens Was: Behavioral Variability versus 'Behavioral Modernity' in Paleolithic Archaeology. *Current Anthropology* (Chicago), Vol. 52, pp. 17–18.

Shennan, S. 2001. Demography and cultural innovation: a model and its implications for the emergence of modern human culture. *Cambridge Archaeological Journal* (Cambridge), Vol. 11, pp. 5–16.

Singer, R. and Wymer, J. 1982. *The Middle Stone Age at Klasies River Mouth in South Africa.* Chicago, University of Chicago Press.

Smith, F.H., Trinkaus, E., Pettitt, P.B., Karavanić, I. and Paunović, M. 1999. Direct radiocarbon dates for Vindija G1 and Velika Pećina Late Pleistocene hominid remains. *Proceedings of the National Academy of Science of the USA* (Washington D.C.), Vol. 96, pp. 12281–12286.

Solecki, R.S. 1971. Shanidar. *The First Flower People*. New York, Alfred A. Knopf.

Steguweit, L. 2003. *Gebrauchsspuren an Artefakten der Hominidenfundstelle Bilzingsleben (Thüringen).* Tübinger Arbeiten zur Urgeschichte, Vol. 2. Rahden/Westf., Verlag Marie Leidorf.

Stiner, M.C. 1990. The use of mortality patterns in archaeological studies of hominid predatory adaptations. *Journal of Anthropological Archaeology* (Amsterdam), Vol. 9, pp. 305–351.

____. 1994. *Honor among Thieves: A Zooarchaeological Study of Neandertal Ecology.* Princeton, Princeton University Press.

____. 1999. Palaeolithic mollusc exploitation at Riparo Mochi (Balzi Rossi, Italy): food and ornaments from the Aurignacian through Epigravettian. *Antiquity* (York), Vol. 73, pp. 735–754.

Stiner, M. C., Munro N. D., Surovell T.A., Tchernov E. and Bar-Yosef, O. 1999. Paleolithic population growth pulses evidenced by small animal exploitation. *Science* (Washington D.C.), Vol. 283, pp. 190–194.

Thieme, H. 1997. Lower Palaeolithic hunting spears from Germany. *Nature* (London, New York, Tokyo), Vol. 385, pp. 807–810.

____. 1999. Altpaläolithische Holzgeräte aus Schöningen, Lkr. Helmstedt. *Germania* (Mainz), Vol. 77, pp. 451–487.

Thieme, H. and Veil, S. 1985. Neue Untersuchungen zum eemzeitlichen Elefanten-Jagdplatz Lehringen, Ldkr. Verden. *Die Kunde N. F.* (Hannover), Vol. 36, pp. 11–58.

Trinkaus, E. 1983. *The Shanidar Neandertals.* London, Academic Press.

Turk, I. 1997. Moustérienska "koščena piščal" in druge najdbe iz Divjih bab I v Sloveniji [Mousterian 'bone flute' and other finds from Divje babe I cave site in Slovenia, Ljubljana]. *Opera Instituti Archaeologici Sloveniae*, Vol. 2. Ljubljana, Znanstvenoraziskovalni center SAZU.

Vandermeersch, B. 1969. Découverte d'un objet en ocre avec traces d'utilisation dans le Moustérien de Qafzeh (Israel). *Bulletin de la Société préhistorique française* (Paris), Vol. 66, pp. 157–158.

Vanhaeren, M. 2002. Les fonctions de la parure au Paléolithique supérieur: de l'individu à l'unité culturelle. PhD thesis, Université de Bordeaux I, France.

Vanhaeren, M., d'Errico, F., Stringer, C., James, S. L., Todd, J. A. and Mienis, H. K. 2006. Middle Paleolithic Shell Beads in Israel and Algeria. *Science* (Washington D.C.) Vol. 312, pp. 1785–1788.

Van Peer, P., Rots, V. and Vroomans, J.-M. 2004. A story of colourful diggers and grinders: the Sangoan and Lupemban at site 8-B-11, Sai Island, Northern Sudan. *Before Farming* (Bristol), No. 2004/3, pp. 139–166.

Van Peer, P., Vermeersch, P.M. and Paulissen, E. 2010. Chert Quarrying, Lithic Technology and Modern Human Burial at the Palaeolithic Site of Taramsa 1, Upper Egypt. *Egyptian Prehistory Monographs.* Leuven, Leuven University Press.

Vaquero, M., Chacón, G., Fernández, C., Martínez, K. and Rando, J.M. 2001. Intrasite spatial patterning and transport in the Abric Romaní Middle Palaeolithic site (Capellades, Barcelona, Spain). N.J. Conard (ed.), *Settlement Dynamics of the Middle Palaeolithic and Middle Stone Age*. Tübingen, Kerns Verlag, Tübingen Publications in Prehistory, pp. 376–392.

Vaquero, M., Rando, J.M. and Chacón, G. 2004. Neanderthal spatial behavior and social structure: hearth-related assemblages from the Abric Romaní Middle Palaeolithic Site. N.J. Conard (ed.), *Settlement Dynamics of the Middle Palaeolithic and Middle Stone Age II,* Tübingen, Kerns Verlag, Tübingen Publications in Prehistory, pp. 367–392.

Vértes, L. (ed.) 1964. *Tata. Eine mittelpaläolithische Travertin-Siedlung in Ungarn*. Budapest, Akademie der Wissenschaften.

Voelker, A.H.L., Grootes, P.M., Nadeau, M.-J. and Sarnthein, M. 2000. Radiocarbon levels in the Iceland Sea from 25-53 kyr and their link to the earth's magnetic field intensity. *Radiocarbon* (Tucson), Vol. 42, pp. 437–452.

Vogelsang, R. 1998. Middle Stone Age Fundstellen in Südwest-Namibia. *Africa Praehistorica*, Vol. 11. Cologne, Heinrich-Barth-Institute.

Wadley, L. 2001. What is cultural modernity? A general view and a South African perspective from Rose Cottage Cave. *Cambridge Archaeological Journal* (Cambridge), Vol. 11, pp. 201–221.

____. 2005. Putting Ochre to the test: replication studies of adhesives that may have been used for hafting tools in the Middle Stone Age. *Journal of Human Evolution* (Amsterdam), Vol. 49, pp. 587–601.

____. 2006. Partners in grime: results of multi-disciplinary archaeology at Sibudu Cave. *Southern Africa Humanities* (Johannesburg), Vol. 18, pp. 315–341.

Wadley, L., Hodgskiss, T. and Grant, M. 2009. Implications for complex cognition from the hafting of tools with compound adhesives in the Middle Stone Age, South Africa. *Proceedings of the National Academy of Science of the USA* (Washington D.C.), Vol. 106, No. 24, pp. 9590–9594.

Wagner, E. 1983. *Das Mittelpaläolithikum der Großen Grotte bei Blaubeuren (Württemberg).* Stuttgart, Konrad Theiss Verlag.

Watts, I. 1998. The origin of symbolic culture: the Middle Stone Age of southern Africa and Khoisan ethnography. Ph.D. thesis, University of London, UK.

____. 2002. Ochre in the Middle Stone Age of southern Africa: ritualised display or hide preservative? *South African Archaeological Bulletin* (Cape Town), Vol. 57, No.175, pp. 1–14.

White, T. D., Asfaw, B., DeGusta, D., H. Gilbert, H., Richards, D., Suwa, G. and Howell, F.C. 2003. Pleistocene Homo sapiens from Middle Awash, Ethiopia. *Nature* (London, New York, Tokyo), Vol. 423, pp. 742–747.

Weiner, J. and Floss, H. 2004. Eine Schwefelkiesknolle aus dem Aurignacien vom Vogelherd, Baden-Württemberg: Zu den Anfängen der Feuererzeugung im europäischen Paläolithikum. *Archäologische Informationen* (Bonn), Vol. 27, pp. 59–78.

Weiß, C. 2000. *Die Artefakte aus Straußenei der Mumbahöhle, Tansania* (Schicht III). MA thesis, University of Tübingen, Germany.

Wiessner, P. 1983. Style and social information in Kalahari San projectile points. *American Antiquity* (Washington D.C.), Vol. 48, pp. 253–276.

Wendorf, F., Schild, R. and Close, A.E. 1993. Egypt during the last Interglacial: *The Middle Paleolithic of Bir Tarfawi and Bir Sahara East.* New York, Plenum Press.

Wynn, T. 1995. Handaxe enigmas. *World Archaeology* (London), Vol. 27, pp. 10–24.

Zilhão, J. 2001. *Anatomically Archaic, Behaviorally Modern: The Last Neanderthals and Their Destiny.* 23. Kroon-Voordracht. Amsterdam, Joh. Enschedé.

Zilhão, J., Angelucci, D.E., Badal-Garcia, E., d´Errico, F., Daniel, F., Dayet, L., Douka, K., Higham, T.F.G., Martínez-Sánchez, M.J., Montes-Bernárdez, R., Murcia-Mascarós, S., Pérez-Sirvent, C., Roldán-García, C., Vanhaeren, M., Villaverde, V., Wood, R. and Zapata, J. 2010. Symbolic use of marine shells and mineral pigments by Iberian Neandertals. *Proceedings of the National Academy of Science of the USA* (Washington D.C.), Vol. 107, pp. 1023–1028.

Rock art and hunter-gatherer communities in relation to World Heritage

Janette Deacon
Honorary Research Associate, Rock Art Research Institute
University of the Witwatersrand, Johannesburg, South Africa

Introduction

UNESCO aspires to a World Heritage List that is representative, balanced and credible. Significant rock art sites in all the continents of the world have been inscribed on the List, but the question remains: Is this sample balanced and fully representative? This reference report focuses on rock art produced by hunter-gatherer communities. The purpose is to provide a global context for hunter-gatherer rock art traditions in order to evaluate places of Outstanding Universal Value (OUV) that will contribute to the balance and credibility of the World Heritage List.

In addition to rock art research publications, this report is guided by two main sources of information: (a) world reports on rock art published between 1984 and 2004 that identified trends for the 1980s, 1990s and early 2000s; and (b) the information and recommendations compiled during meetings conducted from 2008-2011 as part of the UNESCO World Heritage Thematic Programme, Human Evolution: Adaptations, Dispersals and Social Developments (HEADS) and the related Action Plan.

1. **The first World Report on Rock Art for UNESCO was compiled by Emmanuel Anati (1984). The main concern was to demonstrate that rock art is a worldwide phenomenon that represented 'a way of expression as well as a cultural trend of pre-literate people'. The second World Report, written a decade later, drew attention to the presence of constants, archetypes and universal paradigms to reveal 'the human capacities of abstraction, synthesis and idealization … (and) insight into the intellectual life and cultural patterns of man' (Anati, 1994). Another decade later, a World Review of Rock Art edited by Bertilsson and McDermott (2004) was published in honour of Professor Anati and took the form of a regional summary of current rock art research that looks toward the future in the 21st century. It, too, acknowledges that rock art was made by people as a means to 'express their deepest thoughts and religious beliefs' (op.cit.:5).**

2. **The Action Plan (UNESCO, 2010) identified key objectives for establishing links between scientific research and conservation within the framework of the 1994 Global Strategy to broaden the definition of World Heritage and preserve the identified properties from progressive deterioration. At the same time, it aims to recognize sites that demonstrate outstanding evidence for traces of the earliest interaction between humankind and the land, early cultural behaviour, cognitive steps and creative expressions.**

To address these key objectives in the field of hunter-gatherer rock art, this 2011 review begins with definitions and the origins of rock art. A global overview of distribution and dating is provided as background to the range of hunter-gatherer rock art and ideologies. Recommendations for a more balanced World Heritage List are made in the Appendix of this report in relation to the social context of hunter-gatherer ideology and rock art, scientific research and conservation, and gaps in the current List with suggestions for sites that could be added.

Definitions

For the purposes of this report, **hunter-gatherers** are defined as communities whose primary mode of production was gathering wild plant foods, as well as eggs, insects, shellfish, fish, birds and small terrestrial animals. Gathered foods were supplemented by active hunting of larger animals by various means such as trapping, spearing or bows and arrows. The past tense is used deliberately here because virtually no 21st century communities are still able to subsist entirely by hunting and gathering. In the majority of cases, gathering was done by women and hunting by men. Hunter-gatherers tended to be fairly mobile within defined territories, and moved from one place to another as either plant foods or meat resources were depleted. The stereotype of hunter-gatherers as communities focused on the daily quest for food, water and shelter, however, does not always acknowledge a well-developed social system and structured world view that was successful over tens of thousands of years. The strength of these beliefs often persisted after communities changed their mode of production or were overwhelmed by immigrant populations. For example, hunter-gatherers were often regarded as inferior by pastoralists and farmers who succeeded them and gained power over the land. Paradoxically, those same farmers adopted beliefs and practices from hunter-gatherers (Francis, 2001; Turpin, 2001; Gallardo, 2009; Whitelaw, 2009) in confirmation of their power over natural forces to intervene in such matters as rainmaking and access to the spirit world. For this reason, insider knowledge about rock art and, particularly, about the belief system that inspired it, can still be obtained from living communities who no longer rely on hunting and gathering for their mode of production.

The term **Rock Art** comprises the full range of paintings (pictographs), engravings (petroglyphs or pictograms) and drawings of images, both naturalistic and non-representational, onto a natural rock surface, including scrawls, cupules and lines. It has been produced intermittently by hunter-gatherers over a period of more than 77,000 years (Clottes, 2002; Henshilwood et al., 2002; Henshilwood, d'Errico and Watts, 2009) and even as much as 200,000 years (Bednarik, 1993, 1996). If scrawls, cupules and patterns of engraved lines are not included in the definition of 'art' on the assumption that they were not made as visual symbols of ideas, representational rock art is much younger, with the oldest dated examples less than 40,000 years old. In either case, the history of rock art means that it is a creative cultural phenomenon that lasted longer and spread more widely than any other comparable development of human artistic endeavour (Clottes, 2002). As a strong element of cultural sophistication, the visual language of rock art has been described as part of the 'engine' that keeps a culture functioning in a specific environment (Biesele, 2007). It is widely accepted as a key to ancient beliefs, traditions and rituals (Bertilsson, 2008), even though some paintings and engravings might not have been inspired by symbolism linked to beliefs.

Classifications of world rock art in terms of technique or kind (such as fine-line painting, finger-painting, monochrome, polychrome, pecked engravings, fine-line engravings, scratching, cupules, etc.), authorship and geographic distribution have been proposed by Anati (1994) and will not be repeated here. They are useful in identifying variability at a broad scale, but have not been designed to provide an understanding of meaning and motive. When ethnography has been available to explain meaning and the relationship of sites to their geographic setting, the cultural context often cross-cuts classifications based on style and technique, as in North America (Turpin, 2001; Francis, 2001).

Origins

In the broader context of the development of human consciousness that has been brought to the fore by researchers over the past few decades, the earliest rock art is believed to provide positive evidence of the birth of the transfer of mental imagery into visual imagery as a result of the physical development of the human brain and neuropsychology (Lewis-Williams, 2002; Clottes, 2002; Henshilwood, d'Errico and Watts, 2009) and physical modernity (d'Errico, 2003). But, from the evidence available at present, the earliest rock art in any geographical region does not always coincide with the advent of the first physically modern humans. Recent evidence suggests that even Neanderthals might have been capable of perforating and marking shells with ochre paint (Zilhão, 2010, quoted in Choi, 2010). Instead, the earliest rock art follows thousands of years later (Klein, 2009), and in some regions of the world, for example, North Africa (ICOMOS, 2007) it is as late as the terminal Pleistocene or early Holocene, only a few thousand years before domestication of plants and animals. Human neurological development was clearly necessary to enable people to make rock art, but environmental considerations and social relations established and maintained belief systems that generated the ideas behind the art (Boyd, 2003). It is therefore assumed that rock art was initiated by hunter-gatherer communities at times when social relations and related spiritual beliefs required support and mediation. This might have happened as a result of population pressure on scarce resources as well as movement of peoples to new social and geographic environments that brought issues of ownership with it.

It is relatively simple to identify hunter-gatherer rock art, but the question that is more difficult to answer from archaeological evidence is when the neurological foundations of modern human thought processes developed (Klein, 2009). To what extent is the ability of humans to develop and express cultural and mental constructs and abstract thought related primarily to rock art (Layton, 1991)? And why did they want to convey those thoughts more widely than gesture and the spoken word (Lewis-Williams and Pearce, 2004)? The answers to these questions must also explain why some hunter-gatherers did not make rock art at all, despite social challenges and a well-developed belief system, and why others did so only intermittently. Rock art was made and redefined independently at many times and places as hunter-gatherers lived in and responded to the challenges of life and spirituality in different cultural and physical environments (Lewis-Williams, 2002). The evidence we have thus far suggests that neurological development determined capability, but not inevitability. In other words, people who were capable of expressing their beliefs through rock art did not necessarily do so, and when they did, it was not always a continuous practice.

Criteria other than rock art suggested for signaling the capability of abstract or symbolic thought and related social activity include: (a) shell beads for personal ornamentation; (b) patterns engraved on ochre, ostrich eggshell and bone; (c) carvings of people and animals out of bone, wood and ivory; (d) spatial organization of domestic space with clearly defined elaborate hearths and activity areas; (e) collection and trading of raw materials over considerable distances; (f) ceremony and ritual as expressed in graves; (g) more elaborate stone tools; (h) rapid change in the rate of change in artifact manufacture and the degree of spatial diversity; and (i) the expansion of human populations into less hospitable regions such as the Arctic and other marginal environments (Deacon, 2001; Henshilwood et al., 2002; Parkington et al., 2005; Mackay and Welz, 2008; Henshilwood, d'Errico and Watts, 2009; Klein, 2009). Some of these date in Africa from as early as 77,000 years ago, but all have a variable presence by between 50-40,000 years ago in Africa, Europe and the Near East that contrasts sharply with their near uniform absence before (Klein, 2009). This timing coincides broadly with the movement of anatomically modern hunter-gatherers, *Homo sapiens sapiens,* out of Africa, and their colonization of Europe, the Near East, India, Australia and Asia, and eventually the Americas. Within 10-20,000 years of the departure from Africa, rock paintings and engravings were a widespread cultural feature, and by 3,000 years ago there was hardly a region where rock art had never been practised.

Spatial distribution of rock art in the landscape is another factor that demonstrates deliberate selection on the part of the original artists and must therefore have had social and spiritual meaning to them. A thematic study of North African and Saharan rock art (ICOMOS, 2007) pointed out that rock art needs to be anchored in a geo-cultural context as its full significance is related not only to the societies that produced it and the meanings with which it was imbued, but also the quality of the place where it is found and particularly its natural environment. This does not suggest a causal relationship between environment and culture in which certain features of the natural environment would trigger a cultural response that included rock art. Rather, it acknowledges that most societies developed a symbiotic relationship with their landscape and expressed it in their rock art, for example at Dinwoody in North America (Turpin, 2001; Loendorff, 2004), at Alta in Norway (Helskog, 1999), in the /Xam heartland in South Africa (Deacon, 1988; Deacon and Foster, 2005) (Fig. 1), and in Australia (Flood, 1997; Morwood and Hobbs, 2002; Bednarik, 2006) (Fig. 2).

The challenge when considering the origins and anthropological underpinnings of rock art at a global scale is to be simultaneously aware of the effects of landscape and environmental changes, neuropsychological developments in our species, and social networking, migration and conflict, that have influenced the many different ways in which societies manipulated and reacted to them.

Distribution and dating

In assessing the worldwide corpus of hunter-gatherer rock art to identify a representative collection, milestones in time (the oldest, the youngest, the longest unbroken tradition) and regional traditions can be identified, but it is more challenging to identify places that represent major ideological milestones with universal value. Some of these are already on the World Heritage List and the Tentative List (Appendix 1). Others have been suggested in the reports of meetings of the HEADS Programme (Appendix 3).

The main rock art traditions around the world and their time frames are summarized in a geographic framework below. Thereafter, themes related to cultural issues such as content, symbolism and belief systems are examined to analyse the anthropological underpinnings of rock art in hunter-gatherer society.

Europe and Asia

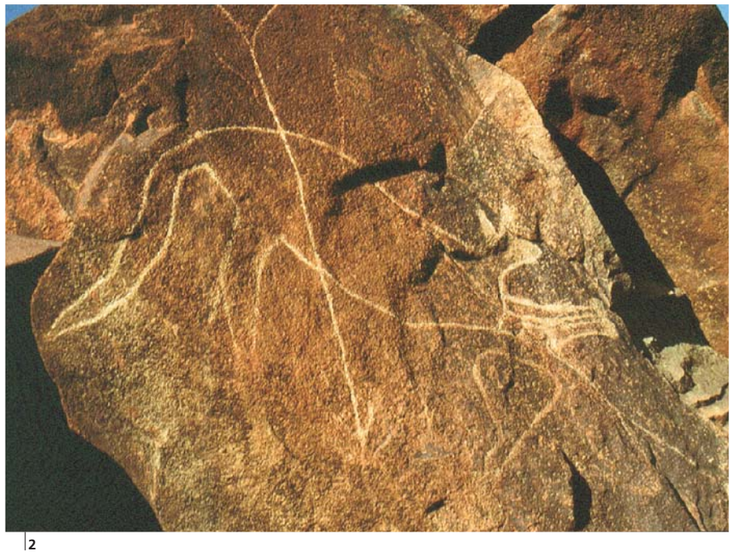
Upper Palaeolithic rock paintings and engravings have been recorded at about 350 sites unevenly distributed in Mediterranean and Eastern Europe. Most have been found in France, Spain and Portugal, with fewer in Italy, and some outliers in Sicily, Germany, Romania and Russia. They are associated with the settlement of *Homo sapiens sapiens* in the region after some 40,000 years ago (Clottes, 2001; Bertilsson and McDermott, 2004). The painting tradition, with large polychrome paintings of, amongst others, bison, woolly rhinoceros, mammoths, cave bears, reindeer, lions, horses and ibex, and rare stylized human figures that are often therianthropic, achieved a high level of artistic skill from the start. The engravings range from finger marks in wet clay on the walls of caves, to outlines of animals and human figures, and bas-relief sculpture. Some of the most profusely decorated sites on the World Heritage List – such as the Prehistoric Sites and Decorated Caves of the Vézère Valley (France), and Cave of Altamira and Paleolithic Cave Art of Northern Spain (Fig. 3) – are far underground in deep limestone caves where artificial light would have been used by the artists and their contemporaries. Others, such as Prehistoric Rock Art Sites in the Côa Valley and Siega Verde (Portugal/ Spain) and the Rock Art of the Mediterranean Basin on the Iberian Peninsula (Spain), are in the open.

Rock art was a post-glacial phenomenon in parts of Northern Europe where it is associated with the geographic expansion of hunting and fishing communities and population increase after the Last Glacial at the very end of the Palaeolithic and in the Mesolithic, as at Alta in Norway, and during the period immediately before the introduction of pastoralism, agriculture, metal working and settled communities. Valcamonica in Italy, and Tanum in Sweden, are examples where rock engravings record aspects of the transition from hunting and gathering and the traditions of rock art persisted, sometimes into the Middle Ages (Bradley et al., 2001).

In Western Europe, the majority of the rock art seems from current evidence to have been done during a 25,000-year period in the last ice age between about 35,000 and 10,000 years ago. Contributing to this evidence are at least 56 direct radiocarbon dates on organic ingredients in paint from sites in France and Spain in the west (Clottes, 2001) and an indirect date on charcoal of about 14,000 years ago associated with a limestone fragment that has a painting of a mammoth found in Kapovaya cave in the Ural Mountains in Russia in the east (Devlet and Devlet, 2004). Two pieces of black manganese dioxide from Mousterian levels at Pech de l'Aze (d'Errico and Soressi, 2002; Klein, 2009) have an incised abstract pattern. Although the World Heritage Site, Gobustan Rock Art Cultural Landscape, in Azerbaijan claims that the oldest engravings – they are as much as 40,000 years old (ICOMOS, 2007), it seems safe to assume that they are part of the Upper Palaeolithic tradition of Western Europe. They include both anthropomorphic images that are said to have stylistic similarities with Upper Palaeolithic Venus figurines, and zoomorphic subjects. Archaeological deposits, that include engraved rock fragments, date from the Mesolithic to a food-producing economy (Anati, 2001).

Some rock art in the Indian subcontinent (there are more than 5,000 recorded sites) is thought to be of Upper Palaeolithic age in the range of c.25,000 – 15,000 or 12,000 BP (Chen, 2001; Chakraverty, 2004). In the most detailed regional study at the World Heritage Site, Rock Shelters of Bhimbetka (India), about 35% of the total rock painting motifs in 1700 shelters within a 9 km radius are assigned to the 'Prehistoric Period' (Chakraverty, 2004), although cup marks and a meandering line at Auditorium Cave are thought to date to the Acheulian about 200,000 years ago (Bednarik, 1993, 1996). This extremely early occurrence has led to a general view that the earliest

1



2

3

1. *Rock engravings (petroglyph) in the landscape of the /Xam Heartland, South Africa (Tentative List). Photo: Janette Deacon*

2. *Rock engraving (petroglyph) of a macropod in western Murujuga, Dampier Archipelago, Australia. Photo: Robert Bednarik*

3. *Paintings in the Cave of Altamira, Spain, are situated far from natural light. Cave of Altamira and Paleolithic Cave Art of Northern Spain (WHL), Portugal and Spain. Photo: © UNESCO*

rock art was mainly geometric and non-figurative (Chakraverty, 2004), but if the cupules and meandering line are classified as 'marks' rather than 'art', the earliest paintings from the Upper Palaeolithic and Mesolithic are those with a wide variety of animals and human figures (Chen, 2001). The Mesolithic art in particular illustrates religious and ceremonial practices with distinctively different styles used for the depiction of men and women interspersed with patterns of unknown symbolic meaning (Chen, 2001).

In the former Soviet countries and China, there are numerous rock engraving sites in the open as well as paintings in rock shelters that are attributed to hunter-gatherers. The earliest are thought to have been made at the end of the Pleistocene, from about 12,000 BP, i.e. towards the end of the painting tradition in France and Spain, and the tradition persisted into the Mesolithic and Neolithic (Chen, 2001). There are no direct dates available and although it has been suggested that negative hand prints on the walls of caves in Alashan in western Inner Mongolia could be 30,000 years old, the assumption is not widely accepted (Chen, 2001). The content of the art indicates that major environmental changes have occurred since the earliest rock art was made. In Inner Mongolia rock engravings of wild oxen, tigers, deer, horses and camels have been found in what is today a desert (Chen, 2004). The engravings include ostriches which became extinct in the region about 10,000 years ago indicating that the art pre-dates the Holocene. Wild oxen are also the most commonly depicted animal in rock paintings in shallow caves along the Jinsha River where some of the oxen are several metres in height and width and are associated with complex symbols (Chen, 2004). In a later naturalistic phase of rock art by hunter-gatherers there are scenes of hunting with bows and arrows, dancing, fighting and intercourse that have led researchers to suggest that it was during this phase that the 'worship of divinities began' *(ibid.)*.

In China, rock painting and engraving carried on during the pastoralist and Neolithic periods of the Holocene into recent times when particularly Buddhist iconography became widespread. In South-East Asia, rock art in Malaysia, Indonesia, Thailand and Myanmar seems to post-date the hunter-gatherer economy, although stylistic similarities between the rock art of Indonesia and Australia have been suggested (Chen, 2001).

North America

The hunter-gatherers who moved into North America from eastern Asia at the end of the Late Pleistocene continued to practise rock art throughout the Americas. The Basic Conventionalized Rock Art style is distributed all along the coast from Siberia to northern California and up major navigable rivers (Turpin, 2001). Common origins are suggested as broad similarities persist there and elsewhere on the continent because 'native artists were motivated to produce art that consistently portrayed the same general themes, often relying upon a remarkably similar iconographic repertoire' in both paintings and engravings *(ibid.)*. In general, however, the stylistic sequences recognized by researchers in North American rock art have not been verified by chronometric dating and particularly in hunter-gatherer rock art in the far west there is evidence for long-term continuity (Turpin, 2001). Stylistic changes do occur, however, in regions that saw a shift from hunting and gathering to agriculture (Whitley, 2004).

There are terminal Pleistocene dates for North American engravings as well as depictions of animals that became extinct during the early Holocene (Whitley, 2004). Because painted surfaces at open sites do not last as long as engravings, all the reliable dates for paintings are less than 10,000 years and the painting tradition was still alive within the last few hundred years in some areas (Turpin, 2001; Whitley, 2004).

Ethnography has played an important role in the understanding of North American Rock Art of Archaic non-agricultural people. There is little doubt that the images portrayed in both engravings and paintings have a shamanistic origin and were part of the worldview and set of metaphysical beliefs of the communities that created and used them. The changes that took place through time and the differences in content from one region to another emphasize that, although the art was shamanistic, it was also functionally variable (Whitley, 2004). Geometric designs, schematic representations of complex ideas, are generally more common than realistic motifs and where they occur together they mirror the persistence of the underlying shamanistic theme of altered states of consciousness that 'form a bridge between rock art and religious belief … even if it can no longer be understood' (Turpin, 2004). With the aid of ethnography, some of these designs have been decoded to explain schematic representations of complex ideas. An enclosed zigzag, for example, represents the rattlesnake, and the snake in turn is a spirit helper and guardian of the supernatural (Whitley, 1996).

Spirit helpers are a constant theme in North American rock art as they are related to the vision quest that was a central component of North American society and religion as it established the adult status of individuals in their community (Turpin, 2001). The species favoured as spirit helpers show considerable spatial variability from birds and salmon to eagles and bears. In the Northwest, spirits of the dead were also considered capable guardians as they gave shamans special powers of prophecy and clairvoyance (Turpin, 2001).

The shamanistic influence is further evident in pervasive and persistent anthropomorphic figures with human, animal and supernatural features that are often associated with geometric or abstract motifs. In the Lower Pecos Valley in Texas, painted designs represent the datura plant that was used by shamans as a medicinal and ceremonial plant in vision quests (Boyd, 2003). Even realistic or representational images have mythic or abstract qualities (Turpin, 2001). Bighorn sheep, for example, are a constant theme in Coso rock engravings in California where ethnographic records confirm that they were a weather icon and spirit helper associated with rain. Shamans with rain-making powers believed that they were able to transform themselves into their spirit helpers and many of the engravings of bighorn sheep therefore have human and animal characteristics (Turpin, 2001). In Wyoming in the Dinwoody tradition, transhumance related to the hunting of bighorn sheep was a factor that influenced the placement of certain motifs according to elevation in the landscape and has been explained in terms of their social meaning (Loendorf, 2004).

Another example of the importance of the situation of rock art in the landscape is described in the Columbia Plateau region in western North America where incised boulders and outcrops are consistently found at the tide line, immersed by high tides and exposed by low tides. They face out to sea, often near the mouth of streams where salmon spawn. Ethnographic reports indicate that this placement was purposeful as the water-washed designs were carved to magically lure the salmon to their spawning grounds. The retreating tides carried the messages out to sea (Turpin, 2001).

South America

Rock art is ubiquitous throughout lowland South America and its distribution is regarded as a reflection of habitation, procurement and travel customs that have persisted over more than 10,000 years. There is a degree of cultural uniformity in the earliest rock painting tradition with geometric patterns and images of people and animals of the upper Orinoco region suggesting a strong social structure, recognized territoriality and a degree of territorial control (Greer, 2001). The general uniformity changes with the introduction of ceramics and food production, however, and the rock art styles become increasingly heterogeneous. In the northern Amazonian rock art complex in Brazil, Colombia, Suriname, Guyana and Venezuela, the iconography of the rock art has been retained in the material culture of local village communities, many of whom are still aware of oral histories in an 'integrated communal lifestyle controlled by ecological beliefs, overseen by shamans and accompanied by hallucinogenic drugs' (Greer, 2001).

In the excavated cave sites in the Sao Raimundo Nonato area of the Piaui region in northern Brazil, in the World Heritage Site, Serra da Capivara National Park (Fig. 4), paintings have been dated to at least 17,000 years ago on charcoal associated with painted rock spalls from the cave walls, and claims for even great antiquity have also been made (Guidon and Delibrias, 1986; Clottes, 2002). These are not isolated dates and there is further evidence from several other sites to support a terminal Pleistocene date for the rock painting tradition in the region. Furthermore, there is sufficient independent archaeological evidence to show that people were settled there before 10,000 years ago (Greer, 2001). Rock engravings seem to be less ancient and were still being made in the twentieth century in some places. Their distribution is often along rivers where they seem to be closely related to fishing. In terms of Tukano ethnographic concepts, rock engravings 'reflect the need to maintain equilibrium for long-term human survival' (Greer, 2001).

Rock art associated with Andean hunter-gatherers to the south of Amazonia has been dated to between about 10,500 and 3000 years ago (Schobinger and Strecker, 2001), early occupation of the highland areas of Peru and Chile having been limited by glaciers during the Late Pleistocene. The communities are regarded as 'specialized foragers' because of the pattern of transhumance that they developed and which gradually changed to horticulture and the domestication of camelids.

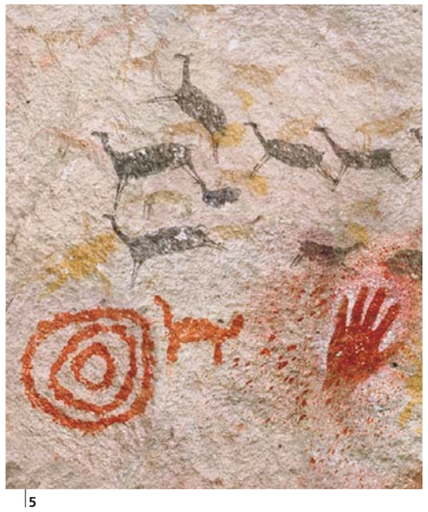
In the southern part of the Andes, however, the hunting and gathering economy persisted and in Patagonia it was still practised in early colonial times. Anomalous to the usual pattern, communities on the north coast of Chile subsisted on fish and shellfish and practised mummification and funerary rites with unusual anthropomorphic statuettes (ibid.).

Hunter-gatherer rock art of the high Andes in Peru includes figurative rock paintings from at least 10,000 years ago (Schobinger and Strecker, 2001), some of which are highly schematized black human silhouettes, together with many vicunas painted in red. Guanacos feature prominently in the Abrigo del Diablo where they are associated with paintings of people apparently armed with sticks and lances. Excavations in the floor of the cave recovered a number of painted stones dated approximately to the fifth millennium BC (Schobinger and Strecker, 2001).

Polychrome paintings of camelids (always running), felines and small human figures have been found in sites in northern Chile and northwest Argentina. In the Atacama Desert to the south, the ubiquitous camelids are painted together with small human figures and birds. Associated archaeological evidence suggests that the communities responsible for the paintings were incipient pastoralists, on their way to domesticating guanaco and vicuna (Schobinger and Strecker, 2001). Gallardo (2009) dates the hunter-gatherer phase of rock engravings to between 5,000 and 4,000 years ago when semi-sedentary communities were living in semi-subterranean dwellings built with large rounded boulders. They were trading copper beads and collecting large numbers of Pacific shells to perforate them as ornaments, and were apparently using llamas as beasts of burden during trade expeditions. It is suggested that the distribution and subject matter of the rock art add to other lines of evidence for intensification of social relations at a time of major economic change, and that the rock art would thus have contributed to the ideological and social reproduction of these communities (Gallardo, 2009).

An important insight into the antiquity of geometric paintings and shamanic practices has been recovered from Huachichocana CH-3 in the southern Andean region. The cave contained the interred remains of a juvenile 'shaman' with an intentionally deformed head, a second individual, and many unusual grave goods including wood carvings, wooden artefacts inlaid with turquoise and mica, necklaces and other objects dated to about 3,400 BP. This date falls within the range of other sites with geometric rock paintings of zigzags, crenellations, dots and inverted u-shapes dated to ca. 4,500-2,500 BP (Schobinger and Strecker, 2001) suggesting evidence for a link between shamanism and rock paintings at that time.

4



5

4. *At Serra da Capivara (WHL), Brazil, radiocarbon dates have been obtained on charcoal associated with painted spalls from the wall of a shelter. Photo: © UNESCO*

5. *Hand print, concentric circles and guanacos at Cueva da los Manos, Río Pinturas (WHL), Argentina. Photo: © UNESCO*

At the southern tip of South America, the World Heritage Site, Cueva da los Manos, Río Pinturas (Fig. 5), is significant because of a number of rock painting sites that are part of the same tradition as similar ones in neighbouring Patagonia. They date to between 13,000 and 9,500 years ago and include hand prints, large numbers of stenciled outlines of human hands in the cave, as well as guanacos and hunting scenes. The hunter-gatherer communities of Patagonia were still practising their economy in the 19th century. Although they were no longer painting, ethnography has been of help in interpreting the images.

Australia

Australia is of particular interest in the context of this report because it the only continent in which rock art was done exclusively by hunter-gatherer societies, and it is said to have the highest concentration of rock art in the world (Bednarik, 2004) with more than 100,000 individual sites. It has also claimed one of the earliest examples of rock art with a thermoluminescence date for cupules of between 58,000 and 75,000 years ago in the Northern Territory (since re-assessed with more reliable minimum ages substantially younger (Taçon, 2001)) and ochre 'crayons' dated to between 55,000 and 50,000 years (Taçon, 2001). The bulk of available evidence suggests that Australia was populated at least 45,000 years ago, after the colonization of South-East Asia by anatomically modern people who had expanded out of Africa at least 10,000 years earlier (Klein, 2009). Some Australian researchers argue that the movement out of Africa could have been much earlier and that Australia could have been colonized as much as 60,000 and even 120,000 years ago (Taçon, 2001) by ancestral Australian Aboriginals who were already familiar with rock art (Morwood and Hobbs, 2002; Bednarik, 2004).

Despite ethnographic and anthropological studies and some innovative assessments of painted images (Taçon and Chippindale, 2001; Morwood and Hobbs, 2002), research has not focused primarily on the detailed meaning of the art, perhaps partly because of 'restraint in the invention of interpretative mythologies' on the part of researchers who have learned that 'valid interpretations of rock art are vastly more complex than a Eurocentric observer would be able to deduce' (Bednarik, 2004). Vinnicombe (1995, quoted in Taçon, 2001) expressed the development as having 'moved well beyond the early antiquarian phase, through a quantitative to a more qualitative and interpretative phase which is now being tempered to some degree by the realities of ethical and political expediency'. Australian rock art management has, however, become a model of cross-cultural dialogue at the World Heritage sites of Uluṟu-Kata Tjuṯa National Park and Kakadu National Park (Fig. 6), among others.

A generally recognized rock art sequence (summarized below from Taçon, 2001) began with petroglyphs in the form of arrangements of cupules on shelter walls and boulders in the north and northwest of Australia, possibly as much as 60,000 years ago. Cupules were overlain by Panaramitee engravings with pits, cupules, circles, concentric circles, animal and occasionally human tracks that are thought to relate to increase ceremonies. These highly adaptable motifs, some dated to more than 40,000 years ago, are found throughout Australia and continued to be part of the rock art tradition up to the 20th century. Finger fluting, made by running the fingers over the soft walls of limestone caves, was a widespread practice, particularly in the south between about 20,000 and 30,000 years ago.

The first painted images of handprints (many in stencil form), grass prints and silhouettes of stringy objects soaked in pigment, date from about the same time as finger flutings. At some as yet undetermined time between 30,000 and 10,000 years ago the first large naturalistic paintings of animals and very rare human figures were made in the north, and gradually over time the ratio of human figures to animals increased along with greater regional diversification throughout the continent. In western Arnhem Land, for example, the so-called 'Dynamic Figures' of people in distinctive poses began around 10,000 years ago and were succeeded by Simple Figures, Yam Figures and early X-ray figures around 6,000 years ago, and by Complete Figure Complex paintings after

4,000 years ago (Chippindale and Taçon, 1998; Chippindale et al., 2000; Taçon, 2001). The greater regionalization has been interpreted as facilitating social differentiation between groups and a closure of social networks that was related in turn to increased population density during the Holocene (Smith, 1992, quoted in Taçon, 2001).

The variety of 'styles', regional differentiation in subject matter and changes through time in Australian rock art make it difficult to offer over-arching explanations or assign meaning except at a high level of abstraction. Some explanations are strongly linked to the landscape and significance of landmarks. Others relate to creation and were part of rituals and ceremonies. Altered states of consciousness inspired at least some of the images (Chippindale et al., 2000; Taçon and Chippindale, 2001).

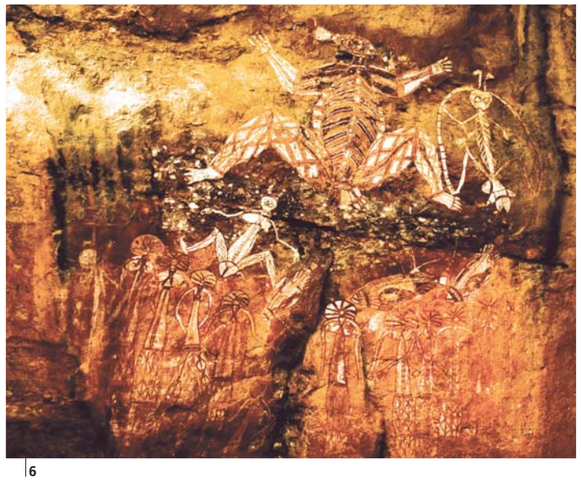
North African Arab States, West Africa and East Africa

The vulnerability of the Saharan ecosystem has played a key role in determining the sustainability of human occupation of this vast desert that stretches from the Atlantic coast in the west to the Red Sea in the east. From what is currently known, the first rock art associated with hunter-gatherers, post-dates the dry conditions associated with the Last Glacial Maximum and were made around 12,000 years ago in the Bubalus period named after the giant buffalo that became extinct about 5,000 years ago (Coulson and Campbell, 2001) and more recently termed the Tazina style (ICOMOS, 2007). The tradition is characterized by huge almost life-size engravings of elephant, rhinoceros, buffalo, giraffe, antelope, hippopotamus, lion and crocodile, sometimes accompanied by much smaller human figures often holding weapons (Coulson and Campbell, 2001). In the Western Sahara in Morocco and Algeria, the engravings are often difficult to understand as lines cut across the animals which often have exaggerated anatomical parts, particularly the horns, and adjacent animals even share body parts (ICOMOS, 2007). In the Tassili n'Ajjer and Tadrart Acacus, the Round Head tradition was partly contemporaneous between about 10,000 and 7,500 years ago. It features very large rock paintings by hunter-gatherers, mainly of people with round featureless heads, many of whom seem to be floating or swimming as in out-of-body travel. One such painting is nearly 6 m tall (Coulson and Campbell, 2001). Other examples of human figures show deliberate superpositioning but the timing of painting episodes is unclear (Fig. 7).

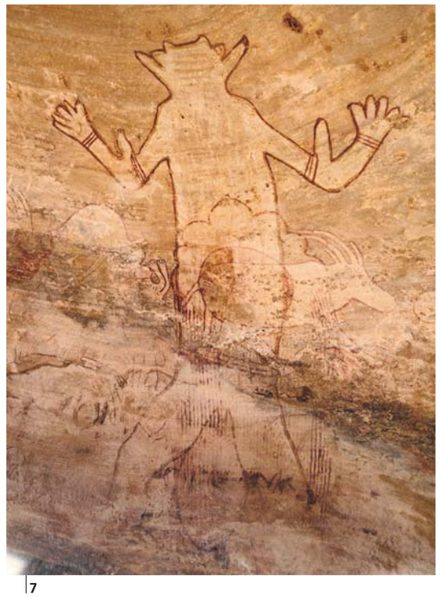
By 8,000 years ago domesticated animals and pottery were introduced in the eastern Sahara and had moved to the central and western Sahara by 7,500 years ago. Thereafter both rock paintings and engravings are assumed to have been made by pastoralists as they include domesticated animals, particularly cattle with decorated bodies and necklaces, and artefacts associated with them, as well as, later, horses and chariots (ICOMOS, 2007).

6. *Selected rock art sites at Kakadu National Park (WHL), Australia, are open to the public only with permission from descendants of the original artists. Photo: © OUR PLACE THE WORLD HERITAGE COLLECTION*

7. *The so-called 'Great God of Sefar' from the Round Head period at Tassili n'Ajjer (WHL), Algeria. Photo: David Coulson/ TARA.*



6



7

As all the Saharan states share the same geological formations, landscape and history, it has been proposed that they be regarded as a single entity for the purposes of identifying rock art sites for World Heritage research (UNESCO, 2009).

Hunter-gatherer rock art has not been reported from West, Central Africa or East Africa There are, however, many places with mostly geometric paintings made with paint applied with a finger or thick brush, as well as geometric engravings on suitable surfaces, that are universally accepted as the work of farming communities, both pastoralists and agriculturalists. All are therefore less than 2,000 or 3000 years old, and possibly much younger.

Southern Africa

Southern Africa, which for the purposes of this paper includes all the countries south of Kenya and Malawi in the east and south of Congo Brazzaville and the Democratic Republic of Congo in the west, has tens of thousands of rock painting and engraving sites. In the north of this region, the hunter-gatherer Rock Art is confined to areas such as Irangi-Kondoa in Tanzania, Kasama in Zambia and parts of Angola and Mozambique, where the geological formations have created rock shelters. In the south, rock art is found almost everywhere, with paintings in mountainous areas where rock shelters and caves occur, and engravings mainly in the interior where caves are rare.

The earliest dated evidence of rock engraving comes from Blombos Cave on the southern coast of South Africa where eight pieces of hard ochre engraved with geometric patterns have been found in Middle Stone Age deposits that are capped by a layer of wind-blown sand dated by optical luminescence to 77,000 years ago (Henshilwood, d'Errico and Watts, 2009). Similar pieces have been found at other sites as well (d'Errico, 2008). Engraved fragments of ostrich eggshell from Diepkloof rock shelter on the west coast are dated to about the same time period, around 60,000 years ago (Texier et al., 2010). The oldest dated non-geometric engraving is from Wonderwerk Cave in the centre of South Africa where it was associated with a radiocarbon date on charcoal of 10,200 years (Thackeray, 1983). There is debate about whether or not the engraved ochre and ostrich eggshell should be considered as 'art' but, whether it was intended to carry symbolic meaning or not, it certainly demonstrates that people at that time were capable of making patterns on surfaces that were not purely functional.

Seven hand-sized slabs of rock with paintings from the Apollo 11 rock shelter in southern Namibia were found during excavations between 1969 and 1972 (Wendt, 1972). Fifteen radiocarbon dates from the same stratigraphic level gave a median age of 27,500 years BP. This places the rock painting tradition in southern Africa in the same general time period as the Upper Palaeolithic rock art in France.

It is estimated that more than 70% of the southern African rock art was the work of hunter-gatherers. While there are broad similarities that indicate the art was closely related to their belief systems based on altered states of consciousness and relationships with the spirit world, there are also regional and probably temporal differences in the painting and engraving techniques and in the content of the art. Extensive research on mainly San (Bushman) ethnography has been very helpful in interpreting the art in both general and specific ways at major sites like Twyfelfontein and the Brandberg in Namibia, uKhahlamba/Drakensberg (Fig. 8) and Mapungubwe (Fig. 9) in South Africa, and the Matobo Hills in Zimbabwe. It is possible, for example, to identify images that depict the activities and experiences of ritual specialists from the postures of human figures, from figures with both human and animal features (therianthropes), from animal behaviour, associated images of artefacts and real and imaginary animals (Vinnicombe, 1976; Lewis-Williams, 1981; Jolly, 2000; Coulson and Campbell, 2001; Lewis-Williams and Pearce, 2004).

Southern Africa was the stage for major population movements between 2,500 and 1,500 years ago as people from central and eastern Africa, who had knowledge of metalworking and domesticated plants and animals, migrated southwards. These changes are evident at sites such as Tsodilo

HEADS Scientific Working Group 4

in Botswana (Fig. 10) and Chongoni in Malawi in images of sheep and cattle, new iconography based mainly on geometric and non-representational images, changes in the style of paintings and engravings, and new settlement patterns. The role of rock art in the manipulation of power relations and access to resources and land has been analysed in several studies (Blundell, 2004; Whitelaw, 2009).

Towards a more balanced World Heritage List

Social context of hunter-gatherer ideology

The contribution that researchers using ethnography and anthropology combined with neuropsychological studies of religious experience have recently made to the understanding of rock art in North America (Whitley, 2005), southern Africa (Lewis-Williams and Pearce, 2004), Australia (Chippindale et al., 2000), Scandinavia (Helskog, 1999) and western Europe (Clottes and Lewis-Williams, 1996) is the recognition of images that relate to altered states of consciousness typical of shamanistic belief systems (Lewis-Williams, 2002). At a high level of generalization there are behavioural similarities in religious experience that are the result of the wiring of the human brain rather than borrowing of customs and beliefs from one culture to another. In the context of the World Heritage List it is useful to be able to identify rock art images that might relate to altered states of consciousness, especially in places where there are no ethnographic records of shamanic practice.

In order to take this broad generalization further, anthropological and ethnographic research at a regional level is an essential component of any contextual study for understanding the meaning and the role or function rock art motifs played in hunter-gatherer ideologies. The function and meaning of rock art images is communicated through their form and placement on the rock surface. It cannot be predicted, or even understood in any detail, without knowing something about the symbolism and iconography of the belief system. Ethnography and oral history offer that key when available. When they are absent, the content of the rock art can sometimes provide clues through analogy with other cultures using what Wylie (2002) and Lewis-Williams (2006*a*, 2006*b*) refer to as cable-like arguments. The strands that have typically been used for such cables include oral history, ethnography, neuropsychology, social theory, archaeology and analysis of the rock art itself.

The results of both the ethnographic and analogue methods have been widely referred to as a shamanistic explanation because elements of form and content in the rock art have been recognized in shamanic rituals, beliefs and experiences, notably including altered states of consciousness, that have been described particularly from northern Europe, Siberia and the Americas. This ethnographic and social approach has provided a stimulating foundation for further research (Lewis-Williams, 2006). A neuropsychological model, structuration theory and the negotiation of social change and embodiment have followed (Pearce et al., 2009).

Lewis-Williams (2006*b*) has summarized experiences that ritual specialists (shamans) in hunter-gatherer communities generally have during altered states of consciousness:
- Contact spirits and other supernatural entities;
- Fight against monsters and malevolent spirits;
- Heal the sick;
- Control movements and lives of animals;
- Change the weather;
- Foretell the future.

The supernatural entities that facilitate these accomplishments include:
- Variously conceived supernatural potency, or power;
- Animal helpers and other categories of spirits that are associated with potency.

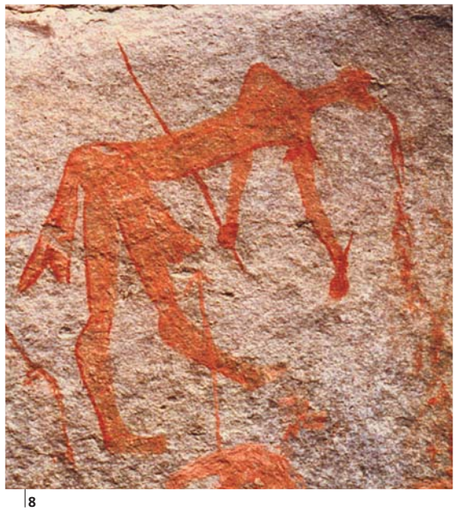
Attributes of altered states of consciousness that might be recognizable in rock art can include the following (Chippindale et al., 2000) (Fig. 11):

Universal experiences	*Common metaphors*
■ Seeing geometric forms	
■ Breathlessness	
■ Weightlessness	• Being underwater
■ Rising up from the body	• Flying
■ Incapacitation of the body	• Death
■ Taking on a new material form	• Transforming into an animal
■ Oscillating noise	• Insects buzzing or rhythm of instrument
■ Tingling of the skin	
■ Muscular pains	• Stabbed by weapons
■ Feeling of being stretched	

In Arnhem Land in Australia some of these sensations relating to ‘Clever Men’ are expressed as:
- Spirit familiars perhaps sitting on shoulders or in dilly bags;
- Insects buzzing;

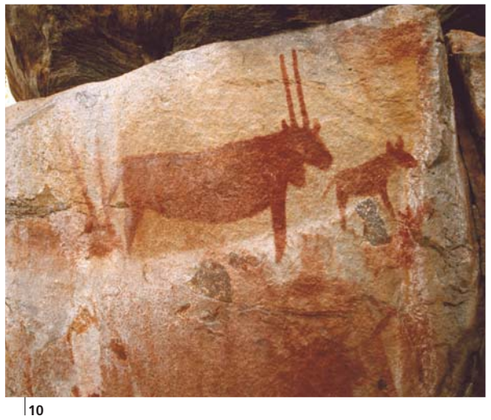
8. *San ethnography has been helpful in explaining paintings such as this one from the uKhahlamba/Drakensberg, South Africa. The figure is bending from the waist and bleeding from the nose, both actions associated with trance. Photo: Aron Mazel*

9. *Paintings of loin cloths worn by San during male initiation, from Mapungubwe Cultural Landscape (WHL), South Africa. Photo: Janette Deacon*



8

9



10

11

10. *Painting with antelope, possibly oryx, from Tsodilo (WHL), Botswana. Photo: David Coulson/TARA*

11. *Painting from the uKhahlamba/Drakensberg, South Africa, illustrating the transformation of a human figure with an animal head, and with geometric patterns on the body. Photo: Aron Mazel*

- *Marr* being given to or used by 'clever men';
- Travel in the water world where the great water creature lives;
- Travel to the sky world of the flying fox;
- Clever men travelling in the material world but in animal form.

In southern Africa, some typical elements include:
- *!giten* (medicine people or shamans) bending from the waist or in exaggerated poses expressed during trance dancing, and often associated with clapping women or processions of dancers;
- *!giten* bleeding from the nose;
- Therianthropes;
- People with wings or flying therianthropes;
- Fish and underwater metaphors;
- Associations signifying the 'death' of a person in deep trance;
- Medicine bags;
- Arrows pointing towards, or penetrating, people and animals;
- Elongated human figures;
- Large mythical 'rain animals';
- Swarms of bees;
- Snakes;
- Red lines of magic power, often outlined with white dots, connecting people and animals;
- Entoptic phenomena or phosphenes that represent patterns seen during altered states of consciousness;
- Men with a bar across the penis.

In North America, common characteristics include metaphors related to the vision quest (Whitley, 1996), such as:
- Death or killing that represents an analogy between dying and entering trance;
- The death metaphor can apply to both human figures and animals that represent the shaman's spirit helper;
- Going underwater or drowning because of the physical similarities between going into trance and going underwater, expressed in images of frogs, salamanders, turtles and occasionally fish;
- Flight expressed in images of shamans dressed with feathers and bird costumes or with bird-like feet and wings, sometimes associated with concentric circles representing a whirlwind;
- Sexual intercourse, sometimes expressed graphically but more commonly as a vulva-shaped motif symbolizing the vagina;
- Spirit helpers such as snakes, bighorn sheep, eagles and bears;
- Entoptic patterns.

A variation on this theme in northwest North America has rock paintings and engravings with haunting, staring eyes. One eye is apparently blind or missing, reminiscent of the widespread myth that an eye could be traded for wisdom. The X-ray style, in which the skeleton or interior organs are represented on both human and animal figures, is often associated with the symbolic death of the shaman who is 'reduced to the skeletal condition' (Eliade, 2004) and reborn from bones (Turpin, 2001).

Although a shamanistic and neuropsychological basis for rock art interpretation has not been universally supported (Bahn, 2001; Helvenston and Bahn, 2003; Solomon, 2008), it has been demonstrated to be appropriate in enough places to accept it as a major causal factor for the practice of rock art and for a source of certain motifs (Reichel-Dolmatov, 1967, 1978; Lewis-Williams and Dowson, 1988; Turpin, 2001; Whitley 2001; Lewis-Williams, 2002, 2006*b*).

Recommendations

The impact of the ethnographic approach has led to the recommendation (UNESCO, 2009) that nominations of sites with ethnographic information, or oral history, or evidence of sustained significance of the place, should include the following documentation:
- Continuity of beliefs and practices through time in descendant communities;
- Continuity in spiritual significance of the place;
- Knowledge about the motivation and/or belief or ideological system that inspired it;

- Socio-economic context of the rock art;
- Involvement of the descendant communities and/or artists.

In addition, all nominations should include:
- Content of the rock art;
- Archaeological context;
- Recording and documentation that demonstrates repeated use of particular images and themes (= a tradition);
- Evidence for development of the painting tradition/s e.g. monochrome to polychrome or changes in content of the art.

If the study of rock art is to advance beyond acknowledgement of its religious, ideological and neuropsychological underpinnings, more interdisciplinary research is required. Otte and Remacle (2004) propose that we should 'resolutely orient ourselves toward the language of forms as they appear to us outside the context of any particular message.' Another school of thought stresses the relationship between the art and the place where it was made: 'in many cases, it is quite likely that the site is iconically prior to and ritually more important than the pictorial images with which it is covered' (Vastokas, 1988). The geo-cultural context needs to be developed with appropriate theory, as do sub-disciplines such as landscape archaeology (Chippindale and Nash, 2004) and practical issues such as analysis of pigments and rock engraving techniques.

Scientific research and conservation

Research and documentation are essential requirements for inter-site comparison of Outstanding Universal Value and for informing management plans. Delegates at the Action Plan meetings (UNESCO, 2009) were particularly concerned about:
- Techniques for rapid assessment of impacts on the cultural and physical condition of rock art sites;
- Ways of gauging social, cultural and economic impacts on sites that have been nominated;
- Appropriate ways of interlinking values for conservation of the natural and cultural environment in properties listed as cultural landscapes or mixed sites;
- Understanding the territory as a socio-cultural space described in terms of past and present geology, geography, geomorphology and bioclimate;
- How topographic and geomorphological links have been taken into account in defining the limits of the site;
- Access to biotic and non-biotic resources.

Attention was consistently drawn to the need for inter-disciplinary research on the conservation of rock art sites that would include:
- Paintings and the engravings themselves;
- Rock surfaces on which the art has been placed;
- Surrounding environment;
- Assessment of the impact of visitors on sites.

Recommendations

The state of preservation of the physical environment in which the rock art is found and the plans for visitation should be assessed and addressed in the management plans for all sites. It is an important aspect of the integrity and authenticity of a site and would also have added significance for the ambience and spiritual value (UNESCO, 2009).

It is recommended that:
- A multidisciplinary conference of conservators, chemists, geologists, engineers, botanists, zoologists and rock art specialists is held to present problems that need resolution through research, and to learn about the results of both successful and unsuccessful interventions;
- Guidelines based on successful assessments and interventions undertaken during multidisciplinary research on conservation of rock art sites be developed and made available. As each site has its own problems and challenges, guidelines will assist managers to identify where problems lie and to select from a range of options;

- Minimum standards for conservation be developed for managers of rock art sites that could include monitoring systems, low-cost tools and methodologies, database management and visitor controls.

Management and best practice

Management plans are mandatory for World Heritage nomination dossiers, and delegates at the Action Plan meetings (UNESCO, 2009) drew attention to the need for stronger emphasis on conservation. There is a perception that there is a general absence of research and guidelines for rock art sites that would assist States Parties to approach the development of management plans professionally.

A suggestion that management plans should respond to the needs and significance of individual sites, rather than be written according to a formula that might be inappropriate, was well received. There is no doubt that there is need for a management system that follows a broader approach with fresh theory and methodology.

Recommendations

Methodology for management plans should be based on:

Consultation and research
- Consultation with local communities, whether or not they are descended from the original artists;
- A policy for the use of natural resources and access by stakeholders and local communities;
- Research on ethnographic literature and anthropological studies that might be relevant to the culture of the original artists.

Survey
- An understanding of the territory as a socio-cultural space described in terms of past and present geology, geography, geomorphology and bioclimate, and how topographic and geomorphological links have been taken into account in defining the limits of the site and the buffer;
- Baseline information on environmental issues such as air quality, microclimate and dust deposition that might impact the rock art;
- A thorough survey of all the individual rock art sites within the place to be nominated, with a database, maps and photographs;
- Condition assessments, particularly for sites that will be open to the public.

Strategies and implementation
- A conservation strategy that considers the rock art and the rock on which it is placed, the immediate environment, and the natural setting of the place;
- Guidelines for archaeological excavations at rock art sites to prevent damage due to dust and disturbance of the surrounding land;
- Controlled access of all visitors, including the public, managers and researchers;
- The implications of controlled access for the income stream that might be dependent on entrance fees;
- Research on visitor behaviour at the site or in the country so that plans to address issues such as carrying capacity, unwelcome or unexpected impacts, vandalism and appropriate signage can be tailored to individual situations;
- Explicit involvement of local communities in decision-making, site management and entrepreneurial opportunities;
- A communication plan and clear statement on who is responsible for implementing recommended strategies;
- Training and capacity-building for all staff.

Presentation
- Appropriate signage and information for the public that will not detract from the ambience of the site;
- Use of recyclable and reversible materials for all interventions, including paths and boardwalks;
- Holistic site interpretation to communicate the spiritual value of the site and its archaeological and historical context to the public.

Monitoring
- Regular quality control and monitoring that will involve reference to original survey and condition assessment reports and regular updates;
- Professional advice for any interventions and infrastructure that might be contemplated or recommended;
- Guidance on how to gauge social, cultural and economic impacts;
- Methods for storing, accessing and sharing data.

Sites for possible inclusion on the World Heritage List

Most of the suggestions of feasible sites for inscription on the List (UNESCO, 2009) are concerned with the geographic extension of existing sites in order to give a larger sample of a particular tradition or geographic distribution, or official acknowledgement of rock art sites in places listed because of their natural heritage values. Others identify pastoralist or farmer rock art traditions that are not considered in this report (Appendix 3 and Appendix 4).

Apart from sites already on the Tentative List (Appendix 1), gaps in the suite of hunter-gatherer rock art sites on the World Heritage List (Appendix 2) could be bridged by including the following:

Hunter-gatherer ideology gaps

- A sample of Kimberley painting traditions in northwest Australia (Wandjinas and Gwion-Gwion);
- Abydos-Woodstock-Spear Hill complexes, eastern Pilbara, Western Australia;
- Rock engravings in the Dampier Cultural Precinct in Western Australia;
- Rock paintings in Finland;
- Quebrada de Humahuaca rock art and cultural landscape;
- Dinwoody, Wyoming, USA;
- Lower Pecos Valley, Texas, USA;
- Coso rock engravings, California, USA;
- Huashan in Guangxi Province, China;
- Helanshan, Ningxia Hui Province, China.

Geographic gaps

- Transnational nomination of rock art sites throughout the Sahara, from Mauritania to Egypt (would include pastoralist and nomad traditions);
- Nyero in Uganda (hunter-gatherer and pastoral art);
- Representative sites of Tasmania, Australia.

Bibiography

Anati, E. 1984. The state of research in Rock Art. *Bolletin Centro di Studi Preistorici* (Capo di Ponte), Vol. 21, pp.13–56.

____. 1994. *World Rock Art. The primordial language.* Capo di Ponte, Centro Camuno di Studi Preistorici, pp. 160.

Anati, E. (ed.). 2001. *Gobustan Azerbaijan.* Capo di Ponte, Centro Camuno di Preistorici.

Bahn, P.G. 2001. Save the last trance for me: an assessment of the misuse of shamanism in Rock Art studies. In: Francfort, H.P., Hamayon, R.N. and Bahn, P.G. (eds.), *The concept of shamanism: uses and abuses.* Budapest, Akadémiai Kiadó, pp. 31–93.

Bednarik, R. 1993. The calibrated dating of petroglyphs. *The Artefact* (Melbourne), Vol. 16, pp. 32–38.

____. 1996. The Jinmium claims. *The Artefact* (Melbourne), Vol. 19, pp. 107–08.

____. 2004. Millennium: the state of Australian Rock Art research. In: Bertilsson, U. and McDermott, L. (eds.), *The future of Rock Art – a world review.* Stockholm, National Heritage Board of Sweden, pp. 50–9.

____. 2006. Australian apocalypse. *The story of Australia's greatest cultural monument.* Occasional AURA Publication No. 14, Melbourne, Australian Rock Art Research Association.

Bertilsson, U. 2008. Recent initiatives and achievements. In: Sanz, N. (ed.), *Rock Art in the Caribbean. Towards a serial transnational nomination to the UNESCO World Heritage List.* Paris, UNESCO, pp. 160–171.

Bertilsson, U. and McDermott, L. (eds.) 2004. *The future of Rock Art – a world review.* Stockholm, National Heritage Board of Sweden.

Biesele, M. 2007. The meaning of Rock Art: ethnography, comparison, metaphor. In: Deacon, J. (ed.), *African Rock Art: the future of Africa's past.* Nairobi, Trust for African Rock Art, pp. 128–131.

Blundell, G. 2004. *Nqabayo's Nomansland. San Rock Art and the somatic past.* Uppsala, Uppsala University Press.

Boyd, C. 2003. *Rock Art of the Lower Pecos.* College Station, Texas A&M University Press.

Bradley, R., Chippindale, C. and Helskog, K. 2001. Post-Paleolithic Europe. In: Whitley, D. S. (ed.), *Handbook of Rock Art research.* Walnut Creek, AltaMira, pp. 482–529.

Chakraverty, S. 2004. 130 Years of Rock Art studies in India. In: Bertilsson, U. and McDermott, L. (eds.), *The future of Rock Art – a world review.* Stockholm, National Heritage Board of Sweden, pp. 94–113.

Chippindale, C. and Nash, G. (eds.) 2004. *Pictures in place: the figured landscapes of rock-art.* Cambridge, Cambridge University Press.

Chippindale, C. and Taçon, P.S.C. 1998. The many ways of dating Arnhem Land Rock Art, north Australia. In: Chippindale, C. and Taçon, P.S.C. (eds.), *The Archaeology of rock-art.* Cambridge, Cambridge University Press, pp. 90–111.

Chippindale, C., Smith, B. and Taçon, P.S.C. 2000. Visions of Dynamic power: archaic rock-paintings, states of consciousness and 'Clever-Men' in Western Arnhem Land (NT), Australia. *Cambridge Archaeological Journal* (Cambridge), Vol. 10, No. 1, pp. 63–101.

Choi, C.Q. 2010. Heavy brows, high art. *Scientific American* (New York), Vol. 302, No. 2, pp. 10–11.

Clottes, J. 2001. Paleolithic Europe. In: Whitley, David S. (ed.), *Handbook of Rock Art research.* Walnut Creek, AltaMira. pp. 863.

____. 2002. *World Rock Art.* Los Angeles, The Getty Conservation Institute.

Clottes, J. and Lewis-Williams, J.D. 1998. *The Shamans of Prehistory. Trance and magic in the painted caves.* New York, Harry N. Abrams.

Coulson, D. and Campbell, A. 2001. *African Rock Art.* New York, Harry N. Abrams.

Deacon, H.J. 2001. Modern human emergence: an African archaeological perspective. In: Tobias, P.V., Raath, M.A., Moggi-Cecchi, J. and Doyle, G.A. (eds.), *Humanity from African naissance to coming millennia.* Johannesburg, Witwatersrand University Press, pp. 213–222.

Deacon, J. 1988. The power of a place in understanding southern San rock engravings. *World Archaeology,* Vol. 20, No. 1, pp. 129–140.

Deacon, J. and Foster, C. 2005. *My heart stands in the hill.* Cape Town, Struik.

Devlet, M. and Devlet E. 2004. Russian Rock Art: the current state of research. In: Bertilsson, U. and McDermott, L. (eds.), *The future of Rock Art – a world review.* Stockholm, National Heritage Board of Sweden, pp. 132–143.

Eliade, M. 2004. *Shamanism, archaic techniques of ecstacy.* Trans. Trask, W.R. Princeton, NJ, Princeton University Press, New Edition.

d'Errico, F. 2003. The invisible frontier: a multiple species model for the origin of behavioral modernity. *Evolutionary Anthropology* (Hoboken, NJ), Vol. 12, pp. 188–202.

____. 2008. Le rouge et le noir: implications of early pigment use in Africa, the Near East and Europe for the origin of cultural modernity. *South African Archaeological Society Goodwin Series* (Cape Town), Vol. 10, pp. 168–174.

d'Errico, F. and Soressi, M. 2002. Systematic use of manganese pigment by Pech de l'Aze Neanderthals: implications for the origin of behavioural modernity. *Journal of Human Evolution*, Vol. 42, pp. A13.

Flood, J. 1997. *Rock Art of the Dreamtime*. Sydney, Harper Collins.

Francis, J.E. 2001. Style and classification. In: Whitley, D.S. (ed.), *Handbook of Rock Art research.* Walnut Creek, AltaMira, pp. 221–244.

Fu, C.Z. 2001. Asia. In: Whitley, David S. (ed.), *Handbook of Rock Art research.* Walnut Creek, AltaMira, pp. 760–785.

____. 2004. Chinese Rock Art research in the Twentieth Century. In: Bertilsson, U. and McDermott, L. (eds.), *The future of Rock Art – a world review.* Stockholm, National Heritage Board of Sweden, pp. 114–119.

Gallardo, F. 2009. Social interaction and rock art styles in the Atacama Desert (northern Chile). *Antiquity* (York), Vol. 83, No. 321, pp. 619–633.

Greer, J. 2001. Lowland South America. In: Whitley, D.S. (ed.), *Handbook of Rock Art research.* Walnut Creek, AltaMira, pp. 665–706.

Guidon, N. and Delibrias, G. 1986. Carbon-14 dates point to Man in the Americas 32,000 years ago. *Nature* 321, pp. 769–771.

Helskog, K. 1999. The shore connection: cognitive landscapes and communication with rock carvings in northernmost Europe. *Norwegian Archaeological Review*, Vol. 32, No. 2, pp. 73–94.

Helvenston, P.A. and Bahn, P.G. 2003. Testing the 'three stages of trance' model. *Cambridge Archaeological Journal*, Vol.13, pp. 213–224.

Henshilwood, C.S., d'Errico, F., Yates, R.J., Jacobs, Z., Tribola, C., Duller, A.T. and Mercier, N. 2002. Emergence of modern behavior: Middle Stone Age engravings from South Africa. *Science*, Vol. 295, pp. 1278–1280.

Henshilwood, C.S., d'Errico, F. and Watts, I. 2009. Engraved ochres from the Middle Stone Age levels at Blombos Cave, South Africa. *Journal of Human Evolution,* Vol. 57, pp. 27–47.

ICOMOS. 2007. *Rock Art of Sahara and North Africa. Thematic Study.* Paris, ICOMOS.

____. 2009. *Rock Art sites on the UNESCO World Heritage List. Bibliography.* Paris, UNESCO-ICOMOS Documentation Centre. http://www.international.icomos.org/centre_documentation (Accessed 14 May 2011).

Jolly. P. 2000. Modeling change in the contact art of the south-eastern San, southern Africa. In: Chippindale, C. and Taçon, P. (eds.), *The Archaeology of Rock-Art* [Reprint edition]. Cambridge, Cambridge University Press, pp. 247–267.

Klein, R.G. 2009. *The human career: human biological and cultural origins,* 3rd edn. Chicago, University of Chicago Press.

Layton, R. 1991. *The Anthropology of Art.* Cambridge, Cambridge University Press.

____. 2001. Ethnographic study and symbolic analysis. In: Whitley, D.S. (ed.) *Handbook of Rock Art research.* Walnut Creek, AltaMira, pp. 311–331.

Lewis-Williams, J.D. 1981. *Believing and seeing. Symbolic meanings in southern San rock paintings.* London, Academic Press.

____. 2002. *The Mind in the Cave. Consciousness and the origins of art.* London, Thames and Hudson.

____. 2006*a*. The evolution of theory, method and technique in Southern African Rock Art research. *Journal of Archaeological Method and Theory,* Vol. 13, No. 4, pp. 343–377.

____. 2006*b*. Shamanism: a contested concept in archaeology. *Before Farming,* Vol. 2006/4, Article 1, pp. 1–15.

Lewis-Williams, J.D. and Dowson, T.A. 1988. The signs of all times. Entoptic phenomena in Upper Palaeolithic art. *Current Anthropology* (Chicago), Vol. 29, No. 2, pp. 201–245.

Lewis-Williams, J.D. and Pearce, D. 2004. *San spirituality: roots, expressions and social consequences.* Walnut Creek, AltaMira Press.

Loendorf, L. 2004. Places of power: the placement of Dinwoody petroglyphs across the Wyoming landscape. In: Chippindale, C. and Nash, G. (eds.), *The Figured Landscapes of Rock-Art. Looking at pictures in place.* Cambridge, Cambridge University Press, pp. 201–216.

Mackay, A. and Welz, A. 2008. Engraved ochre from a Middle Stone Age context at Klein Kliphuis in the Western Cape. *South African Archaeological Bulletin* (Cape Town), Vol. 61, No. 188, pp. 181–188.

Morwood, M.J. and Hobbs, D.R. 2002. Visions from the Past. *The archaeology of Australian Aboriginal art.* Crows Nest, Allen & Unwin.

Otte, M. and Remacle, L. 2004. Meaning in Palaeolithic art: a semiotic approach. In: Bertilsson, U. and McDermott, L. (eds.) *The future of Rock Art – a world review.* Stockholm, National Heritage Board of Sweden, pp. 155-162.

Parkington, J.E., Poggenpoel, C., Rigaud, J-P. and Texier, P-J. 2005. From tool to symbol: the behavioural context of intentionally marked ostrich eggshell from Diepkloof, Western Cape. In: d'Errico, F.; Backwell, L. (eds.), *From tools to symbols: from early hominids to modern Humans.* Johannesburg, Witwatersrand University Press, pp. 475–492.

Pearce, D., Namono, C. and Mallen, L. 2009. Meaning then, meaning now: changes in the interpretative process in San rock art studies. In: Mitchell, P.; Smith, B. (eds.), *The Eland's people: new perspectives in the Rock Art of the Maloti-Drakensberg Bushmen. Essays in memory of Patricia Vinnicombe.* Johannesburg, Witwatersrand University Press, pp. 61–79.

Reichel-Dolmatoff, G. 1967. Rock paintings of the Vaupes: an essay of interpretation. *Folklore Americas,* Vol. 27, No. 2, pp. 107–13.

____. 1978. Drug-induced optical sensations and their relationship to applied art among some Colombian Indians. In: Greenhalgh, M. and Megaw, V. (eds.), *Art in Society.* London, Duckworth, pp. 289–304.

Sanz, N (ed.) 2008. *Rock Art in the Caribbean. Towards a serial transnational nomination to the UNESCO World Heritage List.* World Heritage Papers Series, No. 24. Paris, UNESCO.

Schobinger, J. and Strecker, M. 2001. Andean South America. In: Whitley, D.S. (ed.), *Handbook of Rock Art research.* Walnut Creek, AltaMira, pp. 707–759.

Smith, C. 1992. Colonising with style: reviewing the nexus between Rock Art, territoriality and the colonisation and occupation of Sahul. *Australian Archaeology* (Sydney), Vol. 34, pp. 34–42.

Solomon, A. 2008. Myths, making and consciousness. *Current Anthropology* (Chicago), Vol. 49, No. 1, pp. 59–86.

Taçon, P. 2001. Australia. In: Whitley, D.S. (ed.), *Handbook of Rock Art research.* Walnut Creek, AltaMira, pp. 530–575.

Taçon, P. and Chippindale, C. 2001. Transformation and depictions of the First People: animal-headed beings of Arnhem Land, N.T., Australia. In: Helskog, K. (ed.), *Theoretical perspectives in Rock Art research.* Oslo, Institute for Comparative Research in Human Culture, pp. 175–210.

Texier, P-J., Porraz, G., Parkington, J., Rigaud, J-P., Poggenpoel, C., Miller, C., Tribolo, C., Cartwright, C., Coudenneau, A., Klein, R., Steele, T. and Vernai, C. A. 2010. *Howieson's Poort tradition of engraving ostrich eggshell containers dated to 60,000 years ago at Diepkloof Rock Shelter, South Africa.* PNAS. www.pnas.org/cgi/doi/10.1073/pnas.0913047107 (Accessed 14 May 2011).

Thackeray, A.I. 1983. Dating the Rock Art of southern Africa. *South African Archaeological Society Goodwin Series,* Vol. 4, pp. 21–26.

Turpin, Solveig. 2001. Archaic North America. 2001. In: Whitley, D.S. (ed.), *Handbook of Rock Art research.* Walnut Creek, AltaMira, pp. 361–413.

UNESCO. 2009. *Prehistory and World Heritage. A thematic initiative.* Paris, UNESCO.

____. 2010. *Action Plan of the World Heritage Thematic Programme on Prehistory (WHC-10/34.COM/INF.5F2).* http://whc.unesco.org/archive/2010/whc10-34com-5F-inf2e.pdf (Accessed 14 May 2011).

Vastokas, J.M. 1988. Comment on J.D. Lewis-Williams and Thomas Dowson, The signs of all times. Entoptic phenomena in Upper Palaeolithic art. *Current Anthropology,* Vol. 29, No. 2, pp. 229–230.

Vinnicombe, P. 1976. *People of the Eland.* Pietermaritzburg, Natal University Press.

Wendt, W.E. 1976. Art mobilier from the Apollo 11 Cave, South West Africa: Africa's oldest dated works of art. *South African Archaeological Bulletin,* Vol. 31, pp. 5–11.

Whitelaw, G. 2009. 'Their village is where they kill the game': Nguni interactions with the San. In: Mitchell, P. and Smith, B. (eds.), *The Eland's people: new perspectives in the Rock Art of the Maloti-Drakensberg Bushmen. Essays in memory of Patricia Vinnicombe.* Johannesburg, Witwatersrand University Press, pp. 139–163.

Whitley, D. 1996. *A Guide to Rock Art Sites: Southern California and Southern Nevada.* Missoula, Montana, Mountain Press.

____. 2004. Rock Art research and management in the USA. In: Bertilsson, U. and McDermott, L. (eds.), *The future of Rock Art – a world review.* Stockholm, National Heritage Board of Sweden, pp. 188–197.

____. 2005. *Introduction to rock art research.* Walnut Creek, Left Coast Press.

Wylie, A. 2002. *Thinking from things: essays in the philosophy of archaeology.* Berkeley, University of California Press.

APPENDIX 1

Rock Art World Heritage Sites from lists compiled by Sanz (2008) and ICOMOS (2009)

AFRICA: LISTED (8)

Botswana	- Tsodilo
Gabon	- Ecosystem and Relict Cultural Landscape of Lopé-Okanda
Malawi	- Chongoni Rock Art Area
Namibia	- Twyfelfontein
South Africa	- ukhahlamba/Drakensberg Park
	- Mapungubwe Cultural Landscape
Tanzania	- Kondoa Rock-Art Sites
Zimbabwe	- Matobo Hills

AFRICA: TENTATIVE (12)

Burkina Faso	- Pobe Mengao
Cameroon	- Bidzar
Centr. Afr. Rep.	- Lengo
Chad	- Ennedi and Tibesti
	- Archei
Mali	- Es-Souk
Mozambique	- Vumba
Namibia	- Brandberg
Uganda	- Nyero
South Africa	- /Xam #Khomani Heartland
Zambia	- Mwela
Zimbabwe	- Ziwa

ARAB STATES LISTED (3)

Algeria	- Tassili n'Ajjer
Jordan	- Petra
Libya	- Tadrart Acacus

ARAB STATES TENTATIVE (1)

Morocco	- Aire du Dragonnier Ajgal

ASIA AND THE PACIFIC LISTED (5)

Australia	- Kakadu National Park
	- Uluṟu-Kata Tjuṯa National Park
India	- Rock Shelters of Bhimbetka
Kazakhstan	- Petroglyphs within the Archaeological Landscape of Tamgaly
Korea	- Gochang, Hwasun and Ganghwa Dolmen Sites [not on ICOMOS list]

ASIA AND THE PACIFIC TENTATIVE (1)

Philippines	- Petroglyphs and petrographs of the Philippines

EUROPE AND NORTH AMERICA LISTED (13)

Azerbaijan	- Gobustan Rock Art Cultural Landscape
Bulgaria	- Madara Rider [not on Sanz list]
France	- Prehistoric Sites and Decorated Caves of the Vézère Valley
Ireland	- Archaeological Ensemble of the Bend of the Boyne [not on ICOMOS list]
Italy	- Rock Drawings in Valcamonica
	- The Sassi and the Park of the Rupestrian Churches of Matera [not on ICOMOS list]
Norway	- Rock Art of Alta
Portugal	- Prehistoric Rock Art Sites in the Côa Valley
Spain	- Cave of Altamira and Paleolithic Cave Art of Northern Spain
	- Rock Art of the Mediterranean Basin on the Iberian Peninsula
Sweden	- Rock Carvings in Tanum
Turkey	- Göreme National Park and the Rock Sites of Cappadocia [not on ICOMOS list]
United Kingdom	- Stonehenge, Avebury and Associated Sites [not on ICOMOS list]

EUROPE AND NORTH AMERICA TENTATIVE (8)

Bulgaria	- Magoura Cave
Canada	- Aisinai'pi
France	- Chauvet Cave, Pont d'Arc
Israel	- Mount Karkom
Italy	- Apulia caves
Moldova	- Orheiul Vechi
Romania	- Basarbi
Spain	- Cantabrica

LATIN AMERICA AND THE CARIBBEAN LISTED (9)

Argentina	- Cueva de las Manos
	- Quebrada de Humahuaca [not on Sanz list]
Bolivia	- Fuerte de Samaipata
Brazil	- Serra da Capivara National Park
Chile	- Rapa Nui National Park
Colombia	- San Agustín Archaeological Park [not on Sanz list]
Guatemala	- Archaeological Park and Ruins of Quirigua [not on Sanz list]
Mexico	- Rock Paintings of the Sierra de San Francisco (Baja California)
Peru	- Chavin (Archaeological Site) [not on Sanz list]

LATIN AMERICA AND THE CARIBBEAN TENTATIVE (6)

Brazil	- Peruacu Caves
Chile	- Rock Art of Patagonia
Dominican Republic	- Parque Nacional de Este
Mexico	- Yagul and Mitla Caves
Paraguay	- Parque Nacional Ybyturuzu
Uruguay	- Chamanga

APPENDIX 2

Serial nominations

Serial nomination and the extension of existing sites can be considered both within countries and across borders. Site extensions automatically increase the number of stakeholders and a strategy for relationships and resources is therefore needed. Similarly, joint management of sites can be problematic and the challenge is to harmonize conflicting legal frameworks and policies.

Suggestions were made for the extension and/or serial nomination of the following properties:

- North Africa – recommendations based on the ICOMOS thematic study for the region could include serial transnational nominations in the Sahara and Sahel region, an extension of Tassili n'Ajjer linking Burkina Faso, Mali and other neighboring countries in the same geological and ecological region with rock paintings and similar prehistory; and rock engraving sites in Algeria and Morocco in a separate nomination;
- USA – sites in the south-west such as California, Utah and Pecos River sites that cut across into Mexico could be included in a serial national or transnational property;
- Hawaiian petroglyphs should be included in the North America nomination. Colorado Plateau, Hopi culture, etc.;
- Italy – extension of Rock Drawings in Valcamonica;
- Norway and Sweden – extension of Rock Carvings in Tanum;
- Chile and Argentina – extension of Cueva de las Manos in Patagonia ;
- The Caribbean – serial transnational nomination in English, Spanish and French-speaking countries;
- Columbia and Venezuela? Difficulties because of guerilla activities;
- Amazonia: Arawaq nomadic people have a link to the rock art. The inventory of rock art in Amazonia is spectacular. However, more information is needed on rock art distribution and context in this large area that spans five countries;
- Transnational serial extension of inscribed site of petroglyphs within the Archaeological Landscape of Tamgaly, Kazakhstan, to include sites such as Seymuli Tash and Syuleyman Too, Kyrgyzstan;
- Central Asia – petroglyphs in Siberia;
- Saudi Arabia – serial national nomination for Ha'il (including Shuwaymash) and Najran (Jabal Qara) near the border of Yemen, with a possible transnational extension into Yemen;
- India – Daraki-Chattan and Chatturbhatan Nala;
- China – Huashan in Guangxi Province, Helanshan in Ningxia Province;
- Australia – Dampier Cultural Precinct, Woodstock-Abydos-Spear Hill complex (serial nomination) and Kimberley (serial), all in Western Australia, plus Tasmanian rock art (serial nomination);

APPENDIX 3

Additional rock art sites suggested for World Heritage Listing

South Africa

- Extension of uKhahlamba/Drakensberg Park site to include a transboundary agreement with Lesotho for an international serial nomination of the mixed site that will include rock art to the west of the current western boundary. The buffer zone needs redefinition, and areas to the north of the current boundary that could include the Upper Tugela Valley, Golden Gate National Park and significant palaeontological sites, and in the southern and south-eastern part of the Drakensberg region, will enrich the existing values linking biodiversity to rock art;
- Farmer rock art sites in the Makgabeng mountains in Limpopo Province as this tradition is missing from the current range in southern Africa and includes oral histories that assist in interpretation and understanding;

- Consider including rock art as a criterion in the Cederberg as part of the proposal to change this section of the current serial nomination of the Cape Floral Kingdom to a mixed site.

Zimbabwe and Botswana

- Zimbabwe and Botswana will be part of a recommendation to extend the Mapungubwe Cultural Landscape from neighboring South Africa.

Mozambique

- The initial suggestion to nominate rock art in the Vumba area has been withdrawn in favor of a larger area that includes farmer art sites in the north.

Zambia

- It might be possible to identify sites close to the border with Zaire at a later date once research has been done, and to link them in a serial nomination with Chongoni Rock-Art Area in Malawi.

Tanzania, Kenya and Uganda

- Newly-discovered sites in north-central Tanzania could be linked to Kondoa Irangi Rock Paintings;
- Nyero in Uganda could be linked to the transnational serial nomination of the hunter-gatherer and pastoral art tradition in the Lake Victoria zone of Tanzania, Uganda and Kenya.

2.3.2 Arab States and West Africa

- It was proposed that the North African sub-region of the Arab States Region, which includes at least Tunisia, Morocco, Libya, Sudan, Mauritania, Central African Republic, Cameroon, Mali, Niger, Chad, Egypt, Burkina Faso and Gabon, should be regarded as a single entity for the purposes of identifying rock art sites for World Heritage listing. The reason is that they share the same geological formations, landscape and history of the same nomadic people responsible for much of the rock art over the past 10,000 years. The traditions were spread along ancient routes, such as the Salt Route.

- The following sites are recommended for further research:
  Morocco: Atlas Marocain;
  Algeria: Atlas Saharien, Ahaggar;
  Mauritania: L'Adrar Mauritaniens;
  Niger: Aïr, Djado, Kawar, Niger River Valley;
  Mali: Adrar de Ifaros;
  Libya: Messak;
  Egypt: Giff el Kebir, Nubie et Haute Egypte;
  Sudan: Engravings in Nubie;
  Burkina Faso: Revise the existing sites of Markoyu to be extended to the north; Ouen Pea Doketi to be extended to the west.

2.3.3 Arab States

- Saudi Arabia – Serial nomination of sites to the east and south of Ha´il, including Showaymas. Serial nomination of all sites in the vicinity of Najran, especially at Jabal Qara, and possibly as an international nomination together with Yemen, to cover adjacent sites there.

2.3.4 Asia and the Pacific

- India – Daraki-Chattan, Madhya Pradesh and Chaturbajan Nala, Madhya Pradesh;
- China – Huashan painting site, Guangxi Province; possibly Helanshan, Ningxia Hui Province;
- Australia
- Dampier Cultural Precinct, Western Australia;
- Serial nomination of Abydos-Woodstock-Spear Hill complexes, eastern Pilbara, Western Australia;
- Serial nomination of selective sample of Kimberley painting traditions (Wandjinas and Gwion-Gwion);
- Serial nomination of representative sites of Tasmania.

2.3.5 Europe and North America

- ICOMOS thematic studies on rock art should prioritize possible nominations of sites in North America which are well documented, recorded and researched, e.g. in Western USA and in Canada;
- Finland: Finnish rock paintings could be connected to sites in Russia, Sweden and Norway;
- Extension of Tanum in Sweden to Begby in Norway;
- Extension of Valcamonica to Valtellina, both in Italy;
- Expansion could be considered in Gobustan Rock Art Cultural Landscape, Azerbaijan;
- USA – Hawaii, serial nomination of several representative sites, plus sites on the mainland.

2.3.6 Latin America and the Caribbean

- Peru: Proper consideration is needed to be given by the State Party for the Lines and Geoglyphs of Nasca and Pampa de Jumana as sites related to rock art;
- Argentina: Quebrada de Humahuaca as a rock art site and cultural landscape;
- Full understanding of rock art sites in areas nominated for natural values, for example Ichigualasto – Talampaya (Argentina), Parque Noel Kempff Mercado (Bolivia), Pantanal Conservation Area (Brazil) and San Pedro de Atacama on the World Heritage Tentative List;
- Serra da Capivara National Park (Brazil): a possible extension is under consideration by the State Party. Unify sites within the Parque Nacional Serra das Confusões which includes 120 sites in an intermediate area between the two parks;
- Fuerte de Samaipata (Bolivia): extend the natural and archaeological values by 256 ha to join with the natural values of the Valles Cruceños, Parque Nacional Amboró, under consideration;
- Cueva de las Manos (Argentina): extend the area of Cueva Las Manos encompassing sites of the Pinturas River and others on the central plateau of Sta. Cruz (Estancia La María), under consideration;
- Propose a joint transboundary nomination for the Rock Art of Patagonia (Chile and Argentina), under consideration.

APPENDIX 4

Hunter-gatherer rock art sites inscribed on the World Heritage List

In a global context, hunter-gatherer rock art sites on the World Heritage List (ICOMOS, 2009) are the earliest form of rock painting and engraving in most regions. Exceptions are those areas where habitation was not possible before the Mesolithic, such as in Scandinavia where the majority of rock art sites are post-hunter-gatherer (Bertilsson, 2004), or in tropical forests in Africa where early rock art might have existed but is no long visible. In many cases, people continued painting and engraving on rocks after the introduction of herding and agriculture, and occasionally into recent times. In each case, the change is evident in the rock art as the techniques, meaning and symbolism shifted.

Of the 32 rock art sites inscribed on the World Heritage List, about one-third (11) are almost exclusively the work of hunter-gatherers, 12 include rock art by hunter-gatherers as the ancestral tradition which subsequently changed with the introduction of food production and new belief systems, while 8 sites are almost exclusively post-hunter-gatherer. The fact that the same places continued to be the locus for rock art is significant because it suggests that ancestral traditions about the power of certain places persisted even when people changed their mode of production. It is only when social hierarchies differentiated between the ruling classes and commoners that a major dislocation occurs between places selected by hunter-gatherers and subsequent cultures, although there are exceptions such as Rock Drawings in Valcamonica and Gobustan Rock Art Cultural Landscape.

Hunter-gatherer almost exclusively (11)

Twyfelfontein (Namibia)
uKhahlamba/Drakensberg National Park (South Africa)
Matobo Hills (Zimbabwe)
Kakadu National Park (Australia)
Uluṟu-Kata Tjuṯa National Park (Australia)
Prehistoric Sites and Decorated Caves of the Vézère Valley (France)
Prehistoric Rock Art Sites in the Côa Valley (Portugal)
Cave of Altamira and Paleolithic Cave Art of Northern Spain (Spain)
Cueva de las Manos (Argentina)
Serra da Capivara National Park (Brazil)
Rock Art of Alta (Norway)

Hunter-gatherer followed by herder and agriculturalist (12)

Tsodilo (Botswana)
Chongoni Rock-Art Area (Malawi)
Mapungubwe Cultural Landscape (South Africa)
Kondoa Rock-Art Sites (Tanzania)
Tassili n'Ajjer (Algeria)
Rock-Art Sites of Tadrart Acacus (Libya)
Petroglyphs within the Archaeological Landscape of Tamgaly (Kazakhstan)
Gobustan Rock Art Cultural Landscape (Azerbaijan) – to Middle Ages
Rock Drawings in Valcamonica (Italy)
Rock Art of the Mediterranean Basin on the Iberian Peninsula (Spain)
Rock Carvings in Tanum (Sweden)
Rock Shelters of Bhimbetka (India)

Post-hunter-gatherer (8)

Ecosystem and Relict Cultural Landscape of Lopé-Okanda (Gabon)
Madara Rider (Bulgaria)
Rapa Nui National Park (Chile)
Rock Paintings of the Sierra de San Francisco, Baja California (Mexico)
Quebrada de Humahuaca (Argentina)
San Augustin Archaeological Park (Colombia)
Archaeological Park and Ruins of Quirigua (Guatemala)
Chavin (Archaeological Site) (Peru)

Early origins of agriculture and World Heritage: the role of Asia

Ofer Bar-Yosef
Department of Anthropology
Harvard University, Cambridge MA, USA

Introduction

The aim of this paper is to briefly present our current knowledge concerning the Agricultural Revolution that was a major tipping point in human evolution (Bellwood, 2005). After 2.6 million years of hunting and gathering, small and dispersed Palaeolithic populations, and a series of migrations to the edges of the world, as recorded by the genetic evidence, human societies developed a new economic system that changed the course of history. The story of how we all became the descendants of a major revolution is exemplified in the following pages. In order to avoid overall generalizations I decided to concentrate my narrative on the two ends of Asia: west and east. In both regions the first established farming villages cultivated different wild species of cereals that resulted unintentionally in the domestication of the plants; a genetic change that led to the production of the surplus of staple food, thus enhancing population growth. Following one or two millennia – while hunting continued to be an important source of meat, hides, antlers, horn cores – herd animals such as goats, sheep and cattle were corralled, pigs were penned, which resulted in their genetic change and domestication. The archaeological records collected in the Levant, a particular region of western Asia, are the richest in the entire world. Least known is the similar process that occurred in east Asia, mainly in China.

Cultivation of wild plants did not emerge suddenly. Several groups of Late Pleistocene hunter-gatherers already developed what is known as 'low-level food production' (Smith, 2001), i.e. they started to manipulate and cultivate one or two species of either the 'winning' plants, those which feed the world of today, namely, wheat, barley, rice and corn, or others of regional importance such as millet and rye. For clarity and brevity the story here focuses on the two ends of Asia. As western Asia is archaeologically better known, it is assumed that with future excavations and the use of analytical methods in the study of botanical and zoological remains, and information gathered from radiocarbon dating, isotope, starch and phytolith analyses, the sequence of the technological and economic changes of other regions will enable us to understand the social transformations that had major consequences.

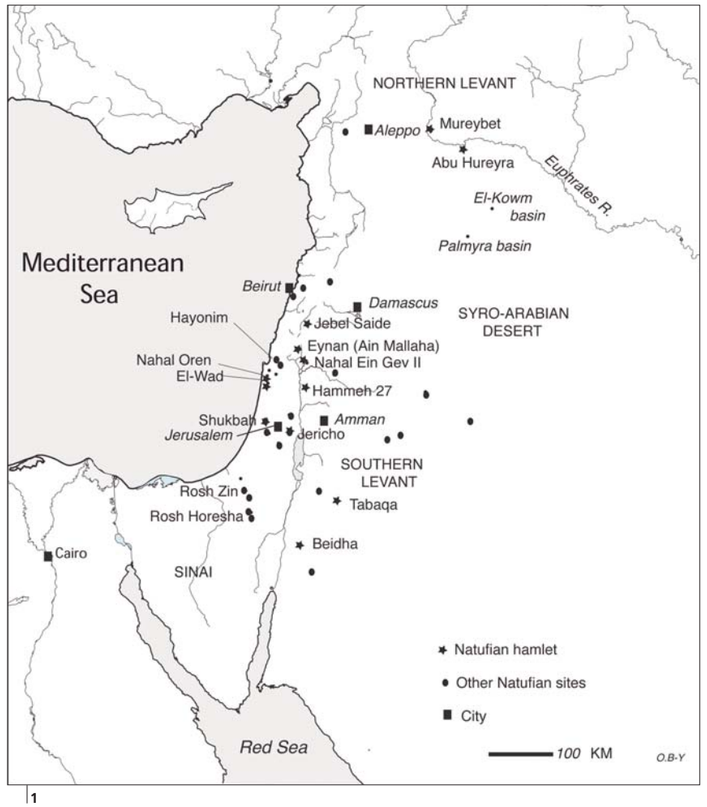
To uncover the steps leading from forager societies to early cultivators, we need to start with the review of the Terminal Pleistocene, the closing millennia of the Ice Age in the northern hemisphere. Only by understanding the changing socio-economic conditions in both west and east Asia will we be able to propose 'how', 'when' and 'why' particular groups of hunter-gatherers started cultivating annual plants that unintentionally became domesticated. Debates among archaeologists are often focused on the process of how foragers became farmers, and whether they realized, while cultivating these wild cereals over several centuries, that human selection for non-shattering ears that ripe together and do not fall off as in the wild species would enhance the growth of the desired plants; plants that would not fall apart when harvested with a sickle, hand picked or using a basket and a stick.

An important event that had direct impact on the prehistoric environments is the Younger Dryas, a relatively short climatic event (13/13,800 – 11,700 years ago) characterized by cold and dry conditions, which motivated certain groups in the northern Levant and northern China to become more sedentary and initiate plant cultivation, while other groups became more mobile.

In explaining what happened we should move back in time by several millennia. In both areas the archaeological record indicates that, upon the termination of the long and very cold period, commonly known as the Late Glacial Maximum (LGM) from around 18/17,000 – 14,500 years ago, a slow pace of improved climatic conditions prevailed. Populations of hunter-gatherers recovered from conditions that reduced the habitable region in the world to spread to areas that were formerly semi-arid or arid (the Syro-Arabian and the Sinai), as well as to large portions of the loess area of northern China, thus inhabiting all exploitable territories. In the case of the Levant, it was the region lying between the Mediterranean Sea, the Taurus and Zagros mountains and encircled by the deserts in the east and the south. In China it was the arid region stretching south from the Mongolian arid lands to the valley of the Yellow River and beyond. Moreover, the improved climatic pattern brought about increasing wetter and warmer conditions from 14,500 – 13/12,800 years ago that marked the spread of forests in western and eastern Asia and the development of a wide belt of open parkland, rich in annual plants and animal life. While these trends were essentially similar in both regions, we need to discuss the available evidence of each region separately.

The Levant in western Asia

The increase of populations during the period from 14,500 – 13,000 years ago led to the establishment of small, semi-sedentary hamlets, probably consisting of 50 – 150 people, in locations dictated by demographic pressures (increased numbers of foragers for a given territory) or a minor climatic fluctuation (Bar-Yosef and Belfer-Cohen, 1989). These new semi-sedentary or sedentary villages and hamlets formed the relics of the well-known Early Natufian culture (Henry, 1989; Bar-Yosef, 2002; Fig. 1). Their dwellings were rounded semi-subterranean buildings (Fig. 2). At large sites, multi-burial cemeteries were uncovered marking the ownership of the inhabitants (Belfer-Cohen, 1995). Many of the graves were of people of varied ages and gender buried with garments decorated with shell beads, most often *Dentalium* sp. shells, and in some cases with additional grave offerings. The most well-known grave is that of a physically-impaired woman covered by



1. *Map of the Levant showing the main Natufian hamlets. Only several were tested but they seem to have preserved more than one house. Hamlets are indicated by stars and other Natufian sites as points across the landscape.*
© O. Bar-Yosef

1

more than 50 tortoise shells interpreted as a shaman (Grosman et al., 2008). In this small cave the remains of the feasts represented by animal bones were also uncovered (Munro and Grosman, 2010), thus providing insights to Natufian rituals beyond the daily social activities.

The rich assemblages of domestic tools include, for example, flint crescent-shaped microliths (also called lunates) – a projectile element to facilitate hunting, perforators for the fabrication of garments made of hide, and sickles made with flint blades inserted occasionally into bone (Fig. 3), and often into wooded hafts for harvesting cereals or cutting straw. Mortars and pestles were made from limestone, and basalt (lava) blocks were food preparation utensils. In some instances, basalt pestles were brought from distances of over 100 km. Two larger goblet-shaped mortars made of basalt were probably used for preparing larger quantities of food. Special activities including the ephemeral production of plaster by burning broken limestone rocks were used in a few cases for flooring.

The building of the walls of the domestic structures is still not well known and a few indications may hint to the use of straw in addition to wooden supports (Fig. 2). The same material could have been used for constructing thatched structures. Among the known hamlets are, for example, Hayonim Cave and Terrace, El-Wad Cave and Terrace, Nahal Oren, Wadi Hammeh 27 and Eynan (Ain Mallaha) (see Fig. 1). In the latter, among the rounded semi-subterranean houses, we can note a large building of 9 m in diameter, a series of post-holes supporting the roof and hearths, with evidence for long-term use and employment as a special building for the gathering of the elders or the execution of rituals (Valla, 1988, 2003). In addition, a few carved art objects (animal and schematic human representations) and carved and incised limestone slabs were uncovered in Hayonim Cave, and those predominantly of abstract designs were found at Wadi Hammeh 27 (Edwards, 1991; Bar-Yosef, 2002; Belfer-Cohen and Bar-Yosef, 2009).

The change occurred during the Late and Final Natufian (ca. 12,800/700 – 11,700/500) and most excavated sites demonstrate poorly built houses in the southern Levant. Along the coastal hills, mountain ranges and the western margins of the Jordan Valley, Late/ Final Natufian dwellings have a fragile, ephemeral character, and their dead are rarely buried with adornments (Bar-Yosef, 2002; Valla et al., 2007). In the semi-arid habitats of the south (Negev and Sinai), Natufian groups returned to mobile, annual foraging.

Information from better recorded sites demonstrates that people increased consumption of low-ranked resources such as bone grease, juvenile gazelles, and fast-moving small game like hare and tortoise (Munro, 2004; Stiner et al., 2000). Unfortunately the lack of information concerning plant consumption does not allow us to fully recognize the entire subsistence of these people.

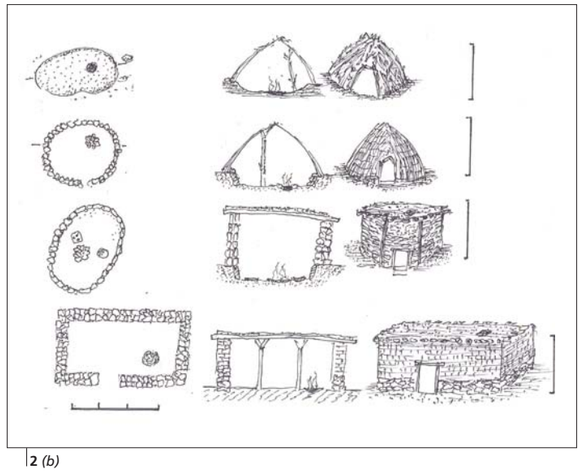
2. *(a) Photo of a large Natufian building from Eynan (Ain Mallaha) in the Jordan Valley. Photo: F. Valla*
(b) Suggested reconstructions of Levantine habitations from brush huts of foragers through rounded small, semi-subterranean houses of both Natufian and early farmers (PPNA times). The maps of the houses as recorded by the excavators are on the left, and the reconstructions on the right (a cross-section and the full building). The main difference is that the Natufian houses continued to be brush and straw houses while the early Neolithic villagers had real flat roofs built of wooden poles, mats, thatch and clay. In the ensuing period, the PPNB, houses were rectangular, sometimes with two floors.
© O. Bar-Yosef

2 *(c)*

The situation is different at better preserved sites in the north, such as in Mureybet and Abu Hureira – the river valley settlements. Their successful subsistence relied on plants and game animals. Abu Hureira (Moore, 2000), Tel Mureybet (Ibáñez, 2008) and Tel Qaramel (Mzurowski et al., 2009) produced rich Late Natufian and early Neolithic archaeobotanical assemblages. Based on analyses by Willcox and his associates, it seems that the inhabitants probably began to cultivate wild cereals in addition to gathering (Willcox et al., 2009). This activity may fall under the category of 'low-level food production' (Smith, 2001). Thus, faced with the difficulties imposed by the Younger Dryas conditions, particular groups of Terminal Pleistocene foragers adopted new solutions to intensification of food acquisition through a mixed subsistence strategy to minimize their risks. Indeed, during these times, the entire population of hunter-gatherers in the Levant incorporated the following options:

(a) Increased mobility characterized by a large number of Late/ Final Natufian hamlets in the southern Levant and the semi-arid area of the Negev and Sinai, resulting in the emergence of the unique Harifian culture and the invention of a typical arrowhead – the Harif Point (Goring-Morris, 1991);
(b) Increased sedentism for defending ownership of exploited habitats and providing security (real or imaginary), while recognizing their competing foragers, as demonstrated by the establishment of the village of Hallan Çemi Tepesi (11,900 – 10,500 cal BP) on the banks of a tributary of the Tigris River (Rosenberg and Redding, 2000);
(c) Increased sedentism in suitable habitats where wild cereals and other plant sources were in abundance. Intensified hunting and gathering and part-time cultivation is evidenced by the presence of arable weeds in archaeobotanical samples. This kind of sedentism is currently being recorded from Tel Qaramel (west of the Euphrates valley), Mureybet, Abu Hureira and Jerf el-Ahmar (Hillman et al., 2001; Willcox et al., 2008, 2009; Stordeur and Abbès, 2002; Stordeur and Willcox, 2009).

It therefore seems that the wild cereals were available only along the western wing of the Fertile Crescent, as predicted by the conditions of the Younger Dryas. The onset of cultivation was slow and local. The archaeobotanical assemblages demonstrate that within a few centuries, as the climatic conditions improved, cultivation became a successful strategy due to stable and sufficient amounts of winter precipitation (Willcox et al., 2008, 2009). However, the transition to full-fledged agriculture and reliance on supplies of staple food took several additional centuries. It is therefore during the ensuing millennia of the Holocene (from 11,700/500 cal BP) that rapid population growth led to the slow evolution of more complex social structures. In addition, it has been suggested that the first appearance of green beads among Late Natufian body decorations marked the onset of beliefs directly related to the practice of cultivation (Bar-Yosef Mayer and Porat, 2008).



2 *(b)*

3. *Natufian sickle haft from Kebara cave. Source: Turville-Petre, 1932 Photo: N. Goring-Morris*

3

HEADS Scientific Working Group 4

The period when farming became productive in different areas in the Levant ca. 11,700/500 – 10,700/500 cal BP is labeled 'Pre-Pottery Neolithic A' (PPNA), following the terminology proposed by Kenyon (1957) when she excavated the mound of Jericho in the 1950s. Not surprisingly, circular and oval stone foundations continued to be the standard plan of the domestic subterranean unit. But the walls were mostly built by unfired bricks, shaped as 'loaves of bread' with a plano-convex cross-section. Supporting wooden posts held the flat roof (Fig. 4). Hearths were located inside and outside the houses, and instead of mortar and pestles the dominant food preparation utensils were flat or rounded grinding stones with rollers (metates and manos), as well as a series of cup-holes in slabs often located near the hearths (Cauvin, 2000). Public and private storage facilities were erected (Gopher et al., 2001; Kuijt and Finlayson, 2009). Villages grew up to 2.5 ha in size, and their population is estimated at 150 – 300 people. Special buildings for either communal storage or meetings between elders were shaped in a similar way to the American 'kiva' and were often subterranean. They are best exemplified at Jerf el Ahmar and Mureybet (Stordeur and Abbés, 2002).

The PPNA economy was mixed and often included cultivating different species of cereals, which was represented in villages across the Levant. New techniques for food intensification were transmitted along the same lines of communication that facilitated the distribution of the obsidian from Anatolian sources through the southern Levant. Plant gathering (fruits, seeds, etc.) continued along with hunting common game in each sub-region. Tools made of flint included sickles, new types of dynamic arrowheads used with bows, axes-adzes for wood-working, tree felling and shaping poles, and perforators, among others.

It seems that during this period that lasted about 1,000 years, different groups (possibly tribes) experimented with different plants (rye, einkorn wheat, emmer wheat, barley and oatmeal) with the first trials to grow legumes (see Fig. 5). It is only during the second period, that is archaeologically defined as 'Pre-Pottery Neolithic B' (PPNB, ca. 10,500 – 8,200 cal BP), that village life became well established and socially more complex.

We should also note that in common literature and summaries the public use the terms 'cultivation', 'domestication', 'agriculture' and 'agro-pastoral' interchangeably without clarity (Harris, 2007). Cultivation means tillage, sawing, irrigating, harvesting, and storing seeds for consumption and for planting the following year. This tells us that the practitioners are 'farmers' regardless of the genetically determined morphological traits of the plants. Thus early cultivators, whether Late/Final Natufians or inhabitants of PPNA villages, were simply farmers. The term 'agriculture' could indicate 'low-level food production', or 'full-time cultivators'. However, by about 10,500 years ago, goats, sheep, cattle and pigs were domesticated (Zeder, 2008), and animal husbandry was part and parcel of annual subsistence activities justifying the use of 'agro-pastoral' societies. The term 'domestication' defines the genetic change that took place among wild species and should not be used interchangeably employed with other terms.

The archaeobotanical data from the Levant indicates that the initiation of the cultivation of wild barley, wheat, rye and other plants was either successful or a total failure (Weiss et al., 2006). Most authorities agree that the bearers of the earliest PPNA toolkits were the first farmers, as their carbonized plant remains contain cereals as well as weeds that grow in tilled fields (Colledge, 2001; Willcox et al., 2008, 2009; Kislev et al., 2006). Large assemblages of plant remains were preserved in PPNA villages due to the rapid accumulation of deposits rich in ash from domestic contexts. In brief, plants grown by the first cultivators included rye (*Secale cereale*), einkorn (*Triticum boeoticum*), emmer wheat (*Triticum dicoccoides*), barley (*Hordeum spontaneum*), and oats (*Avena sterilis*). Several grass species such as Aegilops and Stipa may represent wild weeds that grew in cultivated fields or resulted from gathering. Pulses such as lentils (*Lens culinaris*), peas (*Pisum sativum*), grass peas (*Lathyrus*), bitter vetch (*Vicia ervilia*) and common vetch (*Vicia sativa*) are found, but chickpeas (*Cicer arietinum*) and fava beans (*Vicia faba*) first appeared during the PPNB.

Based on cultural markers and almost 1,000 readings of radiocarbon dates, the Pre-Pottery Neolithic B is subdivided into four sub-periods (Early, Middle, Late and Final – also known as PPNC). For brevity, the following is just a short summary of the period as a whole.

The villages of the PPNB (ca. 10,700/500 – 8,400/200 cal BP) are larger than earlier ones, consisting of domestic houses which are square or rectangular in form, have flat roofs and, in some locations, consist of two floors (Fig. 2). Floors in many cases were covered by plaster produced from burned limestone or gypsum. Formations of closed compounds with several rooms resemble the density

4. *An oval PPNA house exposed in the site of Netiv Hagdud, Jordan Valley. Photo: Netiv Hagdud Archive*

4

5 *(a)*

5 *(b)*

5 *(c)*

6 *(d)*

5. *Wild and domesticated ears of wheat: (a) Wild ear of Emmer wheat; (b) Wild Emmer spikelet; (c) Domesticated ear of Emmer wheat; (d) Domesticated Emmer spikelet. Photo: E. Weiss*

and proximity of houses in Asikli Hüyük and Çatalhüyük on the Anatolian plateau. These overcrowded agglomerations raise the issues of real or ritualistic defense and expression of territorial ownership. In addition, different mortuary practices in several sites disclosed the emerging of differential status among individuals (Goring-Morris, 2005).

The process of husbandry began with sheep and goats in the northern Levant (Zeder, 2006; Vigne, 2008); a position currently supported by DNA studies of modern goats. Over time goats and sheep were herded into the central and southern Levant, possibly along the same exchange routes that enabled Anatolian obsidian and chlorite bowls to reach the south. The movement of Red Sea shells northward makes it probable that this was part of a long distance exchange (e.g. Bar-Yosef Mayer, 2005).

The translocation of goat, sheep, cattle and pigs together with fallow deer and, later, dogs and cats is documented in the Cypriote PPNB site of Shillourocambos (Guilaine and Briois, 2001; Vigne and Cucchi, 2005). Already Terminal Pleistocene foragers had visited Cyprus, but by 9,500 years ago the sea was crossed by colonizing farmers. Indeed, the PPNB farming communities demonstrate that they conducted the preponderance of agricultural activities, such as sawing cereals in the autumn and harvesting in the summer, growing legumes, including chickpeas and broad beans. Flax was used for manufacturing fibres that caused a change in clothing and increased the use of cords and wool (McCorriston, 1997).

Between the two sub-regions, there are differences in the toolkits. Bifacially-shaped axes-adzes dominated in the south, while in the northern Levant and Anatolia they were fully polished. These tools were employed in tree-felling, wood-working, crafting objects, shaping posts and building sea crafts. Harvesting was done with simple sickles, V-shaped bone tools for stripping seed heads from straw, and later the threshing board or *tribulum* (Anderson, 1998). Arrowheads proliferated during this period (Gopher, 1994; see Fig. 6), and although the yields from game animals decreased, the large number of projectiles may reflect the increase of warfare among Neolithic tribes. Interestingly, pottery first appeared around 9,000 cal BP in the northern Levant and about a thousand years later in the south.

Storage facilities include special built-in installations and small rooms in houses or courtyards. Changes in the sizes and locations of storage facilities mark the shift from nuclear family consumption to larger social units, and perhaps to an institutionalized control of public granaries in the largest villages of 12 ha.

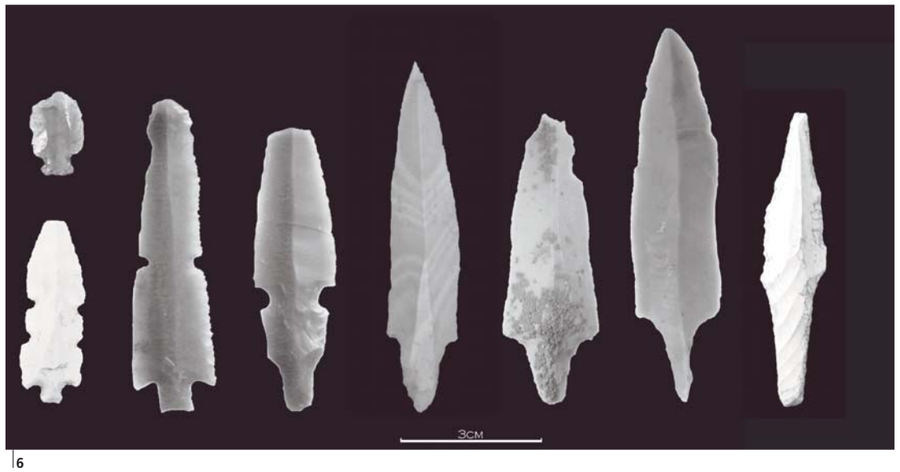
The social changes are best observed in buildings that served as village shrines. Undoubtedly the most impressive site is Göbekli Tepe (Schmidt, 2006) that features rectangular buildings above large polygonal buildings in the lower layer, with T-shaped carved pillars, many of which bear animal reliefs. The energy investment of cutting rock pillars up to 5.6 metres long, carving the rock, and sculpting animals as independent objects, reflect a significant amount of organized labor, thus indicating social organization, labor channeling, control, and the emerging of inequality. Sculptures at Göbekli Tepe and Nevali Çori, as well as in the later buildings at Çatalhöyük, exemplify both animal and human figures, including ithyphallic representations and the presence of raptors, with only minor appearances of female figures. The complexity of the symbols is not easy to decipher, and may indicate the intricacies of an elaborate cosmology.

Different examples for ritualistic behaviour include plaster modelled skulls (Fig. 7), stone masks as well as caches of human plaster statues, some of which are only busts, uncovered in Jericho and Ain Ghazal (Rollefson, 2000). Their intentional burial as used cultic objects is a well-known phenomenon from the historical periods in western Asia. The statues holding their hands covering the lower part of the belly are seen as female representations. All have eyes encircled with black asphalt and stripes of red pigment on their bodies. They may represent a pantheon of deities. Additional ceremonial locations such as Nahal Hemar cave could have been landscape markers of kinship-based territories (Bar-Yosef, 2001).

It should be stressed that the groups of foragers which continued to hunt and gather in the semi-arid habitats of the Levant had recurring contact with the groups in the agricultural villages. Their mutual relationships could have ranged from friendly encounters to violent conflicts, as is well-known from historical examples. These interactions played an important role concerning the transfer of material elements and information. An archaeological example of the mutual relationship of hunters-farmers is 'desert kites', which were large installations laid out by the semi-arid foragers to hunt gazelles or onagers en masse. This observation indicates that the villagers needed meat, hides and horns from wild species, and not only from their domesticated livestock.

The excavation of a large number of villages across the Levant indicate that the abandonment of almost every village, even those situated next to copious springs (e.g. Jericho), or along river banks (e.g. the Euphrates Valley), occurred within a few centuries with only a few exceptions (e.g. Jerf el Ahmar). While climatic conditions during this period had improved, several reasons have been offered to justify this observation, such as the depletion of soil fertility due to the lack of fertilizers, the effects of salinization, successive droughts, harvest failures and famines, disease, and intergroup violence that may reflect 'war before civilization'(Keeley, 1996).

6. *Typical Pre-Pottery Neolithic B arrowheads from Kefar HaHoresh, Israel. Photo: N. Goring-Morris*



6

7. *Plastered skull from Kefar HaHoresh, Israel. Photo: N. Goring-Morris*

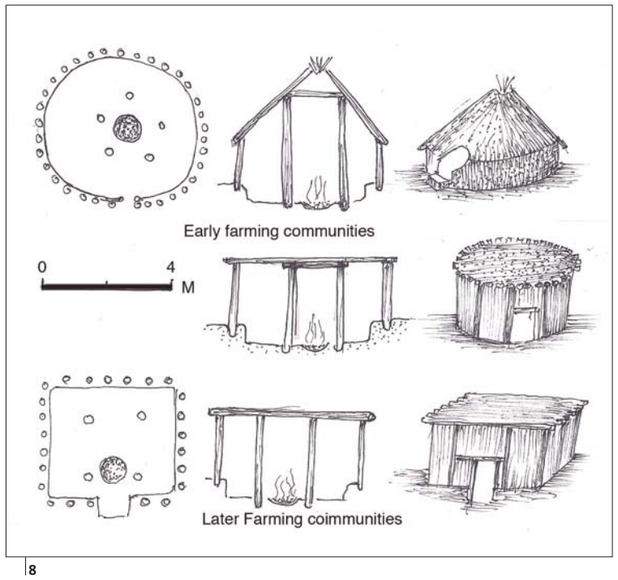
7

The emergence of agriculture in China

The climate of China is characterized by tropical and subtropical Pacific and Indian Ocean summer monsoons that bring rain from early March to June – July beginning in the south and advancing northward. During the winter, the entire country is dominated by the Siberian-Mongolian high pressure system that often produces strong winds. The northwest enjoys westerlies that bring some precipitation from western Eurasia. Topographic variability within each of the sub-regions results in a mosaic distribution of precipitation and temperatures impacting the flora and fauna.

Understanding the impact of the Younger Dryas on foragers in northern China is aided by historical records of droughts in this vast region, although the prehistoric groups were small and mobile. The paleoclimatic information from this region demonstrates that major changes in vegetation had unavoidable consequences for the food acquisition of hunter-gatherers. The change was dramatic because for several millennia since the LGM (24 – 18,000 years ago), foragers enjoyed reasonably stable conditions across the loess plateau that is dissected by the Yellow River and its many tributaries. Their sites are often small, ephemeral, rich in microblades and quartz 'core and flake' toolkits, but in some of the smaller sites of the river valley stratified sites can be found, such as Shizitan (Shizitan Archaeological Team, 2002). These reflect repeated occupations in favorite localities and the building of brush huts (Fig. 8). The worsening conditions forced the foragers to make similar choices as their contemporaries in the Levant. Unfortunately, we still have limited amounts of information due to the paucity of published site reports.

Hence, during the Younger Dryas, and in particular in the course of the first two millennia of the Holocene (11,500 – 9,500 cal BP), several sites seem to reflect the seasonal agglomerations of families and possibly sub-clans such as the reported Nanzhuangtou, Zhuannian and Donghulin (Figs. 9–11). Nanzhuangtou did not contain a microblade industry that was common in northern China ca. 25,000 years ago, but rather other stone tools, some pottery shards, and a rich bone and antler assemblage, including the remains of deer, dog, pig, wolf, chicken, soft-shell turtle, and shellfish (Underhill, 1997; Cohen, 2003; Lu 1999, 2006). The two other sites produced microblades plus other stone tools, such as domestic tool kits. All three sites had grinding slabs and rollers. Given the local conditions, acorns, bean and millet were available, however, only the full publication of all plant remains and starch analysis will clarify the diets of late foragers. At the site of Donghulin, dated to ca. 11 – 9,600 cal, a burial of a woman was discovered decorated with 68 sea shells (Zhao et al., 2006; Hao et al., 2001). Grinding slabs and their hand stones were found and starch analysis demonstrated that they were used for processing acorns.

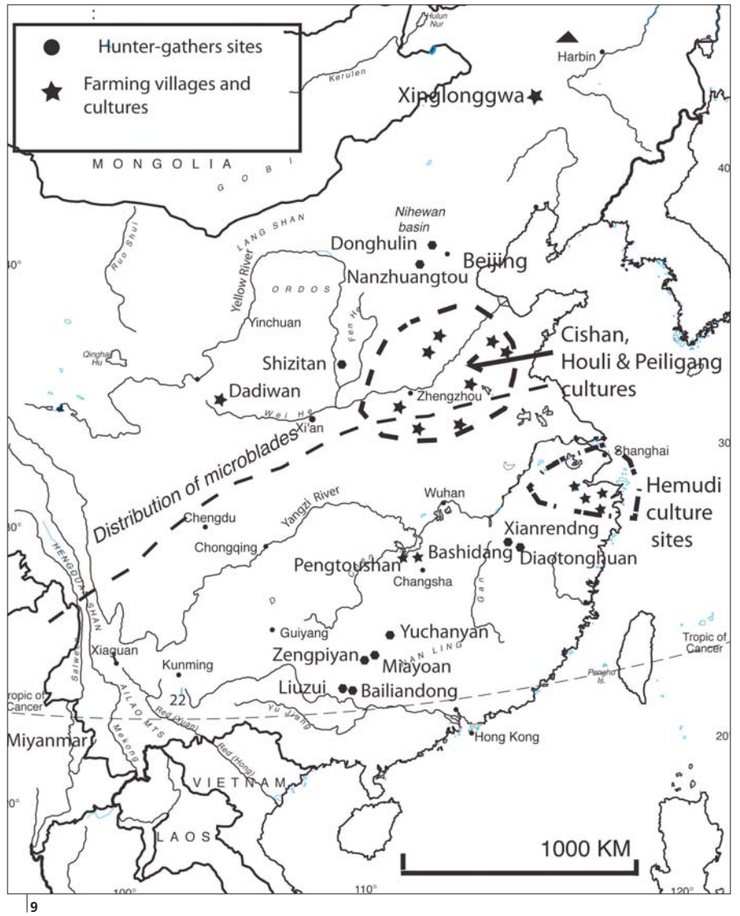


8. *Suggested reconstructions of Chinese houses. Early farmers (rounded plans) and later ones (square plans). The roofs could have been of different shapes. In rainy areas the thatched roof was probably more common.*
© O. Bar-Yosef

The next phase is represented by the cultures named Huoli, Cishan, and Peligang (Fig. 9). These different groups emerged as cultivators of millet within the Middle and Lower Yellow River basin (Lu, 2009; Crawford, 2009; Zhao, 2004). They probably started as dry land farmers of broomcorn and foxtail millets (Zhao, 2010), and their village sites are incorporated in the primary 'core area' where agriculture was established in north China.

The first farming communities are 1–2 ha in size, with semi-subterranean rounded houses (Fig. 8), a large number of storage pits (some containing abundant millet grains), garbage pits, distinct cemetery areas, abundant pottery, stone adzes, axes, spades, and four-legged grinding stones – the best known are from Cishan. The excavations of this site uncovered many pits and only one house.

The bio-molecular study of plant remains from Cishan suggests that broomcorn millet (*Panicum mileaceum*) was first cultivated/domesticated sometime from ca. 10,300 to 8,700 cal BP (Lu et al., 2009; Crawford, 2009). It is worth noting that the two domesticated varieties of millet, Panicum miliaceum and *Setaria italica* were identified in the Peiligang culture in the basin of the middle and lower Yellow River, contexts from about 8,400/200 cal BP, the Xinglonggwa culture (inner Mongolia) around 8,000 cal BP, and at Dadiwan (Gansu) ca. 7,800 – 7,300 cal BP, located further west at a higher altitude along the Wei River, a major tributary of the Yellow River. If the general view of the large region incorporating the area of Cishan, Houli and Peiligang is identified as the core area where millet cultivation began then the other sites, located further away, are secondary



9. *Map of China indicating the main well-known sites of Late Pleistocene and early Holocene hunter-gatherers, as well as the areas of farming sites (stars). Please note that the star symbols in the area of the Cishan, Houli and Peiligang cultures in the north and the Hemudu culture area in the south, do not represent the actual sites.*
© O. Bar-Yosef

locations into which farming techniques spread. This hypothesis needs additional testing mainly with radiocarbon dates on short-lived samples such as seeds and animal bones.

It seems that what is missing today from the Chinese record are the sedentary sites of foragers who started the cultivation of millet. If we accept that cultivation of wild varieties of millet started during the last centuries of the Younger Dryas as a strategy of low-level food production, it could have been domesticated within the next 1,500 – 2,000 years (see also Shelach, 2000). Isotopic analysis of human bones from the Xiaojingshan site (ca. 8,000 cal BP) suggests that millet made up only 25% of the diet of both males and females (Hu et al., 2008). Similar evidence from the Xinglongwa-type sites (ca. 8,100 – 7,2000 cal BP) of ∂13C values in human bones mark the consumption of millet and may reflect the presence of both broomcorn and foxtail millets, thus suggesting a more advanced stage of agricultural development (Barton et al., 2009).

The evolution of architecture in China seemed to be the same as in the Levant; the square and rectangular buildings appear later then the rounded ones (Fig. 9). However, as economic changes spread from a core area, a well-established radiocarbon chronology is needed for every small region before long-distance correlations and cultural interpretations can be applied. A geographic component that enhanced long-distance connections was the numerous rivers in China that served as the prehistoric highways. In conclusion, as square buildings in China were erected over the rounded buildings, the site plan and tight clustering of the houses in the Xinglonggwa sites indicate, for example, that it was definitely later than the sites in the central plain.

Interestingly, floatation samples from a Houli culture site, Yuezhuang (Shandong), with a date of 7,900 cal BP, demonstrate the presence of some 40 broomcorn and one foxtail millet seeds along with 26 rice seeds, indicating an unexpectedly early arrival of this plant in the Yellow River area (Crawford, 2006). In addition, somewhat further south in the Huai River basin, the site of Jiahu produced large amounts of domesticated rice grains and no millet, tentatively dated to ca. 9,000 – 7,800 cal BP (Zhao and Zhang, 2010).

Animal bones from villages in the Yellow River basin demonstrate that, in addition to hunting deer species and carnivores, pig was first domesticated (Flad et al., 2007; Yuan and Flad, 2002). There is little doubt that pigs were penned and the process began with 'cultural control' of individuals attracted to the garbage dumps of villages such as those of the Cishan, Houli and Peiligang cultures, at least by 8 – 7,000 cal BP. By 6,000 cal BP pig meat became 60 % of consumed mammals' tissues (Yuan et al., 2008). With the advent of agriculture other animals were domesticated or adopted from neighboring regions such as the water buffalo and the chicken.

10

11 *(a)*

11 *(b)*

10. *A site of foragers in the loess plateau, known as Shizitan 9, in the area of the Yellow River. © Archaeological Team of Shizitan*

11. *(a) A grinding stone; (b) A roller or rubbing stone employed for grinding seeds and acorns. © Archaeological Team of Shizitan*

South China enjoyed somewhat better climatic conditions than the north, but several fluctuations are clearly recorded in cave speleothems and the South China Sea. The detailed origins of rice cultivation and domestication is currently debated among archaeologists (e.g., Liu et al., 2007; Fuller, 2007; Zhao, 2010). Three areas seem to have been the locus of rice manipulation and eventual domestication in the basin of the Yangtze River: Lake Dongting area (Hunan), Lake Poyang area (Jiangxi) and the lower Yangtze River valley.

It is worth noting that the cultures in South China (ca. 23/20,000 – 11,500 ka cal BP) preserved the old tradition of cobble-tools such as choppers, cores and flakes, small cup-holes on cobbles, perforated cobbles, bone, antler, and shell tools. In addition, in this region the earliest pottery was found in cave sites. These new utensils, dated to ca. 18,000 cal BP (Boaretto et al., 2009; Yuan, 2002), were possibly employed for making special liquids, or extraction of grease from bones by cooking. The special social meaning of pottery making is still poorly understood (Pearson, 2005). Rice phytoliths found in two of the caves (Xianrendong and DiaoTong Huang in JIangxi) are now considered as evidence for gathering and possible tending rice plants in the wetland areas near the sites (Zhao, 2010).

Although the impact of the Younger Dryas was subdued in comparison to north China, early Holocene conditions were improved with the more stable monsoonal systems that allowed foragers to carry on their gathering and hunting activities. The impetus for the onset of the cultivation of wild rice is unclear, and among potential triggers is the suggestion of social connections with the north through the river network, or that local 'demographic pressures' created conditions of competition with other foragers. Rice exploitation began during the Upper Paleolithic probably by some groups like in Xianrendong and Diaotonghuang caves in the Lake Poyang area, but systematic cultivation started some time in the Holocene, perhaps around 9,000 – 8,500 cal BP. The evidence of carbonized plant remains obtained in villages such as Bashidang (ca. 8,150 – 7,600 cal BP) in Lake Dongting area and Kuahuqiao (ca. 7,900 – 7,300 cal BP), in the lower Yangtze basin (Zheng et al., 2007; Zhong et al., 2007), and Tianluoshan (Fuller et al., 2009) document the process of domestication. Thus from the Yangtze River basin the local 'agriculture package' dispersed further south (Zhang and Hung, 2008).

Indeed, the origins of rice cultivation and domestication are not yet well known and with every new excavation the overall picture may change. The presence of rice in Jiahu (Huai River Valley) and Yuezhuang within the Yellow River large basin may hint to two potential interpretations: (a) that rice was first manipulated in the Huai River basin; and (b) that long-distance interactions cased an early arrival of the rice north of the Yangtze River basin. Animals such as the domesticated pig were adopted later as hunting continued to be the main source of meat (Yuan et al., 2008).

Concluding remarks

The perspective of the *longue durée* concerning the agricultural revolution should provide us with a few answers to the pertinent questions of 'why', 'how', 'where' and 'when' foragers became farmers. These are the questions that were already asked by the Swiss botanist Alphonse de Candolle in his book, 'Origins of Cultivated Plants' (1984). He realized that sewing small seeds was not the favorite activity of hunter-gatherers. Gathering them is one kind of a task but rearing them is different, so he mainly dealt with it – as we do several generations later – by focusing on how it was done, and where and when, i.e. as archaeological inquiries. By recognizing that a new (although partial) subsistence strategy was adopted by foragers during the closing millennia of the Terminal Pleistocene in western and eastern Asia, we provide an answer to the 'why' question. It is only tentative and its strength depends on the quality of our data sets.

There is a growing awareness that when bad times struck in a land 'full of people' the best option for some groups was to stay put and intensify the exploitation of plant resources by cultivation while continuing to exploit other sources (both plants and animals) in their immediate environment. It is thus hypothesized that this strategy was adequate within the natural habitat of the cereals in the Levant and north China. None of those 'early farmers' abandoned gathering, hunting, trapping and fishing as well as collecting land snails, freshwater mollusks, and water plants. We may label these foragers as 'incipient farmers' or 'affluent foragers' who practiced low-level food production while being fully aware of their entire available resources.

In the Levant and China, 'incipient cultivation' resulted in the domestication of the harvested species and the stable, steady provisioning of staple food in preferred climatic conditions. This is clearly expressed in the rapid increase of local populations and the development of full-fledge farming and herding economies (Bellwood, 2005; Bouquet-Appel and Bar-Yosef, 2008, and papers therein). These changes occurred during the first four millennia of the Holocene (ca. 11,700/500 – 8,200 cal BP).

In considering the paleoclimatic and archaeological information from north China, it seems that the Yellow River basin was prone to droughts much more frequently than south China. Given the reconstructed demography of mobile hunter-gatherers in this region, we should expect the establishment of millet cultivation as preceding the earliest rice cultivation by a millennium or two. The evidence for the impact of the Younger Dryas on the local vegetation in south China is very reduced when compared to the north. Therefore the triggers to the onset of rice cultivation should be sought.

Indeed, in my view, the processes in the Levant and China were reasonably similar and sedentism was the first common group strategy under the circumstances of relative demographic pressure in the climatically-affected regions. Building domestic houses followed the same pattern starting with round pit-houses shifting gradually to square and rectangular ground plans. However, materials and food preparation utensils varied. In China wood and adobe were the standard building components, while in the Levant undressed, dressed stones and bricks dominate the construction of habitation structures. Mortars, slabs with cup-holes and pestles characterize the first stages of food preparation in the Levant but grinding (milling) slabs and stone employed in China from the Late Paleolithic through the Neolithic. Pottery was already available in the earliest Neolithic communities but missing from the earlier Levantine sites. Small-scale farming supplemented by gathering and hunting was a common strategy in China. Hunting was abandoned earlier in the Levant strategy but lasted longer in south China than either the north or the Levant. While rapid climatic changes served as a trigger during the closing centuries of the Younger Dryas, such changes continue to punctuate the Holocene sequences of both regions and their impact is still highly, except for the 8200 cal BP short cold event (e.g. Chen et al., 2008; Weninger et al., 2009).

Acknowledgements

This paper benefitted from two previous papers now in press on a similar subject which I presented in the Harlan II symposium in University of California Davis (co-organized by P. Gepts and his associates), and the Wenner Gren Symposium on Early Agriculture in Merida, Mexico (co-organized by T.D. Price and myself). I thank my colleagues in both symposia for their helpful comments. I am grateful to Asia Center, China Fund and American School of Prehistoric Research of Harvard University for funding my research in China. I thank P. Keenan for copy editing the draft of this manuscript. Needless to mention that all shortcomings of the text are mine.

Bibliography

Anderson, P.C. 1998. History of harvesting and threshing techniques for cereals in the prehistoric Near East. A.B. Damania, J. Valkoun, G. Willcox and C.O. Qualset (eds.), *The Origins of Agriculture and Crop Domestication.* Aleppo, Syria, ICARDA, pp. 145–159.

Barton, L., Newsome, S.D., Chen, F.-H., Wang, H., Guilderson, T.P. and Bettinger, R.L. 2009. Agricultural origins and the isotopic identity of domestication in northern China. *Proceedings of the National Academy of Sciences,* Vol. 106, pp. 5523–5528.

Bar-Yosef, O. 2001. From Sedentary Foragers to Village Hierarchies: The Emergence of Social Institutions. G. Runciman (ed.), *The origin of human social institutions.* London, The British Academy, pp. 1–38.

____. 2002. Natufian: A complex society of foragers. B. Fitzhugh and J. Habu (eds.), *Beyond foraging and collecting.* New York, Kluwer Academic/Plenum Publishers, pp. 91–149.

Bar-Yosef, O. and Belfer-Cohen, A. 1989. The origins of sedentism and farming communities in the Levant. *Journal of World Prehistory.* Vol. 3, pp. 447–498.

Bar-Yosef Mayer, D.E. 2005. The Exploration of Shells as Beads in the Palaeolithic and Neolithic of the Levant. *Paléorient,* Vol. 31, pp. 176–185.

Bar-Yosef Mayer, D.E. and Porat, N. 2008. Green stone beads at the dawn of agriculture. *Proceedings of the National Academy of Sciences,* Vol. 105, pp. 8548–8551.

Belfer-Cohen, A. 1995. Rethinking social stratification in the Natufian Culture: The Evidence from Burials. S. Campbell and A. Green (eds.), *The Archaeology of Death in the Ancient Near East.* Oxford, Oxbow Monograph 51, pp. 9–16.

Belfer-Cohen, A. and Bar-Yosef, O. 2009. First things first: Abstract and figurative expressions in the Levant. P.G. Bahn (ed.), *An Enquiring Mind: Studies in Honor of Alexander Marshack.* Oxford, Oxbow, pp. 25–37.

Bellwood, P. 2005. *First Farmers: The Origins of Agricultural Societies.* Oxford, Blackwell.

Boaretto, B., Wu, X., Yuan, J., Bar-Yosef, O., Chu, V., Pan, Y., Liu, K., Cohen, D. J., Jiao, T., Li, S., Gu, H., Goldberg, P. and Weiner, S. 2009. Radiocarbon Dated Early Pottery at Yuchanyan Cave, Hunan Province, China. *PNAS,* Vol. 106, pp. 9595–9600.

Bouquet-Appel, J.P. and Bar-Yosef, O. (eds.). 2008. The Neoloithic demographic transition and its consequences. Springer.

Candolle, A. de. 1884. *Origin of Cultivated Plants.* London, Kegan Paul.

Cauvin, J. 2000. *The Birth of the Gods and the Origins of Agriculture* (Trans. by T. Watkins). Cambridge, Cambridge University Press.

Chen, Z., Zong, Y., Wang, Z., Wang, H. and Chen, J. 2008. Migration patterns of Neolithic settlements on the abandoned Yellow and Yangtze River deltas of China. *Quaternary Research,* Vol. 70, pp. 301–314.

Cohen, D.J. 2003. Microblades, Pottery, and the Nature and Chronology of the Palaeolithic-Neolithic Transition in China. *The Review of Archæology,* Vol. 24, No. 2, pp. 21–36.

Colledge, S. 2001. *Plant Exploitation on Epipaleolithic and Early Neolithic Sites in the Levant.* Oxford, BAR International Series 986.

Crawford, G.W. 2006. East Asian Plant Domestication. M.T. Stark (ed.), *Archaeology of Asia.* Malden, USA, Blackwell Publishing, pp. 77–95. (Blackwell Studies in Global Archaeology.)

____. 2009. Agricultural origins in North China pushed back to Pleistocene-Holocene boundary. *Proceedings of the National Academy of Sciences,* Vol. 106, pp. 7271–7272.

Edwards, P.C. 1991. Wadi Hammeh 27: An Early Natufian Site at Pella, Jordan. O. Bar-Yosef and F.R. Valla (eds.), *The Natufian Culture in the Levant.* International Monographs in Prehistory, Ann Arbor, pp. 123–148.

Flad, R.K., Yuan, J. and Li, S. 2007. Zooarchaeological Evidence for Animal Domestication in Northwest China. D.B. Madsen, F.H. Chen, and X. Gao (eds.), *Late Quaternary Climate Change and Human Adaptation in Arid China.* Developments in Quaternary Science, Vol. 9. Amsterdam, Elsevier, pp.167–203.

Fuller, D.Q. 2007. Contrasting patterns in crop domestication and domestication rates: recent archaeobotanical insights from the Old World. *Annals of Botany,* pp.1–22.

Fuller, D.Q., Qin, L., Zheng, T., Zhao, Z., Chen, X., Hosoya, L.A. and Sun, G.-P. 2009. The Domestication process and domestication rate in rice: Spikelet bases from the Lower Yangtze. *Science*, Vol. 323, pp. 1607–1610.

Gopher, A. 1994. *Arrowheads of the Neolithic Levant.* Eisenbrauns, Winona Lake, Indiana.

Gopher, A., Abbo, S. and Lev-Yadun, S. 2001. The 'when', the 'where' and the 'why' of the Neolithic revolution in the Levant. *Documenta Praehistorica,* Vol. 28, pp. 49–62.

Goring-Morris, A.N. 1991. The Harifian of the Southern Levant. O. Bar-Yosef, and F.R. Valla (eds.), *The Natufian Culture in the Levant.* International Monographs in Prehistory, Ann Arbor, pp. 173–216.

____. 2005. Life, death and the emergence of differential status in the Near Eastern Neolithic: Evidence from Kfar HaHoresh, Lower Galilee, Israel. J. Clark (ed.), *Archaeological Perspectives on the Transmission and Transformation of Culture in the Eastern Mediterranean.* Oxford, Council for British Research in the Levant and Oxbow Books, pp. 89–105.

Grosman, L., Munro, N.D. and Belfer-Cohen., A. 2008. A 12,000-year-old Shaman burial from the southern Levant (Israel). *Proceedings of the National Academy of Sciences,* Vol. 105, pp. 17665-17669.

Guilaine, J. and Briois, F. 2001. *Parekklisha Shillourokambos:* An Early Neolithic site in Cyprus. S. Swiny (ed.), *The Earliest Prehistory of Cyprus: From Colonization to Exploitation.* Boston, MA, American Schools of Prehistoric Research, pp. 37–54. (Cyprus American Archaeological Research Institute Monograph Series.)

Hao, S.-G., Ma, X.-P., Yuan, S.-X. and Southon, J. 2001. The Donghulin woman from western Beijing:14C age and associated compound shell necklace. *Antiquity,* Vol. 75, No. 289, pp. 517–522.

Harris, D.R. 2007. Agriculture, cultivation, and domestication: Exploring the conceptual framework of early food production. T. Denham, J. Iriarte, and L. Vrydaghs (eds.), *Rethinking agriculture: Archaeological and ethnoarchaeological perspectives.* Walnut Creek, CA, Left Coast Press, pp. 15–35.

Henry, D.O. 1989. *From Foraging to Agriculture: The Levant at the End of the Ice Age.* Philadelphia, University of Pennsylvania Press.

Hillman, G.C., Hedges, R., Moore, A. Colledge, S. and Pettitt, P. 2001. New evidence of Late glacial cereal cultivation at Abu Hureyra on the Euphrates. *Holocene,* Vol. 11, pp. 383–393.

Hu, Y., Wang, S., Luan, F., Wang, C. and Richards, M.P. 2008. Stable isotope analysis of humans from Xiaojingshan site: implications for understanding the origin of millet agriculture in China. *Journal of Archaeological Science,* Vol. 35, pp. 2960–2965.

Ibáñez, J.J. (ed.) 2008. *Le site néolithique de Tell Mureybet (Syrie du Nord): En hommage à Jacques Cauvin.* Oxford, Archaeopress, BAR International Series 1843.

Keeley, L.K. 1996. *War Before Civilization.* New York, Oxford University Press.

Kislev, M.E., Hartman, A. and Bar-Yosef, O. 2006. Early domesticated fig in the Jordan Valley. *Science,* Vol. 312, pp. 1372–1374.

Kuijt, I. and Finlayson, B. 2009. Evidence for food storage and predomestication granaries 11,000 years ago in the Jordan Valley. *Proceedings of the National Academy of Sciences,* Vol. 106, pp. 10966-10970.

Liu, L., Lee, G.-A., Jiang, L. and Zhang, J. 2007. Evidence for the early beginning (c. 9000 cal. BP) of rice domestication in China: a response. *Holocene,* Vol. 17, pp. 1069–1068.

Lu, H., Zhang, J., Liu, K.-b., Wu, N., Li, Y., Zhou, K., Ye, M., Zhang, T., Zhang, H., Yang, X., Shen, L., Xu, D. and Li, Q. 2009. Earliest domestication of common millet (*Panicum miliaceum*) in East Asia extended to 10,000 years ago. *Proceedings of the National Academy of Sciences,* Vol. 106, pp. 7367–7372.

Lu, T.L.-D. 1999. *The Transition from Foraging to Farming and the Origin of Agriculture in China.* Oxford, BAR International Series 774.

____. 2006. The occurrence of cereal cultivation in China. *Asian Perspectives,* Vol. 45, No. 2, pp. 129–158.

Mazurowski, R.F., Michczynska, D.J., Pazdur, A.P. and Piotrowska, N. 2009. Chronology of the early Pre-Pottery Neolithic settlement Tell Qaramel, Northern Syria, in the light of radiocarbon dating. *Radiocarbon,* Vol. 51, No. 2, pp. 771–781.

McCorriston, J. 1997. The fiber revolution: Textile extensification, alienation, and social stratification in ancient Mesopotamia. *Current Anthropology,* Vol. 38, pp. 517–549.

Moore, A.M.T., Hillman, G.C. and Legge, A.J. (eds.) 2000. *Village on the Euphrates: From Foraging to Farming at Abu Hureyra.* Oxford, Oxford University Press.

Munro, N.D. 2004. Zooarchaeological Measures of Hunting Pressure and Occupation Intensity in the Natufian. *Current Anthropology,* Vol. 45, Supplement August-October, pp. S5–S33.

____. 2004. Small Game and the Transition to Agriculture in the Southern Levant. C. Delage (ed.), *The Last Hunter-Gatherer Societies in the Near East.* Oxford, BAR International Series 1320, pp. 169–188.

Munro, N.D. and Grosman, L. 2010. Early evidence (ca. 12,000 BP) for feasting at a burial cave in Israel. *PNAS,* Vol. 107, pp. 15362–15366.

Pearson, R. 2005. The social context of early pottery in the Lingnan region of south China. *Antiquity,* Vol. 79, pp. 778–790.

Rollefson, G.O. 2000. Ritual and Social Structure at Neolithic 'Ain Ghazal. I. Kuijt (ed.), *Life in Neolithic Farming Communities: Social Organization, Identity, and Differentiation.* New York, Plenum, pp. 165–190.

Rosenberg, M. and Redding, R.W. 2000. Hallan Cemi and early village organization in Eastern Anatolia. I. Kuijt (ed.), *Life in Neolithic Farming Communities. Social Organization, Identity, and Differentiation.* New York, Kluwer Academic/Plenum, pp. 39–62.

Schmidt, K. 2006. *Sie bauten die ersten Tempel. Das rätselhafte Heiligtum der Steinzeitjäger* [They Built the First Temples: The Mysterious Sanctuary of the Stone Age Hunters]. München, Verlag C.H. Beck. (In German.)

Shelach, G. 2000. The earliest Neolithic cultures of northeast China: Recent discoveries and new perspectives on the beginning of agriculture. *Journal of World Prehistory,* Vol. 14, pp. 363–413.

Shizitan Archaeological Team. 2002. **山西吉 柿子 旧石器 代 址**S14**地点**
[The excavation of the Paleolithic site, Shizitan (Loc. S14), Jixian county, Shanxi province]. *Archaeology* (Tiayuan), Issue 4, pp. 1–28. (In Chinese, Mandarin.)

Smith, B.D. 2001. Low-level food production. *Journal of Archaeological Research,* Vol. 9, pp. 1–43.

Stiner, M.C., Munro, N.D. and Surovell, T.A. 2000. The tortoise and the hare: small game use, the Broad Spectrum Revolution, and Paleolithic demography. *Current Anthropology,* Vol. 41, pp. 39–73.

Stordeur, D. and Abbès, F. 2002. Du PPNA au PPNB: mise en lumière d'une phase de transition à Jerf el Ahmar (Syrie). *Bulletin de la Société Préhistorique Française,* Vol. 99, pp. 563–95.

Stordeur, D. and Willcox, G. 2009. Indices de culture et d'utilisation des céréales à Jerf el Ahmar. COLLECTIF (ed.), *De Méditerranée et d'Ailleurs... Mélanges offerts à Jean Guilaine.* Toulouse, Archives d'Écologie Préhistorique, pp. 693–710.

Underhill, A.P. 1997. Current Issues in Chinese Neolithic Archaeology. *Journal of World Prehistory,* Vol. 11, pp. 103–160.

Valla, F.R. 1988. Aspects du sol de l'abri 131 de Mallaha (Eynan). *Paléorient,* Vol. 14, No. 2, pp. 283–296.

____. 2003. La tradition natoufienne et les progrès de la néolithisation au Levant. B. Vandermeersch (ed.), *Echanges et Diffusion dans la Préhistoire Méditerranéenne.* Paris, CTHS, pp. 15–27.

Valla, R.F., Khalaily, H., Valladas, H., Kaltnecker, E., Bocquentin, F., Cabellos, T., Bar-Yosef-Mayer, D.E., Le Dosseur, G., Regev, L., Chu, V., Weiner, S., Boaretto, E., Samuelian, N., Valentin, B., Delerue, S., Poupeau, G., Bridault, A., Rabinovich, R., Simmons, T., Zohar, I., Ashkenazi, S., Delgado Huertas, A., Spiro, B., Mienis, H.K., Rosen, A.M., Porat, N. and Belfer-Cohen, A., 2007. Les Fouilles de Ain Mallaha (Eynan) de 2003 à 2005: Quatrième Rapport Préliminaire. *Journal of the Prehistoric Society,* Vol. 37, pp. 135–379.

Vigne, J.-D. 2008. Zooarchaeological Aspects of the Neolithic, Diet Transition in the Near East and Europe, and their Putative Relationships with the Neolithic Demographic Transition. J. P. Bouquet-Appel and O. Bar-Yosef (eds.), *The Neoloithic demographic transition and its consequences.* New York, Springer, pp. 179-205.

Vigne, J.-D. and Cucchi, T. 2005. Premiéres Navigations au Proche-Orient: les informations indirects de Chypre. *Paléorient,* Vol. 31, pp. 186–194.

Weiss, E., Kislev, M.E. and Hartmann, A. 2006. Autonomous Cultivation Before Domestication. *Science,* Vol. 312, pp. 1608–1610.

Weninger, B., Clare, L., Rohling, E.J., Bar-Yosef, B., Böhner, U., Budja, M., Bundschuh, M., Feurdean, A., Gebel, H.-G., Jöris, O., Linstädter, J., Mayewski, P., Mühlenbruch, T., Reingruber, A., Rollefson, G., Schyle, D., Thissen, L., Todorova, H. C., and Zielhofer, C. 2009. The Impact of Rapid Climate Change on Prehistoric Societies during the Holocene in the Eastern Mediterranean. *Documenta Praehistorica,* Vol. 36.

Willcox, G., Fornite, S. and Herveux, L. 2008. Early Holocene cultivation before domestication in northern Syria. *Vegetational History and Archaeobotany,* Vol. 17, pp. 313–325.

Willcox, G., Buxo, R. and Herveux, L. 2009. Late Pleistocene and early Holocene climate and the beginnings of cultivation in northern Syria. *The Holocene,* Vol. 19, pp. 151–158.

Yuan, J. 2002. Rice and Pottery 10,000 Yrs. BP at Yuchanyan, Dao County, Hunan Province. Y. Yasuda (ed.) *The Origins of Pottery and Agriculture.* Yangtze River Civilization Programme, International Research Center for Japanese Studies. New Dehli, Roli Books/Lustre Press, pp. 157–166.

Yuan, J. and Flad, R.K. 2002. Pig domestication in ancient China. *Antiquity,* Vol. 76, pp. 724–732.

Yuan, J., Flad, R.K. and Luo, Y. 2008. Meat-acquisition patterns in the Neolithic Yangzi River Valley, China. *Antiquity,* Vol. 82, pp. 351–366.

Zeder, M.A. 2006. Central questions in the domestication of plants and animals. *Evolutionary Anthropology,* Vol. 15, pp. 105–117.

____. 2008. Domestication and early agriculture in the Mediterranean basin: origins, diffusion and impact. *PNAS,* Vol. 105, pp. 11597–11604.

Zhang, C., and Hung, H.-C. 2008. The Neolithic of Southern China– origin, development, and dispersal. Asian *Perspectives,* Vol. 47, pp. 291–29.

Zhao, C., Wang, T., Wu, X., Liu, M., Yuan, X., Yu J. and Guo, J. 2006. Donghulin, Zhuannian, Nanzhuangtou, and Yujiagou sites. Institute of Archaeology of the Chinese Academic of Social Science (ed.), *Prehistoric Archaeology of South China and south-east Asia- collected papers of an international academic workshop, celebrating 30 years for the excavations of Zengpiyan cave.* Beijing, Wen wu chu ban she, pp. 116–127.

Zhao Z. 2010. New data and new issues for the study of origins of rice agriculture in China. *Archaeological and Anthropological Sciences*, Vol. 2, pp. 99–105.

Zhao, Z. and Zhang, Z. 2010. Report on the 2001 flotation results from the site of Jiahu. *Chinese Archaeology,* Vol. 10, pp. 196–202.

Zheng, Y.-F., Sun, G.-P. and Chen, X.-G. 2007. Characteristics of the short rachillae of rice from archaeological sites dating to 7000 years ago. *Chinese Science Bulletin,* Vol. 52, pp. 1654–1660.

Zong, Y., Chen, Z., Innes, J.B., Chen, C., Wang, Z. and Wang, H. 2007. Fire and flood management of coastal swamp enabled first rice paddy cultivation in east China. *Nature,* Vol. 449, pp. 459–463.

Paleo-landscapes and vulnerability in the framework of the World Heritage Convention

Margherita Mussi
Dipartimento di Scienze dell'Antichità
Università di Roma 'La Sapienza' Rome, Italy

Introduction

Following an informal, but widely shared definition, landscape 'comprises the visible features of an area of land, including physical elements such as landforms, living elements of flora and fauna, abstract elements like lighting and weather conditions, and human elements like human activity and the built environment'.[1] Past and present landscapes are the result of the ever-changing balance between contrasting agents, some of which add deposits on top of them, while others erode and destroy them. The pace of change is variable in time and space, but change always happens. This is self evident when looking at landscapes of the past few centuries or millennia. There are scores of towns on hills or highlands which have been ruined and eroded, while others lie buried in lowlands. After 2,000 years the Rome of Julius Cesar along the Tiber River was at 6 m below the modern one, and similarly the 14th century Florence of Dante Alighieri was some metres below today's streets and buildings after just seven centuries. If one makes reference to earlier prehistoric times, the compounded effect of obliterating and eroding agents is such that only under truly exceptional circumstances can any sizeable preserved fragments of past landscapes be made visible. In such cases, agents adding deposits on extant features of land have prevailed over agents eroding the landscape, otherwise, by definition, nothing would have survived to present times.

I will first refer to the definition of landscape as adopted by the World Heritage Committee and in accordance to the World Heritage Convention,[2] and examine properties already listed as cultural landscapes; then I will describe examples of prehistoric landscapes, and eventually discuss the vulnerability of paleo-landscapes and their relevance to the *Convention.*

The chosen examples of prehistoric landscapes illustrate various time periods and different agents involved in burial and preservation:
1) Melka Kunture (Ethiopia), Lower and Middle Pleistocene, characterized by alluvial deposits;
2) Krems-Wachtberg (Austria), Upper Pleistocene, characterized by aeolian-borne deposits;
3) Torre Spaccata (Italy), Middle Holocene, characterized by volcanic deposits.

Landscapes and the World Heritage Convention

In 1992, landscapes were adopted by the 16th session of the World Heritage Committee under the heading of 'cultural landscapes',[3] and the cultural criteria used to justify inscription of properties on the World Heritage List was revised to ensure their inclusion as 'combined works of nature and of man' as per Article 1 of the 1972 Convention, which defines 'cultural heritage' for the purposes of the Convention. Interestingly, 'combined works of nature and of man' is an excerpt of the following paragraph, which should be read in its entirety:

> *sites: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view (UNESCO, 1972).*

In other words, since the very beginning of the Convention, archaeological sites were closely linked to the natural environments, and the importance of embedded scientific values related to history, ethnology and anthropology was underlined.

1. This definition circulates on the Web, and is found, for instance, in documents of Australia and New Zealand, but I have not been able to properly track its origin.
2. For the full text of the *Convention concerning the Protection of the World Cultural and Natural Heritage* (World Heritage Convention), see: http://whc.unesco.org/en/conventiontext/ (in English), http://whc.unesco.org/fr/conventiontexte/ (in French).
3. See http://whc.unesco.org/en/culturallandscape (accessed March 6, 2010).

In 1992, a more detailed definition was given.

> *[Cultural landscapes] are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal*[4].

Categories of landscapes were further established in Annex 3 of the *Operational Guidelines for the Implementation of the World Heritage Convention*[5]. While it is recognized that 'the most easily identifiable is the clearly defined landscape designed and created intentionally by man', the subcategory of 'organically evolved landscape' seems relevant for the purpose of defining paleo-landscapes, as follows:

> *a relict (or fossil) landscape is one in which an evolutionary process came to an end at some time in the past, either abruptly or over a period. Its significant distinguishing features are, however, still visible in material form.*

The Operational Guidelines further clarify that:

- *cultural landscapes … are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal;*
- *they should be selected on the basis both of their outstanding universal value and of their representativity in terms of a clearly defined geo-cultural region and also for their capacity to illustrate the essential and distinct cultural elements of such regions.*
- *the extent of a cultural landscape for inscription on the World Heritage List is relative to its functionality and intelligibility. In any case, the sample selected must be substantial enough to adequately represent the totality of the cultural landscape that it illustrates.*
- *general criteria for protection and management are equally applicable to cultural landscapes. It is important that due attention be paid to the full range of values represented in the landscape, both cultural and natural.*

Subsequently, in 2000, a definition of 'landscape' was also approved by the Council of Europe in Florence, within the framework of the European Landscape Convention. It is stated that this convention 'can be regarded as complementary to the Unesco one'.[6] According to Article 1 of the European Landscape Convention, '"landscape" means an area, as perceived by people, whose character is the result of the action and interaction of natural an/or human factors'; and after point 38:

> *'landscape' is defined as a zone or area as perceived by local people or visitors, whose visual features and character are the result of the action of natural and/or cultural (that is, human) factors. This definition reflects the idea that landscapes evolve through time, as a result of being acted upon by natural forces and human beings. It also underlines that a landscape forms a whole, whose natural and cultural components are taken together, not separately.*

Cultural Landscapes and Prehistory in the World Heritage List

To date, 66 properties from 43 countries have been included as cultural landscapes on the World Heritage List[7]. In 19 instances, i.e. almost one in three, the nomination file mentions prehistory, or prehistoric sites belonging to different time periods. For the sake of the present purpose, I also include the Uluṟu-Kata Tjuṯa National Park (Australia), as it is stated that 'cave paintings on Ayers Rock up to 10,000 years old indicate the length of time Aborigines have been present in the area'.[8] Prehistory, however, is only cursorily mentioned in 7 of the 19 properties, often under the heading of 'History and Development' of the site, and is not further described or not fully illustrated.

4. UNESCO World Heritage Centre. 2008. Operational Guidelines for the Implementation of the World Heritage Convention, http://whc.unesco.org/archive/opguide08-en.pdf (accessed 19 May 2011).
5. UNESCO World Heritage Centre, op. cit., Annex 3.
6. See http://www.coe.int/t/dg4/cultureheritage/heritage/Landscape/default_en.asp (accessed 5 March 2010)
7. See http://whc.unesco.org/en/culturallandscape (accessed March 6, 2010).
8. IUCN Summary 447a Uluṟu (Ayers Rock-Mount Olga) National Park (Australia). Summary prepared by IUCN (April 1987) based on the original nomination submitted by Australia.

Accordingly, it does not seem of major importance – even in the case of Willendorf in the Wachau (see below). It is rather an aspect of the authenticity of the property, and an added value to broadly or totally different thematic issues.[9]

Therefore, for the purposes of this paper, I retain 12 properties which exemplify how prehistory has been so far integrated into cultural landscapes (Table 1). The selection criteria are the following: (ii), (iii), (iv), (v) and (vi), i.e. all the cultural criteria have been taken into account, except for criterion (i), which is 'to represent a masterpiece of human creative genius'. Two properties (Uluṟu-Kata Tjuṯa National Park and Ecosystem and Relict Cultural Landscape of Lopé-Okanda) are also nominated in accordance to natural criteria, that will not be further discussed.

Table 1. **Cultural landscapes in the WHL with conspicuous prehistoric evidence**

State Party	*Criteria*	i	ii	iii	iv	v	vi	Rock art
Argentina	Quebrada de Humahuaca		**x**		**x**	**x**		x
Australia	Uluṟu-Kata Tjuṯa National Park					**x**	**x**	x
Azerbaijan	Gobustan Rock Art Cultural Landscape		**x**	**x**			**x**	**x**
Gabon	Ecosystem and Relict Cultural Landscape of Lopé-Okanda			**x**	**x**			x
India	Rock Shelters of Bhimbetka			**x**		**x**		**x**
Kazakhstan	Petroglyphs within the archaeological landscape of Tamgaly			**x**				**x**
Kyrgyzstan	Sulaiman-Too Sacred Mountain			**x**			**x**	x
Lithuania	Kernavé Archaeological Site (Cultural Reserve of Kernavé)			**x**	**x**			
Mongolia	Orkhon Valley Cultural Landscape		**x**	**x**	**x**			x
Norway	Vegaøyan- The Vega Archipelago					**x**		
Sweden	Agricultural Landscape of Southern Öland				**x**	**x**		
Zimbabwe	Matobo Hills			**x**		**x**	**x**	**x**
TOTAL		**–**	**3**	**8**	**5**	**6**	**4**	**9**

The relevant cultural criteria for selection are the following:
(ii) to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;
(iii) to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
(iv) to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;
(v) to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
(vi) to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance.

Rock art is mentioned in bold when it is a most conspicuous aspect of the property.

9. Prehistory and/or prehistoric sites are cursorily mentioned in the nomination files of the following properties: Hallstatt-Dachstein, Wachau, Lednice-Valtice Cultural Landscape, Upper Middle Rhine Valley, Cilento and Vallo di Diano, Costiera Amalfitana or St. Kilda.

Interestingly, even if no 'masterpiece' is recognized as such, at 9 out of the 12 properties rock art is recorded in the nomination as either the prevailing evidence, or at least as a conspicuous part of it, sometimes starting with the very name of the property (for instance, Petroglyphs within the archaeological landscape of Tamgaly, Gobustan Rock Art Cultural Landscape, etc.). Rock art is integrated into the cultural landscape in a variety of ways. Concerning Sulaiman-Too Sacred Mountain (Kyrgyzstan), 'the majority of images belong to the Bronze Age', and 'five peaks and slopes contain a large assembly of ancient cult places and caves with petroglyphs'.[10] The nomination of Gobustan (Azerbaijan), specifies that:

> *ICOMOS considers that the rock engravings are an exceptional testimony to a way of life that has disappeared and particularly in the way they graphically represent activities connected with hunting and fishing which reflect a time when the climate and vegetation of the area were quite different from today.*[11]

In India, at Rock Shelters of Bhimbetka, there are 'rock shelters, displaying paintings that appear to date from the Mesolithic Period right through to the historical period', and 'the cultural traditions of the inhabitants of the twenty-one villages adjacent to the site bear a strong resemblance to those represented in the rock paintings'.[12] At Relict Cultural Landscape of Lopé-Okanda in Gabon, the archaeological record starts 400,000 years ago, and there are 'extensive remains of Neolithic and Iron Age sites and large numbers of petroglyphs, both associated with the spread of Bantu peoples from the southern Sahara into central, east and southern Africa'.[13]

Only in the named cultural landscapes of the northernmost countries (Lithuania, Norway, Sweden) is prehistory manifest somehow without the supporting evidence of artistic activity. At Kernavé Archaeological Site (Cultural Reserve of Kernavé) in Lithuania:

> *the relief of the surface, structured in a natural way, served well for the development of the economical activities as well as defensive purposes. This was the reason for the early settlement in this place in the late Paleolithic period (9th–8th millennia BC) as well as the succession of cultural activities to the Late Middle Ages and to the present… the site is a complex ensemble of archaeological properties, encompassing the town of Kernavé, forts, some unfortified settlements, burial sites and other archaeological monuments from the late Paleolithic period to the Middle Ages.*[14]

At Vegaøyan- The Vega Archipelago (Norway), the property preserves the evidence left by fishermen and farmers in the last 1,500 years, but there is more than that, as:

> *many Stone Age (Mesolithic) habitations have been found on the older strandlines flanking the mountains on Vega… In this treeless landscape, which was subsequently forsaken when the people moved to lower, more fertile areas, the up to 10,000-year-old remains can be experienced in virtually authentic surroundings… A Stone Age Trail has been set out… equipped with information signs and a brochure, to show how the Stone Age people lived.*[15]

The property of Agricultural Landscape of Southern Öland (Sweden):

> *is dominated by a vast limestone pavement. For some five thousand years human beings have lived here and adapted their way of life to these physical constraints. As a consequence, the landscape is a unique one, with abundant evidence of human settlement from prehistory continuous up to the present day… Stone Age passage graves, monumental cairns from the Bronze Age, prehistoric forts, house foundations, complex systems of stone enclosures with fossil arable land and large burial grounds from the Iron Age testify to a rich and important pre-history.*[16]

Overall, however, as said above, rock art is prominent in the cultural landscapes relevant to prehistory. This is related to visibility, which is higher for evidence standing on rocks above the ground than for buried remains. It is also easier to link art to a narrative, even when it is not any more

10. Advisory Body Evaluation, 2009, Sulaiman-Too (Kyrgyzstan), No 1230 rev.
11. Advisory Body Evaluation, 2007, Gobustan (Azerbaijan), No 1076 rev.
12. See http://whc.unesco.org/en/list/925
13. Advisory Body Evaluation, 2007, Ecosystem and Relict Cultural Landscape of Lopé-Okanda, No. 1147 Rev.
14. Nomination File, 2004, Kernavé Archaeological Site (Cultural Reserve of Kernavé).
15. Nomination File, 2004, Vegaøyan- The Vega Archipelago.
16. Nomination File, 2000, Agricultural Landscape of Southern Öland.

possible to decipher its content: petroglyphs in sacred places or places of worship are an example. However, scattered remains of the past, as found during archaeological research, are generally buried, fragmented, and small-sized, and need a great investment of scientific research before they can be understood to any extent and provide information on human past behaviour.

Rock art, however, is only documented during the last millennia, and simply does not appear during the preceding 2.5 million years, or more, of human evolution. It is also often linked to worship and non-domestic activities, and gives only limited clues to other aspects of life. Furthermore, it needs, by definition, rocky supports, and cannot be found in alluvial plains, sand dunes, etc.

Another aspect of prehistoric life that is documented again and again in cultural landscapes is related to the funerary sphere. Even if not as conspicuous as art, burials – all of them related to relatively late phases of prehistory – are mentioned at some detail in five properties (Gobustan Rock Art Cultural Landscape, Petroglyphs within the Archaeological Landscape of Tamgaly, Sulaiman-Too Sacred Mountain, Kernavé Archaeological Site (Cultural Reserve of Kernavé), and Orkhon Valley Cultural Landscape). In these cases, tombs and graves are probably more easily spotted as well because of higher visibility and because they allow a relatively straightforward interpretation.

A more balanced sample is needed to fully illustrate and preserve landscapes of the very ancient past. Paleo-landscapes, furthermore, are quite distinct from cultural landscapes with prehistoric evidence: the landscapes perceived today are generally very different from the prehistoric ones. Nowadays the remains of the past stand side by side with buildings of historical age, while vegetation, landforms, etc. have all changed. Of the above-mentioned properties, only a few approach a real paleo-landscape, to exemplify an environment of the past. One such example is the Vegaøyan as 'up to 10,000-year-old remains' can be seen and visited 'in virtually authentic surroundings'. While in the Lopé-Okanda, where open environments alternate with dense forests:

> *il faut admettre que les hommes ont indubitablement et largement contribué au maintien local d'un paysage ouvert, notablement lors de la phase humide de l'Holocène inférieur. Le paysage particulier de la Lopé-Okanda est donc bien un paysage culturel résultant en partie de l'action humaine.*[17]

Both in the Norwegian and in the Gabonese case it is suggested that things remained static for a long time, either because the area was 'forsaken' when people moved elsewhere – and natural agents, it should be added, were in no great activity – or because humans continued to clear the forest during millennia in a row, keeping the landscape rather unchanged. A further interesting approach is the comment by ICOMOS that, at Gobustan, rock art graphically represents a past environment different from that of today.[18]

All the above-mentioned cultural landscapes are part of the extant surface of the Earth. Examples of buried landscapes will be illustrated below. They have little in common with landscapes existing today at the same location and, accordingly, will be described as paleo-landscapes.

Eroded paleo-landscapes at Melka Kunture (Ethiopia)

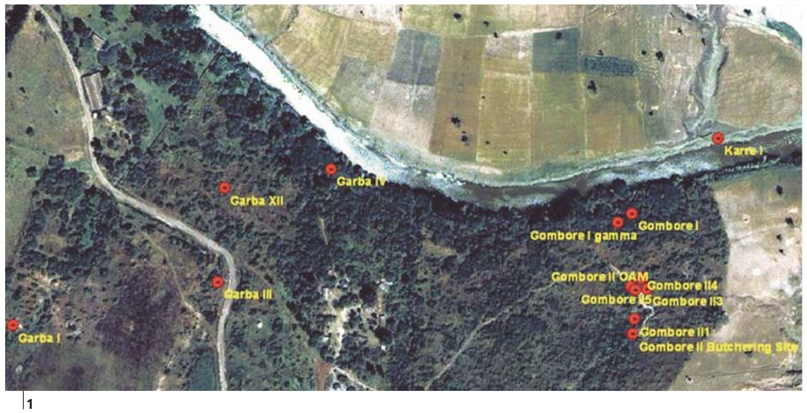
Melka Kunture is a rich and complex archaeological and palaeontological area, 50 km south of Addis Ababa. At more than 2000 m asl, it extends over some 70 km^2 on the banks of the upper Awash River, on the shoulder of the Ethiopian Rift. Sediments include gravels, sands, silts and clays, which are consistent with a fluvial depositional environment. The alluvial deposits are interbedded with tephra and other volcanic products, to a compounded thickness of c. 100 m. The very long sequence has been dated through magneto-stratigraphy and K-Ar, and through 40Ar/39Ar on volcanic tephra by the Berkeley Geochronology Center (Morgan, 2009; Morgan et al., forthcoming). More than 70 archaeological layers are known to exist (Chavaillon and Piperno, 2004). Twenty have been tested, and eight extensively excavated. Every major period of the African archaeological record is included, beginning at 1.7 million years with the Oldowan, discovered at Karre I, Kella III, Gombore I, Garba IV, and as evolved Oldowan at Gombore Iγ. At around 1 million years, Garba XII and Simbiro III illustrate a transitional phase from the late Oldowan to the Early Acheulean and to an archaic phase of the Acheulean. Gombore II, at c. 0.8 million years, is Middle Acheulean, while Garba I, at c. 0.5 million years, is Late Acheulean.

At c. 0.2 million years, the Acheulean-Middle Stone Age transition, and the early Middle Stone Age, are both documented at Garba III, where fragmented remains of an archaic *Homo sapiens* have been discovered. Four probable *Homo erectus* specimens were also found at the earlier sites. The Late Stone Age, so far undated, outcrops in a disturbed position at Wofi and Kella. Obsidian exploitation, which starts at the Oldowan sites, is impressively documented at Balchit, 7 km away from the core area of Melka Kunture, and next to outcrops of this volcanic glass. Extensive accumulations of tens of thousands of blades, cores, and débris litter the landscape. Obsidian has been in use up to historical times.

After paleobotanical and paleontological investigations, dry, open savannah environments were in existence all over the sequence. The vertebrate paleontology includes bovids, giraffids, hippopotamids, and suids, as well as primates *(Theropithecus cf. oswaldi). Hippopotamus* sp. is especially abundant at the excavated sites, which were close to the paleo-Awash River and its tributaries. Early hominid fossils and artifacts are found in similar environments at other sites of Africa and the Middle East.

Site density is self-evident in Figure 1, which is the area closest to the site museum. Within 2 km^2, a dozen of Lower and Middle Pleistocene archaeological sites, some multi-layered, have been surveyed and/or excavated. They are at different depths, blanketed by alluvial and volcanic deposits which protected them, allowing for today's research. The covering sediments are of variable thickness, which is always within approximately 10 m, often markedly less. The depth of the sites is not correlated with their age, which is bracketed between 1.7 and 0.2 million years. The gently undulating modern landscape, dissected by the Awash River, encompasses 1.5 million years of the past. Throughout this enormous span of time, remains left by ancient groups have accumulated again and again, and have been again and again eroded. The few remnants of multiple superimposed paleo-landscapes are now compounded into a kind of chronological patchwork. Surviving islets of deposits of different Pleistocene age, subsequently covered by a few metres of sediment, stand more or less side by-side and, at first glance, appear as an undifferentiated surface.

To understand how sites have accumulated through time, one has to look below the modern surface, making use of a natural or excavated stratigraphic sequence. An example can be seen in Figure 2, which depicts the bed and banks of an intermittently-flowing tributary of the Awash River. It is the area of Simbiro, a few kilometres upstream of the main channel of the River, where site density is no less than that close to the museum. Flowing waters have eroded a gully in the alluvial plain of the Awash, allowing the inspection of deposits over a distance of some kilometres and which are at a few metres below modern ground level. A tephra layer dated to 0.8 million years, not visible in the picture, stands to the left of the young boy, and caps all the sequence between his feet and the man standing in the dry bed of the rivulet. Overall, there are four distinct archaeological layers, evidenced by accumulated pebbles, lithic artifacts and bones, all of them, accordingly, of an age of



1

2

1. *Melka Kunture. Aerial view of the banks of the Awash River, with the location of Middle Pleistocene paleolithic sites close to the museum. Photo: Margherita Mussi*

2. *Melka Kunture, Simbiro. Superimposed Acheulian paleolithic levels, pre-dating 0.8 million years, truncated by erosion. They all originally extended on a much larger area, and each defined a now buried paleo-landscape. Photo: Margherita Mussi*

17. Dossier d'inscription, 2007, Ecosystème et paysage culturel relique de Lopé-Okanda (In French).
18. Cf. Advisory Body Evaluation, 2007, Gobustan (Azerbaijan), No 1076 rev.

more than 0.8 million years. The layers are more or less horizontal, or gently dipping, but they are abruptly cut by erosion at both ends. Along the gully, one can observe again and again this phenomenon, which interrupts the archaeological layers. However, the void created by erosion in the past has often been subsequently filled by deposit laid during a flood. The ground at the top is generally more or less even. Walking on the raised surface without the knowledge of geologic matters, the different age of underlying contiguous deposits can easily be missed.

At Atebella, a few kilometres away and along another affluent of the Awash River, the landscape is slightly different, but the result is the same. Several prehistoric sites, not yet excavated, have been discovered, which pre-date 1.2 million years, the age of a dated volcanic deposit higher up in the local stratigraphic sequence. During Spring, when there is more flowing water, the river erodes along its banks the sediments which happen to be the least resistant. In Figure 3, a more compact archaeological layer has been somehow cleaned of the deposits capping it. Bifacial tools are in full sight, as the one next to the folded metre. This early Acheulean prehistoric site of more than1.2 million years is now integrated into the modern landscape, while belonging to a very different time period. It will be part of it as long as it resists the seasonal floods that erode the river banks.

A paleo-landscape at Wachtberg in the Wachau Cultural Landscape (WHL), Austria

The Wachau Cultural Landscape is a stretch of the Danube Valley in Austria, and was inscribed on the World Heritage List as a cultural landscape in 2000. It includes the town of Krems. According to the nomination file, 'the core zone around the town of Krems is accompanied by a buffer zone throughout the entire area of the cadastral community of Egelsee and in the area of Krems's Kreuzberg and Wachtberg terraces down to the river Krems'.[19]

In year 2006, the prehistoric community was struck by a paper in the journal *Nature*, which described a rather astonishing discovery precisely at Wachtberg, in the buffer zone: two 27,000 years old Gravettian burials of newborn babies, one with a single infant, and another one with two little skeletons, most probably twins (Einwögerer et al., 2006) (Fig. 4). The Gravettian encompasses Europe from the Atlantic shores to the Russian plain, and is actually recognized as the first pan-European culture. It is well known for dwelling structures, lithic, ivory and bone implements, wall art and portable art, including the so-called 'venus' figurines and depictions. Tens of burials have also been discovered, allowing for the full investigation of the anthropological characteristics of

19. Nomination file, 2000, Wachau Cultural Landscape.

paleolithic *Homo sapiens* in Europe. However, prior to 2006, the burial sample was biased towards adults and adolescents, with apparently little interest for newborns. The discovery at Wachtberg opened new ground for the study of the Gravettian cultural complexity.

The discovery of a Gravettian site in suburban Krems was not a surprise in itself. The Danube Valley, as well as of some of its affluent, in Austria and elsewhere in central Europe, has long been known for its rich Upper Pleistocene record, especially for evidence related to the period when the Gravettian was in full bloom. This definitely reflects a thriving, if sparse, population of prehistoric hunter-gatherers, but it is also the outcome of favorable conditions allowing for good preservation. Throughout the cold phases of the last glacial age, the dry, heavy winds repeatedly blanketed the landscape with very fine-grained, airborne particles, which often accumulated over several metres. This deposit, known as 'loess', is found over large stretches of the Eurasian middle latitudes, and includes countless prehistoric sites. Implements, dwelling structures, and animal and human remains have been delicately covered by the wind-blown dust, which in the end totally buried them. When this happened quickly after abandonment, and whenever destructive agents such as frost and erosion have not since prevailed, evidence of the past is safely kept up to present times. This is well illustrated at the aptly name 'mega-sites' in the loess of Moravia, in southern Czech Republic, north-east of Vienna. Along the Dvje River, over a stretch of some 5 km, Dolní Věstonice, Pavlov and Milovice, all of them Gravettian sites, stand next to each other. Over the years a compounded area of more than 10,000 m^2 has been excavated. Accordingly, it is an extensive paleo-landscape below some metres of loess, which is being documented.

Elsewhere, however, the loess cover is more than a protective blanket which can be removed: when the wind-blown deposits are several metres thick, prehistoric sites cannot be easily spotted, and even less so researched. Past remains are totally obliterated, and later development, including buildings, may be built on top of them. This is the very case of Wachtberg, in suburban Krems. The aerial photo (Fig. 5) depicts a rather densely settled area, where excavations have been under way since the late 19th century. Some of the early find spots, and namely Hundssteig, have since disappeared under buildings and roads. The more recent excavations, which started in 2005, are located at Wachtberg in a rather green area, a not yet built one – but things have dramatically changed since then, and a house is now in existence where the burials once were (Fig. 6 and 7). The archaeological research was done under high pressure, in the middle of building operations. Much more than burials was actually found, and well-preserved dwelling structures allow an unusual insight into the Gravettian way of life. Notwithstanding difficulties, the archaeological team has been able to piece together a continuous plan of the prehistoric features over an area some 50 m^2. There is ground to believe that this remarkable site is only a fraction of a Gravettian mega-site, which was probably reasonably preserved before Krems started to expand in the 20th century. The buried paleo-landscape of 27,000 years ago extends below up to 8 m of loess, under a whole suburb of the town.

3

4

5

3. *Melka Kunture, Atebella. An Acheulian site, pre-dating 1.2 million years, with bifacial implements in full sight. Photo: Margherita Mussi*

4. *Krems-Wachtberg. The ochrated burial of two newborn babies, from a 27,000 years old Gravettian site, within a paleo-landscape extending under a suburb of Krems. © Austrian Academy of Sciences, Prehistoric Commission*

5. *Krems. Aerial view, with the excavated areas where Upper Paleolithic sites were unearthed under loess deposits. Photo taken from the South. © Aerial Archive, Department for Prehistory and Early Historic Archaeology of the University of Vienna; Graph: Austrian Academy of Sciences, Prehistoric Commission*

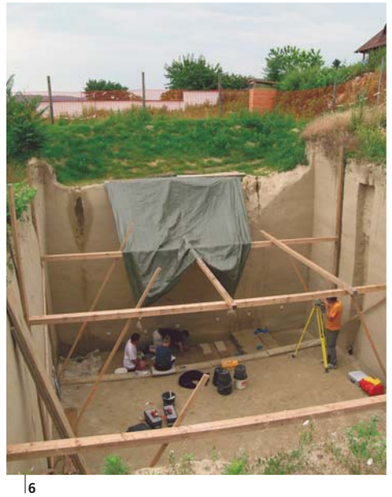
The case of Wachtberg is a good example of how a buried landscape is preserved, but at the same time in danger of being lost because of the very reason which allowed it to survive over many millennia. In the nomination file of the Wachau Cultural Landscape property, reference is made to another major Gravettian site, Willendorf, which lies upstream of Krems. In the description of the area, it is underlined that 'the Wachau is a very ancient settlement region, proved most impressively by the finds of the so-called Fanny from Galgenberg (approx. 32,000 years old) and the Venus of Willendorf (approx. 26,000 years old)'. The 'Fanny' figurine was found at another loess site, i.e. at an earlier, Aurignacian one. Both finds, however, are portable art. The iconic status of the Willendorf Venus apparently blurs the perception that it was originally discovered in a prehistoric settlement which, in turn, was once part of a well-dated paleo-landscape. The site, and a few more nearby, were unearthed a century ago, at the time of the construction of the railroad which stretches along the Danube Valley. This meant digging deep into loess deposits of the Upper Pleistocene. At the time, over a sizeable distance, one could follow along the sections in the loess superimposed paleo-landscapes, which were evidenced by archaeological finds and other features of the past. The place where the Venus figurine was discovered is kept clean from vegetation and open to the public, allowing to understand its original position, but the perception of a once larger, continuous area is now lost.

Paleo-landscapes and volcanic events at Torre Spaccata (Rome, Italy)

The outskirts of Rome are characterized by impressive architectural remains of the classic Roman age, which define a specific cultural landscape of their own. This is especially true in the Ciampino Plain, the area just south-west of Rome, at the foot of the quiescent Colli Albani volcano. The Romans took advantage of the flat morphology for hydraulic engineering, and the extensive remains of four different aqueducts are a picturesque character of the area. In more recent years, this same morphology allowed for the building of one of the Rome airports.

The Ciampino Plain, however, is a rather recent feature within the Quaternary chronological scale. Even as it is, it contrasts with the surrounding landscape, dissected by the many little valleys of a drainage network originating at the nearby volcanic mound. Recent geological investigations have demonstrated that the flat area is the outcome of volcanic events which happened during the Holocene (De Benedetti et al., 2008) it was the site of catastrophic hydrologic events, i.e. inundations provoked by the overspill of the Albano Lake, which is located upslope, in the crater of the volcano. The floods were the outcome of anomalous fluctuations in the lake level, linked in turn to endogenous causes, namely massive CO^2 emission, which ended in the lake outflow. More than water was involved, and a lahar was produced, i.e. a mudflow of volcanic fragments. The landslide flooded the lowermost slopes of the volcano, filling the valleys, clogging the drainage system, and producing, in the end, the Ciampino Plain.

6. *Krems-Wachtberg, 2005. Excavation trench at the 27,000 years old Gravettian site discovered in the loess. The excavated airborne deposit, originally covering the site, stands like walls around the digging people. © Austrian Academy of Sciences, Prehistoric Commission*



6

7. *Krems-Wachtberg. he recent building on top of the Pleistocene loess deposit, which now covers part of the 27,000 years old Gravettian site. © Austrian Academy of Sciences, Prehistoric Commission*

7

This happened more than once, as a minimum of two lahars are well documented. One originated in prehistoric times, around 3,700 BC, while a second one is known to be of Roman Age, thanks to archaeological research (Gioia, 2008). It has actually long been known that Titus Livius, the Roman historian, had described in his 'Ab Urbe Condita Libri' a catastrophic water outflow from the Albano Lake, which had devastated the countryside at the foot of the volcano. It reportedly happened in 395 or 394 BC, during the war between Rome and the Etruscan town of Veii. The event was also described by later Roman authors. In modern times, it was believed that this was just a piece of myth, until extensive archaeological research unearthed lahar deposits at Torre Spaccata, at the limit of the Ciampino Plain, in the modern Roman suburbs. Both the archaeological remains and ^{14}C dating confirm that it deposited exactly at the time mentioned by Titus Livius. The tens of archeological trench at Torre Spaccata also evidenced that Chalcolithic and Bronze Age remains lay buried below the lahar, which had in part displaced them. Accordingly, prehistoric human groups had settled there again and again, making use of higher ground as well as well as of the valleys which had been affected by previous lahars, before the landscape underwent more changes after another destructive event in the 4th century BC.

An archaeological park and open-air museum is being opened at nearby Centocelle, which is adjacent to Torre Spaccata. The remains of three large Roman villas will be the focus of the exhibit. The villas lasted for centuries to the early Middle Ages, and were related to agricultural exploitation of the countryside close to ancient Rome. After they were excavated, the monumental remains became part of the modern landscape. They can be rather easily visited, and can be seen and understood by any interested person. The previous, pre-lahar prehistoric landscape, vice versa, was only reached by deep trenches at Torre Spaccata, and cannot be directly perceived or visited. The prehistoric finds found below will be on exhibit in a building, and the knowledge of the past will be recreated by explicatory panels and multimedia means. Even if the 4th century BC lahar blanketed a paleo-landscape and to some extent preserved it, the following historic events, including the modern expansion of suburban Rome, do not allow to put it into light. In a way, it is the opposite of the World Heritage listed property Archaeological Areas of Pompei, Herculaneum and Torre Annunziata, also deeply affected by volcanic events. Pompeii and Herculaneum have both been explored and researched since the 18th century, and the wealth and monumentality of remains led to extensive excavations. The Roman towns which disappeared under volcanic deposits were cleared of ashes and lava and reintegrated into the present day landscape. It happened at the expense of the settled land which once extended on top of the buried towns, but this has long been accepted as needed and worth the effort.

Pompeii's reintegrated landscape is exceptional in many ways, and stems from its preservation and monumentality, which were understood well before modern activity could affect it. In between Pompeii and the opposite, hidden paleo-landscape of Torre Spaccata and Ciampino Plain, lay the Bronze Age village of Nola, another victim of Vesuvius in Campania (southern Italy). Nola was buried while in full activity, around 1700-1900 BP. It was discovered just a few years ago during the construction of a shopping mall. Nola was soon nicknamed 'the prehistoric Pompeii' because of the superlative preservation, under volcanic deposits, of several dwellings and their contents, including organic remains which do not usually survive. The area of the prehistoric dwellings was eventually preserved and can now be visited, but this is only a small fragment of the buried paleo-landscape. Even at this limited scale, this only happened after legal controversy, because the planned commercial activity was at stake.

Final remarks

Prehistoric sites have been integrated into cultural landscapes. In the nomination of 8 out of the 12 properties listed in Table. 1, reference is made to criterion (iii) 'bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared'. This underpins a real concern for documenting the past. The following issues should be considered:

1) In most cultural landscapes prehistoric remains are just spots, surrounded by substantially later evidence. In paleo-landscapes, vice versa, even in those surviving only as fragments, as it is the rule, the components form an integrated and complex, even complete system;
2) Archaeology should not be perceived as part of just a three-dimensional space: in this perspective it lacks the fourth dimension, time, its most important characteristic;

3) Overall, remains are selected which stand above the ground, are easily recognizable, as rock art and burials, and can be integrated in extant cultural landscapes. This focus implies a bias towards the last few millennia of human activity. The previous 2.5 million years, or more, are simply not recorded.

Paleo-landscapes are an integrated space where humanity evolved in the past, as opposed to compounded remains of different ages surviving up to the present. They are visible at surface level, or are buried below it, and only reached through excavations. To include them appropriate strategies are required for a number of reasons:

1) Monuments and large buildings appear late in the record, Stonehenge or Barumini are the exception, not the rule. Caves are also rather visible, and some are interconnected and characterize a landscape of their own: this is the case of the Balzi Rossi, in northern Italy, where nine caves and rock shelters open over 300 m of rock cliff, and form a mega-site of the Upper Palaeolithic, comparable to those in loess of Moravia; while in the Ach Valley of southern Germany, four caves at less than one hour of walking distance from each other are linked by conjoinable lithic elements, which ensure that they were used in strict contemporaneity, as part of the same perceived landscape (Sheer, 1993). But cave settlements, too, are only a fraction of the prehistoric record, both in time and in space. The visibility of the overwhelming majority of prehistoric remains is slight, and they can be easily missed, even when they exist above ground level, which is definitely not the rule;
2) The effect of natural agents on exposed landscapes, compounded through time, is usually devastating. In the examples provided in Table.1, prehistory is a conspicuous aspect of a property only outside the Tropics and the temperate belt, i.e. either in hyper-arid surroundings (the Gobustan petroglyphs), or at high latitudes under cold climates (Norway, Sweden and Lithuania). This reflects relatively stable and conservation environments, as the lack of water and/or low temperatures keeps at bay biological activity (micro-organisms, vegetation, etc.), and also puts limits on human settlement and human impact. A rather extreme case is known to exist in the Canadian Arctic: Palaeo-Eskimo implements and dwelling structures, up to 4,000 years old, can still be found protruding from the ground, and remains of the later Dorset period, when covered by a snowbank during most of the year, even preserve the bedding material of moss and heather (McGhee, 1996). Arctic environments, however, only opened to human settlement after the end of the Last Glacial Period. Desert environments, on the other hand, are not devoid of changes (deflation, desquamation of rocky surfaces, etc.). In the long run, they are no guarantee for conservation, either;
3) Buried landscapes refer to much longer time-spans than exposed ones, potentially covering the whole prehistory. Being sealed, they have a different quality than cultural landscapes with prehistoric remains, which include mixed evidence up to historic times. Proper attention should, accordingly, be given to them. They are also safer than the exposed ones. However, as described above, they are also vulnerable because of the very origin of the successful preservation: the deposits which blanket them sometimes hide them totally, they are only reached in an extremely restricted area (Torre Spaccata), and are even covered by new buildings, or are at the risk of being turned into building ground (Nola, Wachtberg);
4) Before being buried, any piece of land has been laid exposed for some time, and accordingly has been subject to a number of natural agents. Erosion can further happen at any stage, and long after burial. Even in the case of buried landscapes, preservation cannot be expected to occur over large stretches. Melka Kunture is exceptional, because fragments of extremely ancient paleo-landscapes exist side by side over short distances, creating a kind of chronological jigsaw - but those are just fragments. Elsewhere, remains of paleo-landscapes are even less extensive, but nonetheless of outstanding value, as in the case of Dmanisi in Georgia: a fragment of a 1.7 million years old savannah survived between eroded gullies and under buildings of the Middle Ages, giving much information on the early adaptation of human beings to the middle latitudes.

The authenticity and integrity of paleo-landscape is linked to scientific recognition and multidisciplinary research, including archaeology, geology, geomorphology, palaeontology, palaeobotany, palaeozoology, and other allied sciences. This is in full accordance with the importance of embedded scientific values which is underlined in Article 1 of the World Heritage Convention. Paleo-landscapes definitely fit into the category of 'relict (or fossil) landscape' established in Annex 3 of the Operational Guidelines (see above). As 'the sample selected must be substantial enough to adequately represent the totality of the cultural landscape that it illustrates', this opens interesting perspectives to joint serial nominations, as only in truly exceptional cases it can be expected that the 'totality' might be represented at any single site of great antiquity. The case of the Middle Pleistocene occupation of Europe can be viewed in this perspective: a number of sites exist, which preserve at the site museums evidence of different parts of the same general environment, as at Ambrona (Spain), Tautavel and Terra Amata (France), La Polledrara, Casal de' Pazzi, Isernia and Notarchirico (Italy). The landscape which was in existence in Mediterranean Europe between 600,000 and 300,000 years ago can be pieced together only by making use of the research made in different countries.

The vulnerability of paleo-landscapes is extremely high, and actually much higher than of any of the constituent elements. They deserve all the care, attention and investment of scientific research needed to preserve this precious and fragile heritage for future generations.

Bibliography

Benedetti de, A.A., Funiciello, R., Giordano G., Diano, G., Caprilli, E. and Paterne, M. 2008. Volcanology, history and myths of the Lake Albano maar (Colli Albani volcano, Italy). *Journal of Volcanology and Geothermal Research,* Vol. 176, No. 20, pp. 387–406.

Chavaillon, J. aand Piperno, M. (eds). 2004. Studies on the Early Paleolithic site of Melka Kunture, Ethiopia. Florence, Istituto Italiano di Preistoria e Protostoria.

Council of Europe. 2000. European Landscape Convention, CETS No.176. http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm

Einwögerer, T., Friesinger, H., Händel, M., Neugebauer-Maresch, C., Simon, U. and Teschler-Nicola, A. 2006. Upper Palaeolithic Infant Burials. *Nature,* Vol. 444, pp. 285.

Gioia, G. (ed.) 2008. *Torre Spaccata. Roma S.D.O, le indagini archeologiche.* Roma, Comune di Roma.

McGhee, R. 1996. *Ancient People of the Arctic.* Vancouver, UBC Press.

Morgan, L.E. 2009. Geochronological constraints on Plio-Pleistocene hominid evolution in the Ethiopian Rift. Ph.D thesis, University of California, Berkeley.

Morgan, L.E., Renne, P.R., Kieffer, G., Piperno, M., Gallotti, R., Raynal, J.-P. In prep. A chronological framework for a long and persistent archaeological record: Melka Kunture, Ethiopia.

Scheer, A. 1993. The Organization of Lithic Resource Use during the Gravettian in Germany. H. Knecht, A. Pike-Tay, R. White (eds). Before Lascaux. Boca Raton, CRC Press, pp. 195–210.

UNESCO. 1972. Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention).
http://whc.unesco.org/en/conventiontext/ (English web page)
http://whc.unesco.org/fr/conventiontexte/ (French web page)

UNESCO World Heritage Centre. 2008. Operational Guidelines for the Implementation of the World Heritage Convention.
http://whc.unesco.org/en/guidelines/ (English web page)
http://whc.unesco.org/fr/orientations/ (French web page)

Attending lessons from human evolution-related sites in the context of World Heritage

François Sémah
Professor, Department of Prehistory
Muséum National d'histoire naturelle, Paris, France

The teacher and the student

Human evolution relates our origins through various aspects, most of them attractive to all publics. This interest in our history provides a universal value to human evolution-related sites, together with their inseparable material heritage. And, indeed, some among them are registered as World Heritage properties.

The interest in such fossil – and artefact[1] – bearing sites, which also often present a valuable palaeoenvironmental record, is fostered by the fact that, especially for sites dealing with an ancient period of human history, the role of the researcher is crucial. Only a scientific approach, most often grounded in prehistoric archaeology, may interpret and validate the chapter of this particular thick book of human history. On the other hand, the scientists themselves often rely on the 'translation' of the site knowledge of the local communities in order to orientate their discoveries and their interpretation.

The site is therefore appealing in itself, mainly drawing from a symbolic and subjective point of view[2], constituting an attraction owing largely to the mysteries it conceals, part of which could likely be disclosed during the visit thanks to the efforts of the above-mentioned actors. Such a character is not the sole privilege of prehistoric sites, but it renders in them a conspicuous importance, which deserves some preliminary thinking.

The property itself remains the decision-maker throughout an endless, dynamic and crucial conceal-then-disclose game which is played by multiple actors: the local communities, who have developed a specific relationship with the site and are often aware of its importance; the scientists, who master the instruments to enlighten the heritage significance; the managers who warrant both the protection and the access[3], and the various categories of visitors who, though being 'newcomers', account among the 'owners' of the heritage value.

Acknowledging the value of the property means developing a dialogue among those actors who are all, in turn, students and teachers. If the respective roles and mutual exchanges between local communities, authorities responsible for the site and scientists seem quite clear, we should not forget that the visitor's feedback is of valuable help in order to clarify and develop both the scientific interpretation and site management.

What is to be taught? What is to be learnt?

Both these questions encompass all the related challenges of a human evolution-related site, provided we consider all the participating communities – though each having a specific role – are on equal terms with each other and are in conditions to develop a mutual pedagogical approach.

We shall attempt below to list some of the most important lessons one might expect from such sites, from the scientific, conservation, interpretation and development points of view. Identifying the aim of such lessons can help us to structure the initiatives to be taken at the properties and to estimate their potential impact as well.

Precisely like when we watch a performance, we develop a two-step thought process: at the onset, in direct relation with the quality of what we watch, we only enjoy the lesson taught by the site. That moment might be considered as superficial, and indeed may lead to self-appraised or even preconceived models that, if not false, are often inaccurate. But the pictures received by our eyes and our minds are the basic material that will assemble to lead to the second, conceptualization step, whose importance will grow and develop throughout and after the visit or the study, hence grounding the benefit we receive and our perception of the site's value.

In such a way, the role of a thematic programme carried out by the UNESCO World Heritage Centre regarding ancient human history as a whole should not be to develop uniform and repetitive standards of study, interpretation, conservation and management of the sites. Indeed, it must encourage the circulation and the sharing of fruitful ideas and experiences, and help to prevent counter productive initiatives. But this is merely the very practical part of its duties. The richness of the above-mentioned first step to appraise the heritage highly depends on the freedom and creativity potential of the actor communities.

Beyond such practical matters, the success of a programme regarding the roots of human history will depend on its ability to foster constructive and good practices foreseeing the conceptualization second step. Such practices aim more at the homogenization of individual approaches developed at the properties rather than at the *uniformization* of their standards. They further aim at highlighting the relationships that the programme has to develop with the most important connected or subsidiary conservation and scientific fields (e.g. ethology, ecology, genetics, social anthropology etc.), which might often bring a mandatory and valuable contribution to the addressed field. The development of these good practices are intended to strongly link the ancient human history-related properties (including the discovered material heritage) to the dialogue between involved communities, helping them to understand, respect – i.e. protect – and commonly appropriate our ancient history in order to foster spreading its universal values.

A meeting with the ancestors of humankind

Two fascinating aspects

At the first rank of the general interest paid to human evolution-related sites, the various fossil taxa, which are related to the hominid phylum, obviously come to mind. The anatomical description of such fossils, the magical reconstructions allowed by modern forensic techniques which almost bring them back to life, fascinate both the palaeontologists and the common observers. But this latter interest is far from being merely that of a tourist paying a visit to some kind of Madame Tussauds' museum wax figures.

In fact, those fossils, when explained, exhibited or reconstructed (Fig. 1), picture our evolution in a quite comforting way. They involve us in the exciting discovery of creatures which, to a certain degree, are all considered as ancestors. Indeed, in a first approach, we accept willingly – or skim through – the ever-growing complexity of their mutual relationships, which have become today much more difficult to intellectually appraise than the obsolete linear *Australopithecus – Homo erectus – H. neandertalensis- H. sapiens* phylum which was taught in schools some 50 years ago. Looking at the chronological distribution of those figures, we feel unconsciously reassured by their seemingly progressive aspect, from ape-like to definitely 'us' (an attitude that finds its roots in early evolutionary works, see Fig. 2). Such a perception is encouraged by the taxonomic register used by the scientific community (e.g. referring to definite human characters such as *habilis, sapiens*, etc.), a register in which toponymy and chronology have became dominant only in quite recent times (e.g. *antecessor, heidelbergensis, floresiensis,* etc.).

Moreover, the presentation of their chronological and geographical distribution displays several documented 'Out of Africa' waves of human dispersals, especially during the last two million years, since the oldest, *Homo habilis* – like fossils found in Georgia (c. 1.8 million years) (e.g. Gabounia

1. Any anthropic stucture such as an occupation floor might be considered here as an 'artefact'.
2. Which is usually called the 'spirit of the site'.
3. The term 'site managers' obviously includes here any local, national or international authority playing a part in the site conservation.

et al., 2002), up to the development of Upper Palaeolithic civilizations in Western Europe by anatomically modern humans several tens of thousand years ago, e.g. the master work of art found in the Grotte Chauvet (e.g. Clottes, 2010), via the earliest organized fireplaces by Acheulians claimed in Israel c. 0.8 million years ago (e.g. Alperson-Afil, 2008). All these sites make us gaze at what we are somewhat eager to consider as some kind of repetitive – perhaps even socially-programmed – attempts to colonize the overall Old World (and subsequently New World), of which only the last one proved to be ultimately successful. In that way we have a natural disposition to be amazed by the sites documenting both sides of such adventures, resembling the way we look at the *Monumen a Colón* in Huelva or at the *Faro a Colón* in Santo Domingo.

Behind such definitely inaccurate but so 'human' perceptions lays the declension of two major questions related to human evolution and dispersals, whose homogenized perception is mandatory in the framework of a worldwide programme on account of their diverse and immense impacts.

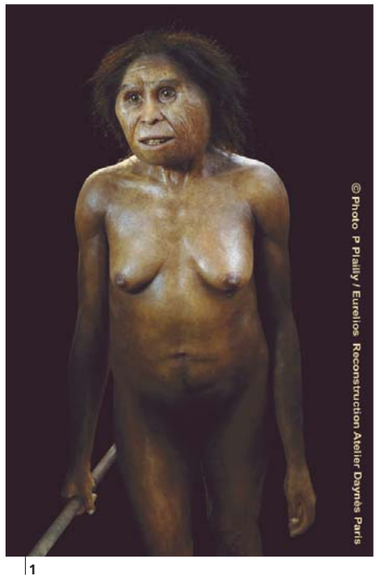
Humans and biological evolution

The first question anchors our extant species in the overall evolutionary scheme of living and extinct species as part of the Earth's history.

- As for the environmental record associated to the sites, it emphasizes the natural dimension of the heritage properties, hence contributing to bridge the usual gap between 'natural' and 'cultural' properties on the World Heritage List (and in the criteria of Outstanding Universal Value as well). Beyond the basic scientific idea, it helps to homogenize the users' attitude towards sites which often, in many aspects, resemble natural reserves.
- Those protected sites harbour the heritage regarding the story of our biological species. That simple sentence conveys the idea that we are one among the results of natural selection, and is not at odds with the recognition – even, the case being, from a mystical or religious point of view – of the overall 'success' of extant humankind and its ability to colonize – and biologically adapt to – many ecological niches. On the contrary, it reinforces, whenever necessary, the acknowledgment of a diverse but biologically unique humankind.
- Witnessing extinct hominid taxa is much meaningful.
  - The fossils are rare, mostly valuable – one more reason to pay much attention to the conservation of the sites – and hardly allow for the application of the classical methods of palaeontology on a statistical significant basis. Many of the worldwide famous human fossil-bearing sites yielded their own, sometimes hypothetical, taxonomic appellation, e.g. *Homo georgicus* for Dmanisi in Georgia (Lumley and Lordkipanidze, 2006), in order to foster the analyses conducted by an ever progressing human palaeontology. But the observer of a fossil, whatever his competency in that field, can easily play the part of the palaeontologist, looking at the inherited and/or derived anatomical characters which shall assign a specific place within the complex structure of our evolutionary tree. The large dissemination towards plain public of the very specialized debate regarding the taxonomic position of the Toumaï skull, *Sahelanthropus tchadensis* (c. 7 million years) (e.g. Brunet et al., 2002) is a good example of that universal value of human evolution-related heritage.
  - Such an observation also leads to accept the amazing documentation that, until quite recent times, several quite different humanities could have replaced each other, co-existed or even cohabited in various parts of the world (e.g. along with *Homo sapiens* during the Upper Pleistocene, the extinct *Homo neandertalensis*, *H. floresiensis*, or the latest, most derived *H. erectus*; another recent example was given by the genetic analysis of the Denisova fossil)[4].
- Worth noting is that recent palaeoanthropological research studies document and describe – and for some of them debate – quite early members of the hominids phylum like *Sahelanthropus tchadensis, Orrorin tugenensis* or *Ardipithecus ramidus*[5], which date back to the Upper Miocene or the Lower Pliocene. These largely predate the Quaternary reign of the *Homo* genus, and make the documented fossil record closer to the supposed separation between the human phylum and that of the chimpanzees. *Pan* (chimpanzees and bonobos) are genetically our closest living cousins, and according to the molecular clock our phylum should have separated from theirs some 6 million years ago, following a complex pattern which might have included some further interbreeding and genetic exchange (Patterson et al., 2006).
  - When looking at those fossils and their originating sites, one is entitled to question the aspect and behaviour of the common ancestor (or, more probably, of the common ancestors likely to have existed along a certain time-span).
  - As long as great apes palaeontology (and 'archaeology') is not as developed as palaeoanthropology, the latter discipline has naturally to pay much attention to the quite recent development of great apes primatology, including ethological studies and the documentation of actual cultures among ape groups (i.e. specific behaviours developed by geographically separated groups who live in quite comparable habitats) (e.g. Krief et al., 2005). Under these perspectives, it appears obvious that a programme on ancient human history developed by UNESCO must include, in order to set up good practices, strong relationships with the management (and related ethological and conservation studies) of natural reserves in which live the extant great apes communities: humans and apes are diurnal primates who have in common, beyond biological resemblances, a quite complex social behaviour.

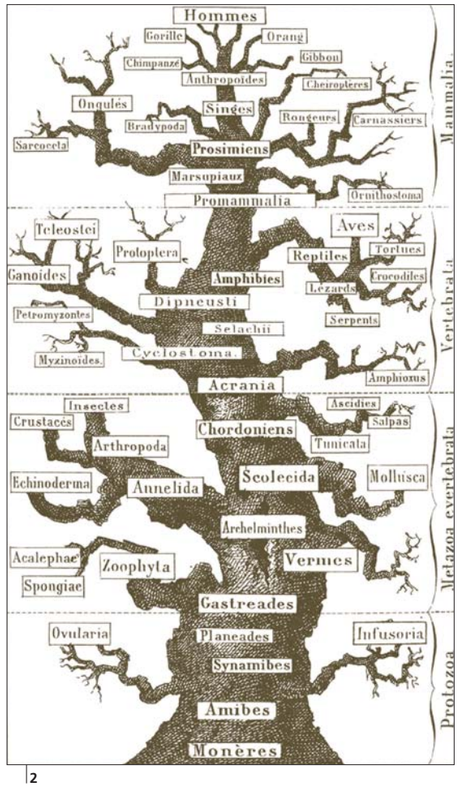
An almost ubiquitous species

That perspective opens the second question, i.e. the ability of human groups to colonize most of the earth's ecosystems, even under extreme conditions: deserts, polar areas, and even oceans (Blanche, 2008), which highlights a conspicuous difference between great apes and humans. Contrary to the former, humans are not subordinated to a specific environment, and are one of the couple of almost ubiquitous living species (together for instance with rats, cockroaches and a few others).



1

1. *Reconstruction of the* Homo floresiensis *female individual presented in Musée de l'Homme, Paris (Upper Pleistocene, 95,000 to 13,000 years). © Photo : Philippe Plailly / Elisabeth Daynes, 2007. Eurelios – Reconstruction. Atelier Daynès Paris*



2

2. *The descent of Man, a genealogic tree predating the discovery of Pithecanthropus erectus in the 19th century. From Haeckel, E. 1877.* Anthropogénie ou Histoire de l'évolution humaine. Leçons familières sur les principes de l'embryologie et de la phylogénie humaines *(Trans. from German in the 2nd edition by Ch. Letourneau). Paris, Reinwald & Cie, pp. 432–433.*

4. See for instance: *Neandertals:* Svoboda, 2005; *Flores:* Morwood,et al. 2004; *Denisova:* Krause et al., 2010.
5. See for instance, *Orrorin:* Pickford, M. & B. Senut, 2001. 'Millennium ancestor', a 6-million-year-old bipedal hominid from Kenya. *South African Journal of Science*, 97, 1-2, pp. 22.
Ardipithecus: White, T.D., B. Asfaw, Y. Beyene, Y. Haile-Selassie, C. O. Lovejoy, G. Suwa & G. WoldeGabriel, 2009. *Ardipithecus ramidus* and the Paleobiology of Early Hominids. *Science*, 326 (5949), pp.75–86.

Such a specificity may be considered under several aspects:

- In the case the survival of the species is bound to the existence of a specific natural habitat, resilience after an environmental change is obviously much more difficult. The more adaptive the species, the more likely could seem its survival, and the increased narrowing of the ecological niches colonized by great apes has become a serious concern today in terms of biodiversity conservation. It is amazing to notice that only very few genus of hominoids are living nowadays at the surface of our planet (including the four gibbons, *Pongo, Gorilla* and *Pan*), with a limited number of species likely to quickly decrease if no conservation initiatives were taken. Regarding palaeoanthropology, that leads to the far-from-resolved but most interesting question of present, as well as past competition – whether intended or not – between hominid groups, which could have played a large part in the extinction of former human taxa.
- The history of hominid dispersals becomes a topic at least as interesting as that of the observation of the chronology of human-related taxa who colonized the world. It is in all cases fully related to the latter, as geographic dissemination and correlative complex isolations and contacts constituted a major factor in biological evolution leading to specialized human groups, e.g. Neanderthals (Fig. 3) (e.g. Fabre et al., 2009).
- Such processes help in some way to better appraise the diversification potential of our extant species, which is believed to have grown from a limited and quite recent genetic stock having dispersed from Africa a few tens of thousand years ago, before reaching a few millions of individuals at the beginning of the Neolithic period, prior to a demographic expansion (e.g. Bocquet-Appel and Bar-Yosef, 2008). That interest can lead, beyond the basic concerns of conservation and interpretation of human evolution-related sites, to strengthen the links between the UNESCO HEADS Programme and the studies carried out in human population genetics. These trace the history of human groups along the last thousands of years, or look for the groups who, like those of the most remote Indian islands, are the best candidates to have preserved our part of our 'initial' genetic characteristics (e.g. Endicott et al., 2003).
- Dispersals (for much remote times) and especially more recent migrations often appear as an individual or collective behaviour which is definitely human: an immense field of research and of public interest lies in the results of current studies whose purpose is to discriminate 'natural' dispersals, e.g. following an ecological corridor from the actual intentional migrations, such as organized seafaring (e.g. Sémah, 2003).

These studies related to human dispersals highlight that the objective of the HEADS Programme is, beyond evolution and chronology, to take into account the worldwide richness and diversity of hominid habitats during late Cenozoic and Quaternary times, the ecological stresses and biodiversity changes which occurred and, obviously, the development and adaptation of subsistence and technical behaviours, and also of the social and symbolic organization of the concerned groups.

Looking for the ancestors' way of life

In the same way that we are naturally eager to identify a continuous progression towards *Homo sapiens* – like anatomy in the palaeoanthropological record, we are inclined to follow a cultural 'evolution' along the human ancient history, and to (inaccurately) strongly correlate it with the loss of 'simian' characters.

What is actually modern?

As a matter of fact, such a correlation exists but, as for the biological changes, has nothing to do with a false continuum. Among the apparent novelties in human behaviours, some are definitely linked with the overstepping of anatomical or cognitive thresholds, but others are merely technical innovations made by chance or under environmental or social pressures (i.e. answers to an identified need). Two simple instances can illustrate the humanistic values underlying that issue. The inventor of the computer processor was, biologically and neurologically, fully comparable to the inventor of pottery, who might have lived much before the Holocene (e.g. Prendergast et al., 2009). The human groups who presently perpetuate the fabrication of polished stone axes and adzes (e.g. in Papua, Fig. 4) represent a modern human society who does do not 'live in the Stone Age'. In a precisely same way, the western societies using eyed needles for sewing purposes did not fossilize a Solutrean way of life (e.g. Stordeur, 1979) some 18,000 years ago.

Looking at human abilities and behaviours throughout our long history is therefore a challenging quest for the milestones documenting modernity. A significant part of the interest we may bear in prehistory lays in the surprising discovery of the very remote roots of many of our behaviours. In that sense, we are not different from the people who, at the turn of the 20th century, realized that prehistoric troglodytes, often described as rough and wild people, could also have painted actual cathedrals in Cantabria (e.g. Cartailhac, 1902) or used sophisticated ornaments (Fig. 5). Hence, human evolution considered in terms of behavioural aspect helps us to look for actual humanity inside, behind and especially beyond the skull of any hominid fossil we observe, and also to acknowledge the modernity of whatever extant human group.

Though, in the case of artefactual remains, we should not forget during our quest that finding a tangible proof does not mean that the related ability did not pre-exist: the oldest rock art bison might have been much predated by beautiful drawings made on loose sand, unable to fossilize.

Would they be linked to the acquisition of a mandatory biological character, to the crossing of a specific cognitive threshold or to the discovery of a technical or a social organization process, the

3. *The 'anteneandertals' c. 450,000 years old hominid remains (*Homo heidelbergensis*) from Caune de l'Arago, Tautavel, France: the emergence of Neanderthal characters in Western Europe.*
(a) Skull (Arago 21 and Arago 47) and mandible (Arago 13)
(b) Face Arago 21
© H. and M.-A. de Lumley, Centre Européen de Recherches Préhistoriques de Tautavel

3 *(a)*

3 *(b)*

4

5

4. *Ja Aroway (micro-gabbro) Ormu ceremonial axe (Ormu-Wari Village, Western Papua, Indonesia).*
© Mission Erik Gonthier, 1982

5. *Mammoth ivory pendant from the Upper Palaeolithic Abri Pataud site (Les Eyzies-de-Tayac, Dordogne, France).*
© Photo Roland Nespoulet, collections Muséum national d'histoire naturelle, Paris

traces of all these features represent important milestones in our heritage, worth to be both studied and protected.

Behaviour and biological ability, crossing cognitive thresholds

Biological and neurological abilities are clear prerequisites for certain behaviours. Under this category is certainly the acquisition of the human – permanent – bipedalism and the correlative development of the brain (e.g. Falk, 1991; Grimaud-Hervé, 1998), allowing the successful dialogue between the brain and the hand (e.g. Piveteau, 1991). But some abilities remain partly mysterious regarding their development, such as for articulated speech: the basic neurological ability seems to have appeared quite early, at the *Homo habilis* stage (Tobias, 1987; Grimaud-Hervé, 1998), while researchers still debate, regarding the evolution of the larynx morphology, whether actual articulated speech was already mastered by Neanderthals or only appeared at the *Homo sapiens* stage.

The recovered hominid toolkits, for obvious reasons mostly stone artefacts, were often used in the past to identify 'actual' representatives of the *Homo* genus. As was to be expected, the development of researches in both primatology and palaeoanthropology largely relativized that schematic boundary. Though, it remains that hominids proved to be able to develop an organized technical process more than 2.5 million years ago (e.g. Roche et al., 2003), and that the oldest hand axes found in Africa (e.g. Isaac and Curtis, 1974), with their tridimensional symmetry, document an intellectual ability of abstraction comparable to that of a mathematician doing spatial geometry (Fig. 6). In the same way, the calibration (especially regarding the mass) of stone bolas in Acheulean assemblages, likely to have been used as thrown weapons, might reflect a practically applied – but in all cases actual – understanding of basic physics, e.g. ballistics (see reports associated with the discovery of the Ngebung site, Sangiran, Java, Indonesia, e.g. Sémah et al., 1992).

Social organization and symbolic behaviours

All observers are keen to identify ancient traces of social organization in the prehistoric record which resemble that of modern societies. Notwithstanding again current discoveries made in great apes ethology including, for instance, evidence of within-group solidarity (e.g. Boesch et al., 2010), we shall restrict here to two examples, namely that of social solidarity and of the consciousness of death.

We are touched to witness the discovery of an aged, toothless maxilla in Dmanisi, Georgia, dated c. 1.8 million years ago (Lordkipanidze et al., 2005), or that of a broken-then-healed mandible among the c. 0.8 million years old Javanese *Homo erectus* (which was discovered by S. Sartono, see Widianto, 1993; Sémah, 2001). These are examples of individuals who barely would have survived their handicap without any help of the members of their group.

Some sites further document the necessity of an organized social group for subsistence needs, like for hunting-scavenging, with which appears the sharing of activities and responsibilities, together with anticipation (Fig. 7). Here comes the debate about the interpretation of ancient hunting and scavenging sites, regarding the behaviour of the group in order to ensure its food supply (e.g. Potts, 1988; Isaac, 1978).

On the other hand, symbolic behaviour, consciousness of death and communication with a supranatural world is not the prerogative of modern humans, though appearing quite early in our species' history, as in Qafzeh, Israel (e.g. Bar-Yosef Mayer et al., 2009). Such behaviour is also claimed in much more remote times, maybe c. 0.5 million years ago, among the pre-Neanderthals from la Sima de los Huesos in Atapuerca, Spain (e.g. Carbonell and Mosquera, 2006) where corpses had been thrown in a karstic chasm together with, possibly, an unused hand axe made from exotic quartzite (Fig. 8). It is subsequently much documented among *Homo neandertalensis* and among modern humans during the Upper Palaeolithic, including rock art and portable art objects.

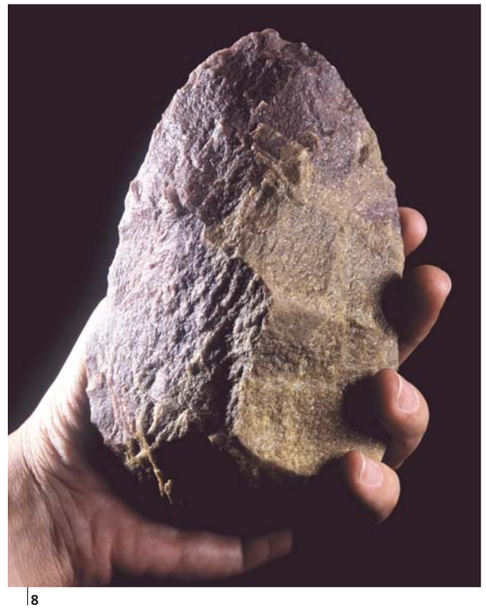
Modern technologies

As we see in present times with electricity or IT technologies, technical inventions can revolutionize the way of life of human groups in a permanent way. Ancient times do not stand as an exception. The above-mentioned domestication of fire (see Alperson-Afil, 2008, for the oldest documented periods), which seems to have quickly disseminated after 400,000 years and helped the colonization of northern areas (e.g. Gowlett, 2006), is the most famous example. Many assessments and theories have been published about its impacts (on social contacts, ability to conquer higher latitude areas, impact on the metabolism helping the development of the brain, etc.), and are sufficiently well known to be worthless quoting here.

6. *Flint hand axe from Abbeville (France) found by Boucher de Perthes in the 19th century (with original label). © Photo Rachel Orliac, collections Muséum national d'histoire naturelle, Paris*

6

7



8

7. *Acheulean raindeer hunters occupation floor in la Caune de l'Arago, 550,000 years ago (Isotopic Stage 14). © H. and M.-A. de Lumley, Centre Européen de Recherches Préhistoriques de Tautavel*

8. *'Excalibur' quartzite hand axe from la Sima de los Huesos (>550,000 years), Atapuerca, Spain. © Jordi Mestre / Institut Català de Paleoecologia Humana i Evolució Social*

Technical progress is interesting to follow along human history from two points of view:

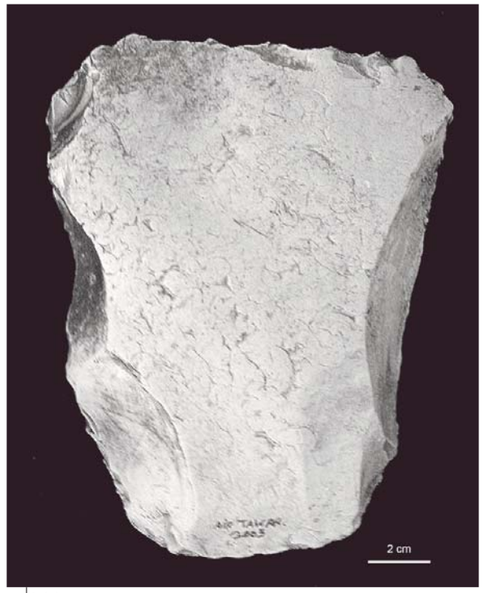
- The persistence of technical forms which have undergone almost no change since their invention: an Acheulean stone cleaver (Fig. 9), which might be 1.5 million years old, of the earliest found in Africa, is (in dimension, weight, efficiency of the cutting edge) not much different from a steel head axe we may buy nowadays in a supermarket. Regarding that issue, we can also include the case of the Upper Palaeolithic sewing needles.
- The sophistication of technical processes, especially when an 'intermediate' tool is needed, represents a kind of 'transitive' behaviour which seems almost definitely human, though it happens indeed that chimpanzees use a stone in order to steady an anvil on which they will break nuts with a hammerstone. Among early human stone implement makers, the collection of convenient pebbles to be used as hammerstones to knap other stone blocks appears as the simplest search for 'intermediate' tools, and is likely to have quickly stood as a behaviour which can be timely disconnected from the process of shaping the intended useful artefact. Such a transitive project would develop and become more and more complex through time: the pilot's skill on a jetliner highly depends on the aerodynamics specialist's skill who conceived the shape of the wings and on the composite manufacturer's skill to assemble the plane… but the three of them have almost no chance to physically meet.

The endeavour to understand prehistoric ways of life underlines the extent of one of the collaborations the UNESCO HEADS Programme must develop with social anthropology (and noticeably specialists in technological behaviours concerning the latter examples). Such an interdisciplinary dialogue has to go far beyond the assessment of simple comparisons between archaeological material and extant behaviours or artefacts. In looking at any individual or social aspects, it must include an overall appraisal of the diversity of human adaptation to a specific environment.

An ancestral environmental concern

Relationships between our descent, the climate and the environment are documented since the deepest geological times which can be related to our phylum. After the severe extinction which took place some 65 million years ago, during a period known as the K/T boundary among geologists (e.g. Ravosa and Dagosto, 2007), the primates were among the animals which took advantage of the resources offered by the development of the angiosperm forests during the first stages of the Cenozoic.

9. *Acheulean cleavers from Indonesia: (a) South Sumatra (b) Ngebung, Sangiran, Central Java. (a) © Hubert Forestier and Truman Simanjuntak, IRD/Puslitbang Arkenas (b) © François and Anne-Marie Sémah, Truman Simanjuntak, MNHN/Puslitbang Arkenas*



9 *(a)*

9 *(b)*

The links between the emergence of the hominid phylum and climatic-environmental conditions appeared crucial beginning in the 1960s, with the conspicuous finds of bipedal *Australopithecus* in Eastern Africa. The related publication of the 'East Side Story' (e.g. Coppens, 1994), presented a model taking into account the discoveries so far. Though, as was to be expected in scientific research, more recent discoveries, including that of *Australopithecus bahrelghazali* (Brunet et al., 1996), relativized and nuanced its absolute value.

The influence of climate and associated environmental changes, and of catastrophic events as well, on human group dispersals and biological/behavioural adaptations represents a large part of the present concerns of the scientific community. During the whole of the 2.5 million years long Quaternary period, humans have been witnesses to, then in much later times actors of ever-changing climates, environments and biodiversity.

Environment and human dispersals, specific adaptations and endemism

The onset of constraining climatic conditions and the opening of ecological corridors may have favoured hominid dispersals, under pressure from developing inhospitable conditions (including the rarefaction of subsistence resources), or thanks to the opening of new ecological corridors allowing the groups to follow their preys, and even, in more recent times, for intentional migrations. Coppens (e.g. 2009) has reasonably predicted for a long time that the first representatives of the *Homo* genus would have been subject to such a dispersal out of Africa since the dawn of the Quaternary, c. 2.5 million years ago. Though not yet supported by such old evidence, this hypothesis seems quite likely with respect to not only the ability of human groups but also to the onset of the Quaternary climatic changes. The resemblance with *Homo habilis* of the c. 1.8 million years old Georgian fossils (Gabounia et al., 2002), the correlative presence of Eurasian and African originating animals on the site is supportive of the idea (Lumley and Lordkipanidze, 2006), as are the numerous –though sometimes still discussed– European Early Pleistocene sites which have yielded old lithic implements (e.g. Arzarello et al., 2007; Fig. 10).

For much younger times, scientists claim the impact of climatic change, both more humid conditions opening favourable corridors towards Israel and severe drought in tropical Africa (Vaks et al., 2006; Cohen et al., 2007), would have favoured *Homo sapiens* dispersals towards the Levant at the beginning of the Upper Pleistocene. They mention the dramatic impact of the Pleistocene-

10. *Flint core and flake from Pirro Nord, Apricena, Puglia, Italy (1.3 to 1.6 million years) Courtesy Marta Arzarello, Photo: G. Fassino © National Geographic*

10

Holocene boundary, some 12, 000 – 10,000 years ago on the redistribution of populations which settled an emerged Sunda shelf which became an archipelago within a very short time span (owing to the severe Pleistocene to Holocene transition sea-level rise, after the last glacial maximum e.g. Sathiamurthy and Voris (2006).

The newly-colonized environments may have led to biological evolution. The example of the Southeast Asian archipelagos, an immense natural laboratory for the study of biogeography known since the work of Wallace in the 19th century (Wallace, 1869), is one of the best examples. Owing to the severe fluctuations of the sea level during the alternating glacial and interglacial stages of the Pleistocene (e.g. Lambeck et al., 2002), the sea straits narrowed or even disappeared repetitively, allowing the mammals from the Asian continent to reach the southernmost part of the Sundaland, or even to cross narrow straits towards the Wallacea.

In that way did the early, archaic *Homo erectus* become the first islander in human history, probably as soon as 1.6 million years ago (e.g. Sémah et al., 2000), and had to adapt to an environment dominated by tropical forests. The earliest fossils found on Java Island show some amazing, probably endemic derived characters, especially regarding the robustness of their mastication system or even the overall size of their body (e.g. Sémah et al., 2010). Much later, around the Lower to Middle Pleistocene boundary (c. 0.8-0.9 million years), other *H. erectus* reached the islands, who mastered an Acheulean tradition previously well disseminated over continental Asia (see Fig. 9 above). Some of them would even have crossed sea straits and reached Flores Island. The question is still debated whether they were the ancestors of Upper Pleistocene 'hobbit' (*Homo floresiensis*) who was recently found on the island (see Fig. 1).

Without multiplying the documented examples, we easily understand the importance of a careful study of the environmental record associated – or neighbouring – the human evolution-related sites. Special attention must be paid to the preservation and the access to the material which can be subject to dating methods (chronology is of the utmost importance in such a case) or to the study of palaeoenvironmental proxies (geochemistry, mineral weathering and neoformation, palaeontology/ palaeobotany, etc.).

The World Heritage Programme has to consider carefully the conservation and the interpretation of such records, especially when they address the history and the various impacts (depending on the geographic position) of the major changes which occurred during the Quaternary.

From environment to territory

Another crucial dimension of the palaeoenvironmental approach is that of the territory, the appropriation of the environment by human groups. Many kinds of studies, mostly related to earth and natural sciences, can help that multidisciplinary aspect of the interpretation of the sites. In most cases, a geographic information system is built in order to manage the usually huge amount of necessary data and infer the main circulation and exchange areas.

The territory is built around the more or less permanent or intermittent occupation areas fulfilling some primary needs (e.g. water and shelter). These can be quite thoroughly described when an actual archaeological record is available, such as in the case of caves and rock shelters, or human stations developed around lakes and along the former course of rivers, which can be traced by means of geomorphology (e.g. study of alluvial terraces systems and palaeo-lake contours). The relationship between the excavated remains and the embedding matrix, together with the stratigraphical successions, represent the most valuable basic data at this stage.

Then come various studies involving the technical and subsistence behaviours, including all the palaeobiology-related approaches (e.g. archaeozoology and palaeobotany), among others. For example, one may also look at the radius of the area surveyed in relation to the collection of suitable material to make stone or shell implements (e.g. Grégoire, 2009), or at the stable isotope composition of the human remains and human preys, e.g. strontium (e.g. Bentley et al., 2004), which can be compared to an analogous cartography of those elements in the environment in order to assess the origin of the food consumed by humans.

Sites or group of sites documenting such a human structuring of the space for exploitation purposes are worth conserving, including obviously those which reflect the occupation of areas which underwent 'extreme' conditions at the time; this is especially the case for polar zones or for the very specific territory which is the ocean. For instance, the former Lapita seafarers who colonized the South Pacific islands some 4,000 years ago lived on a marine territory whose boundaries are represented by the shores of the islands. Their traces are discovered at archaeological sites whose content may help to assess the dimensions of the 'territory', e.g. the transportation distance of obsidian volcanic glass as a raw material for stone implements, the origin of which is characterized by means of mineralogical analysis (e.g. Rosenfeld, 1997).

Obviously, yet another field of collaboration with social anthropologists working on extant communities (e.g. the sea nomads, Blanche, 2008) is necessary at this stage.

From the exploitation of nature to human impact

The next step regarding the complex mutual relationships between human groups and their environment is that of the human impact on nature. Simple exploitation of the territory is not likely to have left many evident anthropic traces in the records especially during the Palaeolithic period, when the human demography was still very low (e.g. Bocquet-Appel et al., 2005). Though, some researchers claim that the use of fire, noticeably in tropical countries, could have been recorded in the distant environment some 50,000 years ago (e.g. Thevenon et al., 2004). That impact has therefore to be searched for, not merely by means of concrete fossilized traces in the surroundings, but more by an appreciation of the development of human activities.

Much eloquent in relation to this point of view are the discoveries reflecting the exchanges between communities, especially the circulation of symbols and valuable – raw or worked – material, which are likely to have appeared since the Palaeolithic (e.g. Fiedorczuk, 1995). But the most important seems to be the progressive understanding of the dynamic processes which regulate the nature, including the yearly climatic cycles, e.g. seasonal hunting periods at Pincevent, France, during the Magdalenian (Leroi-Gourhan and Brézillon, 1966). In the late Pleistocene (including in Western Europe the Upper Palaeolithic) the understanding of the potential and the dynamics of the territories is likely to have quickly developed, along with the symbolic behaviours which mark both the territories and the human activities.

Since then, humans were ready to programme their impact on the environment, knowing the rhythms of nature, taming several animals as a ready to use source of proteins, of hard raw material, or for specific activities (e.g. Ingicco, 2008; Fig. 11), identifying in the forests the most useful plants to be protected and exploited then reproduced (e.g. useful *Arenga* palm trees, see

11 *(a)* **11** *(b)*

11. *Early Holocene (c. 9,000 years) traces of the relationships developed between humans and cercopithecids in Eastern Java, Indonesia (Song Terus cave) (a) A* Trachypithecus *face found associated to a human burial; (b) Pendant made of* Trachypithecus *canine. Photos Kasman Setiagama. © François & Anne-Marie Sémah, Truman Simanjuntak, MNHN/Puslitbang Arkenas*

for instance Bellwood, 1992; Fig. 12). In other words, human societies were ready to enter the revolutionary period called Neolithic, which witnessed the development of agriculture and domestication.

Milestones documenting this adventure are fully part of the prehistoric sites which portray our ancient history. They are potentially rich with information about crucial questions such as human individual and social resilience when facing an environmental change or a natural catastrophic event (e.g. volcanic eruption, earthquake, etc.).

But the central lesson we have to learn from those sites, in an interdisciplinary way involving ecologists and social anthropologists, deals with a major question which is at stake in our extant societies. It regards the actual place and action of humans who are not opposed to the nature (e.g. Descola, 2005), taking into account their multi-facetted biological and cultural impact which, by means of the current progress in medicine and reproduction behaviours might well influence our own evolution in the future (Combes, 2006).

Who are the aborigines?

When we recapitulate all the kinds of relationships which connect us, during our evolution through time and space, with various environments and with the changes they underwent, we realize that a large part of the extant humankind may claim their 'aboriginality', not to speak about the perpetuation of ancestral features in our body and in our behaviours.

On the other hand, when we follow the progresses in palaeoanthropology and genetics, e.g. African mitochondrial Eve and Y-chromosome Adam (see Manica et al., 2007 and associated references), we realize that no human group at the surface of the earth might claim an 'aboriginality' anchored in time for more than a couple of tens of thousands of years.

Such considerations should influence the development of the UNESCO World Heritage HEADS, Programme notably:

- To realize that local communities, who own and use the properties, have to play a major part in conservation projects;
- To pay attention to the long-term relationships between human groups who structured their territory and the environment.

12. *Peridotite adze for use on* Metroxylon sagu *palm tree, main source of sago (Northern coast of Western Papua, Indonesia).*
© Mission Erik Gonthier, 1982

12

Developing good practices must therefore explore, in collaboration with anthropologists, the significance of the relationships developed by the local communities with the specific concerned heritage. It must also consider the depth of the relations between their way of life and the specificities of their environments and territories, and, where relevant, the persistence until today of behaviours which are deeply anchored in time.

What are the responsibilities of a human evolution-related UNESCO programme?

The lessons we might learn from human evolution-related sites are multiple, and all the more numerous if we consider such a heritage in the context of ever-developing research regarding our long history. Though, it is clear that the objective in terms of World Heritage should not merely be to build a mosaic of inscribed sites, grounded on the precaution principle regarding their potential value and noticing the relatively low number of inscribed sites.

Such a programme must contribute to building a flexible thematic framework which will allow the World Heritage Committee to develop an actual policy on the topic, able to dynamically follow the development of the related scientific disciplines in the long term.

Conservation, which is at the core of the initiatives that the World Heritage Centre develops together with the Advisory Bodies, must be grounded in the will to develop the dialogue mentioned in the introduction of the present paper, placing all the actors on an equal basis. It needs to carefully balance, beyond geographical and chronological distribution, the diversity of the above-mentioned human evolution 'milestones'. It also needs to balance the priorities given to sites already developing excellent competences in research, interpretation and conservation matters with less-successful but valuable and willingly managed sites, especially in Southern countries which often undergo difficult economical and political situations.

But those central initiatives must keep the doors open towards the use – and the case being, the creation – of other instruments able to foster the acknowledgment of the Outstanding Universal Value of human evolution-related properties. Related important concerns might address, among others:

- Interdisciplinary collaborations, noticeably with the relevant fields evoked throughout the previous pages, like primatology, palaeoenvironmental sciences, ecology, human population genetics and social anthropology. Inter-sectoral cooperation with specialists of museology and of public dissemination, noticeably through the Advisory Bodies, is important as well.
- Development of thematic studies in line with the World Heritage Convention's mandate and the above-mentioned mandatory balances. Such studies can easily open the way to serial nominations, or foster the influence of inscribed sites on neighbouring or thematically-related others, which are not inscribed properties but which can gain from or even pioneer the defined good practices. The interdisciplinary collaborations can benefit greatly from such studies, especially by the launching of initiatives related to both extremities of the human evolution continuous chain: a human being is an animal (primatology) but definitely a social animal (e.g. a thematic study addressing the extant hunters-gatherers groups).
- The access to material heritage is an important issue for these – predominantly non-monumental – sites. Their interpretation, especially for dissemination purposes towards plain public, highly depends on the clear explanations of the significance of the related discoveries. Such an access to the material heritage also helps to understand the paradox of a 'conservation' which is grounded, in so many cases, on a planned and careful partial 'destruction' of the site: that of the archaeological excavations which must record and capitalize, using uniformized and up-to-date practices, all the material and immaterial related data.
- The transfer of knowledge, capacity-building and training, by means of a close collaboration at the crossroads of conservation and science, with universities and research agencies, who will then be led to actually play their part as actors, and not merely as experts.

Bibliography

Alperson-Afil, N. 2008. Continual fire-making by hominins at Gesher Benet Ya'akov, Israel. *Quaternary Science Reviews,* Vol. 27, pp. 1733–1739.

Arzarello, M., Marcolini, F., Pavia, G., Pavia, M., Petronio, C., Petrucci, M., Rook, L. and Sardella, R. 2007. Evidence of earliest human occurrence in Europe: the site of Pirro Nord (Southern Italy). *Naturwissenschaften*, Vol. 94, pp.107–112.

Bar-Yosef Mayer, D.E., Vandermeersch, B. and Bar-Yosef, O. 2009. Shells and ochre in Middle Paleolithic Qafzeh Cave, Israel: indications for modern behaviour. *Journal of Human Evolution*, Vol. 56, No. 3, pp. 307–314.

Bellwood, P. 1992. The Archaeology of Early Agricultural Societies. in Tarling, N. (ed.) *The Cambridge history of Southeast Asia.* Cambridge, Cambridge University Press, pp. 94–136.

Bentley, R.A., Price, T.D. and Stephan, E. 2004. Determining the 'local' 87Sr/86Sr range for archaeological skeletons: a case study from Neolithic Europe. *Journal of Archaeological Science,* Vol. 31, pp. 365–375.

Blanche, P. 2008. *Nomades de la mer.* Paris, Ibis Press.

Bocquet-Appel, J.-P., Demars, P.-Y., Noiret, L. and Dobrowsky, D. 2005. Estimates of Upper Palaeolithic meta-population size in Europe from archaeological data. *Journal of Archaeological Science,* Vol. 32, pp. 1656–1668.

Bocquet-Appel, J.-P. and Bar-Yosef, O. (eds.) 2008. *The Neolithic demographic transition and its consequences.* Springer Netherlands.

Boesch, C, Bolé, C., Eckhardt, N. and Boesch, H. 2010. Altruism in forest chimpanzees: the case of adoption. *PLoS ONE* 5, No.1.

Brunet, M., Beauvilain, A., Coppens, Y., Heintz, E., Moutaye, A.H.E. and Pilbeam, D. 1996. *Australopithecus bahrelghazali,* une nouvelle espèce d'Hominidé ancien de la région de Koro Toro (Tchad). *Comptes rendus des séances de l'Académie des Sciences,* Vol. 322, pp. 907–913.

Brunet, M., Franck, G., Pilbeam, D, Mackaye, H.T., Likius, A., Ahounta, D., Beauvilain, A, Blondel, C., Bocherens, H., Boisserie, J.-R., De Bonis, L., Coppens, Y., Dejax, J., Denys, C., Duringer, P., Eisenmann,V., Fanone, G., Fronty, P., Geraads, D. Lehmann, T., Lihoreau, F., Louchart, A., Mahamat, A., Merceron, G., Mouchelin, G., Otero, O., Campomanes, P.P., De Leon, M.P., Rage, J.-C., Sapenet, M. Schuster, M., Sudre, J., Tassy, P., Valentin, X., Vignaud, P., Viriot, L., Zazzo, A. and Zollikofer, C. 2002. A new hominid from the Upper Miocene of Chad, Central Africa. *Nature*, Vol. 418, pp.145–151.

Carbonell, E. and Mosquera, M. 2006. The emergence of a symbolic behaviour: the sepulchral pit of Sima de los Huesos, Sierra de Atapuerca, Burgos, Spain. *Comptes-Rendus Palevol,* Vol. 5, pp. 155–160.

Cartailhac, E. 1902. Les Cavernes ornées de dessins, la grotte d'Altamira, Espagne, 'Mea culpa' d'un sceptique. *L'Anthropologie,* Vol. XIII, pp. 348–354.

Clottes, J. (ed.) 2010. *La grotte Chauvet, l'art des origines.* Paris, Le Seuil.

Cohen, A.S., Stone, J.R., Beuning, K.R., Park, L.E., Reinthal, P.N., Dettman, D., Scholz, C.A., Johnson, T.C., King, J.W., Talbot, M.R., Brown, E.T. and Ivory, S.J. 2007. Ecological Consequences of Early Late-Pleistocene Megadroughts in Tropical Africa. *Proc. Nat. Acad. Sci.,* Vol. 104, pp.16422–16427.

Combes, C. 2006. *Darwin, dessine-moi les hommes.* Paris, Le Pommier.

Coppens, Y. 1994. East Side Story, the origin of Humankind. *Scientific American,* Vol. 270, No. 5, pp. 88–95.

____. 2009. *Le présent du passé: l'actualité de l'histoire de l'Homme.* Paris, Odile Jacob, Paris.

Descola, P. 2005. *Par-delà nature et culture.* Paris, Gallimard.

Endicott, P.,M., Thomas, M., Gilbert, P., Stringer, C., Lalueza-Fox, C., Willerslev, E., Hansen, A.J. and Cooper, 2003. The genetic origins of the Andaman islanders. *Am. J. Hum. Genet.,* 72, p.178–184.

Fabre, V., Condemi, S. and Degioanni, A. 2009. Genetic evidence of geographical groups among Neanderthals. *PLoS ONE* 4, No. 4.

Falk, D. 1991. 3.5 Million years of hominid brain evolution. *Seminars in Neuroscience,* Vol. 3, No. 5, pp. 409-416.

Fiedorczuk, J. 1995. Production, selection and export of blanks in the Final Palaeolithic Masovian complex. A case study of the blade workshops from Rydno IV/$_{57}$ in Southern Poland. *International flint symposium No. 7*, Polish Academy of Sciences, Institute of Archaeology and Ethnology, Warszaw, Vol. 33, pp. 59–69.

Gabounia, L., de Lumley, M.-A., Vekua, A., Lordkipanidze, D. and de Lumley, H. 2002. Découverte d'un nouvel hominidé à Dmanissi (Transcaucasie, Géorgie) [Discovery of a new hominid at Dmanisi (Transcaucasia, Georgia)]. *Comptes-Rendus Palevol,* Vol. 4, pp. 243–353. (In French.)

Gowlett, J.A.J. 2006. The early settlement of northern Europe: Fire history in the context of climate change and the social brain. *Comptes-Rendus Palevol,* Vol. 5, pp. 299–310.

Grégoire, S., 2009. Nature des roches et aires d'approvisionnement en matière première des industries lithiques archaïques des premiers habitants de l'Europe. Exploitation des territoires. *L'Anthropologie,* Vol. 113, No.1, pp. 168–177.

Grimaud-Hervé, D. 1998. *L'évolution de l'encéphale chez* Homo erectus et Homo sapiens. *Exemples de l'Asie et de l'Europe.* Paris, Cahiers de Paléoanthropologie, CNRS.

Ingicco, T. 2008. Les primates du Quaternaire d'Asie du Sud-Est: aspects paléoenvironnementaux et utilisation par l'Homme. *XXI^{ème} colloque de la SFDP* (Mulhouse), pp. 12.

Isaac, G. L. 1978. The food-sharing behavior of protohuman hominids. *Scientific American,* Vol. 238, pp. 90-108.

Isaac, G.L. and Curtis, G. H. 1974. Age of early Acheulean industries from the Peninj Group, Tanzania. *Nature,* Vol. 249, pp. 624–627.

Krause, J., Fu, Q. Good, J. M., Viola, B., Shunkov, M. V., Derevianko, A.P. and Pääbo, S. 2010. The complete mitochondrial DNA genome of an unknown hominin from southern Siberia. *Nature,* Vol. 464, pp. 894–897.

Krief, S., Hladik, C.M. and Haxaire, C. 2005. Ethnomedicinal and bioactive properties of plants ingested by wild chimpanzees in Uganda. *Journal of Ethnopharmacology,* Vol. 101, Issue 1–3, pp.1–15.

Lambeck, K., Esat, T.M. and Potter, E.-K. 2002. Links between climate and sea levels for the past three million years. *Nature,* Vol. 419, pp. 199–205.

Leroi-Gourhan, A. and Brézillon, M. 1966. L'habitation magdalénienne n°1 de Pincevent-près-Montereau (Seine et Marne). *Gallia Préhistoire,* 9, Vol. 2, pp.263–85.

Lordkipanidze, D., Vekua, A., Ferring, R., Rightmire, G.P., Agusti, J., Kiladze, M. and Zollikofer, C.P.E. 2005. Anthropology: The earliest toothless hominin skull. *Nature,* Vol. 434, pp. 717–718.

Lumley, M.-A. de and Lordkipanidze, D. 2006. L'Homme de Dmanissi (Homo georgicus), il y a 1 810 000 ans. *Comptes Rendus Palevol,* Vol. 5, Issue 1, pp. 273–281.

Manica, A., Amos, W., Balloux, F. and Hanihara, T. 2007. The effect of ancient population bottlenecks on human phenotypic variation. *Nature,* Vol. 448, pp. 346–348.

Morwood, M.J., Soejono, R.P., Roberts, R.G., Sutikna, T., Turney, C.S., Westaway, K.E., Rink, W.J., Zhao, J.-X., van den Bergh, G.D., Rokus Awe Due, Hobbs, D.R., Moore, M.W., Bird, M. I. and Fifield, L.K. 2004. Archaeology and age of a new hominin from Flores in eastern Indonesia. *Nature,* Vol. 431, pp.1087–1091.

Patterson, N., Richter, D.J., Gnerre, S., Lander, E.S. and Reich, D. 2006. Genetic evidence for complex speciation of humans and chimpanzees, *Nature,* Vol. 441, pp.1103–1108.

Pickford, M. and Senut, B. 2001. 'Millennium ancestor', a 6-million-year-old bipedal hominid from Kenya. *South African Journal of Science,* Vol. 97, Issue 1–2, pp. 22.

Piveteau, J. 1991. *La main et l'hominisation.* Paris, Masson.

Potts, R. 1988. *Early hominid activities at Olduvai.* New York, Aldine de Gruyter.

Prendergast, M.E., Yuan, J. and Bar-Yosef, O. 2009. Resource intensification in the Late Upper Paleolithic: a view from southern China. *Journal of Archaeological Science,* Vol. 36, pp.1027–1037.

Ravosa, M.J. and M. Dagosto (eds.). 2007. *Primate Origins: Adaptations and Evolution.* New York, Springer.

Roche, H., Brugal, J.-P., Delagnes, A., Feibel, C., Harmand, S., Kibunjia, M., Prat, S. and Texier, P.-J. 2003. Les sites archéologiques plio-pléistocènes de la formation de Nachukui, ouest Turkana,Kenya: Bilan synthétique 1997-2001. *Comptes-Rendus Palevol,* Vol. 2, pp. 663–673.

Rosenfeld, A. 1997. Excavation at Buang Merabak, Central New Ireland. Bulletin of the *Indo-Pacific Prehistory Association,* Vol.16, pp. 213–224.

Sathiamurthy, E. and Voris, H.K. 2006. Maps of Holocene Sea Level Transgression and Submerged Lakes on the Sunda Shelf. *The Natural History Journal of Chulalongkorn University,* Supplement, Vol. 2, pp. 1–44.

Sémah, F. 2001. La position stratigraphique du site de Ngebung 2 (dôme de Sangiran, Java, Indonésie). Sémah, F., Falguères, C., Grimaud-Hervé. D. and Sémah, A.-M. (eds.), *Origine des peuplements et chronologie des cultures paléolithiques dans le sud-est asiatique,* Paris, Semenanjung/ARTCOM, pp. 299–329.

Sémah, A.-M., Sémah, F., Djubiantono, T. and Brasseur, B. 2010. Landscapes and Hominids' environments: Changes between the Lower and the Early Middle Pleistocene in Java (Indonesia). *Quaternary International,* Vol. 223-224, pp. 451–454.

____. 2003. Les migrations préhistoriques. Mohen, J.-P. (ed.), *Le nouveau Musée de l'Homme.* Paris, Odile Jacob, pp.165–171.

Sémah, F., Sémah, A.-M., Djubiantono, T. and Simanjuntak, H.T. 1992. Did they also make stone tools? *Journal of Human Evolution,* Vol. 23, pp. 439–446.

Sémah, F., Saleki. H., Falguères, C., Féraud, G. and Djubiantono, T. 2000. Did Early Man reach Java during the Late Pliocene? *Journal of Archaeological Science,* Vol. 27, pp. 763–769.

Stordeur, D. 1979. *Les aiguilles à chas du Paléolithique.* Paris, Suppl. Gallia Préhistoire, CNRS.

Svoboda, J.A., 2005. The Neandertal extinction in eastern Central Europe. *Quaternary International,* Vol. 137, pp. 69–75.

Thevenon, F., Bard, E., Williamson, D. and Beaufort, L. 2004. A biomass burning record from the West Equatorial Pacific over the last 360 ky: methodological, climatic and anthropic implications. *Palaeogeography, Palaeoclimatology, Palaeoecology,* Vol. 213, pp. 83–99.

Tobias, P.V. 1987. The brain of *Homo habilis*: A new level of organization in cerebral evolution. *Journal of Human Evolution,* Vol. 16, Issue 7-8, pp. 741–761.

Vaks, A., Bar-Matthews, M., Halicz, L. and Frumkin, A. 2006. Climatic window for the 'Out of Africa' exodus of early modern humans: Evidence from desert stalactites. Goldschmidt Conference Abstracts 2006, *Geochimica et Cosmochimica Acta,* Vol. 70, A663–A676.

Wallace, A.R. 1869. *The Malay Archipelago.* New York, Harper and Brothers.

White, T.D., Asfaw, B., Beyene, Y., Haile-Selassie, Y., Lovejoy, C.O., Suwa, G. and WoldeGabriel, G. 2009. *Ardipithecus ramidus* and the Paleobiology of Early Hominids. Science, Vol. 326 (5949), pp.75–86.

Widianto, H. 1993. *Unity and diversity of hominid fossils from Java: presentation of unpublished human fossil remnants.* Ph.D. thesis, Muséum national d'histoire naturelle, France.

Annexes

List of Participants
Meeting Agendas

Prehistory and the World Heritage Convention: Towards an Action Plan and the related thematic studies, *UNESCO Headquarters, Paris, 3 to 4 November 2008*

Robert Bednarik, Convener and Editor, International Federation of Rock Art Organisations (IFRAO), Australia

Christopher Chippindale, Curator for British Archaeology and Reader in Archaeology, Museum of Archaeology & Anthropology, University of Cambridge, Cambridge, UK

Margaret Conkey, Department of Anthropology, University of California Berkeley, USA

Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa

Jean-Paul Demoule, Centre of Protohistoric Research, Université Paris 1 Panthéon-Sorbonne, Paris, France

Graciela González Brigas, World Heritage Centre, UNESCO

Mark-Antoine Kaeser, Université de Neuchâtel; Director, Laténium, Neuchâtel Archaeology Park and Museum, Switzerland

Penelope Keenan, World Heritage Centre, UNESCO

Giriraj Kumar, Dayalbagh Educational Institute, Agra, India; Rock Art Society of India (RASI), India

José Luis Lanata, Department of Anthropology, University of Buenos Aires, Buenos Aires, Argentina

David Lordkipanidze, Director, Georgian National Museum, Tbilisi, Georgia

Margherita Mussi, Dipartimento di Scienze dell'Antichità, Università degli Studi di Roma, Rome, Italy

Jean-Pierre Mohen, Director, Musée de l'Homme, MNHN, Paris, France

Marvin W. Rowe, Department of Chemistry, Texas A&M University, USA, and Texas A&M University at Qatar, Doha, Qatar

Nuria Sanz, General Coordinator of the HEADS Programme, World Heritage Centre, UNESCO

Her. Exc. Mrs María Jesús San Segundo, Chairperson of the World Heritage Committee, Ambassador of Spain to UNESCO

François Sémah, Department of Prehistory, Museum National d'Histoire Naturelle, Paris, France

Michael Turner, UNESCO Chair in Conservation Studies, Bezalel Academy of Arts and Design, Jerusalem

Paloma Ziogas, World Heritage Centre, UNESCO

Human Evolution and the World Heritage Convention, *Burgos, Spain, 21 to 25 March 2009*

Berhane Asfaw, Rift Valley Research Service, Addis Ababa, Ethiopia

Gail Ashley, Professor II, Director of Quaternary Studies Graduate Program Dept. of Earth & Planetary Sciences, Rutgers – The State University of New Jersey, USA

Ki Dong Bae, Professor of Archaeology, Dept of Anthropology, Hanyang University Museum, Korea

Ofer Bar-Yosef, George G. and Janet G.B. MacCurdy Professor of Prehistoric Archaeology, Department of Anthropology, Peabody Museum, Harvard University, USA

Yonas Beyene,Head of the Department of Archaeology and Anthropology and latter Paleontology, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ministry of Culture and Tourism, Ethiopia

Raymonde Bonnefille, Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE), France

Natasha Caillot, World Heritage Centre, UNESCO

Eudald Carbonnell, Director, Catalan Institute of Human Palaeo-Ecology and Social Evolution (IPHES) co-director of excavations at the Archaeological Site of Atapuerca, Spain

Nicholas J. Conard, Institute of Pre- and Protohistory and Mediaeval Archaeology, University of Tübingen, Germany

Laura Demiguel, Ministry of Culture, Spain

Eusebio Z.Dizon, Archaeological Studies Program, University of the Philippines, Philippines

Xing Gao, Research Professor, Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences, Beijing, China

José Jiménez, Director-General of Fine Arts and Cultural Goods, Ministry of Culture, Spain

José Luis Lanata, Department of Anthropology, University of Buenos Aires, Buenos Aires, Argentina

Toshisada Nishida, Executive Director, Japan Monkey Centre, Inuyama; Professor Emeritus, Department of Zoology at the Graduate School of Science, Kyoto University, Japan

Robert Sala, Professor of Prehistory, University Rovira i Virgili; Researcher, Archaeological Site of Atapuerca, Spain

Nuria Sanz, General Coordinator of the HEADS Programme, World Heritage Centre, UNESCO

Her. Exc. Mrs María Jesús San Segundo, Chairperson of the World Heritage Committee, Ambassador of Spain to UNESCO

François Sémah, Department of Prehistory, Muséum national d'Histoire naturelle, Paris, France

Kasman Setiagama, UNESCO

James Woodburn, International Expert, UK

Rock Art and the World Heritage Convention, *uKhahlamba/Drakensberg Park, South Africa, 3 to 8 April 2009*

Richard Alcázar, Resident Archaeologist, Fuerte de Samaipata, Bolivia

Salah Amokrane, Site Manager, Tassili n'Ajjer, Algeria

Emmanuel Anati, International Expert; Rock Drawings in Valcamonica, Italy

Rev Saloman April, Director of the National Heritage Council (NHC), Namibia

Zouhir Ballalou, Director, Office of the Protection and Promotion of the M'zab Valley, Ministry of Culture, Algeria

Robert Bednarik, Convener and Editor, International Federation of Rock Art Organisations (IFRAO), Australia

Mourad Betrouni, Director of Cultural Heritage, Ministry of Culture, Algeria

Chrissy Chiumia, Chongoni Rock-Art Area Site Manager, Malawi

Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa

Laura Demiguel, Ministry of Culture, Spain

Jean Claude Dioma, Director of Cultural Heritage, Ministry of Culture, Tourism and Communication, Burkina Faso

Sewelo Fane, Tsodilo Site Manager- Tsodilo Site Museum National Museum, Botswana

Malahat Farajova, Director of the Gobustan National Historical and Artistic Preserve, Azerbaijan

Gisele Daltrini Felice, Fundação Museu do Homem Americano (FUMDHAM); Serra da Capivara National Park, Brazil

José Jimenez, Director-General of Fine Arts and Cultural Goods, Ministry of Culture, Spain

Penelope Keenan, World Heritage Centre, UNESCO

Leonard Khoza, Second Secretary, Permanent Delegation of the Republic of South Africa to UNESCO

Amos Khwinana, Senior Environmental Officer, Department of Environmental Affairs and Tourism, South Africa

Andossa Likius, Department of Paleontology, Faculty of Exact and Applied Science, University of N'Djamena, Chad

Audax Zephania Mabulla, Department of History and Archaeology University of Dar es Salaam, Tanzania/ Trust for African Rock Art (TARA)

Julie MacDougall, Manager, Áísínai'pi/ Writing-on-Stone, Canada

Claudio Margottini, Geophysical Engineer, University of Modena and Reggio Emilia; Geological Survey of Italy; Italian High Institute for the Environmental Research and Protection (ISPRA), Italy

Aron Mazel, International Centre for Cultural and Heritage Studies, Newcastle University, UK

Yoliswa Mkhize, General Manager, uKhahlamba/Drakensberg Park, Ezemvelo KZN Wildlife, South Africa

Sello Mokhanya, Principal Heritage Officer, Amafa KwaZulu-Natal, South Africa

Oscar Mthimkulu, Ezemvelo KZN Wildlife, South Africa

Tshimangadzo Nemaheni, Site Manager, Mapungubwe Cultural Landscape, South Africa

Ntsizi November, Department of Environmental Affairs and Tourism, South Africa

Roberto Ontañón Peredo, Chief of Archaeological Section, Service of Cultural Heritage, Consejería de Cultura, Turismo y Deporte, Gobierno de Cantabria, Spain

Maria Mercedes Podestá, International Expert, Argentina

Raffaella Poggiani Keller, Soprintendenza per i Beni Archeologici di Milano, Rock Drawings in Valcamonica, Italy

Roger Porter, Ezemvelo KZN Wildlife, Ezemvelo, South Africa

Frans Prins, Strategic Environmental Focus, South Africa

Celeste Rossouw, Senior Rock Art Officer, Amafa KwaZulu-Natal, South Africa

Nuria Sanz, General Coordinator of the HEADS Programme, World Heritage Centre, UNESCO

Her. Exc. Mrs María Jesús San Segundo, Chairperson of the World Heritage Committee, Ambassador of Spain to UNESCO

Her Exc. Dr Konji Sebati, Ambassador, Permanent Delegation of the Republic of South Africa to UNESCO

Benjamin Smith, Director, Rock Art Research Institute, South Africa

Victor Syatyoka, Site/Area Manager, Mwela and adjacent areas rock art site (rock paintings), Zambia

Andrés Troncoso, Archaeologist, Assistant Professor, Department of Anthropology, Faculty of Social Sciences, University of Chile, Chile

Gerd Johanne Valen, Director, World Heritage Rock Art Centre – Alta Museum, Norway

Colum Zhuwau, Manager, Matobo National Park, Zimbabwe

Prehistoric Properties and the World Heritage Convention, *Manama, Bahrain, 10 to 14 May 2009*

Salman Ahmed Almahari, Directorate of Archaeology and Heritage, Ministry of Culture and Information, Bahrain

Khalid M. Al-Sendi, Head of Archaeological Section, Ministry of Culture and Information, Bahrain

Amanda Chadburn, Team Leader/ Inspector of Ancient Monuments, English Heritage, UK

Christopher Chippindale, Curator for British Archaeology and Reader in Archaeology, Museum of Archaeology & Anthropology, University of Cambridge, Cambridge, UK

Ian Clarke, Director, Southern Region, Historic Sites and Museums Branch, Heritage Division, Alberta Culture and Community Spirit, Canada

John Gordon Crock, University of Vermont, USA

Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa

María Paz Fernández Undurraga, World Heritage Centre, UNESCO

Flemming Højlund, Curator, Moesgard Museum, Denmark

Wajeeh Karasneh, Inspector of Antiquities of Irbid Governorate Irbid Office of Antiquities, Jordan

Lina Kutiefan, Head of Site Management Department, Directorate General of Antiquities and Museums (DGAM), Damascus National Museum, Syria

Antoine Hugues Jacques Lataste, Administrateur du Centre des monuments nationaux responsable du site de Carnac, France

Steffen Terp Laursen, Moesgard Museum, Aarhus University Section for Pre-History and Archaeology, Denmark

Pierre Lombard, Senior Researcher CNRS, Head of French Archaeological Mission in Bahrain, Maison de l'Orient, France

Karim Hendili, UNESCO Advisor for World Heritage and Culture to the Ministry of Culture and Information, Bahrain National Museum, Bahrain

Margherita Mussi, Dipartimento di Scienze dell'Antichità, Facoltà di Lettere e Filosofia, Università di Roma 'La Sapienza', Italy

Mónica Isabel Bahamondez Prieto, Chief Curator, Laboratory of Monuments, National Centre of Conservation and Restoration, Chile

Wilfredo Pulido Ronquillo, Chief, Archaeology Division, National Museum, Philippines

Nuria Sanz, General Coordinator of the HEADS Programme, World Heritage Centre, UNESCO

François Sémah, Department of Prehistory, Muséum National d'histoire naturelle, Paris, France

Lillian Stošić, Head of Department, Ministry of Culture, Agency for Protection of Cultural Heritage, Croatia

Saulius Vadišis, Director of the Administration of the State Cultural Reserve of Kernave, Lithuania

Anne Mette Rahbæk Warburg, Deputy Director General, Kulturarvsstyrelsen Heritage Agency of Denmark, Denmark

The Implementation of the Action Plan, Scientific Working Group, *UNESCO Headquarters, Paris, 12 to 14 September 2009*

Ofer Bar-Yosef, Department of Anthropology, Harvard University, USA

Nicholas J. Conard, Institute of Pre- and Protohistory and Mediaeval Archaeology, University of Tübingen, Germany

Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa

Margherita Mussi, Dipartimento di Scienze dell'Antichità, Università degli Studi di Roma 'La Sapienza', Rome, Italy

François Sémah, Department of Prehistory, Muséum National d'histoire naturelle, Paris, France

Michael Turner, UNESCO Chair in Conservation Studies, Bezalel Academy of Arts and Design, Jerusalem, Israel

Action Plan, Drafting Committee 33 COM 5A, *UNESCO Headquarters, Paris, 22 October 2009*

Greg Terrill (Delegation of Australia), Department of the Environment, Water, Heritage and the Arts

Britta Rudolff (Delegation of Bahrain), Counsellor for UNESCO Affairs, Sector for Culture and National Heritage, Ministry of Information

Michael Turner (Delegation of Israel), Bezalel Academy for Arts and Design, UNESCO Chair in Urban Design and Conservation Studies

George H.O. Abungu (Delegation of Kenya), Okello Abungu Heritage Consultants

Her. Exc. Mrs María Jesús San Segundo (Delegation of Spain), Ambassador, Permanent Delegation of the Kingdom of Spain to UNESCO

Robert Mearkle (Delegation of the USA), Culture, Communications and Information Officer, Office of UNESCO Affairs, Bureau of International Organization Affairs, U.S. Department of State

David Ostroff (Delegation of the USA), Political Officer, U.S. Mission to UNESCO

Karim Hendili (World Heritage Centre, UNESCO), UNESCO Advisor for World Heritage and Archaeology to the Sector of Culture and National Heritage, Kingdom of Bahrain

Penelope Keenan (World Heritage Centre, UNESCO)

Nuria Sanz (World Heritage Centre, UNESCO)

Action Plan, Advisory Bodies, *UNESCO Headquarters, Paris, 27 October 2009*

Joe King, ICCROM

Regina Durighello, ICOMOS

Tim Badman, IUCN

Penelope Keenan, World Heritage Centre, UNESCO

Nuria Sanz, World Heritage Centre, UNESCO

World Rock Art Archive, *UNESCO Headquarters, Paris, 22 December 2009*

Emmanuel Anati, Centro Camuno di Studi Preistorici, Italy

Francesco Bandarin, Director, World Heritage Centre, UNESCO

Ulf Bertilsson, Project Manager, Tanum World Heritage, Sweden

Penelope Keenan, World Heritage Centre, UNESCO

Luíz Oosterbeek, Instituto Politécnico de Tomar, Portugal

Nuria Sanz, World Heritage Centre, UNESCO

Benjamin Smith, Rock Art Research Institute, University of the Witwatersrand, South Africa

Antonio Uriarte, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

The Implementation of the Action Plan, Scientific Working Group, *UNESCO Headquarters, Paris, 17 to 18 May 2010*

Sonya Bahri, Director of UNITWIN/ UNESCO Chairs Network, UNESCO

Ofer Bar-Yosef, Department of Anthropology, Harvard University, USA

Nicholas J. Conard, Institute of Pre- and Protohistory and Mediaeval Archaeology, University of Tübingen, Germany

Penelope Keenan, World Heritage Centre, UNESCO

Margherita Mussi, Dipartimento di Scienze dell'Antichità, Università di Roma 'La Sapienza', Italy

Nuria Sanz, World Heritage Centre, UNESCO

François Sémah, Department of Prehistory, Museum National d'Histoire Naturelle, Paris, France

World Rock Art Archive Working Group, *UNESCO Headquarters, Paris, 5 to 6 July 2010*

Emmanuel Anati, Centro Camuno di Studi Preistorici (CCSP), Capo di Ponte (Bs), Italy

Ulf Bertilsson, Project Manager, Tanum World Heritage, Sweden

Felipe Criado Boado, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

María Cruz Berrocal, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa

Penelope Keenan, World Heritage Centre, UNESCO

Julián Martínez García, Instituto Andaluz del Patrimonio Histórico (IAPH), Spain

Nuria Sanz, World Heritage Centre, UNESCO

Benjamin Smith, Rock Art Research Institute, University of the Witwatersrand, Johannesburg, South Africa

World Rock Art Archive Working Group, *Rock Art Research Institute, University of the Witwatersrand, Johannesburg, South Africa, 17 to 19 November 2010*

Emmanuel Anati, Director, Centro Camuno di Studi Preistorici (CCSP), Capo di Ponte (Bs), Italy

Ulf Bertilsson, President ICOMOS-CAR; Project Manager, Tanum World Heritage, Sweden

Hugh Brody, Canada Research Chair in Aboriginal Studies, University of the Fraser Valley (UFV), Canada

María Cruz Berrocal, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa

Eric Esquivel, World Heritage Centre, UNESCO

Azizo da Fonseca, Rock Art Research Institute, University of the Witwatersrand, South Africa

Niède Guidon, Fundação do Homem Americano, Brazil

Penelope Keenan, World Heritage Centre, UNESCO

Webber Ndoro, African World Heritage Fund, South Africa

Nuria Sanz, World Heritage Centre, UNESCO

Demétrio da Silva Mutzenberg, Fundação do Homem Americano, Brazil

Benjamin Smith, Rock Art Research Institute, University of the Witwatersrand, South Africa

Juan Vicent, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

World Rock Art Archive Metadata Model, *UNESCO Headquarters, Paris, 22 December 2010*

María Cruz Berrocal, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

Eric Esquivel, World Heritage Centre, UNESCO

Alfonso Fraguas, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

Nuria Sanz, World Heritage Centre, UNESCO

Juan Vicent, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

African human origin sites and the UNESCO World Heritage Convention, *National Museum of Ethiopia, Addis Ababa, Ethiopia, 8 to 11 February 2011*

H.Exc. Amin Abdulkedir, Minister of Culture and Tourism, Ethiopia

Zeresenay Alemseged, Ethiopia

Dkifle Argaw, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Bernane Asfaw, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Metasebia Bekele, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Yonas Beyene, Director of Conservation of Monuments and Sites, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Jean-Renaud Boisserie, Ethiopia

Raymonde Bonnefille, Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE), France

Ronald Clarke, University of the Witwatersrand, South Africa

Nicholas J. Conard, Tubingen University, Germany

Yves Coppens, Collège de France, France

Janette Deacon, University of South Africa; Rock Art Institute, South Africa

Anne Delagnes, University of Bordeaux, France

Fernando Díez Martín, Universidad de Valladolid, Spain

Manuel Domínguez-Rodrigo, Universidad Complutense de Madrid, Spain

Tshey Eshete, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Mulugeta Feseha, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Nurie Gebreegziabeher, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Graciela González Brigas, African World Heritage Fund, South Africa

Jara Haile Mariam, General Manager, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Otilia Hernandez, AECID, Ethiopia

Penelope Keenan, World Heritage Centre, UNESCO

Jane Kessy, Department of Antiquities, Tanzania

Mzalendo N. Kibunjia, National Commission for Cohesion and Integration, Kenya

Rudolph Kuper, University of Cologne, Germany

Andossa Likius, University of N'Djaména, Department of Paleontology, Tchad

Karen Lupo, Washington State University, USA

Alexandros Makarigakis, UNESCO Office in Addis Ababa

Emma Mbua, National Museums of Kenya, Kenya

Margherita Mussi, Dipartimento di Scienze dell'Antichità, Università degli Studi di Roma 'La Sapienza', Rome, Italy

Nonofho Ndobochani, South African Heritage Resources Agency, South Africa

Marcello Piperno, Head of Italian Archaeological Mission, Melka Kunture, Ethiopia

Mohamed Sahnouni, National Centre for Research on Human Evolution (CENIEH), Spain

Riccardo Salvini, Italian Archaeological Mission, Melka Kunture, Ethiopia

Nuria Sanz, World Heritage Centre, UNESCO

François Sémah, Department of Prehistory, Muséum National d'histoire naturelle, Paris, France

Getashaw Seshaw, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Bernard Smith, Queen's University Belfast, UK

Deano Stynder, University of Witswatersgand, South Africa

Dawit Tibebuu, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Christian Tryon, New York University, USA

Mohammed Umer, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Hosea Wanderi, National Museums of Kenya, Kenya

Hassan Wario Arero, National Museums of Kenya, Kenya

Soloman Yirga, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Hailu Zeleke, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia

Preparation of the Management Plan of Tchitundo-Hulu Rock Art Site, *Virei, Angola, 14 to 23 March 2011*

João Afonso, Provincial Direction of Culture in Huambo, Angola

Charles Akibode, Ministry of Higher Education, Science and Culture, Cape Verde

Zlarid Almeida, General Direction of Culture (S.Tome), PALOP

Reginaldo d'Alva, General Direction of Culture (S.Tome), PALOP

Maria Helena Benjamim, National Museum of Archaeology, Angola

Celestino Ikako Bobala, Direction Culture, Ecuatorial Guinea, PALOP

João Jeronimo Bumba, Provincial Direction of Culture in Lunda Sul, Angola

Emanuel Caboco, Angola

Joaquim Caesso, Universidade Metodista de Angola, Angola

Josué de Campos, Provincial Direction of Culture in Bengo, Angola

Alexandre Candido, Virei, Namibe, Angola

Pedro Chissanga, Provincial Direction of Culture in Huambo, Angola

Eugénio Kanga Clemente, Ministry of Hotels and Tourism, Angola

Eugénio Cristiano, Virei, Namibe, Angola

Luis Da Silva Cruz, Virei, Namibe, Angola

Pedro Cenas Miguel Dissungua, Provincial Direction of Culture in Uije, Angola

Ziva Domingos, DG/INPC, Angola

Avelino Elais, Provincial Direction of Culture in Huila, Angola

Benjamin Fernández, Provincial Direction of Culture, Namibe, Angola

Graciela González Brigas, AWHF, South Africa

Belchior Tchilanda Grongulu, Ministry of the Interior, Angola

Albino Jopela, Universidade Eduardo Mondlane, Mozambique

Cristovão Mario Kajibanga, Provincial Direction of Culture in Benguela, Angola

Daniel Francisco Tomé Kawende, Provincial Direction of Culture in Huila, Angola

Luzolo Kiala, National Archives of Angola, Angola

Tierra Little, Trust of African Rock Art (TARA), Kenya

Domingos Lopes, Provincial Direction of Culture in Luanda, Angola

Maria Bela Calheiras Manuel, Direction of Hotels and Tourism (Luanda), Direction of National Tourism Activities, Angola

Elias Massunga, Provincial Direction of Culture in Malanje, Angola

José Mbalote, Provincial Direction of Culture in Benguela, Angola

Bernardo Mussonde, Virei, Namibe, Angola

Joaquim Muteka, Virei, Namibe, Angola

Martinho Nganga, Provincial Direction of Culture, Namibe, Angola

Francisco Neto, Provincial Direction of Culture in Bengo, Angola

Bilukas Nsekala Nsenga, Provincial Direction of Culture in Zaire

Silvestre Severino A. Oliveira, National Museum of Archaeology, Angola

Alberto Micha Olo, General Direction of Culture (S.Tome), PALOP

Maria Piedade de Jesús, National Museum of Archaeology, Angola

Carmen Pontevedra, AECID, PALOP

Joseph Puig, AECID, Angola

Manuel António Sebastião, Provincial Direction of Culture in Luanda, Angola

Benjamin Smith, Rock Art Research Institute, University of the Witwatersrand, South Africa

Miguel Sebastião, Chief of Division, Project Coordination, Angola

Victor Suaba, Instituto Nacional do Património Cultural (I.N.P.C), Angola

Paulo Valongo, Director MNAB, Angola

Paulo Jorge Vendían, Instituto Nacional do Património Cultural (I.N.P.C), Angola

Celestino Vicente, Provincial Direction of Culture in Kunene, Angola

Luis Paulo Vissunjo, Provincial Direction of Culture in Kuando Kubango, Angola

Maria Augusta Zala, Provincial Direction of Culture in Namibe, Angola

List of Participants

World Rock Art Archive Working Group, *Tanum, Sweden, 13 to 15 April 2011*

María Cruz Berrocal, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

Ulf Bertilsson, President ICOMOS-CAR; Project Manager, Tanum World Heritage, Sweden

Catarina Bertilsson, Swedish Rock Art Research Archives, University of Gothenburg, Sweden

Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa

Eric Esquivel, World Heritage Centre, UNESCO

Azizo da Fonseca, Rock Art Research Institute, University of the Witwatersrand, South Africa

Alfonso Fraguas, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

Niède Guidon, Fundação do Homem Americano, Brazil

Kristian Kristiansen, Institute of Historical Studies, University of Gothenburg, Sweden

Inger Liliequist, Director General, Swedish National Heritage Board, Sweden

Benjamin Smith, Rock Art Research Institute, University of the Witwatersrand, South Africa

Nuria Sanz, World Heritage Centre, UNESCO

Demétrio da Silva Mutzenberg, Fundação do Homem Americano, Brazil

Juan Vicent, Consejo Superior de Investigaciones Científicas de España (CSIC), Spain

HEADS Scientific Working Group, *Tübingen, Germany, 6-7 May 2011*

Nicholas J. Conard, Institute of Pre- and Protohistory and Mediaeval Archaeology, University of Tübingen, Germany

Margherita Mussi, Dipartimento di Scienze dell'Antichità, Università di Roma 'La Sapienza', Italy

Nuria Sanz, World Heritage Centre, UNESCO

François Sémah, Department of Prehistory, Museum National d'Histoire Naturelle, Paris, France

Advisory Bodies representatives

Tim Badman, Special Adviser, World Heritage Programme on Protected Areas, IUCN, Switzerland

Ulf Bertilsson, Project Manager, Tanum World Heritage, on behalf of ICOMOS International, Sweden

Mounir Bouchenaki, Director-General, ICCROM, Rome, Italy

Jean Clottes, Rock Art Expert, on behalf of ICOMOS International, France

Robin Dennell, International Expert, on behalf of ICOMOS International, UK

Bernard Smith, Professor of Tropical Geomorphology, School of Geography, Archaeology and Palaeoecology, Queen's University Belfast, on behalf of IUCN, UK

World Heritage Centre of UNESCO

Francesco Bandarin, Assistant Director-General for Culture, World Heritage Centre, UNESCO

Nuria Sanz, General Coordinator of the HEADS Programme, World Heritage Centre, UNESCO

Natasha Caillot, World Heritage Centre, UNESCO

Eric Esquivel, World Heritage Centre, UNESCO

María Paz Fernández Undurraga, World Heritage Centre, UNESCO

Graciela González Brigas, World Heritage Centre, UNESCO

Penelope Keenan, World Heritage Centre, UNESCO

Paloma Ziogas, World Heritage Centre, UNESCO

Meeting Agendas

Prehistory and the World Heritage Convention: *Towards an Action Plan and the related thematic studies*

UNESCO, Paris, 3 to 4 November 2008

Monday 3 November
Room VIII

09.00 – 10.45
OPENING SESSION

Official Opening Address by Her Exc. Mrs María Jesús San Segundo
Chairperson of the World Heritage Committee, Ambassador of Spain to UNESCO

Opening remarks by Mr Francesco Bandarin
Director, World Heritage Centre, UNESCO

Presentation of the Table of Participants

Objectives of the Meeting by Dr Nuria Sanz
General Coordinator of the HEADS Programme, World Heritage Centre, UNESCO

10.45 – 11.00 Coffee break

11.00 – 13.00
SESSION I:
HUMAN EVOLUTION

Chaired by Her Exc. Mrs María Jesús San Segundo
Chairperson of the World Heritage Committee, Ambassador of Spain to UNESCO

Prof. François Semah
Department of Prehistory, Museum National d'Histoire Naturelle, Paris, France

Prof. José Luís Lanata
Department of Anthropology, University of Buenos Aires, Buenos Aires, Argentina

Dr David Lordkipanidze
Director, Georgian National Museum, Tbilisi, Georgia

Discussion

13.00 – 14.30 Lunch break

14.30 – 16.30
SESSION II:
PREHISTORIC SITES

Chaired by Prof. Michael Turner
UNESCO Chair in Conservation Studies, Bezalel Academy of Arts and Design, Jerusalem, Israel

Prof. Christopher Chippindale
Curator for British Archaeology and Reader in Archaeology, Museum of Archaeology & Anthropology, University of Cambridge, Cambridge, U.K.

Prof. Jean-Paul Demoule
Centre of Protohistoric Research, Université Paris 1 Panthéon-Sorbonne, Paris, France

Prof. Margherita Mussi
Dipartimento di Scienze dell'Antichità, Università degli Studi di Roma, Rome, Italy

Discussion

16.30 – 16.45 Coffee break

16.45 – 17.15

Chaired by Prof. Jean Clottes
Rock Art Expert on behalf of ICOMOS International

Prof. Marvin W. Rowe
Department of Chemistry, Texas A&M University, USA, and Texas A&M University at Qatar, Doha, Qatar

Prof. Jean-Pierre Mohen
Director, Musée de l'Homme, MNHN, Paris, France

Prof. Mark-Antoine Kaeser
Associate Professor, Université de Neuchâtel; Director, *Laténium*, Neuchâtel Archaeology Park and Museum, Neuchâtel, Switzerland

17.15 – 18.30
SESSION III:
ADVISORY BODIES
VISION ON *THE WORLD HERITAGE CONVENTION*

International Council on Monuments and Sites (ICOMOS)

International Union for Conservation of Nature (IUCN)

International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM)

Chaired by Mr Francesco Bandarin
Director, World Heritage Centre

Prof. Jean Clottes
Rock Art Expert, France, on behalf of ICOMOS International

Mr Tim Badman
Special Adviser, World Heritage Programme on Protected Areas, IUCN, Gland, Switzerland

Mr Mounir Bouchenaki
Director-General, ICCROM, Rome, Italy

Discussion

Tuesday 4 November
Room VII

9.00 – 11.00
SESSION IV:
ROCK ART

Chaired by Mr Mounir Bouchenaki
Director-General, ICCROM, Rome, Italy

Prof. Janette Deacon
Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa

Mr Robert G. Bednarik
Convener and Editor, International Federation of Rock Art Organisations (IFRAO), Australia

Prof. Margaret Conkey
Department of Anthropology, University of California, Berkeley, USA

Dr Giriraj Kumar
Dayalbagh Educational Institute, Agra, India; Rock Art Society of India (RASI), India

Discussion

11.00 – 11.15 Coffee break

11.15 – 13.00
SESSION V:
WORKING GROUPS

I. Human evolution
II. Prehistoric sites
III. Rock art

13.00 – 14.30 Lunch break

14.30 – 16.30 Continuation of SESSION VI

Conclusions of Working Groups

16.30 – 16.45 Coffee break

16.45 – 18.30
FINAL DISCUSSION

Concluding and forward-looking remarks
World Heritage Centre, UNESCO

Closure of meeting

Human Evolution and the World Heritage Convention
Burgos, Spain, 21 to 25 March 2009

Saturday 21 March

18.00 Arrival of participants from Madrid to Burgos

20.30 Dinner at the AC hotel

Sunday 22 March

10.30 Bus to Atapuerca, WH site

Visit to Atapuerca, organized and hosted by the Directorate of Cultural Heritage/ *Consejería Castilla y León*

Visit by Prof. Eudald Carbonell

13.30 – 14.30 Lunch

14.30 Discussion table concerning management of the site

20.30 Dinner at the AC hotel

Monday 23 March

9.00
OFFICIAL OPENING

Chaired by Her. Exc. Ambassador Mrs San Segundo
- Ms María José Salgueiro, Council of Culture and Tourism of Castilla y León
- Dr Nuria Sanz, World Heritage Centre, UNESCO
- Mr Enrique Sainz, Directorate of Cultural Heritage Castilla y León
- Her. Exc. Ambassador Mrs San Segundo, Chairperson of the 33rd session of the World Heritage Committee, Ambassador of Spain to UNESCO

10.30 – 10.45 Coffee break

10.45

Human Evolution and the *World Heritage Convention*
Chaired by Mr José Jiménez, Fine Arts Director of the Ministry of Culture of Spain
Keynote speakers:
- Prof. Yves Coppens

Presentation of the objectives of the meeting within the framework of the Prehistory Programme of the World Heritage Centre, UNESCO
- Dr. Nuria Sanz, General Coordinator of the HEADS Programme, World Heritage Centre, UNESCO

13.30 – 14.30 Lunch

14.30
WORKING SESSION I

Discussion on criteria and Outstanding Universal Value
Introduction/Definition: Prof. François Sémah
Prof. Toshisada Nishida
Hominids among Primates
Prof. Berhane Asfaw
The Human Lineage
Prof. Robert Sala
The First 'Out of Africa'
Prof. Raymonde Bonnefille
Interdisciplinarity and Human Evolution
Prof. Robin Dennell (ICOMOS)
Narratives in Human Evolution

16.00 – 16.15 Coffee break

16.15 Working Groups

Prof. Ofer Bar-Yosef	Definition of criteria and OUV
Prof. François Sémah	Evaluation Features
Prof. Robin Dennell & Prof. Bae Ki-Dong	Narratives and related Thematic Studies

20.30 Dinner at the Teatro Principal de Burgos, reception room

Tuesday 24 March

9.00
WORKING SESSION II

Regional surveys
Introduction: Nuria Sanz

Geographic Working Groups

Prof. Nicholas J. Conard	Europe & N. America
Prof. José Luis Lanata	Latin America & Caribbean
Prof. Eusebio Dizon	Asia Pacific
Prof. Yonas Beyene	Africa

10.30 – 10.45 Coffee break

10.45 Conclusions of the Geographic Working Groups
Moderator: Prof. Ofer Bar-Yosef
Rapporteurs: Prof. Nicholas Conard / Prof. José Luis Lanata / Prof. Eusebio Dizon / Prof. Yonas Beyene

13.30 – 14.30 Lunch

14.30
WORKING SESSION III

Good practice case studies
Improving cooperation at the WH Committee and identification of good practices
Her. Exc. Mrs San Segundo
Prof. Bernard Smith
Prof. James Woodburn

16.00 – 16.15 Coffee break

16.15 Geographic Working Groups

Prof. Nuria Sanz & Prof. Gao Xing	Feasible serial nominations
Prof. Bernard Smith & Prof. Gail Ashley	Conservation and Management
Prof. Nicholas J. Conard	Documentation and further actions to be developed

Wednesday 25 March

8.30 Conclusions of the Working Groups Sessions I and III

Plenary Session

10.30 – 10.45 Coffee break

11.30 Press conference

12.30 Departure of the official authorities and participants

Picnic lunch

Annotated Agenda

As a working framework, the agenda of the Working Groups should follow the questionnaire, *Human Evolution Sites*, distributed to participants prior to the meeting, especially for Sessions I and III.

SESSION I
Discussion on criteria and Outstanding Universal Value (OUV)

- Definition of criteria and OUV.
- Evaluation features.
- Narratives and related thematic studies.

SESSION II
Regional surveys

The regional surveys do not only intend to produce complementary names for inclusion on the World Heritage List and the Tentative List, but to evaluate the concerned area and the possibility for further development. As such, their feedback, which will be presented by the coordinators of the Working Groups, should propose answers to the following questions:

- How is the regional area represented on the World Heritage List and on the Tentative List? Which other sites could complement the lists (in order of priority)?
- Beyond human evolution, do some of those sites present other significance(s) of Outstanding Universal Value?
- What is the relevance of the regional area to the narratives and thematic studies presented in the questionnaire?
- According to the Working Group, are there any major narratives or thematic studies relevant to the area but lacking in questionnaire?
- Can you provide examples of regional and thematic clusters of sites which may offer the potential of serial nominations (national, international, transboundary) or good practice case studies?
- Can you detail the need for documentation about the sites?
- What is the current state of cooperation with the Advisory Bodies and the concerned area?

SESSION III
Good practice case studies

- Conservation and management studies.
- Documentation and further actions to be developed.
- The Working Group on feasible serial nominations should base discussions on the conclusions of the Regional Surveys Working Group (Session II), and present a synthesis about such a clustering policy in the framework of the *World Heritage Convention*. Special attention should be paid to the following questions:
  - Is clustering intended to result in feasible serial nominations for sites related to human evolution?
  - What are the potential problems likely to be faced in this process? Are they specific to human evolution?
  - What are the key potential benefits of serial nominations for the purpose of conservation and advancing scientific research, in relation to:
    - Regional/international collaboration;
    - Fostering a fruitful collaboration between sites managers and the Advisory Bodies;
    - Management policy also benefiting important sites which are not likely to be nominated because of limited OUV.

Tentative guidelines for discussion

1. Hominids among primates

Humans are animals, but social animals. Beyond the simplicity of the statement stands the recurring question of distinguishing humankind from nature, which has become an important concern in dealing with issues related to World Heritage. What are the main scientific approaches to be developed when dealing with a fossil primate placed on the human lineage from both biological and behavioral (cultural) points of view? What aspects of the record need special attention? How does the knowledge of the higher primate's way of life help to approach fossil hominid sites?

2. The human lineage

What is the length and supposed complexity of the record to be considered when dealing with human evolution, and to what extent does it cover important events in the Earth's history? Is human palaeontology (which deals with a quite limited number of fossils, many of them receiving different taxonomic names) a specific branch of palaeontology? What are the relative values of different regions regarding human evolution, and which are the most important scientific aspects to be considered for a human evolution related site?

3. The first 'Out of Africa'

Humans are primates able to adapt to various ecological niches, which is reflected in both their anatomical and social evolution. What factors have determined their dispersals and adaptations? From which geological period is it likely to find hominid fossils out of Africa? Since when is a 'cultural' dispersal not necessarily correlative of a population dispersal?

4. Interdisciplinarity and human evolution

Human evolution related sites can be considered as hybrid, natural and cultural properties. Hominid remains are studied as fossils, but traces of their adaptive behavior to the environment are most informative as well. To which aspects of their environment should we pay special attention to understand such biological and cultural adaptation and evolution? Which traces are mandatorily present in order to assess the scientific authenticity and integrity of a human evolution related site? How far is interdisciplinarity needed to interpret such sites?

Rock Art and the World Heritage Convention

uKhahlamba/Drakensberg Park, South Africa, 3 to 8 April 2009

Friday 3 April

Arrival of participants in Johannesburg and transfer by coach to uKhahlamba/Drakensberg Park World Heritage site

12.30 Coach leaves meeting point at Johannesburg Tambo International Airport, via Sunnyside Park Hotel, Johannesburg

Packed lunch on coach

18.30 Arrival of participants to Cathedral Peak Hotel, uKhahlamba/Drakensberg Park

19.30 **Dinner at Cathedral Peak Hotel**

Saturday 4 April

9.00 – 11.30
OFFICIAL OPENING

Her Exc. Dr Konji Sebati
(President of Opening Session), Ambassador of South Africa to UNESCO
Her. Exc. Mrs María Jesús San Segundo
Ambassador of Spain to UNESCO, Chairperson of the World Heritage Committee
Mr José Jiménez
Director-General of Fine Arts and Cultural Goods, *Ministry of Culture, Spain*
Mr Ntsizi November
Department of Environmental Affairs and Tourism, South Africa
Dr Nuria Sanz
General Coordinator of the HEADS Programme ; Chief, Latin America and the Caribbean Unit, World Heritage Centre, UNESCO
Her Exc. Dr Konji Sebati
Official Opening Address

OBJECTIVES OF THE MEETING WITHIN THE FRAMEWORK OF THE HEADS PROGRAMME OF THE WORLD HERITAGE CENTRE, UNESCO
Dr Nuria Sanz
World Heritage Centre, UNESCO

ROCK ART AND THE *WORLD HERITAGE CONVENTION*
Prof. Emmanuel Anati (Chair)
Rock Art and the World Heritage List

Keynote addresses:
Prof. Benjamin Smith
Director, Rock Art Research Institute, University of the Witwatersrand, South Africa
Origins and diversity of rock art and its global significance

Prof. Aron Mazel
International Centre for Cultural and Heritage Studies (ICCHS), Newcastle University, UK
Values of the uKhahlamba/Drakensberg Park World Heritage Site

11.30 – 11.45 **Coffee break**

11.45 – 13.00
WORKING SESSION I

Criteria and Outstanding Universal Value for Rock Art on the World Heritage List

Prof. Robert Bednarik: Evaluation of distribution and quantity of rock art themes and traditions

Prof. Janette Deacon: Evaluation of quality and rarity of rock art themes and traditions

13.00 – 14.00 **Lunch at Cathedral Peak Hotel**

14.00 – 16.30 Working Groups

MODERATOR AND RAPPORTEUR	ROCK ART TOPIC
Prof. Emmanuel Anati, Mr Colum Zhuwau	Criteria and OUV
Mr Robert Bednarik, Ms Malahat Farajova	Evaluation of distribution and quantity
Prof. Janette Deacon, Mr Tshimangadzo Nemaheni	Evaluation of quality and rarity
Dr Gisele Daltrini Felice	Assessment of authenticity and integrity
ICOMOS, Dr Ulf Bertilsson	Thematic studies

16.30 – 16.45 Coffee break

Conclusions of Working Groups

20.00 Dinner at Cathedral Peak Hotel

Sunday 5 April

9.00 – 11.45
WORKING SESSION II

Regional Surveys
Introduction: **Dr Nuria Sanz;** Africa: **Prof. Benjamin Smith;**
Asia Pacific: **Mr Robert Bednarik;** Arab States: **Mr Salah Amokrane;**
Europe and North America: **Ms Gerd Johanne Valen;**
Latin America and the Caribbean: **Prof. Maria Mercedes Podestá**

Geographic Working Groups

MODERATOR AND RAPPORTEUR	REGION
Prof. Janette Deacon, Mr Victor Syatyoka	Africa
Mr Robert Bednarik	Asia Pacific
Dr Ulf Bertilsson, Ms Gerd Johanne	Europe & North America
Mr Mourad Betrouni, Mr Salah Amokrane	Arab States
Mr Richard Alcazar, Prof. Maria Mercedes Podestá	Latin America & Caribbean

11.15 – 11-30 Coffee break

11.30 – 12.30 Conclusions of Geographic Working Groups

12.30 – 13.30 Lunch at Cathedral Peak Hotel

13.30 Visit to Didima Rock Art Centre
Groups take turns to visit the Didima Rock Art Centre and rock paintings at Lower Mushroom Rock Shelter
Hosts: Mr Jeremy Hollmann, Ms Celeste Rossouw

19.30 Dinner at Cathedral Peak Hotel

20.00 – 21.30 EVENING SESSION: Creativity and Contemporary Rock Art. Dr Claudio Margottini

Monday 6 April

9.00 – 11.00
WORKING SESSION III

Good practice case studies
Her. Exc. Mrs María Jesús San Segundo
Improving cooperation at the World Heritage Committee and identification of good practice
Contributors
Scandinavia: **Dr Ulf Bertilsson**, Patagonia: **Dr Andrés Troncoso**,
Spain: **Mr Roberto Ontañón Peredo**, Namibia: **Rev Salomon April**,
North America: **TBC**, uKhahlamba: **Mr Roger Porter**

11.00 – 11.15 Coffee break

11.15 – 13.00 Round table discussion concerning interpretation and management of the uKhahlamba and other sites

13.00 – 14.00 Lunch at Cathedral Peak Hotel

14.00 – 16.00 Working Groups

MODERATOR AND RAPPORTEUR	TOPIC
Dr Nuria Sanz, Mr Richard Alcazar	Feasible serial nominations
Dr Claudio Margottini	Conservation
Prof. Benjamin Smith, Ms Raffaella Poggiani Keller	Documentation and further actions to be developed
Prof. Aron Mazel	Management

16.00 – 16.15 Coffee break

16.15 – 18.00 Conclusions of Working Groups

Contribution to the Action Plan

19.30 Dinner at Cathedral Peak Hotel

Tuesday 7 April

7.30 Depart Cathedral Peak Hotel for visit to Giant's Castle rock art site
Hosts: Mr Frans Prins, Mr Sello Mokhanja

Picnic lunch

16.00 Return to Cathedral Park Hotel

16.00 – 16.15 Coffee break/refreshments

16.15 – 18.00 Plenary Session

19.30 Dinner at Cathedral Peak Hotel

Wednesday 8 April

10.00 Press Conference
Departure of the Official Authorities and participants from uKhahlamba/Drakensberg Park World Heritage site to Johannesburg and Johannesburg Tambo International Airport by coach

Annotated Agenda

Criteria and outstanding universal value for rock art sites (tentative guidelines for discussion)

1. Introduction: Rock art as the manifestation of human conceptual thoughts and beliefs

Rock art is the manifestation of human conceptual thoughts and beliefs of traditional societies through time. Over what time period has it endured? Where do we draw the line between 'prehistoric' rock art and 'classical' art? Is there adequate representation of all the major conceptual beliefs? Are there any narrative themes that are not represented? What is the value of the quality of the physical environment in which rock art is situated?

2. Distribution and quantity of rock art themes and tradition

Rock art is found on every continent, but should the WH List reflect the relative abundance of sites in different regions? If rock art is very common in one region, how do we evaluate this in terms of OUV? How can we reflect the distribution and relative quantity of rock art themes and traditions through time? Does the dating of sites increase their significance? Is a long artistic tradition more significant than one that lasted a relatively short time?

Evaluation of the distribution and quantity of rock art themes and traditions:
- the placement of the engravings and paintings in the landscape (geographical situation and spatial distribution);
- geographical extension and quantity of rock art;
- the age of the rock art tradition;
- what is known about the site from research and potential research.

3. Quality and rarity of rock art themes and traditions

The value and significance of rock art is often measured by the aesthetic quality and state of preservation. Is this a good measure? What about rare rock art traditions in a poor state of preservation? If the rock art tradition is still being practiced, does this rare occurrence increase its value? Can the quality of management over-ride the quality of the rock art?

Evaluation of quality and rarity of rock art themes and traditions:
- position of the tradition in the global development and origins of art;
- quality of the physical environment in which the rock art is found;
- aesthetic quality of the rock art;
- rarity of images and themes and their exemplary value;
- duration of the tradition;
- evidence of a long artistic tradition;
- state of preservation;
- management status and threats to the rock art.

4. Authenticity and integrity of narratives and themes in rock art

There is a tendency to value sites where a lot of research has been conducted simply because the information is more detailed. Is this part of the OUV? Interpretation makes rock art more accessible, but how do we assess the authenticity and integrity of the research? Should sites be placed on the WH list because they are threatened? What are the physical impacts of existing or potential development at the site? What are the social/cultural uses of the rock art and heritage. How do we evaluate the significance of intangible heritage relating to rock art amongst descendant communities who no longer include artists in the old tradition? What is the impact of natural physical factors?
Assessment of authenticity and integrity of narratives and themes in rock art:
- knowledge about the motivation behind the rock art from contemporary descendant communities;
- the economy of the people who created it;
- the content of the art and the belief system that inspired it;
- understanding the cultural development of the artists and their culture;
- relationship of the tradition up to contemporary times to the rock art, and the involvement of descendants of the artists or the descendant community;
- interpretation.

Annex
Meeting Agendas
uKhahlamba/Drakensberg Park, South Africa, 3 to 8 April 2009

Working Groups

As a working framework, the agenda of the Working Groups should follow the *Questionnaire for Managers of Rock Art Sites on the World Heritage List* and *the Tentative List* distributed to participants prior to the meeting, especially for Sessions I and III.

SESSION I
Discussion on criteria and Outstanding Universal Value (OUV)

- *Definition of criteria and OUV.*
- *Evaluation factors.*
- *Narratives and related thematic studies*.

SESSION II
Regional surveys

The regional surveys do not intend to suggest additional and complementary names for inclusion on the World Heritage List and the Tentative List, but to evaluate the regional area concerned and the possibility for further research. As such, their feedback, which will be presented by the coordinators of the Working Groups, should propose answers to the following questions:

- How is the regional area represented on the World Heritage List and on the Tentative List? Which other sites could complement the lists (in order of priority)?
- Beyond rock art, do some of those sites present other significance(s) of Outstanding Universal Value?;
- What is the relevance of the regional area to the narratives and thematic studies presented in the questionnaire?;
- According to the Working Group, are there any major narratives or thematic studies relevant to the area but lacking in the questionnaire?;
- Can you provide examples of regional and thematic clusters of sites which may offer the potential of serial nominations (national, international, transboundary) or good practice case studies?;
- Can you detail the level of need for documentation of the sites?;
- Are the boundaries and buffer zones effective or do they need revision?;
- What is the current state of cooperation with the Advisory Bodies within the concerned regional area?;
- Are the WH sites adequately resourced in terms of funding, research, public awareness, visitor management, monitoring and staff?

SESSION III
Good practice case studies

- Conservation and management studies;
- Documentation and further actions to be developed;
- The Working Group on feasible serial nominations should base discussions on the conclusions of the Regional Surveys Working Group (Session II), and present a synthesis about such a clustering policy in the framework of the *World Heritage Convention*. Special attention should be paid to the following questions:
  - Is clustering intended to result in feasible serial nominations for rock art sites?
  - What are the potential problems likely to be faced in this process? Are they specific to rock art or to other related sites?
  - What are the key potential benefits of serial nominations for the purpose of conservation and advancing scientific research, in relation to:
    - regional/international collaboration;
    - fostering a fruitful collaboration between sites managers and the Advisory Bodies;
    - management policy also benefiting important sites which are not likely to be nominated because of limited OUV.

Prehistoric Properties and the World Heritage Convention

Bahrain, 10 to 14 May 2009

Sunday 10 May

Arrival of participants at Bahrain International Airport and transfer to the hotel (ensured by the Ministry of Culture and Information)

9.00 – 9.15 Representative of the Ministry of Culture and Information
OFFICIAL OPENING **Dr Nuria Sanz, World Heritage Centre, UNESCO**

9.15 – 9.30 Introduction of the participants and expectations

9.30 – 10.00 Introduction: Action Plan of Prehistory. Objectives of the Meeting
Dr Nuria Sanz, World Heritage Centre, UNESCO.

10.00 – 10.30 Discussion

10.30 – 10.45 Coffee break

10.45 – 11.30 **Prof. François Semah:** Human Evolution

11.30 – 12.15 **Prof. Janette Deacon:** Rock Art

General Discussion

13.00 – 14.00 Lunch

14.00 – 14.45 Prof. Christopher Chippindale

14.45 – 15.30 Prof. Margherita Mussi

15.30 – 16.00 Discussion

16.00 – 16.15 Coffee break

16.15 – 18.00 Case Study Burial Mounds: 'The Burial Ensembles of Dilmun and Tylos: A Case Study'
Dr Flemming Højlund, The Early Dilmun civilization
Mr Steffen Terp Laursen, The Early Dilmun burial monuments
Mr Pierre Lombard, The Middle-Late Dilmun and Tylos burial monuments

20.00 Dinner hosted by the Ministry of Culture and Information

Monday 11 May

08.00 – 12.00 Field visits – departure from the hotel at 07.30

12.00 – 13.30 Field visits
1) Wadi as-Sail, the one remaining landscape with scattered Early Type Dilmun mounds
2) Karzakkan, a Late Type Dilmun mound cemetery
3) 'Royal' Dilmun Mounds in Aali village
4) Janabiyah 'chieftain' Dilmun mounds
5) Shakhura Tylos mounds

Visit to the World Heritage site of Qal'at al-Bahrain: Ancient Harbour and Capital of Dilmun (guided by Dr Pierre Lombard) and visit to the site museum.

13.30 – 15.00 Lunch offered by the Ministry of Culture and Information at Qal'at al-Bahrain Site Museum

15.00 Transfer back to the hotel

17.00 – 20.00 Free time – optional visits organized by the Ministry of Culture and Information

Tuesday 12 May

9.00 – 11.00 Presentation of case studies
Hunter-gatherers:
Mr Ian Clarke, Head Smashed in Buffalo Jump, Canada
Mr Wilfredo Pulido Ronquillo, Paleolithic Archaeological Sites in Cagayan Valley, Philippines

11.00 – 11.15 Coffee break

11.15 – 13.00 Ms Anne Mette Rahbæk Warburg, Aasivissuit, Arnangarnup Qoorua, Denmark

Caves:
Prof. Margherita Mussi
Mr John Gordon Crock, Fountain Cavern, Anguilla

General discussions

13.00 – 14.15 Lunch

14.15 – 16.00 Megaliths:
Mr Antoine Lataste, Carnac, France
Dr Amanda Chadburn, Stonehenge, United Kingdom
Dr Luciano Mule Stagno, Hal Saflieni Hypogeum, i and Megalithic Temples of Malta

16.00 – 16.15 Coffee break

16.15 – 18.00 Long sequence sites:
Mr Saulius Vadišis, Kernave archaelogical site, Lithuania
Mr Wajeeh Karasneh, Abila City (Modern Qweilbeh), Jordan
Ms Lina Kutifan, Ebla, Syria

General Discussion

Wednesday 13 May

09.00 – 13.00 Working Groups

MODERATOR AND RAPPORTEUR	TOPIC
Coordination Prof. Christopher Chippindale Rapporteur Prof. Mussi	Main themes and criteria - OUV - rarity - quality - geographical distribution
Coordination Prof. Sémah Rapporteur Prof. Deacon	Priority actions on conservation Documentation Management
Coordination Mr Khalid Al Sindi Rapporteur Mr Steffen Terp Laursen	Nomination of the Burial Ensembles of Dilmun and Tylos – Outstanding Universal Value - significance - authenticity - integrity - sites for comparative analysis - pre draft OUV statement

13.00 – 14.00	**Lunch**
	Discussion on Action Plan: Prof. François Sémah Prof. Janette Deacon Prof. Christopher Chippindale Prof. Margherita Mussi Dr Nuria Sanz
16.00 – 16.15	**Coffee break**
16.15 – 18.00	General remarks Official closing session

Thursday 12 May

Departure of the participants

Annotated Agenda

Working Group I

1. Distribution and quantity of rock art themes and tradition

Archaeological properties and sites related to the beginning of cultural diversity are found on every continent, but should the World Heritage List reflect the relative abundance of sites in different regions? If the sites are very common in one region, how do we evaluate this in terms of OUV? How can we reflect the distribution and relative quantity of related themes and cultural traditions through time? Is a long sequence more significant than one that lasted a relatively short time?

Evaluation of the distribution and quantity of prehistoric sites:
- the placement (geographical situation and spatial distribution);
- geographical extension and quantity of the testimonies;
- the chronology;
- what is known about the site from research and potential research.

2. Quality and rarity of sites

The value and significance of these sites is often measured by the aesthetic quality and state of preservation. Is this a good measure? What about rare cultural traditions in a poor state of preservation? Does OUV automatically increase with rarity? If the cultural tradition is still being practiced, does this rare occurrence increase its value? Can the quality of management override the quality of the sites?

Some criteria to evaluate of quality and rarity:
- the quality of the physical environment in which the site (s) is/are placed;
- aesthetic quality of the site;
- rarity of remaining and themes and their exemplary value;
- duration/ chronology;
- evidence of a long cultural phenomenon;
- state of preservation;
- management status;
- others.

Annex
Meeting Agendas
Bahrain, 10 to 14 May 2009

3. Narratives and themes in Prehistory

There is a tendency to value sites where a lot of research has been conducted simply because the information is more detailed. Is this part of the OUV? Interpretation makes prehistoric sites more accessible, but how do we assess the authenticity and integrity of the research? Should sites be placed on the WH list because they are threatened? What are the physical impacts of existing or potential development at the site? What are the social/ cultural uses of the Prehistoric sites. How do we evaluate the significance of intangible heritage related to prehistoric sites amongst descendant communities? What is the impact of natural physical factors?

The significance of the site could be base on:
- The economy of the people who created it;
- The content of the art and the belief system that inspired it;
- Knowledge about the link from contemporary descendant communities;
- Understanding the cultural development along the sequence;
- Role in the history of research.

4. Regional approach

The regional surveys do not intend to suggest additional and complementary names for inclusion on the World Heritage List and the Tentative List, but to evaluate the regional area concerned and the possibility for further research. As such, their feedback, which will be presented by the coordinators of the Working Groups, should propose answers to the following questions:

- How are the regional area represented on the World Heritage List and on the Tentative List? (According to Annexes I and II)
- According to the Working Group, are there any major narratives or thematic studies relevant to Prehistory but lacking in the List?
- Can you provide examples of regional and thematic clusters of sites which may offer the potential of serial nominations (national, international, transboundary) or good practice case studies?

Working Group II
Documentation, Conservation and Management

- Documentation practices at Prehistoric Sites: priorities of cooperation;
- Conservation practices at Prehistoric sites: priorities for cooperation;
- Management practices at Prehistoric sites: priorities for cooperation;
- What are the key potential benefits of serial nominations for the purpose of conservation and advancing scientific research, in relation to:
  - Regional/international collaboration;
  - Fostering a fruitful collaboration between sites managers and the Advisory Bodies;
  - Management policy also benefiting important sites which are not likely to be nominated because of limited OUV.

Working Group III
Outstanding Universal Value of Dilmun burial mounds in Bahrain; discussion based on the Tentative List

- Meaning, significance;
- Conditions of integrity;
- Conditions of authenticity;
- List of sites for comparative analysis;
- Draft of Outstanding Universal Value.

The Implementation of the Action Plan, Scientific Working Group

UNESCO Headquarters, Paris, 12 to 14 September 2009

Saturday 12 September

9.00
Welcome at main entrance of UNESCO Headquarters, 7 Place de Fontenoy, Paris 75007

9.30
OFFICIAL OPENING
Official Opening Address
Mr Francesco Bandarin, Director, UNESCO World Heritage Centre

Follow up to the Official Decisions of the World Heritage Committee
Dr Nuria Sanz, Chief, Latin America and the Caribbean Unit/ General Coordinator of the Programme, UNESCO World Heritage Centre

Presentation of Table of Participants

10.30
WORKING SESSION I
Chaired by **Prof. Ofer Bar-Yosef,** George G. and Janet G.B. MacCurdy Professor of Prehistoric Archaeology, Department of Anthropology, Peabody Museum, Harvard University, USA
i. Considerations of the title of the Programme

11.15 – 11.30
Coffee break

11.30
WORKING SESSION II
(continued)
ii. Credibility

13.00 – 14.00
Lunch

14.00
WORKING SESSION III
Chaired by **Prof. Nicholas J. Conard,** Institute of Pre- and Protohistory and Mediaeval Archaeology, University of Tübingen, Germany

Integration of World Heritage in scientific research, OUV and the natural and social sciences for related sites

16.15 – 16.30
Coffee break

16.30
WORKING SESSION IV
Chaired by **Prof. Margherita Mussi,** Dipartimento di Scienze dell'Antichità, Facoltà di Lettere e Filosofia, Università di Roma 'La Sapienza', Italy

How to improve communication with communities and decision-makers for site conservation and management

20.30
Dinner

Monday 14 September

9.30
WORKING SESSION V
Chaired by **Prof. François Sémah,** Department of Prehistory, Museum National d'Histoire Naturelle, Paris, France

Maintaining values by improving international cooperation

11.15 – 11.30
Coffee break

11.30
WORKING SESSION VI
Chaired by **Mr Mike Turner,** UNESCO Chair in Conservation Studies, Bezalel Academy of Arts and Design, Jerusalem
i. Increase membership to conserve related heritage at the WHC
ii. How to identify priorities and means to improve the implementation of the World Heritage Convention for related sites

13.00 – 14.00
Lunch

14.00
WORKING SESSION VII
Chaired by **Prof. Janette Deacon,** Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa
i. Improve the technical capacity of site managers involved in related heritage conservation
ii. Increase monitoring

16.15 – 16.30
Coffee break

4.30
WORKING SESSION VIII
Chaired by **Dr Nuria Sanz,** Chief, Latin America and the Caribbean Unit/ General Coordinator of the Progr me, UNESCO World Heritage Centre

Thematic studies. Tentative Lists and their regional harmonization

20.30
Dinner

World Rock Art Archive

UNESCO Headquarters, Paris, 22 December 2009

Tuesday 22 December

9.00	Welcome at main entrance of UNESCO Headquarters, 7 Place de Fontenoy, Paris 75007
9.30 OFFICIAL OPENING	Official Opening Address **Mr Francesco Bandarin,** Director, UNESCO World Heritage Centre Presentation of the Table of Participants Objectives of the Meeting **Dr Nuria Sanz,** Chief, Latin America and the Caribbean Unit/ General Coordinator of the Programme, UNESCO World Heritage Centre
10.45 – 11.00	Coffee break
11.00 WORKING SESSION I	Presentation of Practises Chaired by Dr Nuria Sanz, UNESCO **Prof Emmanuel Anati,** Director, Centro Camuno di Studi Preistorici (CCSP), Capo di Ponte (Bs), Italy Archive of CCSP **Dr Ulf Bertilsson,** President ICOMOS-CAR, Sweden Documentation of Rock Art in Sweden. Participation of the European Commission in archiving European Prehistoric Art **Dr Luíz Oosterbeek,** Secretary General, International Union of Prehistoric and Protohistoric Science (UISPP), Instituto Politécnico de Tomar, Portugal Management of Rock Art archives of UISPP
13.00 – 14.00	Lunch
14.00 WORKING SESSION I *(continued)*	**Dr Antonio Uriarte,** Consejo Superior de Investigaciones Científicas de España (CSIC), Madrid, Spain Perspective of CSIC **Prof. Benjamin Smith,** Director, Rock Art Research Institute, Research Article Editor, South African Archaeological Bulletin, Associate Professor, University of the Witwatersrand, Johannesburg, South Africa Archiving Rock Art in Africa, SARADA Project, Origins Centre
15.00 WORKING SESSION II	Discussion Chaired by Dr Nuria Sanz, UNESCO Key points • Methodologies of archiving Rock Art manifestations of World Heritage sites • Management of archives, accessibility • Layout of a future repository • Archives and comparative analysis for World Heritage • Current collaboration between institutions • Archives as a system of monitoring
16.00 – 16.15	Coffee break
16.15 WORKING SESSION II *(continued)*	Proposition of working models 1. Structure of cooperation 2. Feasible protocols 3. A common approach for a World Heritage Rock Art Archive
20.00	Dinner

The Implementation of the Action Plan, Scientific Working Group

UNESCO Headquarters, 17 to 18 May 2010

Monday 17 May

9.00	Welcome at main entrance of UNESCO Headquarters, 7 Place de Fontenoy, Paris 75007
9.30 OFFICIAL OPENING	Introduction and Background to Discussions **Dr Nuria Sanz,** Chief, Latin America and the Caribbean Unit/General Coordinator of the Programme, UNESCO World Heritage Centre
10.30 – 10.45	Coffee break
10.45 SESSION I	Chaired by **Prof. Nicholas J. Conard,** Institute of Pre- and Protohistory and Mediaeval Archaeology, University of Tübingen, Germany Research and Adaption in the framework of the World Heritage Thematic Programme
13.00 – 14.00	Lunch
14.00 SESSION II	Chaired by **Prof. François Sémah,** Department of Prehistory, Museum National d'Histoire Naturelle, Paris, France Training/Capacity building **Ms Sonya Bahri,** Director of UNITWIN/UNESCO Chairs Network, UNESCO Presentation of UN UNITWIN/UNESCO Chairs Network
16.15 – 16.30	Coffee break
16.30 SESSION III	Chaired by **Prof. Margherita Mussi,** Dipartimento di Scienze dell'Antichità, Facoltà di Lettere e Filosofia, Università di Roma 'La Sapienza', Italy • Coordination • Communication
20.30	Dinner

Tuesday 18 May

9.30 SESSION IV	Chaired by Dr Nuria Sanz Rock Art communities in the framework of the World Heritage Thematic Programme
10.30 – 10.45	Coffee break
10.45 SESSION IV *(continued)*	Conservation and applied research for conservation
13.00 – 14.00	Lunch
14.00 SESSION V	Chaired by Dr Nuria Sanz Revision of the Draft Action Plan
16.15 – 16.30	Coffee break
16.30 SESSION VI	Chaired by Dr Nuria Sanz Final remarks and conclusions
20.30	Dinner

World Rock Art Archive Working Group

UNESCO Headquarters, Paris, 5 to 6 July 2010

Monday, 5 July

8.30 Welcome at main entrance of UNESCO Headquarters, 7 Place de Fontenoy, Paris 75007

9.00
OFFICIAL OPENING

Presentation of round table of participants

Dr Nuria Sanz, Chief, Latin America and the Caribbean Unit/General Coordinator of the Programme, UNESCO World Heritage Centre;
Introduction and Background to Discussions

General remarks

10.00 – 10.15 Coffee break

SESSION I

Prof Emmanuel Anati, Director, Centro Camuno di Studi Preistorici (CCSP), Capo di Ponte (Bs), Italy
Status of the archive of WARA

Prof. Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa
Synthesis of questionnaires submitted to rock art site managers in 2009.
State of the art of archiving Rock Art in Africa; Rock Art and contemporary indigenous production and recording methodologies of living heritage; San descendants, South Africa.

Discussion

13.00 – 14.00 Lunch

SESSION II

Dr Felipe Criado Boado, Dr María Cruz Berrocal, Consejo Superior de Investigaciones Científicas de España (CSIC), Santiago de Compostela/Madrid, Spain
The management of rock art information. proposal for a catalog of distributed repositories

Discussion

16.15 – 16.30 Coffee break

SESSION III

Prof. Benjamin Smith, Director, Rock Art Research Institute, Research Article Editor, South African Archaeological Bulletin, Associate Professor, University of the Witwatersrand, Johannesburg, South Africa
SARADA Project, Origins Centre
Prospective contribution from Africa *'25*

Discussion

20.00 Dinner

Tuesday 6 July

8.30
SESSION IV

Dr Ulf Bertilsson, President ICOMOS-CAR, Sweden
Documentation of Rock Art in Sweden. Participation of the European Commission in archiving European Prehistoric Art

Feasible prototype for a World Rock Art Archives database *'25*

Discussion

10.30 – 10.45 Coffee break

10.45
SESSION IV
(continued)

Mr Julián Martínez García, Instituto Andaluz del Patrimonio Histórico (IAPH), Spain
Rock Art Database of IAPH *'25*

Discussion
i. Methodologies of archiving Rock Art manifestations of World Heritage sites
ii. Management of archives, accessibility
iii. Layout of a future repository
iv. Archives and comparative analysis for World Heritage
v. Current collaboration between institutions
vi. Archives as a system of monitoring

12.00 – 13.00 Discussion *(continued)*

Interviews for website
Japanese Garden
UNESCO Headquarters

13.00 – 14.00 Lunch

14.00 – 16.15
SESSION V

Proposition of working models
1. Structure of cooperation
2. Feasible protocols
3. A common approach for a World Heritage Rock Art Archive

Interviews for website, Japanese Garden, UNESCO Headquarters

16.15 – 16.30 Coffee break

16.30
SESSION V

Elaboration of the recommendations to the World Heritage Committee

Final remarks and conclusions

Meeting close

20.00 Dinner

World Rock Art Archive Working Group

Rock Art Research Institute, University of the Witwatersrand
Johannesburg, South Africa, 17 to 19 November 2010

Wednesday 17 November

9.30 – 10.45 OFFICIAL OPENING

Prof. Benjamin Smith, Director, Rock Art Research Institute, on behalf of the University of the Witwatersrand, South Africa

Dr Nuria Sanz, General Coordinator of the HEADS Programme/Chief, Latin America and the Caribbean Unit, World Heritage Centre, UNESCO

Dr Webber Ndoro, Director, African World Heritage Fund, South Africa

OBJECTIVES OF THE MEETING WITHIN THE FRAMEWORK OF THE PROGRAMME OF THE WORLD HERITAGE CENTRE, UNESCO, INTRODUCTION OF WHC WEB PAGE

Dr Nuria Sanz, World Heritage Centre, UNESCO

INTRODUCTION OF PARTICIPANTS AND MEETING OVERVIEW

Prof. Benjamin Smith, Director, Rock Art Research Institute; University of the Witwatersrand, South Africa

10.45 – 11.00 Coffee break

11.00 – 13.00 SESSION I

OVERVIEW OF PROPOSED CASE STUDIES
Discussion, proposal and agreement of proposed case studies

South Africa
Prof. Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg,South Africa

Malawi, Chongoni Rock Art Area (WHL)
Prof. Benjamin Smith

Sweden, Rock Carvings in Tanum (WHL)
Dr Ulf Bertilsson, President ICOMOS-CAR; Project Manager, Swedish Rock Art Archives, Sweden

Brazil, Serra da Capivara (WHL)
Dr Niède Guidon and Dr Demétrio da Silva Mutzenberg, Fundação do Homem Americano, Brazil

Others. *Australia, Asia, North America, Arab States,* to be discussed

13.00 – 14.00 Lunch

14.00 – 16.00 Recommendations on the integration of intangible heritage in Rock Art case studies

Prof. Hugh Brody
Contemporary San heritage from the Kalahari and the ethics and practicality of inclusion in the archive

Prof. Janette Deacon
Historical San material, e.g. Blake and Lloyd, and the ethics and practicality of inclusion in the archive

Prof. Benjamin Smith
Farmer heritage of Malawi and the ethics and practicality of inclusion in the archive

Discussion

16.00 – 16.15 Coffee break

16.15 – 18.30 SESSION II

Identification of the practical steps needed to realize the completion of each case study
Metadata fields for each case study

Prof. Juan Vicent/Dr Maria Cruz Berrocal, Consejo Superior de Investigaciones Científicas de España (CSIC)
Contribution profile of metadata

Prof. Emmanuel Anati, Director, Centro Camuno di Studi Preistorici (CCSP), Capo di Ponte (Bs), Italy
Introduction of contents of profile

Dr Ulf Bertilsson
Standardization of a Rock Art inventory

Prof. Janette Deacon
Summary of Questionnaire

Discussion

20.00 Dinner

Thursday 18 November

9.30 – 11.00 Roundtable discussion on the nature of the World Archive
Identification of key components, budget considerations, management model, collaboration between institutions, partner institutions, links, preliminary content and formulation of a preliminary draft structure of cooperation, and tools for comparative analysis.

11.15 – 13.00 Coffee break

Working Group 1
Identification of components and implementing agents for Africa and Europe

Working Group 2
Identification of components and implementing agents for Asia, Australia and the Americas

13.00 – 14.00 Lunch

14.00 – 16.00 Report back of Working Groups

16.00 – 16.15 Coffee break

16.15 – 18.00 Visit to Origins Centre
Host. Prof. Benjamin Smith

Interviews with experts, Origins Centre

19.00 Cocktail and Dinner hosted by University of the Witwatersrand and AWHF

Friday 19 November

9.30 – 11.00 SESSION III

Agreement of practicalities and planning details of the international archive.
- Categories of information
- Management
- Timeframe
- Case studies implementation
- Funding
- Budget

Coffee break

11.15 – 13.00 Elaboration of draft structure

13.00 – 14.00 Lunch

14.00 – 15.30 Finalization of document

Meeting close

20.00 Dinner

African human origin sites and the UNESCO World Heritage Convention

National Museum of Ethiopia, Addis Ababa, Ethiopia, 8 to 11 February 2011

Monday 7 February

Arrival of participants in Addis Ababa

Tuesday 8 February

8.30 Transport from hotels to National Museum of Ethiopia

9.00 OPENING SESSION

Official Opening and Welcome

H. E. Mr Amin Abdulkedir, Minister of Culture and Tourism, Ethiopia

Representative of the Spanish Government in Ethiopia

Presentation of the objectives of the meeting in the framework of the HEADS Programme
Dr Nuria Sanz, General Coordinator of the World Heritage Thematic Programme
HEADS/Chief, Latin America and the Caribbean Unit, UNESCO World Heritage Centre

Regional priorities and cooperation in relation to Human Evolution research and conservation
Ms Graciela González Brigas, Programme Specialist, African World Heritage Fund, South Africa

Keynote speech. Outstanding Universal Value of Human Evolution in Africa
Prof. Yves Coppens, Collège de France, France

10.00 – 10.15 Coffee break

10.15 Roundtable, General Overview of HEADS

Chaired by Dr Nuria Sanz

Prof. Nicholas J. Conard, Tübingen University, Germany
Long-term cultural evolution and becoming human

Prof. François Sémah, Director, Department of Prehistory, Muséum national d'histoire naturelle, France
Science and HEADS objectives

Prof. Janette Deacon, Department of Anthropology and Archaeology, University of South Africa, Pretoria, South Africa; Research Associate, Rock Art Research Institute, Johannesburg, South Africa
Ethnological and anthropological parallels for the study of Human Evolution in Africa

Prof. Margarita Mussi, Department of Archaeological and Anthropological Historical Sciences of Antiquity, Università degli Studi di Roma 'La Sapienza', Italy
Methodologies to preserve the OUV of Human Evolution sites in Africa

General discussion

13.00 – 14.00 Lunch

14.00 SESSION I

Credibility

ICOMOS
Prof. Robin Dennell, Department of Archaeology, University of Sheffield, UK
Vision of ICOMOS on how to fill the gaps on the African World Heritage List related to Human Evolution

IUCN
Prof. Bernard Smith, School of Geography, Archaeology and Palaeoecology, Queen's University Belfast, UK
Criteria (viii) in the framework of Human Evolution for World Heritage

Geographies

Ethiopia

Dr Yonas Beyene, Head of Archaeology, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia
Mr Jara HaileMariam, General Manager, Authority for Research and Conservation of Cultural Heritage (ARCCH), Ethiopia
Dr Berhane Asfaw
Dr Zeresenay Alemseged
Dr Jean-Renaud Boissiere
Ethiopia and World Heritage, research and conservation

16.00 – 16.15 Coffee break

16.15

Prof. Anne Delagnes, PACEA (IPGQ Group), Université Bordeaux I, France
The Stone Age Record of Ethiopia in the East African context

Dr Marcello Piperno, Head of the Italian Archaeological Mission at Melka Kunture (Ministry of Foreign Affairs, Italy, and Università degli Studi di Roma 'La Sapienza', Italy)

Dr Riccardo Salvini

Introduction to Melka Kunture

20.00 Dinner at hotel

Wednesday 9 February

9.00 SESSION II

Geographies

Kenya

Dr Emma Mbua, Head of Department of Earth Sciences, Senior Research Scientist, National Museums of Kenya
Dr Mzalendo N. Kibunjia, Chairman, National Commission for Cohesion and Integration, Kenya
Dr Hassan Wario Arero, Director, Museums, Sites and Monuments, National Museums of Kenya
Dr Hosea Wanderi, National Museums of Kenya

Tanzania

Prof. Manuel Dominguez-Rodrigo, Department of Prehistory, Universidad Complutense de Madrid, Spain

10.00 – 10.15 Coffee break

10.15 Geographies *(continued)*

North Africa

Prof. Mohamed Sahnouni, Professor and Programme Coordinator, National Centre for Research on Human Evolution (CENIEH), Burgos, Spain; Research Associate, Stone Age Institute, Indiana University, Bloomington, Indiana, USA

Chad

Dr Andossa Likius, Department of Paleontology, University of N'Djaména Chad

South Africa

Prof. Ron Clarke, Professor and Reader in Palaeoanthropology, School of Anatomical Sciences, University of the Witwatersrand; Deputy Director of the Sterkfontein Research Unit, University of the Witwatersrand, South Africa

Prof. Deano Stynder, Department of Archaeology, Faculty of Science University of Cape Town, South Africa
Definition of a Human Evolution site. Case studies from South Africa

13.00 – 14.00 Lunch

14.00 SESSION III
Conservation and management

Ethiopia

Dr GebreKirstos Nurie
Dr Zeresenay Alemseged

South Africa

Dr Nonofho Ndobochani, Manager, Archaeology, Palaeontology and Meteorites Unit, South African Heritage Resources Agency

16.00 – 16.15 Coffee break

16.15 Human Evolution World Heritage sites: the role of applied research for conservation

Dr Christian Tryon, Assistant Professor of Anthropology, The Center for the Study of Human Origins, New York University, USA
Geology, stone technology and early populations of humans in Africa

Prof. Raymonde Bonnefille, Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE), France
Palynology and ancient environments

Prof. Karen Lupo, Archaeology and Evolutionary Anthropology, Washington State University, USA
Ethno-archaeology and human behavioral ecology

Dr Rudolph Kuper, Heinrich-Barth-Institut e.V., Cologne, Germany
Desert Environment. consequences for conservation of early archaeological sites

Prof. Fernando Diez Martín, Department of Prehistory, Universidad de Valladolid, Spain
Cultural itineraries for human evolution in/from Africa

General Discussion

20.00 Dinner at Italian Embassy, Addis Ababa

Thursday 10 February

9.30 Visit of National Museum

10.00 – 10.15 Coffee break

10.15 SESSION IV
Tanzania

Dr Jane Kessy, Conservator of Antiquities, Department of Antiquities, Tanzania

Geographic Working Groups

Thematic Working Groups

13.00 – 14.00 Lunch

14.00 Working Groups *(continued)*

16.00 – 16.15 Coffee break

16.15 Presentation of Working Groups

17.00 Conclusions and way forward

19.00 Official close

19.30 Official Dinner hosted by Ethiopian Authorities

Friday 11 February

8.00 Pick up from hotels

Visit to Melka Kunture, hosted by ARCCH and the Italian Archaeological Mission at Melka Kunture

13.00 – 14.00 Lunch

Visit to Melka Kunture *(continued)*

Return to hotel

20.00 Dinner at hotel

Saturday 12 February

Departure of participants

Meeting Agendas

Preparation of the Management Plan of Tchitundo-Hulu Rock Art Site

Virei, Angola, 14 to 23 March 2011

12-16 March — Arrival of participants in Luanda

17 March — Arrival of participants in Virei

OFFICIAL OPENING

Her Exc. Cândida Celeste, Governor of the Namibe Province, Angola
Ambassador of the Kingdom of Spain to Angola
Ms Graciela González Brigas, Representative, African World Heritage Fund
Ms Rosa Cruz e Silva, Minister of Culture, Angola

18 March
WORKING SESSION I

The World Heritage Convention and the inscription of properties on the UNESCO World Heritage List

19 March
WORKING SESSION II

Management of cultural heritage: management plans

20 March
WORKING SESSION III

Visit to the archaeological site, Tchitundo-Hulu

21 March
WORKING SESSION IV

Management plan of Tchitundo-Hulu Rock Art Site

22 March
WORKING SESSION V

Management plan of Tchitundo-Hulu Rock Art Site

23 March — Official close

24 March — Return to Luanda

Workshop carried out in Portuguese language

Trainers:
Prof. Albino Jopela, Universidade Eduardo Mondlane, Mozambique
Prof. Benjamin Smith, Rock Art Research Institute, University of the Witwatersrand, South Africa
Dr Charles Akibodé, Ministry of Higher Education, Science and Culture, Cape Verde
Ms Graciela González Brigas, African World Heritage Fund, South Africa
Mr Terry Little, Trust for Rock Art of Africa – TARA, Kenya

Published within the World Heritage Papers Series

1 World Heritage **manuals**
Managing Tourism at World Heritage Sites: a Practical Manual for World Heritage Site Managers
Gestión del turismo en sitios del Patrimonio Mundial: Manual práctico para administradores de sitios del Patrimonio Mundial
(In English) November 2002; (In Spanish) May 2005

2 World Heritage **papers**
Investing in World Heritage: Past Achievements, Future Ambitions
(In English) December 2002

3 World Heritage **reports**
Periodic Report Africa
Rapport périodique pour l'Afrique
(In English and French) April 2003

4 World Heritage **papers**
Proceedings of the World Heritage Marine Biodiversity Workshop, Hanoi, Viet Nam
February 25–March 1, 2002
(In English) May 2003

5 World Heritage **papers**
Identification and Documentation of Modern Heritage
(In English with two papers in French) June 2003

6 World Heritage **papers**
World Heritage Cultural Landscapes 1992-2002
(In English) July 2004

7 World Heritage **papers**
Cultural Landscapes: the Challenges of Conservation
Proceedings from the Ferrara workshop, November 2002
(In English with conclusions and recommendations in French) August 2004

8 World Heritage **papers**
Mobilizing Young People for World Heritage
Proceedings from the Treviso workshop, November 2002
Mobiliser les jeunes pour le patrimoine mondial
Rapport de l'atelier de Trévise, novembre 2002
(In English and French) September 2003

9 World Heritage **papers**
Partnerships for World Heritage Cities – Culture as a Vector for Sustainable Urban Development
Proceedings from the Urbino workshop, November 2002
(In English and French) August 2004

10 World Heritage **papers**
Monitoring World Heritage
Proceedings from the Vicenza workshop, November 2002
(In English) September 2004

11 World Heritage **reports**
Periodic Report and Regional Programme – Arab States 2000-2003
Rapports périodiques et programme régional – Etats Arabes 2000-2003
(In English and French) June 2004

12 World Heritage **reports**
The State of World Heritage in the Asia-Pacific Region 2003
L'état du patrimoine mondial dans la région Asie-Pacifique 2003
(In English) October 2004; (In French) July 2005

13 World Heritage **papers**
Linking Universal and Local Values: Managing a Sustainable Future for World Heritage
L'union des valeurs universelles et locales : La gestion d'un avenir durable pour le patrimoine mondial
(In English with the introduction, four papers and the conclusions and recommendations in French) October 2004

14 World Heritage **papers**
Archéologie de la Caraïbe et Convention du patrimoine mondial
Caribbean Archaeology and World Heritage Convention
Arqueología del Caribe y Convención del Patrimonio Mundial
(In French, English and Spanish) July 2005

15 World Heritage **papers**
Caribbean Wooden Treasures
Proceedings of the Thematic Expert Meeting on Wooden Urban Heritage in the Caribbean Region
4–7 February 2003, Georgetown – Guyana
(In English) October 2005

16 World Heritage **reports**
World Heritage at the Vth IUCN World Parks Congress
Durban (South Africa), 8–17 September 2003
(In English) December 2005

17 World Heritage **papers**
Promouvoir et préserver le patrimoine congolais
Lier diversité biologique et culturelle
Promoting and Preserving Congolese Heritage
Linking biological and cultural diversity
(In French and English) December 2005

18 World Heritage **papers**
Periodic Report 2004 – Latin America and the Caribbean
Rapport périodique 2004 – Amérique Latine et les Caraïbes
Informe Periodico 2004 – América Latina y el Caribe
(In English, French and Spanish) March 2006

19 World Heritage **papers**

Fortificaciones Americanas y la Convención del Patrimonio Mundial
American Fortifications and the World Heritage Convention
(In Spanish with selected papers in English) December 2006

20 World Heritage **reports**

Periodic Report and Action Plan – Europe 2005-2006
Rapport périodique et plan d'action – Europe 2005-2006
(In English and French) January 2007

21 World Heritage **reports**

World Heritage Forests
Leveraging Conservation at the Landscape Level
(In English) May 2007

22 World Heritage **reports**

Climate Change and World Heritage
Report on predicting and managing the impacts of climate change on World Heritage and Strategy to assist States Parties to implement appropriate management responses

Changement climatique et patrimoine mondial
Rapport sur la prévision et la gestion des effets du changement climatique sur le patrimoine mondial et Stratégie pour aider les États parties à mettre en œuvre des réactions de gestion adaptées
(In English and French) May 2007

23 World Heritage **papers**

Enhancing our Heritage Toolkit
Assessing management effectiveness of natural World Heritage sites
(In English) May 2008

24 World Heritage **papers**

L'art rupestre dans les Caraïbes
Vers une inscription transnationale en série sur la Liste du patrimoine mondial de l'UNESCO

Rock Art in the Caribbean
Towards a serial transnational nomination to the UNESCO World Heritage List

Arte Rupestre en el Caribe
Hacia una nominación transnacional seriada a la Lista del Patrimonio Mundial de la UNESCO
(In French, English and Spanish) July 2008

25 World Heritage **papers**

World Heritage and Buffer Zones
Patrimoine mondial et zones tampon
(In English with French summaries) March 2009

26 World Heritage **papers**

World Heritage Cultural Landscapes
A Handbook for Conservation and Management
(In English) November 2009

27 World Heritage **papers**

Managing Historic Cities
Gérer les villes historiques
(In English and French) September 2010

28 World Heritage **papers**

Navigating the Future of Marine World Heritage
Results from the first World Heritage Marine Site Managers Meeting
Honolulu, Hawaii, 1-3 December 2010
(In English) May 2011

World Heritage papers

United Nations
Educational, Scientific and
Cultural Organization

Organización
de las Naciones Unidas
para la Educación,
la Ciencia y la Cultura

World Heritage
Convention

Convención del
Patrimonio Mundial

For more information contact:
UNESCO World Heritage Centre

7, place de Fontenoy
75352 Paris 07 SP France
Tel : 33 (0)1 45 68 15 71
Fax : 33 (0)1 45 68 55 70
E-mail : wh-info@unesco.org
http://whc.unesco.org

Design by RectoVerso