

Session C01

Thursday, 7 September 2006 / Jeudi, 7 Septembre 2006

*Room 6.1.53, Faculty of Science, Lisbon University
Salle 6.1.53, Faculté de Science, Université de Lisbonne*

Status of Prehistoric studies in the twenty first century in India

État de l'art des études préhistoriques au XXI^e siècle en Inde

organized by / organisé par

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SESSION'S ABSTRACT

India has amassed a wealth of data on prehistory in the last century. Still major part of it is with focus on regional characters. Vital information on dates is sparse. So is about the makers of the cultures in the subcontinent. A colloquium with the participation of both senior and young prehistorians from India will bring into proper perspective the work so far done. This will point out the limitation and throw lights on the methodology and future programme for clearer understanding of the situation. The colloquium will be open to other participants who may like to take up work in the subcontinent in future and those who would share their experiences.

RÉSUMÉ DE LA SESSION

L'Inde a accumulé une large quantité de données sur la préhistoire dans le siècle dernier. Une large partie de celle-ci se concentre sur des caractères régionaux. Des informations vitales sur les dates sont éparées. Un colloque avec la participation soit de préhistoriens seniors que jeunes de l'Inde, mettra en perspective les travaux accomplis jusqu'à présent. Ceci identifiera les limitations et illuminera la méthodologie et programme futur pour une compréhension plus claire de la situation. Le colloque sera ouvert à d'autres participants qui veulent engager des travaux dans le sub-continent dans l'avenir, et à ceux qui veulent partager leurs expériences.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

09:00 **Opening / Overture**

09:20-09:40 G. C. MOHAPATRÁ (Chandigarh, India)

C01-01

Miles and Milestones in the Indian Prehistoric Panorama.

- 09:40-10:00 Vidula JAYASWAL (Varanasi, India)
C01-02 **Prehistoric India: Assessment & Prospects in the Twenty-first Century.**
- 10:00-10:20 Narhar RAJAGURU (Pune, India)
 Sheila MISHRA (Pune, India)
 Sushama G. DEO (Punte, India)
C01-03 **Palaeoenvironment of Prehistoric sites (Acheulian to Upper Palaeolithic) in Western India: A Geoarchaeological Approach.**
- 10:20-10:40 Asok DATTA (Calcutta, India)
C01-04 **Understanding Acheulian Culture in the Gandheswari river Valley.**
- 10:40-11:00 **Break / Pause**
- 11:00-11:20 Ravindra KORISSETTAR (Karnatak, India)
C01-05 **Palaeolithic Research in India: Planning Ahead.**
- 11:20-11:40 Manoj KUMAR SINGH (Delhi, India)
C01-06 **Is study of Stone Age Cultures dead in India?**
- 11:40-12:00 Krishnendu POLLEY (Kolkata, India)
 Ranjana RAY (Kolkata, India)
C01-07 **An experimental study on the manufacturing process of the Lower Palaeolithic implements from quartz nodules.**
- 12:00-12:20 **Break / Pause**
- 12:20-12:40 Parth R. CHAUHAN (Parlin , U.S.A.)
 Rajeev PATNAIK (, India)
 Sheela ATHREYA (Texas, U.S.A.)
C01-08 **Recent Palaeolithic investigations in the Narmada Basin, central India.**
- 12:40-13:00 Rakesh PRAKASH PANDEY (Jiw Aji, India)
C01-09 **Quaternary Environment & Prehistory of Northern Madhya Pradesh, India.**
- 13:00-14:30 **Lunch / Déjeuner**
- 14:30-14:50 P. RAJENDRAN (Thiruvananthapuram, South India)
C01-10 **Studies on a human skull fossil entombed within the ferricrete.**
- 14:50-15:10 A. R. SANKHYAN (Kolkata, India)
C01-11 **On the status of Indian Hominoid and Hominid Fossils.**

- 15:10-15:30 Bishnupriya BASAK (Calcutta, India)
C01-12 Prehistoric Research in Bengal on the threshold.
- 15:30-15:50 Subrata CHAKRABARTI (Santiniketan, India)
C01-13 Progress of Prehistory in Bengal: a cultural overview.
- 15:50-16:10 Jagannath PAL (Allahabad, India)
C01-14 The Neolithic Culture in the Northern Vindhyas and the Middle Gangetic Plain.
- 16:10-16:30 Vasant SHINDE (Pune, India)
Shweta SINHA
C01-15 Origins of Agricultural Communities in Asia and the Climatic Factors.
- 16:30-16:50 **Break / Pause**
- 16:50-17:10 Kishor K. BASA (Bhopal, India)
D. SAHOO (Bhubaneswar, India)
B.K. MOHANTA (Bhopal, India)
C01-16 Neolithic Potteries of Orissa, Eastern India.
- 17:10-17:30 Hari Chandra MAHANTA
C01-17 Investigating the Neolithic Cultures of Meghalaya, Northeast India: A New Study of the Garo Hills Sites.
- 17:30-17:50 Himanshu PRABHA RAY (New Delhi, India)
C01-18 The Archeology of Megaliths in Peninsular India: future research agenda.
- 17:50-18:10 Falguni CHAKRABARTY (Medinipur, India)
C01-19 Dhokra Craft Of West Bengal: a legacy of Indian Archaeometallurgy.
- 18:10-18:30 Alok KUMAR KANUNGO (Pune, Maharashtra, India)
C01-20 Representation of Ethnographic Reality through Line Drawings & Sketches.

ABSTRACTS / RÉSUMÉS

- C01-01** G. C. MOHAPATRÁ (Bhopal, India)
Miles and Milestones in the Indian Prehistoric Panorama.

ABSTRACT: Hominid activities in India during prehistory had been as variegated as its landscape. Data collected since about a century reveal presence of all stages of prehistoric cultural evolution. From Palaeolithic to Metal Age Urban Culture, all stages of techno-economic evolution is traceable but

not in a unified common sequence. There are regional angularities accentuated by location, resource, accessibility etc., beside the past and the present human neglect. While prehistoric research everywhere is continuously opening up new vistas of knowledge, progress in this regard in India is somewhat slow but not unsteady. A review of the progress of research in Indian Prehistory during the last century projects its status as: - "at the threshold of a dynamic take off in the current global perspective". Data available now on:

- (a) hominid fossils from the Narmada valley;
- (b) absolute dates of some of the Lower and Middle Pleistocene deposits relevant to the Palaeolithic succession from the Acheulian till the Upper Palaeolithic;
- (c) the missing early Holocene Mesolithic;
- (d) the fascinating jumble of the peasant-pastoralist cultures along with their changing spatial and temporal hue at the dawn of the Metal-Age, demand critical attention.

Alongside taking stock of what is missing, one cannot afford to lose sight of the geo-physical dimensions of the subcontinent's regionalism. The strategy for the future should be identifying diversities in the ecological parameters when the cultures display departures from the conventional pattern. Probably in the coming years of the century that just begun, critical look at the reason for differences, departures, dearths, voids etc. would be as meaningful as new discoveries, adding better mileage to the Indian Prehistoric research as never before.

C01-02 Vidula JAYASWAL (Varanasi, India)

Prehistoric India: Assessment & Prospects in the Twenty-first Century

ABSTRACT: Similar to the history and growth of archaeology, the discipline of Stone Age studies in India is governed primarily with the changing aims of investigations. To mention some of the main stages in chronological sequence are – attempt to finding the tools and discovering Stone Age sites, – to locating primary contexts of habitations, – recording the details of palaeoclimatic conditions, – the growing tendency to use scientific methods for the interpretation of the Stone Age data etc. Since the canvass of the proposed theme of this paper is very vast, it may not be possible to provide a full narrative account of all the researches, which have been carried out so far, in this continent. Thus, an attempt is first made to demonstrate the stage where Indian Prehistory has reached today, through important selective examples. And, the prospective problems to be taken into account for the prehistoric researches for the twenty-first century, thereafter. Since all the three stages of Stone Age – the Palaeolithic, Mesolithic and Neolithic, vary from one and other considerably, it is imperative to discuss all these stages individually for a meaningful assessment.

C01-03 Narhar RAJAGURU (Pune, India)
Sheila MISHRA (Pune, India)
Sushama G. DEO (Punte, India)

Palaeoenvironment of Prehistoric sites (Acheulian to Upper Palaeolithic) in Western India: A Geoarchaeological Approach.

ABSTRACT: In the last 25 years a few multidisciplinary studies involving disciplines of geology, geomorphology, geochemistry and geochronology have been carried for investigating prehistoric sites like Didwana (Thar Desert), Madhuban (Saurashtra) and Bori-Morgaon (Upland Maharashtra). Didwana has preserved Acheulian, Middle Palaeolithic and Upper Palaeolithic artefacts in playa and dune and fluvial sediments while at Madhuban, Acheulian artefacts occur in reddish fossil soil (Terra Rosa) developed within two generations of 'milliolite formation' of littoral origin. Acheulian artefacts are found in semi-primary context in alluvial deposits containing lenses of acidic volcanic ash (Tephra) at Bori and Morgaon in Upper Bhima basin. Acheulian artefacts also occur in semi-primary context in alluvial deposits at Nevasa.

On the basis of a few absolute dates, from Bori ($Ar^{39}-Ar^{40}$), Nevasa (Th-Ur series), and Didwana (TL), it appears that Acheulian in Western India is at least 600,000 years old or even earlier while Middle and Upper Palaeolithic at Didwana are around 120,000 and 35,000 years old.

Acheulian at Didwana, Bori and Morgaon is associated with climate drier than today, while the site of Madhuban with Late Acheulian artefacts is associated with climate wetter than today. Middle Palaeolithic and Upper Palaeolithic sites of Didwana are linked with ameliorated climate in otherwise prolonged phase of aridity of the Late Pleistocene in the Thar desert.

Briefly, Stone Age hunter-gatherers have adapted to arid/semi-arid climate since the basal Middle Pleistocene with short spells of relatively wet climate, particularly around 120 ka and 35 ka. Volcanic ash fall during the Early Pleistocene was a catastrophic event and might have temporarily affected Acheulian culture in Upland Maharashtra. The site of Madhuban is the only site in Western India preserved in the context of sea level changes and approachable today only during the low tide.

C01-04 Asok DATTA (Calcutta, India)

Understanding Acheulian Culture in the Gandheswari river Valley.

ABSTRACT: The Lower Palaeolithic in India is characterized by two cultural or technological traditions, the Soanian and the Acheulian (Misra, 2001). The Soanian was confined in north India and Pakistan while the Acheulian cultural remains have been reported from a vast area covering almost from the Siwalik in the north to Chennai in the south (Paddyaya, 1984, Misra 1989) and from Gujrat in the west to West -Bengal in the east.

The Soanian is characterized by pebble tools (Chopper/Chopping), Scrapers, Flakes, Blades and Cores (Misra, 2001). The Acheulian on the other hand is identified on the basis of Handaxes, the shape of which varies from Pear, Ovate, Triangular, Cordate, Lanceolate and transitional forms between them. They are often described as "all purpose tools". But its actual functions are often fraught with contradictions. The earliest known handaxe from definite stratigraphical context has been dated to 1.3 million years old while its vertical sequence does not confirm any evolutionary change with time (Wymer, 1982). In fact, the best symmetrical forms are found mixed with the crudely chipped handaxes (Pappu, 2004).

The lower Palaeolithic in West -Bengal is known as Acheulian culture being characterized by Handaxe, Cleaver, Pebble tools (Chopper Chopping), Scraper, Flake and Core etc. In fact, West-Bengal is the Eastern most extension of Acheulian Culture in India. It did not move further east due to the presence of vast alluvium land (Bengal basin area which comprises more than 63% of the total land mass of west -Bengal). Naturally, the Acheulian culture was confined to the old land mass of south-western part of the state comprising mostly the districts of Bankura, Midnapur, Purulia etc In this region, Gandheswari river valley is one of the most important focal area of the Acheulian culture in west-Bengal . The present paper attempts to understand the Acheulian Culture of Gandheswari river valley in terms of settlement system approach.

C01-05 Ravi KORISSETAR (Karnatak, India)

Palaeolithic Research in India: Planning Ahead

ABSTRACT: This paper emphasizes on the identification of landmarks in the Indian Palaeolithic research and evaluates our progress of understanding against the background of achievements in the larger Old World Palaeolithic archaeology. The Indian Palaeolithic archaeology betrays striking response to changing emphases in Old World developments as well as new methods of investigations. Over the years the Indian Palaeolithic archaeology has endeavoured to establish a regional identity for itself and has developed its own set of methodologies and frames of reference.

One is struck by the lack chronologically resolution relating to the initial colonization of south Asia and the well preserved fossil evidence of hominids. These are the two areas of great concern to the archaeologists of the 21st century in India.

During the last fifty years, however, there has been considerable refinement in our understanding of the Palaeolithic development in the Indian Subcontinent. While during the early days explorations dominated that was crucial to defining the area covered by the Palaeolithic settlements and identify the gaps in the documentation of Palaeolithic succession in India. Since the 1950s problem oriented programmes came to be initiated. Resolving the issues such as terminology in Indian prehistory, describing the characteristics of the Middle and Upper Palaeolithic and excavation of selected Palaeolithic sites, and the reconstruction of the environmental background was of prime importance.

Success in these areas goes to the credit of a large number of Institutions and individual scholars in India.

At the turn of the 20th century I had the most exciting opportunity to bring out a series of four volumes entitled *Indian Archaeology in Retrospect*, with the help of colleagues in India and abroad. We notice that the Indian Palaeolithic has been considerably well defined and understood. However the age old problems of chronology of initial occupation and the later emergence of anatomically modern humans and the latter's role in the shaping of the late Middle Palaeolithic and Upper Palaeolithic appear to engage our serious attention.

Against this background the papers presents the strategies for the 21st century Palaeolithic archaeology in India.

C01-06 Manoj KUMAR SINGH (Delhi, India)

Is Study of Stone Age Cultures Dead in India?

ABSTRACT: The existence of Stone Age researches and teachings are going to be extinct from India in twenty first century. We have at least 40 Anthropology and Archaeology departments, where one can learn about Stone Age Cultures, but only one or two departments have specialist for this subject, and in near future, very soon, they will retire. Thus, the status of studies of Stone Age Cultures in India is really thinkable, because in younger generation nobody is working on this ever neglected field of research.

This paper deals with how and why it happened.

C01-07 Krishnendu POLLEY (Calcutta, India)
Ranjana RAY (Calcutta, India)

An experimental study on the manufacturing process of the Lower Palaeolithic implements from quartz nodules

ABSTRACT: Experiments with lithic technology helps Prehistorians to understand the nature and the evolution of technology manifested by the stone age people. Sometimes it also helps to understand the related behaviours like choice of raw materials as well as the biological abilities of prehistoric people. The latter directly or indirectly helped the process of evolution of culture. In India not much work is done on this aspect. Quartz is found to have been used in large quantity for manufacturing Lower Palaeolithic tool in Eastern part of India. This has been noticed both in the recent field work by the author in the Eastern Plateau region as well as in the collection made by the earlier Prehistorians from this region, which are stored in the prehistory museum of the department of Anthropology, Calcutta University. An experimental study on the manufacturing process of the Lower Palaeolithic implements from quartz nodules is carried out in order to shed more light on Lower Palaeolithic technology as well as related behaviours of the Lower Palaeolithic people.

C01-08 Parth R. CHAUHAN (Parlin, U.S.A.)
Rajeev PATNAIK (India)
Sheela ATHREYA, (Texas, U.S.A.)

Recent Palaeolithic investigations in the Narmada Basin, central India.

ABSTRACT: The Narmada Valley in central India has been known for its rich record of vertebrate fossils and Palaeolithic sites since the 19th century. Recent fieldwork (2 seasons) in the central portion has provided new geological and archaeological insights. Based on the order of superposition, erosional unconformity, the nature of sediments, sedimentary structures, pedogenic characters, the presence of tephra and palaeomagnetic signatures, these Quaternary deposits have been divided into seven formations, namely Pilikarar, Dhansi, Surajkund, Baneta, Hirdepur, Bauras and Ramnagar. These formations range from the Lower Pleistocene to the Holocene in relative age. Hominin occupation in direct association with the Narmada River appears to have taken place since, at least the early Middle Pleistocene, but probably much earlier.

The known Palaeolithic evidence comprises a continuous sequence of sites and find-spots ranging from the Lower Palaeolithic to the Chalcolithic phases of techno-chronology. Most assemblages found

closer to the main river are low in artifact density, while rich factory and workshop sites are located away from the river. Within the fluvial sediments of the basin, both primary and secondary occurrences of artifacts and fossils have been well-documented (although a butchery site has never been convincingly reported). A change in preference for raw material type is noted, where older assemblages (Lower and Middle Palaeolithic) are made mostly on quartzite, whereas younger assemblages are produced on chert, chalcedony, or quartz.

Despite the comparatively older age of the sediments at Surajkund and Dhansi, equally old lithic assemblages (e.g., Mode I, Early Acheulian) were *not* evident. The only Early Acheulian evidence comes from Pilikarar, which is significantly away from the main fluvial deposits. This absence or low profile of early assemblages close to the river (particularly at Dhansi) is probably due to the limited spatial distribution of such sediments, when considering that early Middle and late Lower Pleistocene Palaeolithic sites are known from elsewhere in the Indian subcontinent. An alternative explanation is that the sediments or the sequences at these localities are not as old as previously interpreted, since a convincing chronological framework and 'stratigraphical consistency' is still lacking for the entire Narmada sedimentary basin.

C01-10 P. RAJENDRAN (Trivandrum, India)

Studies on a human skull fossil entombed within the ferricrete.

ABSTRACT: A suspected faunal fossil was discovered on 14 th Oct. 2001 within the ferricrete at Odai in Bommavarpalayam in Villupuram district of Tamil Nadu in South India. In order to prove the existence of a faunal fossil within the ferricrete it was subjected to various medical methodology such as X-ray, 2 D scan, 3 D scan, Photo Microscopy, and Scanning Electron Microscopy. X-ray had identified, for the first time, the presence of a faunal fossil within the ferricrete. Subsequently 2 D scanning was applied, and could distinguish the human cranium and the outer ferricrete. Then with the 3 D scanning hundreds of images were taken and they had identified it as a human baby skull. It was further studied under SEM to understand various characteristics in detail and had well recorded fossilized cranial bones, neurons, veins, brain tissues, RBC cells etc. In this contest the absence of any micro organisms within the skull is significant. In order to make one to one comparison a foetus skull was examined by Photo Microscopy and it had again analyzed under SEM. These studies proved beyond doubt that the entombed fossil was of a human baby skull, and named as 'Laterite Baby'.

The perfect nature of the fossilized RBC, neurons, veins, brain tissues etc in fact shows a unique nature of preservation of the fossil within the ferricrete. This might be due to the peculiar nature of the cyst formation over the fossil and also due to the absence of any micro organisms within the fossil. It has proved, for the first time, that the organic matter within the sediment was retained in fossil form even after the ferricretization of the matrix. Integrated multidisciplinary studies are to be undertaken to unravel hither to unknown factors responsible for such a fossilization and preservation of the organic remains within the ferricrete.

C01-11 A. R. SANKHYAN (Kolkata, India)

On the status of Indian Hominoid and Hominid Fossils .

ABSTRACT: Palaeoanthropological researches in India came to a slow pace after 1980s when the palaeoanthropologists took the hominoid molecular evidence as sacrosanct and restricted the existence of the last common ancestor (LCA) of the great ape-hominid lineage, as well as that of the *Homo sapiens* to African continent. The consequence of the "molecular vision" was an assault on *Ramapithecus* and *Sivapithecus* as well as on the Asian *Homo erectus*, denying their contributions to the Plio-Pleistocene hominid and to the *Homo sapiens* ancestry, respectively. Despite of this, we still are away from identifying the anatomically appropriate Last Common Ancestor of the "African Ape-hominid" clade and are also unable to prevent the seekers of the "Multiregional Origins" of modern *Homo sapiens* in view of the wider distribution of the "archaic" *Homo sapiens* in the Old World. This communication comments on some of these points in the light of new fossil evidences, especially from South Asia.

C01-12 Bishnupriya BASAK (Calcutta, India)

Prehistoric Research in Bengal on the threshold.

ABSTRACT: The core region of Chotanagpur plateau comprising the modern state of Jharkhand, the south-eastern margins of the plateau or the western upland in West Bengal and northern Orissa have been extensively worked upon since the second half of the 19th century. Initiated by British geologists who made discoveries of 'chipped stones' and 'flakes' in the course of their mining surveys, prehistoric research in Bengal in the next century exposed the western upland (comprising Purulia and the western parts of Birbhum, Bankura, Burdwan and Midnapur) as a potential region for further studies. We have traversed a long way since then in terms of changing perspectives towards past cultures. Some lacuna is apparent in the earlier studies, which nevertheless form extremely valuable sources for information. I shall try to explain the changing status of prehistoric research in Bengal by two case studies.

Tarafeni valley in north-west Midnapur was selected as part of a Ph.D dissertation (1992-1997) for a more holistic understanding of past human behaviour. By adopting a regional approach I undertook an intensive survey of microlithic sites. The context of the sites was studied from a multidisciplinary perspective that revealed new information on the late Quaternary palaeoenvironment and a chronology of Terminal Pleistocene was proposed for the sites. Working within a functionalist processual framework I aimed at understanding past strategies of land use adopted to cope with the environment. Thus instead of doing a stereotyped cataloguing of 'finished tools' I took the entire assemblage as a unit of analysis which threw light on processes of raw material procurement, manufacture, use, maintenance and discard of tools. The methodology adopted here was built on similar studies of lithics carried out in other parts of the world. Ethnoarchaeological and ethnographic case studies of modern day hunter-gatherers were used as conceptual tools to gain an insight into past human behaviour. (...)

C01-13 Subrata CHAKRABARTI (Santiniketan, India)

Progress of Prehistory in Bengal: a cultural overview.

ABSTRACT: Just two years after the discovery of the first Palaeolithic tools in India at Pallavaram, near Madras, in 1863, the first Lower Palaeolithic hand axe was discovered in Bengal at Kunkune, about 19km north-west from Govindapur in the district Bankura in 1865. This was followed by discovery of a few more Palaeolithic tools from the area around the Biharinath hill complex in Northwest Bankura and in the Ranigunj cold-field area in lateritic context in Burdawan district of Bengal. Unfortunately, the significance of the first discovery of Palaeolithic in Bengal did not receive due attention, and only in the 1940s some attempts have been made to understand the Stone Age past of Bengal but these were intermittent and sporadic in nature, and no further serious research in investigating the Stone Age Prehistory of Bengal was undertaken till the 1960s.

The prehistory in Bengal came of age in the 1960s and grew into a conscious and scientific discipline due mainly to Professor Dharani Sen and his pupils. Explorations and to a limited extent, excavations were carried out by them. At the same time with the work undertaken by the Archaeological Survey of India and the Directorate of West Bengal Archaeology did yield interesting results. This not only resulted in new discoveries of more sites from Bengal but it also made possible to look again and anew at the earlier discoveries which paved the way for an integrated approach to Prehistory in Bengal. This has been manifested in the research designs and the field-researches conducted in parts of Bengal, mainly Upland Bengal, between 1970 and 1990. However in research designs the site-oriented approach to culture studies remained dominant within a broader framework of empiricism and positivism.

In the last decade of the last century in prehistoric studies in Bengal deterministic approach led to a consideration of research design of distributional archaeology in understanding of culture process of the past hunter-gatherers. (...)

C01-14 Jahannath N. PAL (Allahabad, India)

The Neolithic Culture in the Northern Vindhya and the Middle Gangetic Plain.

ABSTRACT: The archaeological excavations in northern Vindhya and the middle Gangetic plains have revealed the evidence of first farming culture going back to 6th-5th millennium B.C. The culture is marked by hand made ceramic industries (characteristic feature being the cord impressed pottery), microliths, ground and polished Neolithic celts, bone tools, domesticated and wild animal bones and cultivated and wild plant remains. The area has emerged as one of the earliest centers of rice

cultivation. The Neolithic settlements are marked by hut floors. We propose to present the status of this first farming culture of northern India as revealed from recent excavations especially at Tokwa, Jhusi, Hetapatti, Lahuradeva, etc.

C01-16

Kishor K. BASA (Bhopal, India)
D. SAHOO (Bhubaneswar, India)
B. K. MOHANTA (Bhopal, India)

Neolithic Potteries of Orissa, Eastern India

ABSTRACT: The Neolithic culture of Eastern India in general and Orissa in particular is not known as much as that of South India, North India including Ganga valley and Northern Pakistan. Hence, the paper aims at emphasizing the Neolithic cultures of Orissa- a province situated as a bridge between North and South India- by laying stress on potteries. The objectives of the paper are the following:

1. To discuss the history of research on Neolithic cultures in Orissa in order to give proper perspective.
2. To compile the evidence of pottery on the basis of exploration and excavation by other scholars.
3. To provide an account of pottery found from various Neolithic sites of Orissa as a result of exploration and trial trench excavation by our group.
4. To compare such potteries with those of some major sites in Eastern India.

It is relevant to mention here that the first Neolithic site was reported in Orissa during 1920s at Baidyapur. The first systematic excavation of a Neolithic site in Orissa was done in 1961 at Kuchai which is one of the earliest sites to excavated in eastern India. Besides describing the ware in terms of typology and technology, the variation in the nature of archaeological deposit between coastal Neolithic sites and such sites in the interior hilly area will also be discussed.

C01-17

Hari C. MAHANTA

Investigating the Neolithic Cultures of Meghalaya, Northeast India: A New Study of the Garo Hills Sites.

ABSTRACT: Many Neolithic sites have been discovered in Meghalaya since 1960's. Most of the sites are located in the West Garo Hills district of Meghalaya. As one of the most extensively excavated Neolithic site in West Garo Hills, the Selbalgre site has long been regarded as the representative of the Neolithic culture of Meghalaya in general. Its material cultures have been frequently used by many scholars to address the relationships between Northeast India and Southeast Asia, usually with a broader perspective to tracing the early dispersal of Austronesian people. Over the past several years fresh explorations have been done in the area and also conducted one excavation at the site Selbalgre. By employing new excavation techniques and more rigorous sampling strategies, our excavations have found a significant amount of new information in relating to the subsistence and settlement pattern, chronology, dispersal of Neolithic man etc. These new data allow us to re-examine many important issues in the Neolithic archaeology of Northeast India.

C01-18

Himanshu PRABHA RAY (New Delhi, India)

The Archeology of Megaliths in Peninsular India: future research agenda.

ABSTRACT: Megalithic monuments are conspicuous features of the landscape of peninsular India and a survey of published literature indicates the existence of around 2200 sites, including cemeteries, habitations and habitation cum burial sites. Starting with the work of early antiquarians in 1823 the authorship and date of these megalithic monuments has continued to be a vexed problem in Indian archaeology, as well as the nature of intra-site and inter-site interaction. Chronologically, the Iron Age megalithic sites span several centuries from 1200 BC to 300 AD and extend across all regions of peninsular India with the exception of the western Deccan encompassing parts of the present states of Maharashtra and Gujarat. Nor are they evenly distributed. Instead there is a concentration of sites in Karnataka followed by those in Tamilnadu further south. As a tradition of commemorating the dead, the practice of setting up memorial stones continued into the historical period.

A survey of the material culture associated with megalithic sites indicates an increase in conflict and aggression within the Iron Age communities of peninsular India in the first millennium BC, as compared to earlier levels. In addition, the manpower required for the construction of megalithic monuments indicates mobilisation and organisation of labour by these societies. The variability in the scale of the megaliths ranging from simple urn burials at one end of the scale to large stone circles enclosing elaborate chambers at the other points towards a multitude of locally oriented systems of varying scale and geographic extent.

This paper is an attempt and re-evaluating the trends that have emerged in the study of megalithic sites in peninsular India and presenting alternative methodologies that may be adopted for a meaningful approach to the subject.

C01-19

Falguni CHAKRABARTY (Madinipur, India)

Dhokra Craft Of West Bengal: a legacy of Indian Archaeometallurgy.

ABSTRACT: Metallurgy in Indian subcontinent dates back to circa 6000 B.C. with occurrence of a few copper objects, from the early phases of Mehrgarh, Pakistan. However, in prehistoric times use of a more or less permanent mould to cast a number of articles, one after another, was unknown. One of the earliest methods of casting metal objects was to make a wax model of the article that was replaced by the molten metal, this being technically known as the lost wax or *cire perdue* process. The statue of the dancing girl, unearthed at Mohenjodaro dated around third millennium B.C. with intricate but elegant carving, shows that the *cire perdue* process had already been perfected.

This process has presently been highly marginalized globally by the process of industrialization. The various tribal communities, however, living in different regions of India even today continue to practice this prehistoric craft for living. These craftsmen and their craft are respectively known by different names in different regions of India. One such community living in West Bengal, a state in India, is known as Dhokra and the craft they follow is regionally known by the same name of their community.

With this background, the present paper aims to highlight the variations of technology, raw materials and types of produced items found among the Dhokra communities living in different districts of West Bengal. The paper, primarily based on ethno-archaeological approach, could be helpful to get some ideas about socio-cultural backdrop necessary for the continuity of a particular prehistoric trait on the one hand and the variation of the same trait in the context of time and space on the other.

C01-20

Alok KUMAR KANUNGO (Pune, India)

Representation of Ethnographic Reality through Line Drawings & Sketches

ABSTRACT: Ethnographic studies have become synonymous with visual study and in recent past every means of visual media is being used in these studies and even special courses and training are being offered. Ethnographic study in its true sense started in India in the 18th century and picked up its momentum in the late 19th and early 20th centuries. With the European colonization of India, the land of diversity attracted many ethnographers from around the world in general and from Britain in particular for studying the society and people. Studying the tribes of India, more particularly those of the eastern and north-eastern India was not only an administrative necessarily but it also became an academic fashion among the British administrators, most of whom later joined as anthropology professors (J.H. Hutton, J.P. Mills, Christoph von Furer-Haimendorf etc.) in various universities/institution in Britain. In other words India was a laboratory for anthropological studies in the late 19th and early 20th centuries and some of the masterpieces on Indian tribes were written during this period. There was no visual media available and even camera was just getting introduced. Tribes in hilly areas were hostile to any outsider, let alone ethnographers. Still many works and publications of this period on Indian tribes were probably more visually documented than those of today. The visual representation was done with the help of line drawings and sketches. Either the ethnographers themselves were good artists (John Butler & R.G. Woodthorpe) or were being accompanied by an artist colleague (Major Strange was accompanying E.A. Samuells during the later's study of the Juangs). There are even cases when ethnographers have tried to draw/sketch more than what they wrote (Henry Balfour on Naga). These drawings of colonial period revealed the people of India when no other visual media was available. The individuals in the drawings are not shown as static but in a dynamic manner appropriate to the context. Minute details of the individuals and their dress and ornaments are shown so that an experienced person can make out cultural items which were in use

and to which community they belonged. The sketches are so detailed and authentic that these, many a time, interpret a society better than the written documents. These sketches have not received the attention from the anthropological community which they deserve. The present paper makes an attempt in that direction with the help of specific examples.

Session C02

Friday, 8 September 2006 / Vendredi, 8 Septembre 2006

*Room 12.06, Faculty of Law, Lisbon University
Salle 12.06, Faculté de Droit, Université de Lisbonne*

Brazilian Archaeology: To Whom Belongs This Past?

Archéologie Brésilienne: a qui appartient ce passé ?

organized by / organisé par

Erika González	UNICAMP, Brazil – arqueo@terra.com.br
Luiz Oosterbeek	Polytechnic Institute of Tomar– loost@ipt.pt
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Wagner Bornal	Fundação Cultural de Jacare, Brazil
Gerson Mendes	S. Paulo University, Brazil

SESSION'S ABSTRACT

Although archeological scientific researches in Brazil are quite recent (no more than 70 years), a considerable amount of data and knowledge regarding Brazilian pre-history and history has been produced. Nevertheless, like other countries in which national society has been formed through a rupture between native Indian societies and the European colonizer, latter added by African cultures, actual society has low identification of archaeological contexts as been its "own history".

Therefore, recent initiatives of Public Archaeology in Brazil indicate that there is not only a single public to be considered, but several publics, each one with different levels of acknowledgment, appropriation and valorization of their cultural heritage.

With this objective, the present colloquium aims to present archaeological studies done in different social contexts (quilombos, Indian lands and traditional communities), discussing aspects related to the identity of actual groups about their past heritage. On the other hand, the treatment and formal recognition of the Brazilian state regarding its own past will also be discussed (What is cultural heritage in Brazilian legislation? What deserves to be preserved? What are the initiatives valued with public funds to research and conservation?). Finally, the colloquium will focus on debating Brazilian Archeology social responsibility in the contribution to the strengthening of linkages with the past, promoting the enforcement of its cultural heritage and consequent preservation of material features.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

- 14:30 **Opening / Ouverture**
- 14:30-14:50 Erika Robrahn-GONZÁLEZ (Brazil)
C02-01 **Avaliação sobre a Arqueologia Brasileira.**
- 14:50-15:10 Pedro Paulo Abreu FUNARI (Brazil)
C02-02 **Avaliação de estudos arqueológicos realizados em sítios históricos brasileiros de comunidades afro-descendentes.**
- 15:10-15:30 Gerson Levi da Silva MENDES (Brazil)
C02-03 **Análise de pesquisas arqueológicas realizadas no interior de Terras Indígenas da Amazônia.**
- 15:30-15:50 Wagner Gomes BORNAL (Brazil)
C02-04 **Análise de experiências de pesquisa compartilhada junto a comunidades caiçaras.**
- 15:50-16:10 Rogério Dias (Brazil)
C02-05 **Análise dos caminhos realizados pelo poder público no Brasil no reconhecimento e tratamento do patrimônio cultural do país.**
- 16:10-16:30 L. Oosterbeek (Tomar, Portugal)
C02-06 **Arqueologia do contacto. Problemas de identidades e sentido dos olhares cruzados de europeus e brasileiros.**

ABSTRACTS / RÉSUMÉS

- C02-01** Erika Robrahn-GONZÁLEZ (Brazil)
Avaliação sobre a Arqueologia Brasileira.

ABSTRACT: Avaliação sobre a Arqueologia Brasileira, seu passado, presente e perspectivas futuras, e a responsabilidade social do arqueólogo em contribuir para a identificação, valorização e preservação deste passado. Arqueologia Pública no Brasil, perspectivas e campos de atuação.

- C02-02** Pedro Paulo Abreu FUNARI (Brazil)
Avaliação de estudos arqueológicos realizados em sítios históricos brasileiros de comunidades afro-descendentes.

ABSTRACT: Avaliação de estudos arqueológicos realizados em sítios históricos brasileiros de comunidades afro-descendentes (e quilombos em especial), à luz de uma análise sobre reconhecimento deste patrimônio pela comunidade negra e sua incorporação à identidade nacional.

C02-03 Gerson Levi da Silva MENDES (Brazil)

Análise de pesquisas arqueológicas realizadas no interior de Terras Indígenas da Amazônia.

ABSTRACT: Análise de pesquisas arqueológicas realizadas no interior de Terras Indígenas da Amazônia, com especial atenção sobre a maneira como as comunidades indígenas atuais lidam com os sítios arqueológicos presentes em suas terras (como reconhecem este patrimônio, incorporam, valorizam e destroem, dentro de uma dinâmica de constante re-invenção de sua identidade).

C02-04 Wagner Gomes BORNAL (Brazil)

Análise de experiências de pesquisa compartilhada junto a comunidades caiçaras.

ABSTRACT: Análise de experiências de pesquisa compartilhada junto a comunidades caiçaras (ou seja, comunidades que moram à beira mar e vivem dos recursos marinhos) na busca de sustentabilidade social e econômica no tratamento, preservação e exploração do patrimônio arqueológico

C02-05 Rogério Dias (Brazil)

Análise dos caminhos realizados pelo poder público no Brasil no reconhecimento e tratamento do patrimônio cultural do país.

ABSTRACT: O que legalmente é definido como patrimônio, as interfácies com outros órgãos do governo que lidam com comunidades tradicionais (Fundação Nacional do Índio, Fundação Palmares para afro-descendentes). Políticas de preservação e histórico de como o Estado vem ampliando sua visão de patrimônio e incorporando elementos imateriais (saberes, danças, culinária, entre outros) ligados às raízes das diferentes etnias que formam o povo brasileiro.

C02-06 L. Oosterbeek (Tomar, Brazil)

Arqueologia do contacto. Problemas de identidades e sentido dos olhares cruzados de europeus e brasileiros.

ABSTRACT: Revisão da problemática da arqueologia missioneira, à luz das pesquisas pré-históricas. Discute-se o sentido ideológico das perspectivas interpretativas, sugerindo novos olhares sobre a temática.

Session C04

Friday , 8 September 2006 / Vendredi, 8 Septembre 2006

*Room 6.1.47, Faculty of Science, Lisbon University
Salle 6.1.47, Faculté de Science, Université de Lisbonne*

Technology and Methodology for Archaeological Practice: Practical applications for the past reconstruction

Technologie et Méthodologie pour la pratique en Archéologie: Applications pratiques pour la reconstruction du passé

organized by / organisé par

Alexandra VELHO

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Hans KAMERMANS

Rijksuniversiteit Leiden, Faculty of Archaeology, POB 95, 15, 2300
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SESSION'S ABSTRACT

New methods arise everyday, as technology goes further and new opportunities of analysis are given. From Statistics to Artificial Intelligence, from GIS to 3D, today's archaeology practice has changed, as computers become more and more included in our lives. This is the space of innovation, were we invite the presentation of new ways of being archaeologist.

RÉSUMÉ DE LA SESSION

De nouvelles méthodes surgissent tous les jours, avec le développement de la technologie et de nouvelles opportunités d'analyse. De la statistique à l'intelligence artificielle, du SIG aux 3D, la pratique en archéologie a changée aujourd'hui, a la mesure où les ordinateurs deviennent de plus en plus une partie de nos vies. Ceci c'est l'espace de l'innovation, dans lequel on invite à la présentation de nouvelles formes d'être un archéologue.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

09:00 **Opening / Overture**

Topic: Virtual Reality

09:00-09:15 Sorin HERMON (Prato, Italy)
Franco NICCOLUCCI (Prato, Italy)

C04-01

Virtual Reality and 3D Modelling approaches to the Archaeological Research.

09:15-09:30 Jean-Noël ANSLIJN (Bertrange, Luxembourg)
Foni LE-BRUN RICALENS (Bertrange, Luxembourg)
Anne HAUZEUR (Bertrange, Luxembourg)
Michel TOUSSAINT (Liège, Belgium)
Susanne RICK (Liège, Belgium)

C-04-02 **3D scanning of prehistoric burials in Great-Duchy of Luxembourg: past operations, critical analyses and perspectives for future developments.**

09:30-09:45 Vera MOITINHO (Lisboa, Portugal)
Telmo PEREIRA (Lisboa, Portugal)

C04-03 **Arqueologia Virtual: Estudo de casos.**

09:45-10:00 Eleftheria PALIOU (Southampton, UK)

C04-04 **Analyzing Visibility in Rendered 3D Spaces: The Visual Consumption of the Thera Wall Paintings.**

10:00-10:15 M^a Soledad CORCHÓN (Salamanca, Spain)
E. GARCÍA;
M. CORREIA
D. G. AGUILERA
A. L. MUÑOZ
J. G. LAHOZ
J. S. HERRERO

C04-05 **3D scanning and tridimensional modelling: a new methodology applied to the study and conservation of paleolithic rock art. The examples of Las Caldas cave (Priorio, Asturias) and the Peña de Candamo (San Román de Candamo, Asturias).**

10:15-10:30 Alexandrino GONÇALVES (Leiria, Portugal)
Fernando SILVA (Leiria, Portugal)
António José MENDES (Coimbra, Portugal).

C04-06 **Reconstructions of the past – How real can it be?**

10:30-10:45 Matt RATTO (Amsterdam, The Netherlands)

C04-07 **Epistemic commitments and archaeological representation.**

Topic: Archaeometry

10:45-11:00 Michael GLASCOCK (Missouri, U.S.A.)

C04-08 ***** Archaeometry: bringing science and archaeology together**

Topic: Modelling and Spatial Analysis

11:00-11:15 Hans Peter BLANKHOLM (Tromsø, Norway)

- C04-09** Beyond simple GIS-driven pathway analyses.
- 11:15-11:30 Makoto TOMII (Kyoto, Japan)
- C04-10** Piecing together the fragmented potsherds information: Data-collecting methodology for reconstruction of a past activity.
- 11:30-11:45 Igor STANISLAVOVISH NOVIKOV (Novosibirsk, Russia)
- C04-11** GIS-based geomorphological models for prediction of the systems in prehistoric occupatio (cas-srudy of Obi-Rakhmat rockshelter vicinity, Western Tien-Shan).
- 11:45-12:00 Adam NEWTON (Liverpool, UK)
- C04-12** Modelling early hominin behavioural ecology.
- 12:00-12:15 Katalin T. BIRÓ (Budapest, Hungary)
Balázs HOLL
- C04-13** GIS applications at the multi-period site Vörs-Maniasszynyiszit, SW Hungary.
- 12:15-12:30 Maria Helena NEVES PEREIRA RUA (Lisboa, Portugal)
- C04-14** Historical Analysis and Territory
- 12:30-13:00 Alexandra FIGUEIREDO (Tomar, Portugal)
- C04-15** Intra e inter-site analysis: The Rego da Murta megalithic complex.
- 13:00-14:30 Lunch / Déjeuner
- 14:30-14:45 Axel POSLUSCHNY
- C04-16** From landscape archaeology to social archaeology. Finding patterns to explain the development of early celtic 'princely sites'.
- Topic: Dating**
- 14:45-15:00 Léo DUBAL
- C04-17** Advanced Methods for Dating.
- Topic: Information Retrieval**
- 15:00-15:15 A. SARRIS (Rethymno, Crete, Greece)
E. PERAKI (Rethymno, Crete, Greece)
N. CHATZOYIANNAKI (Rethymno, Crete, Greece)
M. ELVANIDOU (Rethymno, Crete, Greece)
E. KAPPA (Rethymno, Crete, Greece)

G. KAKOULAKI (Rethymno, Crete, Greece)
E. KARIMALI (Rethymno, Crete, Greece)
M. KATIFORI (Rethymno, Crete, Greece)
K. KOURIATI (Rethymno, Crete, Greece)
G. PAPADAKIS (Rethymno, Crete, Greece)
N. PAPADOPOULOS (Rethymno, Crete, Greece)
M. PAPAZOGLU (Rethymno, Crete, Greece)
V. TRIGKAS (Rethymno, Crete, Greece)
K. ATHANASAKI (Rethymno, Crete, Greece)

C04-18 Time Drilling Through the Past of the Island of Crete.

15:15-15:30 Mathias WILBERTZ (Hannover, Germany)

C04-19 ADABweb – Information System with Geo Web Services for the Cultural Heritage of Lower Saxony.

15:30-15:45 M. CATTANI
G. MANTEGARI
R.C. DE MARINIS
G. VIZZARI

C04-20 Managing and sharing archaeological knowledge through a WebGIS: the case study of the Bronze Age in northern Italy.

15:45-16:00 Catalina GALÁN SAULNIER (Madrid, Spain)
Evaristo GESTOSO RODRÍGUEZ (Madrid, Spain)

C04-21 Archaeological Spatial Data Infrastructures: Distributional and Collaborative Archaeology in Interoperability Framework.

16:00-16:15 Keith W. KINTIGH (Tempe, Arizona, U.S.A.)

C04-22 The Challenge of Archaeological Data Integration.

Topic: Ecological Applications

16:15-16:30 Katalin HERBICH (Szeged, Hungary)
Róbert PATAY

C04-23 Organic remains from the Copper Age settlement of Ecser.

16:30-16:45 Marianna IMRE (Szeged, Hungary)

C04-24 Soil background of the Late-Neolithic archaeological site Polgár-31.

16:45-18:30 Discussion / Discussion

ABSTRACTS / RÉSUMÉS

C04-01 Sorin HERMON (Prato, Italy)
Franco NICCOLUCCI (Prato, Italy)
Virtual Reality and 3D Modelling approaches to the Archaeological Research.

ABSTRACT: The last decade has witnessed a constant growth in Virtual Reality (VR) and 3D models applied to archaeology. However, despite the great potential of VR as a research tool, already applied in most disciplines, it had little impact on the archaeological scientific research, the latest developments in the field concentrating on improving computer graphics methods and artistic skills rather than adopting 3D modelling and VR in the archaeological reasoning process. Often, a typical question of archaeologists being confronted with a VR model would be “how accurately it represents the archaeological reality”, and if yes, it would follow an artistic evaluation of the product, and rarely “how it can enhance my understanding of the past?”. VR can be used as a medium for visually expressing numerical data, ideas and check hypothesis, gathering various data formats and giving them a visual form, analysable and subject to deconstruction. Moreover, in VR, one can freely move in 3D, but also in 4D, by creating predictive models or evaluating scenarios and alternatives of past events, given particular parameters. In this sense, VR can serve the archaeologist as a “time-machine”, by visualizing the past environment (the archaeological world under investigation), and allowing its study “from within”, the archaeologist being an integrated part of the VR model, that represent his/her depiction of the past under scrutiny. VR also facilitates the transformation of data into information and into knowledge; having no language barriers, (an image does not need to be translated), it sustains the communication between the scientific community and the dissemination of both the reasoning process (data transparency) and the final results in an easy to understand format. Thus, a VR model, which can be viewed as a simulation of an environment, constructed with the meaning of getting an insight of a particular problem or to predict the behaviour of a particular phenomenon, can be used as a research platform, where multiple format data are integrated into an homogeneous system which allows the creation of an integrated archaeological research framework.

The paper will thus focus on the potential of VR and 3D modelling for the archaeological research.

C04-02

Jean-Noël ANSLIJN (Bertrange, Luxembourg)
Foni LE-BRUN RICALENS (Bertrange, Luxembourg)
Anne HAUZEUR (Bertrange, Luxembourg)
Michel TOUSSAINT (Liège, Belgium)
Susanne RICK (Liège, Belgium)

3D scanning of prehistoric burials in Great-Duchy of Luxembourg: past operations, critical analyses and perspectives for future developments.

ABSTRACT: During an archaeological prevention campaign in the summer 2000, two important Neolithic graves were found at Altwies near Schengen (Great-Duchy of Luxembourg).

Due to the bad conservation of the bones it was decided to scan the graves using a 3D scanner, in order to keep an archive of the burials and their direct environment, instead of moulding the ensemble using silicone rubber and polymer supports as planned initially.

The resulting models were then used to produce actual scale polymer prototypes for public exhibition and further archaeological and anthropological studies.

The present paper aims to present the conclusions of this operation and the further development of a new project, using the 'static' 3d surface model in combination with other individual scans of the bones (CT scans) to create a new dynamic model that can be used in archaeological and anthropological studies – e.g. illustrating the different hypotheses regarding the funerary rites - as well as for public diffusion.

The new project tends to re-think the initial 3D scanning process and to develop a protocol for further similar experiments.

C04-03

Vera MOITINHO (Lisboa, Portugal)
Telmo PEREIRA (Lisboa, Portugal)

Virtual Archaeology: case studies

ABSTRACT: In this session we will try to show how the use of digital solutions and 3D technologies can contribute to the artefacts and sites study, preservation, divulgation, enriching the traditional archaeological alpha-numeric data and draws, with new digital formas of visual register and virtual manipulation.

We will present some study projects related with reconstruction and preservation of Virtual Archaeology.

KEYWORDS: Virtual Archaeology; 3D Technology.

C04-04 Eleftheria PALIOU (Southampton, UK)

Analyzing Visibility in Rendered 3D Spaces: The Visual Consumption of the Theran Wall Paintings.

ABSTRACT: Viewshed and isovist analysis, the well established methods for the investigation of visibility in landscape and architectural environment respectively, are based on 2 or 2.5 dimensional data structures, and therefore have limited usefulness for the study of human visual experience in three-dimensional built space. Very recently attempts have been made for the development and implementation of new methods of analysis that take into account the third dimension, by integrating 3D modeling and GIS technologies. Such approaches can act as adjuncts to narratives derived through the exploration of VR models and go beyond the mere visual appraisal of rendered images, enabling formal descriptions of the visual structure of socially constituted historic and prehistoric space, and making explicit subtle but often meaningful differences in the visual qualities of past environments. These methodologies could potentially be applied to the study of entire architectural environments, this paper, however, examines their usefulness for the definition and description of the visual properties of prehistoric artifacts that were created to be seen, such as the Theran wall paintings. The idea that underlies this work is that some of the most essential research questions related to the study of wall decoration, e.g. the different modes that the murals were consumed, their possible viewers, the intentions of the painter or those that commissioned the paintings, as well as visual emphasis and hierarchy of meaning in pictorial programs, can be more sufficiently approached by considering the exact bodily positioning and viewpoint of an observer located in space.

C04-05 M^a Soledad CORCHÓN (Salamanca, Spain)

E. GARCÍA; M. CORREIA
D. G. AGUILERA
A. L. MUÑOZ
J.G. LAHOZ
J.S. HERRERO

3D scanning and tridimensional modelling: a new methodology applied to the study and conservacion of paleolithic rock art. The examples of Las Caldas cave (Priorio, Asturias) and the Peña de Candamo (San Román de Candamo, Asturias).

ABSTRACT: In this paper we will present the preliminary results of the application of 3D scanning technology and three-tridimensional modelling to the record and documentation of rock art in two caves in the mid valley of Nalón (Asturias, North of Spain). This new technology developed in Cartographic Engineering, that has been applied with successfull results in topography and in the modelling of architectural structures, is deeply improving the study of Paleolithic parietal art.

In this work, we present the first results of the reconstruction or three-tridimensional modelling, generated by the 3D laser scanner, of two decorated surfaces: the *Panel de los Grabados* of the Las Caldas Cave (Priorio) and the *Muro de los Grabados* of the La Peña de San Román de Candamo Cave (Candamo), both belonging to the cantabric Solutrean and Magdalanian.

The processes of capture, processing and management of information within this new methodology produce three-tridimensional models that can be texturized with digital images. The metric rigor of this models potentials not only the results obtained with traditional proceedings, but also the blend of this information with other digital plataforms, making by this way possible new ways of investigation. By this so we will present the advantages of applying this models with techniques of fotogrammetry and infography and within Gographic Information Systems (G.I.S.).

Finally, the application of this new proceedings potentials an excelent new form of conservation and difusion of rock art.

KEYWORDS: Paleolithic rock art. Cantabric Cornise. Prehistoric heritage. 3D scanning. Three-tridimensional modelling. Close range photogrammetry. Infography.

C04-06 Alexandrino GONÇALVES (Leiria, Portugal)
Fernando SILVA (Leiria, Portugal)
António José MENDES (Coimbra, Portugal)

Reconstructions of the past – How virtual can they be?

ABSTRACT: Since the Middle Ages, perhaps even before, the questions related to the historical and cultural past, mainly to the level of archaeological findings, have exerted an enormous and mysterious allure on Man. Ever since then, Man has come up with methods and forms to recreate such places, in order to satisfy this recognized natural and ancestral curiosity associated to the human being.

In these last few years, the number of projects involving historical reconstruction has increased significantly, due to two main factors: the technological developments that allow such designs to be accomplished more easily, with a larger impact, affecting a greater number of people; and the continuous and increasing interest of humanity about these questions related to cultural and architectural patrimony.

This paper intends to present two virtual models developed using some optimization techniques that allowed the creation of realistic historical environments, but keeping low file sizes, so that they can be accessed anywhere by anyone.

As a result, you can make your own historical tour at:

- The Flavian Forum of Conimbriga: <http://www.forumflaviano.web.pt>
- House of Skeletons (Conimbriga): <http://www.casadosesqueletos.web.pt>

KEYWORDS – Virtual Reality, Web, VRML, Optimisation, Conimbriga

C04-07 Matt RATTO (Amsterdam, The Nederland)

Epistemic commitments and archaeological representation.

ABSTRACT: New technologies and methodologies are constantly being incorporated into archaeological practice. These tools foster new modes of engagement with older questions and the development of new lines of research. This makes them attractive objects for innovative scholarship. However, there are problems and dangers inherent in such adoptions. Among these is the possibility that some of the means of constituting and communicating knowledge that are particular to archaeology may be lost or, conversely, that the capabilities of new technologies may not be fully exploited.

In order to call attention to the problems and the possibilities, we reflect on the adoption of a particular technology within archaeology, that of 3D computational simulation or “virtual reality.” We do so by focusing on a single example - the creation of an immersive, “virtual reality” pre-roman temple by a classical archaeologist. However, our goal in this exploration is not to romanticize past modes of working or to demonize the development and adoption of new technologies in archaeology. Instead, by examining how one particular example of VR archaeology was received by archaeologists, cultural heritage professionals, and computer scientists, we reveal the similarities and the differences between these various groups. These differences are more than just “skin deep” and include important contradictions in the overall goals of these groups as well as the means by which they make – and make legitimate – claims about the past. In this paper we develop the concept of ‘epistemic commitment’ in order to reveal the different goals of the groups involved and the linkages between aesthetic and representational choices, and the constitution of evidence. Our purpose in doing so is to make obvious the epistemic differences that hinder the acceptance and use of novel technologies in archaeology and to point to some of the ways such barriers might be overcome.

C04-09 Hans Peter BLANKHOLM (Tromsø, Norway)

Beyond simple GIS-driven pathway analyses.

ABSTRACT: Following Wheatley and Gillings (2002) it is paramount that new algorithms be developed for realistic, archaeological mobility analyses. Following the experiences from a regional Stone Age project in sub-arctic Northern Norway – an area of highly varied ecological settings and landscapes and distinct seasonal variability, including a prolonged dark season, work is in progress on the algorithm for a new methodology. Aside from the common topographical parameters, “walkability” values are assigned to feature polygons (e.g. wooded terraces, barren ground, bogs) and according to season (e.g. snow-cover, freeze-up, visibility). While standard raster calculation may still yield a single least-cost pathway solution, it is instead proposed to appreciate variability and perform a correspondence analysis on the “walkability” vectors for the features, resulting in a back-plot on the terrain of optimal *choices*.

C04-10 Makoto TOMII (Kyoto, Japan)

Piecing together the fragmented potsherds information: Data-collecting methodology for reconstruction of a past activity.

ABSTRACT: This paper shows a good example of the reconstruction of a past activity through the analysis of one prehistoric vessel. The vessel is considered to have been accidentally dropped by an adult at the streamside slope in the season of autumn-spring, and whose content seems to have been an unhardened organic material and does not seem to have been picked up back by her/him.

About 150 broken pieces assumed to have been broken from one vessel appeared in that prehistoric layer of yellow-brown silt without lamination which included some dispersed 15cm-long stones. These pieces were found in isolation on the lower edge of the slightly steep slope to the south for a stream, with showing their distribution of ellipse shape within 1.5m by 1.0m whose long axis was parallel to stream flow from the east to the west.

Much attention to data-collecting has been paid in the process from recognizing the cluster of broken pieces to refitting them into a single vessel; for instance, depositing soil condition, in-situ potsherds orientation, potsherd surface/facets wear-out, directions of lines in between refitted pieces, etc. Much information from most of potsherds is recorded through photo-taking both before their being picked up from the ground and after adhering soil being completely removed off.

The questions to be answered are, in the prehistoric past, whether the water-facing area was covered with plants or not; whether the pieces were changed in their position or not; whether the original vessel was broken here or somewhere; whether the vessel was dropped off from a certain height or pushed down immediately on the ground; whether the vessel contained anything inside or not; whether the person having brought the pottery picked up its broken pieces or left them untouched, etc.

C04-11 Igor STANISLAVOVISH NOVIKOV (Novosibirsk, Russia)

GIS-based geomorphological models for prediction of the systems in prehistoric occupatio (cas-srudy of Obi-Rakhmat rockshelter vicinity, Western Tien-Shan).

ABSTRACT: Because of Paltau valley (Uzbekistan) contains the unique Paleolithic sites, this territory has attracted the attention of researchers. Over the course of geomorphological studies, we began a GIS project, including as one of its components a digital mapping of the terraces of different ages in the Paltau and neighboring valleys. It made possible the discovery of territories with morphological, chronological and genetic characteristics analogous to those of territories containing known Paleolithic sites. Reconnaissance work in these places has yielded preliminary results. The principles and results of computer modeling in order to predict the discovery of Paleolithic sites will be presented.

C04-12 Adam NEWTON (Liverpool, UK)

Modelling early hominin behavioural ecology.

ABSTRACT: Behavioural ecology is the study of adaptive behaviour in relation to environmental and social circumstances. Computer models have been used to study the behavioural ecology of extant primates. Similar models can be applied to extinct hominins to gain insights into areas such as

foraging and subsistence strategies, diet, dispersals and colonisations, and causes and consequences of extinctions and adaptive radiations.

The paper presents new ecological modelling work investigating the differences in behavioural ecology between *Paranthropus* and early *Homo*. The study particularly focuses on dietary differences during times of environmental stress, which could be an important factor in determining niche separation.

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Ungar, P.S., 2004. Dental topography and diets of *Australopithecus afarensis* and early *Homo*. *Journal of Human Evolution*, 46, 605-622.

Wood, B.A., Strait, D.S., 2004. Patterns of resource use in early *Homo* and *Paranthropus*. *Journal of Human Evolution*, 46, 119-162.

C04-14 Maria Helena NEVES PEREIRA RUA (Lisboa, Portugal)

Historical Analysis and Territory.

ABSTRACT: Archaeological finds, vestiges discovered on site, documentary proofs of previous occupation, can now be analysed as if they were objective fact. Recourse to Geographic Information Systems – GIS has led to transformation of the analysis of environmental data, traditionally intuitive, into duly quantified values, in such a way as to determine the characteristics of an historical region and to formulate hypothetical scenarios of former societies.

C04-15 Alexandra FIGUEIREDO (Tomar, Portugal)

Intra e inter-site analysis: The Rego da Murta megalithic complex.

ABSTRACT: The Rego da Murta megalithic complex is a group of monuments constituted by menirs and dolmens that are located in the center of Portugal, Alvaiázere.

The aim of this paper is to present the results of the digs done since 1999 by a team that integrates different institutions and a multidisciplinary science.

The study includes also systematic prospections that contribute for a more complete understanding of landscape and how was the relation of the men with its surroundings.

The dig register was made with the most advanced technologies in computer sciences to try to produce a more efficient report and interpretation of what happens in terms of ritual practice. What will be presented are our conclusions using the geographic information systems.

C04-16 Axel POSLUSCHNY

From landscape archaeology to social archaeology. Finding patterns to explain the development of early celtic 'princely sites'.

ABSTRACT: In 2003 the German Research Foundation (DFG) decided to support a research programme studying the so-called "princely sites" ("Fürstensitze") of the Early Iron Age (Hallstatt/Early Latène) in Middle Europe. These sites and their (social) meaning have been the subject of intensive debate by numerous archaeologists. Undoubtedly they are the manifestation of a change in settlement behaviour, perhaps also in social culture, between the Late Bronze Age and the beginning of the Celtic Iron Age. One part of the programme is the project "Princely sites' & Environs". With the help of

Geographical Information Systems we will investigate different types of settlements (open settlements, hillforts, "chiefly sites", "princely sites") and burials/cemeteries from the Late Bronze Age (Urnfield period) to the end of the Early Iron Age Late Latène period), connecting them with aspects of their natural environment as part of their area of economic and cultural activities. Another aim is the investigation of territories and of lines of communication and transport which should also contribute to the detailed analysis of problems such as the visibility of individual sites, landmarks or astronomic fixed points which can provide an indication of how prehistoric peoples realised their surroundings. The paper will focus on the theoretical and methodological background of the investigation and will also present the results of the first two years of research.

C04-17 Léo DUBAL**Advanced Methods for Dating.**

ABSTRACT: Retroprediction freewares & Google Earth provide now access for a large public to the detailed investigation of relevant past Solar Ephemerides and Eclipses, whilst AMS datation requires only minute amount of fast growing organic material (dessicated human skin, reef, straw).

New data will be presented concerning:

- Chronology of the Amarna Heresy
- Evidence for an Amarnian Heritage in the Abou Simbel Temple
- Evidence for an Imhotep connection with the launching of the Egyptian Calendar.
- Evidence for the oldest mummified skull and its connection with paleoamerican young child funerary ritual and datation of Omaguacan Rock Art.

C04-18 A. SARRIS (Rethmno, Crete, Greece)
 E. PERAKI (Rethmno, Crete, Greece)
 N. CHATZOYIANNAKI (Rethmno, Crete, Greece)
 M. ELVANIDOU (Rethmno, Crete, Greece)
 E. KAPPA (Rethmno, Crete, Greece)
 G. KAKOULAKI (Rethmno, Crete, Greece)
 E. KARIMALI (Rethmno, Crete, Greece)
 M. KATIFORI (Rethmno, Crete, Greece)
 K. KOURIATI (Rethmno, Crete, Greece)
 G. PAPADAKIS (Rethmno, Crete, Greece)
 N. PAPADOPOULOS (Rethmno, Crete, Greece)
 M. PAPAZOGLU (Rethmno, Crete, Greece)
 V. TRIGKAS (Rethmno, Crete, Greece)
 K. ATHANASAKI (Rethmno, Crete, Greece)

Time Drilling Through the Past of the Island of Crete.

ABSTRACT: Following the momentum of the Digital Archaeological Map of Lasithi, a dynamic archive of the archaeological sites of the island of Crete has been formed, constituting a central data warehouse to be used for information retrieval and the management of the cultural heritage. The project, part of a much larger effort named 'Digital Crete: Mediterranean Cultural Itineraries', was implemented under the framework of the Greek Operational Program of Information Society, following the eEurope initiative of the European Union.

The Digital Archaeological Atlas of Crete covers the time span from prehistory to the end of the Roman Period, while it also includes the main architectural monuments of the later periods. The location of the monuments was identified through a combination of systematic GPS fieldwork, analysis of ortho-rectified aerial photos and digitization of survey plans. Archaeological information was collected by published documents and was entered in a specially designed database. The latter allows communication with the cartographic infrastructure of the system, built on a GIS platform. In this way, archaeological features are projected on different thematic map clusters, which make possible the correlation of the archaeological sites along with their environmental, topographical, geological and statistical contexts. Customization of the GIS environment was necessary in order to produce a hierarchical time-usage sequence of the represented cultural monuments.

Data extraction is offered through different media, such as an Infokiosk, the Web or a centralized digital documentation and management inventory unit, each having a different degree of sophistication. The gazetteer provides among others high resolution photographic material of monuments and sites, digitized plans of excavated sites, short video presentation of main excavators and researchers, fly-through capabilities over a 3D Landsat satellite surface of the island, etc.

C04-19 Mathias WILBERTZ (Hanover, Germany)

ADABweb – Information System with Geo Web Services for the Cultural Heritage of Lower Saxony.

ABSTRACT: The Lower Saxony State Service for Cultural Heritage (NLD) is establishing a web-based information system called “ADABweb”. Its essential features are a database, the internet-technology with web-services and the technology of Geographic Information Systems (GIS). The paper gives a report of the system, of its functions and of its state of development.

C04-20

M. CATTANI
G. MANTEGARI
R. C. DE MARINIS
G. VIZZARI

Managing and sharing archaeological knowledge through a WebGIS: the case study of the Bronze Age in northern Italy.

ABSTRACT: The aim of the paper is to discuss the results of an ongoing project for the creation of a webGIS for the Bronze Age settlements in northern Italy.

Our knowledge on this subject is constantly and rapidly increasing every year, stimulating a debate among scholars which has reached a very deep analytical level. Hence, this is a very interesting scenario for experimenting innovative knowledge sharing systems.

The project involves different Italian Universities, which carry out both archaeological and IT research. This interdisciplinary approach proved to be very effective in order to create a tool which aims at becoming a point of reference for north Italian Bronze Age studies.

C04-21

Catalina GALÁN SAULNIER (Madrid, Spain)
Evaristo GESTOSO RODRÍGUEZ (Madrid, Spain)

Archaeological Spatial Data Infrastructures: Distributional and Collaborative Archaeology in Interoperability Framework.

ABSTRACT: In the last decade some specifications related to the geographic data transmission in vectorial and raster formats through computer science networks have been developed, especially the ones related to the Http protocol. The development of these specifications has been led by some Open Gis Consortium's (OGC) experts whose work has made possible that the interoperability between geographic informatics' systems take place.

The establishment of open systems comprises advantages in terms of overcoming of incompatibilities and lost of information during the transformation process between different platforms. The data transmission technology has experienced a fast development, from the beginning with the first map images specified in html, which showed links that display more information in another viewing window, to real GIS data viewers with the Web Map services (WMS) technology. In spite of the advantages related to this sort of platforms, they are not common in the geo-spatial network servers, but national and regional portals. Also, the platforms related to archaeological contents are unusual. These platforms allow mix information from different servers and show this answering to a desktop application, which allows the interaction with data stored in a local database, or web applications, which allow contacting the servers-application programming interface (API) via the web browser. In addition, the Web Feature Servers (WFS)-Transactional allows general users to connect and add their own data, as in cooperative digitization projects, and also downloading data from the server. There are servers that also have a database with functions and spatial operators and they make possible to develop the sort of work related to the spatial, territorial or landscape archaeology, and even make networks vectorial topology studies through the Structured Query Language (SQL). (...)

C04-22

Keith W. KINTIGH (Tempe, Arizona, U.S.A.)

The Challenge of Archaeological Data Integration.

ABSTRACT: Archaeology's efforts to understand phenomena operating on large spatial and temporal scales are crippled by the complexities of archaeological datasets, the lack of data

comparability across projects, and limited access to primary data. Our work suggests that *scientifically meaningful* integration of systematically collected archaeological data will require a *knowledge-based archaeological data integration system*. A distributed archive of digital data with rich semantic descriptions of dataset content would be accessed by a concept-oriented, query-driven integration system capable of mediating between the semantics of a research question and the semantic content of the archive's data sources. The output would be an *informed database* with consistent variables and sensibly integrated and scaled observations. This paper discusses the key design considerations and the pragmatic challenges presented by the development of such a system.

C04-23Katalin HERBICH (Szeged, Hungary)
Róbert PATAY**Organic remains from the Copper Age settlement of Ecser.**

ABSTRACT: The aim of our work was to add new results to the archaeobotanical investigations of the Copper Age archaeological sites. Up to the present just a little site was studied in Hungary from this aspect, for example Kompolt, Óbuda, Csepel-Island. From these sites mainly seeds of gathered plants came up. In pursuit of our aims we collected samples from different features, the daubs with imprints and the noticeable organic materials. To find direct organic residues we used water-sieving technique on the samples. For the sake of the easier determination of the indirect remains we made silicon rubber molds from the imprints of the daubs.
Oral presentation

C04-24

Marianna IMRE (Szeged, Hungary)

Soil background of the Late-Neolithic archeological site Polgár-31.

ABSTRACT: The aim of our work was to examine the soil conditions of an archeological site to clarify how the Late-Neolithic culture settled on this site influenced the development of the original soil horizon. For this purpose we reconstructed the Late Neolithic paleogeography for the examined area on the basis of sedimentological, micromorphological, pedological and geochemical investigations. We described the soil profile, measured the content and distribution of grain size, the content of organic matter and carbonate, and took undisturbed samples for micromorphological analysis of soil thin sections. The correlations of the parameters were studied in details and the original soil overlay of the area was determined.

Session C05

Thursday, 7 September 2006 / Jeudi, 7 Septembre 2006

*Room 6.1.47, Faculty of Sciences, Lisbon University
Salle 6.1.47, Faculté de Sciences, Université de Lisbonne*

**Re-construction, simulation, reconstitution
How real is our real, how fake is our past?**

**Reconstruction, simulation, reconstitution.
Combien réel est notre réel? Jusqu'à quel point notre passé est imaginé?**

organized by / organisé par

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SESSION'S ABSTRACT

As Computer methods are developed, new means are used to present the message: Multimedia, Hyper-text, or interactive Documentaries. Following McLuhan (1994) ideas that the mean is the message, and Baudrillard philosophy that in our time all is simulation, we are challenged through the idea of what is our Past: a today's construction or a scientific result through defined methods.

This world in which we are living allows us to jump into new paradigms in which technology has an important role. The challenge that we invite you in is to think on this new opportunities that arouse on this world, which take us a little bit closer to the most real reality: a hiper-reality.

RÉSUMÉ DE LA SESSION

A mesure que de nouvelles méthodes informatiques sont développée, de nouveaux moyens sont utilisés pour présenter le message: Multimédia, Hyper texte ou documentaires interactifs. Selon les idées de McLuhan que le moyen est le message, et la philosophie de Baudrillard qu'à notre époque tout est simulation, nous ressentons la curiosité de savoir ce qu'est notre passé: une construction d'aujourd'hui ou un résultat scientifique obtenue a travers de méthodes prédéfinies.

Ce monde dans lequel nous vivons nous permet de développer de nouveaux paradigmes dans lesquels la technologie joue un rôle important. L'invitation que nous vous faisons est de penser a ces nouvelles opportunités qui surgissent dans le monde et qui peuvent nous rapprocher d'une réalité plus réelle: l'hyper réalité.

SESSION PROGRAMME/ PROGRAMME DE LA SESSION

09:00 **Opening / Overture**

09:00-09:20 Fabio CAVULLI (Trento, Italy)
Sonia LUNARDELLI (Trento, Italy)
Annaluisa PEDROTTI (Trento, Italy)

C05-01 **Virtual Archaeology as Experimental Archaeology.
Chapter One: Reconstruction of the enclosure and hut recovered in the early
Neolithic Settlement of Lugo di Grezzana (North-eastern Italian pre-Alps).**

09:20-09:40 Fabio CAVULLI (Trento, Italy)
Sonia LUNARDELLI (Trento, Italy)
Annaluisa PEDROTTI (Trento, Italy)

C05-02 **Virtual Archaeology as Experimental Archaeology.
Chapter Two: Reconstruction of a series of three huts at Isera La Torretta
(North-eastern Italian Alps).**

09:40-10:00 Alexandrino GONÇALVES (Coimbra, Portugal) Fernando SILVA (Leiria, Portugal)
António José MENDES (Coimbra, Portugal)

C05-03 **Reconstructions of the past – How virtual can they be?**

10:00-10:20 Sorin HERMON (Prato, Italy)
Franco NICCOLUCCI (Firenze, Italy)

C05-04 **Quantifying contingency in the archaeological research - a fuzzy logic
approach.**

10:20-10:40 Jean-Claude GARDIN (Paris, France)

C05-05 **Reconstructions. "real" or "false" in archaeology? New ideas and practices on
the subject.**

10:40-11:00 Isabelle SAILLOT (Paris, France)

C05-06 **A cognitive model of paleolithic man actions.**

11:00-11:20 Paola MOSCATI (Roma, Italy)

C05-07 **A virtual visit to the ancient sabine princes.**

11:20-11:30 **Discussion**

ABSTRACTS / RÉSUMMÉ

C05-01 Fabio CAVULLI (Trento, Italy)
Sonia LUNARDELLI (Trento, Italy)

Annalisa PEDROTTI (Trento, Italy)

Virtual Archaeology as Experimental Archaeology.

Chapter One: Reconstruction of the enclosure and hut recovered in the early Neolithic Settlement of Lugo di Grezzana (North-eastern Italian pre-Alps).

ABSTRACT: Due to post-depositional events, such as pedogenesis and erosion, the complex deposit at Lugo di Grezzana (Verona), which included an early Neolithic settlement, required a careful and accurate stratigraphic excavation. The aim was to understand the features of this period, which remain largely unknown in this region. In addition to the stratigraphic excavation all finds were located and recorded using a Total Station and samples were collected for micromorphological analysis and botanical determination.

An accurate stratigraphic investigation was carried out in the deposit representing an early Neolithic settlement in Lugo di Grezzana (Verona).

Through the stratigraphical analysis, an enclosure was recognised made up by a wooden palisade and a shallow ditch. Nearby the concentration of large post-holes with a hearth in the central position has been interpreted as the traces of a hut. As the distribution of the features was not strictly regular. The elevated part of the complexes were considered for reconstruction in order to verify the reliability of the hypotheses that had been formulated. The results answer some queries but open new questions at the same time.

C05-02

Fabio CAVULLI (Trento, Italy)
Sonia LUNARDELLI (Trento, Italy)
Annalisa PEDROTTI (Trento, Italy)

Virtual Archaeology as Experimental Archaeology.

Chapter Two: Reconstruction of a series of three huts at Isera La Torretta (North-eastern Italian Alps).

ABSTRACT: The settlement of Isera La Torretta (Trento) was occupied from the Recent Neolithic to the Copper Age. The most ancient occupation left traces of three huts on different artificial terraces. Stratigraphic analysis was essential to understand the sequence of the non-contemporaneous complexes and the depositional process that took place. This study was carried out using GIS technology on data collected during the rescue excavation. Although the area was not excavated with the purpose of producing a virtual reconstruction, the results which are rare in North Italy for the period, permitted some hypotheses of reconstruction of the huts. It is in order of verifying these suppositions that we tried to reconstruct the volumetric spaces of the huts. The project has used Virtual Archaeology (Lightwave) as a mean that can partially substitute real experimental reconstruction, which although probably less powerful than the latter is useful and less expensive.

C05-03

Alexandrino GONÇALVES (Coimbra, Portugal)
Fernando SILVA (Leiria, Portugal)
António José MENDES (Coimbra, Portugal)

Reconstructions of the past – How virtual can they be?

ABSTRACT: Since the Middle Ages, perhaps even before, the questions related to the historical and cultural past, mainly to the level of archaeological findings, have exerted an enormous and mysterious allure on Man. Ever since then, Man has come up with methods and forms to recreate such places, in order to satisfy this recognized natural and ancestral curiosity associated to the human being.

In these last few years, the number of projects involving historical reconstruction has increased significantly, due to two main factors: the technological developments that allow such designs to be accomplished more easily, with a larger impact, affecting a greater number of people; and the continuous and increasing interest of humanity about these questions related to cultural and architectural patrimony.

This paper intends to present two virtual models developed using some optimization techniques that allowed the creation of realistic historical environments, but keeping low file sizes, so that they can be accessed anywhere by anyone.

C05-04Sorin HERMON (Prato, Italy)
Franco NICCOLUCCI (Firenze, Italy)**Quantifying contingency in the archaeological research - a fuzzy logic approach.**

ABSTRACT: Boolean logic is commonly applied when archaeological artifacts have to be classified into types, commonly by confronting the attributes of the analyzed object with a relevant typological list, best suited to it (based on previous experimentations, etc.). Thus, each object can be assigned to one and only one type. However, a first obstacle archaeologists encounter in their routine classification work is when the objects under analysis do not completely fit with the (ideal) types description of the typological list; in other words, characteristics of the list-types are not always identifiable on the analyzed objects. At this stage, several choices are opened to the archaeologist:

1. choose a type and "force" the object into one of the classes, thus adjusting the reality (the object with its attributes) to the theory (the list-type),
2. define a new sub-type, or "variant" of a given type
3. define a new type
4. assign object to a generic type – varia, and describe it textually.

It is clear that whichever direction the archaeologist will opt for, it will be a compromise and it will only partially represent the reality of the objects under investigation. Moreover, types often have dual traits, being defined both objectively and intuitively, with attributes that cross-cut types, and types with blur boundaries, all which leads to a more or less free interpretation (based on common sense, accumulated knowledge and gained experience) of the classification process. Consequently, within the reasoning process of classification, expressions such as "seems to", "most likely", "apparently", "probably" and so forth, are involved in the decision-making of assigning subject A to type α . Thus, even though these doubts are often generally expressed in the text accompanying the result of the classification, they disappear as soon as an inventory table is published, where absolute values are assigned to each object. (...)

C05-05

Jean-Claude GARDIN (Paris, France)

Reconstructions, « real » or « false » in archaeology ? New ideas and practices on the subject.

ABSTRACT: I - The question raised in our title is hardly new when raised in the field of scientific research in general, without a distinction between 'hard' and 'soft' sciences. A relative innovation comes however from a present seminar in Paris called "SdH/SdN" (Sciences de l'Homme/Sciences de la nature), in which archaeology presents different views on the subject.

Most archaeologists refer alternatively to "false" or "true" – this last word being often understood as 'provisionally non-false' – to justify various selections in matters of research. A few examples will be given in this paper of authors conscious of the provisional value of their constructions from different viewpoints (physical, semiological, ideological, etc.). The distinction between 'real' and 'false' inevitably takes then a wholly relative sense.

Oppositions are nevertheless common between 'good' and 'bad' ways of practicing archaeology when dealing with techniques and methods that progress rapidly in present times. Mathematics and statistics were first a major reference. Uses of computer science were added after the '50s, as shown by a growing number of conferences and publications dealing more with computer applications than demonstrating their contribution to the progress of knowledge in the sense of scientific research in general. In other words, we are witnessing a certain convergence between the works considered in C04 and C05 as the program of Commission IV seemed to expect (*Newsletter* no. 5, § 2).

Example 1 – International conferences since 2000 on the multiplication of computer applications in archaeology presented without reference to the value of new socio-historical theories based on them.

Example 2 – Multiplication of electronic editorial programs of all sorts, without reference to the progress of scientific knowledge in the fields concerned (history, economics, anthropology, etc.).

Example 3 – Ph.D. in archaeology bearing on comparative values of computer techniques independently of their respective effects on scientific knowledge. (...)

C05-07

Paola MOSCATI (Roma, Italy)

A virtual visit to the ancient sabine princes

ABSTRACT: Highly sophisticated computer graphics and image processing techniques have allowed for the implementation of a virtual reconstruction and exhibition of the Tomb XI grave goods, found in the Sabine necropolis of Colle del Forno lying on the Via Salaria, 30 km. north of Rome. The Tomb, excavated in 1972 and unfortunately already violated, held a princely burial relevant to the historical period in which the ancient Sabine people came into contact with the regal Rome.

Thanks to a rigorous archaeological and archival research, the above magnificent grave goods, whose two main nuclei are today kept in the Ny Carlsberg Glyptotek in Copenhagen and in the Museum of Fara in Sabina, have been integrally reconstituted. The renovation of the Ny Carlsberg Glyptotek, officially opened last June, raised the opportunity to carry out a virtual restitution of the Tomb and of the cart found inside it, together with a simulation of the movement mechanisms and a deep analysis of the ancient decorative techniques.

Besides the 3D restitution for exhibition aims, a web site and an interactive multimedia application complete the project, allowing users to immerse themselves in the ancient uses of an Italic people, located in the Tiber Valley. Thanks to its iteration, this pilot case study can be considered as a model for the virtual re-union of archaeological contexts now dispersed in various museums of the world, making it possible to enjoy them without limitations of space and time.

Session SUB C05

Thursday, 7 September 2006 / Jeudi, 7 Septembre 2006

*Room 6.1.47, Faculty of Science, Lisbon University
Salle 6.1.47, Faculté de Science, Université de Lisbonne*

Emergence of cognitive abilities

Emergence des compétences cognitives

organized by / organisé par

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SESSION'S ABSTRACT

The cognitive abilities of the ancient hominids seem to appear very progressively in so far as the material evidences that they left behind them are taken into account. In fact, their technical productions, which appeared more than 2 million years BP, improved very slowly. On the other hand, the evidence of non utilitarian practices, such as the burial of deaths or the first graphic expressions, made their appearance much later, not before 100 000 years BP. Besides, the human fossils themselves indicate a gradual evolution with in particular an uniform growth of the brain size.

We can query about the emergence conditions of these material and “symbolic” productions and ask oneself why only the human species could develop it. If we admit that they reflect a modification of the cognitive skills, then it is advisable to wonder what these capacities consist of? We could thus question the capacities of anticipation of the biface makers or the capacities of abstraction and symbolization of the first men having buried their deaths.

We could also seek to understand the conditions which led to the installation of a variety of cognitive processes during the evolution. Are they answers to the requests of a changing environment? Or the

result of an evolution of the neurophysiological organization of the brain? Or a better use of anatomical and cerebral structures already installed there at the beginnings of the hominisation? It is also possible to consider a more active role of hominoids on their own development and query about the impact of their activity in the emergence of new cognitive abilities.

One can also ask whether there is something specific to the human species that could explain why the nearest parents of the hominoids, the apes, do not seem to have access to such cognitive aptitudes, at least not in so developed and systematic a manner. Are these differences the result of simply diverging process in species with equivalent potentialities at the beginning? Are there neurophysiologic differences important enough to explain these ability differences? Or is it the aptitude to transmit their knowledge to the following generations that would distinguish the human primates compared to the non human primates?

All these questions and many other deserve to be debated. This is the reason why it seemed to us that it could be profitable to rassemble specialists of different disciplines – paleoanthropologists, prehistorians, neuropsychologists, neurophysiologists, cognitivists, ethologists – all interested in the question of the emergence of cognitive abilities in the first hominoids, so that they could confront their points of view and their knowledge.

RÉSUMÉ DE LA SESSION

Les capacités cognitives des anciens hominidés semblent se mettre en place très progressivement si l'on en croit les vestiges matériels qu'ils ont laissé derrière eux. En effet, leurs productions techniques, apparues il y a plus de 2 millions d'années, se sont perfectionnées très lentement au fil du temps tandis que les manifestations de préoccupations non utilitaires, telles que l'inhumation des morts ou les premières expressions graphiques, ne firent leur apparition que bien plus tard, il y a 100.000 ans tout au plus. Par ailleurs, les vestiges humains eux-mêmes indiquent une évolution graduelle avec en particulier un accroissement régulier de la taille du cerveau.

On peut s'interroger sur les conditions d'émergence de ces productions matérielles et «symboliques» et se demander pourquoi seule l'espèce humaine a su les développer. Si l'on admet qu'elles reflètent une modification des capacités cognitives, il convient de se demander en quoi consistent ces capacités? On peut ainsi s'interroger sur les capacités d'anticipation et de séquentialisation des fabricants de bifaces ou encore sur les capacités d'abstraction et de symbolisation des premiers hommes ayant enterrés leurs morts.

On peut aussi chercher à comprendre les conditions qui ont conduit à la mise en place de différents processus cognitifs au cours de l'évolution. S'agit-il de réponses aux sollicitations d'un environnement changeant? ou bien d'une évolution de l'organisation neurophysiologique du cerveau? ou encore d'une meilleure utilisation de structures anatomiques et cérébrales déjà en place dès les débuts de l'hominisation? On peut aussi envisager un rôle plus actif des hominidés dans leur propre devenir et s'interroger sur l'impact de leurs activités dans l'émergence de nouvelles compétences cognitives.

On peut aussi se demander s'il y a quelque chose de spécifique chez l'homme qui expliquerait que les plus proches parents des hominidés, à savoir les grands singes, ne semblent pas disposer de telles aptitudes cognitives, ou du moins pas de manière aussi développée et systématique. Ces différences ne résuleraient-elles pas simplement d'histoires évolutives divergentes, mais avec des potentialités équivalentes au départ? existe-t-il des différences neuro-physiologiques suffisamment importantes pour expliquer ces différences de compétence? ou bien serait-ce l'aptitude à transmettre leurs connaissances aux générations suivantes qui distinguerait les primates humains des primates non humains?

Toutes ces questions et bien d'autres méritent d'être débattues. C'est pourquoi il nous a semblé qu'il pourrait être fructueux de rassembler des spécialistes de disciplines différentes – paléoanthropologues, préhistoriens, neuropsychologues, neurophysiologistes, cognitivistes, éthologues – qui tous s'intéressent à la question de l'émergence des compétences cognitives chez les premiers hominidés, afin qu'ils confrontent leur point de vue et leurs connaissances.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

11:30 **Opening / Ouverture**

11:30-11:50 Sophie ARCHAMBAULT DE BEAUNE (Lyon, France)

SUB C05-01 **Technical invention in the Paleolithic: what if the answer came from the cognitive and neuropsychological sciences?**

11:50-12:10 François DJINDJIAN (Paris, France)

SUB C05-02 **Innovation in the prehistoric societies.**

12:10-12:30 Thomas WYNN (Colorado, U.S.A.)
Frederick L. COOLIDGE (Colorado, U.S.A.)

SUB C05-03 **When did humans acquire their enhanced working memory?**

12:30-12:50 Ian TATTERSALL (New York, U.S.A.)

SUB C05-04 **Language and the Origin of Symbolic Thought.**

12:50-13:00 **Discussion**

13:00-14:30 **Lunch / Déjeuner**

14:30-14:50 James STEELE (London, UK)

SUB C05-05 **For extinct hominins, what was the relationship between manual dexterity and speech?**

14:50-15:10 Natalie UOMINI (Southampton, UK)

SUB C05-06 **Where are the left-handed knappers? Finding handedness in the archaeological record.**

15:10-15:30 Carmine COLLINA (Aix-en-Provence, France & Roma, Italy)
Carolina MAESTRO

SUB C05-07 **Researching a common semantics : evaluating definition criteria of cognitive processes in prehistory.**

15:30-15:50 Isabelle Saillot (France)

SUB C05-08 **A cognitive model of paleolithic man actions.**

15:50-16:10 Miriam HAIDLE (Tübingen, Germany)

SUB C05-09 **How to think a simple spear?**

16:10-16:30 Roberto FLORES GUEVARA (Paris, France)

SUB C05-10 The problems of the scientific approach to «hominization».

ABSTRACTS / RÉSUMÉS

SUB C05-01 Sophie ARCHAMBAULT DE BEAUNE (Lyon, France)

Technical invention in the Paleolithic: what if the answer came from the cognitive and neuropsychological sciences?

ABSTRACT: The evolution of the cerebral capacities of humans, from the first hominids to Modern Humans, is at the heart of our interrogations. How can we explain the fact that only hominids seem to have developed the capacity for technical invention, in contrast to our closest relatives the great apes? The archaeological data allow us to observe this phenomenon but offer very little in the way of a response to this question.

By examining the possible contributions of other disciplines, particularly in the cognitive and neuropsychological sciences, we can ask if there exists a cause and effect relationship between the following phenomena:

- The archaeological data indicate that the technical inventions realized throughout prehistory are increasingly frequent and complex from the first hominids to Modern Humans;
- The cognitive perspective seems to indicate that the processes of analogical reasoning are increasingly frequent through time, either for “statistical” reasons (a greater population density leads to a greater probability of the meeting of two ideas), or for cognitive reasons;
- Finally, the paleoanthropological data show that current neurological conditions developed progressively with the frontal lobes and prefrontal cortex becoming more and more accentuated from the first hominids to Modern Humans.

We will explore here the possible contribution resulting from a confrontation of these different disciplines.

SUB C05-02 François DJINDJIAN (Paris, France)

Innovation in the prehistoric societies.

ABSTRACT: Innovation in human societies is generally involving the convergence of several different and independent socio-cognitive processes like particularly the following:

1. A cerebral capacity of innovation (from a know-how n to $n+1$);
2. An investment (in time and means or their equivalent in money);
3. A social context favourable or not favourable to innovation (customs, brakes to change, taboo, mental block, believes in progress, unions or trusts, financial interests, loss of power or social dominance, etc.);
4. A need or a utility (functional);
5. A constraint (social, economic, or environmental), implying a change;
6. An external contribution (analogy, random event, casual correlation, acculturation, contact, cross-fertilisation, etc.).

Several processes will be unreachable to the archaeologists (1, 3), while others may be estimated indirectly from archaeological artefacts (6, 5, 4, 2). With such an approach, several innovations, with or without future, known during the transition from middle to upper palaeolithic, are analysed like for example the emerging or development of : dwellings, mobile and cave art, burials, concept of territory, ceramics, etc.

SUB C05-03 Thomas WYNN (Colorado, U.S.A.)
Frederick L. COOLIDGE (Colorado, U.S.A.)

When did humans acquire their enhanced working memory?

ABSTRACT: In previous publications, we have advanced the hypothesis that an enhancement of working memory was the final step in the evolution of human cognition. This hypothesis has been very successful in explaining the success and rapid expansion of modern humans. However, the exact timing of this development remains unclear. The archaeological record does not provide a single unambiguous signature for enhanced working memory. Good arguments can be made for both early (ca. 190,000) and late (after 100,000) timings. In this paper we will examine the alternative scenarios, including the possibility that fully modern cognition was not achieved until after the beginning of the Upper Palaeolithic.

SUB C05-04 Ian TATTERSALL (New York, U.S.A.)

Language and the Origin of Symbolic Thought.

ABSTRACT: Until quite recently, the precursors of modern humanity were nonsymbolic, nonlinguistic creatures, separated from us in these respects by an apparently bottomless gulf. So the question arises as to how was that gulf bridged. The peripheral apparatus that permits speech had at least largely been in place since well before anatomically identifiable *Homo sapiens* appeared, between 200 and 100 kyr ago, in what appears to be a classic example of exaptation. The same appears to have applied to the capacity for symbolic cognition, for in the absence of any evidence for symbolic behaviors before – and well beyond – the time at which anatomical *Homo sapiens* first came on the scene, it seems most likely that the neural equipment that permits this revolutionary new form of cognition was acquired as part of the radical biological reorganization that gave *Homo sapiens* its distinctive physical identity. This new capacity then had to be “discovered” through the action of a cultural stimulus of some kind. I suggest that this stimulus was the invention of language. This behavior appears to be fairly readily spontaneously invented, and has the advantage over other suggested driving forces of modern cognition, such as theory of mind, of being a communal rather than an internalized attribute.

SUB C05-05 James STEELE (London, UK)

For extinct hominins, what was the relationship between manual dexterity and speech?

ABSTRACT: Understanding uniquely human cognitive functioning must rely on comparative data from humans and other living species, but the testing of hypotheses about key adaptive transitions also depends on reliable interpretations of the fossil and archaeological evidence for human evolution. Such evidence is, however, systematically biased towards specific dimensions of the systems that are of interest. In relation to spoken language and tool use (two core features of human uniqueness), the fossil anatomical evidence directs our focus to the evolution of articulatory range and acoustic variability in the vocal tract, and to the evolution of mechanisms of grip in object manipulation by the hand. The archaeological record, in turn, focuses our attention on stone tool production and use. If we are to reconstruct broader system properties from such evidence, then we must know what necessary relationships exist between the features which we can now see, and those which we cannot. One major goal of a newly-funded European research project, HANDTOMOUTH, is to establish whether the extensive archaeological evidence for the early evolution of human tool production and use is in any way indicative of capacities in other, less visible behavioural systems. Can the evidence for gestural control and goal organization in tool production tell us whether hominins were also capable of constructing and uttering complex spoken utterances? We intend to evaluate the possibility that goal-directed action in the manipulative domain may have evolved in parallel with complexity of articulatory manoeuvres in vocal communication, reflecting shared features of neural architecture. The paper will outline the scientific basis for this project, and address some of the limitations on reliable inference which need to be addressed.

SUB C05-06 Natalie UOMINI (Southampton, UK)

Where are the left-handed knappers? Finding handedness in the archaeological record.

ABSTRACT: It is often stated that the emergence of language in hominins can be studied through manual laterality. In the context of human evolution, handedness can be defined as a species-level tendency to coordinate the right and left hands in a consistent manner, not only individually but at a population level. Any archaeological evidence that bears on prehistoric handedness should therefore provide indirect information about prehistoric brain structure and function. Handedness evolution can be traced in several categories of archaeology, primatology, and linguistics, but the most direct evidence lies in the archaeological record.

This paper will present a concise and structured summary of the archaeological data for right- and left-handedness in hominins, including *Homo heidelbergensis*, Neanderthals, and living humans, with a special focus on direct percussion. Included will be the results from a new analysis of coup de tranchet on Lower Palaeolithic bifaces from Boxgrove (UK). These are combined with an experimental study of knapping gestures which relates the observed laterality markers to the gestures that created them, in order to validate the biomechanical assumptions in this category of evidence.

With this paper we hope to raise awareness of the archaeological evidence for handedness, which can give clues to the timing of the emergence of a potential marker for language.

SUB C05-07 Carmine COLLINA (Aix-en-Provence, France & Roma, Italy)
Carolina MAESTRO

Researching a common semantics : evaluating definition criteria of cognitive processes in prehistory.

ABSTRACT: Researchers with different experiences and from different heuristic schools are embedded in the study of the cognitive processes. Nevertheless the default of a common scientific terminology impedes, sometimes, a correct exchange of ideas between researchers from different disciplines. Approaching the debate on the emergence of cognitive abilities, it could be possible that the prehistoric archaeologists don't master the fundamental terms of the cognitive disciplines and also that the specialists of other disciplines don't manage the effective significances expressed by material culture and, particularly, by technical structures of lithic artefacts. Starting with the discussion of the role of the technological approach in the interdisciplinary debate on the emergence and evolution of cognitive abilities, this paper focuses on the methodological reconsideration of the adopted terminology. A systematic reflection on the cognitive terms applied to the prehistoric contexts requires an evaluation of an heuristic tool like the *chaîne opératoire* concept and of the observations provided by psychology, linguistic, anthropology and ethology.

SUB C05-08 Isabelle Saillot (France)

A cognitive model of paleolithic man actions.

ABSTRACT: As far as paleolithic cognitive processes are concerned, the studies sometimes define their own vocabulary and method, using current words while ascribing them various meanings. The debate can then hardly be as fruitful as they otherwise could. We suggest an alternative approach which is to address the numerous and accurate concepts developed since about forty years by cognitive psychology and especially its experimental branch. According to French psychologist Pierre Janet (1926), the objects and artefacts, usually described as a set of external properties, are better understood considering them as the set of actions we can do with them. Cognitive psychology of goal oriented actions, following Janet, Gibson and Richard, becomes then a powerful tool provider in the attempt to understand and modelize paleolithic men behaviour and cognitive abilities. Here we show why and how it is possible to use these tools initially developed to investigate modern man cognition in the laboratory conditions. We claim that this cognitive psychology method allows to draw a rigorous description of mental organization, especially about the complex cognitive process of memory and categorization, whatever human species is dealt with and whatever paleolithic period is concerned. Preliminary results concerning the Magdalenian level of the Tournal cave are presented.

SUB C05-09 Miriam HAIDLE (Tübingen, Germany)

How to think a simple spear?

ABSTRACT: The cognitive development in the Lower Palaeolithic is usually summarised as very slow and primitive. Obviously, the types of stone tools don't change very much, rare tools from other raw materials are simple, anticipation seems to be limited to basic raw material procurement. Yet, if not only viewed in typological categories from modern perspective, Lower Palaeolithic tools can offer more than that. The cognitive processes needed to produce a wooden spear, as it is known from Schöningen, Lower Saxony, are coded here in a process chart. This thought chart includes the initial perception of a basic need, perceptions of sub-problems like the need of certain tools to continue the manufacture, active and passive attention foci open in the production process, the different phases with sub-goals, and in the end the satisfaction of the basic need. The cognitive process behind the manufacture and use of a simple spear takes some days, is interrupted several times, and has to be run independently from immediate needs. This vast extension of the distance between perceived problem and solution becomes thinkable only with the spin-offs of sub-processes. They allowed *Homo heidelbergensis* to organise their tool behaviour cognitively sophisticated in an abstract and effective way.

SUB C05-10 Roberto FLORES GUEVARA (Paris, France)

The problems of the scientific approach to «hominization».

ABSTRACT: The scientific approach to the problem of emergence of "human abilities" in hominids needs to take into account the anatomical particularities, fruit of a long evolution, and their concrete conditions of existence. Then, we need to study the interactions established between those individuals and their environment just modified by their own activity.

Many important obstacles stand in the way of our work:

1. This question is a very important philosophical and ideological issue;
2. Our scientific background compels us to look for a unique factor;
3. The pressure (coming from the media, scientific institutions, society) urges us to answer this question today, and not tomorrow;
4. The very fragmentary state of the human and artifactual prehistoric remains collected.

In fact, many factors have certainly contributed by means of an interaction and/or successive interactions, still unknown, to the qualitative jump called "hominization".

I will present my standpoint as a neurophysiologist that

- do not necessarily consider the brain as being at the origin of hominization, and do not think that we are able, at this moment, to solve completely and scientifically this question.

Session C06

Thursday, 7 September 2006 / Jeudi, 7 Septembre 2006

*Room 12.06, Law Faculty, Lisbon University
Salle 12.06, Faculté de Droit, Université de Lisbonne*

History of Human Populations, palaeoecology and ancient DNA

Histoire du peuplement, paeoécologie et ADN ancien

organized by / organisé par

- Eric CRUBEZY** Paul Sabatier University, Laboratory of Anthropology, CNRS, UMR 8555, Toulouse, France – crubezy.eric@free.fr
- Eugénia CUNHA** Universidade de Coimbra, Departamento de Antropologia, Coimbra, Portugal – cunhae@ci.uc.pt
- Bertrand LUCES** Institut de Médecine Légale et de Médecine Sociale, PO Box 5575, 11, rue Humann 67085 Strasbourg Cedex, France – bertrand.luces@wanadoo.fr

SESSION'S ABSTRACT

In the last few years, genetic studies on past human populations have developed considerably and ancient DNA became an indispensable tool in those. Either studying the history of Human populations, the kinship relations within necropolis, epidemiology or Man/animal relations, palaeogenetic studies provided spectacular insights. This colloquium aims at producing a global synthesis of these works and to explore new perspectives.

All teams working in this domain are invited to participate in it.

RÉSUMÉ DE LA SESSION

Ces dernières années les études génétiques des populations humaines du passé se sont considérablement développées et l'ADN ancien est devenu un outil indispensable à leur étude. Qu'il s'agisse d'étudier l'histoire du peuplement, des relations de parenté au sein des nécropoles, de l'épidémiologie ou des relations de l'homme et de l'animal, les études de paléogénétique ont permis des percées spectaculaires. Ce colloque se propose de produire une synthèse de l'ensemble de ces travaux et d'explorer de nouvelles perspectives.

Toutes les équipes travaillant dans ce domaine sont invitées à le rejoindre.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

09:00 **Opening / Ouverture**

09:00-09:20 Sylvain AMORY (Strasbourg, France)
C. KEYSER-TRACQUI (Toulouse, France)
Eric CRUBEZY (Toulouse, France)
Bertrand LUDES (Toulouse, France)

C06-01 **Ancient DNA studies: the case of the Yakutia.**

09:20-09:40 Ândrea Kelly C. RIBEIRO-DOS-SANTOS (Belém, Brasil)
Anderson NONATO MARINHO
Emanuel BATISTA DOS SANTOS
Claudia RODRIGUES CARVALHO (Rio de Janeiro, Brasil)
Sheila MENDONÇA DE SOUZA (Rio de Janeiro, Brasil)
Walter ALVES NEVES (São Paulo, Brasil)
Frederika KAESTLE

C06-02 **Ancient mitochondrial DNA. The evidence between paleoindians populations in South America.**

09:40-10:00 Anders GÖTHERSTRÖM (Uppsala, Sweden)
Juan Luis ARSUAGA (Madrid, Spain)
R. QUAM (Binghamton, U.S.A.)
J. DAURA (Barcelona, Spain)
M. SANZ (Barcelona, Spain)
M. E. SUBIRÁ (Barcelona, Spain)

C06-04 **Neandertal DNA from the Cova del Gegant.**

10:00-10:20 Rafael MONTIEL (Azores, Portugal)

C06-05 **Authenticity in ancient human mitochondrial DNA studies: A review.**

10:20-10:40 Cristina VALDIOSERA MORALES (Madrid, Spain)
N. GARCÍA (Madrid, Spain)
Juan Luis ARSUAGA (Madrid, Spain)
Anders GÖTHERSTRÖM (Uppsala, Sweden)

C06-06 **Glacial refugia: phylogeographic patterns in ancient European brown bears based on mitochondrial DNA.**

10:40-11:00 Jaime LIRA GARRIDO (Madrid, Spain)
A. LINDERHOLM (Stockholm, Sweden)
H. ELLEGREN (Uppsala, Sweden)
K. LIDÉN (Stockholm, Sweden)
Juan Luis ARSUAGA (Madrid, Spain)
Anders GÖTHERSTRÖM (Uppsala, Sweden)

C06-07 **A new approach on the origins of horse domestication in the Iberian Peninsula. Genetic analysis of Bronze Age horses from El Portalón de Cueva Mayor site (Sierra de Atapuerca, Burgos, Spain).**

11:00-11:20 Bertrand LUDES (Toulouse, France)
Christine KEYSER (Toulouse, France)
Eric CRUBEZY (Toulouse, France)
C. BOUAKAZE (Strasbourg, France)
Sylvain AMORY (Strasbourg, France)
E. PETKOVSKY (Strasbourg, France)

C06-08 **New perspectives in ancient Human DNA.**

11:20-11:40 Luisa PEREIRA (Porto, Portugal)

C06-10 **Improving inferences on past human migrations: new data from complete mitochondrial sequencing studies.**

11:40-13:00 **Discussion / Discution**

ABSTRACTS / RÈSUMÈS

C06-01 Sylvain AMORY (Strasbourg, France)
C. KEYSER-TRACQUI (Toulouse, France)
Eric CRUBÉZY (Toulouse, France)
Bertrand LUDES (Toulouse, France)

Ancient DNA studies: the case of the Yakutia.

ABSTRACT: The peopling of Siberia is currently an interesting challenge for anthropologists considering its localization between Europe, Asia and America and the presence of various ethnic groups belonging to different linguistic families. The Republic Sakha or Yakutia is the largest autonomous Republic of the Russian Federation. This 3 millions km² territory is localized in the north east of Siberia, between Mongolia in the South and the Artic Ocean northward.

The very cold and dry climate of this region combined with specific taphonomic conditions (presence of permafrost) and inhumation practices generally induce a good preservation of the bodies and also of the DNA integrity. Furthermore, the Yakuts are semi-nomadic cattle and horse breeders and speak a language composed by Turkic and Mongolian words. These cultural specificities contrast with the surrounding populations who are hunter gatherers and reindeer breeders speaking a Tungusic language. These characteristics make Yakutia an amazing field of investigation for anthropologists and ancient DNA scientists.

During the last three years we have studied more than 70 ancient samples dating from the 3rd century BP to the 19th century AD. These samples have been analyzed by STR typing of nuclear DNA (both autosomes and Y chromosome) and by direct sequencing of mitochondrial DNA. This important sampling collection gave us the opportunity to investigate different hypothesis on the influence of the neighboring populations on the Yakut population. The weight of the different waves of migrants from Central Asia, Mongolia as well as the Russian colonization has been studied thanks to wide chronological repartition of our samples. Considering the good state of conservation of our samples we were able to test various methodological approaches for DNA extraction on different substrates (i.e. bones, teeth and hairs) to ensure the validity of the results obtained.

C06-02 Ândrea Kelly C. RIBEIRO-DOS-SANTOS (Belém, Brasil)
Anderson NONATO MARINHO
Emanuel BATISTA DOS SANTOS
Claudia RODRIGUES CARVALHO (Rio de Janeiro, Brasil)
Sheila MENDONÇA DE SOUZA (Rio de Janeiro, Brasil)
Walter ALVES NEVES (São Paulo, Brasil)
Frederika KAESTLE

Ancient mitochondrial DNA from South American Paleoindian human skeleton.

ABSTRACT: Investigation about the peopling and subsequent population movement in the Americas has a long history. Much of this research has concentrated on material from North America, although South American sites have gained some attention, most recently. One of the newest directions in research concerning these issues has been an examination of the genetic variability of living and ancient Native Americans. However, the majority of the modern research has been conducted on North American samples, and there has been almost no examination of ancient DNA from South American early remains, in part because few research groups in South America have been doing ancient DNA research. Our investigation can fill some of the gaps in our knowledge of South American ancient genetic variation, and has the potential to answer fundamental questions regarding the initial peopling of the Americas. The aim is to investigate human genetic variation in ancient humans living in Lagoa Santa Region, Central Brazil, dated from the final Pleistocene to the middle Holocene.

Their cranial features do not cluster with late and modern Asians and Native Americans, but instead cluster with people from South Pacific, the so-called sundadonts. The second aim is to compare the results obtained for the Lagoa Santa early remains with the variability observed in the mongolized sinodont groups living both at the savanna and at the shoreline after the middle Holocene as well as human groups from other regions of the Americas. In other words, this study tries to answer the following questions: Do the Lagoa Santa people really represent a first wave of non-mongolized people migrating from Asia to America? Are these people different from those in North America? What is the connection between these early Paleoindians and more recent Native Americans in South America? What is their relationship with the prehistoric mongolized coastal groups in Brazil? (...)

C06-03

François-X RICAUT (Cambridge, UK)
Maggie BELLATI (Cambridge, UK)
Marta-M LAHR LEVERHULME (Cambridge, UK)

Ancient Solomon Islands mtDNA: assessing Holocene settlement and the impact of European contact.

ABSTRACT: Archaeologists, linguists and geneticists generally agree that Near Oceania was subject to two major pulses of human dispersal: a Pleistocene occupation around 40000 BP and a Late-Holocene migration at 3500 BP commonly associated with the archaeological cultural complex known as Lapita. The latter resulted in the settlement of Remote Oceania and there are a variety of competing models (Express train, slow boat, entangled bank, etc.) used to explain this. Recent genetic studies have focused on this issue, but none of them have taken into consideration the bias possibly introduced by 19th century historically reported population decline caused by European contact (diseases, blackbirding, etc.). This reportedly led to the loss of more than 97% of the living population on some islands. To investigate population decline bias and the settlement of Near Oceania, we studied the maternal population history of Solomon Islands through the extraction of DNA from hairs and teeth belonging to a total of 21 individuals collected by the Sommerville expedition during the late 19th-century. Of these, 20 could be typed for some protein-coding region SNPs and the hypervariable region I (HVI) of the mtDNA. Comparison of our genetic data with those available from the modern Solomon Islands populations conflicts with the hypothesis drastic changes in genetic diversity, indicating that the 19th century putative bottleneck is not easily detectable through our genetic data. The most frequent mtDNA lineages share the Polynesian mitochondrial DNA motif (16189-16217-16247-16261) (40%) or its ancestral types (25%), supporting the view that the Solomon Islands populations received an important maternal genetic contribution from the expansion of Austronesian speakers to Remote Oceania in accord with the "slow-train" model.

C06-04

Anders GÖTHERSTRÖM (Uppsala, Sweden)
Juan Luis ARSUAGA (Madrid, Spain)
R. QUAM (Binghamton, U.S.A.)
J. DAURA (Barcelona, Spain)
M. SANZ (Barcelona, Spain)
M. E. SUBIRÁ (Barcelona, Spain)

Neandertal DNA from the Cova del Gegant.

ABSTRACT: A Neandertal mandible was recently discovered from the site of Cova del Gegant (Sitges, Barcelona, Spain) during a study of the Pleistocene faunal remains from prior excavations at this site. A small bone sample was removed from the specimen for DNA analysis, and a total of 47 base pairs were sequenced from the mitochondrial D-loop. The short sequence does not deviate from the published Neandertal sequences at any of the sites where there are differences between the published Neandertal sequences and most anatomically modern humans, including an indel that appears to be diagnostic for the species.

C06-05

Rafael MONTIEL (Azores, Portugal)

Authenticity in ancient human mitochondrial DNA studies: A review.

ABSTRACT: Research into ancient mitochondrial DNA is plagued by contamination, post mortem damage, and other artefacts. These problems have led to the development of a set of guidelines for authentication of ancient DNA (aDNA) results, including the use of dedicated aDNA laboratories, biochemical preservation tests, multiple negative controls, quantification of the target DNA, cloning and sequencing of polymerase chain reaction products, control of amplicon length, and reproducibility of results. The stringent set of controls suggested by Cooper and Poinar a few years ago is, however, rarely followed in practice, and even when applied carefully, these criteria need not be sufficient to guarantee authenticity. Furthermore, some authors are proposing flexibility and intelligent use of these authenticity criteria, in order to avoid the “checklist” approach which can result in publication of non-authentic results and in rejection of some interesting and probably authentic ones. On the other hand, although there have been several papers recommending appropriate experimental designs for ancient-DNA studies, there have been few attempts at statistical analysis to establish the confidence of the results obtained. The best way to prevent or minimize contamination is to start precautionary measures as early as possible, ideally commencing with sample collection and preparation by field archaeologists, although this is not always possible. Therefore, before starting an aDNA study, a careful experimental design must be devised, a prospective analysis of some samples to determine their usefulness must be performed, and a cost-benefit analysis must be considered.

C06-06

Cristina VALDIOSERA MORALES (Madrid, Spain)

N. GARCÍA (Madrid, Spain)

Juan Luis ARSUAGA (Madrid, Spain)

Anders GÖTHERSTRÖM (Uppsala, Sweden)

Glacial refugia: phylogeographic patterns in ancient European brown bears based on mitochondrial DNA.

ABSTRACT: Climatic changes have had great influence on the distribution and behaviour of different species. The Quaternary was a period with major climatic changes and fluctuating population dynamics. It is believed that during the Last Glacial Maximum several species migrated to southern Europe, when great part of northern and central Europe was covered with ice sheets and tundra. These species settled in three suggested glacial refugia: the Iberian, Italic, and Balkanic Peninsulas. Using genetic data from ancient brown bears, we studied the consequences of geographic isolation. Our data supports refugial isolation and postglacial recolonisation of Europe, a pattern followed likely by other animal groups, including hominids.

C06-07

Jaime LIRA GARRIDO (Madrid, Spain)

A. LINDERHOLM (Stockholm, Sweden)

H. ELLEGREN (Uppsala, Sweden)

K. LIDÉN (Stockholm, Sweden)

Juan Luis ARSUAGA (Madrid, Spain)

Anders GÖTHERSTRÖM (Uppsala, Sweden)

A new approach on the origins of horse domestication in the Iberian Peninsula. Genetic analysis of Bronze Age horses from El Portalón de Cueva Mayor site (Sierra de Atapuerca, Burgos, Spain).

ABSTRACT: Time, location, and process of the domestication of *Equus caballus* have been studied in different disciplines. Particularly, the process and the geographical area are some of the questions that have risen controversial debate. Genetic analyses on mitochondrial DNA (mtDNA) of extant horses support the multiregional domestication hypothesis, pointing at the Iberian Peninsula as a centre of independent horse domestication. Archaeological analyses suggest that the domestication of the horse in the Iberian Peninsula took place during the Calcolithic – Bronze Age period. In this study we present mtDNA of 20 ancient Iberian horses, twelve belonging to the Bronze Age, and show how Iberian wild horses contributed to shape the extant Iberian horse breeds.

C06-08 Bertrand LUDES (Toulouse, France)
Christine KEYSER (Toulouse, France)
Eric CRUBÉZY (Toulouse, France)
C. BOUAKAZE (Strasbourg, France)
Sylvain AMORY (Strasbourg, France)
E. PETKOVSKY (Strasbourg, France)

New perspectives in ancient Human DNA.

ABSTRACT: In the last years, ancient human DNA studies have been commonly performed by paleogeneticists. However, most of these studies have been hampered by various obstacles such as the minute amount and the degraded nature of ancient DNA samples. In order to overcome these significant limitations, new genetic markers like single nucleotide polymorphisms (SNPs) are investigated. Indeed, SNPs occur only at single positions in the human genome (i.e. base substitutions, insertions or deletions) allowing them to be analyzed in short DNA amplicons. Moreover, their very low mutation rate makes them suitable to reconstruct the history of ancient human populations.

Our team currently develops a methodology to type several SNPs simultaneously on small amounts of ancient human DNA. This approach, termed Snapshot, is based on a minisequencing reaction. DNA fragments encompassing SNPs of interest are first amplified in a multiplex PCR and then SNPs are simultaneously detected by a single base extension of specific unlabelled primers with labelled dideoxynucleotides (SBE), which are finally analyzed by capillary electrophoresis.

We develop this approach on Y chromosome SNPs (Y-SNPs) because of the paternal inheritance and the lack of recombination in the nonrecombining part of the Y chromosome that make Y-SNPs of considerable interest to trace back male patterns of migration. Considering the past populations currently under study in our lab (Mongolian, Yakut and Native Amerindian), we focus on twelve Y-SNPs relevant for our research topic.

When fully developed, this sensitive and robust SNP analysis method should allow the investigation of a larger number of ancient DNA samples.

C06-09 Sylvain AMORY (Strasbourg, France)
C KEYSER-TRACQUI
Eric CRUBEZY (Toulouse, France)
Bertrand LUDES (Toulouse, France)

Ancient DNA studies: the case of the Yakutia.

ABSTRACT: The peopling of Siberia is currently an interesting challenge for anthropologists considering its localization between Europe, Asia and America and the presence of various ethnic groups belonging to different linguistic families. The Republic Sakha or Yakutia is the largest autonomous Republic of the Russian Federation. This 3 millions km² territory is localized in the north east of Siberia, between Mongolia in the South and the Artic Ocean northward.

The very cold and dry climate of this region combined with specific taphonomic conditions (presence of permafrost) and inhumation practices generally induce a good preservation of the bodies and also of the DNA integrity. Furthermore, the Yakuts are semi-nomadic cattle and horse breeders and speak a language composed by Turkic and Mongolian words. These cultural specificities contrast with the surrounding populations who are hunter gatherers and reindeer breeders speaking a Tungustic

language. These characteristics make Yakutia an amazing field of investigation for anthropologists and ancient DNA scientists.

During the last three years we have studied more than 70 ancient samples dating from the 3rd century BP to the 19th century AD. These samples have been analyzed by STR typing of nuclear DNA (both autosomes and Y chromosome) and by direct sequencing of mitochondrial DNA. This important sampling collection gave us the opportunity to investigate different hypothesis on the influence of the neighboring populations on the Yakut population. The weight of the different waves of migrants from Central Asia, Mongolia as well as the Russian colonization has been studied thanks to wide chronological repartition of our samples. Considering the good state of conservation of our samples we were able to test various methodological approaches for DNA extraction on different substrates (i.e. bones, teeth and hairs) to ensure the validity of the results obtained.

C06-10 Luisa PEREIRA (Porto, Portugal)

Improving inferences on past human migrations: new data from complete mitochondrial sequencing studies.

ABSTRACT: Since the first revolutionizing paper, in 1987, by Allan Wilson's group, proving the mitochondrial DNA (mtDNA) potential for inferences on human population history, studies based on this genome have been extensively explored. That first study showed clearly that the most recent common ancestor to all mtDNA lineages, that is "Eve", dated back to around 100,000-200,000 years ago, and that the root of the genetic tree was placed in Africa, being the first solid genetic prove of the "Out of Africa" hypothesis. Now we have a pretty clear idea about the pattern and dates for mtDNA lineage dispersion from Africa to Asia (60,000-70,000 years ago), and hence to Australia (70,000) to Europe (40,000-50,000) and, less consensually, to America (12,000-15,000 or 26,000-34,000). At the European scale, by the end of 2000, the established picture was that the majority of nowadays mtDNA lineages date back to the Palaeolithic period, with a minor input (around 20%) of Neolithic newcomers, from the Near East, after 10,000 years ago.

By the year 2000, a new era of mtDNA studies initiated. The development of sequencing technologies allowed the surveying of the complete mtDNA molecule (16,569 base pairs) instead of only a small region (around 360 base pairs), so that now all the mtDNA information is ready for analysis. A much-refined description and dating of worldwide human migrations is, consequently, emerging.

I will focus on the European context, where this new information allowed sub-characterizing the previous 80% Palaeolithic pool in diverse temporal pools, following different gradients of dispersion. In fact, we got strong signals of Post-Last Glacial Maximum expansion of certain mtDNA lineages from an Iberian refugium, which extensively re-settled the European continent, in a West-East axis.

Session C08

Tuesday, 5 September 2006 / Mardi, 5 Septembre 2006

*Room 5.2, Faculty of Letters, Lisbon University
Salle 5.2, Faculté de Lettres, Université de Lisbonne*

Bioarchaeology from the Midst of Shells

La Bioarchéologie a partir des amas coquillers

organized by / organisé par

- Sheila MENDOÇA DE SOUZA** Escola Nacional de Saúde Pública, Fiocruz, Rio de Janeiro, Brasil – sferraz@ensp.fiocruz.br
- Eugénia CUNHA** Universidade de Coimbra, Faculdade de Ciências e Tecnologia, Departamento de Antropologia, Portugal – cunhae@ci.uc.pt
- Sabine EGGERS** Universidade de São Paulo, Departamento de Biologia, São Paulo, Brasil – saegggers@usp.br

SESSION'S ABSTRACT

The growing field of bioarchaeology has focussed primarily on methodological as well as local or regional issues during the last few years. However, certain archaeological sites scattered around the world do share some common features, a fact that opens the opportunity of better understanding human adaptation and adaptability in the past. This colloquium will focus on Mesolithic shell middens of Portugal and shellmounds from Brazil, aimed at shedding light on bioarchaeology differences between fluvial and maritime/lacustric settlements regarding four main subjects: a) type and degree of bony manifestations of disease and stress; b) degree of the association of anaemia to infectious diseases; c) occurrence and expression of occupational stress, considering technological variation and adaptive strategies and d) dental diseases and wear in the light of prevailing subsistence patterns.

RÉSUMÉ DE LA SESSION

Ces dernières années, le domaine florissant de la bioarchéologie s'est focalisé surtout sur des questions méthodologiques, locales ou régionales. Cependant, certains sites archéologiques de par le monde partagent des caractéristiques communes, donnant ainsi accès à une meilleure compréhension de l'adaptation et de l'adaptabilité humaine dans le passé. Ce colloque porte sur les coquillages mésolithiques du Portugal et les amas du Brésil, dans le but d'éclairer les différences bioarchéologiques entre les habitats fluviaux et maritimes/lacustres. Quatre axes seront abordés: a) le type et le degré de manifestation osseuse de maladies et de stress, b) le degré d'association des anémies et des maladies infectieuses, c) la fréquence et l'expression des marqueurs de stress, en considérant les variations techniques et les stratégies adaptatives et d) les maladies et usure dentaire dans le but d'accéder aux modèles alimentaires.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

09:00 **Opening / Ouverture**

09:00-09:30 Eugénia CUNHA (Coimbra, Portugal)
Francisca ALVES CARDOSO (Coimbra, Portugal)
Cláudia UMBELINO (Coimbra, Portugal)

C08-01 Bioarchaeology and paleopathology: evidence from the Portuguese Mesolithic.

09:30-10:00 Cláudia RODRIGUES-CARVALHO (Rio de Janeiro, Brasil)
Andrea LESSA (Rio de Janeiro, Brasil)
Sheila MENDONÇA DE SOUZA (Rio de Janeiro, Brasil)

C08-02 Bioarchaeology of the Sambaqui groups, skeletal morphology, physical stress and trauma.

10:00-10:30 Maria MERCEDES M. OKUMURA (São Paulo, Brasil)
Ligia G. BARTOLOMUCCI (São Paulo, Brasil)
José FILIPPINI (São Paulo, Brasil)
Walter NEVES (São Paulo, Brasil)
Rita VARGIU (São Paulo, Brasil)
Sabine EGGERS (São Paulo, Brasil)

C08-03 Coastal versus fluvial shellmounds builders in Brazil: methodological issues regarding biodistance.

10:30-11:00 Andrea KELLY CAMPOS RIBEIRO DOS SANTOS (Belém, Brasil)
Anderson NONATO MARINHO (Belém, Brasil)
Valeria BRAZ (Rio de Janeiro, Brasil)
Terezinha DE JESUS (Belém, Brasil)

C08-04 DNA studies, macro and microscopic taphonomy in the Brazilian Sambaquis: one step ahead.

11:00-11:30 Mirjana ROKSANDIC (Rostock, Germany)

C08-05 Interpreting burial place and space from distribution of bones: feasting with the ancestors in the shell middens.

11:30-12:00 Cláudia UMBELINO (Coimbra, Portugal)
Alejandro PÉREZ-PÉREZ (Barcelona, Spain)
Eugénia CUNHA (Coimbra, Portugal)
Carla HIPÓLITO (Sacavém, Portugal)
Maria DO CARMO FREITAS (Sacavém, Portugal)
João PEIXOTO CABRAL (Sacavém, Portugal)

C08-06 Mesolithic flavours: an insight through chemical analysis on human bones from the Sado and Muge shell middens.

12:00-12:30 Celia BOYADJIAN (São Paulo, Brasil)
Roberto PERROTTA (São Paulo, Brasil)
Karl REINHARD (São Paulo, Brasil)
Sabine EGGERS (São Paulo, Brasil)

C08-07 Microfossils in dental calculus and sediments from a Brazilian shellmound: what do they reveal about diet and plant management?

12:30-13:00 Sheila MENDONÇA DE SOUSA (Rio de Janeiro, Brasil)
Verónica WESOLOWSKI AGUIAR (Rio de Janeiro, Brasil)
Cláudia RODRIGUES CARVALHO (Rio de Janeiro, Brasil)

C08-08 **Teeth, nutrition, infections, anemia, mortality: costs of lifestyle at the shoreline.**

13:00-14:30 **Lunch / Déjeuner**

14:30-15:00 Maria MERCEDES M. OKUMURA (São Paulo, Brasil)
Walter NEVES (São Paulo, Brasil)

C08-09 **The contribution of cranial morphology of human skeletal remains to the understanding of the biological affinities between coastal and riverine shellmounds in Southern Brasil.**

15:00-16:30 **Discussion**

ABSTRACTS / RÉSUMÉS

C08-01 Eugénia CUNHA (Coimbra, Portugal)
Francisca ALVES CARDOSO (Coimbra, Portugal)
Cláudia UMBELINO (Coimbra, Portugal)

Bioarchaeology and paleopathology: evidence from the Portuguese Mesolithic.

ABSTRACT: The quantity of Portuguese Mesolithic skeletal remains provides a good framework for the analysis of the pathologies which leave signature on the bones. The pathological analysis of nearly 400 skeletons coming from both the Muge and the Sado shell middens didn't reveal high prevalence of lesions. The paleopathological study of nearly 400 skeletons coming from both the Muge and Sado shell middens, dating from 7200BP to 6740BP, reveal the presence of low frequencies of pathological lesions. Many analysis were precluded due to the preservation state of the material. Some skeletons were preserved in block whereas in others the calcified matrix did not only covered the periosteum of the bone but also filled the medullary cavities of long bones, limiting radiographic analysis. Other taphonomic alterations resulted from plant roots, macro and micro fauna actions, particular gnawing. Notwithstanding the mentioned obstacles, through a careful observation it was possible to distinguish between those pseudopathological lesions and the true pathological ones. As such, the main purpose of this presentation is to describe the most relevant cases and to discuss the meaning of the virtual absence of some pathologies.

C08-02 Cláudia RODRIGUES-CARVALHO (Rio de Janeiro, Brasil)
Andrea LESSA (Rio de Janeiro, Brasil)
Mendonça DE SOUZA (Rio de Janeiro, Brasil)

Bioarchaeology of the Sambaqui groups, skeletal morphology, physical stress and trauma.

ABSTRACT: The *sambaqui* people has been studied since the XIX century and their morphological traits are generally described as medium to robust, thick limbs, medium to low stature, with strong sexual dimorphism. although the females usually have a more masculine appearance. A great variety of sites have now been excavated and analysed. Much more information concerning craniology, osteometry, epigenetic traits, but also paleopathology and muscular and joint stress indicators has been gathered, helping to better define those groups and the similarities/differences among the sites. Sites in Rio de Janeiro state and Santa Catarina state, Brazil, provide data for comparison and different archaeological contexts to *sambaquis*. Studies on acute trauma reveal few fractures and almost no violence in most of them. Muscular stress indicators and arthritis proved a variety of

locomotion patterns from one site to the other, having in common low asymmetry in the use of the limbs and bigger mechanical impact on the upper limbs. Robusticity varies to different groups and the muscular markers of stress have low scores for most of the individuals. Sex differences are generally slight. Great cemeteries with hundreds of burials and huge mounds, among other archaeological data, point to a dense pacific and well organized society, able to explore the economic resources along the shoreline in different ways, using the body according to each peculiar condition, but possibly with few specialized activities and low sexual division of labour.

C08-03

Maria MERCEDES M. OKUMURA (São Paulo, Brasil)
 Ligia G. BARTOLOMUCCI (São Paulo, Brasil)
 José FILIPPINI (São Paulo, Brasil)
 Walter NEVES (São Paulo, Brasil)
 Rita VARGIU (São Paulo, Brasil)
 Sabine EGGERS (São Paulo, Brasil)

Coastal versus fluvial shellmounds builders in Brazil: methodological issues regarding biodistance.

ABSTRACT: Studies regarding biodistance between coastal and riverine shellmound inhabitants have yielded distinct conclusions. Craniometrical analyses and studies based on non-metrical dental traits regarding these two groups point to a certain degree of similarity between them. However, non-metrical cranial traits indicate that there is some differentiation between coastal and riverine inhabitants. This communication aims to discuss how different methodological approaches on biodistance (including different samples used to comparisons) can provide different answers to the same problem.

C08-04

Andrea KELLY CAMPOS RIBEIRO DOS SANTOS (Belém, Brasil)
 Anderson NONATO MARINHO (Belém, Brasil)
 Valeria BRAZ (Rio de Janeiro, Brasil)
 Terezinha DE JESUS (Belém, Brasil)

DNA studies, macro and microscopic taphonomy in the Brazilian Sambaquis: one step ahead.

ABSTRACT: The study of human bones from *sambaquis* has suggested that conservation of those testimonies were better than others in Brazil. Otherwise, a detailed analysis of macroscopic and microscopic morphology, as well as biochemical characteristics suggest no relation between ultrastructure preservation and the macroscopic preservation of the bones. This fact can possibly be explained by the intense diagenesis in some of those sites, so that the bone is preserved but the histological changes are intense. The complete change in appearance and constitution of the bones at the microscopic level seems to be an usefull indicator for DNA and collagen preservation. The more detailed analysis of those compounds has both archaeological as well as forensic interest. Extraction and sequencing of aDNA from archaeological brazilian human remains is of great interest to elucidate the prehistoric migrations and peopling of America, but many apparently preserved bone samples are negative for aDNA extraction. The first taphonomic studies of macro and micro taphonomy in archaeological samples from *sambaquis* are now being crossed with aDNA analysis. The first aDNA extractions for *sambaquis* in microscopically well preserved bones are also bringing genetic information about those people. Two individuals from Moa and other two from Beirada *sambaquis*, Rio de Janeiro State, Brazil, are presented here. Three of them were positive for DNA amplification. In those samples it was possible to identify 22 mutations in mtDNA, all of then included in the haplogroup C of the American Indians.

C08-05

Mirjana ROKSANDIC (Rostock, Germany)

Interpreting burial place and space from distribution fo bones: feasting with the ancestors in the shell middens

ABSTRACT: **Both old and new excavations at the Muge valley sites of Cabeço da Arruda and Cabeço da Amoreira suggest strong connection between hearths, shell concentrations and burials. While burials could have been dug into the shell middens, no evidence of pits is**

discernible in the soil. Distribution of skeletal elements is consistent with both pits and mounds. The central position of the burials in the mounds and the central role of the mounds in the Mesolithic landscape of the Muge valley, suggest an important ritual role for the ancestors in the life of the community. I am trying to get to an important question here, were these habitation sites periodically abandoned and used as burial sites, habitation sites that are concurrently used as burial grounds, or were they predominantly burial sites with associated ritual activities centered on the community ancestors.

C08-06

Cláudia UMBELINO (Coimbra, Portugal)
Alejandro PÉREZ-PÉREZ (Barcelona, Spain)
Eugénia CUNHA (Coimbra, Portugal)
Carla HIPÓLITO (Sacavém, Portugal)
Maria DO CARMO FREITAS (Sacavém, Portugal)
João PEIXOTO CABRAL (Sacavém, Portugal)

Mesolithic flavours: an insight through chemical analysis on human bones from the Sado and Muge shell middens.

ABSTRACT: The trace elements and carbon and nitrogen stable isotopes analyses performed on human bones from the Portuguese Muge and Sado shell middens reveal a diverse diet, based on the exploration of a large spectrum of the available food resources in Tejo and Sado estuaries, namely of marine and terrestrial, animal and vegetable sources. Nevertheless, some differences are noted in what concerns the relative importance of marine food in diet. The Mesolithic individuals from the Muge sites, Cabeço da Amoreira, Cabeço da Arruda and Moita do Sebastião, seem to depend more heavily on marine resources, which represent about 50% of their diet, than the Sado ones, where these resources made up nearly 30%, according to $\delta^{13}\text{C}$ data. This inference is corroborated by the higher strontium levels observed on Muge human bones when compared to those of Sado. Conversely, the Sado individuals from Arapouco, Cabeço das Amoreiras, Cabeço do Pez, Poças de S. Bento and Vale de Romeiras show evidence of a more heterogeneous diet, with a greater reliance on vegetable foods.

When compared to the Late Neolithic/Chalcolithic communities, namely Abrigo da Carrasca, Eira Pedrinha, Gruta dos Alqueves, Hipogeu de S. Paulo, Pai Mogo I, *Tholos* Cabeço da Arruda, the Neolithic diet appears to be more homogeneous, based mainly on terrestrial items.

The observed heterogeneity in the Late Mesolithic sites, dated between 7500 to 5500 BP, appear to result from particular adaptations to their environments.

C08-07

Celia BOYADJIAN (São Paulo, Brasil)
Roberto PERROTTA (São Paulo, Brasil)
Karl REINHARD (São Paulo, Brasil)
Sabine EGGERS (São Paulo, Brasil)

Microfossils in dental calculus and sediments from a Brazilian shellmound: what do they reveal about diet and plant management?

ABSTRACT: **Brazilian shellmound dwellers were thought to rely heavily on marine resources. Little is known about the importance of plants in their diet, because they do not preserve well in shellmound contexts. However, eating and manufacturing artefacts with the help teeth leave microfossils trapped in the calculus matrix. Their identification and quantification thus permit reconstructing diet and the use of plants in the past. The consumed plants could have been collected, cultivated or domesticated. In some Brazilian shellmounds, such as the huge cemetery Jaboiticabeira II, there are thick dark layers of earth rich in organic material. Do they represent evidences of horticulture? Analysing the relative proportions of micro plant remains from dental calculus and these dark earth layers gives clues about the plants consumed, used in manufacture and eventually cultivated. These data contribute to the detection of subsistence changes and the evaluation of the social consequences related to the shellmound builders' way of life.**

C08-08

Sheila MENDONÇA DE SOUSA (Rio de Janeiro, Brasil)
Verónica WESOLOWSKI AGUIAR (Rio de Janeiro, Brasil)
Cláudia RODRIGUES CARVALHO (Rio de Janeiro, Brasil)

Teeth, nutrition, infections, anemia, mortality: costs of lifestyle at the shoreline.

ABSTRACT: It is generally accepted that the Brazilian prehistoric groups came close to the shoreline and developed an economic adaptation to coastal ecosystems a long time ago. Pleistocene findings in different places suggest that for more than 9.000 years hunting-gathering people lived along the shoreline sandy plains in different parts of the Brazilian territory. Settlement in sites called *sambaquis* (shellmounds) and others testify those prehistoric people were living by the sea and salt water lagoons, fishing, hunting and gathering plants and seafood along that time. A rich environment and availability of water food along all the year may have supported long standing bigger groups along the more productive areas. This new lifestyle was probably favoured by Holocene climatic changes, specially during the *Optimum Climaticum*. Huge sites, hundreds of meters long and twenty to thirty meters high, represent the peak of this adaptation in the southern region of Brazil. Pot sherds associated to some sites suggest that a technological and perhaps economic transition may have occurred in the last periods. Peristomies, infections, anemia indicators, teeth and oral pathology are here used to discuss possible costs and advantages of the *sambaqui* lifestyle in Brazil.

C08-09

Maria MERCEDES M. OKUMURA (São Paulo, Brasil)
Walter NEVES (São Paulo, Brasil)

The contribution of cranial morphology of human skeletal remains to the understanding of the biological affinities between coastal and riverine shellmounds in Southern Brazil.

ABSTRACT: Brazilian shellmounds are sites found along the entire coast and in some adjacent riverine regions. Here, we use craniometric data in order to find out if there is a biological connections between these two populations. Although hundreds of skeletons from the seashore sites are available in several Brazilian institutions, human remains from the riverine population are scarce. We analysed 9 males and 3 females from 4 fluvial shellmounds from São Paulo State (Moraes, Itaoca 1; Estreito and Pavão III), dated between 5900 and 1200 yBP. Principal component analyses (corrected for size) pointed to a certain degree of similarities between the two populations, at least at the macro-zone of the Ribeira do Iguape River.

Session C09

Saturday, 9 September 2006 / Samedi, 9 Septembre 2006

*Room 5.2, Faculty of Letters, Lisbon University
Salle 5.2, Faculté de Lettres, Université de Lisbonne*

Land snails as food – Past and present

Escargot comme nourriture – Passé et présent

organized by / organisé par

David LUBELL

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SESSION'S ABSTRACT

Land snails are a frequent, often abundant, component in a few Late Pleistocene and in hundreds of early to mid Holocene archaeological deposits throughout the circum-Mediterranean region. The most spectacular examples are the Capsian escargotières of eastern Algeria and southern Tunisia, but archaeological sites containing abundant land snail shells that represent food debris are known from Cantabria, the Pyrenees, southern France, Italy, south-eastern Europe including Balkans, Cyprus and the Levant, the Zagros region, Ukraine and Cyrenaica. Outside the Mediterranean area the occurrence of land snails as food debris in archaeological deposits is less common, but nonetheless present in a number of regions, including Brazil, Peru, Texas, the Caribbean, East Africa, Nigeria and Sudan. There is also evidence for past and modern use of amphibious fresh water snails as food amongst the Maya, while fresh water snails are known from Mesolithic and Neolithic sites in several regions of China. What is the significance of land snails as prehistoric food? Do they represent a signature for the period just prior to the adoption of food producing economies? Were they a starvation food or are they evidence of feasting? Were they, in some cases, domesticated? What is the nutritional contribution of land snails to prehistoric and ethnographically documented diets? These are all questions that remain to be answered, and it will be the goal of this colloquium to bring together a group of interested scholars to develop means to answer them.

RÉSUMÉ DE LA SESSION

Les escargots constituent un fréquent, souvent abondant, composant des quelques dépôts archéologiques du Pléistocène tardif et de centaines de dépôts de l'Holocène récent à moyen tout le long de la région du circum méditerranéenne. Les exemples les plus spectaculaires sont les escargotières d'Algérie de l'Est et de la Tunisie du Sud, mais des sites archéologiques contenant d'abondantes coquilles d'escargots représentant des restes alimentaires sont connus en Cantabrie, Pyrénées, Sud de la France, Italie, Europe du Sud, incluant les Balcons, Chypre et le Levant, la Région Zagros, l'Ukraine et la Cyrénaïque. En dehors de la zone méditerranéenne, l'existence d'escargot comme reste alimentaire dans des dépôts archéologiques est moins commune, mais toutefois présente dans de nombreuses régions incluant le Brésil, le Pérou, le Texas, les Caraïbes, l'Afrique de l'Est, le Nigéria et le Soudan. Nous avons aussi la preuve d'utilisation passé et moderne d'escargot amphibie d'eau douce parmi les Maya, tandis que les escargots d'eau douce sont connus dans plusieurs régions de Chine du Mésolithique au Néolithique. Quel est l'importance des escargots

terrestres comme nourriture préhistorique? Représentent-ils la signature d'une période antérieure à l'adoption d'économies de production de nourriture? S'agit-il d'une nourriture de première consommation ou sont-ils le témoignage de festivités? Ont-ils été, dans certains cas, domestiqués? Quelle a été la contribution des escargots aux diètes préhistoriquement et ethnographiquement documentées? Ces questions restent sans réponses et l'objectif de ce colloque est de réunir un groupe d'académiques intéressés de tenter d'y répondre.

SESSION PROGRAM / PROGRAMME DE LA SESSION

- 09:00 **Opening / Overture**
- 09:00-09:15 Nena GALANIDOU (Crete, Greece)
C09-01 **Gathering, storing, preparing and consuming land snails in modern Crete: an ethnoarchaeological study.**
- 09:15-09:30 Lilian KARALI (Athens, Greece)
C09-02 **Land Snails in Ancient Greece.**
- 09:30-09:45 Mia RIZNER (Rijeka, Croatia)
 Nicola VUKOSAVLJEVIC (Zagreb, Croatia)
 Preston MIRACLE (Cambridge, England)
C09-03 **The Palaeoecological and Paleodietary significance of edible land snails across the Pleistocene-Holocene transition on the eastern Adriatic coast.**
- 09:45-10:00 F. Igor GUTIÉRREZ ZUGASTI (Santander, Spain)
C09-04 **Early Holocene land snails exploitation in La Fragua Cave (Cantabria, Spain).**
- 10:00-10:15 Pablo ARIAS (Santander, Spain)
C09-05 **Snails in the grave. A contribution to the study of the significance of terrestrial gastropods in Holocene archaeological contexts of northern Spain.**
- 10:15-10:30 David LUBELL (Waterloo, Canada)
C09-06 **The Maghreb escargotières – Holocene snail farms?**
- 10:30-11:00 **Discussion**

ABSTRACTS / RÉSUMÉS

C09-01 Nena GALANIDOU (Crete, Greece)

Gathering, storing, preparing and consuming land snails in modern Crete: an ethnoarchaeological study.

ABSTRACT: Seasonal land-snail gathering is one of the last living traditional practices still encountered in rural areas of Crete. Land snails, which are highly nutritious, are gathered, stored and prepared in a variety of ways and are consumed in many different contexts. Oral accounts suggest that during the first half of the 20th century snail gathering was carried out largely by children. Today snails are more usually harvested by adults (sometimes during special expeditions, sometimes during the course of vegetable harvesting or returning from the field). This paper presents the preliminary results from a joint ethnoarchaeological and ethnohistoric project to record activities to do with land-snail collection, storage, preparation and consumption; initially this project will deal with Crete alone, later expanding to investigate the whole of the 20th-century Aegean. Our study aims (a) to record every facet of this practice and to relate it to its historic and economic context and (b) to identify any regional and/or temporal variation within Crete.

C09-02 Lilian KARALI (Athens, Greece)

Land Snails in Ancient Greece.

ABSTRACT: The analysis of land snails from archaeological contexts has produced valuable data on past environments and of man's activities. The study of land snails has many applications in archaeology and valuable contributions in the area of palaeoeconomy. Buried soils are expected to contain the most reliable assemblages with relatively low frequencies of allochthonous elements. Snails are both proverbially and actually stenotopic and are therefore influenced strongly by local environmental factors.

Land snails are a common find in Greek archaeological sites as a result of natural or human activity. The meat of the animal is edible and their shells can be used as personal ornaments. They may occur naturally, being either contemporary with the archaeological material or burrowing into the deposit after the occupation of the site. In either case, it may be possible to determine the micro-environment of the site using the landsnails.

The most common species found in the Aegean area are the following: *Helicella profuga* (Schmidt), *Helix aspersa* (Muller), *Lindholmiola lens* Ferussac, *Chylostoma cyclolabris* (Deshayes), *Cochlicella barbara* (Linne), *Cyclostoma cepaea* (Nemoralis), *Albinaria terebra* (Pfeiffer), *Rumina decollata* (Linne) etc.

C09-03 Mia RIZNER (Croatia)
Nicola VUKOSAVLJEVIC (Croatia)
Preston MIRACLE (Cambridge, England)

The Palaeoecological and Paleodietary significance of edible land snails across the Pleistocene-Holocene transition on the eastern Adriatic coast.

ABSTRACT: This paper examines the palaeoecological and paleodietary significance of edible land snails from several different points of view: ethno-archaeological, nutritional, experimental and theoretical, based on the study of assemblages from Pupicina Cave (NE Istria, Croatia). Several lines of evidence show that large land snails (*Helix* sp.) were brought on site for food. At the local level, ethnoarchaeological and taphonomic studies reveal the possible ways in which snails were prepared for eating. At a broader scale this pattern of diversifying the food supply is well-known in the circum-Mediterranean region and correlates with significant environmental changes (e.g. flooding of the Adriatic plain). This paper also examines the use of land snails as evidence for the seasonal occupation of a site.

C09-04 F. Igor GUTIÉRREZ ZUGASTI (Santander, Spain)

Early Holocene land snail exploitation in La Fragua Cave (Cantabria, Spain).

ABSTRACT: The question regarding the anthropic or natural origin of land snail deposits within the archaeological record is continually debated the world over. In the Cantabrian region of northern Spain land snail middens are routinely identified within the early Holocene archaeological record. The La Fragua Cave site (Santoña, Cantabria, Spain), which contains an early Holocene layer dated to 9600 ± 140 BP (8965 ± 193 cal BC), offers the opportunity to address this debate through the examination of *Cepaea nemoralis* land snails recovered in direct association with mammal bones, charcoal, lithic artifacts and other materials. Because the land snail's contextual association points to their consumption by humans, it is therefore assumed that their presence in the site is clearly anthropic in origin.

C09-05 Pablo ARIAS (Santander, Spain)

Snails in the grave. A contribution to the study of the significance of terrestrial gastropods in Holocene archaeological contexts of northern Spain.

ABSTRACT: The significance of accumulations of terrestrial gastropods in Mesolithic and Neolithic contexts has been an occasional issue of debate in the Prehistory of SW Europe, particularly in the Pyrenean area. Some sites that have been recently excavated in Cantabrian Spain, such as Los Canes in Asturias or Cubío Redondo and La Fragua in Cantabria, allow us to address the problem from a more objective perspective. However, the new data are not without problems, and a detailed taphonomic evaluation of each site is urgently required. The available information suggests that the high densities of land snails may be interpreted in some cases as a result of natural processes, whereas in others (for instance, grave I of Los Canes) deliberate human activity can be claimed.

C09-06 David LUBELL (Waterloo, Canada)

The Maghreb escargotières – Holocene snail farms?

ABSTRACT: The quantity of land snails in many Iberomaurusian and Capsian sites appears to be far greater than could have been easily collected in the wild. This paper will examine the dynamics of land snail ecology in semi-arid regions, modern practices of raising snails, and the nutritional value of land snails in an attempt to test the hypothesis that some of the Maghreb sites, especially the larger Capsian escargotières, represent instances of some type of snail farming.

Session C11

Thursday, 7 September 2006 / Jeudi, 7 Septembre 2006

*Room 5.2, Faculty of Letters, Lisbon University
Salle 5.2, Faculté de Lettres, Université de Lisbonne*

Ancient cultural landscape in South Europe Their ecological setting and evolution.

Ancien territoires de l'Europe du sud Son organisation écologique et évolution

organized by / organisé par

José Eduardo MATEUS Instituto Português de Arqueologia, Avenida da Índia, 136, 1300-300 Lisboa, Portugal – jmateus@ipa.min-cultura.pt

Paula Fernanda RIBEIRO DE QUEIROZ Instituto Português de Arqueologia, Lisboa, Portugal – pqueiroz@ipa.min-cultura.pt

SESSION'S ABSTRACT

The workshop intends to contribute to an overview on the new research perspectives, strategies, disciplinary contributions, and results on the ancient Mediterranean human territories. Theoretical, methodological and practical aspects will be considered. Emphasis is made on the ecological setting of these very ancient cultural landscapes, namely on the synchronous distribution of their (explored and potential) resource pools, their spatial (discontinuous/continuous) partition and organization, and their (ecological/economical) functioning. In what concerns diachrony focus will be made on the origin of the anthropogenically-induced eco-territorial sub-system, their cultural and ecological (stability/instability) dynamics, their short-term trajectories, and long-term evolution and heritage. Finally, inter-regional regularities and/or discrepancies across the entire Mediterranean Region in their South-North and West-East gradients will be discussed.

RÉSUMÉ DE LA SESSION

Avec ce colloque on veut essayer une vision générique, à titre de bilan actuel, sur la recherche des anciens terroirs d'Europe du Sud, surtout en ce qui concerne ces nouvelles perspectives, stratégies, et contributions disciplinaires – y compris ses aspects théoriques, méthodologiques, et pratiques. On donnera une attention spéciale à l'intégration écologique de ces vieux paysages culturels, en considérant la distribution synchrone des ressources (potentielles ou explorées), sa partition et organisation spatiale (discontinue ou continue), et son fonctionnement (écologique / économique). En ce qui concerne la diachronie, on veut traiter l'origine des sous-systèmes de l'éco-territoire, anthropogéniquement produits, ses dynamiques culturelles et écologiques (stabilité / instabilité), ses trajectoires de temps court, ses évolutions et héritages de longue durée. Finalement on s'intéressera à la thématique des comparaisons interrégionales (régularités, contrastes), concernant la Région Méditerranéenne, y compris ces gradients Nord-Sud et Est-Ouest.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

- 14:30 **Opening /Ouverture**
- 14:30-15:00 Paula QUEIROZ (Lisboa, Portugal)
José Eduardo MATEUS (Lisboa, Portugal)
- C11-01** **Palaeoecological and Archaeobotanical Investigation of the inner and outer rural domain of the Santa Clara-a-Velha Monastery (Coimbra).**
- 15:00-15:30 José Eduardo MATEUS (Lisboa, Portugal)
Paula QUEIROZ (Lisboa, Portugal)
- C11-02** **Approaching Ancient Territories in Central and South Portugal – A balance of the research.**
- 15:30-16:00 José Eduardo MATEUS (Lisboa, Portugal)
Paula QUEIROZ (Lisboa, Portugal)
- C11-03** **New tentative strategies for an integrated approach to Ancient Cultural Landscapes.**
- 16:00-16:30 António MACEDO (Lisboa, Portugal)
José Eduardo MATEUS (Lisboa, Portugal)
Paula QUEIROZ (Lisboa, Portugal)
- C11-04** **Compiling and integrating historical cartographic, iconographic, toponymic, and textual sources for assessing ancient territories in Portugal.**
- 16:30-17:00 Telmo PEREIRA (Lisboa, Portugal)
José Eduardo MATEUS (Lisboa, Portugal)
Paula QUEIROZ (Lisboa, Portugal)
- C11-05** **Pleistocene Fluvial Palaeoecology in the Tagus Valley – The state-of-the-art.**
- 17:00-17:30 Randi DANIELSEN (Braga, Portugal)
- C11-06** **Landscape development in central littoral Portugal under anthropogenic and / or climatic influence.**
- 17:30-18:00 João TERESO (Alcobaça, Portugal)
- C11-07** **Terronha de Pinhovelo in the context of the NW Iberia: a new project.**
- 18:00-18:30 Tomaso Di FRAIA (Pisa, Italy)
- C11-08** **Following in Mycenaean's footsteps: two specialized productions at the Final Bronze Age site of Archi (Chieti, Italy)**

ABSTRACTS / RÉSUMÉS

C11-01

Paula QUEIROZ (Lisboa, Portugal)
José Eduardo MATEUS (Lisboa, Portugal)

Palaeoecological and Archaeobotanical Investigation of the inner and outer rural domain of the Santa Clara-a-Velha Monastery (Coimbra).

ABSTRACT: We present a first synthesis of the palaeoecological and archaeobotanical investigation of the Santa Clara-a-Velha monastery.

This feminine monastic complex located on the low fluvial terraces of the Mondego River; build on the XIV century, experienced a severe series of fluvial inundations during the Little Ice Age (XVI and XVII centuries). Waterlogged conditions were established, creating mud sequences and local anaerobic micro-environments with potential good preservation for organic remains, thus permitting the development of a pluri-directional palaeoecological and archaeoetnobotanical investigation.

The objective is to explore the scientific and cultural potential of different information-pools (distinct stratified matrix sequences with specific archaeobiologic contents in various space and temporal contexts), in order to understand the ancient territory exploited by the monastery, in its ecological, economical and social setting, eventually assessing aspects of the monastic community daily life.

Native plant resources exploited, cultivation of exotic plants, the use of plants as diet, fuel, raw material, as well as the local and regional (semi-natural and agricultural) vegetation mosaic present inside and outside the farm enclosure, are assessed through the study of the pollen and spores, the remains of fruits, seeds and other plant macrostructures such as wood and charcoal fragments preserved on the detected information pools.

These information pools include: 1) fluvial clayey-mud deposits laid by the Mondego river; 2) muddy sequences from local inundations inside the church and cloister; 3) horticultural soils preserved inside the ancient garden flowerbeds; 4) microstratified calcite concretions on the walls; 5) garbage heaps; 6) other microstratified contexts still to unveil in the course of future excavations – still to be found the ancient latrines, storage food and litter compartments and containers, and the wells.

KEYWORDS: *Coimbra; Santa-Clara-a-Velha; Palaeoecology; Archaeoetnobotany.*

C11-02

José Eduardo MATEUS (Lisboa, Portugal)
Paula QUEIROZ (Lisboa, Portugal)

Approaching Ancient Territories in Central and South Portugal – A balance of the research.

ABSTRACT: We present here a first tentative critical overview on the research done in (Central and South) Portugal on the evolution of our Cultural Landscapes in their ecological and economic settings.

A long time-span is considered, from the (semi)natural pre-agricultural territories till the complex Modern Epoch highly hierarchic landscapes. Western Iberian Ancient Territories are un-homogeneous ecological and cultural entities which show a large inherent hierarchical diversity in their eco-economic spatial partitioning, being pluritemporal, complex, historical entities, difficult to approach by the traditional research disciplinary framework

Research themes, strategies, and contexts which have been explored in the last decades, are revisited here: First, we start with the historical eco-physiography surveys; then we'll focus on the palaeoecological investigation (using (palaeo)palynology and (palaeo)macrobotany) of natural lagoon and peat-mire sediment series, anthropogenic clayey colluvial deposits, human-made water reservoirs (dams, cisterns, wells, aqueducts and drainage ditches), domestic storage pits and containers, and waist confined reservoirs (latrines, garbage ditches and pits); Secondly, we will approach the still rare spatial archaeology studies; Thirdly, the investigation of historical documental sources (cartographic, iconographic, toponimic, textual); Finally, we will revisit shortly the "ethnographic programmes", involving the oral tradition concerned with the ancient land-use.

A final discussion will consider the need for renewed transdisciplinary strategies for approaching the Ancient Territory as a concrete eco-artefactual entity, under an integrated plural inquire.

C11-03José Eduardo MATEUS (Lisboa, Portugal)
Paula QUEIROZ (Lisboa, Portugal)**New tentative strategies for an integrated approach to Ancient Cultural Landscapes.**

ABSTRACT: *Cultural Landscapes* are complex historical entities which challenge traditional disciplinary commitment due to the fact that these present an intricate compromise between natural and artefactual realms, and between past and present. This ambiguity becomes especially difficult to cope with when we address the ancient human eco-territories as concrete entities, subject to direct inquiry, beyond the simple invocation of this mega-concept as a far reference.

The distinct disciplinary approaches, from Archaeology, Ethnology, Regional History, Landscape Ecology, Historical Geography, Quaternary Plant Ecology are too much compromised with their traditional concrete primary research objects, which tend to be, for the sake of "local intelligibility", more or less confined thematically and neutral in terms of its integration inside the Concrete Territory. In their territorial isolation these tend to miss "time" and "space".

With the support of the integrative language of the GIS and of real-time Terrain Virtual Modelling we present and discuss new tentative strategies to address the complexity of Cultural Landscapes in their functional (ecologic / economic) synchronic diversity and their inherent evolutive diachronies (at multiple time-rates).

KEYWORDS: *Transdisciplinary science; Cultural Landscape; Archaeological theory; Past Territory Sciences.*

C11-04António MACEDO (Lisboa, Portugal)
José Eduardo MATEUS (Lisboa, Portugal)
Paula QUEIROZ (Lisboa, Portugal)**Compiling and integrating historical cartographic, iconographic, toponymic, and textual sources for assessing ancient territories in Portugal.**

ABSTRACT: A first balance of a recent research programme on historical sources for assessing ancient cultural landscapes in Portugal is presented. Major aim is to achieve programme strategies and designs for the future development of cooperative research networks, involving a diversified set of state and private (central and regional) institutional protagonists.

We start with a preliminary overview of the availability and diversity of the historical documental sources in Portugal concerning the Ancient Territory and discuss their typology, specific data particularities, and potential exploitation for the research.

We discuss distinct possible ways this historical-geographic information can be related and linked to the traditional archaeological and palaeoecological data assuming their effective spatial and historical-ecological context.

In practice the programme focus on the exploratory establishment of a database structure integrating different software applications, including GIS platforms, allowing a tentative integration of the diverse regional historical data sources, such as those obtained from the interpretation of historical cartography, old toponymy, iconographic sources, textual documentation, and oral (ethnographic) tradition.

C11-05

Telmo PEREIRA (Lisboa, Portugal)
 José Eduardo MATEUS (Lisboa, Portugal)
 Paula QUEIROZ (Lisboa, Portugal)

Pleistocene Fluvial Palaeoecology in the Tagus Valley – The state-of-the-art.

ABSTRACT: Although still very fragmentary, most evidence concerning Pleistocene ecosystems in Portugal, comes from karstic deposits where wood charcoal and mammalian bone remains constitute almost the unique source of information.

Pleistocene palaeobotanical studies are extremely rare and the only studies come from Serra da Estrela and the Setúbal Peninsula series.

Nevertheless, since the 1940', the Portuguese Geologic Surveys ("Serviços Geológicos de Portugal"), identified some fluvial clayey layers inside stratigraphical series of Quaternary fluvial terraces, with fossil botanic content.

This virtually indicates the viability of a future Pleistocene Fluvial Palaeobotanic research programme, whatever it might be.

More recently, palynologic results from ocean cores collected on the outer margin of the Portuguese marine platform showed a continental-derived pollen content, partly transported by the Tagus and the Sado discharges. The potential interest of comparing both fluvial and marine pollen assemblages seems promising.

In this presentation, a state-of-the-art on this issue will be provided, together with a first report on a preliminary inquire concerning the re-observation of some of these contexts, with a special focus in the Alpiarça Region (Tagus River).

KEYWORDS: *Pleistocene; Palaeobotany; Fluvial deposits.*

C11-06

Randi DANIELSEN (Braga, Portugal)

Landscape development in central littoral Portugal under anthropogenic and/or climatic influence.

ABSTRACT: The littoral zone of central Portugal is dominated by large sand dune areas afforested in the early 19th Century in response to the threat of sand dunes advancing towards settlements and agricultural fields. Little is known about the original vegetation of the area and of past dune dynamics. A palynological investigation of lakes situated in the border zone between an agriculturally barren littoral dune landscape and the Gandâra plain currently characterized by intensive agriculture, contributes in these respects. The study shed some light on the background of ecological dynamics during the last millennia as well as the development of local agriculture.

KEYWORDS: *Palynology, Central Portugal, landscape dynamics / human influence.*

C11-07

João TERESO (Alcobaça, Portugal)

Terronha de Pinhovel in the context of the NW Iberia: a new project

ABSTRACT: A new Project will be presented here. It focuses on the anthracological and carpological investigation of a proto-historic and roman settlement.

Terronha de Pinhovel (Macedo de Cavaleiros, Northeast Portugal) is a settlement occupied during the Iron Age and the Roman period. It is placed in the southern part of what has been considered the Zoelae territory, controlling the passage through the Macedo Valley. During three archaeological campaigns there have been identified several fireplaces with abundant plant macrofossils.

The few paleobotanic studies in this region are based in charcoal analysis, mainly of prehistoric settlements. Although there are no polinic data available for this area, there are important investigations carried out in the Spanish sierras located close to this Portuguese region. Those anthracological and carpological research, and the pollen sequences, are of great relevance in order to accomplish an understanding of the vegetation changes and evolution, also as the role of human activity.

The Terronha de Pinhovelo project is in its beginning but it is expected to be of great relevance mainly in order to add new data on the human exploitation of the territory and selection of wood resources.

C11-08

Tomaso Di FRAIA (Pisa, Italy)

Following in Mycenaean's footsteps: two specialized productions at the Final Bronze Age site of Archi (Chieti, Italy)

Dans le sillage des Mycéniens: deux productions spécialisées dans le site du Bronze Final d'Archi (prov. Chieti, Italie).

RESUMÉ: L'habitat du Bronze Final (1150-950 a. J.-C.) de Fonte Tasca (Comune d'Archi, prov. Chieti, Italie), a révélé deux secteurs économiques très importants.

La présence de noyaux d'olives de grandes dimensions démontre l'exploitation d'oliviers cultivés, tandis que le grand nombre de *dolia*, fabriqués surtout en *chamotte* et capables de contenir des centaines de litres, s'explique uniquement pour le stockage de l'huile. L'oléiculture et la production d'huile, deux innovations amorcées par des influences culturelles extérieures, furent évidemment favorisée par le milieu naturel (collines géoclimatiquement favorables à l'oléiculture) et par une organisation socio-économique très avancée.

Le grand nombre de fusaïoles, de bobines et de poids de métier à tisser, tous en céramique, ne trouve confrontation dans aucun autre habitat du Bronze Final. De plus, une analyse fonctionnelle de ces outils a démontré que la quasi totalité des fusaïoles était faite pour filer des fils plutôt fins; pareillement les poids de métier, petits et légers, devaient être utilisés pour produire des étoffes très légères et raffinées. Donc le filage et le tissage, probablement accompagnés par la couture et la broderie (ceci semble indiqué par les bobines), étaient des activités spécialisées qui permettaient une production remarquable pour qualité et quantité. Dans les deux cas il s'agit précisément des productions qui avaient caractérisé longtemps l'économie mycénienne, en lui fournissant une contribution fondamentale pour l'exportation.

On peut donc supposer que ces activités se soient développées à Fonte Tasca juste à la suite de l'écroulement des Palais mycéniens, dans un réseaux d'échange déjà éprouvé.

KEYWORDS: oléiculture, *dolia*, filage et tissage.

Session C13

Friday , 8 September 2006 / Vendredi, 8 Septembre 2006
And/ Et
Saturday , 9 September 2006 / Samedi, 9 Septembre 2006

Anfiteatre 3, Faculty of Law, Lisbon University
Amphithéâtre 3, Faculté de Droit, Université de Lisbonne

The earliest inhabitants in Europe

Les premiers habitants en Europe

organized by / organisé par

Henry de Lumley

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SESSION'S ABSTRACT

Several recent discoveries have renewed our knowledge on the earliest inhabitants of Europe. We know now, thanks to the findings made at Barranco León and Fuente Nueva 3, that they occupied the Mediterranean coasts since 1,3 Ma. Several fundamental problems remain unsolved :

- Where these earliest humans are coming from and the main stages of their progression through the Continent. One or several waves of settlement.
- Who were these Men :*Homo habilis*, *Homo rudolfensis*, *Homo georgicus*, *Homo ergaster*, *Homo erectus*, *Homo antecessor*, *Homo cepranensis*.
- Different raw materials débitage strategies.
- Typological characteristics of the earliest industries in Europe.
- Cultural assignments : Preolduwayen, Oldowayen, archaic industry.
- Dynamics of the interactions between the earliest Europeans and their environment. Are there climatic reasons that explain the arrival of the first Europeans.

RÉSUMÉ DE LA SESSION

De nombreuses découvertes récentes ont renouvelé nos connaissances sur les premiers habitants de l'Europe. Nous savons aujourd'hui, grâce aux découvertes effectuées sur les sites de Barranco León et de Fuente Nueva 3 qu'il occupe les bords de la Méditerranée dès 1,3 Ma. De nombreux problèmes fondamentaux sont à résoudre:

- D'où viennent les premiers européens et les principales étapes de leur progression sur le continent. Une seule ou plusieurs vagues de peuplement.
- Qui étaient ces hommes : *Homo habilis*, *Homo rudolfensis*, *Homo georgicus*, *Homo ergaster*, *Homo erectus*, *Homo antecessor*, *Homo cepranensis*.
- Différentes stratégies de débitage des matières premières.
- Caractéristiques typologiques des plus anciennes industries de l'Europe.

- Attributions culturelles : Préoldowayeb, Oldowayen, industrie archaïque.
- Dynamique des interactions entre les premiers européens et leur environnement. Y a t il des raisons climatiques qui expliquent l'arrivée des premiers européens.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

8th September 2006 / 8^{ème} Septembre 2006

- 09:00 **Opening / Ouverture**
- 09:00-09:15 Deborah BARSKY (Tautavel, France)
C13-01 **Clats bruts de débitage et éclats à retouches irrégulières d'utilisation dans les industries lithiques archaïques des premiers habitants de l'Europe.**
- 09:15-09:30 Italo BIDDITTO (Pofi, Italy)
C13-02 **L'assemblage lithique du site de Castro di Volsci (Frosinone, Italie) dans le cadre des plus anciennes industries européennes.**
- 09:30-09:45 Emiliano BRUNER
 Giorgio MANZI
C13-03 **The Ceprano calvarium under tomographic inspection. Further evidence about the cranial morphology of the earliest Europeans.**
- 09:45-10:00 Antoni CANALS I SALOMO (Tarragona, Spain)
C13-04 **Les industries lithiques archaïques des gisements de Cacères: grotte de Santan Ana et grotte de Maltraviesc.**
- 10:00-10:15 Eudald CARBONNEL I ROURA (Tarragona, Spain)
C13-05 **Les industries lithiques archaïques de la Sima de l'Eléphant et de Gran Dolina TD 4, TD 5 et TD 6, Sierra d'Atapuerca, Espagne.**
- 10:15-10:30 Dominique CAUCHE (Nice, France)
C13-06 **Stratégie de débitage dans les industries lithiques archaïques des premiers habitants de l'Europe.**
- 10:30-10:45 Vincenzo CELIBERTI (Tautavel, France)
C13-07 **Galets aménagés et galets fracturés utilisés dans les industries lithiques archaïques des premiers habitants de l'Europe.**
- 10:45-11:00 Jackie DESPRIEE (Blois, France)
 Robert GAGEONNET (Blois, France)
 Pierre VOINCHET (Paris, France)
 Christophe FALGUERES
 Jean-Jacques BAHAIN (Paris, France)
 Jean Dépont

Jean-Michel DOLO (Gif-sur-Yvette, France)
Hélène TISSOUX (Paris, France)
Gilles Courcimault

C13-08 **Les vagues de peuplement au Pléistocène inférieur et moyen dans le bassin de la Loire moyenne, région Centre, France. Apport de l'étude des formations fluviales.**

11:00-11:15 Mathieu DUVAL
Christophe FALGUÈRES
Jean-Jacques BAHAIN
Pierre VOINCHET
Jean-Michel DOLO
Isidro TORO
Bienvenido MARTINEZ-NAVARRO

C13-09 **Datation para ESR du site paléolithique inférieur de Fuente Nueva 3 (Orce, Bassin de Guadix-Baza, Espagne).**

11:15-11:30 Anna ECHASSOUX (Nice, France)

C13-10 **Dynamique des interactions entre les premiers européens et leur environnement. Comportement, mode de vie et niveau de cognition des premiers européens.**

11:30-11:45 Eduardo GARCÍA-SÁNCHEZ (Madrid, Spain)

C13-11 **The earliest human occupation of Europe: migratory routes.**

11:45-12:00 Eduardo GARCÍA-SÁNCHEZ (Madrid, Spain)

C13-12 **The earliest human occupation of Europe: a heterochronological process.**

12:00-12:15 Rebeca GARCIA GONZÁLES (Burgos, Spain)
José MIGUEL CARRETERO (Burgos, Spain)
Laura RODRÍGUEZ (Burgos, Spain)
Asier GÓMEZ (Burgos, Spain)
Juan Luis ARSUAGA (Madrid, Spain)
José María BERMÚDEZ DE CASTRO (Madrid, Spain)
Eudald CARBONELL I ROURA (Tarragona, Spain)
Ignacio MARTÍNEZ MENDIZÁBAL (Alcalá de Henares, Spain)

C13-13 **Subadult clavicles from Atapuerca-TD6 (Gran Dolina site, Burgos, Spain).**

12:15-12:30 Iris GLAESSLEIN (Liverpool, UK)

C13-14 **Patterns of choice and constraint in pre-Neanderthal central Europe.**

12:30-12:45 Ana GRACIA TELLEZ (Madrid, Spain)
Juan Luis ARSUAGA (Madrid, Spain)
Ignacio MARTÍNEZ MENDIZÁBAL (Alcalá de Henares, Spain)

- C13-15** **Maxillary osteitis in cranium 5 from the Sima de los Huesos (Atapuerca, Spain): maxillo-dental infection and/or neoplastic deformation?**
- 12:45-13:00 Sophie GREGOIRE (Tautavel, France)
- C13-16** **Nature des roches et aires d'approvisionnement en matières premières des industries lithiques archaïques des premiers habitants de l'Europe. Explosion des territoires.**
- 13:00-14:30 **Lunch / Déjeuner**
- 14:30-14:45 Henry DE LUMLEY (Paris, France)
- C13-17** **Les premières étapes de la colonisation de l'Europe et l'arrivée de l'Homme sur les rives de la Méditerranée,**
- 14:45-15:00 Marie-Antoinette DE LUMLEY (Paris, France)
David LORDKIPANIDZE (Tbilisi, Georgia)
- C13-18** **Homo georgicus aux portes de l'Europe, il y a 1,81 Ma. Un pont entre Homo habilis et Homo ergaster.**
- 15:00-15:15 Giorgio MANZI (Roma, Italy)
Italo BIDDITTO (Pofi, Italy)
Vincenzo CELIBERTI (Tautavel, France)
Maria FOLLIER
Dennis KENT
Donatella MAGRI
Rita MELIS
Salvatore MILLI
Giovanni MUTTONI
Maria Rita PALUMBO (Roma, Italy)
Fabio PARENTI (Roma, Italy)
Massimo RUFFO
Barbara SARACINO
Giancarlo SCARDIA
Eugenia SEGRE-NALDINI (Roma, Italy)
Carl C SWISHER
Aldo SEGRE (Roma, Italy)
- C13-19** **Cenprano, Italy: excavations in the lower Palaeolithic horizons at Campogrande and surroundings. Field seasons 2001-2005.**
- 15:15-15:30 Ignacio MARTÍNEZ MENDIZÁBAL (Alcalá de Henares, Spain)
Juan Luis ARSUAGA (Madrid, Spain)
R. QUAM (Binghamton, U.S.A.)
- C13-20** **Paleontological approaches to the evolution of language: the state of the art.**
- 15:30-15:45 Antonella MINELLI (Isernia, Italy)
- C13-21** **The Limestone industry of Isernia La Pineta.**

15:45-16:00 Anne-Marie MOIGNE (Tautavel, France)
Arnauld FILOUX

C13-22 **Approvisionnement alimentaire des premiers habitants de l'Europe.**

16:00-16:15 Medea NIORADZE (Tbilisi; Georgia)

C13-23 **Les industries lithiques archaïques du début du Pléistocène inférieur du site de Dmanissi, Géorgie.**

16:15-16:30 Maria Cruz ORTEGA MARTÍNEZ (Madrid, Spain)
Ana GRACIA TELLEZ (Madrid, Spain)
José MIGUEL CARRETERO (Burgos, Spain)
Ignacio MARTÍNEZ MENDIZÁBAL (Alcalá de Henares, Spain)
Juan Luis ARSUAGA (Madrid, Spain)

C13-24 **Restoration of a fossil human femur from the site of the Sima de los Huesos (Atapuerca, Spain).**

16:30-16:45 Marie Rita PALUMBO (Roma, Italy)
Magri Donatelle
Giorgio MANZI (Roma, Italy)

C13-25 **Paléoenvironnements, faunal dispersals and human evolution during the Pleistocene: Italy as a case-study.**

16:45-17:00 Fabio PARENTI (Roma, Italy)

C13-26 **New data on middle Pleistocene of the Anagni basin, Southern Latium, Italy.**

17:00-17:15 Eva María POZA REY (Madrid, Spain)
Juan Luis ARSUAGA (Madrid, Spain)

C13-27 **3D CT reconstruction and virtual endocast of Cranium 5 from the Sima de los Huesos site (Atapuerca).**

17:15-17:30 Aldo Giacomo SEGRE (Roma, Italy)

C13-28 **Lower Pleistocene and Villafranchian sequence in Central Italy.**

17:30-17:45 Ursula THUN-HOHENSTEIN (Ferrara, Italy)
A. DI NUCCI (Ferrara, Italy)
Anne-Marie MOIGNE (Tautavel, France)

C13-29 **Mode de vie à Isernia La Pineta (Molise, Italie): Stratégie d'exploitation du Bison schoetensacki par les groupes humains.**

17:45-18:00 Isidro TORO MOYANO (Granada, Spain)
Henry DE LUMLEY (Paris, France)
Deborah Barsky (Tautavel, France)
Dominique CAUCHE (Nice, France)

Vicenzo CELIBERTI (Tautavel, France)
Beatriz FAJARDO
Sophie GRÉGOIRE (Tautavel, France)

C13-30 **Significance of hominid presence in southern Spain during the Early Pleistocene at the Orce site of Barranco León and Fluente Nueva 3.**

18:00-18:15 Amélie VIALET (Paris, France)

C13-31 **L'évolution de l'homme en Eurasie: nouveaux fossiles, nouveaux outils d'analyse.**

18:15-18:30 Michael J. WALKER (Murcia, Spain)

C13-32 **Hominins Cognitive ability of mid.middle Pleistocene hominins at the <<Lower-to-Middle Palaeolithic transition in Western Europe >>.**

9th September 2006 / 9^{ème} Septembre 2006

09:00-13.00 **Discussion**

ABSTRACTS / RÉSUMÉS

C13-11 Eduardo GARCÍA-SÁNCHEZ (Madrid, Spain)

The earliest human occupation of Europe: migratory routes.

ABSTRACT: European Early Palaeolithic's record of Europe shows, at least, three human occupation episodes. The earliest one, dated *circa* 1.25 Ma BP, could have its origin in East Africa. The second one, dated around the Matuyama/Brunhes Limit, its recorded by palaeoanthropological remains inviting to consider that these populations came from western Asia. The third of them, documented since OIS 16/OIS 15, supposed the dispersion into Europe of acheulean technologies, maybe from East Africa by Middle East. Present paper explores possible routes followed by these populations in their way into western Eurasia.

KEYWORDS: Europe. Earliest Human Occupation. Lower Pleistocene. Middle Pleistocene. Pre-Oldowayen. Oldowayen. Acheulean.

C13-12 Eduardo GARCÍA-SÁNCHEZ (Madrid, Spain)

The earliest human occupation of Europe: a heterochronological process.

ABSTRACT: European Early Palaeolithic's record of Europe shows, at least, three human occupation episodes. The oldest one is only recorded in the Iberian Peninsula. The sites are scarce and dated between 1.5 and 1.25 Ma BP. The lithic assemblages are very similar to those recorded in Dmanisi (Georgia) *circa* 1.8 Ma BP, and may represent the same hominid dispersal event, also recorded in Middle East and East Asia. This hominid spread across Eurasia must be related to the faunal changes detected in Caucasus, Middle East and European ecosystems by the Pliocene/Pleistocene conventional limit, than involved the diffusion of African *taxa* in those regions. A second human occupation of Europe, restricted into the Mediterranean area, is recorded by a slightly

more abundant number of archaeological sites. They are dated between OIS 25-OIS 24 and OIS 19-OIS 18 transitions. Paleoanthropological and archaeological records point to an Asian origin of this hominid dispersal, related with the Galerian faunal event. After a new archaeological record hiatus, there are new evidences of human activity in Europe since OIS16-OIS 15. At this time the European geographic range populated by hominids increases, reaching as northern latitudes as South Great Britain and North Germany in the warm isotopic stages. In general terms, locations representing this third phase involved the introduction in Europe of new technologies and behavioural trends, as a better knowledge of the environment. While the previous human occupation events don't seem to be successful, paleoanthropological and archaeological data recorded from *circa* 550 Ka BP points to demographic continuity, linking with the earliest manifestations of the technologies and human populations characteristic of the European Middle Palaeolithic.

KEYWORDS: Europe. Earliest Human Occupation. Lower Pleistocene. Middle Pleistocene.

C13-13

Rebeca GARCIA GONZÁLES (Burgos, Spain)
 José MIGUEL CARRETERO (Burgos, Spain)
 Laura RODRÍGUEZ (Burgos, Spain)
 Asier GÓMEZ (Burgos, Spain)
 Juan Luis ARSUAGA (Madrid, Spain)
 José María BERMÚDEZ DE CASTRO (Madrid, Spain)
 Eudald CARBONELL I ROURA (Tarragona, Spain)
 Ignacio MARTÍNEZ MENDIZÁBAL (Alcalá de Henares, Spain)

Subadult clavicles from Atapuerca-TD6 (Gran Dolina site, Burgos, Spain).

ABSTRACT: We report here the analyses of the two infant clavicle remains, ATD6-37 and ATD6-55 from the Lower Pleistocene TD6 level of Gran Dolina site (Sierra de Atapuerca), that belong to two different immature individuals of the species *Homo antecessor*. These clavicles together with the adult specimen ATD6-37 provide us with some relevant information about two important aspects of the Palaeobiology of these humans, i.e., development and body shape. The morphological pattern and age at dead are determined by comparisons with a large sample of dental aged modern infants, and hypothesis about the postcranial growth and body shape of these humans are suggested and discussed.

C13-14

Iris GLAESSLEIN (Liverpool, UK)

Patterns of choice and constraint in pre-Neanderthal central Europe.

ABSTRACT: The microlithic industries of lower Palaeolithic central Europe have been speculated to be a result of raw material availability and therefore natural constraints. However, on some sites such as Bilzingsleben and Vértesszöllös, raw material constraints do not apply. Clearly here has been a positive selection for small-scale tools that must have different explanations.

The seemingly stable pattern of forms unrelated to raw material properties, leads to the inference that early hominin societies possessed, and transmitted over generations, a defined set of behavioural norms.

The paper argues that patterns of choice can be isolated within lower Palaeolithic stone tool assemblages that are distinct from patterns of ecological restraint.

C13-15

Ana GRACIA TELLEZ (Madrid, Spain)
 Juan Luis ARSUAGA (Madrid, Spain)
 Ignacio MARTÍNEZ MENDIZÁBAL (Alcalá de Henares, Spain)

Maxillary osteitis in cranium 5 from the Sima de los Huesos (Atapuerca, Spain): maxillo-dental infection and/or neoplastic deformation?

ABSTRACT: Cranium 5 from the Sima de los Huesos (Atapuerca) shows an alteration of the left maxillary bone above the canine-premolars roots which extends up to the lower left nasal border. The

bone is considerably thickened, and the nasal border is deformed, showing a fistular drainage canal. An associated premolar, which fits into the left P3 tooth socket, was subsequently recovered from the site. This tooth is broken and the pulp cavity is exposed. A dental infection is clearly shown in this tooth, the mandible and the maxilla, and the possible relation with the maxillary deformation is discussed.

C13-20 Ignacio MARTÍNEZ MENDIZÁBAL (Alcalá de Henares, Spain)
Juan Luis ARSUAGA (Madrid, Spain)
R. QUAM (Binghamton, U.S.A.)

Paleontological approaches to the evolution of language: the state of the art.

ABSTRACT: For decades evidence for the evolution of human language has been looked for in the hominid fossil record relying mainly on paleoneurology and the reconstruction and study of the upper respiratory tract. Nevertheless, recent advances in neuroscience, in the study of the ontogenetic development of the upper respiratory tract and the new fossil human discoveries from the Sierra de Atapuerca have questioned the reliability of both these approaches. Recently, we have proposed a new research line to address the question of the origin of language based on the possibility of reconstruction the acoustic capacities of fossil hominids.

C13-24 Maria Cruz ORTEGA MARTÍNEZ (Madrid, Spain)
Ana GRACIA TELLEZ (Madrid, Spain)
José MIGUEL CARRETERO (Burgos, Spain)
Ignacio MARTÍNEZ MENDIZÁBAL (Alcalá de Henares, Spain)
Juan Luis ARSUAGA (Madrid, Spain)

Restoration of a fossil human femur from the site of the Sima de los Huesos (Atapuerca, Spain).

ABSTRACT: A fossil human femur (Femur XII) of *Homo heidelbergensis* from the site of the Sima de los Huesos (Atapuerca, Spain) was reconstructed from two main fragments and numerous smaller fragments from the diaphysis. The original reconstruction of this specimen was separated after the discovery of additional fragments which pertained to this same bone. The subsequent reconstruction resulted in a complete femur. To carry this out, the fragments were separated using acetone vapors in a sealed container. This technique is commonly used on ceramic materials, but its application to osseous remains is an innovative approach.

C13-26 Fabio PARENTI (Roma, Italy)

New data on middle Pleistocene of the Anagni basin, Southern Latium, Italy.

ABSTRACT: Excavations have been restarted at Fontana Ranuccio, a 458 Ky Acheulean site with rich mammalian fauna (*Elephas antiquus*, *Ursus deningeri*, *Bos primigenius*, *Dama clactoniana*, *Equus mosbachensis*), a remarkable bone industry and 4 human teeth, belonging to some form between *erectus* and Neanderthalian. At Colle Marino, a travertine layer and lime-clay contains mode 1 industry, below any volcanic layers whose lower limit is 700 Ky old. Drillings, for about 40 m, have identified Bhrunes-Matuyama limit 23 m under the main volcanic pyroclastite, in a thick limnic clay layer. At Costa San Giacomo middle Villafranchian yellow sands contain *Mastodon arvernensis* and *Elephas meridionalis*.

C13-27 Eva María POZA REY (Madrid, Spain)
Juan Luis ARSUAGA (Madrid, Spain)

3D CT reconstruction and virtual endocast of Cranium 5 from the Sima de los Huesos site (Atapuerca).

ABSTRACT: The use of the CT scans in paleoanthropology allows for the non-invasive study of fossil remains, aiding in their preservation and making it possible to study the internal structures and areas which in the past were difficult to access, such as the endocranial cavities. Through 3D CT reconstruction, we can obtain a virtual endocast and study some of the internal structures, such as the

meningeal patterns. A 3D CT reconstruction of the endocranium in Cranium 5 from the Sima de los Huesos has provided new information on European *Homo heidelbergensis* making comparative studies with African Middle Pleistocene specimens possible.

C13-28 Aldo Giacomo SEGRE (Roma, Italy)

Lower Pleistocene and Villafranchian sequence in Central Italy.

ABSTRACT: Explorations and diggings, in Latium and neighbourhoods from 1950 to 2004, have brought out following composite sequence: Northern Latium, upper middle Pleistocene: Travertine, gravels Acheulian-mustertian transition, Riss. *Homo* (femur), *Elephas Antiquus*, *Hippopotamus*, *Bubalus murrensis*. Upper Acheulian artefacts layers. Middle Latium, middle Pleistocene: Volcanoclastic K-Ar 360 Ky. Below: lower Acheulian lithic and bone artefacts. *Homo*, *Inuus*, *Elephas antiquus*, *Ursus deningeri*, *Dama clactoniana*. Volcanic ash with *Zelkova*, *Buxus Caucasian* flora. Hot pyroclastic flow about 15 m (50 feet) thick between 520 to 530 Ky. Limnotufite with Taxodiacean flora. Choppers of lower-middle Pleistocene below the volcanic limit of 700 Ky. Southern Latium, lower Pleistocene: Travertine reed Phragmites fragments. Ceprano Hominid calvaria 800-900 Ky old. Gravel with choppers artefacts. Red sand with *Unio* shells. Gravel sand with very rough chopper artefacts (Arce locality). Unconformity. Yellow sand layer with middle Villafranchian *Mastodon arvernensis*, *Elephas meridionalis* fauna.

C13-32 Michael J. WALKER (Murcia, Spain)

The Demise of the “Mysterians”: Cognitive ability of mid-Middle Pleistocene hominins at the “Lower-to-Middle Palaeolithic transition”.

ABSTRACT: An aspect of the study of human cognitive evolution in Lower and Middle Pleistocene times, that often generates more heat than light, is whether early *Homo* had spoken language. This aspect is unhelpful because it offers no clues as to how to design practical research into the palaeoanthropological or Palaeolithic record that might resolve the matter. It is more worthwhile to address questions on which the record can indeed throw light. One of these is whether early *Homo* made choices that required decisions to be taken about embarking on, and engaging in, chains of activity that comprise sequential links, each of which involves behaviour different from that of both the previous and subsequent link, in a chain that has to be followed in orderly sequence for results to be attained. Such a chain has a self-determining property, in the sense that choices taken in order to embark on the activity of the next link set both the scope of, and the limits to what may then be undertaken. Awareness of the limits may stimulate recursive attention being paid to hitherto unnoticed possibilities for exploration in earlier parts of the chain once a chain is no longer seen as defining a single and exclusive pattern of behaviour, but instead as enabling and enhancing alternative patterns of behaviour open to freedom of choice (“second-order cognitions” in psychological jargon; hardly ever observed in wild hominoids). Palaeolithic evidence for this is clear-cut by mid-Middle Pleistocene times. (...)

Session C14

Monday, 4 September 2006 / Lundi, 4 Septembre 2006

*Room 11.06, Faculty of Law, Lisbon University
Salle 11.06, Faculté de Droit, Université de Lisbonne*

Modern Humans origins in Eurasia

Origines de l'homme moderne en Eurasie

organized by / organisé par

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SESSION'S ABSTRACT

Modifications leading to anatomically modern humans in Europe have various origins, probably related to different cultural environments that were crossed, with an external origin. At the same time, humans were changing in Europe, becoming genetically isolated; external input was significant for its rapidity and radical differences. Local populations may have been able to adapt to such changes, but the greatest impact came from migration of technologically, anatomically and spiritually more evolved people. This (non-African!) migration was a shock that had quite different repercussions depending on the cultural context in which it arrived. The phenomena of acculturation and mixing was probably the most important for the entire history of the European continent. The different scenarios proposed for the replacement of Neandertals or Homo erectus by modern humans must be supported by chronological data. With this aim, we are requesting synthetic contributions on recent advances in radiometric research. In addition, this seems to be an opportune time to compare the results from different methods, such as TL, K/Ar, tephrochronology and the calibration of C14. Chronologies based on oxygen isotope variability should also be compared with continental climatic and chronological variability. Beyond the different methods being used, the primary aim of this symposium focuses on the processes for the appearance of anatomically modern humans, with respect to both anatomic and cultural evolution. Such sequences should first be conceived at a regional level, to be subsequently integrated into the larger Eurasian framework. In priority, we are soliciting authors from regions that are poorly known in order to complete a general table.

RÉSUMÉ DE LA SESSION

Les modifications menant aux hommes anatomiquement modernes en Europe ont des origines variées, probablement liées à des environnements culturels différents qui furent traversés, d'origine extérieure. En même temps, l'humanité changeait en Europe, devenant isolée génétiquement ; l'apport externe était significatif, par sa rapidité et ses différences radicales. Les populations locales ont pu s'adapter à de tels changements, mais le plus grand impact vint de la migration de populations techniquement, anatomiquement et spirituellement plus évoluées. Cette migration (non-africaine) fut un choc, qui eut différentes répercussions selon le milieu culturel où elle survint. Ce phénomène

d'acculturation et de mélange fut probablement le plus important de l'ensemble de l'histoire du continent européen. Les différents scénarios quant au remplacement des Néandertals ou des Homo erectus par les Hommes Modernes doivent être soutenus par des données chronologiques. Dans ce but, nous sollicitons des contributions synthétiques sur les récentes avancées en matières radiométriques. Par ailleurs, il semble aujourd'hui opportun de confronter les résultats issus des différentes méthodes telles que la T.L., le potassium/Argon, la tephro-chronologie et les tables de calibration du C14. Les chronologies fondées sur les variations isotopiques de l'Oxygène doivent être confrontées aux variations climatiques et chronologiques continentales. Au-delà des différentes méthodes mises en oeuvre, le but essentiel de cette rencontre est centré sur les processus d'apparition de l'Homme Moderne, à la fois sur le plan anatomique et dans ses aspects culturels. De telles séquences devraient d'abord être conçues sur le plan régional, afin de s'intégrer dans une démarche plus large entreprise sur le plan de l'Eurasie. En priorité, nous sollicitons les auteurs d'aires régionales peu ou mal méconnues, afin de compléter un tableau général.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

- 14:30 **Opening / Overture**
- 14:30-14:50 Annamaria RONCHITELLI (Siena, Italy)
Ursula Wierer (Siena, Italy)
- C14-01** **Uluzzian and Aurignacian in Southern Italy: which approach regarding the economy of *débitage*?**
- 14:50-15:10 Francesco MALLEGNI (Pisa, Italy)
Stefano RICCI (Pisa, Italy)
- C14-02** **Upper Paleolithic burials of Grotta Paglicci: Paglicci 12 and Paglicci 25. Relief of the enthesopathies.**
- 15:10-15:30 Philip R. NIGST (Leipzig, Germany)
Paul HAESAERTS (Brussels, Belgium)
- C14-03** **The Early Upper Palaeolithic in Central Europe: the site of Willendorf II (Lower Austria).**
- 15:30-15:50 Vyacheslav SLAVINSKI (Novosibirsk, Russia)
- C14-04** **Variability of Central Asian industries of the Levallois type.**
- 15:50-16:10 Alexander TSYBANKOV (Novosibirsk, Russia)
- C14-05** **Chronological classification of the Southern Kazakhstan Paleolithic (on the basis of the Kyzyltau archaeological collections).**
- 16:10-16:30 Th. BENICE VIOLA (Vienna, Austria)
Horst SEIDLER (Vienna, Austria)
- C14-06** **Modern Human Origins - A Central Asian perspective.**

ABSTRACTS / RÉSUMÉS

C14-01 Annamaria RONCHITELLI (Siena, Italy)
Ursula WIERER (Siena, Italy)

Uluzzian and Aurignacian in Southern Italy: which approach regarding the economy of débitage?

ABSTRACT: The present paper is part of a research about the behaviour of two populations belonging to different *taxa* which lived in Southern Italy during the Early Upper Palaeolithic: the Uluzzians, the last representatives of the Neandertals, and the Aurignacians, the first modern men in Europe. The analysis wants to compare their systems of lithic production, mainly what concerns modalities and degree of raw material exploitation.

The study is based on two sites which show the above mentioned Cultures in a stratigraphic sequence: Castelcivita Cave and Cala Cave, both in the region of Campania (Salerno Province), the first located in the inland and the second actually on the coast.

C14-02 Francesco MALLEGGNI (Pisa, Italy)
Stefano Ricci (Pisa, Italy)

Upper Paleolithic burials of Grotta Paglicci: Paglicci 12 and Paglicci 25. Relief of the enthesopathies.

ABSTRACT: At Grotta Paglicci - Puglia, Italy, have been found two gravettian burials: Paglicci 12, referable to a juvenile male individual and Paglicci 25, an adult of feminine sex. In this study the enthesopathies found on the two subjects are described.

C14-03 Philip R. NIGST (Leipzig, Germany)
Paul HAESAERTS (Brussels, Belgium)

The Early Upper Palaeolithic in Central Europe: the site of Willendorf II (Lower Austria).

ABSTRACT: Between 45 and 30 ka BP we recognize the replacement of Neanderthals by anatomically modern humans and the transition from Middle to Upper Palaeolithic. One of the central questions in the transition period discussion is the age of the Early Aurignacian, especially the question if an Aurignacian prior to 36,5 ka BP is present in Europe and its relation to the various transitional industries (e.g. Châtelperronian, Szeletian, etc.). As a contribution to this discussion this talk deals with the archaeology and chronostratigraphy of layers 2 and 3 of Willendorf II. Willendorf II is one of the rare sites to offer a good chronostratigraphic framework for the transition period in Central Europe. The focus of this presentation will be a technological analysis of the lithic industries of layers 2 and 3.

C14-04 Vyacheslav SLAVINSKI (Novosibirsk, Russia)

Variability of Central Asian industries of the Levallois type.

ABSTRACT: Recently, researchers of the Central Asian Paleolithic have established a number of developmental trends and classified available technocomplexes on the basis of common features according to these trends. Technocomplexes have been mostly established on the basis of formal technical-typological and statistical analyses. As a result of this broad understanding of the attribution problem and because of the insufficient concretization of archaeological materials, such broad notions as the Middle Paleolithic Levallois industries of Central Asia have become common in literature. On the basis of the results of the refitting analyses carried out within the collections of Kara-Bom and Orkhon-1, a considerably "narrower" concept of the Levallois technology of Central Asia have been established. Certain trends have been identified within this general concept. Two major reduction strategies have been determined: the uni-polar reduction aimed at detaching points and the classical tortoise reduction. Middle Paleolithic industries of the Levallois type from the given region have been subjected to comparative analyses with respect to core refitting possibilities, more precise establishing of morphology of artifacts and typology of reduction products. Attempts to establish the dispersal areas of the identified Levallois trends within Central Asia have been made.

C14-05

Alexander TSYBANKOV (Novosibirsk, Russia)

Chronological classification of the Southern Kazakhstan Paleolithic (on the basis of the Kyzyltau archaeological collections).

ABSTRACT: The Karatau Mountain range has become the most thoroughly investigated archaeological area in Southern Kazakhstan. During the episodes of considerably humid climatic conditions in the Pleistocene, the paleo-environment of this area was beneficial for human habitation. Availability of fresh water and the high quality raw material made the piedmonts of the Karatau range an ideal place for early humans.

Since 1994, a large-scale archaeological research has been carried out at the Kyzyltau sites located on the northeastern slopes of the Maly Karatau ridge. The sites represent clusters of million Stone Age tools concentrated on the surface at the area of several tens of square kilometers. Archaeological materials have been carefully analyzed and a new pattern of cultural and chronological attribution of lithic industries of the region under study have been elaborated. Hypothesis on the existence of four diachronic lithic industries have been put forward. The industries have been preliminarily attributed to the chronological range from the early to the final Upper Paleolithic. The established industries demonstrate different technological traditions of preparation and utilization of raw material. The noted various states of preservation of the artifact surfaces support the hypothesis on the diachronic attribution of technocomplexes.

Session C15

Tuesday 5 September 2006 / Mardi, 5 Septembre 2006

*Room 11.04, Faculty of Law, Lisbon University
Saale 11.04, Faculté de Droit, Université de Lisbonne*

Iran Palaeolithic

Le Paléolithique d'Iran

organized by / organisé par

- Marcel OTTE** Université de Liège, Service de Préhistoire, Liège, Belgium – prehist@ulg.ac.be
- Fereidoun BIGLARI** Center for Paleolithic Research, National Museum of Iran, Teheran, Iran – fbiglari@gmail.com
- Jacques JAUBERT** PACEA, Institut de Préhistoire et de Géologie du Quaternaire, Talence, France – j.jaubert@ipggq.u-bordeaux1.fr

SESSION'S ABSTRACT

The Zagros mountains contain several caves, hardly explored. Certain of these have an ancient Aurignacian, crucial for the origins of modern Man in Europe. The colloquium makes the state of the art of what has been discovered and what is in process of research.

RÉSUMÉ DE LA SESSION

Les Monts Zagros contiennent de nombreuses grottes fort peu explorées. Certaines contiennent un aurignacien ancien, crucial pour l'origine de l'Homme moderne en Europe. La rencontre établit le bilan de ce qui fut découvert et de ce qui est en cours.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

- 09:00 **Opening / Overture**
- 09:00-09:20 Gilles BERILLON (Paris, France)
 Narges AMINZADEH (Téhéran, Iran)
 Pierre ANTOINE (Villeneuve d'Ascq, France)
 Asghar ASGARI KHANEGHAH (Téhéran, Iran)
 Jean-Jacques BAHAIN (Paris, France)
 Mohammad BEHESHTI (Téhéran, Iran)
 Benoît CHEVRIER (Nanterre, France)
 Hamid EBADOLLAHI (Racht, France)
 Hamid EBADOLLAHI (Téhéran, Iran)

Fernando RAMIREZ ROZZI (Paris, France)
Valéry ZEITOUN (Paris, France)

C15-01 **New Palaeolithic open air localities in Northern Iran.**

09:20-09:40 Jacques JAUBERT (Talence, France)
Fereidoun BIGLARI (Téhéran, Iran)
Vincent MOURRE (Talence, France)
Jean-Guillaume BORDES (Bordeaux, France)
Laurent BRUXELLES
Jean-Baptiste MALLYE
Marjan MASHKOUR (Paris, France)
Bruno MAUREILLE (Talence, France)
Rakhmat NADERI
William RENDU
Yves QUINIF
Sonia SHIDRANG (Téhéran, Iran)

C15-02 **The Middle Palaeolithic occupation of Mar-Tarik, a new Zagros Mousterian site in Bisotun massif (Kermanshah, Iran).**

09:40-10:00 Nicholas J. CONARD (Tübingen, Germany)
Elham GHASIDIAN (Tübingen, Germany)
Saman HEYDARI (Tübingen, Germany)

C15-03 **The open-air Epipaleolithic site of Bardia and Paleolithic occupation of the Qaleh Gusheh Sand Dunes, Esfahan Province, Iran.**

10:00-10:20 Elham GHASIDIAN (Tübingen, Germany)
Ahmad AZADI (Yasoj, Iran)
Saman HEYDARI (Tübingen, Germany)
Nicholas J. CONARD (Tübingen, Germany)

C15-04 **Late Paleolithic Blade Production in the Basht Region of the Southwestern Zagros, Iran.**

10:20-10:40 Saman HEYDARI (Tübingen, Germany)
Elham GHASIDIAN (Tübingen, Germany)
Nicholas J. CONARD (Tübingen, Germany)

C15-05 **Paleolithic sites on Travertine and Tufa Formations in Iran.**

10:40-11:00 Vincent MOURRE (Toulouse, France)
Fereidoun BIGLARI (Teheran, Iran)
Jacques JAUBERT (Talence, France)
S. ALIPOUR
Laurent BRUXELLES
Rakhmat NADERI (Teheran, Iran)

C15-06 **Shiwatoo, an Acheulian site near Mahabad, Northwestern Zagros, Iran.**

11:00-11:20 Sonia SHIDRANG (Teheran, Iran)

C15-07 **A Typological and Technological Study of Upper Paleolithic Collection from Sefid Ab, Central Iran.**

11:20-11:40 Marjane MASHKOUR (Paris, France)
 A. MOHASEB (Paris, France)
 Valentin RADU (Bucharest, Roumanie)
 N. HASHEMI (Mashhad, Iran)
 J. DARVISH (Mashhad, Iran)
 Marcel OTTE (Liège, Belgium)
 Fereidoun BIGLARI (Teheran, Iran)

C15-08 **Animals in the Upper Paleolithic cave of Yafteh - (Luristan- Iran).**

11:40-12:00 Jean-Guillaume BORDES (Bordeaux, France)
 Sonia SHIDRANG (Teheran, Iran)

C15-09 **La séquence aurignacienne de Yafteh (Khorramabad, Iran) d'après les fouilles F. Hole et K. Flannery.**

12:00-12:20 Kamyar ABDI

C15-10 **Middle and Upper Pleolithic Patterns of Settlement and Land Use in the Central Zagros.**

12:20-12:40 Janusz K. KOZLOWSKI (Krakow, Poland)

C15-11 **La technologie du Baradostien.**

12:40-13:00 Deborah OLZEWSKI (Philadelphia, PA, U.S.A.)
 Harold DIBBLE (Philadelphia, PA, U.S.A.)

C15-12 **Aurignacian Facies in the Middle East: the case of the Zagros Upper Palaeolithic.**

13:00-14:30 **Lunch / Déjeuner**

14:30-14:50 Fereidoun BIGLARI (Teheran, Iran)
 Mohsen JAVERI (Ispahan, Iran)
 Marjan MASHKOUR (Paris, France)
 Mehdi YAZDI (Ispahan, Iran)
 Rahmat NADERI (Teheran, Iran)
 Sonia SHIDRANG (Teheran, Iran)
 Faranak BAHROLOLOUMI (Teheran, Iran)
 Margareta TENGBERG (Paris, France)
 Jamshid DARVISH (Mashhad, Iran)
 Narges HASHEMI (Mashhad, Iran)

C15-13 **Test excavations at the Middle Palaeolithic Rockshelter sites of Qaleh Bozi, Southwest of Central Iran.**

14:50-15:10 Benoît CHEVRIER (Nanterre, France)
 Gilles BERILLON (Paris, France)
 Asghar ASGARI KHANEGHAH (Téhéran, Iran)

POSTER 1 **New lithic industries in Tehran and Mazandaran provinces (Iran). Typo-technological features.**

15:10-15:30 Benoît CHEVRIER (Nanterre, France)
 Gilles BERILLON (Paris, France)
 Asghar ASGARI KHANEGHAH (Téhéran, Iran)

POSTER 2 **New lithic industries in Tehran and Mazandaran provinces (Iran). Typo-technological features.**

15:30-18:30 **Discussion**

ABSTRACTS / RÉSUMMÉS

C15-01 Narges AMINZADEH (Teheran, Iran)
 Pierre ANTOINE (Villeneuve d'Ascq, France)
 Asghar ASGARI KHANEGHAH (Teheran, Iran)
 Jean-Jacques BAHAIN (Paris, France)
 Mohammad BEHESHTI (Téhéran, Iran)
 Gilles BERILLON (Paris, France)
 Benoît CHEVRIER (Nanterre, France)
 Hamid EBADOLLAHI (Racht, France)
 Sara NOCHADI (Teheran, Iran)
 Fernando RAMIREZ ROZZI (Paris, France)
 Valéry ZEITOUN (Paris, France)

New Palaeolithic open air localities in Northern Iran.

ABSTRACT: The Iranian territory is a central region for any theories relating to Pleistocene human settlements of Eurasia. After a century of field researches, Iranian field evidences mainly come from the Zagros provinces. The cooperative French and Iranian Paleoanthropological Project (FIPP) initiated a field research in Northern Iran. In 2005, we discovered three new open air palaeolithic localities: *Garm Roud* (Amol, Province of Mazandârân) delivered a site of Upper Palaeolithic affinities in a good stratigraphic context; *Otchounak* and *Moghanak* (Damâvand, Province of Tehran) are two localities of Mousterian and Pre-Mousterian affinities that we found on the surface.

C15-02 Jacques JAUBERT (Talence, France)
 Fereidoun BIGLARI (Teheran, Iran)
 Vincent MOURRE (Toulouse, France)
 Jean-Guillaume BORDES (Bordeaux, France)
 Laurent BRUXELLES
 Jean-Baptiste MALLYE
 Marjan MASHKOUR (Paris, France)
 Bruno MAUREILLE (Talence, France)
 Rakhmat NADERI (Teheran, Iran)
 William RENDU
 Yves QUINIF
 Sonia SHIDRANG (Teheran, Iran)

The Middle Palaeolithic occupation of Mar-Tarik, a new Zagros Mousterian site in Bisotun massif (Kermanshah, Iran).

ABSTRACT: The study of the Iranian Middle Paleolithic is taken on the basis of a double objective: 1, to better define the lithic industries and the chronological position of the Zagros Mousterian; 2, to invest other geographical units than Zagros, starting with the central Plateau (e.g. Niyasar and Isfahan regions).

In 2004, the French-Iranian mission for Paleolithic period pursue geological and geomorphological investigation in Kermanshah area to lay strong foundations for these fields and to supplement previous research on raw materials sources undertaken by S. Heydari and F. Biglari. Concerning the first point, we excavated a perched cave at the base of Bisotun massif (30 km NE of Kermanshah),

Mar Tarik, which has been discovered with two other neighboring caves surveyed and published by Biglari in 2001.

The deposits were unfortunately in very large part altered by clandestine excavations. The karstologic study and the history of its sedimentary dynamics could be drawn. The study of the lithic material confirms the techno-typological relationship with previously published data from this area (Hunter's Cave, Warwasi...).

Even if the former studies were not really technologically oriented, we come across similar elements such as use of close raw materials, Levallois *débitage* almost exclusive, strong proportion of retouched tools with a majority of points, elongated points, convergent scrapers, *déjetés* or double scrapers with frequently sharpened edges. This industry thus represents a particular economic and functional *facies*, related most probably on the location and the operating mode of the site itself.

A slab of fine grained limestone engraved of geometrical patterns was discovered but unfortunately we can't be assured that it was associated to Mousterian period. It is the same for some human remains probably of Holocene age and ascribable to *Homo sapiens* on the basis of first diagnosis.

A first date has been obtained on stalagmite at the base of the sequence: 123,6 [+3,4/-3,2] kyr BP. (...)

C15-03

Nicholas J. CONARD (Tübingen, Germany)

Elham GHASIDIAN (Tübingen, Germany)

Saman HEYDARI (Tübingen, Germany)

The open-air Epipaleolithic site of Bardia and Paleolithic occupation of the Qaleh Gusheh Sand Dunes, Esfahan Province, Iran.

ABSTRACT: Qaleh Gusheh is located several kilometers north of Arisman and is a low dune field within the Rig Boland, a belt of mobile dunes that lie to the northeast of the Karkas Mountains and southwest of the Latif Mountains of central Iran. Following the initial discovery of lithic artefacts on the surface of the dunes by members of the German Archaeological Institute in 2003, members of the Tübingen-Iranian Stone Age Research Project (TISARP) began systematic documentation of the sites in the Qaleh Gusheh region in 2004 and 2005. So far 26 sites have been studied, and we have documented occupation of the dune field as far back as the Middle Paleolithic. Unfortunately the sites in the Qaleh Gusheh region are being destroyed rapidly as irrigation-based agriculture expands into the dune fields.

The TISARP team studied a number of localities and focused work in 2005 on the site of Bardia. Here we collected finds on the surface and conducted shallow excavations over an area of 196 m². The crew recovered 7680 chipped lithic artefacts that appear to date to the Epipaleolithic. The cores are mostly bi- and multidirectional platform cores, and tools include laterally retouched blades and bladelets, points, end scrapers and lunates. The diverse lithic raw materials provide excellent conditions for refitting and technological analysis. This paper presents an overview of the archaeology of the Qaleh Gusheh dune field and focuses on the site of Bardia to illustrate the region's potential for Paleolithic research.

C15-04

Elham GHASIDIAN (Tübingen, Germany)

Ahmad AZADI (Yasoj, Iran)

Saman HEYDARI (Tübingen, Germany)

Nicholas J. CONARD (Tübingen, Germany)

Late Paleolithic Blade Production in the Basht Region of the Southwestern Zagros, Iran.

ABSTRACT: The Basht region is located in southwestern Iran near the foothills of Zagros Mountains and on the edge of the Khuzestan Plain. Recent archaeological research has documented many new Epipaleolithic, Upper Paleolithic and several Middle Paleolithic sites. So far the members of the Tübingen-Iranian Stone Age Research Project (TISARP) have collected lithic assemblages from 15 sites, most of which are associated with caves and rockshelters. Compared with published data from other sites of Zagros region including Yafteh, Gar Arjaneh and Pasangar, the assemblages from the Basht region document new patterns of blade and bladelet production. Particularly noteworthy are diminutive, single platform, conical and semi-conical bladelet cores. We assume that assemblages

containing these cores and associate débitage date to the Epipaleolithic, or to the Late Baradostian and Zarsian in Solecki's terminology. This paper presents the technology and typology of the new sites from the Basht region and compares the laminar technologies documented at these sites in the southwestern Zagros with laminar technologies know from other parts of the Zagros Mountains.

C15-05 Saman HEYDARI (Tübingen, Germany)
Elham GHASIDIAN (Tübingen, Germany)
Nicholas J. CONARD (Tübingen, Germany)

Paleolithic sites on Travertine and Tufa Formations in Iran.

ABSTRACT: While the Iranian Paleolithic sites from the caves and rockshelters of the Zagros region are widely known. Current research of the Tübingen-Iranian Stone Age Research Project (TISARP) have documented many new, open-air Paleolithic localities. Recent survey has focused on regions containing travertine and tufa deposits, and our initial results point to these formations as attractive places for Paleolithic research.

These geomorphological features are formed around the outlets of hot spring in areas of Quaternary volcanic activity. Volcanic systems exist in a long and wide belt in the Central Plateau of Iran from the Bazman Mountains in the southeast to the Sahand Mountains in the northwest of the country. Hunter and gatherer societies used these geological features for stone knapping, hunting and living sites. Some of the sites in travertine and tufa deposits have yielded large assemblages of lithic artifacts. Here we discuss the relationship between the travertine and tufa deposits and Paleolithic settlement in these regions. Among many travertine and tufa deposits in Iran, to date very few of them have been surveyed for Paleolithic sites. Where we have looked, the results have been encouraging. Many of these mineral-rich, geothermal springs have formed carbonate deposits which provide good settings for the preservation of cultural materials.

C15-06 Vincent MOURRE (Toulouse, France)
Fereidoun BIGLARI (Teheran, Iran)
Jacques JAUBERT (Talence, France)
S. ALIPOUR
Laurent BRUXELLES
Rakhmat NADERI (Teheran, Iran)

Shiwatoo, an Acheulian site near Mahabad, Northwestern Zagros, Iran.

ABSTRACT: Shiwatoo is an open-air site in alluvial context in the area of Mahabad, in northwestern Iran. It yielded an abundant lithic industry dominated by cores made out of local pebbles, with a few pebble-tools. In 2004, within the framework of the *French-Iranian Paleolithic Mission*, a new visit at the site led to the enrichment of the initial series. Moreover, a technological study of the material resulted in revising the previous chrono-cultural attribution to Oldowan. The discovery of a clear andesite flake-cleaver in 2004 is one of the key elements of the new attribution of the industry to Acheulean. This discovery strongly confirms the presence of Acheulean in this country, in an intermediate geographical position between the series of Levant and those of the Indian sub-continent.

C15-07 Sonia SHIDRANG (Teheran, Iran)

A Typological and Technological Study of Upper Paleolithic Collection from Sefid Ab, Central Iran.

ABSTRACT: The high Iranian central plateau, which overlooked by Paleolithic archaeologists for nearly one century, now seems to offer rich potential for Paleolithic researches. There are increasing numbers of new discoveries of Paleolithic sites in this region during last decade that comprised mostly of Middle Paleolithic age. But recent discovery of an Upper Paleolithic open-air site, Sefid Ab in the west of the Plateau, indicate the region can give us a good opportunity to study Upper Paleolithic occupation in a different environmental setting comparing to the Zagros region. This new site is temporally ordered on the basis of the techno-typological characteristics of the lithic assemblage comparing to the Zagros Aurignacian assemblages. A number of features in this lithic assemblage is comparable to Zagros Aurignacian, but It is obvious that here we have different settlement pattern, adapted to special zone conditions with different environmental setting. This site yielded a

Blade/bladelet industry with Upper Paleolithic techno-typological affinities. For instance high frequency of burin seems to be typical of the Sefid-Ab tool groups. This paper attempts to introduce the characteristics of this new Upper Paleolithic assemblage and have a primarily look on its similarities and differences in comparison with Zagros Aurignacian assemblages.

C15-08 Marjane MASHKOUR (Paris, France)
A. MOHASEB (Paris, France)
Valentin RADU (Bucharest, Romania)
N. HASHEMI (Mashhad, Iran)
J. DARVISH (Mashhad, Iran)
Marcel OTTE (Liège, Belgium)
Fereidoun BIGLARI (Teheran, Iran)

Animals in the Upper Paleolithic cave of Yafteh - (Luristan- Iran).

ABSTRACT: Yafteh cave is located in the Khorramabad region (Luristan province). Yafteh was excavated during the 60's by Franck Hole and Kent Flannery for documenting the Palaeolithic settlement in the Hilly in this part of the Zagros region) and in general this part of the Middle East where the huge gaps in the evidences of prehistoric human settlement do not allow a clear understanding of its dispersal and the diversity of its natural resource exploitations. Yafteh had been dated to the Upper Palaeolithic (radiocarbon dates by F. Hole, M. Zeder and recently by M. Otte provide a wide range >40000~18000 uncal BP). In 2005 Yafteh was again reinvestigated by a joint Belgian /Iranian team directed by M. Otte (Université de Liège) and F. Biglari (Centre for Palaeolithic Research- National Museum Iran).

Approximately 16000 animal bones remains have been examined.. Bones have suffered high fragmentation; 79% of the assemblage remains unidentified. The identified part of the assemblage counts for 1100 fragments. The Macro mammalian remains of Yafteh originated of human activities, evidenced by the presence of burnt bones, cut marks, and the absence of carnivore activity.

The bulk of the assemblage is composed of small herbivores expressed by 54% of the NISP; Caprids are by far the main exploited species followed by a small amount of Gazelles. Other species identified in the fauna are, Cervids and Boar. Carnivores are represented by 5 families, Canidae, Felidae, Mustelidae. Microvertebrate remains are principally composed of fish remains and rodents. The remains were allocated to Cyprinids (Leuciscus) represented at least by 4 species on the basis of the morphologic difference. Rodents in Yafteh are allocated to six families Ellobius cf. lutescence, Chionomys cf. nivalis, Microtus cf. socialis, Meriones libycus, Meriones vinogradovi, Calomyscus bailwardi and Allactaga sp. Meriones and Allactaga and Microtus cf socialis The accumulation factor of this assemblage, as in the case of some fish remains, may be non anthropic. (...)

C15-12 Deborah OLZEWSKI (Philadelphia, PA, U.S.A.)
Harold DIBBLE (Philadelphia, PA, U.S.A.)

Aurignacian Facies in the Middle East: the case of the Zagros Upper Palaeolithic.

ABSTRACT: The regional name (Baradostian) for the Zagros Upper Palaeolithic was chosen some 50 years or so ago by Ralph Solecki, based on his excavation at Shanidar Cave in the Baradost mountains and on consultations with Dorothy Garrod. Our examinations of Upper Palaeolithic lithic assemblages from Warsawi Rockshelter in Iran, however, have suggested that these materials are more closely related to Aurignacian assemblages. Naturally, the Warsawi assemblages do not identically mirror the Aurignacian in Europe, nor do they identically mirror the widely cited Levantine Aurignacian (a term which is primarily used as a reference to the Levantine Aurignacian B). Nevertheless, Upper Palaeolithic lithic assemblages in the Zagros are similar in both typological and technological aspects to the Aurignacian and should be classified as the Zagros Aurignacian facies.

Here we describe the Zagros Aurignacian and examine its attributes in the context of the northern Levant, where it shares a close resemblance to the Aurignacian reported from Umm el-Tlel in Syria, as well as to the Levantine Aurignacian A from Ksar'Akil in Lebanon.

Additionally, we discuss how these similarities over the wider Middle Eastern region might be interpreted in terms of adaptations, "cultural entities", and the constraints of lithic technologies and typologies.

C15-13

Fereidoun BIGLARI (Teheran, Iran)
 Mohsen JAVERI (Isfahan, Iran)
 Marjan MASHKOUR (Paris, France)
 Mehdi YAZDI (Isfahan, Iran)
 Rahmat NADERI (Teheran, Iran)
 Sonia SHIDRANG (Teheran, Iran)
 Faranak BAHROLOLOUMI (Teheran, Iran)
 Margareta TENGBERG (Paris, France)
 Jamshid DARVISH (Mashhad, Iran)
 Narges HASHEMI (Mashhad, Iran)

Test excavations at the Middle Palaeolithic Rockshelter sites of Qaleh Bozi, Southwest of Central Iran.

ABSTRACT: Recent Middle Paleolithic discoveries in the Iranian Central Plateau indicate a rich archaeological potential for the region. Although all these sites are surface occurrences which in some cases may have shallow occupational deposits. But the recent discovery of a cluster of Middle Paleolithic cave and rockshelter sites located about 25 km to S-SW of Isfahan, provided a good opportunity to study Mousterian assemblages in a stratified context. These sites were first studied by a team of geologists from University of Isfahan in 2004 and later in 2005 by a joint team from ICHTO and University of Isfahan. Here we present some results of our 2005 field season.

At first we start to remove and screen the disturbed deposits at floor of the largest site, QB 2, which was rich in very well-preserved and diversified macro and micro – vertebrates, and abundant Middle Paleolithic lithics artifacts, mostly in a fresh condition. The rich faunal remains are composed mainly large and small herbivore remains (Equids, bovids, gazelles and caprine). Micromammalian remains were also collected and belong in majority to rodents. Some of the bones show signs of burning, cut marks and fracture indicating hominin involvement in their accumulation. We also made a stratigraphic section in an undisturbed portion of deposits which had some lithics, bones and ash lenses. Due to presence of large blocks of rock fall covering the floor and extensive looting disturbance at free area of the cave floor, we shifted the excavation to nearby small rockshelter site of QB 3. A limited test at the site yielded a small lithic assemblage and sparse-badly preserved bone and tooth fragments. TL dating of sediment and burned flint samples that taken from both sites are underway

The Qaleh Bozi industry essentially made on pebbles and small cobbles collected from Zaiandeh-Rud River flowing about 1.5 km to the SE. (...)

POSTER 1

Benoît CHEVRIER (Nanterre, France)
 Gilles BERILLON (Paris, France)
 Asghar ASGARI KHANEGHAH (Teheran, Iran)

New lithic industries in Tehran and Mazandaran provinces (Iran). Typo-technological features.

ABSTRACT: In 2005, the French-Iranian Paleoanthropological Project discovered three sites in Northern Iran, in a quasi virgin area of any prehistoric evidence. These ones - Moghanak, Ochounak and Garm Roud 2 - delivered lithic industries in different contexts. Located in the province of Tehran, the two first ones which are composed of 60 surface finds artefacts, constitute five localities (Moghanak 1 to 4, Ochounak).

The typo-technological analysis shows very different technical natures among these objects, all are debitage products. These assemblages present mousterian and/or pre-mousterian affinities. As for the 113 knapped artifacts of Garm Roud 2, in the province of Mazandaran, they were found stratigraphically well-placed and testify to a relatively important lamellar debitage. The technical and typomorphological features as well as the 14C date show similarities with late Baradostian, highlighted in the Zagros area.

Session C16

Thursday, 7 September 2006 / Jeudi, 7 Septembre 2006

And/ Et

Friday, 8 September 2006 / Vendredi, 8 Septembre 2006

*Room 12.02, Faculty of Law, Lisbon University
Salle 12.02, Faculté de Droit, Université de Lisbonne*

Palaeolithic hunter-gatherers concept of territory

Le concept de territoire chez les chasseurs-cueilleurs paléolithiques

organized by / organisé par

- François DJINDJIAN** Université de Paris 1, Institut d'Art et d'Archéologie, Paris, France – francois.djindjian@wanadoo.fr
- Janus KOZLOWSKI** Uniwersitet Jagiellonski, Instytut Archeologii, Kraków, Pologne – kozlowsk@argo.hist.uj.edu.pl
- Nuno BICHO** UCEH - Universidade do Algarve, AD Historia e Arqueologia, Faro, Portugal – nbicho@ualg.pt

SESSION'S ABSTRACT

How to apply hunter-gatherers concept of territory, known through comparative ethnography, to Palaeolithic populations? The methodological proposed approach consists in evidencing the areas delimited by hunter-gatherer displacements for: raw-materials procurement (flint, shells, etc.); cyclic seasonal habitats and hunting camps, looking for food required resources for the groups, life. Then, we will try to relate those displacement spaces with identified cultural areas, from the material culture structuration within a given space- time: lithic and bone industry; parietal and mobile art. Finally, we will relate these spaces with geographic spaces, structured by hydrographical basins and mountains, closing of opening with climatic variations during the late pleniglaciari, with opening and closing of passages, favouring or restricting displacements. We will then try to deduct a general organisation model for hunter-gatherer human groups, with their identification systems on one hand and exchanges on the other, in association with their territories. Participants will be invited to bring methodological and archaeological contributions for evidencing spaces and displacements, cultural areas, geographic closed spaces, etc., enabling to enrich the definition of the concept of Palaeolithic territory.

RÉSUMÉ DE LA SESSION

Comment le concept de territoire chez les chasseurs cueilleurs, connu par le comparatisme ethnographique, peut-il s'appliquer aux populations paléolithiques? La démarche méthodologique proposée consiste d'abord à mettre en évidence les aires délimitées par les espaces de déplacement des chasseurs-cueilleurs pour: les approvisionnements en matières premières (silex, coquillages, etc.); le cycle saisonnier des habitats et haltes de chasse à la recherche des ressources alimentaires nécessaires à la vie du groupe. Puis on essaiera de mettre en correspondance ces espaces de déplacement avec les aires culturelles identifiées à partir de la structuration de la culture matérielle dans un espace-temps donné: industrie lithique et osseuse; art pariétal et mobilier. Enfin, on mettra en relation ces espaces avec les espaces géographiques, structurés par les bassins hydrographiques et les reliefs, qui se cloisonnent ou se décloisonnent au

gré des variations climatiques du dernier pléniglaciaire, avec l'ouverture ou la fermeture de seuils, de passages, de détroits, favorisant ou limitant les déplacements. On essaiera alors d'en déduire un modèle général d'organisation des groupes humains de chasseurs-cueilleurs, avec leurs systèmes d'identification d'une part et de relations et d'échanges d'autre part, en association avec leurs territoires. Les participants au colloque sont invités à apporter des contributions méthodologiques et archéologiques pour la mise en évidence d'espaces de déplacements, d'aires culturelles, d'espaces géographiques cloisonnés, etc. permettant d'enrichir l'existence et la définition de ce concept de territoire paléolithique.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

7th September 2006 / 7^{ème} Septembre 2006

09:00 **Opening / Ouverture**

Chair: J. KOZLOWSKI

09:00-09:10 Janus KOZLOWSKI

Introduction

09:10-09:35 François DJINDJIAN (Paris, France)

C16-01 The concept of territory during Upper Palaeolithic: a methodological approach.

09:35-10:00 Katalin T. BIRÓ

Viola T. DOBOSI

András MARKÓ (Hungarian National Museum, Hungary)

C16-02 Methods of lithic raw material characterisation and raw material origins in the Palaeolithic. State of art in Hungary

10:00-10:25 Laure FONTANA (Aix-en-Provence, France)

C16-03 L'apport des données archéozoologiques à la connaissance des modalités d'occupation du territoire par les chasseurs-cueilleurs du Paléolithique supérieur : l'exemple du Magdalénien français.

10:25-11:00 Lioudmila IAKOVLEVA (Kiev, Ukraine)

C16-04 Le concept de territoire culturel à partir des données des sites du bassin du Dniepr au Paléolithique supérieur récent en Europe orientale.

11:10-11:35 Jérémie LIAGRE (Chartres, France)

D. ARAKELYAN
B. GASPARAYAN
S. NAHAPETYAN
C. CHATAIGNIER

C16-05 **Mobilité des groupes préhistoriques et approvisionnement des matières premières à la fin du Paléolithique supérieur dans le Petit Caucase: données récentes sur le site de plein air de Kalavan (nord du lac Sevan, Arménie).**

11:35-12:00 Vadim N. STEPANCHUK (Kiev, Ukraine)
Igor V. SAPOZHNIKOV (Kiev, Ukraine)
Mikhail I. GLADKIKH (Kiev, Ukraine)
Sergei N. RYZHOV (Kiev, Ukraine)

C16-06 **Ukrainian Upper Palaeolithic: territory and Culture. Current insights into environmental-climatic change and cultural adaptations.**

12:00-12:25 Tsoni TSONEV (Sofia, Bulgaria)

C16-07 **The territory of Bulgaria and the relationships with contiguous territories.**

12:25-13:00 Eugenia ADAM (Iannina, Greece)

C16-08 **Searching for territoriality over a limited territory: how can methodology fill the gaps of lacking data.**

13:00-14:30 **Lunch / Déjeuner**

Chair: A. Broglio

14:30-15:00 Janusz Kozłowski (Krakow, Poland)

C16-09

15:00-15:30 OLIVA (Tchéquie)

C16-10

15:30-16:00 Viola DUBOSI (Budapest, Hungary)

C16-11 **Constancy and Change: UP Hungary.**

16:00-16:30 Dušan MIHAILOVIĆ (Belgrade, Yugoslavie)
Bojana MIHAILOVIĆ (Belgrade, Yugoslavie)

C16-12 **The territory of middle Danube valley in the Pannonian plain and the contacts with the Mediterranean coast.**

16:45-17:15 András MARKÓ (Budapest, Hungary)

C16-13 **Raw material procurement strategy on the Middle Palaeolithic site Vanyarc.**

17:15-17:45 Javier ORDOÑO (Vitoria-Gasteiz)
Ivaro ARRIZABALAGA (Vitoria-Gasteiz, Spain)

C16-14 **Territorial patterns during Middle-Upper Palaeolithic Transition in Cantabrian Iberia.**

17:45-18:15 Nora Viviana FRANCO (Buenos Aires, Argentina)

C16-15 The utility of lithic analysis for the understanding of hunter-gatherers home ranges: examples from south Patagonia (Argentina).

18:15-18:30 Discussion

8th September 2006 / 8^{ème} Septembre 2006

Chair: F. Djindjian

09:00-09:25 Marcel OTTE (Liège, Belgique)
Pierre NOIRET (Liège, Belgique)

C16-16 Le territoire de la basse vallée du Rhin, de la Meuse et de leurs affluents à la fin du Paléolithique supérieur (Belgique, Hollande, Allemagne du Nord-Ouest).

09:25-09:50 Damien FLAS

C16-17 Les industries à pointes foliacées laminaires et les limites de l'expansion aurignacienne dans le Nord-Ouest de l'Europe

09:50-10:15 Marie-Isabelle CATTIN
Jehanne AFFOLTER
Nigel THEW

C16-18 Provenance de diverses matières premières : un indice pour définir circulations et territoires au Magdalénien supérieur en Suisse

10:15-11:00 Céline BRESSY (Mainz, Germany)
G. MONIN (Grenoble, France)
P. BINTZ (Grenoble, France)
G. PION (Besançon, France)
L. MEVEL (Nanterre, France)
Harald FLOSS (Tübingen, Germany)

C16-19 Late Upper Paleolithic territories in Northern French Alps (France) : extent, organisation and comparison with Swiss and Saône basin data.

11:00-11:25 Mahaut DIGAN (Toulouse, France)
Laure FONTANA (Aix-en-Provence, France)

C16-20 Les sociétés du Massif Central au Paléolithique supérieur: approvisionnements et espaces parcourus.

11:25-11:50 Federico Bernaldo DE QUIROS (Leon, Spain)
Carlos FERNANDEZ RODRIGUEZ (Leon, France)
Ana NEIRA CAMPOS (Leon, Spain)
M. MORATIEL

C16-21 From bones to territory: the Azilian site of "la Pila" (Cantabria, Spain).

11:50-12:15 Maria Soledad CORCHÓN RODRÍGUEZ (Salamanca, Spain)
Antonio TARRIÑO VINAGRE
Jimena MATINEZ QUINTANA

C16-22 Mobilité, territoires et relations culturelles au début du Magdalénien moyen cantabrique: nouvelles perspectives.

12:15-13:00 Nuno BICHO (Faro, Portugal)

C16-23 Fashion and glamour: weaponry and beads as territorial markers in Southern Iberia.

13:00-14:30 Lunch / Déjeuner

Chair: Nuno Bicho

14:30-15:00 Stefano BERTOLA (Ferrara, Italy)
Alberto BROGLIO (Ferrara, Italy)
Mirco DE STEFANI (Ferrara, Italy)
Ivana FIORE (Roma, Italy)
F. GURIOLI
P. PALLECCHI
Antonio TAGLIACOZZO (Roma, Italy)

C16-24 Le territoire des chasseurs aurignaciens dans les Préalpes vénètes: l'exemple de la grotte de Fumane.

15:00-15:30 Francesca ALHAIQUE
Amilcare BIETTI (Rome, Italy)
Fabio NEGRINO (Pisa, Italy)

C16-25 Functional Interpretation and Subsistence-settlement patterns for the Upper Paleolithic sites of Western Ligurian Coast.

15:30-16:00 Paolo BOSCATO (Siena, Italy)
Ursula WIERER (Siena, Italy)

C16-26 Ibex as indicator of hunter-gatherer mobility during Late Palaeolithic and Mesolithic.

16:00-16:30 Frédéric BAZILE (Vauvert, France)
Guillaume BOCCACIO
Sophie GREGOIRE (Tautavel, France)
Clément ROUVIERE

C16-27 Territoires au Paléolithique dans les Gorges du Gardon Gard (France).

16:30-17:00 Gérard ONORATINI (Marseille, France)
Patrick SIMON (Monaco)
Vincenzo CELIBERTI (Tautavel, France)

C16-28 Du Paléolithique supérieur au Mésolithique: les parures de coquillages. Un élément culturel majeur des groupes humains de l'Adriatique à l'Atlantique.

17:00-17:30 Mary C. STINER (Tucson, Arizona, U.S.A.)

C16-29 Shell ornaments and land use in the Upper Palaeolithic: a Mediterranean perspective.

17:30-18:00 Ľubomíra Kaminská (Slovakia)

C16-30 The territory of Slovakia and the relationships with contiguous areas

18:00-18:30 Discussion

ABSTRACTS / RÉSUMÉS**C16-01** François DJINDJIAN (Paris, France)**The concept of territory during Upper Palaeolithic: a methodological approach.**

ABSTRACT: The identification of a peopling territory of hunter-gatherer during the European Upper Palaeolithic is based on several independent methodological processes for which the correlation is getting evidence about existence and limits of a territory:

- The physical geography of the territory (relief, hydrography) and its natural limits (shorelines, watersheds);
- The spatial distribution of palaeolithic sites owing to the same material culture, and the breaks between spatial distributions of different "cultures";
- The travelling maps of hunters searching for various raw material procurements (flint, obsidian, shells, amber, etc.);
- The relationships between hunter travels and geographic constraints (cols, straits);
- The determination of zoocenoses and animal migrations inside the annual cycle;
- The identification of an economic model of the territory occupation (opportunistic, planned) based on:
 - the characterization, by the study of dwellings, of the functions of the sites;
 - the estimation of the duration of occupation of the sites;
 - the modelling of the food subsistence system inside the annual cycle;
- The parietal and mobile art manifestations, in relation to the territory.

From several examples chosen in the European Upper Palaeolithic, we demonstrate it is only by the exploitation of the whole data: physical geography, zoocenoses, food subsistence sub-system, procurement sub-system and art sub-system, that the occupation and the limits of a territory of hunter-gatherers may be reconstituted.

C16-02 Katalin T. BIRÓ
Viola T. DOBOSI
András MARKÓ (Hungarian National Museum, Hungary)

Methods of lithic raw material characterisation and raw material origins in the Palaeolithic. State of art in Hungary

ABSTRACT: Hungarian Palaeolithic research has grown from start in close collaboration with earth sciences. The need and possibility for the identification of the raw materials for the stone artefacts emerged practically from the start of the Palaeolithic excavations in the beginning of the 20th century. In fact the first scientists working on the Palaeolithic excavations were geologists - mainly, palaeontologists - themselves. Therefore the scientific analysis of the raw materials of the Palaeolithic stone tools was fairly advanced, especially compared to younger lithic assemblages.

The geological-petrological aspect of lithic raw material studies, however, was not always directly adaptable to the study of archaeological problems, notably provenance. It is typical that the 'success stories' of petroarchaeology were, typically, lithic assemblages of quite early dating Tata, Szeleta, Subalyuk, Érd and Vértesszőllős. The Upper Palaeolithic localities, the more mobile groups were impossible to trace without a sound comparative raw material basis.

Since 1986, the HNM has set up a complete reference collection and gradually we are extending analytical methods of provenancing both to the reference collection and representative selection of archaeological material. This paper will summarise the related studies concerning the Palaeolithic material in Hungary.

C16-03 Laure FONTANA (Aix-en-Provence, France)

L'apport des données archéozoologiques à la connaissance des modalités d'occupation du territoire par les chasseurs-cueilleurs du Paléolithique supérieur: l'exemple du Magdalénien français.

RÉSUMÉ: L'archéologie préhistorique documente la question du territoire des sociétés paléolithiques en identifiant sur les sites des objets et/ou des produits dits « allochtones » qui témoignent de la mobilité des groupes et/ou permettent de dessiner des espaces d'approvisionnement. Les restes fauniques qui documentent l'alimentation carnée des sociétés paléolithiques ne semblent donc pas être, à première vue, le type de vestige le plus à même d'identifier, *via* une étude archéozoologique, un territoire et ses modalités d'occupation. Les grands herbivores - gibiers majoritairement consommés tout au long du Paléolithique supérieur - ont été acquis le plus souvent localement et leur consommation fut, en grande partie immédiate, les carcasses n'étant pas un produit destiné à voyager longtemps sur de longues distances. D'autre part, même si certaines portions de carcasse ont été transportées, l'origine géographique des grands herbivores dont elles sont issues ne pourrait être précisée : ces animaux ont occupé une aire très vaste à l'échelle de l'Europe occidentale et ils sont, en cela, différents d'autres ressources comme les coquillages et le silex.

L'analyse archéozoologique contribue, en théorie, à la problématique du territoire de façon indirecte puisqu'elle met en évidence la ou les saison(s) d'occupation des sites, *via* les données de saisonnalité des chasses. Or, cette donnée supplémentaire dans la caractérisation des sites est rarement utilisée dans l'optique d'une reconstitution des modalités de fréquentation d'un territoire. Pour ce faire, il est indispensable d'appréhender l'exploitation *globale* de l'animal, qui n'est pas une ressource d'ordre uniquement alimentaire, et de la replacer ensuite dans le contexte de l'acquisition et de l'exploitation de *toutes* les ressources, à l'échelle du cycle annuel. Afin d'illustrer cette démarche et ses résultats, nous présenterons notre analyse intégrée des données archéozoologiques du Magdalénien français qui pourraient mettre en évidence l'existence de deux grands types d'exploitation et d'occupation du territoire.

C16-04 Lioudmila IAKOVLEVA (Kiev, Ukraine)

Le concept de territoire culturel à partir des données des sites du bassin du Dniepr au Paléolithique supérieur récent en Europe orientale.

RÉSUMÉ: Le développement démographique et une expansion territoriale des peuplements en Europe entre 15 000 BP– 13 500 BP révèlent une apparence de régionalisation de ces peuplements connus sous les noms de Magdaléniens moyen, Epigravettiens, Méziniens.

Leurs traditions culturelles sont strictement liées avec les paléoenvironnements, leurs stratégies de subsistance et la création de systèmes sociaux et symboliques. Les différentes structures d'habitat, les industries lithiques et osseuses et aussi l'explosion de l'art mobilier et pariétal permettent de définir des territoires de peuplement par des groupes de chasseurs – cueilleurs. En conséquence, celles-ci mettent en comparaison les différentes traditions culturelles, leurs rapprochements ou influences et leurs traits trans-culturels.

L'une de ces territoires peut être défini par les sites des groupes des chasseurs –cueilleurs du bassin du Dniepr en Europe orientale entre 15 000 BP– 14 000 BP. Dans l'état actuel des recherches, le territoire de répartition de ces sites couvre une superficie d'environ 400 km², dans laquelle trois types des sites peuvent être distingués: 1 – les habitats résidentiels avec des constructions architecturales complexes en os et en défenses de mammoths, qui sont installées à proximité de concentrations d'ossements de mammoths dans le but de leur exploitation intensive pour la constructions de l'habitat, à l'occasion des multiples occupations saisonnières et pour la création et l'utilisation des outils, des parures et des sculptures (Gontsy, Kiev–Kirilovskaia, Mézine, Dobranichivka, Mejiriche, Ioudinovo, Elisseevichi 1, Timonovka, Suponevo); 2 – les sites de passage, avec ou sans stockage d'ossements (Elisseevichi 2, Fastiv, Juravka, Semenivka); 3 – les sites de concentration d'ossements de mammoths, d'origine naturelle, qui fournissent en quantité et en richesse, la matière dure animale disponible pour l'homme durant cette période (Sevsk, Juravka, Vilchanka). Ces trois catégories de sites sont situées géographiquement selon un axe nord – sud en suivant les vallées des grands affluents du bassin du Dniepr. (...)

C16-05 Jérémie LIAGRE (Chartres, France)
D. ARAKELYAN
B. GASPARAYAN

S. NAHAPETYAN
C. CHATAIGNIER

Mobilité des groupes préhistoriques et approvisionnement des matières premières à la fin du Paléolithique supérieur dans le Petit Caucase: données récentes sur le site de plein air de Kalavan (nord du lac Sevan, Arménie).

RÉSUMÉ: Le site de Kalavan se trouve à 1600 m d'altitude dans les montagnes qui dominent la rive nord du lac Sevan, le long d'une rivière qui fait partie du bassin versant de la Kura. Son industrie lithique est principalement orientée vers un débitage laminaire avec une forte présence d'outils de la fin du Paléolithique supérieur, transition Mésolithique. C'est le premier campement in situ de la fin du Paléolithique supérieur en Arménie. La stratégie d'approvisionnement en matières premières est double: - un apport local diversifié (jaspe, silex, calcédoine, calcaire...), qui suggère une parfaite connaissance des ressources du milieu environnant et donc une fréquentation répétée de la vallée; - un apport externe d'obsidiennes, dont les gîtes se trouvent à une distance de 60 à 140 km à vol d'oiseau, ce qui implique une mobilité importante ou des échanges avec d'autres groupes de chasseurs-cueilleurs occupant les régions volcaniques du Caucase.

C16-06

Vadim N. STEPANCHUK (Kiev, Ukraine)
gor V. SAPOZHNIKOV (Kiev, Ukraine)
Mikhail I. GLADKIKH (Kiev, Ukraine)
Sergei N. RYZHOV (Kiev, Ukraine)

Ukrainian Upper Palaeolithic: territory and Culture. Current insights into environmental-climatic change and cultural adaptations.

ABSTRACT: Two major types of landscapes are characteristic for Ukraine, i.e. Mountainous areas in extreme west and south (Carpathians and Crimean Mts., respectively) and crucially predominated flat areas of the south of East European plain. Several great hydrosystems, these are - west to east - Dniester, Dnieper, and west tributaries of Lower Don, subdivide the plain meridionally. Wide and well elaborated river valleys, as well as mosaic landscapes of mountain areas, serve as the main source of various bioresources exploited by Palaeolithic man. Upper Palaeolithic settlement pattern essentially depends on water-, bio-, and lithic raw material resources, which availability and quality highly vary as function of paleoclimatic changes. Several terrestrial faunal complexes are recognised for the period in question, and a number of various adaptation systems were formed on this base. Data on general environmental/ climatic changes on the territory of Ukraine is rather well documented, though it remains still incomplete in the concern of geographically more limited areas or isolated archaeological sequences. Nevertheless, available records allow to examine relations between basically distinct artefact units differentiated in space and time, associated behavioral pattern, and availability of vital natural resources. Essential differences in spatial localisation of potential flint outcrops over the territory under discussion, clearly defined change of environment and climate accompanying by faunistic and floristic shifts, and well-recognised cultural facies provide good perspective for investigation of this question. Recent crucial rise of geochronological database and further elaboration of palaeogeographical data sufficiently add to validity of such comparison and allow to place distinct Upper Palaeolithic units more precisely into paleoclimatic and absolute chronology frames. (...)

C16-07

Tsoni TSONEV (Sofia, Bulgaria)

The territory of Bulgaria and the relationships with contiguous territories.

ABSTRACT: In my presentation I propose a new definition of the term 'territoriality' of Palaeolithic hunter-gatherers in the eastern Balkans. Considered are the marked climatic differences from the European plane, which outline in a better way the greater diversity of landscapes used by Palaeolithic groups in the Lower Danube region. This general background makes visible the maximization of the subsistence strategies of the hunter-gatherer communities in their occupation and use of various habitats and distinct landforms: high mountains, canyons, lowlands, and the border between sandy areas and open steppe-forested environment. Important features of the physical geography of the eastern Balkans are presented that distinguish it as a separate region. In brief, I present the rich and

diverse archaeological record of well preserved Middle and Upper Palaeolithic sites, the complexity of artefact production sequences (chaines opératoires) and side-scrapers reduction sequences. As an explanatory model I use the positive correlation between the intensity of occupation and the intensity of communication between Palaeolithic groups. Starting from the late Middle Palaeolithic onwards the intensity of occupation (measured by the mean value of the number of artefacts per square meter) grows very fast (almost exponentially), while the intensity of communication (measured by the mean value of the number of artefacts that convey 'messages' per occupation level) increases slowly and approximates a logarithmic function. Though the exact functions approximating the fast and slow growing occupation and communication of the Palaeolithic groups can vary, the correlation between them remains positively determined though with a considerable stochastic element in it. The deterministic and the stochastic parts of this linear dependence reflect the numerous factors that change from site to site and from region to region and outline the behavior of Palaeolithic communities. (...)

C16-08 Eugenia ADAM (Iannina, Greece)

Searching for territoriality over a limited territory: how can methodology fill the gaps of lacking data.

ABSTRACT: The UPL record of Greece, though progressively enriched with new data, is still far from being prolific. This is attributed to sparse research with few new excavations and limited research projects. In view of these facts, the presentation can only tackle the issue of territoriality in the UPL domain of Greece. We are still very far from distinguishing "cultures". Territories can so far be traced within the broad geographical limits of certain regions (e.g. Epirus or the Peloponnese).

An emphasis will be given on the methodology necessary to address the issue of establishing - or attempting to establish - the territories of UPL hunter-gatherers in Greece.

The presentation will concentrate on raw materials, technology and tool types, mainly within the chronological framework of the Gravettian and Epigravettian.

The presentation may be supplemented with posters by greek colleagues involved in research on the UPL. There is a preliminary suggestion of three posters, one by Dr. E. Panagopoulou on the Lakonis cave complex in the Peloponnese, one by Dr. E. Kotzabopoulou on the faunal assemblages and one by Dr. P. Elephanti on the raw materials of the stone industries.

C16-11 Viola DUBOSI (Budapest, Hungary)

Constancy and Change: UP Hungary.

ABSTRACT: The approximately 20 thousand years between the interpleniglacial till the end of the Würm period has brought about, as a rule, fundamental changes.

In the surface morphology and climate of the Carpathian Basin, the global or at least continent-wide changes were tempered, in a way, filtered by the special, insular geographical position of the region. Local topographical and orographical conditions resulted in a mosaic-like pattern in climate, precipitation having their own biological consequences.

The Carpathian Basin with its characteristic Upper Palaeolithic milieu, the variety of flora and fauna, still had a moment of constancy. Namely, no circumstances can be enumerated in knowing the end of the Ice Age that would support the unexpected cultural variability, at least in Eastern Central Europe. In the study period, the Aurignacian culture, the developed Szeletian culture (whatever contents we allocate to this term, cultural identity or simply nomenclature), and at least three phyla of the Gravettian entity shared the available resources here. These units comprise the Old Blade industries, (Willendoerf-Pavlov circle) followed by, after a hiatus of some thousand years, the Young Blade Industries (Epigravettian population in two chronological levels) and, partly parallel to the latter, the Ságvárian culture having so far unknown antecedents, using preferentially pebble raw material again.

C16-12 Dušan MIHAILOVIĆ (Belgrade, Yugoslavie)
Bojana MIHAILOVIĆ (Belgrade, Yugoslavie)

The territory of middle Danube valley in the Pannonian plain and the contacts with the Mediterranean coast.

ABSTRACT: The territoriality in the Paleolithic of the Danube basin and western Balkans will be considered from two aspects: a) from the aspect of cultural differentiation and cultural and social interactions between bearers of various Paleolithic cultures and facies and b) from the aspect of system of settling, which human communities practiced in the given periods. Most recent investigations indicate that Balkan peninsula in the past had the role of a) transitional area, b) area where influences from the Mediterranean and central Europe are clearly delimited and c) area characterized by entirely distinct cultural manifestations. Special attention will be paid to the cultural and social basis of settlement system within more restricted and wider regional level.

C16-13 András MARKÓ (Budapest, Hungary)

Raw material procurement strategy on the Middle Palaeolithic site Vanyarc, Hungary.

ABSTRACT: On the Middle Palaeolithic site Vanyarc (Northern Hungary) a large sample of chipped stone artefacts were collected and excavated in the last years. On typological ground the industry is characterized by bifacial and leaf shaped tools. In the raw material spectra beside the dominating limnic quartzite varieties supposed to be local, the high ratio of the Szeletian felsitic porphyry should be stressed: one third of the assemblage was made of this rock, originating from 100 km as the crow flies. Pebble raw material as quartzite, nummulithic chert and radiolarite from the nearly Oligocene and Sarmatian outcrops were also used on the site.

The presentation deals with the use of the different raw material types based on typological, technological and refitting studies of the assemblage excavated in 2003-2005.

C16-14 Javier ORDOÑO (Vitoria-Gasteiz)
Alvaro ARRIZABALAGA (Vitoria-Gasteiz, Spain)

Territorial patterns during Middle-Upper Palaeolithic Transition in Cantabrian Iberia.

ABSTRACT: The aim of this paper is to make an approximation to the current state of research about territoriality during Middle to Upper Palaeolithic transition, seen as the interaction between humans (in this case, last neandertals and first Modern Humans who inhabited Cantabrian Iberia) and their immediate (or not) environment.

We pretend to elaborate a brief synthesis of the contributions that prehistoric discipline has been achieved in this current issue. Nowadays, we can observe in the last 25 years a significant evolution of goals, theoretical and methodological contributions and results, since the first topographic and economic approaches (around techno-typological comparisons and the study of cynegetic strategies) of prehistoric sites, to the most recent ones. The last of them have increased the amount and quality of different kinds of analysis, such as raw material sources, palaeoecological reconstruction of environment, or also a supposed "symbolic view" of territory (represented in artistic, ornamental and funerary behaviour).

Lastly, we propose the following questions: is there enough data to establish territorial patterns in these ancient periods? And, if so, can we deduce relevant differences between last neandertals and first Modern Human groups from such a territorial analysis?

C16-15 Nora Viviana FRANCO (Buenos Aires, Argentina)

The utility of lithic analysis for the understanding of hunter-gatherers home ranges: examples from south Patagonia (Argentina).

RÉSUMÉ: Data on frequencies of raw material as well as classes, sizes and characteristics of lithic artifacts can be useful for the evaluation of the areas usually exploited by human groups. In order to obtain this goal, the analysis must take into account the regional availability of raw materials.

The analysis of cases of hunter-gatherers living north and south of Santa Cruz river (Patagonia, Argentina) suggests the utilization of wide areas. The research also suggests the existence of changes in the orientation of the areas exploited between ca. 9,700 and 1,000 years B.P. The results obtained are in accordance to expectations derived from ethnographic studies.

C16-16

Marcel OTTE (Liège, Belgique)
Pierre NOIRET (Liège, Belgique)

Le territoire de la basse vallée du Rhin, de la Meuse et de leurs affluents à la fin du Paléolithique supérieur (Belgique, Hollande, Allemagne du Nord-Ouest).

RÉSUMÉ: Les plaines du Nord semblent avoir été abandonnées au cours du maximum glaciaire. Cependant, dès le Dryas I, on aperçoit des mouvements de remontée de population en Belgique et en Allemagne (Magdalénien). Les contenus culturels sont identiques à ceux de la France du Nord. Plus tard, des traditions régionales se développent au cours du Bølling (Hambourgien, Cresswellien). Enfin un Mésolithique très ancien apparaît au cours de l'Allerød et du Dryas III.

C16-17

Damien FLAS

Les industries à pointes foliacées laminaires et les limites de l'expansion aurignacienne dans le Nord-Ouest de l'Europe

RÉSUMÉ: Durant la seconde moitié de l'Interpléni-glaciaire (OIS 3), on trouve dans la plaine septentrionale de l'Europe des ensembles caractérisés par la présence de pointes foliacées laminaires (le complexe Lincombien-Ranisien-Jerzmanowicien). Sur la base de quelques cas d'association stratigraphique, ces industries ont parfois été interprétées comme une composante de l'Aurignacien local. Cependant les données archéologiques, technologiques et chronologiques indiquent que ces deux complexes sont bel et bien indépendants.

La répartition géographique des ensembles aurignaciens montre que ce complexe ne s'est pas étendu à l'ensemble de la plaine septentrionale. Cette limite de l'expansion aurignacienne est particulièrement visible dans les îles britanniques où le LRJ est par contre nettement plus présent. Cette dichotomie dans la répartition géographique de ces deux complexes peut être mise en relation avec les environnements différents auxquels ces industries se sont adaptées.

C16-18

Marie-Isabelle CATTIN
Jehanne AFFOLTER
Nigel THEW

Provenance de diverses matières premières : un indice pour définir circulations et territoires au Magdalénien supérieur en Suisse

RÉSUMÉ: En préhistoire la notion de territoire est, en général, liée aux matières premières telles le silex ou les coquillages fossiles. A partir des données issues de quelques sites magdaléniens de Suisse, nous aborderons la façon dont sont obtenus ces matériaux et mettrons en évidence plusieurs axes possibles de circulation. En effet, les provenances des matières et leur mode d'introduction dans les campements, permettent de suggérer différentes hypothèses de circulation des groupes humains. Par exemple, le silex obtenu par approvisionnement direct ou par échange définit un territoire parcouru ou connu par les relations que l'on entretient avec d'autres groupes. D'autres éléments, comme les éléments de parure en jais, les coquillages fossiles ou l'ambre, attestent de relations beaucoup plus lointaines, allant jusqu'à la mer Baltique. Dans ce cas, les régions concernées n'appartiennent probablement plus à un territoire parcouru par les groupes magdaléniens du Plateau suisse, mais correspondent à une zone d'influence où se transmettent idées et éléments de la culture matérielle.

C16-19

Céline BRESSY (Mainz, Germany)
G. MONIN Grenoble, France)
P. BINTZ (Grenoble, France)
G. PION (Besançon, France)
L. MEVEL (Nanterre, France)
Harald FLOSS (Tübingen, Germany)

Late Upper Paleolithic territories in Northern French Alps (France) : extent, organisation and comparison with Swiss and Saône basin data.

ABSTRACT: Lithic raw materials constitute the most relevant archaeological remains to deal with human and environment relationship in prehistoric societies. In French Northern Alps have been identified numerous Magdalenian and Azilian settlements located in various geographic contexts which have been well-documented regarding paleoenvironmental setting. Thus, this area offers the necessary background to approach territory organisation of first human populating in mountain environment. Recent studies on flint and quartz procurement have been undertaken with this goal. They provide a dynamic perception of territories which supplement the one acquired thanks to site distribution and typo-technological studies. Combining these three approaches, the data obtained on ten Magdalenian and Azilian settlements, mainly located in Chartreuse and Vercors massifs, but also in Bauges and Bornes, allow to discuss about economic and cultural behaviours related to mobility and territory.

For each site, procurement patterns vary according to site status, raw material availability and cultural or technical choices. Moreover, circulation modalities can be inferred from raw material management (stocks, introduction modalities). The identification of distant sources highlights relationships between sites and various areas, shedding light on main circulation axis and allowing a possible territories outline, with a spatial and height perspective. Regarding this issue, obvious changes have been noticed between Magdalenian and Azilian.

Finally, supra-regional networks, perceptible through shell ornaments diffusion from Mediterranean and Atlantic coasts, raise the question of exchanges and intergroup contacts. Thus, it appears particularly relevant to compare territories occupation modalities of French Alps to that of Swiss and Saône basin in order to grasp any behavioural invariants or, to the opposite, geographic specificities. Territorial issues for Late Upper Paleolithic would then be discussed at a wider scale.

C16-20

Mahaut DIGAN (Toulouse, France)
Laure FONTANA (Aix-en-Provence, France)

Les sociétés du Massif Central au Paléolithique supérieur: approvisionnements et espaces parcourus.

ABSTRACT: Appréhender la question des territoires des sociétés de chasseurs-cueilleurs du Massif Central impose la prise en compte de deux paramètres fondamentaux : la présence de zones montagneuses et la rareté des matières premières lithiques siliceuses de très bonne qualité. C'est d'ailleurs ce qu'ont fait les groupes humains en occupant cette vaste région, comme en témoignent la présence et le nombre des occupations avérées depuis le nord de la Limagne jusqu'aux hautes vallées de l'Allier et de la Loire. Il semble qu'ils n'aient pas considéré les reliefs, l'altitude ou encore la qualité moyenne du silex comme des facteurs les empêchant d'occuper le Massif : il les ont seulement pris en considération, comme d'autres paramètres, dans l'acquisition et l'exploitation globale de leurs ressources et donc dans l'organisation annuelle de leurs déplacements. Mais justement de quelle façon ?

Les données qui, jusque là, ont permis d'aborder cette question des « territoires » sont relatives à l'acquisition et à l'exploitation du silex, notamment celles se rapportant aux matières premières lithiques de provenance éloignée (silex du Crétacé supérieur). L'identification de ces matériaux d'origine lointaine d'excellente qualité et l'étude de ses modalités d'« importation » ont été réalisées dans le but de proposer des hypothèses relatives aux modalités d'occupation du territoire. La présence d'autres produits allochtones comme les coquillages a également permis d'alimenter ce type d'étude. Quant aux données archéozoologiques, si elles apportent effectivement des informations fondamentales comme la saisonnalité des chasses, c'est leur caractère intégré, notamment (mais pas seulement) à l'étude des industries en matières dures animales, qui importe. (...)

C16-21

Federico Bernaldo DE QUIROS (Leon, Spain)
Carlos FERNANDEZ RODRIGUEZ (Leon, France)
Ana NEIRA CAMPOS (Leon, Spain)
M. MORATIEL

From bones to territory: the Azilian site of "la Pila" (Cantabria, Spain).

RÉSUMÉ: Les fouilles de sauvetage faites dans le gisement de la grotte de "La Pila" nous permettent de mieux connaître comme les groupes de l'Azilien ont exploité son environnement. L'analyse de la faune trouvée dans les différents niveaux traduit une série d'activités liée à son usage alimentaire et

comme source de matières premières et aussi comme centre de distribution alimentaire liée à son système d'exploitation du territoire.

C16-22

Maria Soledad CORCHÓN RODRÍGUEZ (Salamanca, Spain)
Antonio TARRIÑO VINAGRE
Jimena MATÍNEZ QUINTANA

Mobilité, territoires et relations culturelles au début du Magdalénien moyen cantabrique: nouvelles perspectives.

RÉSUMÉ: Nous présentons dans cette communication les résultats, encore préliminaires, des études de mobilité et exploitation du territoire par les groupes humains des premiers moments du Magdalénien Moyen cantabrique dans la zone centre-occidental de la Corniche Cantabrique, (grotte de Las Caldas, Asturies, Espagne).

Dans le cas des analyses de matières premières utilisées dans les processus technologiques, nous présentons des données encore provisoires résultat des études en cours. On a détecté l'emploi de plusieurs qualités de silex, quartzite et quartz. On a localisé des silex provenant d'ambiances de formation du Nord et du Sud pyrénéennes, ainsi que provenant de la partie Est de la Région Cantabrique, ce qui montre un approvisionnement, parfois, de plus de 300 km. de distance.

De la même façon qu'on peut parler de relations à une très longue distance, on a détecté une importante sélection de matières premières locales. Dans le cas des ressources minérales employées dans le débitage lithique, on a localisé des sources locales d'approvisionnement pour la quartzite et pour le quartz, à moins de 2 km. du gisement.

En relation avec les activités artistiques, on peut souligner l'approvisionnement des ressources minérales dans les territoires éloignés non plus de 30 km. Ce le cas des plaquettes de grès, support d'art mobilier, ou de l'ambre et du jais, employés pour la fabrication des parures et pendeloques.

Aussi on peut parler de visites à la côte (éloigné non plus de 40 km. à la fin du Paléolithique), car on a localisé dans le gisement des coquillages marins, des dents de mammifères marins, etc.

En conclusion, le début du Magdalénien Moyen dans l'Occident cantabrique est marqué pour la présence de relations culturelles et d'approvisionnement de matières premières à courte et longue distance, concernant la Région Pyrénéenne et la zone Est de la Corniche Cantabrique.

C16-23

Nuno BICHO (Faro, Portugal)

Fashion and glamour: weaponry and beads as territorial markers in Southern Iberia.

ABSTRACT: Lithic and bone weaponry in certain Paleolithic periods are excellent elements to signify stylistic cultural and technological characteristics. Those artifacts, together with certain body adornments, are the perfect set to understand, register, and interpret possible territorial boundaries in Paleolithic Societies. This paper will focus on Gravettian and Solutrean weaponry as the main elements that allow a reconstruction of social and territorial boundaries, land use and the recognition of social group ownership in Southern Iberia.

C16-24

Stefano BERTOLA (Ferrara, Italy)
Alberto BROGLIO (Ferrara, Italy)
Mirco DE STEFANI (Ferrara, Italy)
Ivana FIORE (Roma, Italy)
F. GURIOLI
P. PALLECCHI
Antonio TAGLIACOZZO (Roma, Italy)

Le territoire des chasseurs aurignaciens dans les Préalpes vénètes: l'exemple de la grotte de Fumane.

RÉSUMÉ: La Grotte de Fumane, située à 350 mètres d'altitude, est localisée dans le secteur occidental des Monts Lessini (Préalpes Vénètes). Elle a été occupée par des groupes de chasseurs

aurignaciens au cours de l'Inter-pléniglaciaire würmien, lors des phases climatiques froides comprises entre les interstades d'Hengelo et d'Arcy. L'étude archéozoologique atteste une occupation effectuée à l'entrée de la cavité, principalement entre la fin du printemps et de l'automne et plus rarement au cours de l'hiver et au début du printemps. La mise au jour de structures de combustion, de zones de rejet, le déroulement *in situ* des activités de production sur silex et matières dures animales, la présence de déchets de taille, de nombreux outils, d'armatures, d'objets ornementaux, de matières premières colorantes et de peintures décoratives confèrent au site une fonction résidentielle. L'environnement immédiat autour de la grotte présente un biotope diversifié associant prairie alpine, versants abrupts localisés dans les vallées incisées, forêts et secteurs humides de la Plaine Padano-Vénète, et autorisait ainsi une exploitation de proies variées. Ce territoire proche du site, présente des affleurements de roches mésozoïques et tertiaires ainsi que des sols résiduels et des détritiques de versant riches en silex, et permettait également aux groupes humains de s'approvisionner en matières premières lithiques, dont les caractéristiques présentent par ailleurs de fortes différences concernant leur texture, leurs dimensions ainsi que leur qualité à la taille. Le secteur centre-oriental des Monts Lessini, quant à lui, présente plusieurs gisements d'ocre rouge, matériau utilisé comme colorant. Il convient également de souligner l'existence, au sein des dépôts aurignaciens de la grotte de Fumane, de produits d'origine allochtone. Sept armatures ainsi qu'un petit nombre d'éclats en radiolarite ont ainsi été retrouvés. Plus de 900 coquillages utilisés comme éléments de parure et quelques galets en schistes attestent une provenance méditerranéenne. Enfin, parmi les petits blocs d'ocre mis au jour, certains présentent une composition similaire à celle des gisements d'ocre reconnus en Provence.

C16-25

Francesca ALHAIQUE
Amilcare BIETTI (Rome, Italy)
Fabio NEGRINO (Pisa, Italy)

Functional Interpretation and Subsistence-settlement patterns for the Upper Paleolithic sites of Western Ligurian Coast.

ABSTRACT: The sites considered in this paper are chronologically placed in the Early to Medium Upper Palaeolithic of Western Liguria, i.e. the Aurignacian of Riparo Mochi and Riparo Bombrini at Blazi Rossi (Imperia), the Gravettian again of Riparo Mochi and of the Arene Candide cave (Savona). The interpretation of the different functional role of these sites will be based both on the taphonomic and zooarchaeological studies and on the typological-technological analysis of the lithic industries, with special attention to the varieties of flint (exotic, local and circumlocal) found in the sites..

C16-26

Paolo BOSCATO (Siena, Italy)
Ursula WIERER (Siena, Italy)

Ibex as indicator of hunter-gatherer mobility during Late Palaeolithic and Mesolithic.

ABSTRACT: The research concerns some systematically excavated and studied sites within two different areas in Italy: on the one hand the Cilento Region (Salerno – Southern Italy), with caves occupied during the final Epigravettian, and on the other the valley bottom the Adige River (Trento – Bolzano, Northern Italy), with rock shelters frequently by sauveterrian groups. The sites of both areas, at little distance from each other and occupied during the same period, show different frequency of ibex in the faunal record. As this species lives exclusively in mountains and hills with open environment, the observation of its quantity jointly with topographic analysis of the territories allow to examine hunters' range of action in relation to the different opportunities of tracing *Capra ibex*.

C16-27

Jérôme BULLINGER (Neuchâtel, Switzerland)
Frédéric BAZILE (Vauvert, France)
Guillaume BOCCACIO
Sophie GREGOIRE (Tautavel, France)
Clément ROUVIERE

Territoires au Paléolithique dans les Gorges du Gardon Gard (France).

RÉSUMÉ: Les Gorges du Gardons et leurs marges immédiates constituent une entité originale et bien individualisée en Languedoc Oriental. La Paléolithique ancien reste mal connu mais le Paléolithique Moyen et le Paléolithique Supérieur sont largement représentés sur les quelques vingt kilomètres du canyon. La mise en place (2005) du **Projet Collectif de Recherche** « Matières premières siliceuses en Languedoc-Roussillon » autorise une meilleure perception des territoires occupés, ou du moins parcourus, par les différentes cultures du Paléolithique présentes au sein cette unité géographique. Les auteurs présentent l'état actuel de la recherche sur le sujet à partir des matières premières, roches dures siliceuses pour le paléolithique moyen, roches dures siliceuses, coquille et matière colorante pour le Paléolithique supérieur. Durant tout le Paléolithique, les gîtes du Ludien du Massif de Collorgues –Aubussargues restent une source privilégiée, très sollicitée au Paléolithique Moyen mais pas de façon exclusive silex de la Costière du Gard en particulier).

Au Moustérien Quina, connu dans cinq gisement tous en grotte (la Baume Longue, En Quissé, l'Esquicho Grapaou, St. Vérédème et la Balauzière), le territoire parcouru reste assez limité, privilégiant des déplacements est-ouest, selon les axes des vallées; le territoire reste néanmoins plus important que ce qui est connu au Paléolithique Moyen en Languedoc (forte unité culturelle des gisements du Gardon?).

Au paléolithique supérieur, un accroissement très sensible des sources d'approvisionnement, permet d'envisager des déplacements rayonnant à partir des gisements, plus ou moins limités selon les cultures. Le silex de Collorgues continue à jouer un rôle important (dominant dans l'Aurignacien de L'Esquicho Grapaou) ainsi que le silex de la Costière, mais accompagnés de sources plus éloignées, comme le cénomanien de l'Uzège. L'Episolutréen Salpêtrien, outre la sollicitation des matières premières péri locales, se singularise par des parcours relativement important (75 km) d'axe Nord Sud, en nette liaison avec la moyenne vallée du Rhône. (...)

C16-28

Gérard ONORATINI (Marseille, France)
Patrick SIMON (Monaco)
Vincenzo CELIBERTI (Tautavel, France)

Du Paléolithique supérieur au Mésolithique: les parures de coquillages. Un élément culturel majeur des groupes humains de l'Adriatique à l'Atlantique.

RÉSUMÉ: Dès le début du Paléolithique supérieur, en rive nord du bassin méditerranéen (en Vénétie plus précisément), il y a 40 000 ans apparaît un nouvel élément culturel : la parure de coquillages. Ces tests de mollusques, non consommés, percés afin d'être utilisés comme éléments de parures corporelles ou funéraires, constituent à côté des parures en dents de mammifères, un élément caractéristique des groupes humains du Paléolithique supérieur. Deux courants de diffusion ont été reconnus : le Danubien et le Méditerranéen. Dans ce dernier, à l'est du territoire considéré et dès le Protoaurignacien, les groupes humains, de l'Adriatique au Languedoc, sont caractérisés par des parures à craches de Cervidés, et de petits Gastéropodes variés ramassés frais le long du littoral dont on retiendra surtout les deux espèces suivantes: *Cyclope neritea* et *Homalopoma sanguineum*. Les Lamellibranches assez nombreux tels *Glycymeris violacescens* et les Cardiums, sont issus de «plages fossiles» qui affleurent à proximité des sites. A l'Ouest, des Pyrénées à l'Atlantique, ce sont les parures à Littorines, *Trivia* sp. et *Nucella lapillus*, qui sont l'élément caractéristique des groupes aurignaciens. Des contacts et des échanges sont perceptibles dès cette période puisque des espèces typiquement méditerranéennes se retrouvent dans les sites de l'Aurignacien ancien d'Aquitaine. En Méditerranée du NW tous ces éléments sont utilisés en parures corporelles mais aussi vont se retrouver en parures funéraires par centaines sous forme de «perles de coquillages» cousues (sépultures du Gravettien, de l'Arénien et du Bouvérien). Durant cette même période, on a pu noter la nette augmentation des Lamellibranches collectés frais sur les plages, ainsi au Solutréen et au Magdalénien parallèlement au ramassage des petits Gastéropodes traditionnels, on remarque l'importance et la diversification de certains groupes dont: les Pectinidés, des Turitelles, des Cyprées et des Dentales. Les *Cyclope neritea* et *Homalopoma sanguineum*, éléments de parures associés aux Dentales fossiles, toujours largement utilisés tout au long de l'Epigravettien, vont disparaître brusquement au Mésolithique, au profit de *Columbella rustica* et de *Conus mediterraneus*. Par contre en Atlantique, les éléments de parures à Littorines restent encore largement utilisés.

C16-29

Mary C. STINER (Tucson, Arizona, U.S.A.)

Shell ornaments and land use in the Upper Palaeolithic: a Mediterranean perspective.

ABSTRACT: This study considers the cultural and ecological contexts of marine shell ornament use at a number of Upper Paleolithic sites in the Mediterranean Basin. Ornament traditions appear very suddenly in the earliest Upper Paleolithic horizons at some locations, whereas Mousterian deposits in the region lack ornaments entirely. The movement of source-specific Upper Paleolithic ornaments into continental interiors was quite limited in volume. There is, however, remarkable commonality in the size and shape of ornaments made from diverse materials in coastal and interior sites of Eurasia, particularly in early phases of the Upper Paleolithic. Ornament diversity appears to increase steadily in some regional sequences but not in others. Sites that contain substantial numbers of ornaments appear to concentrate in certain areas of Eurasia, suggesting some local intensification in the production and use of decorative materials. This phenomenon cannot be explained by appealing to a single point of origin for ornamentation behavior among modern humans. New data from Mediterranean sites reveal some details about the circumstances of ornament deposition in coastal sites, including unforeseen connections to site activities and economic foci. The presentation closes with a discussion of the evolutionary role of early ornaments in forager society.

C16-30

Ľubomíra KAMINSKÁ (Slovakia)

The territory of Slovakia and the relationships with contiguous areas

ABSTRACT: Interconnection of the territory of Slovakia with adjacent areas was happening particularly through river basins. This tendency can be seen in the use of stone materials already from the Middle Paleolithic, especially in East Slovakia. The main arterial road was the Ondava river and its tributaries, along which contacts of the Middle Paleolithic hunters were also taking place. Thus in the Upper Paleolithic, the following raw materials got to East Slovakia - from the north: erratic „Northern“ flints from Upper Silesia, others from the upper Vistula such as: flint from the Kraków-Częstochowa Jurassic, „chocolate“ flint from the region of the Holy Cross Mountains and Świeciechów flint from the middle Vistula; from the east: Cretaceous Flint from the middle Dnester basin, andesite from the region of Korolevo in Transcarpathian Ukraine; from the south: felsitic quartz-porphry from the Bükk Mountains and some sorts of limnoquartzites from Hungary. Apart from the above-mentioned, other local materials such as limnoquartzites were used in localities of Aurignacian in Košice basin (Košice-Barca, Seňa, Kechnec), radiolarites, quartzite, obsidian (Tibava), chert (Nižný Hrabovec) in the East Slovak Lowlands. The Gravettian and Epigravettian preferred local obsidian (Cejkov, Kašov, Hrčel). In Aurignacian in West Slovakia, the use of local materials mainly radiolarites was documented (Dzeravá skala cave, Kunov, Prietrž, Hlboké). In the Early Gravettian the use of radiolarites prevailed (Dzeravá skala cave), however in the Late Gravettian with the shouldered points horizon radiolarites were replaced by erratic „Northern“ flint from Upper Silesia and partly also by Cretaceous flint from the Dnester basin.

Session C17

Monday, 4 September 2006 / Lundi, 4 Septembre 2006

*Amphitheatre 5, Faculty of Law, Lisbon University
Amphithéâtre 5, Faculté de Droit, Université de Lisbonne*

Late Palaeolithic Environments and Cultural Relations around the Adriatic

Environnements du Paléolithique final et rapports culturels autour de l'Adriatique

organized by / organisé par

Amilcare BIETTI

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SESSION'S ABSTRACT

Similarities between Late Paleolithic/Epipaleolithic archaeological assemblages from both sides of the Adriatic have been noted several times in the past. At the same time, the area itself was undergoing major geographical and environmental changes during the late Pleistocene and early Holocene. The interplay between geographical and environmental changes on the one hand and cultural areas and contacts on the other must have been varied and complex. This symposium aims to bring together prehistorians and geologists who will present new data and analyses that add to and clarify our picture of Late Paleolithic/Epipaleolithic cultures and their contacts within the changing landscape of the Adriatic area in the late Pleistocene and early Holocene.

SESSION PROGRAMME / PROGRAMME DE LA SESSION

- 14:30 **Opening / Ouverture**
- 14:30-14:45 Amilcare BIETTI (Roma, Italy)
 Emanuele CANCELLERI (Macerata, Italy)
- C17-01** **New results from the excavations at Fondo Focone (Ugento), Bocca Cesira.**
- 14:45-15:00 Amilcare BIETTI (Roma, Italy)
 Paolo GAMBASSINI (Siena, Italy)
- C17-02** **Present State of Knowledge on the Epigravettian sites of Salento.**
- 15:00-15:15 Dusan MIHAJLOVIC (Belgrade, Serbia and Montenegro)

- C17-03** **Cultural and Social Integration in the Late Upper Palaeolithic of the Western Balkans.**
- 15:15-15:30 Darko KOMSO
Paolo PELLEGATTI
- C17-04** **The roots of the late glacial colonization of the Istria Peninsula.**
- 15:30-15:45 Preston MIRACLE (Cambridge, England)
- C17-05** **The Late Glacial 'Great Adriatic Plain': 'Garden of Eden' or 'No Man's Land' during the Epipalaeolithic? A view from Istria (Croatia).**
- 15:45-16:00 Robert WHALLON (Michigan, U.S.A.)
- C17-06** **Social Territories Around the Adriatic in the Late Pleistocene.**
- 16:00-16:15 Silvano AGOSTINI (Chieti, Italy)
- C17-07** **The Adriatic Plain in the Late Glacial Maximum.**
- 16:15-16:30 **Discussion**

ABSTRACTS / RÉSUMÉS

- C17-01** Amilcare BIETTI (Roma, Italy)
Emanuele CANCELLERI (Macerata, Italy)
- New results from the excavations at Fondo Focone (Ugento), Bocca Cesira.**
- ABSTRACT:** After a brief re-examination of the Lithic industries of Pozzo Zecca and Bocca Cesira collected during the old L. Cardini's excavations of 1961-1963 (a typological list was already published by G. Laplace in 1966) , we will present here new results of an excavation done by the Istituto Italiano di Paleontologia Umana near Bocca Cesira in 1974. The results have then be compared with the data coming from already known sites, mainly the nearby site of Taurisano.
- C17-02** Amilcare BIETTI (Roma, Italy)
Paolo GAMBASSINI (Siena, Italy)
- Present State of Knowledge on the Epigravettian sites of Salento.**
- ABSTRACT:** In this paper we will describe the actual state of knowledge on the Epigravettian sites of Salento, mainly Taurisano (about 16000-15500 radiocarbon BP), Grotte Cipollianc, on the Adriatic coast (around 15000 BP), Fondo Focone (Ugento), Pozzo Zecca (about 1400 BP) on the Ionian coast, up to Grotta Romanelli (about 11000 BP), again on the Adriatic Coast, and the Upper layers of Grotta del Cavallo, on the Ionian coast. For all these sites we will examine the environmental situation, the lithic industries both from a typological and technological point of view, as well as the problems regarding the raw material procurement strategies. We will try then to draw some comparisons with the sites of the Italian Adriatic coast as well as with sites on the other side of the Adriatic.
- C17-03** Dusan MIHAJLOVIC (Belgrade, Serbia and Montenegro)
- Cultural and Social Integration in the Late Upper Palaeolithic of the Western Balkans.**

ABSTRACT: There exist many elements which point to social and cultural integration in the late Upper Paleolithic of the western Balkans. In this period there is a narrowing of territoriality and a reduction in mobility of hunter-gatherer groups. The settlement system is organized and based on tradition which is indicated by more frequent reoccupation of the same sites retaining the same function. Economic activities are indicated by seasonal exploitation of resources which are utilized to a maximum degree. Archaeological indications include the high level of operationalization in lithic technology and ever more marked regionalization. I attempt here to define all these phenomena more precisely and to expose them within the context of cultural, economic, and social changes which occurred throughout the entire area of the eastern Mediterranean in the end of the Pleistocene.

C17-04Darko KOMSO
Paolo PELLEGGATTI

The roots of the late glacial colonization of the Istria Peninsula.

ABSTRACT: It is well within the Holocene period that the northern Adriatic region begins to be densely populated. Available archaeological data for the Trieste and Slovenian Karst and for the Istria peninsula (Croatia) indicate that Mesolithic hunter-gatherers colonized and settled down in areas and ecological niches that during the Late Glacial were almost completely empty or only ephemerally occupied. The roots of this colonization process were however planted much earlier. The initial exploration of those areas was probably one of the ways late Paleolithic hunter-gatherers responded to the loss of land caused by the northward advance of the Adriatic Sea. In some areas, increasing mobility costs led Upper Paleolithic groups to repeatedly visit fewer locations for lengthier periods of time. With time, as groups become more isolated from each other, they developed traits that in the archaeological record are reflected in more marked differences between regions. This paper discusses the results of detailed technological analysis of three Late Upper Paleolithic lithic assemblages in one such area namely, the Cicarija region in the Northwestern part of the Istria Peninsula. Data from the Late Pleistocene levels at Pupicina Cave, Nugljanska Cave, and Vesanska Cave tell a story of pioneering groups visiting previously unknown areas, getting acquainted with their resources, and plant the seeds for the later spread of human groups across the entire landscape.

C17-05

Preston MIRACLE (Cambridge, England)

The Late Glacial 'Great Adriatic Plain': 'Garden of Eden' or 'No Man's Land' during the Epipalaeolithic? A view from Istria (Croatia).

ABSTRACT: The Great Adriatic Plain would have been a significant feature in Epipalaeolithic landscapes. Some researchers reconstruct it as rich in game, water, and other resources, and hence a focus for settlement by Epipalaeolithic groups (Van Andel 1989, Bailey and Gamble 1990). In this scenario one expects the exposed plain to have linked the opposite sides of the Adriatic, perhaps through the periodic aggregation of bands on it or the transmission of information and personnel through regional networks that spanned the plain. Others, however, reconstruct the plain as a cold, windswept flatland impoverished in game and lithic raw materials that was more or less avoided by Epipalaeolithic groups until the end of the Pleistocene (Mussi 2001). In this case the plain would have impeded movement, making links between opposite sides of the northern Adriatic more tenuous than in the first scenario. These contrasting reconstructions of the Adriatic Plain have fundamental implications for our understanding of the demographic history of the wider region and processes of recolonization during the Late Glacial.

Faunal remains from sites on the edge of the Adriatic Plain (Šandalja, Vela Pijla [Ložinj]) suggest that the plain supported diverse and large herds of ungulates; reconstructions of resource poor environments on the northern Adriatic Plain need to be reconsidered. We also compare these sequences to recently excavated sites in northern Istria (Pupicina, Vešanska, and Nugljanska Caves); the latter document the process of re-occupation of hinterland environments distant from the northern Adriatic Plain. We conclude that the rapid increase in Epipalaeolithic site number and occupation intensity at the end of the Pleistocene was caused by the flooding of the Adriatic Plain and displacement of Epipalaeolithic groups off the plain and into the hinterland.

C17-06

Robert WHALLON (Michigan, U.S.A.)

Social Territories Around the Adriatic in the Late Pleistocene.

ABSTRACT: The Epipaleolithic is sparsely known around the Adriatic and in adjacent regions, but even in this state of incomplete knowledge it is possible to begin to discern some indication of social groups and their territories. Similarities and differences in the archaeological records from those areas that have well excavated and analyzed Epipaleolithic sites begin to provide the data for at least a very rough outline of such territories. Such an outline is attempted here, with the identification of social group territories being aided by the application of a robust, general model of the spatial organization of hunter-gatherer bands.