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SAfA 2008 Frankfurt 8-11 September

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ADDERLEY, W. Paul, University of Stirling, Great Britain & Carlos Magnavita, Goethe-Universität Frankfurt, Germany: *Multi-use ditches or simply mud? Geoarchaeological investigations at Gajiganna Culture sites in northern Nigeria*

Past archaeological studies around the complex of sites at and around the town of Gajiganna in northeastern Nigeria have focused upon examining the Neolithic communities in the southern Lake Chad basin. The sites suggest a dynamic period of settlement between the early second and the middle of the first millennium BC. Within that wider complex of sites, several have been examined. They have shown demonstrable phases of activity with differences in finds and settlement structure that reflect changes in material culture and socio-economic developments.

In parallel with these temporal issues, the location of the sites produces questions concerning settlement organisation and societal complexity both at intra-site and regional scales. Successful examination of these issues requires a geoarchaeological understanding of the landscapes surrounding the early settlements to address questions relating to interactions between the natural environment and past societies. If the earliest Gajiganna Culture sites are considered as a starting point, the period to be examined offers a pronounced contrast in settlement activities, from a period of initial settlement within a relatively pristine natural landscape, to the later period where settlement dynamics will have been more strongly influenced by factors related to human activities in, and in the vicinity of, each site.

This paper considers the distinct deep encircling ditches around the late Gajiganna sites of Zilum and Rungwa. Such ditches are considered unique in this period of African prehistory. Using geoarchaeology methodologies such as sediment thin-section micromorphology and *in situ* OSL dating to examine the ditch sediments, allows a consideration of their function. Key issues are to what use or uses these ditches were put by people during site occupation and whether the ditch-fill represents abandonment or simply the absence of a need to (re)dig ditches. Evidence for possible multiple uses of these ditches will be presented and discussed in respect of historical decision-making, landscape resources, and the wider environmental context. This methodology allows consideration of more generic issues of complexity within archaeological and anthropological settings, and of adaptive systems; in this case, the stability sought by local actors when initially developing sustainable settlements can be seen to be addressed within opposing constraints presented by environmental and societal factors.

AHMED, Khidir A., Nilein University Khartoum, Sudan: *Encounter at the cataracts*

The importance of viewing salvage archaeology from a proper perspective cannot be too strongly emphasized. In the Nile Valley successive salvage operations have undoubtedly transformed our understanding of the ancient cultures of Nubia. Considerations of greater agricultural and industrial productivity have certainly played their part in the construction of dams. In the Sudan a series of dams are being built or planned for construction at the sites of a number of Nile cataracts. These activities are being carried out at exceptional times in the modern history of the country. It is within this context that present and prospective rescue work should be examined.

AKINADE, Olalekan, A., National Commission for Museums and Monuments, Nigeria: *The differentiation in space, location and time of Nok terracotta objects, Nigeria*

The paper considers the differences in the nature and existence of conventional Nok terracotta objects inside and outside the Nok Culture area. A report on recent fieldwork in regions outside the Nok Culture area will be presented. A summary of findings is given and seemingly similar attributes of the objects under discussion will be highlighted. The author calls for rethinking some generally held views about Nok Culture phenomena and the spatial spread of that culture.

ALLSWORTH-JONES, Philip, University of Sheffield, Great Britain: Ethnoarchaeology at IITA Ibadan

Excavations were conducted at the Archaeological Reserve, established on the site of the former village of Adesina Oja, in the International Institute of Tropical Agriculture Ibadan in 1980-1986. An account regarding abandoned house no. 2 was published in Azania in 2004. This report concerns the midden mound excavated at the same time. It yielded a wealth of information about Yoruba life in the first part of the 20th century, some of which was summarised in hitherto unpublished projects prepared by students of the University of Ibadan under the supervision of the author. The objective is to ascertain what light the remains of material culture excavated at a village peripheral to a great urban centre can throw on Yoruba life at the time.

AMEJE, James, 0.1 National Commission for Museums and Monuments, Nigeria: *Traditional iron working in parts of the 'Nok Culture' area: notes and posers from preliminary investigations*

This paper results from some still preliminary attempts in the study of early traditional iron working in the 'Nok Culture' area of the north-central region of Nigeria. Research findings so far have provoked observations relating to the origins of iron working in the Nok area, as well as the relationship of the present inhabitants of the area with the iron-working remains found there. The possible connection of the Nok iron metallurgy with that of other established iron-working traditions around it (notably lower Benue valley, Anambra valley, and Daima) has been examined, and it has been observed that there is as yet no firm basis for linking them up. It has also been tentatively held that, although the present inhabitants of the area have some relationship with these iron-smelting remains, they are unlikely to be ultimately responsible for them.

APOH, Wazi,Binghamton University, USA: *German colonial residues and legacies in Ghana: archaeological insight into Kpando-Todzi site (Volta region of Ghana)*

In comparison with the robust archaeological study of British and French colonial sites in Africa, the assessment of the archaeology of German colonial rule and legacies in Africa has not received equal attention. The intellectual void created as a result of this inattention has necessitated this study as an attempt at problematizing this practice. The archaeology of German colonial history in the tropics needs to be emphasized so as to generate comparable case studies aimed at assessing commonalities and variations in intercultural entanglements and agency in colonized hinterland regions of the world. Through dissertation improvement supports from the National Science Foundation and the Wenner-Gren Foundation for Anthropological Research, multiple evidential sources were explored between June and December 2005 to document how practices of Kpando people in Ghana were impacted by pre-colonial and German colonial political economic pressures. Data gathered from oral histories, archival documents and ethnographic information revealed that Kpando was first settled in the 16th and 17th centuries by a community of Akan and Ewe-speaking migrant groups. These sources also reveal how German missionaries, merchants and colonial officials (1847/1886-1914) established settlements at Kpando and other stations in the Volta region of Ghana (German/British Togoland) and worked to cultivate new markets for their European products and Christianity. The reverberations of these varied encounters led to the monetization and restructuring of the local economy, which impacted gendered divisions of labor, led to new forms of specialization and indigenous reactions to new products. Complementary data from archaeological test excavations at the Kpando-Todzi site provides insights into the residues and materiality of these political economic encounters. The findings from this archaeological investigation will contribute to a re-examination of the silences on German colonialism. Above all, this research will enhance the establishment of a proposed district museum project at the Kpando-Todzi site for the promotion of education, tourism and cultural resource management of German colonial relics at Kpando and the Volta Region of Ghana.

ARAZI, Noemie, Heritage Management Services, Brussels: *Fact or fiction? The presence of Somono/numu in the Inland Niger Delta of Mali before the rise of Bamana Segu*

Together with the Bozo, the Somono are Mande-speaking fishing populations of the Inland Niger Delta. Even though they share the same family names, the fundamental difference between them is that the Bozo have been identified as an ethnic group, while the Somono have been described as a distinct occupational group associated with the Bamana State of Segu between the 17th and the mid-19th century AD. The malleable character of Somono identity is further attested by their incorporation of people from virtually any background, such as Bamana, Soninke, Songhay, Mossi, and Peulh.

The Somono have also been portrayed as namakalaw, a term that describes occupationally defined artisans and bards who guard their professional secrets through endogamy and esoteric ritual procedures. Recent studies of women craft specialists in the Inland Niger Delta, who identify themselves as Somono and numusow (blacksmiths' wives), hence Somono/numu, might throw new light on the origins of the Somono and their status as nyamakalaw, which is further attested by the region's long sequence of occupation. Most archaeologists, however, have been

reluctant to project the techniques used by today's ethnic groups into the past and to recognize the same groups at removes of a millennium or more. Nevertheless, in this paper I will illustrate that our investigations at Dia, located at the western edge of the Inland Niger Delta, offer promising clues to carry out an ethno-historical study of Somono/numu origins. By combining archaeological, ethnographic and historical data I will explore the likelihood that the Somono might have emerged prior to the Bamana State of Segu.

ASHLEY, Ceri Z., University College London, Great Britain: *Kansyore hunter-fisher-gatherers: new research from western Kenya*

In this paper we contribute to a better understanding of the timing and socio-economic activities of the Kansyore mid-Holocene hunter-gatherers who lived near the shores of Lake Victoria. Kansyore hunter-gatherers are of considerable anthropological interest because they are associated with highly decorated and abundant ceramics prior to the introduction of food production (c. 5000-4000 bp) in East Africa. They are also associated, at some sites, with a relatively intensive lacustrine-based subsistence and relatively intense occupations, presenting a contrast to socio-economic patterns associated with other hunter-gatherers from this region. The Kansyore archaeological entity is associated with dates ranging from c. 8000-3000 bp. The wide range of dates for this entity, mixing of levels at some sites, and unreliable dating materials has called into question the timing of Kansyore. We use archaeological materials, especially ceramics, and direct dates obtained from our excavations at Siror and Haa - large, open sites located near rapids in western Kenya - to argue for an Early and Late Kansyore chronology. We discuss migration, interaction, and exchange as possible factors relating to the identity of the makers of Kansyore pottery, and Kansyore decoration processes, inter-site variability, and socio-economic patterns as a way to broaden our understanding of hunter-gatherer lifeways in East Africa's past.

B

BADEY, Sylvain, Université de Paris I, France: *Exploitation minière du cuivre dans la région de Nioro-du-Sahel (Mali actuel) à l'époque des empires médiévaux subsahariens*

Dans le commerce transsaharien à l'époque des empires soudanais, le cuivre est une matière première dont l'importance - symbolique et financière - est affirmée par tous les textes arabes et confirmée par différentes fouilles archéologiques. On a longtemps considéré l'afflux de ce métal selon une seule voie: un acheminement du Maghreb (entre autres les mines du Sud marocain) vers les Etats au sud du Sahara pour y être échangé contre l'or. Cependant les ressources en cuivre de l'Afrique subsaharienne ont, elles aussi, été exploitées, notamment à Akjoujt (Mauritanie actuelle), Agadès et Takedda (Niger actuel) ainsi que dans la région de Nioro-du-Sahel (à la frontière entre le Mali et la Mauritanie) et ceci, parfois, de manière concomitante à l'arrivée du métal maghrébin.

La région de Nioro-du-Sahel, en tant que zone d'exploitation minière et de production du cuivre, est connue depuis longtemps mais son importance a été souvent sous-estimée par les historiens et les mines elles-mêmes n'ont jusqu'alors jamais fait l'objet d'une étude dédiée.

L'exploitation, au XIVème siècle, de mines de cuivre locales dans l'ouest africain est mentionnée chez deux auteurs de langue arabe (Ibn Battutah et Al Umari) et plusieurs chercheurs (R. Mauny 1961, E.W. Herbert 1984) évoquent les mines de Nioro-du-Sahel. Malgré cela, la tendance est de mettre en avant l'apport massif de cuivre maghrébin comme source d'approvisionnement des empires 'médiévaux' subsahariens. En fait ce déséquilibre est dû au manque d'information lié essentiellement à l'absence de travaux archéologiques spécifiques concernant les sites cuprifères de la région.

Nos travaux en cours nous ont permis, pour la région de Nioro-du-Sahel, d'établir un inventaire quasi-exhaustif des sites d'extraction du minerai de cuivre et de les caractériser, ceci grâce à trois missions de prospections et de sondages archéologiques entre 2005 et 2007.

Une première synthèse de ces travaux et des résultats obtenus peut d'ores et déjà être effectuée: c'est ce que nous proposons de faire dans la présente communication.

BAILEY, Geoffrey N., University of York, Great Britain: *The Red Sea basin as habitat and dispersal corridor*

In this presentation I shall examine current ideas about human dispersal across the Red Sea, particularly at the southern end, and the likely role of the wider region as a zone of settlement and dispersal, taking account of the results of new work on the Farasan Islands and the adjacent mainland of Saudi Arabia. Palaeoenvironmental reconstructions informed by new data on sea-level change, new palaeoclimatic data, and new evaluations of the archaeological record now make possible a more focussed and critical discussion of alternative dispersal hypotheses.

BEYIN, Amanuel, Stony Brook University, USA: *The Coastal Oasis Model and new data from the Gulf of Zula (Asfet), Red Sea Coast of Eritrea*

This paper presents results of recent archaeological investigations in the Gulf of Zula and Buri Peninsula, Red Sea Coast of Eritrea. The findings include abundant Later Stone Age (LSA) sites from inland and coastal landscape. Test excavations on three sites, Asfet, Gelalo NW, and Misse East uncovered LSA lithic artifacts and mollusk shells in close association suggesting human exploitation of marine resources. Backed tools and prismatic cores characterize the lithic assemblages at the LSA sites. The excavated sites have produced radiometric dates ranging between 5000 and 8000 years BP. These dates coincide with the early mid-Holocene intermittent dry periods. Such adverse scenarios may have triggered population diversification and periodic migrations within the Horn of Africa and beyond. One possible explanation for the existence of early to mid-Holocene settlements along the Eritrean coast is that humans were attracted to coastal habitats during the dry periods as resources in the interior of the Danakil Depression deteriorated. Human coastal settlements have been widely documented for this time period from various regions of Africa and Eurasia. The results of this project bring new data on Holocene coastal settlements in the Horn of Africa.

BIEMOND, Wim Moritz, University of South Africa, South Africa: *Reinterpreting the origin and spread of the Toutswe chiefdom in Botswana*

One of the great polities of southern Africa at the beginning of the second millennium AD, the Toutswe chiefdom, occupied eastern Botswana from the fringes of the Kalahari in the west to the Limpopo River in the east. The chiefdom rose to power around AD 1000, a process which led to the establishment of three major capitals, Toutswemogale, Bosutswe and Sung, at around AD 1200. A period of decline followed, culminating in total abandonment by AD 1290. By using a stylistic ceramic analysis method, I reinterpret existing ideas on the diverse cultural origin of the Toutswe people. It is suggested that their origin can be traced back to Bantu-speaking people living in the southern Congo around AD 400. They moved south into Zambia and crossed the Zambezi River to spread into eastern Botswana and the northern Limpopo Province (RSA) as Taukome and Zhizo people by AD 900. The intrusion of K2 people into the Limpopo Valley led to a gradual movement of Zhizo/Leokwe people into eastern Botswana, thereby giving rise to the Toutswe chiefdom. Further research has extended the boundaries of the Toutswe chiefdom to the south, with the Limpopo River serving as a permanent water source for their cattle herds.

BIITTNER, Katie M., University of Alberta, Canada: *Raw material variability in MSA lithic assemblages from Iringa region, Tanzania*

Stone tools have a critical role to play in our understanding of the behaviour of early humans. In particular, the types of raw materials that are present in stone tool assemblages, and the sources from which they are acquired, provide information relating to decision-making processes, planning, organisation of technology, and group mobility. The characterization of lithic artifact assemblages from two rockshelter sites, Magubike and Mlambalasi, in southern Tanzania is currently ongoing in order to evaluate inter- and intra-assemblage variability. Preliminary macroscopic analyses demonstrate a considerable range in the raw material types used.

BLENCH, Roger M.,Kay Williamson Educational Foundation, USA: *The 'Green Sahara' and the dispersal of Nilo-Saharan fishing cultures*

Recent palaeoclimatological data for the Sahara made it possible to draw a long-term picture of the waterways that have crossed the region. During the Pleistocene, the Sahara seems to have been a significant barrier to both human and faunal dispersals, although some traces remain of earlier 'green' periods. With the Holocene, dense new networks of waterways and lakes developed, creating a major expansion of resources, both for aquatic fauna and the humans that could exploit it. The evidence for this is found in climatological, biogeographical, archaeological and linguistic sources, which testify to the dispersal of a variety of aquatic species in the Holocene, evidence for which can be found in animal bones and rock paintings. In addition, the synchronic biogeography of fish, amphibians and other species provide pointers to this process.

The Nilo-Saharan languages are found across this region today, although fragmented by the subsequent expansion of Berber. Their greatest area of diversity is in the Ethio-Sudan borderlands where they may have existed as foragers for a long period. The paper argues that their dispersal was strongly associated with these new resource opportunities, and that a west-east movement at this period can be tracked through finds of bone harpoons and through fossils and rock paintings of aquatic species such as hippos in what are now arid regions.

BRADLEY, Daniel G.,Trinity College, Ireland: *Genetic signatures of migration, selection and domestication in African cattle*

Whereas cattle herding in Africa is ancient, its origins are unclear. Archaeological evidence for local domestication is inconclusive. Genetic investigation reveals different layers of ancestral influence in local breeds, including Near Eastern, South Asian, and a stratum that seems particular to Africa. Mitochondrial DNA diversity has been used to argue for a separate origin from Near Eastern and European cattle. This is discussed here together with new data from the autosomal genome which illustrates the ancestral affinities of African cattle and which points toward genes, for example milk proteins that may have been under selection as a consequence of domestication.

BRANDT, Steven A., University of Florida, USA, Elisabeth Hildebrand, Stony Brook University, USA & Erich Fisher, University of Florida, USA: *Were the Ethiopian highlands a major center for aggregation and dispersal of late Quaternary hunter-gatherer populations?*

Over the last decade, many archaeologists and geneticists have identified the 'Southern Corridor' as the most likely dispersal route of anatomically modern humans out of Africa, across the Red Sea and into Arabia at ~50-70 kya. However, little attention has been paid to the environmental and social contexts from which these African founder populations emerged. Immediately prior to these migrations, the hyperarid and cold conditions of MIS 4 made much of northern and eastern Africa uninhabitable. We have previously posed the hypothesis that during this time, the relatively moist SW Ethiopian highlands served as a palaeoenvironmental refugium that attracted culturally diverse hunter-gatherer groups from surrounding regions. In this paper, we further explore the implications of technological and social change in a refugium context. We suggest that contact among these culturally diverse foraging groups may have stimulated technological and social innovations that were further developed as climatic conditions ameliorated during MIS 3. Armed with these technological and social skills, hunter-gatherer populations would have been able to successfully adapt to a wide range of conditions as they migrated out of SW Ethiopian highlands across and out of Africa. After discussing the archaeological data that will be necessary to test this hypothesis, we conclude by considering how the principles of this hypothesis apply to parallel situations during other time periods such as MIS 2/1.

BRASS, Michael, University College London, Great Britain: *Investigating long-term changes in Saharan pastoral social organisation, 3rd to 1st millennium BC*

My doctoral research develops research presented at SAfA 2006 (Calgary) which employed rock art, tumuli and skeletal remains from the central and eastern Sahara to evaluate and model the development of social complexity in early Saharan pastoral societies through examining pastoral settlement patterns, monument/mortuary distributions and grave assemblages, particularly considering the presence and point of origin of valued items/prestige goods. An approximate date of 4000 BC was proposed for the first archaeological signals of transient elite leaders within the pastoral societies. More specifically, I am re-examining the early 20th century site reports and materials from the c. 8000-3000 BC mortuary site of Jebel Moya in the south-central Sudan. The early 20th century Wellcome excavations at Jebel Moya were undertaken to a relatively good and detailed standard for the time and an amazing 2,793 graves were excavated and recorded.

Today, the materials are housed in the Duckworth Laboratory (Cambridge), the British Museum and the Petrie Museum (London), and the Pitt Rivers Museum (Oxford). The materials include grave goods and human remains. The site has been recently re-seriated by Gerharz (1994) with some further work on the pottery by Isabella Caneva (published in Antiquity for 1990). However, neither has considered the social aspects of the graves in terms of the individual burial assemblages nor the distribution of the graves themselves. The grave cards are kept with the collection in the Cavendish Laboratory to which I have secured access. Structural and spatial analyses of grave goods are being undertaken alongside physical re-examination of the composition of certain classes of grave goods. Furthermore, I will also attempt to link the published physical anthropology to the grave cards. This brief presentation will give the results of my research to date and open it up for discussion amongst a wider audience of Africanists.

BROOKS, Alison S.,George Washington University, USA, C. Tryon, George Washington University, USA & J. Yellen, National Science Foundation, USA: *Background to 'Out of Africa': human behavioral responses to demographic stress during the MSA*

The Middle Stone Age archaeological records of both eastern and southern Africa are characterized by long-term trends towards more specialized technologies, increased resource breadth, greater imports of exotic raw materials, and use of coloring materials, incised decoration and other possibly symbolic artifacts. As we have argued elsewhere, these factors would have increased the potential for demographic expansion, both by reducing risk and by increasing subsistence potential and reliability. Evidence for these trends is patchy and discontinuous, and the patterning suggests multiple hiatuses and reversals especially in the best documented records of South Africa. Here, we demonstrate that these trends are related in several eastern African case studies, as specialized projectiles in localities lacking fine-grained raw materials are preferentially made on exotic raw materials, suggesting the development of long-distance networks. Other specialized technologies such as bone points are preferentially associated with increased diet breadth, e.g. fishing. The fact that many of these trends are not found in the earliest industries of Australia suggests that the patchiness of the MSA record is not due to a deficit in human cognitive capacity but rather to situational responses to demographic stress. New climate records suggest that different regions of Africa experienced non-congruent fluctuations in rainfall, which would have profoundly impacted the potential for human settlement and demographic expansion. Using the Smithsonian's new online data base, we show that site numbers also fluctuated dramatically during the African MSA.

BUSHOZI, Pastory M.,University of Alberta, Canada: *Middle Stone Age technology and hunting behaviour in Tanzania*

This paper describes the preliminary results on the possible functions of lithic points from four Middle Stone Age (MSA) rockshelters in Tanzania: Mumba, Nasera, Magubike and Mlambalasi. It describes ways in which stone points were used and the technological differences between spearheads and arrowheads. The method used in this study was first developed in North America. Later on it was used in the Levant and for some MSA sites in sub-Saharan Africa. Goodwin and Van Riet Lowe recognized the presence of scrapers and points as the defining character when they initially defined the MSA in 1929. Scrapers and points seem to have been deliberate target forms for many toolmakers during the MSA period, but the ways in which these artifacts have

been utilized is not well understood. It is important to understand the technological ability and food acquisition strategies of the earliest anatomically modern humans who evolved in sub-Saharan Africa during the MSA. Preliminary results from this study suggest that MSA points were hafted and used to form projectile armatures.

C

CASEY, Joanna, University of South Carolina, USA: *An ethnoarchaeological study of shea butter production in northern Ghana*

This paper looks at the material correlates of shea butter production in Northern Ghana. Currently shea butter is achieving global recognition as an important ingredient in the exotic cosmetics industry, but historically it was also an important resource in West Africa, making it into 15th century AD travelers' accounts, appearing in markets as far away as Morocco and transforming landscapes before the 18th century AD. As the only indigenous oil in the savanna, shea is used for everything from cooking to conditioning wood, skin and hair, as a lubricant and in medicine and ritual. Although the carbonized remains of shea have been found at very few archaeological sites, it was undoubtedly an important resource in the past. This paper looks at the materials involved in the production of shea butter as a means of suggesting how we might be able to recognize this industry in the archaeological record.

CHIRIKURE, Shadreck, University of Cape Town, South Africa & Thilo Rehren, University College London, Great Britain: Traversing the liminal: *versatility and variability in African iron smelting practices*

Since the seminal work of Cline (1937), the study of indigenous iron metallurgy has gradually developed into a lush field for studies of pre-colonial technology in sub-Saharan Africa. Over the years, research themes bordering on the origins, process technology and socio-cultural aspects of iron production and use have been repeatedly engaged with. For all their diversity, existing studies of iron production seem to converge around the fact that the technology employed in much of sub-Saharan Africa was invariably the bloomery process. This blanket term, however, masks some fundamental differences in as far as different groups and regions utilized different smelting recipes and achieved significantly different results. Curiously however, studies of iron metallurgy in Africa have somewhat avoided delineating some of the factors that promoted product and process variation across space and time. Using case studies drawn from widely separated regions of sub-Saharan Africa, this contribution seeks to understand the variability in African bloomery process and enumerate the decisions and constraints that promoted or stifled it. Particular attention will be paid to the nature of raw materials and their availability, system-driven factors, local innovations, organization of production and the cultural and social contexts in which iron was produced and used. It is hoped that such an approach can generate fresh perspectives on the subject of iron metallurgy.

CHLODNICKI, Marek,Poznan Archaeological Museum, Poland: *Hamdab Dam Rescue Project. Activity of the Poznan Archaeological Museum at the 4th Nile Cataract*

The Nile's 4th Cataract, or at least a significant part of it, would not find its way to archaeologists' interest if not for the plans to build a dam on the Nile. In this hard-to-reach area, considered archaeologically unattractive, archaeological excavations were never conducted before. In 2003 work on the right bank of the Nile, between Es-Sadda and Gebel Gurgurib, was undertaken by a Poznan Archaeological Museum expedition.

Back then this area was a white mark on the archaeological map of Sudan. Five seasons of exploration allowed us to uncover the rich heritage of this region, settled currently by Manasir and Rubatab tribes. Archaeologists' activity highly influenced local interest in the past, which aside from positive aspects also caused negative reactions. Protests against re-settlement politics, undertaken by the Manasir community, made rescue excavations harder and harder until they were completely impossible by the end of 2007. Population waiting for relocation often deals with robbing excavations, even though the Manasir as a community protect the local heritage.

Another situation occurred in the area settled by Rubatab. This community, which will not be re-settled, often offered help and advice in finding important archaeological sites. Close interaction with the school in El Ar showed us the possibilities of cooperation in protecting the archaeological heritage of the region when archaeologists leave. Rock art galleries deserve special protection, since they can serve as tourist attraction but require constant monitoring and protection from thieves. Only the local population can save vast tumulus cemeteries and box graves from destruction, by planning new buildings and cropping fields in such a way as not to damage monuments of the past. This hope is created by educating the youngest generation. Results of the archaeologists' work should not only find their way to specialist literature, but should also be made available to local communities in a more popularised form.

CISSÉ, Mamadou, Rice University, USA: *Recent excavations at Gao-Saney and Gao Ancien (Mali): preliminary results*

Since Tim Insoll's pioneering work at Gao in the 1990s, new research has been undertaken at both Gao-Saney (located 8 km from Gao) and Gao Ancien. Despite the intense pillaging at Gao-Saney, two areas with undisturbed deposits were excavated in 2000 to a depth of approximately 7 m. Both produced a series of radiocarbon dates between 1250-1100 BP (uncalibrated).

At Gao Ancien, extensive excavations have been underway since 2003 in the area known locally as 'the mosque of Kankou Moussa'. Several large stone and/or brick buildings have been uncovered. The primary early stone construction phase appears to date to the 9th and 10th centuries CE. Basal deposits have provided dates between 1380-1180 BP (uncalibrated). This area was intensively occupied, with much reuse of earlier stone materials, as well as clearing and dumping of refuse and building materials. This paper will present the architecture of the Kankou Moussa site and the challenges of interpreting its chronology. Finds from both Gao Ancien and Gao-Saney will be discussed and compared, with preliminary observations on the potential of these sites relating to the development of trade and complex society on the eastern bend of the Niger.

CONARD, Nicolas J., Eberhard Karls Universität Tübingen, Germany: *A critical view of the evidence for a southern African origin of behavioral modernity*

The Middle Stone Age of southern Africa has produced a wealth of new data that points to this region as a center for cultural development during the Middle and Late Pleistocene. In South Africa it has become scientifically fashionable and politically expedient in recent years to emphasize these important findings and to suggest that southern Africa represents the source of behavioral modernity. While a case can be made for this point of view, this paper examines the strengths and weaknesses of this hypothesis and ultimately rejects the idea of a monocentric southern African origin in favor of a model for a historically contextualized, mosaic, polycentric rise of cultural modernity. This model for Mosaic Polycentric Modernity (MPM), while not denying the unique role of Africa in the later phases of human evolution, better matches the global archaeological record than do models emphasizing strictly African origins.

COULIBALY, Elisée, Université de Paris I, France: *La transmission des savoirs et savoir-faire de la sidérurgie directe en Afrique Occidentale: le cas des métallurgistes du Bwamu (Burkina Faso, Mali)*

La question de la transmission des savoirs et des savoir-faire en matière de recherche sur l'art de la métallurgie directe du fer en Afrique reste un sujet encore très peu étudiée. En effet, si quelques auteurs comme Amadou Hampâté Bâ, ou Bruno Martinelli ont déjà abordé quelques aspects de la transmission des techniques anciennes liées au travail du fer dans leurs travaux, force est de reconnaître que cette question a retenu très peu l'attention des chercheurs en paléométallurgie africaine. C'est ce constat qui justifie l'intérêt du thème proposé. Grâce aux données nouvelles actuellement disponibles sur l'histoire de la métallurgie du fer en Afrique, on sait aujourd'hui que les anciens métallurgistes ont su mettre au point, au cours des siècles passés, des savoir-faire fort élaborés sur l'ensemble de la chaîne opératoire, allant de la prospection du minerai, à la transformation du métal en objet fini à la forge. Ainsi les études sur les procédés de la forge, même si ceux-ci sont également peu développées, elles ont pour intérêt principal d'apporter des informations précieuses sur les techniques mises en œuvre dans la fabrication des objets, en l'occurrence la maîtrise des techniques de soudures, d'aciérage ou de nitro-carburation du fer. Les analyses physico-chimiques pratiquées sur les archéo-matériaux et les objets archéologiques ou ethno-archéologiques, attestent que la mise en œuvre de telles techniques fait appel à des connaissances et des gestes techniques précis que l'artisan du fer sait faire intervenir de manière judicieuse au cours de l'opération de fabrication, dans le but d'obtenir volontairement un résultat donné. La nitrocarburation nécessite des procédés précis, en matière de temps de chauffe du métal, de dosage et de composition des substances organiques qui interviennent dans l'opération d'aciérage. Tous ces savoir-faire s'accumulent avec le temps pour constituer un patrimoine immatériel, une culturel technique 'non écrite', qui va finalement se transmettre de génération en génération, dans l'espace et le temps, entre les détenteurs de ces savoirs et les jeunes générations qui doivent en hériter et perpétuer leur transmission. Ils se posent alors d'importantes questions auxquelles se trouve confronté le chercheur: qui était détenteur des savoir-faire métallurgiques? Qui pouvait transmettre ces savoir-faire? Quelles étaient les conditions et les modes de transmission de ces savoir-faire? Quel était la place du secret professionnel, mais aussi du rituel religieux autour de ces savoir-faire qui masquaient souvent les codes rationnels? Voici autant de questions autour desquelles nous essayerons d'organiser notre réflexion sur cette question importante de la transmission et du transfert des savoir-faire de la métallurgie ancienne du fer, en ayant à l'esprit que les derniers détenteurs de ces savoirs et savoir-faire sont en voie de disparition.

CURTIS, Matthew C., University of California Santa Barbara, USA: *Relating the Ancient Ona Culture to the wider northern Horn: discerning patterns and problems in the archaeology of the 1st millennium BC*

This paper argues that the Ancient Ona Culture area of the central highlands of Eritrea, while distinct in a number of ways, represents an important and early regional manifestation of a wider macro-regional culture often called 'Pre-Aksumite'. Archaeological material culture, subsistence, and settlement data from the Greater Asmara area are assessed in relation to wider data for the 'Pre-Aksumite' period of the early to mid-1st millennium BC in the attempt to discern how the Ancient Ona Culture area relates to other coeval localized regional culture groups, and how it might provide important insights for exploring ancient social organization and complexity. Suggestions for new terminology concerning the archaeology of the 1st millennium BC northern Horn are presented as well.

D

DALE, Darla Washington University St. Louis, USA & Ceri Z. Ashley, University College London, Great Britain: *Kansyore hunter-fisher-gatherers: new research from western Kenya*

In this paper we contribute to a better understanding of the timing and socio-economic activities of the Kansyore mid-Holocene hunter-gatherers who lived near the shores of Lake Victoria. Kansyore hunter-gatherers are of considerable anthropological interest because they are associated with highly decorated and abundant ceramics prior to the introduction of food production (c. 5000-4000 bp) in East Africa. They are also associated, at some sites, with a relatively intensive lacustrine-based subsistence and relatively intense occupations, presenting a contrast to socio-economic patterns associated with other hunter-gatherers from this region. The Kansyore archaeological entity is associated with dates ranging from c. 8000-3000 bp. The wide range of dates for this entity, mixing of levels at some sites, and unreliable dating materials has called into question the timing of Kansyore. We use archaeological materials, especially ceramics, and direct dates obtained from our excavations at Siror and Haa - large, open sites located near rapids in western Kenya - to argue for an Early and Late Kansyore chronology. We discuss migration, interaction, and exchange as possible factors relating to the identity of the makers of Kansyore pottery, and Kansyore decoration processes, inter-site variability, and socio-economic patterns as a way to broaden our understanding of hunter-gatherer lifeways in East Africa's past.

D'ANDREA, Catherine, Simon Fraser University, Canada: *Pre-Aksumite and Aksumite settlement of Gulo Makeda, eastern Tigray, Ethiopia*

Systematic archaeological survey and excavation conducted in Gulo-Makeda, northeastern Tigray, have produced new insights into the Pre-Aksumite and Aksumite settlement history of northern Ethiopia (800 BC - AD 700). Results of settlement data, ceramic, and lithic artifact analyses from Gulo-Makeda indicate that the region experienced continuity in site occupations through time, suggesting a degree of political and economic stability in contrast to the Aksum-Yeha regions. Sites in Gulo-Makeda are strategically located along historically known trade routes in areas with moderate to high water flow potential, suggesting that control of trade and

high agricultural productivity were factors in the development of elite groups in the region. Cultural links to Eritrea are evident in ceramic evidence dating to Pre-Aksumite and later Middle to Late Aksumite times. Gulo-Makeda grew from having a culturally peripheral role in the Pre-Aksumite period to a center of some importance during Classic Aksumite times, evidenced by the presence of artifacts of trading elites. Results of recent excavations at the site of Mezber are presented, focussing on new data generated on Pre-Aksumite rural agricultural economy.

DAVID, Nicholas, University of Calgary, Canada: *Ricardo and von Liebig in the Mandara Mountains: iron, comparative advantage, and specialization*

A reconstruction of iron production, distribution and consumption amongst casted groups in the northern Mandara Mountains during the 1930s and 1940s is considered in the light of David Ricardo's Law of Comparative Advantage and Justus von Liebig's Law of the Minimum. Ricardo suggests that it is not specialization per se but rather its absence that requires explanation. This leads to likely explanations for differential production of commodities in the region. However, it was a comparative advantage in marketing that led to Sukur's preeminence as a producer of smelted metal.

Ricardo's law cannot account for the nature of specialization in this region. Instead it is argued following von Liebig that time, particularly the window of time available for farmers to weed, was the 'deficient nutrient', and that this favored the delegation of a variety of specialist tasks to a smith-potter caste.

Finally, the collapse of the ancient smelting industry is explained in terms of the minimal scale of iron consumption which facilitated replacement by byproducts, scrap, the debris of 'modernization' as the opportunity costs of iron production became too great, and, in a developing cash economy, people turned to groundnut cultivation and migrant labor.

DE MARET, Pierre,Université Libre de Bruxelles, Belgium: *From kinship to kingship: an African journey into complexity, or is it perplexity?*

Since Frazer's seminal work, the notion of divine kingship has attracted much interest. It has generated an enormous amount of literature having close relationships to both religion and politics.

In Africa, one can find examples of small-scale societies without a state-like or even a chiefdom structure where nevertheless some individuals are vested with crucial ritual functions, similar to those of sacred or divine rulers.

There are thus no clear-cut separations from the more simple manifestations of the sacred dimension of power to the most elaborate kind of divine kingship.

DECORSE, Christopher R., Syracuse University, USA: *Complexity in the era of the Atlantic World: perspectives from the Central Region Project, coastal Ghana*

This paper examines sociocultural transformations in coastal Ghana from the first millennium though the 19th century AD, with particular emphasis on trade, technological change, and the emergence of complexity during the era of the Atlantic World. While historians have examined many aspects of this period, the paucity of written sources for much of the time period constrains assessment of the transformations that occurred. Archaeology affords a time depth not accessible through the documentary record or oral traditions, in this way providing the most valuable source of information for evaluating African societies over the past 500 years. This paper briefly examines archaeological data from across West Africa and then focuses specifically on developments in southern Ghana between AD 1400 and 1900.

The central Ghanaian coast can be characterized by its comparative lack of urbanization prior to the advent of the Atlantic trade. In the late 15th century AD small fishing and farming villages were scattered along the coast and the adjacent hinterland. Evidence for the pre-European contact occupation of the coast is represented by surface scatters and midden deposits along low rises just above the shoreline or adjacent to lagoons and, in some locales, hilltop sites. In some instances, scatters of surface material extend for almost a kilometer along the shore, suggesting significant pre-15th century AD coastal occupation. While testament to the importance of coastal resources during the pre-European contact period, this material likely represents small, shifting settlements occupied over long periods of time rather than single, continuous settlement. Recent archaeological survey and excavations indicate that this pattern extends back into the first millennium AD, and probably earlier. Although likely engaged in localized trade, the coast was at the extreme periphery of wider trade networks of the northern forest and savanna. Increasing urbanization is the most striking change in African societies on the coast during the post-European contact period. This began as a gradual process during the 15th and 16th centuries AD, but culminated during the following centuries. Beginning with the founding of Castelo de São Jorge da Mina by the Portuguese in 1482, Europeans established numerous outposts on the central Ghanaian coast. African towns adjacent to these European forts and castles became centers of commercial activity and the conduits through which European goods flowed to the interior, as well as points from which enslaved Africans were transported to the Americas. With the advent of the Atlantic trade, many of the earlier, smaller coastal settlements were abandoned and towns associated with European trade entrepots and the capitals of the states in the immediate hinterland, such as Asebu, Efutu and Eguafo, expanded in size and importance. Archaeological research from both the coast and hinterland will be used to illustrate the impact of the European trade and the way in which this impact is represented archaeologically. Fieldwork undertaken during 2007 is reported on, including the ongoing survey of terrestrial and underwater sites in Central Region, and excavations at the British fort at Komenda.

DEWAR, Genevieve,University of Toronto, Canada: *Calibration of radiocarbon dates from human skeletons that reflect marine food intake: a comparison of methods*

Accurate calibration of radiocarbon dates into calendrical years must account for conditions of the organism in life, including the incorporation of carbon from marine sources. A variable ratio of marine and terrestrial protein makes neither of the usual approaches to calibration fully appropriate. Carbon from marine sources typically makes samples appear substantially older, so this adjustment is non-trivial. Calibration of mixed carbon samples can be done by calculating the proportion of marine carbon (% Marine) in the diet. This study uses two examples of co-

interred human burials from coastal South Africa to compare methods for identifying % Marine in human bone collagen. One method identifies the expected range and endpoints of 100 % terrestrial and 100 % marine diets, based on stable isotope analysis of the local flora and fauna. The other method uses isotopes to identify % Marine, but sets the endpoints based on the observed isotope values of skeletons. The method using observed endpoints generates more plausible results. When the % Marine values are used to calibrate published, uncalibrated radiocarbon dates of 122 Holocene period adult skeletons, shifts in the dates range from -622 to +904 years. The magnitude of the adjustment is dependent on the % Marine value, while the direction is based on time (pre- and post- 4000 BP).

DIBBLE, Loretta,Rutgers State University of New Jersey, USA: *Fishing and land use during the mid-Holocene at Koobi Fora, Lake Turkana*

Since 2000, investigations into land and resource use by mid-Holocene and modern fishers at Lake Turkana, Northern Kenya, have been conducted by the Koobi Fora Research and Training Project, a collaboration of National Museums of Kenya and Rutgers University. Various models of site location preference by mid-Holocene fishers have been developed using analogs of prey fish behavioral ecology and ethno-archaeological studies of fishing peoples along Lake Turkana. The input variables for the model are drawn from studies of fishing encampments conducted at Lake Turkana by Diane Gifford-Gonzalez, and ethno-archaeological work done by Purity Kuira. These site preference variables are then mapped onto a reconstruction of the palaeoenvironments of 9000 to 4000 BP.

DRAKE, Nick A.,King's College London, Great Britain: *Was the Sahara a barrier out of Africa? Biogeographic and palaeoclimate evidence*

The Sahara desert has long been thought of as a barrier to the movement of hominins and animals out of Africa, yet it is clear that hominins managed to get out a number of times during the Quaternary. To explain this apparent paradox a number of different routes have been proposed such as across the Bab el Mandeb Straits or the Straits of Gibralter, along the Nile corridor, or around the coast.

The evidence for the Sahara being a barrier is, however, contradictory. For example, Hooghiemstra et al. (1992) show that pollen from arid taxa exist in Atlantic Ocean cores throughout their entire length and from this concluded that a belt of aridity always separated the humid region in the north from that in the south. However, the biogeography of the Sahara suggests that many animals, including such water-loving creatures as fish, crossed it quite recently. Their spatial distribution, having population centers both north and south of the Sahara with small relict populations in central regions, suggests a trans-Saharan distribution in the past.

This paper evaluates the palaeohydrology and biogeography of the Sahara and shows how water-loving animals and hominins could have crossed it. A remote sensing (RS) and digital elevation model (DEM) analysis of the Sahara reveals numerous palaeo-channels with a high drainage density. When these deltas are located on the margin of a river's catchment their distributary channels can link adjacent river systems, thus allowing aquatic life to move from one basin to the next. For example, an inland delta in southern Darfur links the river Nile to the Chari River, thus

connecting the Nile basin and Chad basin and explaining the similarity in their aquatic flora and fauna.

RS and DEM analysis shows the Sahara also supported some truly giant lakes, eight of which were larger than 20,000 km2, the largest being Lake Megachad with an area of 360,000 km2. When these lakes were full, they overflowed, linking adjacent catchments. For example, Lake Megachad overspilled into the Benue River linking the Chad and Niger River basins, creating the world's second largest river system (5,041,532 km²). With the Chad basin also linked to the Nile via an inland delta, this creates the world's biggest interconnected waterway at c. 9,000,000 km2. Further rivers, lakes and inlands deltas to the north make it possible to cross the Sahara from east to west and north to south during humid periods and always be in or close to water. This explains why the fish species of the Sahara (and the Nile) are so similar, forming a single biogeographic group. Some of these fish are cichlids that are known to speciate rapidly. As they do not appear to have done so, it appears that the Saharan inland waterway was functioning during the African humid period.

It will be shown that the distribution of freshwater molluscs, some frogs and toads, and a freshwater turtle also suggests trans-Saharan water connections. Furthermore, by plotting the historical range of hippopotamus, crocodiles and elephants alongside the spatial distribution of reported sightings, Holocene fossils and their depictions in rock art reveal a trans-Saharan distribution suggesting that these animals roamed throughout the Sahara in the Holocene. There is evidence that people followed these waterways with the spatial distribution of bone harpoons and Nilo-Saharan languages closely following it. Thus as the fish and other aquatic life moved across the Sahara, the fishermen appear to have followed them.

Our understanding of the pre-Holocene palaeoclimate of the Sahara will be reviewed to reveal other time periods when it might have been possible to cross the Sahara. It will be shown that they correspond to many proposed 'out of Africa' migrations.

DU PIESANIE, Justin J., University of the Witwatersrand, South Africa: *Understanding social complexity in the Middle Iron Age of South Africa: the case of K2 and Leokwe*

Calabrese (2005) clearly identified and defined two distinct ceramics styles in the Shashe-Limpopo basin. Due to this important research, the first ethnically distinct groups can be seen archaeologically in sub-Saharan Africa. With the identification of Leokwe and K2 ceramic styles co-occurring, comes the question of how did these groups interact, and what was the relative status of these groups in relation to one another through time.

Calabrese argues that at least some Leokwe groups maintained a relatively higher or equal status on initial contact with the K2 group. His basis for this claim is through the identification of what he termed ‘Elite Symbolic Objects’.

Using GIS, site distributions have been analysed to determine the locale of sites within the landscape, on the escarpment, floodplain or vlei, and their position in relation to primary and secondary resources. The hopes are to assess whether there were forms of control in terms of

access to resources, and what implication this would have in an analysis of the relative status of K2 and Leokwe groups.

Additionally, reassessment of the validity of the 'elite symbolic objects' is addressed with relation to the re-examination of Castle Rock in 2007.

E

EGGERT, Manfred K.H., Eberhard Karls Universität Tübingen, Germany: *Fortified settlements in the inner Congo Basin: a multi-faceted approach*

During archaeological reconnaissance work along major rivers in the inner Congo basin a number of fortified settlement sites were discovered. They consisted usually of a circular ditch with a diameter between 50 and 100 m. Exploratory excavations in one of them yielded ceramics belonging to the time of early European exploration from the mid-1870s onward. According to oral tradition collected during reconnaissance these settlements were a widespread phenomenon in those days. They had to be given up because the colonial administration forced the population to do so. In addition to archaeological and ethnohistorical evidence there are some references to these villages in early missionary literature. We are thus able to elucidate a specific historical phenomenon by means of archaeological, oral, and written evidence.

EHRET, Chris, University of California Los Angeles, USA: *Validating linguistic evidence: when is it trustworthy and when is it not?*

Over the years numerous Africanist scholars of language and culture history have presented archaeologists with histories built ostensibly on linguistic evidence. But how is an archaeologist to judge the validity of these proposals? The fundamental requirement in using language evidence for history is that the scholar be working from a systematic historical linguistic reconstruction of the language family, or the branch of a family that contains the relevant evidence. The systematic formulation of sound change history in a language family constitutes the essential analytical apparatus for determining whether the surface similarities between two words of like meaning are due to chance, to borrowing, or to actual common derivation from the same root word. If one does not undertake a rigorous historical linguistic reconstruction first, or does not make use of an existing reconstruction, it does not matter how sophisticated one's understanding of the possibilities and pitfalls of historical linguistics is. One can make educated guesses and, often, guesses with a high probability of being correct, but guesses nevertheless. Many linguistic-based proposals of the past five decades that matter for African archaeological correlation do meet the requirement of being founded on a systematic historical linguistic reconstruction. A great many more do not. This paper systematically identifies which particular linguistics-based works of the past fifty years attain that standard and therefore compel serious attention from Africanist archaeologists, and which do not.

EZE-UZOMAKA, University of Nigeria, Nigeria: *New dates for iron smelting in Lejja, Nigeria*

Lejja has an archaeological heritage of iron metallurgy that is very important to the understanding of the Iron Age in Africa. Many iron-smelting furnaces have been located. There are different types of furnaces in Lejja. They range from large furnaces, small furnaces and slag pits still containing cylindrical slag blocks. The copious amount of slag blocks stacked in this area revealed the extent of iron smelting in Lejja. Excavations carried out in Lejja revealed that the slag blocks, which have been stacked in their various village squares, were residues of an iron-smelting culture that may have spanned thousands of years. Many of the ethnographic recollections show that iron smelting is entrenched in myths, legends and ways of life. Pottery collected shows similarities with Early Iron Age pottery from other sites. Radiocarbon dates show that iron metallurgy in this area may have commenced before some of the dates which had been published earlier in this region.

F

FATTOVICH, Rodolfo, Università degli Studi di Napoli "*L'Orientale*", Italy: *Reconsidering Yeha, Tigray (Ethiopia), ca. 700–400 BC*

Yeha (Tigray) is the most impressive site with evidence of a South Arabian influence dating to the 1st millennium BC in the northern Horn of Africa (Eritrea/Northern Ethiopia). Since the late 19th century this site was regarded as the best evidence of a Sabean colonization of the region in early historical time. In particular, the occurrence of the ruins of a temple in South Arabian style and an elite cemetery with rich shaft tombs suggested that this site was the capital city of a state (Daamat) preceding the Kingdom of Aksum (late 1st millennium BC – late 1st millennium AD). The site, though known since the early 19th century, was more extensively excavated in 1960, 1971, 1972 and 1973 by the Institute of Ethiopian Archaeology and the French Archaeological Unit in Ethiopia, under the direction of Francis Anfray. On the basis of these excavations in the 1960s Anfray divided the culture historical sequence of central Eritrea and Tigray into three main periods: Pre-Aksumite or 'Ethio-Sabean' Period (mid-1st millennium BC) when a South Arabian influence was stronger, Intermediate Period (late 1st millennium BC – early 1st millennium AD) when local cultural traditions emerged again, and Aksumite Period (1st millennium AD) when a new 'Aksumite' culture consolidated. In 1971 and 1972 the author participated in the fieldwork at Yeha and was charged with studying the ceramics. The results of that work were published in 1980 and reflected the state of art at the time. The pottery sequence was divided into three phases: Pre-Aksumite 1, when the ceramics of Yeha were different from those from Matara; Pre-Aksumite 2, when the same types of ceramics were found at Yeha and Matara; and Pre-Aksumite 3, when the ceramics from these sites were again different. These remarks were later used to outline the 'Pre-Aksumite Culture' as a distinctive archaeological culture, characterized by South Arabian elements emphasizing the status of the elite and local elements typical of the rest of the population. Today, recent fieldwork at Aksum, Shirè, Gulo

Makeda (Tigray) and the Greater Asmara region (Eritrea) points to a much more articulated (and complicated) picture. This evidence suggests that a Pre-Aksumite culture actually did not exist and the South Arabian elements (in turn, transformed into local cultural symbolic features as Andrea Manzo will demonstrate in his paper at this conference) characterized a few sites scattered in a mosaic of different (archaeological) cultures in the region in the 1st millennium BC, and thus may support the interpretation that Daamat was a federative state as the Sabean title 'mukarib' of the last kings strongly suggests. In this paper this hypothesis will be tested on an updated revision of the ceramics at Yeha and their comparison with those from Matara and other sites of the 1st millennium BC in Tigray and Eritrea.

FENN, Thomas R., Abdoulaye Maga[2], Oumarou Idé[3], David Killick[1], John Chesley[1] & Joaquin Ruiz[1]: *Technology and trans-Saharan commerce: medieval metals trade in the middle Sahel zone, sub-Saharan West Africa*

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The factors promoting urbanization in the Sahel zone of sub-Saharan West Africa have been the source of much debate and attention in recent years. The development of trans-Saharan trade in the late first millennium AD has often been credited with this sub-Saharan socio-cultural and economic efflorescence. Archaeological investigations in Senegal, Mali, Burkina Faso, and Niger in the past two decades have helped to examine these factors and the relationship to trans-Saharan commerce. However, one of the underlying problems in these investigations is trying to chronologically link the archaeological evidence to trans-Saharan commerce. As the origins and early development of trans-Saharan commerce is poorly understood and studied, establishing this relationship is still somewhat problematic. This paper proposes that examining metal technology and metals trade, both before and after the advent of major trans-Saharan commerce, can contribute to our growing understanding of West African Iron Age urbanization. The examination of copper metallurgical debris and objects recovered from sites linked to trans-Saharan commerce in Niger will provide a proxy for examining economic (and urban) development in the region, as metals and metal trade were a major component of this regional growth and expansion. Evidence will be presented, which primarily examines north-south connections across the Sahara as well as east-west connections from Niger across the middle Sahel zone of sub-Saharan West Africa.

FLEISHER, Jeffrey, Rice University, USA: *Daily practice in early East African coastal houses: two burned 7th–9th century houses from Pemba Island, Tanzania*

Excavations of two burned 7th–9th century houses at Tumbe on Pemba Island, Tanzania, provide unique insight into the daily lives of early coastal people. That these houses burned, collapsed and buried a relatively intact assemblage of household materials offers a rare opportunity to examine the contents of early coastal houses, and to begin to understand the spatial setting in which people lived and carried out their day-to-day practices. This paper will consider the structural arrangement of the house, as well as forms of production indicated by the material record abandoned within the houses themselves. By reconstructing household activities, the goal of this paper is to begin articulating the importance of practice to the constitution of social relations along the Swahili coast. Household archaeology offers one way of doing this, by understanding that the material record of the house and household activities are the means through which social life was constituted and lived.

FOLORUNSO, Caled Adebayo, University of Ibadan, Nigeria: *Updating the cultural landscape of Old Oyo*

The site of Old Oyo had been the subject of archaeological investigation for over half a century. Recent research in the past five years, including reconnaissance, mapping, and excavations on the site, is adding more information to our knowledge of the cultural landscape of the site. While some of the relics that were reported in the past are fast deteriorating, new insights are being gained into other relics that hitherto had not been reported. We also present a comparison of our recent mapping of the Old Oyo walls using GPS with earlier mapping on the site. Digital photography and GPS readings have also been used for quick recording of the cultural landscape features, which include wells that have been identified in some parts of the site, grinding hollows found on rock outcrop surfaces, and seemingly complete pottery vessels that are found partially buried in many parts of the site. Recently, a portion of a potsherd pavement was excavated outside the walling system of the site, and more evidence for potsherd pavements is revealed on the site surface in the general area where the first pavement was excavated. These and many more cultural relics litter the landscape of the Old Oyo site, and this paper provides inventories using GIS to locate the relics.

FRANKE, Gabriele, Goethe-Universität Frankfurt, Germany: *Cultural change in the mid-first millennium BC – new evidence from the Nigerian Chad Basin*

Archaeological research in the Nigerian Chad Basin over the last 20 years has led to new insights into the cultural development during the second and first millennium BC. In the past years, work has focused on large settlements that seem to appear suddenly in this region from the middle of the first millennium BC onwards. Excavations and geomagnetic surveys at Zilum and neighbouring sites in the Gajiganna Culture area have produced evidence for radical changes in settlement size and structure as well as socio-economic systems, e.g. ditches surrounding the settlements and the cowpea as new cultigen.

To find out whether these changes only occurred locally or were a regional phenomenon, the research was extended to the south of the Gajiganna Culture area. Test excavations were carried out at two sites in 2004 and 2005.

In this paper I will present the analysis results from one of these large sites (Malankari, *c.* 30 hectares), dating to about the fourth century BC. A complex settlement structure as shown by the geomagnetic survey, and artistic clay figurines that are completely different from earlier and contemporaneous sites in the Chad Basin are indications of cultural change that might have led to an initial form of social complexity.

FREDRIKSEN, Per Ditlef, Universitetet i Bergen, Norway: *What do we learn from studying clay and pottery in households? Two differing examples from southern Botswana*

From ethnographic and ethnoarchaeological accounts of sub-Saharan ceramic practices we learn that this form of technology has been deeply embedded in a framework of thought which may be referred to as a 'thermodynamic philosophy'. Central here is an ambivalent relationship between potting and human reproductivity, most often found expressed as pollution ideas and prohibitions closely associated with female bodily experience: menstruation, sexual activity and pregnancy. Potentially polluting states and actions were regarded as hot while cleansing agents were cool.

But how do these rather abstract thought-patterns relate to our experiences during field studies of material culture, when we as researchers are faced with the everyday of present domestic life? Do they relate to them at all? These are primary questions to anthropologically oriented archaeologists with an interest in the field of ceramics. And since the questions have everything to do with the ways we approach past and present people's relationship to the material world, they are of particular interest when seen in light of recent academic preoccupation with the interface between 'indigenous knowledge systems' and scientific knowledge. This debate raises the important issue of what social science is and should be when facing rationalities that are different in various aspects from Modernist thinking.

Bearing these considerations in mind, this paper will follow the various stages in the 'life histories' of clay in households, aiming to demonstrate some important differences in people's relationship to clay and potting practices between two Tswana contexts in southern Botswana. The examples will provide the background for some theoretical and methodological reflections on how we approach the materiality of clay and ceramic technology in material culture studies. In turn, these reflections will be related to the title question: what do we learn from such studies?

G

GALLIN, Annabelle, Université de Provence, France: *Peopling of the Sahel during the late Neolithic: new data from Kobadi site (Malian Sahel, 1700–1400 BC)*

During the 3rd and 2nd millennium BC, the aridification of the southern Sahara is considered to have caused the migration of Neolithic people towards the Sahelian belt. One of these migrations has been hypothesized to led from Azawad, Hassi el-Abiod well area, to the Inland Delta of Niger. In this framework, the Kobadi site (1700–1400 BC), located in the Mema area, has been regarded as one of the first settlements of the Neolithic fishers/hunters from Azawad.

The technical and stylistic study of the whole ceramic corpus excavated in Kobadi, performed by the author during her doctoral research, and the review of Hassi el-Abiod collections permit to test the hypothetical link between Azawad and Mema.

The existence of various technical traditions and decorative styles in the Kobadi corpus and their echoes in the Inland Delta of Niger, Azawad and Niamey areas enable us to draw a new picture of the peopling of the Sahelian belt, around the Niger river, during the late Neolithic (3rd and 2nd millennium BC).

GARCEA, Elena A.A., C. Lemorini[2], E. Cocca[2] & G. Mutri[2]: *The lithic and ceramic assemblages from Gobero*

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The lithic and ceramic assemblages from the Gobero archaeological area presented in this paper come from surface collections and excavations at the two main sites, G1 and G3. Even though these sites were intensively used as cemeteries by Kiffian late foragers and Tenerian pastoralists, the large majority of the lithic and ceramic artifacts are not associated with the burials. They are included in the anthropic deposit in which the burials had been dug and therefore indicate that the sites were used for living or performing some specific activities on the spot as well.

Pottery was the first archaeological marker that could be used to identify the cultural groups who occupied the Gobero area. In fact, two distinct ceramic assemblages are present; one shows impressed decorations made with an evenly serrated comb, producing dotted zigzags and dotted wavy lines, which are typical of the early Holocene late foragers of the Sahara-Sudanese region and locally associated with the Kiffian industry; the other, locally called Tenerian, features decorations made with a double-pronged tool, producing alternately pivoting stamped motifs which typify the early pastoral period in the Sahara.

A wide variety of raw materials used to produce the lithic assemblage is a remarkable feature of Gobero. Seven different types of rock could be first distinguished by macroscopic inspection of the artifacts, and fourteen samples have been submitted to petrographic analysis of thin sections under a binocular microscope in order to identify the mineralogical features which characterise the different types of rock.

Functional analysis of the lithic industry indicated macro-traces of use with edge-removals that could be observed on some artifacts under a stereomicroscope. Edge-removals were recorded on three categories of knapped tools: arrowheads, geometric lunates, and end-scrapers.

GIFFORD-GONZALEZ, Diane, University of California Santa Cruz, USA & Albano Beja-Pereira, Research Center in Biodiversity and Genetic Resources, Vairão / Universidade do Porto, Portugal: *The multiple African origins of domestic donkeys*

Molecular genetics has resolved a long archaeological and zoological debate over the origins of the domestic donkey (*Equus asinus*) from wild ancestors. Because the ancestral species of the donkey, *Equus africanus*, is found in subspecific forms across arid zones of Africa and the Arabian Peninsula, and because some early domestic forms were recovered from Dynastic Egypt, it was open to debate whether the species was domesticated in Africa or the Near East. Phylogenetic analysis of wild and domestic mtDNA lineages of the species and its close relatives from 52 countries has identified two highly divergent phylogenetic groups, the Nubian wild ass (*Equus africanus africanus*) and the Somali wild ass (*Equus africanus somaliensis*) as representing ancestral lineages of the domestic ass, excluding Asiatic wild asses as progenitors. Details of the estimated dates of domestication and the dispersion of this highly useful and ubiquitous equid are provided.

GIJANTO, Liza A., Syracuse University, USA: *Trade, interaction and change during the Atlantic Trade on the Gambia River*

The Gambia River was connected to many of the major trade systems in West Africa, with direct ties to the Saharan and Atlantic networks. Prior to the arrival of the Portuguese, Mande traders traveled from the inland Niger delta to the coast trading gold and other commodities for salt. In the mid-15th century, Portuguese merchants initiated commerce along the river, ultimately reorienting trade patterns in the Senegambia from interior land-based to Atlantic maritime commerce. This paper presents preliminary findings from archaeological and historical investigations at the Niumi trade center of Juffure as well as peripheral villages of San Domingo and Lamin. The overall focus of these investigations is to examine potential changes in daily life due to shifts in interactions and commerce from the 15th to the 19th century.

GIRAUDI, Carlo, ENEA (Ente per le Nuove Tecnologie, l'Energia e l'Ambiente), Italy: *Late Upper Pleistocene and Holocene hydrological balance in the GOBERO temporary lake (Niger)*

The Gobero depression formed as a consequence of strong deflation affecting Cretaceous continental sediments gently dipping toward the south. Inside the closed basin, every time the hydrological balance of the catchment became positive, a lake was formed.

The lacustrine sediments are preserved in small patches in the Gobero depression due to the wind deflation and the erosional phases that affected them since their sedimentation. The sediments

have been deposited in a temporary lake having a maximum extent of about 50 km^2, and a maximum depth of about 6–7 m.

The geological-geomorphological survey carried out on the Gobero basin allowed the identification of lacustrine features such as ancient shorelines, wave-cut platforms, and two different outflows. The first outflow was near the SE border of the former lake. The altitude of the sill level that conditioned the lake level was about 6.5–7 m above the bottom of the lake. The second outflow was at the SW border of the basin and formed later. In a first period the sill elevation was about 5.5–6 m above the lake bottom, but erosion due to the outflow lowered the sill until it reached the elevation of about 4.5–5 m above lake bottom.

Wave-cut platforms were also found at the top of some ridges and at the top of archaeological sites, and wave-cut small terraces or platforms have been shaped during the lowering of the lake level. The occupation of the Gobero archaeological sites was strongly conditioned by the presence of the lake and by the lake level oscillations. For example, some sites lying at about 2.5 m above the lake bottom could not be occupied when the lake level was higher.

The lake water submerged the sites three times: the Kiffian settlements were interrupted twice, and the Tenerean settlements on one occasion. Lacustrine sediments formed during Late Upper Pleistocene wet periods have been recognized, but at the present no direct datings are available for them.

GLIGANIC, Luke[1]**,** Z. Jacobs[1], R.G. Roberts[1] & M. Dominguez-Rodrigo[2]: *OSL dating investigations of the Middle and Later Stone Age at Mumba rockshelter, Tanzania: progress and problems*

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Mumba rockshelter in Tanzania has one of the most complete and continuous archaeological sequences in East Africa. It extends from a MSA level of about 130 ka in Bed VI to the present, including an early LSA lithic assemblage in Bed V. The timing of the MSA-LSA transition is of archaeological interest, as the development of LSA technology is widely viewed as a product of modern human behaviour. The top of Bed V is fairly well constrained by a beach deposit which has been correlated with other local lake highstands at 27 ka. Previous studies using ^{14}C, uranium-series, and amino acid racemization (AAR) dating techniques have given a range of ages for Bed V from younger than the 27 ka highstand to 65 ka. Given the problems associated with ^{14}Cdating and uncertainty concerning the uranium-series ages, the site's chronology remains ambiguous. Here we report the preliminary results of an optically stimulated luminescence (OSL) program to improve our understanding of the chronology of Bed V at Mumba rockshelter. OSL dating is a technique that measures the elapsed time since luminescent minerals (such as quartz and feldspar) were last exposed to sunlight. The burial age is estimated from the energy stored in the crystal lattice as a result of the supply of ionizing radiation from naturally-occurring radioactive elements in the deposit. East African quartz has previously proven troublesome for OSL dating techniques, because quartz of metamorphic and igneous origin commonly does not possess the same favourable characteristics as sedimentary quartz. We have examined sand-sized grains of quartz from Mumba rockshelter, and found that they too are dominated by the 'poorly

behaving' components of the OSL signal. These components are not ideal for dating, so a variety of experiments and analytical methods have been performed with the aim of removing these unwanted components. In this presentation, we will report on the progress achieved in meeting this aim, and the problems still to be overcome. The implications of this revised chronology on the origins and dispersal of modern human behaviour will be discussed briefly in our talk.

GOKEE, Cameron D., University of Michigan, USA: *Of time and the river: investigating late prehistoric socio-economy in the central Falémé Valley*

Extant archaeological research along the Falémé River in eastern Senegal and western Mali has documented a palimpsest of human occupations ranging in age and scale from the Palaeolithic tool scatter to the modern agro-pastoral village. In the winter of 2008, the Central Falémé Archaeological Project launched a field program focused specifically on the long-term socio-economic dynamics of the Late Holocene period (*c*. 4000 BP to present). Preliminary analyses of survey and excavation data suggest that people living in the central Falémé corridor experienced both cultural continuity and diversification in the face of broad climatic, economic, and political changes taking place across West Africa.

Settlement patterns among numerous small sites associated with a microlithic tool assemblage document a regional occupation by mobile to semi-sedentary foragers during the Late Stone Age. The subsequent Iron Age occupation marks a shift towards more sedentary village life, a food-producing domestic economy, and increasing craft specialization – concomitant with the formation and expansion of larger polities along the Senegal River to the north and the Niger River to the south and east. Ceramic data from regional surface collection and two excavation probes at the village site of Pathé Djimba suggest that Iron Age communities had become enmeshed in a wide array of cultural and economic networks. Finally, archaeological remains from the past several centuries provide a material testament to socio-economic patterns – described in various textual sources – fundamental to the emergence of contemporary cultural practices and identities.

These and future data will ultimately provide a case study for investigating the interplay between regional socio-economic processes and more localized culture historic trajectories in West Africa over the past several millennia.

GOUEM GOUEM, Bienvenu, Université Libre de Bruxelles, Belgium: *New perspectives on early farming settlement patterns on the southern coast of Cameroon*

Since June 2001 we have been carrying out archaeological research in the southern littoral region of Cameroon; initially along the layout of the Chad-Cameroon pipeline (between 2001 and 2004) as part of the archaeological program of the Chadian Project of Export Oil, subsequently (between 2004 and 2005) in the immediate vicinity of this layout for a PhD program. These archaeological investigations have revealed a remarkable number of sites. Essentially composed

of pits, these sites belong to the first village communities who inhabited in the southern forest region of Cameroon *c.* 3000 BP onwards. An effort was made to understand the original infilling process as well as the primary and secondary functions of the pit structures. The analysis of ceramics from the sites of Bissiang, Dombè, Bidou, Bidjoka, Talla, and Mpoengu enabled the definition of three major pottery traditions. The oldest of these traditions appears to be an extension of the Obobogo Tradition, identified in the Yaoundé region at the forest-savannah border. Also, a set of iron objects associated with overturned vases (most likely funerary remains) were found at the Mpoengu site. This exceptional phenomenon has already been observed at other sites in the forest area of the country. These results yield important elements for understanding the settlement patterns and the ancient lifestyles in southern forested Cameroon, and hence for the whole of the Central African forest area.

GRONENBORN, Detlef, Römisch-Germanisches Zentralmusem Mainz / Johannes Gutenberg Universität Mainz, Germany & James Ameje, National Commission for Museums and Monuments, Nigeria: *Durbi Takusheyi – citadels without cities?*

The 13th/14th century AD elite burial site of Durbi Takusheyi in present-day Katsina State, northern Nigeria, is situated mid-way between the two early Hausa city states of Daura and Katsina. No remains of any associated larger settlement have hitherto been identified. Despite its apparently isolated location, the burials contain rich goods of local manufacture but also imported material from distant regions of the Islamic world. With this pattern – known from various regions world-wide – the Takusheyi burials reflect a characteristic behaviour of emerging elites and also throw light on the constitution and organisation of initial state-level societies in the west-central Bilad al-Sudan.

GUEYE, Ndéye Sokhna, Université Cheikh Anta Diop de Dakar, Senegal: Museum exhibitions in Senegal: instrumentation of history or politics of memory?

West African museums, especially in Senegal, remain essentially marked by their colonial and post-colonial past. The Senegalese museums are offspring of the colonial enterprise. This raises questions about their legitimacy and recognition by local populations. Although sites of memory and cultural heritage, they were modeled according to colonial ethnographic views and therefore reflected colonial perceptions of Africans. Those models were challenged at the end of the colonial era as independences in the 1960s ushered a search for a new national consciousness. This was achieved through rewriting African history, promoting national culture, values, and heroes. Independent Senegal searched to promote national museums; unfortunately, the exhibits remained elitist as they continued to focus on the remote traditional past sometimes to promote nationalist or political views. That ideological orientation contributed to local indifference in respect to post-colonial museums. Instead of curating collective memory, museums were locally viewed as the continuation of the African past invented by the colonizers and later reproduced by the post-colonial state in a nationalist and elitist manner. Significant changes are however noted as, by the 1990s, museums' specialists began to initiate public outreach programs that searched to decolonize and adapt exhibitions to local needs and demands. This outlined trajectory is here

illustrated at the three major museums in Goree Island (Senegal): the Historical Museum, the Slaver Warehouse, and the Women's Museum Henriette Bathily. Our objective is to describe how the museums were designed, perceived and evolved from the colonial period to the present. I will insist on the 1990s and 2000s which are characterized by an epistemological shift that contrasts the colonial period. This will permit us to show the power relations involved in the production of history as well as the complexities of the politics memory in Senegalese museums.

H

HAALAND, Randi, Universitetet i Bergen, Norway: *Changing food ways as indicators of emerging social complexity. From the Neolithic agro-pastoralists to the Meroitic civilization*

Based on archaeological material from the Sudanese Nile Valley one can observe that the typical African food system based on porridge and beer emerged from *c*. 6000 bp. In this area beer and porridge were made from summer-growing crops such as sorghum and millet. Over time the emergence of an increased variety of pottery types (small vessels, such as cups) used for the serving of liquid foods and drink developed. This is seen as related to increased social differentiation where drinking was part of social display. Beer seems especially important for use in the ritual spheres from the early part of 4th millennium bp to the later Meroitic period. Many of the jars from the Late Meroitic period had the capacity to contain several hundred litres of beer. The finer Meroitic pottery, the drinking cups and goblets appear to have been used in special contexts of ritual consumption, which also include ceremonial breaking of the vessels.

HAFSAAS, Henriette, Universitetet i Bergen, Norway & Alexandros Tsakos, Humboldt-Universität zu Berlin, Germany: *Rescuing the cultural heritage or preserving the cultural landscape? Natural environment and national territory in Sudan and Ethiopia*

The wishful leap of African countries to the modern world necessitates economic development, which is mainly linked to the ultimate exploitation of natural resources for the sake of national progress.

In the Sudan, this is primarily employed through the construction of a series of dams for the purpose of producing electricity and improving irrigation through the control of the waters of the Nile. As a consequence, the people of northern Sudan are experiencing a dramatic alteration of their natural environment through the flooding of large parts of the Middle Nile Valley. Subsequently, this causes a mass destruction of the cultural heritage and landscape. If the salvage of the former is being secured through the works of the National Corporation for Antiquities and Museums (NCAM) as well as appeals to foreign (archaeological) missions, the latter will disappear despite being vital for the self-identification of the riverine Sudanese.

The Merowe Dam on the Fourth Cataract has already given a clear example of the uprooting of local communities and the loss of their customs, traditions, and ways of life. On the same token, the Kajbar Dam, under construction in the Third Cataract area, represents a very real threat to the continuity of the Mahas habitation present there at least since the medieval period; while the

proposed dam at the Dal Cataract might bring under water the most important archaeological sites of Soleb, Sedeinga, Sesibi, and Sai. This past is not important neither for the present Islamic government of the Sudan nor for the multi-national enterprises responsible for the creation of a new national identity based purely on capitalist principles. Presently, the pre-Islamic periods are systematically ignored in Sudanese schools and thus in the consciousness of the future citizens of the state.

In neighbouring Ethiopia, in contrast, the most important sites of the late antique and medieval past, mainly Aksum and Lalibela, constitute an integral part of the national and religious identity and are continuously venerated by the Ethiopians. In this sense, we find it revealing that these sites remain on the margins of archaeological research – but nevertheless in the heart of tourist interests and development of related facilities. So, the bulk of this research is of limited scope focusing mainly on Early Man and the (pre-) Aksumite past. It is to be noted that the fieldwork is almost exclusively done by foreign missions. The larger number of archaeological excavations and research in the Sudan can function as a support and not as a hold-back for issues of rescuing and promoting the cultural landscape of the Middle Nile.

HAMBOLU, Musa O., National Commission for Museums and Monuments, Nigeria: *Constructing a relationship between northwestern Nigerian terracotta sculptures and those of Nok*

Widespread in the northwestern part of Nigeria are terracotta sites that have been ravaged by illegal diggers. The sculptures are known to the art market world as Katsina/Sokoto terracottas. Recent efforts at making the best out of a bad situation (through scientific excavations) have produced some modest results.

While a date of 3,337 ± 39 BP obtained at one of the sites (Tsunkwui) led to a tentative belief that we might be dealing with the antecedents of the more sophisticated and more developed Nok terracotta sculptures, a second date of 1555 ± 38 BP from another site (Tsauni Lamba) has dampened the initial assumptions. Still, while more excavations are certainly called for, we can begin to compare the two seemingly disparate traditions.

Therefore in this paper I intend to (1) present data from Tsunkwui and Tsauni Lamba; (2) compare the cultural manifestations; and (3) compare them conjointly with data from, and interpretations on, Nok terracotta sites.

The total impression one gets from the northwestern Nigerian sites is that of basic similarities with Nok in terms of archaeological content and context of finds. More investigations should throw further light on the purpose of the terracottas, the societies that produced them and their relationship to other centres of artistic productions during the early Iron Age of Nigeria.

HAN, Jianlin[1]**,** J.M. Mwacharo[2], V.A. Mobegi[3], T. Amano[4] & O. Hanotte[3]: *Origin and geographic distribution of maternal lineages in African indigenous chickens*

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The origin and history of African indigenous chickens remain unclear as archaeological data are relatively sparse and inconclusive. Using the first 397 bp long mitochondrial DNA D-loop region sequenced in 557 individuals from 37 populations sampled in 12 African countries, the possible maternal ancestors of African chickens were determined. 76 haplotypes are identified. Phylogenetic analysis incorporating these 76 and 12 reference haplotypes from putative centres of chicken domestication in Asia provides strong evidence for the presence of two major and one minor maternal lineages in African chickens, derived from the Indian subcontinent (54 haplotypes), Indonesia (16 haplotypes) and China (6 haplotypes). The geographic distribution of these lineages varies significantly across the continent. The Eastern Africa region has all three lineages with the one from the Indian subcontinent occurring with the highest frequency followed by the one from Indonesia. The three lineages are also observed in Southern Africa with the lineage from Indonesia having a higher frequency. This Indonesian lineage is absent in Western and Northern Africa, where the lineage from the Indian subcontinent predominates. In all regions, the lineage from China is the least represented. Partitions of genetic variation among regions reveal interesting geographic patterns. The lineage from the Indian subcontinent is the most diverse in the eastern part of the continent, while the Indonesian lineage is the most diverse in the southern part of Africa. In conclusion, our results reveal two major entry points for domestic chickens into the African continent: coastal Eastern Africa, a legacy of ancient Indian Ocean trading between Africa and the Indian subcontinent; and the southeastern part of Africa following likely the arrival and establishment of people of Indonesian origin in Madagascar. The origin of the Chinese lineage remains unclear.

HAOUR, Anne C., University of East Anglia, Great Britain: *Garumele, former Kanem-Borno capital?*

A polity with a continuous presence in the Chad Basin of perhaps nine hundred years, Kanem-Borno represents one of sub-Saharan Africa's best-known examples of social complexity. One of its most enduring enigmas remains the site of Garumele, Republic of Niger. Garumele has been many times described, and is said by oral tradition to have served as the capital of Kanem-Borno after the exile of its leaders from Kanem, in modern Chad. The capital is then said to have shifted to Birnin Gazargamo, in the Yobe Valley (Nigeria), known through the excavations of Graham Connah in the 1960s.

In the Nigerian part of the Chad Basin, archaeologists have shed light on past occupation sequences relating to Kanem-Borno, and have developed detailed ceramic sequences; well-known sites include Daima, Birnin Gazargamo, and Ngala. In stark contrast, Garumele, and the Nigérien side of the Chad Basin as a whole, have remained largely unexplored. Accordingly, preliminary archaeological work was initiated by Anne Haour and Boubé Gado at Garumele in 2005, with special attention to issues of ceramic traditions and chronology. This paper will suggest how Garumele may fit, culturally and chronologically, within the activities of Kanem-

Borno, and it will widen its scope to consider what the traditions, which speak of successive capitals for the polity, may be trying to say regarding socio-cultural complexity in this part of the world.

HARRINGTON, Lesley, University of Toronto, Canada: *Physical activity patterns among forager children: evidence from measures of bone strength*

The architectural properties of long bones are developed, in large part, as an adaptive response to individual levels of physical activity. Patterns of bone strength observed in the upper and lower limbs of adults are laid down during childhood when bony tissue is most responsive. Through the cooperation of four curatorial institutions in South Africa, the skeletons of approximately 60 southern African Later Stone Age juveniles were studied. Measures of long bone (diaphyseal) strength were acquired through a combination of non-destructive methods including direct measurement, bi-planar radiography and casting. Bending and torsional strength measures for the upper and lower limbs were calculated using a beam model for the diaphysis. These data illustrate the developmental timing of strength properties reported for southern and western Cape Later Stone Age adults that have been linked to regional and sex-based subsistence behaviours. Comparative data from prehistoric agriculturalist and modern sedentary children demonstrate how subsistence behaviours can be reconstructed through analysis of long bone architecture.

HARVATI, Katerina, Max Planck Institute for Evolutionary Anthropology, Germany: *Affinities of Upper Palaeolithic Europeans: African origin?*

The current modern human origins debate centers on the possibility and degree of admixture between indigenous archaic humans and modern human populations migrating out of Africa into Europe and Asia in the Late Pleistocene. Evidence for such admixture must be sought in the earliest fossil record of modern humans outside Africa, as it is those populations that would have encountered, and possibly interbred with, archaic hominins. In the case of Europe, several aspects of Upper Palaeolithic morphology have been proposed as evidence of at least partial Neanderthal evidence.

A 3-D geometric morphometric analysis of the cranial morphology in available Upper Palaeolithic specimens is conducted using a large comparative sample of recent human geographic populations, Neanderthals and Middle-Late Pleistocene fossil hominins from Europe, Africa and the Levant. The aim of the study is to establish the morphological affinities of Upper Palaeolithic Europeans and to evaluate its morphology for evidence of admixture between Neanderthals and early modern humans. Preliminary results do not support the hypothesis of admixture. Rather, they highlight the relative morphological cohesion of Eurasian early modern humans and point to their cranial morphology as a generalized, ancestral modern human morphology, from which later geographic groups diverged.

HILDEBRAND, Elisabeth A., Stony Brook University, USA & Steven A. Brandt, University of Florida, USA: *Holocene archaeology of Highland Kafa, SW Ethiopia*

Highland southwest Ethiopia is an interesting context for exploring diversity in Holocene foraging and food-producing economies. Cool, moist conditions, steep topography, and compressed ecological zones make for an unusual array of potential environments and resources for prehistoric foragers and farmers. Southwest Ethiopia has long been considered a probable domestication center for several indigenous Ethiopian crops requiring moist conditions: enset (*Ensete ventricosum*), coffee (*Coffea arabica*), yams (Dioscorea spp.) and others. Later prehistoric and early historic periods saw the formation of complex societies such as the kingdoms of Kafa and Yem, which depended on local crops and products, and constituted important southern counterpoints to the evolving Ethiopian empire based in the northern Horn of Africa. Despite these obvious points of theoretical interest, southwest Ethiopia saw little archaeological fieldwork until 2004, when the Kafa Archaeological Project (KAP) initiated a program of survey and excavation of caves and rockshelters in Kafa Zone. Survey yielded more than 20 caves, ten of which were subject to test excavation. Here we present the results of fieldwork and preliminary analysis of lithics and ceramics. Large, well-preserved faunal and archaeobotanical assemblages were also recovered but will require extended analysis. Data from these rockshelters should eventually shed light on local transitions from foraging to food production, and the emergence of social complexity, and the shifting strength of regional connections between southwest Ethiopia and neighboring areas in Sudan, Kenya, the Ethiopian Rift, and the northern Ethiopian highlands.

HORLINGS, Rachel L., Syracuse University, USA: *The environment of historic maritime trade: shipwreck site formation processes in Ghana*

The investigation of shipwreck site formation processes sets the stage for the interpretation of events from an historical maritime past and supports the investigations of wider cultural phenomena. In a region such as coastal Ghana, where relatively little is known concerning the maritime environment and its effects on historic trade and on consequent submerged cultural resources, an understanding of site formation processes is foundational in terms of how sites are investigated and interpreted. This paper is a discussion of an integrative and interdisciplinary approach to investigating these processes within the natural and historical cultural settings of a select shipwreck site in Ghana. Data from this shipwreck site, in conjunction with data from experimental control areas, provide insights into historic trade in the region, and make available a comparative data set for future investigations on a regional scale.

HORSBURGH, K. Ann, Stanford University, USA: *The spread of domesticated dogs across Africa: contributions from ancient DNA*

Our understanding of the spread of domesticated dogs across Africa has been hampered by the osteological similarities between domesticated dogs and several wild canid species from wolves

and golden jackals in the Near East to black-backed jackals in southern Africa. Summarized here is our current state of knowledge about domesticated dogs in Africa, and recent work dedicated to the identification of domesticated dogs in the southern African archaeological record.

HUFFMANN, Tom, University of the Witwatersrand, South Africa: *Mapungubwe and Great Zimbabwe: the origin and spread of social complexity in southern Africa*

Social complexity in southern Africa first developed in the Shashe-Limpopo Basin. As is well known, rank-based society at K2 developed into class distinction at Mapungubwe. The transfer of this new ideology to Great Zimbabwe, however, has received less attention. New research on rainmaking practices suggests that a Mapungubwe dynasty introduced class structures at Great Zimbabwe. Poor climatic conditions at the end of the 13th century undermined sacred leaders at Mapungubwe itself, and while vulnerable, the elite at Great Zimbabwe took over the important gold and ivory trade. Among other things, the new elite used the now-famous Zimbabwe birdstones to establish their legitimacy.

HUMPHRIS, Jane, University College London, Great Britain: *Rwanda made iron – iron made Rwanda? The role of iron in pre-colonial Rwanda*

Across the Great Lakes region it would seem that iron played a central role throughout the last two thousand years, becoming embedded within origin myths, kingship, and ultimately becoming essential to the fertility and survival of many societies. While work is ongoing and the story far from complete, a general understanding of the evolution of the wider area on social, economic, political and cultural levels has been tentatively reached. The development of agriculture and pastoralism, the gradual transformation of societies into kingdom and state organisations, the role of healers and belief systems, are all issues that have been accessed. The resulting picture provides the context for exploring the role and place of iron within this complex history. How or why iron was produced, the effects of this production on society and on the industry itself as demand increased, are intrinsic questions to be answered if a true appreciation of socio-technological histories is to be aimed for.

This paper presents the results of a large-scale project concerned with iron production in Southern Rwanda, combined with a review of previous work. Based on the documentation of over 50 newly located iron-production sites, and six intensively investigated smelting locations, and combining theoretical, ethnographic and materials-science based approaches, issues such as adoption, adaptation, expansion, and impact of prehistoric iron production in Rwanda are beginning to be addressed.

Rwanda possesses a long and well-documented history of iron production, beginning with the earliest ‘decorated brick’ furnaces that have ensured Rwanda’s place within the archaeometallurgical history of Africa. Associated with the still elusive Urewe pottery-using societies, very little is known of the groups organising themselves to spend significant time on

the resource-thirsty job of producing iron. Through the examination of an early smelting site, alongside the metallographic analyses of iron objects found in an Urewe burial, and incorporating this information with the growing corpus of knowledge regarding this period in Great Lakes History, further light will be shed on early technological traditions.

However, this initial phase of production is not the only momentous period of Rwanda's metallurgical past. From around the 16th century AD, with the gradual move towards centralised power, the Nyiginya Kingdom began to emerge. As the kingdom grew in size and power, the demand for iron increased dramatically. Tools for land clearance and field maintenance, and weapons for the continually busy and vast armies of the kingdom, were constantly needed. Until now little was known of how the regional iron production technologies developed and adapted during the evolution of one of the most successful polities of the wider Great Lakes region, or how a continual iron supply was ensured throughout the following centuries.

The results presented are providing the first glimpse into the long-term technological history of pre-colonial Rwanda, and highlighting the remarkable recent metallurgical past of this region.

HUYSECOM, Eric[1]**,** Anne Mayor[1], Barbara Eichhorn[2] & Geneviève Perreard[1]: *Dourou-Boro and Pégué: a re-evaluation of 'Toloy' constructions in the Dogon country (Mali)*

[1]Université de Genève, Switzerland; [2]Goethe-Universität Frankfurt, Germany

In the Dogon country of Mali new discoveries made in 2007 and 2008 demonstrate an increase in socio-economic complexity from the beginning of the 1st century AD and make it possible to re-evaluate the chronology, the technique and the meaning of 'Toloy' constructions.

In the Dourou region, along the Cliff of Bandiagara, circular constructions placed side by side, located in several horizontal faults in a small valley perpendicular to the Cliff of Bandiagara, have walls erected by superimposition of clay coils sometimes plastered by a clayey coating, and tempered with small millet chaff or leaves. A small semi-circular opening is placed against the rocky ceiling. Similar constructions discovered at Pégué near Sanga have been interpreted until recently as granaries from the 3rd–2nd centuries BC, built by the 'Toloy' population, then re-used as burial places during the 11th century by the 'Tellem' population (meaning "those who came before" in Dogon). Twelve dates obtained at Dourou-Boro, and seven new dates from Pégué-Sanga, as well as a detailed analysis of the archaeological material indicate that these were buildings conceived from the start as burials, built between the 3rd century BC and the 13th century AD. The archaeological material from Dourou-Boro notably includes beads of semi-precious stones and glass paste imported from the Middle East, indicating the existence of an increase in complexity with the presence of social hierarchization and long-distance contacts from the beginning of the 1st century AD, well before the arrival of the Dogon.

I

IDE, Oumarou Amadou, Université Abdou Moumouni Niamey, Niger: *La moyenne vallée de la Mékrou (Niger S.O.): éléments d'une occupation humaine ancienne*

La Mékrou, province archéologique peu connue jusqu'alors, s'avère un haut-lieu de la préhistoire en région sahélienne. C'est un affluent de la rive droite du fleuve Niger d'une largeur moyenne d'environ 25 m qui délimite la frontière entre le Niger et le Bénin, où elle prend sa source. La moyenne vallée de la Mékrou, milieu naturel au paysage ensavané, est privilégiée en regard de son environnement, car elle a dû jouer depuis des temps immémoriaux un rôle attractif pour les nombreuses populations préhistoriques qui s'y sont succédées.

Les travaux menés dans la moyenne vallée de la Mékrou font émerger la richesse d'une région sahélienne, dont l'occupation humaine ancienne est restée longtemps inconnue. Toutes les périodes sont représentées, en une longue séquence qui paraît ininterrompue de l'Acheuléen au subactuel, en passant par le Paléolithique récent, le Néolithique et l'apparition d'une métallurgie du fer.

ILES, Louise, University College London, Great Britain: *The iron industries of Bunyoro-Kitara: recent archaeometallurgical research in western Uganda*

Archaeological survey conducted in the latter half of 2007 across three areas of western and southern Uganda has revealed plentiful evidence for iron production relating to the pre-colonial kingdom of Bunyoro-Kitara. This paper will discuss the findings from the subsequent excavations and the preliminary archaeometallurgical analyses, which have enabled aspects of those technologies to be reconstructed, revealing more about how these industries operated within their social, political and physical environments.

Extensive pragmatic yet systematic survey was undertaken across three zones within the extent of influence of the former kingdom: Mwenge, Kooki and Masindi. In total, over 200 new sites were recorded during this survey, mostly relating to the Late Iron Age (LIA), but also including one Stone Age Site in the Kooki area and several Early Iron Age sites in Mwenge. Many sites consisted of large concentrations of slag blocks and other smelting debris, frequently also containing the preserved remains of furnace bases, whereas other sites were comprised of mining pits for the procurement of iron ore.

For the purposes of the research, ten of the Later Iron Age sites were chosen for excavation across the three areas. Initial analyses from one site have highlighted the high level of variation that can exist within a very small area: two areas of smelting remains separated by only twenty metres have revealed two very different technical approaches to the production of iron at the site. Both clusters of iron production activity demonstrated the use of a copper-rich iron ore, however, at one cluster a second, manganese-rich material was being added to the smelts, either intentionally or inadvertently acting as a flux and resulting in an increase in technical efficiency.

As this research and these analyses progress, a broader picture will develop as to the nature and causes of such technological variations across the kingdom, allowing for a greater understanding of the mechanisms under which these iron production technologies operated.

INSOLL, T.A., University of Manchester, Great Britain: *Pots and earth cults. The context and materiality of archaeological ceramics amongst the Tallensi of northern Ghana and their interpretive implications*

This paper seeks to consider what factors might underlie the deposition of a large spread of pottery recorded during excavations in a shrine, the Nyoo shrine, in the Tongo Hills of northern Ghana. Primary in understanding what this pottery might represent would appear to be concepts of materiality associated with the pots as products of the earth, i.e. through the clay used in their manufacture. Hence via their deposition in the earth at Nyoo, it can be suggested that they were returned to the medium from which they came. This might in turn be linked to the former existence of beliefs surrounding earth cults.

This discussion seeks to explore the possible place of pots within earth cults; through the material from which they are made and potentially also through the processes utilised in their manufacture, but also through their acting as mnemonical objects invoking relationships with the earth. Finally, the possible interpretive implications of the Nyoo material and of ideas surrounding pots and earth cults will be briefly considered in relation to archaeological contexts outside sub-Saharan Africa with reference to aspects of 'structured deposition', specifically Grooved Ware pits from the later Neolithic of the British Isles.

IOVINO, Maria Rosa, Centro Internazionale di sperimentazione, di documentazione e di studio per la preistoria e l'etnografia dei popoli primitive, Italy & Corrado Marziano, ICAZ (International Council for Archaeozoology), Italy: *Palaeoecological diversity of southeastern Sicily during Neogene/Quaternary and its implications for territory capabalities, behaviour and adaptation of (early?) human odysseys*

The research carried out in the Neogene/Quaternary of Sicily produced numerous data related to several branches such as geology, stratigraphy, palaeoceanography, palaeoecology, biogeography, and palaeontology. Although in the past a certain amount of research took place, the understanding of early human colonisation(s) of Sicily is still an open question, with conjectural data ranging from Lower Pleistocene up to the Last Glacial Maximum. The two main theories of early population dynamics of Sicily are (a) considering the arrival of human beings from the Italian peninsula through the Messina strait, and (b) coming from Africa through a Siculo-Maghrebin bridge formed during regression periods.

The last decades of palaeoanthropological research in Sicily have been dominated by the debate on the fossil specimen MDS-AG 2840, known as the Mandrascava skull, and other research by Bianchini in the area around the town of Agrigento situated in central southern Sicily, just in front of Africa. Unfortunately the impact of this research has been irrelevant both because it was rejected by scholars as fake and because in the area of the supposed discovery no scientific

research has subsequently been attempted. Human migrations depended on many parameters among which the most relevant are surely the topographic, geographic, and climatic factors.

The discovery of a *Homo sapiens* skull, found recently by the authors at Giovanna Cave, stimulated a focus of our research on the Hyblean Plateau territory that shows geological and geographical features different from the rest of Sicily. In this work we propose to start from a zero level, beginning with the palaeoecological factors of this territory and selecting the suitable areas for future research.

J

JESSE, Friedrike, Karl Peter Wendt, Franziska Bartz, Thomas Frank, Fenna Godhoff, Robin Peters & Bernhard Buhs, Universität zu Köln, Germany: *Shades of the past: GIS-based spatial analysis of prehistoric surface sites in the Lower Wadi Howar (northern Sudan)*

Settlement sites in arid areas such as the Sahara often present themselves as large surface scatters of artifacts which at first sight do not seem to be very specific. Features structuring a site (e.g. hearths or postholes) are either missing or poorly preserved. Often the simple mapping of finds and features allows neither for statements concerning internal settlement structures nor for the spatial and chronological delimitation of settlement areas.

In this paper we tackle these problems using a GIS-based approach. Our study area is the Lower Wadi Howar in Northern Sudan where under the aegis of the ACACIA project numerous large settlement sites have been discovered and partly examined. For the present study five surface sites have been chosen, mostly dating to the 4th and 3rd millennium BC. There, small-scale excavations combined with a detailed survey using a total station have been carried out. Different methods have been applied to detect the inherent structures of the sites. Besides the elaboration of maps showing the distribution patterns of the artifacts, approaches known from GIS-based analysis on large scales such as Thiessen-Polygons, Largest Empty Circle with Kriging, density isolines and Nearest Neighbours Analysis have been tested. The results will be presented in this paper and displayed in the poster session.

JOUSSE, Helene, Naturhistorisches Museum Wien, Austria: *Patterns of animal exploitation in a lacustrine environment by the two human populations of Gobero (Niger) during the Holocene*

The newly discovered Holocene site called Gobero in central Niger provides a rich faunal record indicating change in palaeoenvironment and dietary customs for two successive phases of human occupation.

During the first occupation phase in the early Holocene, between 7600 and 6300 cal BC, fish dominates the faunal remains, especially large species living in deep and permanent waters linked to the Chad Basin. Nile perch and large catfish were taken with a variety of harpoons and hooks made of bone; wild mammals that may have been hunted include hippos, small carnivores, and many antelopes living in forest savanna to drier landscapes as well as turtles and crocodiles.

A large mammal rib was found with cutmarks, and two barbed bone points were found in a midden dated to this phase. Many other barbed bone points come from the area surrounding the site, including some found in situ in lake sediments. They show a large variety of size and morphology, including points and harpoons with one and two rows of barbs.

A second occupational phase in the mid-Holocene, from 4000 to 2800 cal BC, remained heavily dependent on aquatic resources. Midden remains suggest shallow-water net fishing with catch dominated by small clarids and tilapia, mud turtles and mollusks. Wild ungulate bones associated with this phase include dry savanna species such as warthog, giraffe, elephant, tortoise, reedbuck, oryx and gazelles. Domesticated cattle are present within this phase from 3900–2600 cal BC as a minor component in the middens and surrounding paleolake deposit. The significance of the faunal assemblages at Gobero is compared to other Holocene sites in the central Sahara.

The occupation and use of the Gobero site is discussed, proposing the hypothesis of a particular functionality and/or seasonal practices, in the light of other archaeological and analytical data.

K

KAHLHEBER, Stefanie, Goethe-Universität Frankfurt, Germany: *Feeding Nok – subsistence data for the Nok Culture, Nigeria, 500 BC to 200 AD*

Well known for its terracotta art and providing some of the earliest evidence for iron technology in sub-Saharan Africa the Nok Culture of Central Nigeria remained for a long time virgin territory in
archaeological regards. Since 2005 a research project at the Goethe University in Frankfurt (German DFG Research Group 510 "Ecological and Cultural Change in West and Central Africa") has been focussing on the cultural background of the terracotta art, investigating various aspects of the material culture as well as the economical and environmental context, settlement patterns and chronological development of the Nok culture.

Samples taken for archaeobotanical studies during various test excavations and at the site of Ungwar Kura yielded few but sufficient plant remains for a preliminary reconstruction of economy and environment. Based on the results of fruit and seed remain analysis we tentatively reconstruct a plant exploitation system based on mixed cropping of pearl millet (*Pennisetum glaucum*) and cowpea (*Vigna unguiculata*). This practice is also known from the Nigerian Chad Basin in the same period and might have been already applied by the 2nd millennium BC Kintampo culture. Finds of fruit tree species like *Canarium schweinfurthii* and *Vitex* cf. *doniana* stress the importance of wild resources. The combination of cereal and pulse based cropping systems with oleaginous fruit exploitation is characteristic for the prehistoric economy of the Sahel and Sudan zone, and we suggest that it was dominant all over the West African savannas at the beginning of the Iron Age.

KANDEL, Andrew W., Heidelberger Akademie der Wissenschaften, Germany & N.J. Conard, Eberhard Karls Universität Tübingen, Germany: *The significance of coastal adaptations along the southern and western coasts of South Africa*

The early use of coastal resources has been well documented at many archaeological sites along the southern and western coasts of South Africa. The spectrum of marine resources that contributed to prehistoric subsistence includes molluscs, crustaceans and fish, as well as marine mammals and birds. The intensification of coastal adaptations has been noted at many sites and signifies periods when human population densities increased. The ability of prehistoric gatherers and hunters to adapt to this unique environment is a likely cause for their expansion within and out of Africa. In addition to presenting a brief summary of coastal adaptations in South Africa, this paper provides a case study from several open-air sites in the Geelbek Dunes. Located 100 km north of Cape Town on the shores of Langebaan Lagoon, this ecological setting between sea and land provides a backdrop for examining coastal adaptations and their significance.

KANKPEYENG, Benjamin & Samuel Nkumbaan, University of Ghana, Ghana: *Ancient shrines? Koma stone circle mound sites revisited in northern Ghana: a preliminary report*

This paper reports preliminary archaeological survey and excavations in the archaeological region within the basins of the Sisili and Kulpawn rivers in northern Ghana in June 2006 and January 2007. Previous research had described the stone mounds containing terracotta as burial mounds. The current research provides new perspectives and based on the material arrangements within and around the mounds, the types of artefacts and their distribution, the nature and burial of incomplete human remains, and residue on figurines and complete pots, it is possible to propose the hypothesis that the mounds were shrines. Ethnographic analogues of some West African ethnolinguistic groups provide insights into the likely multiple functions of the ancient shrines.

KARBERG, Tim, Humboldt-Universität zu Berlin, Germany: *Development and the looting of antiquities: a case study*

The looting of antiquities is a world-wide phenomenon. Its causes and effects have been discussed in some detail for various parts of the African continent. Today, looting in connection with large-scale development projects in Africa could be causing an increasing threat to our ability to gain any knowledge on the past of areas affected by such development projects. The recent salvage campaigns at the Fourth Nile Cataract in northern Sudan have been accompanied by the large-scale looting and destruction of archaeological sites by local (and other?) people. The few years available for archaeological fieldwork during the construction of the Merowe Dam quite often saw what may be described as races between archaeologists and looters. Often, archaeological sites found intact during a survey were found completely plundered in the next year rendering any archaeological excavation obsolete. Only in very few cases the National Corporation of Antiquities and Museums of the Sudan was able to take significant action after looting was recorded. The situation at the Fourth Cataract was made even more complicated by the fact that the phenomenon of looting cannot be fully understood without taking note of political controversies between the local communities and the authorities of the Sudan, especially about the issue of the resettlement of the population in the area affected by the new dam and locals' rights to the 'treasures' of their land. This paper presents some examples for local and

organised looting at the Fourth Cataract, and it also outlines issues to be addressed by authorities as well as archaeologists in similar circumstances.

KATSAMUNDANGA, Seke

This paper presents the results of the archaeological research in Zimunya communal lands, southeastern Zimbabwe and the investigation into the spatial behaviour of the various cultural periods represented. Using Geographic Information Systems (GIS) and other technologies relevant for analysing spatial data, the distribution of the archaeological sites in the area shows a significant avoidance of the presently wetter areas of the Vumba Mountains and other upland parts of the area during the Stone Age and a shift towards these areas in later times. The paper is an attempt to answer questions on whether that difference in settlement preference, among other spatial patterns during the different cultural periods, was a result of climatic and environmental variations or whether it was a result of technological and cognitive differences. The conclusion that can be derived from the results is that climate and the physical environment had a role in the settlement behaviour in the research area, and probably in the whole of the eastern highlands of Zimbabwe. The material evidence also makes a significant University of Zimbabwe, Zimbabwe: *Researching the ancestral landscape of Manyikaland, southeastern Zimbabwe – a spatial investigation* contribution to the pertinent issues relating to the known sequences in the archaeological cultures of southern Africa in general and Zimbabwe in particular.

KÉITA, Daouda, Université de Bamako, Mali: *Kokolo, un site d'habitat protohistorique en Pays dogon*

Situé sur le Plateau dogon, à environ 15 km au nord-est de Bandiagara, le site de Kokolo est un des nombreux sites qui composent le gisement d'Ounjougou. Les recherches archéologiques menées depuis 2004 dans le cadre du Programme *Peuplement Humain et évolution paléoclimatique en Afrique de l'Ouest* ont permis de découvrir des restes de structures d'habitat qui se composent essentiellement de blocs de pierres sèches entourant des dalles disposées horizontalement. A ces structures, il faut ajouter la découverte d'un espace réservé aux activités domestiques (telle que le travail de mouture, etc.). Une quantité importante de mobilier archéologique a été découverte au cours de ces travaux parmi lequel de l'outillage lithique, de la céramique et des objets en fer. La présente communication a pour principal objectif de présenter les résultats des trois campagnes de fouilles menées à Kokolo.

KILLICK, David, University of Arizona, USA: *Metals in African history and prehistory: a synthesis and some new directions*

The first century of research on African metallurgy was dominated by two topics: (1) the social construction of recent African iron smelting; and (2) whether metallurgy in sub-Saharan Africa was independently invented. The writings of Africanists on the first topic have attracted considerable international interest, but there is little possibility of further field research. Debate

on the second topic is at an impasse, as almost all of the earliest radiocarbon dates fall within a 'black hole' in radiocarbon calibration (*c*. 800–400 BCE). Resolution must await new research using other dating methods (thermoluminescence or cross-dated imported materials), and close coordination of results with those from North Africa, Nubia and the Arabian Peninsula.

New directions in research include: the exploration through archaeometallurgy of the extraordinary diversity of past African iron smelting techniques; quantitative estimates of the production of iron at major production sites; the transfer of metallurgical techniques to Africa through the Islamic world system; the rise of indigenous tin-smelting and bronze-making industries in southern Africa; and changes in the organization of production of iron as a consequence of the Atlantic slave trade. A particularly important technical development is the developing use of lead isotope analysis in reconstructing trade in metals. This is being used to track the earliest trans-Saharan trade and to trace the late trade in southern African tin. In future it will play an important role in studying past trade in non-ferrous metals, glass and ceramic glazes around the margins of the Indian Ocean.

KINDERMANN, Karen, Universität zu Köln, Germany: *Seasonal cycles and settlement patterns of Holocene hunter-gatherers at Djara, eastern Sahara*

From 1998 to 2002 several interdisciplinary expeditions to the Egyptian Limestone Plateau in the eastern Sahara were undertaken within the framework of the Cologne University Collaborative Research Centre 389 ACACIA. A large settlement area labelled Djara was located at a distance in excess of 100 km from permanent water sources. Within this area survey work was carried out at more than 240 predominantly mid-Holocene sites (*c*. 6,400 to 4,500 cal BC). Detailed examinations of the sites, their distribution and positions in the landscape and the characteristic geomorphological features allowed to reconstruct Holocene hunter-gatherers subsistence strategies in this part of the Sahara. Although the ecological conditions were better during the Holocene humid phase (*c*. 8,500 to 5,000 cal BC) a sedentary way of life was improbable in the Djara region. Due to high evaporation rates surface water was only seasonally available. Thus, during times of rainfall Djara formed a temporary 'refuge' in the midst of an unpredictable desert. However, during the dry seasons of the year the dwellers retreated to regions offering permanent water.

KING, Geoffrey C.P., Institut de Physique de Globe de Paris, France: *The role of active tectonics and volcanism in hominin dispersal*

The relative environments of western Arabia compare with those of the Afar region of Djibouti and Ethiopia, providing a similar suite of tectonic and volcanic conditions which extend along the Levant coastal region, the Golan region and north into Georgia. It is suggested that these similarities made the crossing from Afar to Arabia a favoured dispersal route from Africa both in the later Pleistocene and earlier periods. The geographically restricted Galilee region contains 65 % of all reported Palaeolithic sites in Israel and includes the most important. It is proposed that

tectonic activity on the Dead Sea and Haifa faults together with active volcanism has played a major role in making this a favoured habitat that has influenced patterns of dispersal throughout human history.

In this paper we will examine the role of tectonics and volcanism both within and outside Africa, drawing on a range of spatial and temporal examples. While acknowledging the effect of tectonics and volcanism in promoting the preservation and visibility of fossil sites, and their occasional destructive consequences, we emphasise their predominantly constructive role in creating ecologically diverse and well-watered local landscapes that can offer a wide range of foraging and hunting opportunities and moderate the effects of climatic oscillations, providing important zones of refugia and dispersal.

KLEINITZ, Cornelia, Humboldt-Universität zu Berlin, Germany*: 'Enigmatic markings'? A diachronic perspective on multi-sensory engagements with rock surfaces in sub-Saharan West Africa*

So-called 'cup marks', 'grinding hollows' and 'sharpening' or 'polishing grooves' are common features in natural and worked rock surfaces in Africa and beyond. Such forms are often attributed to one or another utilitarian function, but they have also been suggested to have played various symbolic roles. Due to their sustained presence in the landscape such 'enigmatic markings' are likely to have been re-used and/or re-interpreted over time, and thus may have formed persistent components of site histories. Their frequency and durability as well as their apparent variability in size and shape, in techniques of manufacture and in location contexts call for a more detailed discussion of such forms.

At rock art sites in sub-Saharan West Africa cup marks and related forms frequently occur in larger numbers, often in close spatial relationship to painted rock art and occasionally in locations that preclude their use in day-to-day circumstances. Their formal variation is described here and a range of possible utilitarian and/or symbolic manufacture and use contexts are assessed on the basis of attributes of form and manufacture techniques, and their location at the sites and in the landscape. These markings are argued here to have resulted from traditions of subtractive engagement with rock surfaces spanning several millennia and different cultural contexts. While such forms contain only limited visual information, their making involved multi-sensory performative engagements with rock surfaces – in particular a series of gestures – which could point to concepts motivating the creation and use of such petroglyphs at specific locales.

KOSE, Eileen, & Marc Seifert, Universität zu Köln, Germany: *Your belly is my smithy – cooperative field research to fathom African metallurgy of the recent past*

The main focus of *ACACIA* (Arid Climate, Adaptation and Cultural Innovation in Africa), a 12-year multidisciplinary research project at the University of Cologne, was laid on geographical movements and human-environment relations in African arid climate zones during the past

12,000 years. Based on a case study about the reintroduction of iron metallurgy along the Central Kavango in northern Namibia during the Late Iron Age period, we will present an initial attempt at a multidisciplinary conception of environmental adaptation that brought along cultural loss and innovation in metallurgy. The disciplines involved are archaeology, oral history, cultural anthropology, and comparative motif research of folktales.

L

LANE, Paul, University of York, Great Britain: *Pastoralist landscapes and burial practices in Samburu and Laikipia, Kenya*

This paper will present the results of ongoing collaborative research with Charles Hilton and Bilinda Straight on the changing nature of pastoralist settlements, burial practices and landscapes on the Leroghoi and Laikipia Plateaus, Kenya. The focus of the discussion will be on the evidence from recently excavated stone cairns and pastoral Neolithic and pastoral Iron Age sites in the vicinity of the village of Baawa, situated *c.* 30 km south of Maralal, and how this can inform current understanding of (a) the establishment of pastoral economies in this area of Kenya, and (b) the changing nature of pastoralist conceptions of landscape and memory.

LANGEJANS, Geeske H.J., University of the Witwatersrand, South Africa: *Much ado about nothing? Fact and fiction in organic residue analysis*

Residue analysis aims to identify microscopic remains or traces that are left on a tool's surface after use. Analysts have identified organic remains such as plant starch grains, fibres, tissue cells, resin, animal blood films and red blood cells, muscle tissue, connective fibres, bone fragments, hairs, fish scales, and shell. Besides organic residues, it is also possible to distinguish inorganic deposits such as ochre. Residue analysis is conducted with a light microscope, using a range of magnifications, and a large experimental comparative collection.

This paper discusses research issues in residue analysis. Using examples from ancient samples from Sterkfontein and Sibudu Cave and from a large experimental sample, the author reviews issues such as the role of contaminants, how to distinguish use-related residues from contaminants and the influence of sediment pH, sediment moisture, rock type and other variables on residue preservation. Favourable and poor circumstances for biological, mechanical and chemical decay are discussed. This leads to predictions for residue preservation, which can be used to select sites at which residue analysis is expected to be fruitful. For example, it appears unlikely that open air sites and sites with high bioactivity will preserve residues. There is also an apparent bias in the preservation of different residues types. First, some residues are more durable than others. For example, muscle tissue and starch are more fragile than plant tissue and bone. Secondly, different circumstances affect residue types in varied ways. For example, starch grains preserve best in a dry alkaline environment and in a waterlogged acidic environment, but resin preserves best in a neutral environment with fluctuating soil moisture.

LANGLOIS, Olivier, CNRS (Centre National de la Recherche Scientifique), France & Otto Thierry, Laboratoire d'écologie fonctionelle, France: *An iron smelting observed near Molkwo (eastern piedmont of the Mandara Mountains, northern Cameroon) in the late 1980s: from the building to the use of the furnace*

In this paper we will present the main steps of a furnace construction and a smelting session that we observed in the late 1980s near the massif of Molkwo, *i.e.* in an area that has been one of the main iron-production centres in the Mandara Mountains.

LAVIOLETTE, Adria, University of Virginia, USA: *Urban Swahili households from Chwaka, Tanzania, AD 1000–1600*

Households and their associated midden and activity areas were the focal point of a study of large and small Swahili settlements in northern Pemba, Tanzania. We addressed houses as both units of comparison between settlements of different times and scales in one settlement region, and as the key to understanding daily life, subsistence practices, social status, specialization, and change within each settlement. The longest-lived and largest settlement in the study was Chwaka, an urban settlement spanning AD 1000–1600. There, after targeting several stone-built houses for excavation, we conducted extensive subsurface testing to recover remains of deeply buried earthen houses in the town. This paper will provide a comparison of the houses excavated at Chwaka in terms of the diversity of domestic activities and clues to socioeconomic status revealed, against the backdrop of Chwaka's civic/religious architecture and life history.

LEKA, Maria Juliette, Université de Yaoundé, Cameroon / Université de Paris, France: *Etude préliminaire des sites archéologiques en pays tikar: description et analyse d'une série de fosses (Preliminary study of archaeological sites in the Tikar region of central Cameroon: description and analysis of a series of pits)*

Dans la partie méridionale du Cameroun, les recherches visant à la reconstruction du peuplement à travers l'archéologie remontent à plusieurs décennies. Parmi les régions étudiées, la vallée du Mbam, encore appelée *pays tikar*, reste méconnue. Dans cette partie du Cameroun, comme dans d'autres régions plus méridionales, l'essentiel des structures reconnues sont de grandes fosses qui ont fait l'objet de nombreux débats concernant leurs fonctions primaires. La majorité des structures excavées reconnues dans le pays Tikar semblent dater du début de l'Age du fer. Les 'sites à fosses' identifiés localement semblent ainsi rapprocher les anciennes occupations du pays Tikar de celles des régions plus méridionales (cf. les sites d'Avoh, Ndindan, Nkang, Nkometou, Obobogo et Okolo), bien davantage que de celles reconnues au nord du pays. Après une présentation et une description de ces fosses, nous tenterons d'apporter de nouveaux arguments au débat concernant la fonction de ces structures emblématiques des occupations anciennes du Cameroun méridional.

In the central part of Cameroon, research aiming at the reconstruction of the past through archaeology goes back several decades. Among the regions studied, the Mbam valley, also called

pays tikar, remains neglected. In this region of Cameroon, as in several regions of sub-Saharan Africa, pits are studied as part of the reconstruction of the sub-actual and ancient populations. The majority of the excavated structures in the *pays tikar* seem to date to the late Stone Age or Iron Age. These pits are the subject of studies and several debates with regard to their functions. Among the studied regions, the Tikar region is still poorly understood from this point of view; this region remains particularly interesting with regard to the regional distribution of pit sites in the central and southern part of Cameroon. The presence of such sites is a major feature in the reconstruction of chrono-cultural sequences in Central Africa. With a presentation and description of these pits, we will try to add to the available data from pit sites in southern Cameroon (e.g. Avoh, Ndindan Nkang, Nkometou, Obobogo and Okolo), especially regarding functions and the role played by these excavated structures in the economy of Iron Age sub-Saharan populations.

LENSSEN-ERZ, Tilman, Universität zu Köln, Germany: *The aesthetics of aridification: the evolution of herder rock art in NE Chad*

The prehistoric inhabitants of the Sahara region articulated their agency under the conditions of ongoing aridification in part through aesthetic symbolic behaviour which became petrified, as it were, in ubiquitous rock art. When pastoralists started to settle the Ennedi Highlands, climatic deterioration was already under way, with declining tendency. However, despite an environment that degraded from their accustomed way of life and required adaptation to new modes of livelihood, people kept on producing artwork largely showing animals which were of significance to them. While the ecosphere declined, artistic production seemed to ignore the alarming development and evolved an aesthetics which initially foregrounded animals in the function for which they had been domesticated whereas later they were celebrated for their looks, symbolic capital, and their potential to express status. Even representations of humans appear to adapt to this principle. But beyond such inclusive patterns, the landscape seems to have been divided into many small partitions, each connected to a specific identity. In the youngest periods the prevailing aesthetic attitude is replaced with a yet different symbolism that emphasises the human role in using the landscape in a nomadic lifestyle which, in itself, is entirely based on and communicated through a specific animal, i.e. the camel. In the wake of this development artistic sophistication loses in importance and eventually representational art partly becomes replaced by script and signs.

LESUR-GEBREMARIAM, Joséphine, Musée National d'Histoire Naturelle, France: *Climatic changes in Holocene Horn of Africa and animals exploitation by human societies*

The Horn of Africa presents a great diversity of landscapes that have favoured the installation of many different natural environments. Several recent studies of lacustrine sediments, pollen sequences and geomorphologic data have contributed to a reconstruction of the palaeoclimate of the Horn of Africa, especially of the Rift Valley lakes. These data show that, until around 8500 BP, humid conditions prevailed in the region. Then a dry phase began with an optimum around

7500–7000 BP, which was followed between 6500 and 4500 BP by a new wet phase, and finally an arid phase that continues until today. A short humid episode is noticeable around 2500–1000 BP. These palaeoclimatic phases have led to the recomposition of biodiversity and ecological pressures variable according to the different environments. Evolution of human societies during the Holocene presents therefore many patterns characterized by these environmental changes.

To illustrate these evolutions and human adaptations, we will present archaeozoological results from three archaeological sites occupied during the second half of the Holocene.

The first one is the rockshelter of Moche Borago, located on the southwestern edge of the Ethiopian highlands. It has provided evidence of human occupations during the Holocene. This includes more than 30,000 animal bones, which have allowed us to reconstruct the way animals were exploited by humans from the 6th millennium BC until the first half of the 1st millennium AD. Results show that humans hunted, mainly for consumption, a great diversity of mammals, especially bovids. The great stability of the faunal spectrum during all occupation phases suggests that climatic changes did not strongly affect this mountainous area.

On the other hand, in the semi-desertic plain of Gobaad in Djibouti, two archaeological sites, Ali Daba and Asa Koma, occupied respectively during the 4th and the 2nd millennium BC, present a very different situation. Indeed, the fauna from Ali Daba suggests the presence of a humid environment with species living in aquatic environment and woodland savannah. Two thousand years later, results from Asa Koma show that aridification had already strongly changed the landscape with the presence of desertic fauna and the disappearance of aquatic large species. Moreover, this site is the first one in the Horn of Africa where domestic animal bones have been found and their diffusion could be linked with those climatic changes.

In conclusion, the Horn of Africa, because of its geographical and environmental diversity, has been affected in many different ways by the climatic changes during the Holocene. Human communities living in these regions had to adapt to those variations partly by a strong mobility to find resources necessary for their survival but also by the adoption of new ways to exploit animals, such as husbandry.

LINSEELE, Veerle, Katholieke Universiteit Leuven, Belgium: *New faunal data from the Neolithic in Egypt*

Since 2006, new excavations are ongoing at Kom K and Kom W (*c.* 4500 BC), probably the two most famous Fayum Neolithic sites. The excavations have yielded exceptionally large faunal assemblages that allow throwing new light on the sites' economy. For the moment, more than 100,000 animal bones have been studied. Some domestic livestock, cattle, sheep, goat and pig, and wild game could be identified, but the vast majority of the remains are from fish. The species spectrum as well as size reconstructions of the fish document seasonal activities at the sites, which may reflect a seasonal occupation.

During the 2005 field season at Saïs (*c.* 4200 BC) in the Nile Delta, an Early Neolithic fish midden was excavated. A possible parallel with the Fayum Neolithic, with an emphasis on seasonal fishing, was first suspected. This year, the fish remains of the midden were analysed to test this hypothesis.

Animal bone remains from two Neolithic sites in the Eastern Desert of Egypt, Sodmein Cave (*c.* 6200–5000 BC) and the Tree Shelter (*c.* 5700–3700 BC), have recently been reinvestigated. The

results confirm the early presence of small domestic stock there. Dung pellets found at both sites, in the case of Sodmein Cave in the shape of very large packages, have also been examined more carefully. It was tried to identify the animal species that produced them, as well as to establish the period of the year in which these animals visited the site.

These new faunal data from the Neolithic in Egypt, in combination with data from the literature, point to regional differences in timing of the earliest stock keeping, its relative economic importance, the domestic animal species involved and the mobility of the human communities. These differences, and their underlying causes, have implications for the neolithisation of Africa as a whole.

LIVINGSTONE SMITH, Alexander & Anneleen van der Veken, Musée Royal de l'Afrique centrale, Belgium: *Crossing Borders II: new data on material and immaterial culture in the Luba area (Katanga, DRC)*

Central Katanga (DRC) has been the focus of scholarly attention since the arrival of the first explorers up until today. Thanks to extensive archaeological surveys and excavations, the archaeological sequence goes back to the 9th century AD. This region is also home to one of the most famous ancient savannah kingdoms of south central Africa, that of the Luba. According to historians using oral historical data, the Luba kingdom goes back to at least the 18th century AD. However, the connection between the people living in the area today and those who inhabited central Katanga in the past is not clear. Indeed, the material culture uncovered during the excavations displays both elements of continuity and dramatic changes throughout the sequence, particularly as regards ceramic morphological and ornamental styles. To explore the recent history of the area and the cultural variations observed in the archaeological sequence, we are developing an approach based on the integration of archaeology and historical linguistics. To do so, we have decided to study the spatial distribution of contemporary ceramic traditions, pottery manufacturing processes and vocabulary as an interface between the present and the past.

This paper presents the ongoing research of our project. We will briefly outline the distribution of technical traditions in the area to show how some of the primary shaping technologies were identified on archaeological vessels going back to the 10th century AD. We will then outline the first results of our dialectological study. Finally, we will consider the connections between the Upemba depression and the broader framework of south-central Africa.

LOGAN, Amanda L., University of Michigan, USA & Catherine d'Andrea, Simon Frazer University, Canada: *Identifying sorghum using phytoliths and starch grains: a case study from Sudan*

Phytolith and starch grain analyses have contributed a significant amount of data to understanding the development and spread of agriculture in the tropics; however, few of these microbotanical studies have focused on the African continent. In this paper, we report on the development of an identification methodology for sorghum that employs both phytoliths and starch grains. This method was applied at Dangeil, a Meroitic site in northern Sudan, and yielded evidence of sorghum in residues from several different types of artifacts. The presence of domesticated sorghum at the site is further corroborated by macroremains. Future application of this method holds promise for tracing the spread of sorghum throughout Africa and beyond.

LOMBARD, Marlize, University of the Witwatersrand, South Africa: *Direct evidence for the use of ochre in Middle Stone Age adhesives*

This contribution provides direct evidence for the use of ochre in adhesive recipes during the Stillbay, Howiesons Poort and post-Howiesons Poort of South Africa. Stone points and segments from two KwaZulu-Natal sites were microscopically analysed to document ochre and resin occurrences. These micro-residues show a clear distribution pattern on the tool portions that are associated with hafting. Results from separate quartz and crystal quartz segment samples may indicate that different adhesive recipes were applied to different raw materials. A possible functional application for ochre in association with Later Stone Age mastics is also explored. The evidence and suggestions presented here expand our understanding of the versatility, use and value of pigmentatious materials in prehistory; it is not viewed as an alternative or replacement hypothesis for its possible symbolic role during the Late Pleistocene.

LYONS, Diane, University of Calgary, Canada: *End of an era – diversity in former feudal landscapes: an ethnoarchaeological review of powerful places in eastern Tigray, Ethiopia*

Domestic rural houses in eastern Tigray rarely survive for more than a century. Consequently the rural built landscape that can be observed today is partly constituted by building practices of the last decades of Ethiopia's feudal state which ended in 1974 when Emperor Haile Selassie was deposed. This paper presents an ethnoarchaeological study of some of the elite houses that remain in the Eastern Administrative Zone of Tigray Region. At the time of study, many of these houses were still occupied by the original builders or their direct descendents. In addition to their social memories, this time period has the added advantage of historic documentation of political events and feudal practices that provide a rich general context for the study. The architectural diversity and use of prominent settings provide archaeologists with an extant (albeit incomplete) model of feudal landscapes of power.

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MABULLA, Audax ZP & John R.F. Bower, University of California Davis, USA, University of Dar es Salaam, Tanzania: *Territorial exclusion in the late Middle Stone Age of northern Tanzania*

The Loiyangalani site (HcJd1), a late Middle Stone Age (MSA) occurrence at the western edge of the Serengeti Plain, Tanzania, has produced substantial evidence of isolation from nearby, essentially contemporaneous MSA occurrences situated in the Lake Eyasi basin to the south and at the eastern margin of the Serengeti Plain. The evidence consists mainly of marked differences in lithic typology, especially as regards point form, and the absence of exotic lithic material, mainly obsidian that is present in the nearby contemporaneous occurrences. In this paper, we consider ecological, cultural and demographic scenarios that might explain the indications of territorial exclusion in the western Serengeti Plain during the late MSA. In addition, we consider

the implications of such exclusion for demographic expansion, perhaps contributing to 'Out of Africa II', the spread of *Homo sapiens* into Eurasia and beyond.

MACDONALD, Kevin C., University College London, Great Britain: *Cities and the Invisible State: lessons from the oral history and archaeology of Ségou*

Over the past few decades most of the archaeology of the Middle Niger has focused on long-term occupations, particularly urban tells. Such work has also given rise to models of social organisation which, while undoubtedly appropriate to urban clusters, cannot be easily applied to the relatively short-lived polities which surround these cities. Recent research on the heartland of Bamana Ségou provides some new insight into the dynamics, typology, and morphology of settlements founded or modified by the central organising force of the state. Local oral histories of place, concerning the geography of 18th and 19th century Ségou, are complemented by the interpretation of archaeological surface survey from 2004–2005.

MACEACHERN, Scott, Bowdoin College, USA: *Wandala and the DGB sites: political centralisation and its alternatives north of the Mandara Mountains*

The DGB sites (named after the Mafa term Diy-gid-biy), with their striking dry-stone architecture, are the largest and among the earliest archaeological sites in the northern Mandara Mountains. Even given their size and internal complexity, they provide only ambiguous messages about power and authority in the region five centuries ago. At the same time, these sites are situated in proximity to the heartland of the Wandala polity, which was first noted in European and Arabic sources at the time of DGB occupation. Over the next centuries, Wandala progressively differentiated itself from neighbouring Chadic-speaking communities, adopting the political appurtenances and expansionist tactics of an Islamic Sudanic state. This paper will discuss the implications of this geographic and political proximity for both Wandala and the occupants of the DGB sites.

MAGA, Abdoulaye, Université Abdou Moumouni de Niamey, Niger / ECOWAS (Economic Community Of West African States), Nigeria : *Circuits et facteurs internes du trafic des objets archéologiques nigériens et ouest-africains*

In West Africa the countries that are the most affected by the plundering and trafficking of archaeological artefacts are mainly Nigeria for the reputed beauty of its bronzes, brasses, and terracottas; Mali for the terracottas in its interior delta; and Niger for its dinosaur fossils and funeral statues from the Bura Site. Countries such as Guinea, Senegal, and Burkina Faso have also been affected by rings of plunderers. In general, it is very difficult to find a country in Africa, which does not face these international rings of cultural object traffickers. Even art collectors, art traders and Western museums selling such objects are often victims of robberies.

MAGNAVITA, Carlos, Goethe-Universität Frankfurt, Germany: *Displaying power: mud-walled settlements and fired-brick architecture at Lake Chad*

Over the last few years, it became apparent that major permanent settlements to the southwest of Lake Chad were probably once surrounded by protective mud walls or ramparts. This trend began by about the middle of the first millennium BC and persisted up to the 19th century AD. Alongside their practical function, these structures probably also displayed the power of the communities they enclosed. From the 12th–14th centuries AD onwards, fired-brick buildings additionally became part of the symbolic repertoire of power in the territories dominated by the Kanem-Borno kingdom. This paper traces these developments using some examples from recent and past archaeological research around Lake Chad.

MAGNAVITA, Sonja[1], Oumarou Idé[2], Abdoulaye Maga[3], Carlos Magnavita[1] & Gerhard Brey[1]:
Sahelian connections: new studies on Marandet, Niger

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The site of Marandet in central Niger has been tentatively equated by some researchers with the historical Maranda, obviously one of several important stations mentioned by the first Arabic documents describing an ancient trade route linking Egypt with the Kingdom of Ghana. Preliminary archaeological investigations involving mapping, test excavations and analysis of cultural materials recovered at the site were conducted by a cooperative research project of the Universities of Niamey, Arizona, and Frankfurt. The first results suggest that Marandet was both a producer and consumer site for goods widely distributed in West Africa: copper alloys were produced directly on the site for export, while domestic and luxury goods reached the place coming from several different regions. Indeed, it appears that the site was part of an exchange network that connected North Africa, the Sahara, the Lake Chad area, and the Eastern Niger Bend from at least the 7th to the 9th century AD.

MANNING, Katie M., University of Oxford, Great Britain: *Dynamics of an agro-pastoral economy during the mid-late 3rd millennium BC in the Lower Tilemsi Valley, eastern Mali*

The Lower Tilemsi Valley has long been heralded as a key region in the development of agro-pastoral economies along the Sahara-Sahel borderlands in West Africa. And yet, the precise timing and nature of such developments has remained relatively unknown. This paper sets out a new chronological framework for the occupation of the Lower Tilemsi region and presents evidence for the exploitation of domesticated pearl millet in the mid-3rd millennium BC. Furthermore, this paper considers the regional dynamics of agro-pastoral organization, contemplating inter-site variability in subsistence evidence at Karkarichinkat North and contemporaneous, neighbouring sites.

MANZO, Andrea, Università degli Studi di Napoli "*L'Orientale*", Italy: *Capra nubiana in Berbere sauce? For a constructionist approach to Pre-Aksumite art*

Several sites dating to the first half of the 1st millennium BC in Tigray and Akele Guzai are characterized by the occurrence of South Arabian elements, mainly evident in monumental architecture, sculpture and inscriptions. The indisputable presence of South Arabian elements was first regarded as the proof of a Sabean colonization of the region in early historical time which could also explain the origin of the Semitic languages spoken in Ethiopia and Eritrea. In the 1970s new investigations conducted by Fr. Anfray and R. Fattovich for archaeology and by A.J. Drewes and R. Schneider for epigraphy showed that the South Arabian elements had to be regarded as markers of elite status. In the meantime the presence of elements representative of the local culture of the rest of the population was stressed.

In this paper some artworks going back to this phase will be reconsidered. It will be suggested that they are characterized by a fully aware use of exogenous elements of different origins (not just Sabean, not just South Arabian) assembled in a local and original syntax and expressing local social and symbolic messages. Finally, a new assessment of the art of this phase will be attempted in the light of a constructionist identitarian approach, and a tentative explanation for its rise and development will be proposed.

MARKS, Anthony E., Southern Methodist University, USA & Hans-Peter Uerpmann, Eberhard Karls Universität Tübingen, Germany: *New Palaeolithic finds in southeastern Arabia and the question of their possible East African origins.*

This paper examines the archaeological implications for the recent genetic studies suggesting an eastern route out of Africa into southern Arabia by early moderns. It considers what archaeological cultures might have been carried by such people and what we might reasonably expect to find in southern Arabia that might confirm this model. Then, recent finds from southeastern Arabia, at Faya I, will be considered in this East African context. While studies of the Arabian materials are still preliminary, they suggest that the prevailing expectations may well need re-evaluation.

MARZIANO, Corrado ICAZ (International Council for Archaeozoology), & Maria Rosa Iovino, Centro Internazionale di sperimentazione, di documentazione e di studio per la preistoria e l'etnografia dei popoli primitive, Italy: *Palaeoecological diversity of southeastern Sicily during Neogene/Quaternary and its implications for territory capabalities, behaviour and adaptation of (early?) human odysseys*

The research carried out in the Neogene/Quaternary of Sicily produced numerous data related to several branches such as geology, stratigraphy, palaeoceanography, palaeoecology, biogeography, and palaeontology. Although in the past a certain amount of research took place, the understanding of early human colonisation(s) of Sicily is still an open question, with conjectural data ranging from Lower Pleistocene up to the Last Glacial Maximum. The two main theories of early population dynamics of Sicily are (a) considering the arrival of human beings from the Italian peninsula through the Messina strait, and (b) coming from Africa through a Siculo-Maghrebin bridge formed during regression periods.

The last decades of palaeoanthropological research in Sicily have been dominated by the debate on the fossil specimen MDS-AG 2840, known as the Mandrascava skull, and other research by Bianchini in the area around the town of Agrigento situated in central southern Sicily, just in front of Africa. Unfortunately the impact of this research has been irrelevant both because it was rejected by scholars as fake and because in the area of the supposed discovery no scientific research has subsequently been attempted. Human migrations depended on many parameters among which the most relevant are surely the topographic, geographic, and climatic factors.

The discovery of a *Homo sapiens* skull, found recently by the authors at Giovanna Cave, stimulated a focus of our research on the Hyblean Plateau territory that shows geological and geographical features different from the rest of Sicily. In this work we propose to start from a zero level, beginning with the palaeoecological factors of this territory and selecting the suitable areas for future research.

MAYOR, Anne, Université de Genève, Switzerland: *The Toloy-Tellem sequence (Dogon country, Mali) revisited through ceramic and iron objects studies: a complex history of population revealed during the 1st millennium AD*

Before the research program "Palaeoenvironment and Human population of West Africa", archaeological works conducted in several caves of the Bandiagara cliff near Sanga showed a cultural sequence characterized by a 'Toloy' occupation (3rd–2nd centuries BC), a 'Tellem' occupation (11th–15th centuries AD) after a hiatus of more than one millennium, followed by a Dogon occupation from the 16th century AD. A lack of stratigraphy as well as changing functions of the same spaces depending on periods of time or users (alternation of domestic, ritual, and funerary uses) made it difficult to understand the ceramic assemblages, often mixed up.

For ten years now, the excavation of several new sites on the plateau, at the summit and at the bottom of the cliff, as well as in the Seno plain, gives a different image of the population of the Dogon country during the 1st millennium AD, with evidence of metallurgical (Fiko), domestic (Promontoire, Songona), ritual (Dangandouloun) and funerary (Dourou-Boro) activities during the whole period previously regarded as a cultural hiatus.

The contrasted ceramic assemblages reveal a territory at the crossing of influences from the Mande, Gur and Proto-Songhay spheres, suggesting the cohabitation of different groups.

Certain ceramics, e.g. highly decorated three-footed bowls, as well as iron objects, be they pieces of jewellery, arms, or agricultural tools, also show a high local technical knowledge of pre-Dogon blacksmiths and potters.

MBIDA, Christoph, Direction du Patrimoine Culturel du Ministère de la Culture, Cameroon: *Preliminary study of soil samples from Iron Age Campo necropoles*

MCINTOSH, Susan K., & Mamadou Cissé, Rice University, USA: *Recent excavations at Gao-Saney and Gao Ancien (Mali): preliminary results*

Since Tim Insoll's pioneering work at Gao in the 1990s, new research has been undertaken at both Gao-Saney (located 8 km from Gao) and Gao Ancien. Despite the intense pillaging at Gao-Saney, two areas with undisturbed deposits were excavated in 2000 to a depth of approximately 7 m. Both produced a series of radiocarbon dates between 1250–1100 BP (uncalibrated).

At Gao Ancien, extensive excavations have been underway since 2003 in the area known locally as 'the mosque of Kankou Moussa'. Several large stone and/or brick buildings have been uncovered. The primary early stone construction phase appears to date to the 9th and 10th centuries CE. Basal deposits have provided dates between 1380–1180 BP (uncalibrated). This area was intensively occupied, with much reuse of earlier stone materials, as well as clearing and dumping of refuse and building materials. This paper will present the architecture of the Kankou Moussa site and the challenges of interpreting its chronology. Finds from both Gao Ancien and Gao-Saney will be discussed and compared, with preliminary observations on the potential of these sites relating to the development of trade and complex society on the eastern bend of the Niger.

MCPHERRON, Shannon[1], Harold L. Dibble[2/3], Deborah I. Olszewski[3], Utsav A. Schurmans[3], Laurent Chiotti[4] & Jennifer R. Smith[5]: *Revisiting the Nile corridor and Out-of-Africa model: early modern humans and modern behavior in the Egyptian High Desert*

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One of the major routes out of Africa for early modern humans was along the Nile Valley corridor. Previous investigations of Middle Palaeolithic settlement systems focused on a small number of sites in the terraces of the Nile Valley, the desert oases, and the Red Sea Mountains. Research suggested the presence of two groups of early modern humans – the Lower Nile Valley Complex and the Nubian Complex. The Nubian Complex, in particular, was interpreted as a radiating settlement system that incorporated specialized point production. Recently, systematic survey by the Abydos Survey for Palaeolithic Sites project has recorded Middle Palaeolithic artifact density, distribution, typology, and technology across the high desert landscape west of the Nile Valley in Middle Egypt. High desert data indicate that the Nubian Complex associated with early modern humans along this route out of Africa reflects a circulating, rather than a radiating, settlement system. Moreover, extensive lithic artifact refitting and technological analyses call into question interpretations of specialized point production, the notion that Nubian Type 1 and 2 and radial Levallois techniques represent distinct technologies, and the existence of the Lower Nile Valley Complex.

MEISTER, Conny, Eberhard Karls Universität Tübingen, Germany: *Remarks on the first Early Iron Age funeral tradition of southern Cameroon*

Since 2004 the Research Unit 510 of the German Research Foundation (Deutsche Forschungsgemeinschaft) has been exploring the changing interrelationship of environment and culture in the forest-savanna regions of West and Central Africa. The project's Central Africa team has concentrated on survey work as well as excavation of archaeological features related to the settlement of the rain forest of southern Cameroon between 2500 and 1800 BP. Deep pits, discovered during prospection of road profiles and vegetationless zones are the most common feature. They contain mainly ceramics, stones, macrobotanical finds and charcoal, but also slag, tuyère fragments and small iron objects, such as rings, axes or knives.

Apart from these structures, elongated shallow features with rich iron and ceramic furnishings have been found at Akonétye and Campo. Features with a similar array of finds have also been discovered in other parts of the forested regions of southern Cameroon, e.g.in Mouanko-Lobethal and Mpoengou/Kribi.

It is a well-known fact that bones are rarely preserved in tropical soils. Their destruction is caused by the high acidity of the latter. It is therefore not surprising that only scant evidence of bone has been recovered. However, we are confident that the structures under discussion represent burials. The shape of the features as well as the arrangement of iron and ceramic artefacts found within them supports this interpretation. Furthermore, the iron objects may well have beeen grave goods.

It seems evident that these features embody the first Early Iron Age funeral tradition thus far discovered in southern Cameroon. According to radiocarbon dates it existed between about 2000 and 1700 BP.

MERCURI, Anne Maria & Isabella Massamba N'siala, Università degli studi di Modena e Reggio Emilia, Italy: *Vegetation and plant use at Gobero (Central Niger) inferred from pollen*

Pollen is generally known to be an effective tool to reconstruct plant landscape evolution, as it permits to study diachronically environmental changes. Within the multidisciplinary studies carried out at the archaeological site of Gobero, palynological analyses can help to reconstruct past environments giving details on the flora and vegetation cover of this Saharan region during the early and middle Holocene. Moreover, in archaeological contexts, as in the case of Gobero, pollen can provide information on the past relationships between human populations and the environment. During the 2006 field season, pollen samples were collected from spot areas in the burials in the G1 and G3 cemeteries, and from a short sequence in the Gobero Paleolake (GO1), a desiccated lake near the burial sites. Pollen spectra reflect low biodiversity and were dominated by Sahelian taxa (Poaceae + Cyperaceae), whereas Saharan taxa (Chenopodiaceae + Asteraceae) were less represented. Data from the burials give fairly concordant information on the Gobero plant landscape which, at the time of use of the cemetery, was largely an open environment, herb-dominated by grassland or shrubland vegetation. Several hydrophytes and algal elements (Concentrycistes) testify to the presence of permanent water, such as ponds or lakes, and the presence of fresh water environments in the area.

MEYER, Silja V. & Manfred K.H. Eggert, Eberhard Karls Universität Tübingen, huysGermany: *Iron production in southern Cameroon: new evidence in comparative perspective*

Since 2004 the German Research Foundation (Deutsche Forschungsgemeinschaft) has been funding a project entitled 'Environmental and cultural change in West and Central Africa', in which archaeologists, archaeobotanists and geographers from the Universities of Frankfurt and Tübingen participate. During the last field season from early January to early March 2008 the southern Cameroon team of the University of Tübingen detected, inter alia, four circular structures of burnt clay at the village of Nkpwala-Esse in the vicinity of Sangmélima. Two of these shallow bowl structures, measuring about one meter in diameter, were excavated. They were obviously related to iron production. Similar structures had been excavated in the 1980s in the inner Congo basin by an archaeological team also headed by M.K.H. Eggert.

This paper will present a brief account of the newly excavated Cameroonian features, which will then be discussed in the light of the Congolese structures and some ethnohistoric and ethnographic evidence.

MEZOP TEMGOUA, Alice Lucie, Université Libre de Bruxelles, Belgium: *Archaeology, oral traditions, ethnography, linguistics, and the settlement dynamics in the Faro area (Cameroon and Nigeria)*

The mountain dwellers of the Faro area are generally considered to be refugees in the region, but in fact, very little is known concerning their past. They live in isolation on several mountains, yet their culture is quite similar. Events in the past may explain this peculiar pattern. Because little information is available, an attempt was made at combining oral tradition, archaeology, ethnography, and linguistics in order to examine the past of the Faro plain and the encircling mountains, at least from the 17th century onward, and elucidate the processes that account for settlement in the area over that period.

The study of oral traditions is one avenue for the reconstruction of population movements and makes it possible to examine the contexts in which scattered populations regrouped into new ethnic entities. Archaeology reveals that the plain had more significant settlement before the arrival of new populations than afterwards, and that there are correspondences between these old sites on the plain and the villages in the surrounding mountains. Further data were obtained through the study of traditional pottery and the feature of standing stones. In sum, all evidence combined suggests an ancient cultural continuum, which receives further confirmation from linguistic data.

My hypothesis is that the ancestors of today's mountain dwellers moved away from a common point of origin, probably on the plains bordering their present territories. The Faro valley is economically a far more advantageous location, which leads to the question why they should have retreated into the mountains. The present occupation of the river valley by the Foulbé and the Bata suggests that this economically strategic zone was acquired by force at their arrival in the area. A climate of insecurity may best explain the abrupt demographic and social changes, with the original river population, probably less well organized in military terms, retreating to the more easily defensible mountain tops. Eventually, their new settlement pattern resulted in the

formation of new ethnic entities, however, with a shared cultural past explaining the similarities observed today.

MITCHELL, Peter, University of Oxford, Great Britain: *The canine connection: dogs and southern African hunter-gatherers*

Southern African hunter-gatherers were among the last in the world to make the acquaintance of the domestic dog, most likely around 2000 years ago. This paper begins by surveying the evidence for the presence of dogs in hunter-gatherer contexts in southern Africa. It then takes advantage of the region's rich ethnographic and historical sources to consider what the consequences of this acquaintance may have been. The ways in which southern African hunter-gatherers used the dog in their subsistence strategies, the social role of the animal and the symbolic importance accorded it are placed within a broader comparative context that draws on examples from elsewhere in the world.

MOHAPI, Moleboheng, University of the Witwatersrand, South Africa/National University of Lesotho: *A new angle on Middle Stone Age hunting technology in South Africa*

Archaeologists have always been interested in hunting strategies of people living in the Stone Age. Early interpretations of weaponry were speculative but in the last ten years technological studies have transformed lithic interpretations in Europe and America. This paper presents results of a comparative technological study of Middle Stone Age (MSA) points from two sites in KwaZulu-Natal, South Africa, namely: Sibudu Cave and Umhlatuzana rockshelter. The points have ages between about 75 to 33 ka. The study examines changing hunting strategies through time in the MSA because points have been considered parts of hunting weaponry; it has been suggested they were used as spears or darts. Points at the bottom of the sequence at Sibudu (Stillbay) are likely to have been multi-functional tools while those in the younger MSA phases (post-Howiesons Poort, late MSA and final MSA) are likely to have been tips of handheld spears. All points at Umhlatuzana are likely to have been tips of handheld spears.

MOOTS, Hannah M. & Paul C. Sereno, University of Chicago, USA: *Holocene ornaments from Gobero*

Excavation of 84 burials and collection of artifacts from paleodune and lakebed surfaces at Gobero resulted in the recovery of a broad range of ornaments made of ivory, eggshell, bone or stone. We divide these artifacts into those recovered *in situ* as grave goods and those found out of context on deflation surfaces.

Ornaments found as grave goods include one upper arm bracelet and two necklaces. The upper arm bracelet is made of hippo ivory and was found on the left humerus of an immature female (approximately 11 years old) that was dated to the mid-Holocene occupation phase (4250±40 BP). The bracelet has an oval shape with narrow internal and external margins. The enamel surface shows a tessellate fracture pattern under ultraviolet light, a pattern that appears to be unique to hippo tusk enamel.

The two necklaces were associated with mature individuals and were made of similar materials which include ostrich eggshell beads and larger beads made from a green metamorphic rock. The more complete of these necklaces was found in place on a mature female skeleton dated to the younger occupation phase (4860±40 BP). In addition to eggshell beads and one larger green rock bead, there are nine beads and a pendant made of hippo ivory. All of the beads are drilled from each side, some have asymmetric center holes, and a few are square rather than uniformly round. The pendant is subrectangular and has a characteristic 'crows foot' pattern of incisions along each long border. The incisions are in alternate positions on each side, such that in lateral view the edge has a serpentine form.

Ornaments found out of place on the paleodune or surface of the palaeolake include several amazonite and red and yellow carnelian beads in a variety of sizes and shapes. One amazonite bead is partially drilled, and there are many amazonite cores that remain unworked. The most unusual amazonite ornament is a lobate pendant, 44 mm in length. Other ornaments include the distal phalanx of *Gazella dama* with the collateral ligament pits drilled through, a pendant made from an external section of a hippo tusk with two holes for attachment, and a pendant made from an elongate curved cranial bone from a large Nile perch (*Lates niloticus*).

No ornaments were found in any of the burials from the early Holocene occupation phase, and so it appears likely that most of the deflated ornaments were also associated with the mid-Holocene occupants.

MOSOTHWANE, Morongwa N., University of the Witwatersrand, South Africa: *Isotopic evidence of change in Toutswe environment, east central Botswana*

The Toutswe area, in east-central Botswana, is known to have sustained large herds of cattle and small stock approximately 1000 years ago. However, this area is currently characterised by low, seasonal and unreliable rainfall as well as poor soils. In order to determine past environmental conditions under which large herds were maintained, carbon isotope ratios of animals from EIA contexts at Bosutswe and Toutswemogala were compared to those of present-day animals from the same sites.

Bone collagen δ13C results of archaeological cattle are around -6 ‰ compared to -12 ‰ recorded on present-day cattle. Sheep and goats from archaeological contexts have δ13C values around -10 ‰ whereas their present-day counterparts have more negative values averaging -19 ‰. Less negative δ13C values of both species during the EIA are associated with a C4 (grasses) dominant component in diet. Present-day animals, on the other hand, have δ13C values indicating a strong C3 (trees, bushes and shrubs) component in their overall diet.

The abundance of C4 grasses during the EIA is a reflection of adequate rainfall, possibly longer rainy seasons as well as good herd management strategies. At present, there is scarcity of C4 grasses due to draught and overgrazing and hence animals have to depend largely on C3 mophane trees for food. Thus, environmental conditions under which large herds of cattle and small stock were maintained about 1000 years ago in east central Botswana were most likely more conducive than they are at present.

MOTHULATSHIPI, Sarah M., University of Botswana, Botswana: *Landscape dynamics: a case study of the confluence zone of the Shashe and Limpopo Rivers, eastern Botswana*

This paper presents the archaeological contribution of the confluence zone of the Shashe-Limpopo Basin (SLB), a prehistoric landscape with an extraordinarily dynamic environment. The SLB landscape has attracted research attention for decades, and sites such as Mapungubwe have indeed contributed considerably to our understanding of socio-cultural and economic changes in Southern Africa over the past millennium. However, research has remained heavily skewed and sites explicitly targeted for investigation were those deemed important for their ability to contribute towards our understanding of the development of social complexity. This study demonstrates that the development of complex social formations represents settlement structures that epitomise interaction of both long- and short-term cultural and economic processes and that the organisation of such structures is randomly distributed throughout the landscape. Using remote sensing techniques, archaeological sites on the eastern Botswana side of the SLB have been located, and these attest to the long-term attraction of the basin for human settlement. This paper shows that this confluence zone remained unexplored because of its geomorphological setting and the otherwise poor visibility of archaeological sites that could parallel in size and status neighbouring sites across borders. Further analysis using GIS spatial and geochemical methods on the sites located suggests a significant influence by the geomorphologic units on the type of activities undertaken which encouraged inhabitants to employ various management strategies to make this apparently hostile environment habitable. Through landscape analysis and archaeological excavations, this study has revealed that the fluctuating environmental conditions made human habitation of the floodplain problematic and restricted settlement and social organisation to its periphery largely on high ground and hill summits, whilst different parts of the floodplain terrain were exploited as water sources, cultivation and grazing resources.

MUIGAI, Anne, Jomo Kenyatta University of Agriculture and Technology, Kenya, Olivier Hanotte, International Livestock Research Institute, Kenya & Miika Tapio, University of Oulu, Finland: *Origin and migration of the sheep of Africa*

African domestic sheep originated from outside the continent. They were likely first domesticated in the Fertile Crescent, with the earliest domestic sheep remains dated *c.* 9000 BC at Zavi Chemi Shanidar in Iraq. The earliest domestic sheep in Africa are likely to have entered the continent via the Isthmus of Suez and/or the Southern Sinai between 7700 and 7000 bp. These sheep were thin-tailed, as evidenced by tomb and rock paintings. By 4000–3500 bp there were sheep in Eastern Africa. Rock art shows that these sheep were fat-tailed. Climatic changes in northern Africa are believed to have influenced the southward migration of sheep into eastern and southern Africa. The spread of sheep into southern Africa took a long time because of the tsetse disease barrier. The earliest southern African sheep remains to have been found are dating to after 2000 bp. Genetic characterisation can be used as a tool to elucidate centres of

domestication and migration routes. Initial mitochondrial DNA (mtDNA) studies indicated that there were two distinct lineages. To date up to five lineages have been identified. By exclusion of other Old World wild sheep species and partial match to feral European Mouflon, the Asian Mouflon has been proposed as the wild progenitor of *Ovis aries*, the domestic sheep. Further, the studies have supported the Near East as the centre of domestication. Amongst the sub-Saharan African sheep, microsatellite data has confirmed that there are two distinct genetic groups: the fat-tailed sheep of eastern and southern Africa and the thin-tailed sheep of western Africa. This matches the archaeological evidence for two separate entry points for African sheep. The results also indicate that genetic exchanges are likely to have occurred between breeds from eastern and western Africa along the Sahelian belt and that the southern African sheep are genetically related to the eastern African sheep. Whether or not sheep also migrated from western Africa to southern Africa remains unclear. Our results are providing a new insight into the diffusion patterns of sheep pastoralism within the African continent.

MUNENE, Karega, United States International University Nairobi, Kenia & Peter Schmidt, University of Florida, USA: *Postcolonial archaeologies in Africa*

A plenary address on postcolonial archaeologies will provide a continent-wide overview of the varied success of archaeology in Africa to decolonize the practice of archaeology. Such an overview will examine: what colonial legacies continue to influence and guide explanations for change; the silencing and marginalization of African archaeologists who challenge established paradigms; the tensions between the privileged world of archaeologists and the impoverished world of people among whom we work; the systems of patronage that restrict access to archaeology and "eat the young"; the embracing of an activist archaeology that engages local communities, their social/economic problems, and their human rights issues; and an assessment of what the future holds for an African archaeology that is still struggling to find an African voice. These unspoken and mostly silenced issues deeply affect and inform the practice of archaeology in Africa today. This plenary address will fittingly and compellingly bring them to the surface for fulsome discussion and reflection of an appropriate if not necessary condition as we come to the half-century mark for independence of most African countries from colonial rule.

MUTRI, Giuseppina, Università degli Studi di Roma "La Sapienza", Italy: *Natural resources as cultural features in the settlement system of Late Pleistocene foragers in the Jebel Garb, Libya*

This paper presents the settlement system of upper Later Stone Age groups living during the Late Pleistocene in the Jebel Garb (Libya), correlating with the geomorphologic and palaeoclimatic characteristics of the region with the techniques used by the local hunter-gatherers to acquire lithic raw material. The natural environment where past populations lived is not merely a 'natural', but a 'culturally perceivable' context. These hunter-gatherers chose the best areas to settle, weighing up the presence of water supplies against the proximity of habitats for animals that were probably concentrated on the banks of the wadis.

The presence of water possibly led to the diversification of the economic activities and allowed to make genuine 'cultural choices', providing a greater and wider choice of food. The availability of raw materials for manufacturing stone artefacts was also important for the upper LSA communities in Jebel Garb and was a determining factor in their settlement system.

MUTUNDU, Kenny K., Kenyatta University, Kenya: *The diversity of foraging and food- producing communities in Holocene East Africa. An ethnoarchaeological framework for the identification and distinction of late Holocene hunter-gatherer / pastoral Neolithic communities in East Africa*

The advent and development of pastoral economies over the past 5000 years is one of the relatively well-studied topics in the archaeology and prehistory of East Africa. In this regard, one of the interpretive problems that have attracted the interest of archaeologists is the difficulty of distinguishing between archaeological remains of local hunter-gatherers who had access to domestic stock, and those of immigrating pastoralists who practiced a subsistence strategy that may have included wild animals. Lack of knowledge of how these two interacting socio-economic groups might be distinguished archaeologically impedes our better understanding of prehistoric hunter-gatherer interactions with pastoralists and the secondary adoption of food production. In this paper, I use ethnoarchaeological observations among the historic Mukogodo hunter-gatherers and the pastoral Maasai of Kenya to propose an interpretative framework that may be used to distinguish between archaeological sequences associated with different subsistence economies during the 'Pastoral Neolithic' in East Africa or similar contact settings. My study shows that site features and subtle patterns in faunal assemblages can be useful in the identification and distinction of relevant sites, and in addressing some of the interpretive difficulties that archaeologists have encountered in the study of late Holocene archaeological sites in East Africa.

N

N'DAH, Didier, Université de Abomey-Calavi, Benin / Université de Ouagadougou, Burkina Faso: *Les sites du Late Stone Age de la Pendjari (nord-ouest de la République du Bénin*

La localisation de plusieurs sites du Late Stone Age tout au long de la Pendjari, au cours des recherches menées par l'équipe mixte bénino-allemande et les premiers travaux permettent d'avoir quelques nouveaux éléments d'appréciation de cette période de la préhistoire. Les travaux récents que nous venons de mener sur l'un des sites permettent de disposer de données archéologiques ainsi que de datations radiocarbones croisées. Le but de la présente communication est de partir de ces nouveaux éléments pour contribuer au débat sur la question du Late Stone Age en Afrique de l'Ouest.

The discovery of several Late Stone Age sites along the Pendjari during research undertaken by the joint Benin-German team, and first investigations provided some new background information on this period of prehistory. Recent work at one of the sites yielded archaeological

data as well as radiocarbon dates. Based on these new elements, it is the goal of this paper to contribute to the debate on the question of the Late Stone Age in West Africa.

NÄSER, Claudia & Cornelia Kleinitz, Humboldt-Universität zu Berlin, Germany: *The good, the bad and the ugly: a case study on political, ethical and scientific dimensions of salvage archaeology from northern Sudan*

Recent events in northern Sudan have brought up a host of questions concerning political, ethical and scientific dimensions of salvage archaeology connected to major development projects in Africa and beyond.

Archaeological salvage missions regularly find themselves in an impasse between their scientific responsibilities, requests and restrictions put on them by their academic institutions and funding bodies, political and economic interests of different stake holders, including the administration of the development projects, government institutions, human rights groups, various local communities as well as (local) opinion leaders. Using a recent case study this paper aims at exploring the wider implications of this intricate web of interests, and the positions taken by and forced upon archaeology and archaeologists in this context.

The monumental Merowe (formerly Hamdab) Dam at the Fourth Nile Cataract, the largest hydropower project currently under construction in Africa, will result not only in the flooding of a unique cultural landscape in a 200 km stretch of the Middle Nile but also in the destruction of the livelihoods and identities of its about 55.000 modern inhabitants. The paper outlines the conditions of archaeological salvage operations within this particular context, exploring how the complex web of interests connected with the project – paradoxically – led to the expulsion of archaeological missions from the research area by local opinion leaders and thus to the irretrievable loss of cultural heritage.

NDIEMA, Emmanuel K, Rutgers State University of New Jersey, USA, Carolyn Dillian, Princeton University, USA & David Braun, University of Cape Town, South Africa: *Spatial dimension of early pastoralist adaptations at Koobi Fora (Kenya): evidence from geochemical analysis of obsidian sources and artifacts*

The initial foray by pastoralists into new hunter-gatherer-fisher populations' niches at Lake Turkana, Kenya, probably involved competition, networking and exchange with indigenous populations. We adapt a landscape approach to investigate early pastoralists in East Africa in terms of ranging patterns, exchange networks among groups as an adaptive strategy, and the associated selective advantage of pastoralism when early pastoralists made their initial entry into this new ecological setting in the Turkana Basin. There the Galana Boi Formation represents a rare opportunity to study the dynamics of pastoralists' ancient lifestyles during periods of increased climatic variability.

Using XRF and LA-ICP-MS techniques we investigate the geochemical signatures of obsidian artifacts, with the aim of determining raw material sources in relation to proximity to archaeological sites. We incorporate geomatic techniques such as least-cost path analysis to model land use patterns and delineate possible landscape facets that were utilized by competing economies.

Results indicate that there are three types of obsidian artifacts from different sources and some yet undocumented sources. Abundance of obsidian artifacts at archaeological sites indicate that there was an elaborate social network that acted as a fallback during times of nutritional stress.

Future efforts in our ongoing project will help us formulate questions on why some sites were used whereas others were not. More importantly, we will address the question of whether populations co-existed practicing different economies or whether they were populations with 'three arms'.

NEUMANN, Katharina, Alfred Ngomanda, Stefanie Kahlheber & Alexa Höhn, Goethe-Universität Frankfurt, Germany: *What happened in the Central African rain forest during the 3rd millennium BP?*

During the third millennium BP, a dramatic degradation of the evergreen rain forest and an extension of pioneer formations and savannas occurred in Central Africa. Although the serious disturbance of the rain forest is thought to have favoured the immigration of early Bantu agriculturalists, the knowledge about the timing of this event and the underlying causal factors is still limited. We present new multidisciplinary, high-resolution palaeoenvironmental data from Central Africa for the late Holocene. A combination of marine data with diatom, pollen and archaeobotanical evidence shows that the perturbation of the rain forest occurred after 2500 cal BP and was probably induced by a much more accentuated seasonality. A climate with a distinct boreal winter dry season seems to be linked with abrupt warming of the subequatorial Atlantic Ocean, associated with enhanced NE trade winds (harmattan). We propose that the Central African rain forest crisis between 2500 and 2200 cal BP created favourable conditions for farming and paved the way for a major expansion of Bantu-peaking populations.

NEUMANN, Katharina[1]**,** Ahmed Fahmy[2], Laurent Lespez[3] & Aziz Ballouche[4]: ***The Early Holocene grasslands of Ounjougou/Mali: pottery production and its palaeoenvironmental background***

[1]Goethe-Universität Frankfurt, Germany; [2]Helwan University Cairo, Egypt; [3]Université de Caen, France; [4]Université d'Angers, France

At the site of Ravin de la Mouche (Mali) early Holocene ceramics have been found that are among the oldest in Africa. We applied a multi-proxy approach to the sediments of Ravin de la Mouche to reconstruct the palaeoenvironmental conditions under which the important innovation of pottery production developed. Phytoliths, pollen, charcoal, palynofacies and soil micromorphology give evidence of open grassland mainly consisting of annuals and only rarely

affected by fire. Among the phytoliths, the grass-subfamily Panicoideae is well represented. Numerous wild grasses with edible grains belong to the Panicoideae. We suggest that the early Holocene expansion of panicoid grasses was a triggering factor for the invention of ceramics. As grass grains must be heated to facilitate digestion, cooking with pots was a most successful adaptation of human populations for the effective exploitation of the vast early Holocene West African grasslands.

NGOMANDA, Alfred, Katharina Neumann, Stefanie Kahlheber & Alexa Höhn, Goethe-Universität Frankfurt, Germany: *What happened in the Central African rain forest during the 3rd millennium BP?*

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NHAMO, Ancila, University of Zimbabwe, Zimbabwe: *The 'crocodile-men' of Harare: diversity in Zimbabwean rock art themes*

It is believed that rock art sites in Zimbabwe might exceed 10,000 and most of these are generally believed to have been executed by hunting and gathering communities who populated the sub-region before the coming of Bantu communities around 2000 years ago. The most popular current interpretation of the art is based on ethnographic material from present day hunter-gatherers in the sub-region especially those from the Kalahari region and the 19th century San communities from Northern Cape Province of South Africa. This approach has afforded researchers a chance to examine the meanings rather than the aesthetics of the rock art but it also led to overgeneralizations of both the meaning and character of the art in the sub-region. Although most hunter-gatherer groups have similar core traits in their culture, they also have other distinct values, beliefs and issues that they addressed through their art forms. This paper aims to explore the motif variability in Zimbabwean hunter-gatherer rock art by analyzing the occurrence of a particular theme that has been dubbed 'crocodile-men'. This motif is found only in and around the city of Harare. I hope to show that although southern African rock art is similar it is not the same. I also endeavor to explore the thinking that these differences in motifs might allude to different social issues being addressed by the art.

NIXON, Sam R., University College London, Great Britain: *New archaeological insights into the Early Islamic trans-Saharan gold trade: gold coin moulds from the West African Sahel (Essouk-Tadmekka archaeological site, Republic of Mali)*

This talk presents new archaeological data from the West African Sahel to provide fresh insights into the development of the Early Islamic trans-Saharan gold trade. The talk is focused by the study of a set of 9th/10th century AD gold coin mould artefacts recently excavated from the site of the celebrated Early Islamic trans-Saharan trading town of Essouk-Tadmekka, situated in the north of Mali. The talk commences by looking at the limited documentary historical and archaeological data sets related to the Early Islamic gold trade and the over-simplified and potentially problematic ideas which have been constructed upon these. Following this, and the provision of a brief contextual account of the documentary history of Essouk-Tadmekka and the recent excavation of its archaeological site, the account of the analysis of the Essouk-Tadmekka gold coin mould artefacts is provided. The account of the analysis explains the process of their identification against the received wisdom concerning this artefact type in the West African Sahel and the chemical and technical analysis carried out following their identification. The final part of the talk is a discussion of the impact of the Essouk-Tadmekka findings on our understanding of the trans-Saharan gold trade, focusing on three issues: the chronological development of the trans-Saharan gold routes; the development of the sources of the gold; and the development of the processing and shipping of the gold.

NLEND NLEND, Pascal Roger, Université de Yaoundé I, Cameroon: *Synthèse préliminaire de l'étude du site archéologique de Bwambé (Kribi, Littoral du Cameroun)*

La région du littoral sud-camerounais commence à être connue sur le plan archéologique. Des prospections et fouilles menées depuis les années 2000 ont mis en évidence de nombreux sites parmi lesquels celui de Bwambé; il apparait comme une référence dans la zone, parce qu'il a connu une recherche interdisciplinaire (archéobotanique et archéologie). La céramique du site de Bwambé présente principalement deux traditions céramiques qui semblent avoir coexistées pendant le stade néolithique et dont l'une a perdurée jusqu'à l'Age du fer ancien. L'apport de la carpologie et la palynologie permet également d'entrevoir le contrôle par ces populations sur les espèces végétales telles que *Pennisetum glaucum, Elaeis guineensis et Canarium schweinfurthii.*

O

OGUNDIRAN, Akin, University of North Carolina, USA: *Aspects of everyday material life in Ede-Ile (southwestern Nigeria), c. 1600–1830s*

A combination of material culture analysis and settlement archaeology is applied to study the dynamics of everyday life in Ede-Ile (southwestern Nigeria), a colony of the Oyo Empire during the 17th through the early 19th century AD. Excavations in the northeastern quadrant of the settlement allow us to identify some of the major activity areas and the spatial patterns of artifact distribution. The depositional patterns and analysis of the artifacts reveal the dynamics of material life in relation to production, consumption, regional exchange networks, imperial

colonization, migrations, and everyday existence. The presentation will emphasize the importance of linking approaches of material culture analysis with settlement studies. The methodological and theoretical implications of these approaches, I argue, offer archaeology a critical niche in making important contributions to the social history of quotidian life during the era of Atlantic economy and regional imperialism in West Africa.

OSLISLY, Richard[1]**,** Pierre Kinyock[2], Pascal Nlend Nlend[3], François Ngouoh & Olivier Nkonkonda[4]: *Archéologie de la région de Douala (Cameroun): premiers résultats de la fouille de sauvetage du site de Dibamba*

[1]Institut de recherché pour le développement (IRD), Cameroon; [2]Université Libre de Bruxelles, Belgium; [3]Université de Yaoundé I, Cameroon; [4]COTCO, Cameroon

Depuis 2000, les recherches archéologiques sur le littoral sud du Cameroun (Kribi–Campo) ont mis en évidence l'existence d'un peuplement qui s'étale de l'Age de la pierre récent à l'Age du fer. A l'exception d'une attention sommaire accordée à la région de Mouanko sur l'estuaire de la Sanaga, la partie nord de la côte camerounaise n'a suscité que peu d'intérêt. Dans le cadre d'une archéologie préventive, les environs de Douala qui ne disposaient d'aucune source archéologique, révèlent un riche potentiel confirmé par la découverte du site de Dibamba. Les études préliminaires permettent d'ébaucher un premier cadre chronologique de près de 3000 ans, se résumant en:

- un stade néolithique défini par des pots bilobés et des outils polis sur basalte;
- un Age du fer qui se distingue par une céramique aux formes et décors complexes avec la présence de la roulette et une grande maîtrise de la métallurgie du fer;
- une période précoloniale caractérisée par des récipients en faïence et de nombreuses perles de verre bleues importés d'Europe.

P

PERRET, Sébastien, Université de Fribourg, Switzerland, Caroline Robion-Brunner, Université de Genève, Switzerland & Vincent Serneels, Université de Fribourg, Switzerland: *The socio-economic organisation of the iron production: examples from the Dogon area (Mali)*

In traditional societies, iron is a key material, improving agricultural productivity and warfare efficiency. It is a valuable trading good that enters the exchange networks. Control over the iron production can increase the influence and power of a group of people. Overall, one has to consider iron metallurgy as an important structuring element for the society, having a strong economic and cultural impact.

In the Dogon area, the blacksmiths are organised in more or less hermetic castes and play an important role in several key aspects of the Dogon society. Although their knowledge is required at most stages of the metallurgical process (particularly those demanding high technical skills), the Dogon farmers are also deeply involved in the iron production. The ironworkers' status (field ownership, holders of technical and magical knowledge) and matters relating to control (of

natural resources, workforce, products) represent central issues as to the organisation of the iron production.

As can be seen from the examples we will present, several very different modes of organisation can coexist in a relatively small area, reflecting specific local needs and socio-economic configurations. We have chosen sites with varying production scales, ranging from small-scale iron smelting sites oriented towards local consumption to large-scale metallurgies with huge surpluses. The organisation of the work and workforce management on these sites differs in many fundamental aspects. For all steps of the whole 'chaîne opératoire' (from the mining and charcoal production to smelting and bloomsmithing), we will show what segments of the population are involved (farmers, blacksmith, origin) to which extent, and address questions relating to status and control. As far as possible, we will discuss the consumption and diffusion mechanisms of these productions (local consumption, export, trade).

PETIT, Lucas, Frankfurt, Germany: *Crime scene investigations at Oursi hu-beero, Burkina Faso*

Probably the only good thing about the event of violent destruction in history is when it turns out to be, many centuries later, a most interesting find for archaeologists. The burnt structures of Oursi hu-beero in northern Burkina Faso give us a good idea of how a rural African village may have looked like in the Middle Ages. The destructive fire had 'frozen' the situation of the 11th century AD, such as beautifully finished architectural elements, storage jars filled with organic remains, ground stones with colour traces, charred wooden furniture, a rolled-up rope, a slave chain, basketry and, surprisingly, also the skeletal remains of some murdered inhabitants. Numerous scientists have recently been involved in trying to reanimate this unique picture of sub-Saharan village-life of which some details were presented at previous SAfA conferences. In this paper Oursi hu-beero will be viewed through the glasses of a crime scene investigator. By closely studying the victims, the causes and manners of their deaths as it is undertaken in forensic anthropology and by studying the archaeological and historical contexts, we will present new information about the last hours of the inhabitants of Oursi hu-beero and the surrounding village. What has really happened at the crime scene? Who were the suspects and what were their motives?

PFEIFFER, Susan & Lesley Harrington, University of Toronto, Canada: *Indicators of childhood health among foragers and agriculturists of southern Africa*

Every human society must assure the survival of its children. Both the roles those children play and the environment in which they find themselves can influence survivorship. From the skeletal remains of those children who fail to reach adulthood we can ascertain some aspects of their experience. Growth in linear dimensions, development of tooth crowns and skeletal indicators of non-specific stressors to development contribute to this understanding. Age at death must be determined from tooth crown development, which is less environmentally labile than bone

growth. Comparing a large sample from Later Stone Age (LSA) burial sites and a small sample from Iron Age (IA) kraal sites, different growth trajectories can be described from birth to maturity. Rather than analyzing absolute linear dimensions, the analysis is approached in terms of proportional attainment of the adult size of the population, since LSA and IA adults are very different in average statures. The cross-sectional growth of the LSA children is consistent with that of healthy children whereas that of the IA children is not. Indicators of non-specific stressors (anaemia, growth arrest lines, enamel hypoplasia) contribute to the interpretative framework. It appears that causes of death were frequently acute among foragers, but were often linked to chronic health problems among agriculturists. It is therefore especially important that dental development is the basis for age assessment of juvenile material from Iron Age sites.

PFEIFFER, Susan & Genevieve Dewar University of Toronto, Canada: *Calibration of radiocarbon dates from human skeletons that reflect marine food intake: a comparison of methods*

Accurate calibration of radiocarbon dates into calendrical years must account for conditions of the organism in life, including the incorporation of carbon from marine sources. A variable ratio of marine and terrestrial protein makes neither of the usual approaches to calibration fully appropriate. Carbon from marine sources typically makes samples appear substantially older, so this adjustment is non-trivial. Calibration of mixed carbon samples can be done by calculating the proportion of marine carbon (% Marine) in the diet. This study uses two examples of co-interred human burials from coastal South Africa to compare methods for identifying % Marine in human bone collagen. One method identifies the expected range and endpoints of 100 % terrestrial and 100 % marine diets, based on stable isotope analysis of the local flora and fauna. The other method uses isotopes to identify % Marine, but sets the endpoints based on the observed isotope values of skeletons. The method using observed endpoints generates more plausible results. When the % Marine values are used to calibrate published, uncalibrated radiocarbon dates of 122 Holocene period adult skeletons, shifts in the dates range from -622 to +904 years. The magnitude of the adjustment is dependent on the % Marine value, while the direction is based on time (pre- and post- 4000 BP).

PHILLIPSON, David W., Museum of Archaeology & Anthropology Cambridge, Great Britain: *The last millennium BC in the highlands of northern Ethiopia and south-central Eritrea: the need for revised terminology*

During the past fifty years, varied classifications have been applied to the societies of the last millennium BC that have been revealed by archaeological research in the highlands of northern Ethiopia and south-central Eritrea. Almost invariably the terms have not followed the standard archaeological practice of being taken from a site where the entity concerned was first recognised or most comprehensively described. Instead, they have reflected an ill-defined relationship with the Aksumite civilisation of the first millennium AD. Furthermore, different usages are now developing on either side of the modern frontier between Eritrea and Ethiopia.

The paper compares the various terminological schemes that have been proposed and argues that none adequately reflects the levels of diversity now recognised within the region's archaeological record, nor the interpretations which that record supports. In some areas, undue emphasis has been placed on connections with overseas regions largely, but not exclusively, in southwestern Arabia. Arguments for African components have often been based on affinities with neighbouring regions of the continent rather than on strictly local features.

Recent research has revealed evidence that implies more strictly local parallels in earlier contexts. It also appears that elements indicating overseas connections were a highly variable occurrence. The paper concludes by suggesting ways in which cultural-stratigraphic nomenclature might more clearly reflect these new interpretations.

PHILLIPSON, Laurel, Museum of Archaeology & Anthropology Cambridge, Great Britain: *Lithic artefacts as a source of cultural, social and economic information: the evidence from Aksum, Ethiopia*

A decade of research into the lithic industries of Aksum and its near hinterland has progressed from the straightforward recovery and recording of excavated and surface-collected artefacts to the demonstration that these were a significant, varied component of all periods of Aksumite material culture, and to an understanding of their economic and social significance within that culture. It is now possible to demonstrate chronological changes in the forms of some lithic tools and in the composition of excavated assemblages and surface collections, in response to the developing needs of Aksum's monetised, urban economy. It is also possible to identify the uses to which some of the lithic tools were applied and the social patterns involved in their production and use. Some examples of this will be illustrated.

It is also now apparent that two distinct lithic traditions were present during the Pre-Aksumite period. Of these, the dominant industry at Aksum is morphologically and technologically related to and derived from earlier autochthonous aceramic and ceramic Mode 5 industries. This microlithic Pre-Aksumite industry developed in an unbroken sequence throughout the time from the Pre-Aksumite to its demise towards the end of the Late Aksumite or during the Post-Aksumite period. No such continuity is demonstrable for a surprisingly archaic-looking macrolithic Pre-Aksumite industry which comprises the only knapped lithics recovered from Hwalti, south of Aksum, and from a few minor occurrences closer to Aksum. The presence in the same area of two very different Pre-Aksumite lithic industries, one of which appears to have been an entirely local development and the other intrusive, may have a significant bearing on any consideration of Pre-Aksumite settlement patterns and the rise of the Aksumite civilisation. Examples of these two industries will be shown.

Auditors may find it helpful to have a written summary of R. Fattovich's chronology used in this talk:

Pre-Aksumite	700–400 BC

Proto-Aksumite	*c.* 400–150 BC
Early Aksumite	150 BC – AD 150
Classic Aksumite	AD 150 – *c.* 400
Middle Aksumite	*c.* AD 400 – 550
Late Aksumite	AD 550–700
Post-Aksumite	after AD 700

PIKIRAYI, Innocent, University of Pretoria, South Africa & Anders Lindahl, Lunds Universitet, Sweden: *Ceramics and the Ethnographic Present: the social context of pottery production and distribution in the Limpopo Province of South Africa.*

This research is based on the study of modern pottery makers in the Limpopo Province of South Africa. By identifying their production techniques as well as distribution of the finished ceramic products, we seek to inform the Iron Age archaeological record, especially in the middle Limpopo valley, an area associated with the rise of social complexity in the early second millennium AD. The objective is to provide alternative explanations on the distribution pattern of archaeologically defined ceramic/cultural units.

PORRAZ, Guillaume[1]**,** Pierre-Jean Texier[2], Aude Coudenneau[3], John Parkington[4] & Jean-Philippe Rigaud[2]: *An overview of the Howiesons Poort complex at Diepkloof rockshelter (Western Cape, South Africa): implications of the truncated and backed pieces*

[1]CEPAM, CNRS (Centre National de la Recherche Scientifique), France; [2]Institut de Préhistoire et Géologie du Quaternaire, CNRS – Université de Bordeaux 1, France; [3]LAMPEA, Université Aix-Marseille 1, France; [4]University of Cape Town, South Africa

Truncated and backed pieces, often referred to as geometrics, segments, trapezes, or crescents, are considered one of the main typological and functional innovations that occurred among prehistoric hunter-gatherer societies. Their prevalence during the Later Stone Age has often been used as a parallel to establish comparisons with older industries comprising such geometric pieces. One of the most expressive complexes is the Howiesons Poort, once considered as a transitional phase between the MSA and the LSA. However, even if the originality and independence of this southern African Middle Stone Age complex is now fully accepted, its nature and variability is still debated.

Truncated and backed tools of the Howiesons Poort constitute the ‘fossiles directeurs’ of this complex. They syncretise most of the debates that lead the scientific literature. The standardization of these tools, whether they are microlithic or not, their association with blade production, their confection on non-local fine-grained raw materials as well as their function

(associated with hunting technology) are some presuppositions remaining to be fully demonstrated.

The excavation of the MSA site of Diepkloof rockshelter has highlighted the presence of several layers of occupations belonging to the Howiesons Poort, dating to 55–65 ka. Our study focuses on truncated and backed pieces, as one avenue to interrogate broader technological and economic features. The tendency of stylistic and functional attributes of these tools, often being key behavioural interpretations for this complex, will also be discussed.

PORRAZ, Guillaume[2,] Pierre-Jean Texier[1], Chantal Tribolo[3] & Jean-Philippe Rigaud[1]: *Technology and techniques involved in the shaping of the Stillbay bifacial points after the analysis of the more characteristic remains from Eales Cave, Hollow rockshelter and Diepkloof rockshelter lithic assemblages (Western Cape, South Africa)*

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The nature as well as the status of the lithic waste resulting from a bifacial shaping is opposite to the nature and the status of the waste resulting from a débitage. But when producing the blanks to be shaped those two antagonistic stone knapping processes are sometimes successively combined in the same bifacial chaîne opératoire. The bifacial points of three Stillbay lithic assemblages from the Western Cape Province, as well as the more characteristic by-products resulting from their shaping, are taken into consideration.

The main stages of the identified chaînes opératoires and their variability according to the raw materials implemented are documented and debated as well as the identification criteria of the techniques involved for the completion of those bifacial points.

The excavation under way at Diepkloof rockshelter (DRS) already brought to light, on a four metre deep section, the existence of a Stillbay complex subsequent to a MSA still undifferentiated but prior to a Howiesons Poort complex. 22 TL dates have already been calculated (see also paper by Tribolo *et al.,* Session 9) on those two complexes. The technological analysis under way already allows us to evaluate the segmentation of the bifacial chaîne opératoire at DRS and moreover to rely on the part played by the sites in this specific knapping activity.

PORRAZ, Guillaume[6] Chantal Tribolo[1], N. Mercier[1], H. Valladas[2], J.L. Joron[3], P. Guibert[1], Y. Lefrais[1], M. Selo[4], P.-J. Texier[5], J.-Ph. Rigaud[5], C. Poggepoel[7], J. Parkington[7], J.-P. Texier[5] & A. Lenoble[8]: *Old age estimates for the Howiesons Poort and Stillbay assemblages at Diepkloof rockshelter*

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Excavations have been undertaken at Diepkloof rockshelter (DRS; South Africa) since 1999. It is one of the very few sites where Howiesons Poort and Stillbay assemblages can be collected from the same archeo-sequence. These Middle Stone Age techno-complexes are particularly interesting for their affinities with the much younger Later Stone Age facies, and their association with evidences for symbolic behaviour. Establishing their chronology is therefore particularly important for the understanding of the apparition and the evolution of the so-called 'modern' behaviours. Data already available suggest ages ranging from 55 to 80 ka for the Howiesons Poort and from 70 to 80 ka for the Stillbay. The thermoluminescence dating undertaken at DRS on 22 stone samples coming from the whole stratigraphic record indicate 10 to 50 ka earlier intervals for these techno-complexes at DRS. Possible caveats in the dating process are examined and rejected; the archaeological implications of these new results are discussed.

POSNANSKY, Merrick, University of California Los Angeles, USA: *Justifying Imperial sites: a dilemma for ex-colonialists*

How does one justify excavating, publishing and promoting sites of the Colonial and Imperial eras in Africa? Several rational answers can be posed. Such sites are often substantial, important aspects of the monumental landscape. They indicate interaction between overseas powers and African communities, and their excavation raises questions of how processes of change took place. Some of the key information on their existence is reliant on foreign sources and most importantly their excavation is important for understanding the later history of Africa. A further reason can also be proposed that they help tourist promotion and many, being related to the Slave Trade, provide an essential link between Africa and the world-wide African diaspora. Examples of both the importance of such sites and the value of their excavation are drawn from the West African coast and from northern Uganda, and in particular from the 19th century Egyptian fort of Dufile, excavated in 2006–2007, that it is hoped to be conserved as a major sustainable historical monument and a regional information center catering to the need of both Uganda education and tourist promotion.

PRENDERGAST, Mary, Harvard University, USA: *Forager variation and transitions to food production in secondary settings: the view from Lake Victoria*

Studies of so-called 'complex' hunter-gatherers have mainly focused on the Americas and Asia, with little application to Africa south of the Sahara. It has been assumed that most foragers

represented by the East African archaeological record would have had economic and social systems similar to those of the immediate-return foraging societies documented in sub-Saharan Africa over the last century. However, a paper published in 2004 by Dale, Marshall & Pilgram proposed that a moderately complex, delayed-return foraging system existed in the Lake Victoria basin some 8000–2000 years ago. This theory was based largely on ethnographic analogy, site size, density of occupation and the presence of ceramics, but no study had been made of those archaeological remains most pertinent to the economy: plant or animal remains. Here I present zooarchaeological data from several mid-Holocene sites near Lake Victoria, which confirm Dale *et al.*'s theory in several aspects. As Dale observed, the sites are remarkably similar to those located along the Nile in the Sahara-Sahel zone in terms of possible sedentism, use of ceramics, and economy. A more surprising result is evidence for the consumption of domestic animals within the aforementioned hunter-gatherer tradition. I propose that these foragers' semi-sedentary, moderately delayed-return lifestyle may have enabled them to more easily adopt aspects of food production, while other East African foragers resisted changing their economic system until relatively recently.

R

RAJAN, Rahim, Aluka, USA & Heinz Rüther, University ohf Cape Town, South Africa: *The documentation and conservation of African Cultural Heritage Sites and Landscapes*

Aluka (www.aluka.org), an initiative of JSTOR (www.jstor.org), and Heinz Rüther at the University of Cape Town (South Africa) are working together to document and build a digital library about African Cultural Heritage Sites and Landscapes. This database is intended for the use and adoption of the global scholarly and heritage communities. In Africa, access to both the Aluka and JSTOR databases is freely available to academic, government, and research institutions. Thus far, heritage sites and landscapes documented include: Djenne (Mali), Timbuktu (Mali), Elmina (Ghana), Asante Temples (Ghana), the rock-hewn churches of Lalibela (Ethiopia), Aksum (Ethiopia), Lamu Archipelago (Kenya), Kilwa Kisiwani (Tanzania), Engaruka (Tanzania), Great Zimbabwe (Zimbabwe), and a number of rock shelters and caves in South Africa's Cederberg Mountains. The digital library also includes a growing image archive of African rock art from two important repositories in Africa – the Trust for African Rock Art in Nairobi, Kenya, and the Rock Art Research Institute in South Africa. Our presentation will (1) introduce the methods and technologies deployed in the documentation of these heritage sites and landscapes; (2) identify preservation and environmental challenges facing these cultural sites and landscapes; and (3) discuss the value of Aluka's digital library and how this information may assist researchers, educators, conservators, and site managers.

REID, Andrew, University College London, Great Britain: *Animals and power in the archaeology of Great Lakes Africa*

When Graham Connah produced his important 1987 volume on African states, the coverage of the Great Lakes region was necessarily thin. Despite the significant amount of work undertaken in the last 20 years, there still remains an absence of detail on economies, one of the main building blocks of Connah's approach. This paper will review the information we now have available for animal exploitation in the region. Derived from a wide range of sites, these not only highlight the economic role of certain animals, particularly cattle, but also their significance in political and religious activity.

RICHTER, Daniel[1]**,** J. Moser[2], M. Nami[3], J. Eiwanger[4], A. Mikdad[5] & R. Hutterer[6]: *The Middle Palaeolithic in NW Africa as another area of early modern behaviour. New data from the sequence of Ifri n'Ammar, Rif Oriental, Morocco*

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In current archaeological research the populations of anatomically modern humans, which were responsible for the worldwide dispersal of this species, are often linked to the origin of modern behaviour. However, such a link is difficult, if not impossible, to prove. Additionally, the definition of modern behaviour is not, and probably cannot be, clearly defined. But in general items such as pierced shells are taken as evidence of modern behaviour, e.g. in South Africa, leading to a consideration of South Africa as the origin of anatomically modern humans. If such a concept of linkage is generally accepted, then NW Africa with its frequent occurrence of pierced shells in Middle Palaeolithic/Middle Stone Age assemblages containing tanged lithic tools has to be added to the picture.

Here we present an analysis of the current chronometric information available for the Middle Palaeolithic of NW Africa. Additionally, new thermoluminescence (TL) dates for heated flint artefacts from Ifri n'Ammar provide evidence for another early example of modern behaviour in the form of intentionally pierced shells, together with the use of a colorant. Furthermore, the double alternating sequence of Middle Palaeolithic industries containing and lacking tanged tools at Ifri n'Ammar shows the inapplicability of a chrono-evolutionary concept of the development of tanging. Tanged tools have to be viewed as a technical phenomenon, rooted in a specific response of hunter-gatherer populations to achieve or improve certain aspects of subsistence and mobility. This can be taken as a reflection of cognitive skills related to contact and exchange of groups. The technique of tanging can therefore also be viewed as a part of behavioural modernity of the anatomically modern humans, which are responsible for Middle Palaeolithic assemblages in NW Africa as it is evidenced e.g. in Jebel Irhoud.

RIEMER, Heiko, Universität zu Köln, Germany: *Filling a gap in Saharan prehistory: the pottery chronology of Uweinat*

Since Ahmed Hassan rediscovered Jebel Uweinat in 1923, it has become known for its immense rock art heritage. However, there is as yet only very scanty information on other artefacts, site contexts and settings, as well as on the internal chronology of Uweinat. To fill a gap in the research program on Holocene settlement history and climatic change between the Nile Valley and the Central Sahara, the 2005 ACACIA expedition of Cologne University carried out a large-scale survey in the western (Libyan) sector of Uweinat. More than half of the 144 sites recorded yielded pottery that allows approximate dating of assemblages by typo-chronological comparison with other regions in Egypt, Libya, Sudan, and Chad. The results indicate a chronological sequence with three phases lasting from *c.* 6600 to 3000 cal BC, as well as pottery roughly affiliated to later periods. Moreover, the distribution of sites and their geo-topographical settings yield first insights for understanding the settlement potential and development of Uweinat.

ROBERTSHAW, Peter, California State University San Bernardino, USA: *"Two tonnes of excavated potsherds": reflections on state formation in western Uganda*

Graham Connah once remarked that two tonnes of excavated potsherds were unlikely to tell us anything about the Bacwezi dynasty. In response to recent critiques, I offer a more heterarchical and less neo-evolutionary perspective on the archaeology of the Bacwezi and the early state in western Uganda than I have done previously, while further clarifying the region's chronology and settlement history, as reconstructed from not only ceramics, but also archaeological surveys and sediment cores. In doing so I reflect upon some of the major economic, political, and climatic forces relevant to understanding the development of complexity in this part of the world. This discussion touches upon the results of Connah's excavations at Kibiro, as well as new evidence from glass bead analysis.

ROBION-BRUNNER, Caroline, Université de Genève, Switzerland: *The Jèmè-irin, an example of the development of blacksmith clan (Dogon area, Mali): social status and iron working*

The discussions about the specialization in iron metallurgy and the formation of blacksmith 'castes' in West Africa hold a capital place in current research. The issues linked to the technical evolution and the transmission of knowledge and social change are important. Indeed, even if the current situation is rather well understood, little is known about the social and historical reasons of craftsmen caste formation, and the reasons for the presence or absence of such systems in a society. Moreover, we do not know whether the emergence of castes led to major technical changes and if these can be evidenced by the study of archaeological remains.

In the Dogon country, three castes have been distinguished: the Jèmè-irin on the Bandiagara plateau; the Jèmè-na on the Seno plain; and the Jèmè-yélin on the southern plateau. From the oral traditions, I was able to specify, in my PhD thesis, the historical, geographical and social diversity of the Jèmè-irin, and define the identity of ironworkers.

The study of their settlements allows establishing a certain correlation between the surnames and the Dogon languages. Indeed, the distribution of patronymics appears to be a good indicator to

distinguish the linguistic zones where blacksmiths arrived and/or where they acquired their status of specialized craftsmen. The reconstitution of migration patterns based on patronymics shows that the Jèmè-irin possess their own history, though depending on the farmers' one, characterised by a non-monolithic process of formation. They belong to a non-hermetic caste whose marital rules change according to economic, political and social circumstances. This caste constituted itself in the Dogon country from indigenous populations, successively joined by foreigners originating from the interior Niger. Originally, all of these peoples did not belong to blacksmith castes. Native farmers, Dogon, foreigners, and slaves became iron specialists to fulfill economic needs. These transformations were voluntary or forced by the Dogon.

ROSE, Jeffrey, Oxford Brookes University, Great Britain: *Arabian refugia in the Late Pleistocene and implications for modern human expansion*

Within the past few years, southern Arabia has been transformed from *terra incognita* to an emerging and important area of Palaeolithic research. This trend is linked to an increased understanding of the genetic record, which suggests the 'Arabian Corridor' served as a significant conduit for hominin dispersals throughout the Late Pleistocene, coupled with developments in infrastructure that have facilitated logistical accessibility to previously remote areas. Stratified sites have been unearthed; at long last, we can begin to place some Arabian lithic assemblages within a chronological framework.

This paper considers the results from South Arabia's first dated Palaeolithic sites within their geographic and temporal contexts. Contrary to the traditionally envisioned scenario of a heavily trafficked corridor of human migration out of Africa, the emerging picture suggests a complex picture of autochthonous development over the course of the Late Pleistocene, with distinct populations tethered to different refugia throughout the region. This new understanding of human occupation in southern Arabia contradicts some pre-existing models of modern human expansion out of Africa.

ROSENSTEIN, Dana Drake, University of Arizona, USA: Considerations for absolute dating of Late Iron Age sites in southern Africa: comparing radiocarbon, luminescence and archaeomagnetism

Radiocarbon dating is the chronometric technique most frequently utilized by archaeologists world wide, however, this method is inadequate for sites occupied throughout the later Late Iron Age in southern Africa. Because of anomalies in atmospheric production of radiocarbon in the time range 1650–1950 cal CE, there are acute De Vries effects, or 'wiggles', in the radiocarbon calibration curve over this period. Any radiocarbon age from this time calibrates to a calendar date spanning two or more centuries. Although Bayesian radiocarbon calibration, dates from oral-historical records and stratigraphic information from ceramic seriation can help to refine these broad radiocarbon calendar age ranges, in order to understand the sequence of settlement in

the Late Iron Age, it is absolutely essential to employ an archaeometric technique with better resolution in this period.

With luminescence, an absolute dating method using quartz grains from clay, mud and midden features, chronometric results with good resolution and high precision can be obtained for Late Iron Age sites. For the recent past, luminescence dating is significantly more accurate than is possible with radiocarbon. With an explicit, well-planned sampling strategy, luminescence can be used as an anchor for archaeomagnetic dating, a relative dating technique. Both luminescence and archaeomagnetism require particular considerations for use in the southern African Late Iron Age, however, and this paper focuses on the use of these techniques for relatively young, shallowly buried archaeological contexts.

The construction of an archaeomagnetic master curve requires the location of *in-situ*, heat-exposed archaeological features that can be measured for archaeomagnetic direction and also dated by an absolute dating method. Hearths, door slides, daga walls and furnaces, all of which are constructed with sediment datable by luminescence, are types of features sufficiently fired to obtain archaeomagnetic directions. Extrapolation of records for magnetic declination and inclination at Cape Town beginning in AD 1595 suggests that the drift of magnetic field in the region and time of interest would be sufficiently rapid to yield high-recision archaeomagnetic dates over a short period.

Archaeomagnetism is potentially the best method for relative, and eventually absolute, dating of sites in this temporal and geographic context. This research will be an important contribution to our field, because it will become possible to obtain meaningful archaeometric dates for Late Iron Age sites. Several of the most important urban centers of precolonial Africa date to second millennium AD time ranges that were subject to anomalies in radiocarbon production. Once the archaeomagnetic master curve is complete, archaeomagnetism can replace luminescence as the preferred chronometric method for the second half of the Late Iron Age.

RUPP, Nicole & Peter Breunig, Goethe-Universität Frankfurt, Germany: *Recent studies on the Nok Culture, Central Nigeria*

For decades the Nok Culture of Central Nigeria has been well known because of its terracotta figurines, representing the earliest sculptural art in sub-Saharan Africa. In addition, Nok plays a prominent role in the emergence of iron technology, providing some of the earliest evidence of iron smelting in West Africa (500 BC). Despite its scientific importance, little archaeological fieldwork has been devoted to the Nok Culture.

In 2005, investigation of the Nok Culture became part of the German DFG Research Group 510 “Ecological and Cultural Change in West and Central Africa”. Surveys and excavations on Nok sites have lead to discoveries comprising various aspects of the Nok Culture: patterns in site location, economy, iron technology, pottery, stone tools, and, of course, terracotta, discovered in

contexts that will illuminate the latter's still enigmatic function. This paper will present some of the new discoveries.

S

SALL, Moustapha, Université Cheikh Anta Diop de Dakar, Senegal: *Culture matérielle céramique et identités en pays Fogny (Gambie, Casamance)*

Dans la zone historique du Fogny, qui englobe aujourd'hui le Sud-Ouest de la Gambie et la Casamance (Sud-Ouest du Sénégal), plusieurs sites archéologiques furent découverts. Ces derniers constitués d'amas coquilliers et d'anciens villages témoignent d'une longue pratique de la cueillette des mollusques et des interactions entre plusieurs groupes culturels. Cependant, l'essentiel de ces sites sont attribués aux seules populations Diola qui constitue le peuplement le plus important de cette sous-région. Contrairement à cette thèse, les recherches ethnoarchéologiques portant sur les pratiques de récoltes des mollusques et sur les comportements socioculturels et techniques de fabrication des poteries (les principaux artéfacts trouvés sur ces sites) ont montré que d'anciennes populations Baynouk ignorées ou négligées auraient, d'une part, constitué le peuplement le plus ancien du Fogny, et d'autre part, légué un héritage technique à plusieurs populations qui revendiquent la paternité de plusieurs sites archéologiques.

SAMPSON, C. Garth, Texas State University, USA: *Late Holocene faunal diversity in the upper Seacow River valley, South Africa*

Diversity in the faunal remains from a dozen Later Stone Age rockshelters in the semi-arid upper Karoo region of central South Africa is reviewed. Occupied since about BC/AD 0 by ancestral Karoo Bushmen, they accumulated a very wide range of faunal remains including not only the full range of local game animals and attendant carnivores and scavengers, but also micromammals, tortoises, snakes, lizards, birds, amphibians, fish, crabs, and molluscs – some 80 species in all. Proportional composition between shelters is very uneven, reflecting local catchment characteristics within the upper Seacow River valley. Perhaps most interesting is the ease with which shelters in the path of migratory Springbok may be identified, even from quite modest samples. By *c.* AD 1000 the upper valley was invaded by prehistoric herders who appear to have been accommodated by the resident population, who were in turn left in peace to pursue their 'eat everything that moves' subsistence strategy. The herders themselves either failed or did not attempt to dislodge the resident hunter-foragers from their rockshelters, preferring instead to camp in the open with their sheep and cattle. Consequently very few domestic livestock entered the faunal record, in spite of the fact that some rockshelters were surrounded by herder stock enclosures with stone walling. In a very short time hunter-foragers were incorporating small herds into their own highly diversified economy, and building kraals of their own, sometimes outside the shelters. But this was not uniformly done and the boundary between invading herders and the local 'hunters-with-sheep' remained porous, with full-time hunters also moving about

freely between the two zones. But by the time the first Dutch stockfarmers invaded the upper valley in the AD 1770s they evidently encountered no stockowners, and their northward advance was successfully blocked for about a decade by a well-organized hunter-forager resistance. The uppermost levels of nearly all the rockshelters reflect the extermination of the larger game with firearms, and the rapid increase in livestock remains as the shelter inhabitants, now with guns, became enveloped in the complexities of the Dutch frontier economy in which local Bushmen became employed as shepherds and settled around the new farmsteads.

SCHLANGER, Nathan, INRAP (Institut national de recherches archéologiques preventives), France: *Preventive archaeology in Africa – the call of Nouakchott*

Preventive archaeology – planning and acting ahead to avoid the bulldozers looming over the vestiges with frantic but helpless archaeologists nearby – actually has its origins in Africa, with the first phases of the Aswan Dam, a hundred years ago. Since then, the 'World Heritage' conception first applied to exceptional finds has broadened to include also the more 'ordinary' archaeological remains, whose significance is otherwise important. Protection measures taken in Europe with the Malta convention of 1992 are worth heeding to, especially when the aim is to integrate the protection and enhancement of the archaeological heritage, at national, regional and community levels, with considerations of spatial planning, economic growth, tourism and sustainable development on the African continent.

SCHMIDT, Peter, University of Florida, USA: *The Ancient Ona Culture of Eritrea: ritual and subsistence – a way of de-homogenizing the Pre-Aksumite?*

Research in Eritrea between 1998 and 2003 documented hundreds of ancient settlements around the margins of Asmara, Eritrea, dating to the early and mid-1st millennium BCE and ranging from single family dwelling to small and large hamlets, small and large villages, and small towns. Such sites, because of their chronological attribution, would conventionally be identified as Pre-Aksumite. (Pre-Aksumite is a term that some find awkward for the very reason that people identified with these places would have had no way of seeing themselves as living in an era before Aksum came to its florescence.) We refer to these settlements and ritual and multiple use locales as Ancient Ona sites, using a local Tigrinya term for 'ruin' and modifying it to remove any connotation of relatively recent ruins. Beyond these classificatory issues, our findings around Asmara for the first time testify to considerable subsistence, economic, and ideological variation within a region of 10 x 15 km. These variations are linked to different kinds of terrain, soil, water, and other precious resources such as gold. Archaeological evidence indicates that beneath the homogenizing label of 'Pre-Aksumite' or 'Ancient Ona' there is a rich variability that testifies to different subsistence strategies in the well-watered, open basin to the west of Asmara (wheat, barley, flax; cattle) compared to the uplands north and east of Asmara (lentils, flax, tef; goats/sheep). Furthermore, those communities situated in close proximity to the gold workings north of Asmara seem to have experienced rapid growth and access to a wider variety of faunal

and agricultural products – possibly through intra-regional exchange. Of particular interest are the different patterns of ritual life, with a major ritual center located at the Sembel Kushet site, west of Asmara, and radiating, lesser ritual locales within a range of approximately eight kilometers. For the first time, then, we can point to distinctive ways of life within a small, tightly bounded region, distinctions that sustain possible ritual/political differentiation but no clear social hierarchy until the 4th century BCE.

SCHOEMAN, MH Alex, University of Pretoria: *Rain & smoke: the archaeology of rain-control places and things in the Shashe-Limpopo Confluence Area*

Rain-control is materialised ideology. Similar to real rain, it is fluid and – contrary to claims of eternalness – rain-control beliefs are context-specific and thus continually re-shaped and re-interpreted. In turn, rain-control beliefs and symbols can influence the societies that shaped them. During the occupation of the Shashe-Limpopo Confluence Area (SLCA) by Leopard's Kopje people (AD 1000–1300), rain-control was shaped though complex interactions between farmers, hunter-gatherers, the landscape and material culture. Interaction also influenced the selection of rain-control places. The choice of places – hills – related to two factors. The first was an imagining of appropriate rain-control places, including the association of 'nature' with the plateau, where the rain-control hills are located as well as the link between hills, pools/rock-tanks, caves/shelters and rain-control. The second factor was an association of hunter-gatherers with the hills and plateau. Through ritual interaction with the sites knowledge of rain became entangled in the topographic features used in rain-control. A specific material culture, botanical and faunal signature mark the spaces used during rain-control. In this paper I explore the choices, places and things of SLCA rain-control.

SEALY, Judith, University of Cape Town, South Africa: *The emergence of pastoralism in southernmost Africa: new evidence from stable isotopes*

Seventeenth-century Dutch records report Cape Khoekhoe people bringing huge herds of sheep and cattle to trade with early European settlers, but archaeological evidence of these communities is hard to find. Possible explanations include (1) low archaeological visibility due to the mobile lifestyle required to pasture large herds of domesticated animals; (2) large herds (especially of cattle) may have accumulated only recently, around the time of European contact, and thus be difficult to detect in the archaeological record. Stable carbon and nitrogen isotope analyses of human skeletons from the southern Cape coast show that, prior to 2000 BP, hunter-gatherers ate varying mixes of marine and terrestrial foods, but that terrestrial C4 grasses (and animals grazing on them) were very minor items of diet. Sheep were herded from around 2000 BP, but whatever their role in peoples' diets, there is no significant shift in the isotope ratios of human skeletons in the first millennium AD. During the second millennium AD, however, people began to eat significantly more C4-based foods, probably in the form of animal products (meat, milk) from animals grazing on C4 grasses. In one or two cases for which we have

information on burial style, the body was interred in a seated, flexed position, and the grave capped with stones. Thus, although living sites remain elusive, there is evidence of new economic (dietary) and cultural practices after 1000 AD, with domestic stock – probably cattle – becoming more central to peoples' diets at this time. This evidence supports the hypothesis that the historically documented Khoekhoe way of life developed gradually over the last two millennia. It also highlights the question of the origin of the cattle, given several centuries of contact with Iron Age farmers to the east.

SEITSONEN, Oula, University of Helsinki, Finland: *Change and continuity in the lithics use in Nyanza Province, Kenya*

The lithic assemblages excavated from single and multi-period Holocene sites in Nyanza Province, Kenya, show some interesting long-term trends of techno-typological change and continuity. These are evident for example in the raw material choices, used reduction methods and manufactured end products, and presumably mirror developments e.g. in the associated socio-economical networks and settlement patterns. Of interest is that no direct correlation exists between the changes in lithic technology and the changes of ceramic traditions or subsistence economy. This might suggest for the most part of the Holocene a gradual, autochthonous culture-historical sequence with few abrupt changes. Most important and sudden changes in the lithics use are connected to the appearance of Elmenteitan ware in South Nyanza.

SERENO, Paul C., University of Chicago, USA: *Gobero: an exceptional record of early and mid-Holocene human adaptation in the southern Sahara*

A minimum of 200 human burials are preserved on the edge of a paleolake in central Niger and provide an exceptional record of human occupation in the southern Sahara under severe climate fluctuation during the Holocene. The Gobero site complex, located on the northeastern rim of the Chad Basin, was discovered in 2000, briefly revisited in 2003, and investigated during field seasons in 2005 and 2006. An international team excavated 84 burials and mapped, sectioned and sampled the central paleodune burial sites and adjacent paleolake deposits. In 2005, we discovered a Holocene quarry 160 km north of Gobero on the edge of the Aïr massif, showing that the green rock common in Holocene tool kits in Niger has a local origin. That rock is a microcrystalline felsite, which has been used since the Pleistocene and became the exclusive source rock for Tenerean disc knives during the mid-Holocene.

A chronology for Gobero was established on 9 OSL dates on palaeodune sand and 78 C14 AMS dates on human burials, harpoon points, ceramics, midden materials, fauna and sediments. Direct dating of human skeletons, fauna and artifacts was based on the bioapatite component of enamel and bone. The record at Gobero was divided into four occupation phases extending from the Late Pleistocene to the late Holocene.

The most important are the early and mid-Holocene occupation phases, which are separated by an arid interval recognized across the central Sahara. These two pulses of semi-sedentary occupation are clearly distinguished by material culture and funerary practices as well as the distinct physical features of the occupants. The taller early Holocene occupants (~7500 BCE) are buried in tightly bound, hyperflexed postures that compose the earliest cemetery in the Sahara. Most closely related to 'Mechtoid' populations in Mali and Mauritania and to early inhabitants of the Maghreb, these early occupants have long, low crania and are associated with a Kiffian industry characterized by microliths and harpoon-fishing. They abandon the site complex under arid conditions and are replaced by a more gracile people (~4600 BCE), with deeper, more prognathous crania, buried in less flexed posture often with grave goods. Notable burials include an adult male seated in a mud turtle carapace, an adult male with skull resting on a half ceramic vessel, and a triple burial composed of an adult female and two juveniles in symbolic pose with underlying pollen clusters indicative of the presence of flower heads of woolflower (*Celosia*). Grave goods include an upper arm bracelet and an incised ivory pendant as well as hollow-based and tanged projectile points that have been associated with a Tenerean tool kit. Middens close in age and proximity to the burials suggest continued reliance on hunting and fishing in the shallow waters of the Gobero Paleolake. The final phase recorded at the Gobero site complex lacks burials but is represented by isolated undecorated pottery, suggesting the transient presence of late Tenereans. Gobero chronicles the rapid pace of biotic and cultural change in response to profound humid-arid fluctuation during the Holocene.

SIEVERS, Christine, University of the Witwatersrand, South Africa: *Experimental carbonization of fruiting structures beneath hearths*

Various fruits, nuts and seeds from South African trees and shrubs were buried at pre-determined depths and distances from the centre of experimental fires. The fruiting structures were buried in coarse sand and a fine ashy matrix respectively, and different types and quantities of wood were used for the fires. The cold ashes of the fires and the area around and below them were excavated using standard archaeological techniques and dry-screening. The excavation of the various experimental hearths revealed the same structure and colour changes seen in some Middle Stone Age hearths at the rockshelter of Sibudu, KwaZulu-Natal, South Africa. The fruiting structures recovered from beneath the experimental hearths were affected to varying extents: those buried 5 cm below the centre of the fire, in anoxic conditions, were carbonised (became black throughout); those buried 10 cm below the centre of the fire changed colour to darker shades of brown; and those 5 cm and 10 cm below the surface at the perimeter of the fire appeared unaffected. Size, shape, moisture or oil content of the original fruit or seed did not appear to influence the process. Temperatures recorded 5 cm below the experimental fires indicate that carbonisation occurred at or before a maximum temperature of 328 °C, and also at lower maximum temperatures (not above 152 °C) that were maintained for long periods. Thus, the experiments demonstrate that even a relatively low temperature, if it is maintained for long enough, can cause carbonisation of botanical material. Furthermore, the experiments indicate that material that may enter

archaeological deposits by various routes, such as human, animal or natural means like wind, may at some later stage become carbonised by chance when a fire is lit above the area where it lies buried. The implications of the experiments are that accidental carbonisation of material in cave or shelter environments may be far more common that previously thought, that carbonisation of seeds introduced by non-human routes of entry is possible in these environments, that interpretations of carbonised remains should take these issues into account, and that it is essential to sample below hearths and not only the hearths themselves.

SINCLAIR, Paul J.J., Uppsala Universitet, Sweden: *The Urban Mind: long-term urban dynamics in eastern and southern Africa*

This paper explores a new concept, the 'Urban Mind', from combined humanities and natural science studies of the development of urbanism and climate change in eastern and southern Africa. The 'Urban Mind' concept is being formulated as part of the global IHOPE (Integrated History and Future of Peoples on Earth) initiative. In regard to Africa specific focus will be made upon the urban landscape dynamics and environmental change in the Shashi Limpopo Basin and the Swahili coast.

The development of urbanism has been a global phenomenon unfolding as co-evolving human-environmental systems, unfolding over millennia but taking radically different forms in eastern and southern Africa. Crucially, in addition to their physical characteristics towns are ideological constructs: as we invent them, so we believe in them. Drawing upon Bateson's early approach to human-environmental interactions in the 'Ecology of Mind' as well as contributions from the new field of Historical Ecology, this paper proposes a combined humanist and natural science exploration, and delineation of the cultural and environmental dynamics of the 'Urban Mind' as part of the IHOPE initiative.

Towns in southern and eastern Africa arose from existing patterns of human settlement, over the last two millennia. GIS coverages from the region will be used to illustrate the development of urbanism. Towns as spatially ordered, demographically dense settlements or clusters of settlements, and their affiliated communities add a cognitive dimension to the landscape. A landscape is seen as a multidimensional mosaic that relates social constructivist and bio-geophysical aspects of reality. The complex interactions of urban factors at different scales often defy simplistic models of linear development. Towns contain a critical mass of people often from differing cultural backgrounds, producing a variety of ideas, goods and services. Towns are primarily attractors of humans but also support a diverse range of other animals and plants. Urban dynamics in eastern and southern Africa are characterized by a variety of local and regional socio-economic interactions and are also influenced by forcing mechanisms deriving from long-distance effects of changes in world system and physical climate as shown in palaeoclimatic modelling work of Bryson & Bryson and recent work on high resolution climate change in eastern and southern Africa by Holmgren *et al.* Taken together, we aim ultimately at a

genuinely culturally and environmentally informed approach to the cognitive dimensions of urbanism, an increasingly prevalent form of societal organization in the region today.

SMITH, Benjamin, University of the Witwatersrand, South Africa: *'The Flesh Eaters'. A prehistory for the pygmies of Central Africa?*

The subject of this paper is the social construction and deconstruction of African pygmyness by those living, mostly, outside of Africa. It concerns academic discourse, social values, ethnocide and archaeology.

STERNER, Judy, Alberta College of Art & Design, Canada: *Gender and meaning in basketry: the view from the Mandara Mountains*

The importance of basketry as a potential source of information on society and culture has yet to be generally accepted. In this paper I describe, using Willeke Wendrich's classification, the varieties of basketry made and used in the Mandara Mountains of Nigeria and Cameroon. This class of material culture, manufactured by both men and women, correlates with gender and ethnicity very differently from other, specialist-made, artifact classes. Everywhere there is a strong association of technique with gender rather than other social categories. Male-made basketry in the Mandara Mountains is clearly linked to architecture, and a link between coiled baskets and coiled pottery might be argued. But unlike pottery where types are often strongly associated with one or the other gender, the highly gendered difference in techniques is not mirrored in use. Baskets rarely figure in ritual or as markers of status. There are hints that they, like granaries, may sometimes have gender thrust upon them, but, unlike pots, baskets are not, or only very rarely, people.

Consideration of the small number of other case studies of African basketry suggests that in any one region at any one time gender and basketry technique are highly correlated, although there is variability both across space and through time. Second, there is considerable variation in the extent to which symbolic thinking pervades African basketry.

STOJANOWSKI, Christopher M., Arizona State University, USA: *Biological structure and population affinity of burial components at Gobero: intra-site and regional perspectives*

This paper will address one of the more central issues of biological anthropology of the southern Sahara by considering the following issues: (1) Who were the earliest inhabitants at Gobero (*c*. 8500–7300 BP) and are they ancestral to the later inhabitants (*c*. 5500–4500 BP) of the area that buried their dead in the same dunes? (2) What are the continental affinities of each burial component as compared with published data from Aterian, Iberomaurusian, and Capsian sites, crania from Columnata, crania from sites along the Atlantic coast of Mauritania, and crania from interior Mali?

Descriptively, crania at Gobero become shorter through a re-structuring of the occipital bone, most notably the disappearance of the occipital bun that is present in the Kiffian population. The

overall size of the cranial vault decreases through time while the height of the vault increases slightly. The mandible becomes shorter, narrower, and less deep as well. Although there is a decrease in cranial robusticity through time, the Kiffian sample does not exhibit the same degree of robusticity seen in Late Palaeolithic human populations in North Africa.

Craniometric analysis using mean-based principal component extractions as well as population genetic R-matrix methods indicate the two burial components at Gobero are as distinct as the Late Pleistocene/Early Holocene Iberomaurusian and Capsian populations were from the preceding Aterians. This structure is documented using both principal components and R-matrix methods and holds under differing scenarios of demographic expansion. Because the latter transition (Aterian-Iberomaurusian) is interpreted as population replacement, the compressed time frame at Gobero may suggest a similar explanation of biological diversity.

Comparison with the Howells craniometric dataset using FORDISC 2.0 allocates none of the individuals from Gobero to any African population included in this database. Although comparison of remains of the age of Gobero with the largely modern series in the Howells database is problematic, the results are interesting in allocating the Kiffians to Ainu, Japanese, and Chinese populations while the Tenerians were allocated to more diverse populations such as Easter Island, Eskimo, and Guam. That several of the individuals from the Tenerian phase were also allocated to Ainu/Japanese populations suggests the diversity present at Gobero during the Kiffian phase was still present during the Tenerian, but significant immigration of allochthonous populations may have occurred. This interpretation is supported by a Relethford-Blangero analysis, which indicates significant extra-regional alleles were introduced into the population at Gobero during the Tenerian occupation. Therefore, a pattern of *in situ* evolution with significant immigration of extra-local individuals may best explain the biological diversity within Gobero's cemeteries.

STUMP, Daryl, University of York, Great Britain: *Archaeological perspectives on indigenous conservation in pre-colonial Pare, Tanzania*

The landscape within the North Pare Mountains of northeastern Tanzania includes large areas of terraced agricultural fields, hundreds of water storage reservoirs, an extensive network of irrigation furrows, and pockets of woodlands protected locally by their status as sacred groves. Together these features contain a rich archive of information concerning the history of local resource exploitation, and have been cited as examples of 'indigenous conservation' on the grounds that the sacred groves represent preserved remnants of extensive pre-colonial woodlands and that the irrigation furrows and agricultural terraces attest to the existence of effective soil and water conservation measures that predate European contact in the mid-19th century. Thus, Pare reservoirs and furrows have been the focus of a series of rehabilitation programmes from the 1990s onwards, first as a joint project by the Dutch and German development agencies SNV and GTZ and now as part of an ongoing initiative by a local agency, the Traditional Irrigation and Environmental Development Organisation (TIP). A recent initiative by TIP is also promoting the virtues of agricultural terraces, whilst the area's inclusion within the eastern Afromontane bioversity hotspot gives added impetus to the maintenance of local traditions which act to limit further incursions into the remaining forested areas. There are, however, potential alternatives to

these historical narratives which question the antiquity of the sacred groves by reference to records of colonial tree-planting schemes and to early European observations of a largely treeless landscape. Moreover, the area's reputation as a centre for iron production in the late pre-colonial period suggests at least the possibility that any deforestation that occurred resulted from local extraction of fuel wood, and invites questions regarding the clearance of forests for agriculture, particularly since several markets and settlements are recorded as having developed as a direct result of the area's role as a supply station for ivory caravans during the 19th century. Drawing on recent and ongoing archaeological fieldwork this paper will examine the veracity of these various historical narratives, and in doing so aims to highlight the degree to which conservationist initiatives rely on perceptions of environmental history.

STUUT, Jan-Berend, Universität Bremen, Germany: *Paleoclimate on geological timescales: African climate since the Late Neogene*

In this presentation I will try to give a geologist's perspective on how past changes in e.g. tectonics, orbital forcing, and global climate change, shaped the African continent during the past 35 million years.

I will start with an overview of the present-day climate systems that act on the African continent and then go back into geological time to see what these climate systems were like during geologic history, and how these could have been important for the four large stages in human evolution and cultural history:

- Hominid evolution between 6 and 2 Ma BP
- Appearance of modern man *c*. 100 Ka BP
- Pleistocene/Holocene transition and the settling of the Sahara
- Late Holocene aridification and the development of agriculture

SUTTON, John E.G., University of Oxford, Great Britain: *Aksum: the question of gold*

The assumption that the Aksumite empire valued gold and exported it, among other regional products, to Egypt and the Roman Mediterranean is not new. But firm evidence is scant – notably gold coins struck from the 3rd century AD on, occasional traces in monumental tombs, and the imprecise testimony of Cosmas Indicopleustes in the 6th century AD. Significantly, the *Periplus Maris Erythraei*, a systematic gazetteer of Red Sea trade in the 1st century AD, does *not* list gold among the merchandise from Aksum and its harbour, Adulis.

On the other hand, Laurel Phillipson – at SAfA 2004, followed by an article in *Azania* XLI (2006) – has proposed that gold was collected and refined at Aksum itself, and would help explain the siting, by the 1st century AD, of this emerging capital city. If that should prove correct, the implications for rethinking the history, as normally told, of both Aksum itself and its empire should be obvious enough. However, the case rests partly on rumours of alluvial gold and place-name interpretations which appear unsubstantiated by the local mineralogy and geology.

Moreover, two distinct types of enigmatic 'megalithic' installations to the north-west of Aksum town, which (by the same argument) could have served for washing alluvial gold, appear, on practical considerations, more plausibly designed for very different functions. First, the massive rectangular slabs with rimmed edges (*mistah werki*), set horizontally on stone mounds (with variants carved into immoveable rocks), may, conceivably, have had a religious purpose (nevertheless, their known distribution, all to one side of the town, seems odd, indicating perhaps some special activity there). The other installations – consisting of two separate sets of connecting rectangular tanks (or vats) excavated in protruding natural boulders – were probably intended, on the analogy of broadly comparable features in Nubia, for processing grapes and storing wine in the mid-Aksumite period. As a sign of the adoption of elite tastes, that would be a further reflection of Aksum's opulence generated through extensive commercial and cultural contacts – with or without a gold factor.

T

TALLA TANTO, Richard, University of Buea, Cameroon: *Ethnoarchaeological investigations of Mbajeng in the Wimbum land of Donga Mantung Division, Northwest Province of Cameroon*

Most clonial literature on the culture history of the Wimbum and most parts of Cameroon was written from an alien perspective and the conclusions arrived at were generally misrepresentations and distorted since they were not versed with the societies. Based on the above shortcomings, this work sets out to employ different lines of evidence: oral traditions, ethnographic and archaeological data to see how they may substantiate each other for a better reconstruction of the Wimbum early culture history using the Mbajeng archaeological site as a case study. Oral tradition assisted in tracing the migratory history of the Wimbum and also in the archaeological survey of the region, which revealed five sites – Mbajeng, Konchep, Mbadung, Mbiribo, and Ngulu. A detailed archaeological mapping of material culture and features was done only for the Mbajeng site because it had more finds than the other four. Ethnographic studies of some present-day Wimbum material culture also revealed aspects of continuity and change in the making and use of the material culture. In conclusion, the paper observes that though the corroboration of the sources provided a much clearer picture of a more peaceful centralized society contrary to the conflict-ridden one propagated in most colonial documents, not all the finds found at the site could benefit from this corroboration. For example, oral traditions were silent on the stone buildings up the hills while there was none in existence in the ethnographic present forcing us to generate exclusively archaeological interpretations based on their context.

TEXIER, Pierre-Jean[2] **&** Guillaume Porraz[1,] Aude Coudenneau[3], John Parkington[4] & Jean-Philippe Rigaud[2]: *An overview of the Howiesons Poort complex at Diepkloof rockshelter (Western Cape, South Africa): implications of the truncated and backed pieces*

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Truncated and backed pieces, often referred to as geometrics, segments, trapezes, or crescents, are considered one of the main typological and functional innovations that occurred among prehistoric hunter-gatherer societies. Their prevalence during the Later Stone Age has often been used as a parallel to establish comparisons with older industries comprising such geometric pieces. One of the most expressive complexes is the Howiesons Poort, once considered as a transitional phase between the MSA and the LSA. However, even if the originality and independence of this southern African Middle Stone Age complex is now fully accepted, its nature and variability is still debated.

Truncated and backed tools of the Howiesons Poort constitute the 'fossiles directeurs' of this complex. They syncretise most of the debates that lead the scientific literature. The standardization of these tools, whether they are microlithic or not, their association with blade production, their confection on non-local fine-grained raw materials as well as their function (associated with hunting technology) are some presuppositions remaining to be fully demonstrated.

The excavation of the MSA site of Diepkloof rockshelter has highlighted the presence of several layers of occupations belonging to the Howiesons Poort, dating to 55–65 ka. Our study focuses on truncated and backed pieces, as one avenue to interrogate broader technological and economic features. The tendency of stylistic and functional attributes of these tools, often being key behavioural interpretations for this complex, will also be discussed.

TEXIER, Pierre-Jean[1], Guillaume Porraz[2], Chantal Tribolo[3] & Jean-Philippe Rigaud[1]: *Technology and techniques involved in the shaping of the Stillbay bifacial points after the analysis of the more characteristic remains from Eales Cave, Hollow rockshelter and Diepkloof rockshelter lithic assemblages (Western Cape, South Africa)*

[1]Institut de Préhistoire et Géologie du Quaternaire, CNRS – Université de Bordeaux, France; [2]CEPAM, CNRS (Centre National de la Recherche Scientifique), France; [3]Institut de Recherche sur les Archéomatériaux – Centre de Recherche en Physique Appliquée à l'Archéologie, CNRS – Université de Bordeaux, France

The nature as well as the status of the lithic waste resulting from a bifacial shaping is opposite to the nature and the status of the waste resulting from a débitage. But when producing the blanks to be shaped those two antagonistic stone knapping processes are sometimes successively combined in the same bifacial chaîne opératoire. The bifacial points of three Stillbay lithic assemblages from the Western Cape Province, as well as the more characteristic by-products resulting from their shaping, are taken into consideration.

The main stages of the identified chaînes opératoires and their variability according to the raw materials implemented are documented and debated as well as the identification criteria of the techniques involved for the completion of those bifacial points.

The excavation under way at Diepkloof rockshelter (DRS) already brought to light, on a four metre deep section, the existence of a Stillbay complex subsequent to a MSA still undifferentiated but prior to a Howiesons Poort complex. 22 TL dates have already been calculated (see also paper by Tribolo *et al.,* Session 9) on those two complexes. The technological analysis under way already allows us to evaluate the segmentation of the bifacial chaîne opératoire at DRS and moreover to rely on the part played by the sites in this specific knapping activity.

TOMASELLI, Charlize C.L., University of Witswatersrand, South Africa: *A social analysis of metal distribution in the Shashi-Limpopo Valley, CE 900–1300 – a preliminary report*

The Shashe-Limpopo confluence is an area of archaeological research that has provided profound insight into the change from kin-based to class-based society. Evidence for this complexity is found in many archaeological aspects, including spatial layout, settlement size, differentiated settlements, artefacts of ritual and symbolic importance and imported items from the East African trade.

The rise of complex societies in part stems from intensive agriculture, improved technology and control of long-distance trade. A result of this transition is the specialisation of activities. Where, in the past, most people did a little of all the chores associated with their age and gender groups, people were now focusing on dedicated activities. Several activities became the responsibility of the commoners as the ideological system of the era became more and more class-based.

A way for the nascent elite to control the socio-political system was to use material objects representing symbolic and ritual power of the elite in ceremonial events. Ritual symbols were also used in the construction of epic architectural landscapes. The concepts of power and wealth were thus expressed through objects, through a process known as ‘materialisation’ (Earle 1997).

In southern Africa, ritual objects were often made from iron, copper and gold. Their symbolic power has been misconstrued because of the ethnography applied to Central Africa. As a result, the elite was thought to be metal workers. There is, however, no direct evidence to support this hypothesis in southern Africa. Bone shafts have been found at Mapungubwe with traces of iron stains. These have been interpreted as arrow tangs. These tools are interesting in that they represent a blending of pre-metal-using and metal-using hunting technology. The use of bone for the fore-shaft may indicate that iron was a rare and valuable commodity. Ivory objects that appear to be wrist guards, commonly used among archers worldwide, were also found at Mapungubwe. The association of the ivory wrist guards with the arrows would suggest that these

were royal archers who were considered to be of high status as the use and distribution of ivory was tightly controlled by the upper class.

Arab records show that gold was being traded out of the Shashe-Limpopo valley at the time of both Schroda and K2. There is, however, no archaeological evidence that gold was used at these times within the society. Gold was originally seen as a means to wealth and later as wealth itself. The ownership of gold would have been highly controlled by the Mapungubwe elite.

Most previous research has focused on the technology of metal production, and little on the social role of finished objects. This project focuses on the distribution and identification of metal products, in order to understand the role different metals played in the socio-political context of the era.

TOSSOU, Gbèkponhami Monique, Université d'Abomey-Calavi, Benin, Didier N'dah, Université d'Abomey-Calavi, Benin & Akpovi Akeogninou, Université Nationale du Benin, Benin: *Rôle de l'homme dans la mise en place du Dahomey-Gap: apport palynologique et archéologique*

Le Dahomey-gap est la discontinuité qui sépare les deux grands blocs forestiers guinéen et congolais en Afrique. Il est caractérisé par la présence de savanes qui descendent jusqu'à la côte. Les données palynologiques obtenues dans cette zone d'étude montrent que la période située vers 2500 ans BP et l'actuel est considérée comme celle où l'action anthropique s'est réellement manifestée. En effet malgré les conditions favorables pour une reprise de la forêt dans cette coupure phytogéographique, on constate plutôt une progression des savanes. L'homme aurait joué et continue de jouer un rôle dans cette dynamique de la végétation.

La présente communication vise à évaluer ce rôle humain sur la végétation, à la lumière de nouvelles données archéologiques au Bénin et surtout au Sud-Bénin. En effet, de nombreux sites surtout archéométallurgiques ont été découverts et en partie étudiés ces dernières années. Les résultats des recherches archéologiques obtenus dans la sous-région ouest-africaine seront également mis à contribution dans cette analyse.

TRIBOLO, Chantal[1]**,** N. Mercier[1], H. Valladas[2], J.L. Joron[3], P. Guibert[1], Y. Lefrais[1], M. Selo[4], P.-J. Texier[5], J.-Ph. Rigaud[5], G. Porraz[6], C. Poggepoel[7], J. Parkington[7], J.-P. Texier[5] & A. Lenoble[8]: *Old age estimates for the Howiesons Poort and Stillbay assemblages at Diepkloof rockshelter*

[1]Institut de Recherche sur les Archéomatériaux – Centre de Recherche en Physique Appliquée à l'Archéologie, CNRS (Centre National de la Recherche Scientifique) – Université de Bordeaux, France; [2]Laboratoire des Sciences du Climat et de l'Environnement, CEA, France; [3]Laboratoire Pierre Sue, CEA, France; [4]Laboratoire d'Etude de la Matière Extra-terrestre, CNRS, France; [5]Institut de Préhistoire et Géologie du Quaternaire, CNRS – Université de Bordeaux, France; [6]CEPAM, CNRS, France; [7]University of Cape Town, South Africa; [8]Département de Préhistoire du Museum National d'Histoire Naturelle – CNRS

Excavations have been undertaken at Diepkloof rockshelter (DRS; South Africa) since 1999. It is one of the very few sites where Howiesons Poort and Stillbay assemblages can be collected from the same archeo-sequence. These Middle Stone Age techno-complexes are particularly interesting for their affinities with the much younger Later Stone Age facies, and their association with evidences for symbolic behaviour. Establishing their chronology is therefore particularly important for the understanding of the apparition and the evolution of the so-called 'modern' behaviours. Data already available suggest ages ranging from 55 to 80 ka for the Howiesons Poort and from 70 to 80 ka for the Stillbay. The thermoluminescence dating undertaken at DRS on 22 stone samples coming from the whole stratigraphic record indicate 10 to 50 ka earlier intervals for these techno-complexes at DRS. Possible caveats in the dating process are examined and rejected; the archaeological implications of these new results are discussed.

TRIBOLO, Chantal[3] **&** Pierre-Jean Texier[1], Guillaume Porraz[2], Jean-Philippe Rigaud[1]: *Technology and techniques involved in the shaping of the Stillbay bifacial points after the analysis of the more characteristic remains from Eales Cave, Hollow rockshelter and Diepkloof rockshelter lithic assemblages (Western Cape, South Africa)*

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TSAKOS, Alexandros & Henriette Hafsaas, Universitetet i Bergen, Norway, Humboldt-Universität zu Berlin, Germany: *Rescuing the cultural heritage or preserving the cultural landscape? Natural environment and national territory in Sudan and Ethiopia*

The wishful leap of African countries to the modern world necessitates economic development, which is mainly linked to the ultimate exploitation of natural resources for the sake of national progress.

In the Sudan, this is primarily employed through the construction of a series of dams for the purpose of producing electricity and improving irrigation through the control of the waters of the Nile. As a consequence, the people of northern Sudan are experiencing a dramatic alteration of their natural environment through the flooding of large parts of the Middle Nile Valley. Subsequently, this causes a mass destruction of the cultural heritage and landscape. If the salvage of the former is being secured through the works of the National Corporation for Antiquities and Museums (NCAM) as well as appeals to foreign (archaeological) missions, the latter will disappear despite being vital for the self-identification of the riverine Sudanese.

The Merowe Dam on the Fourth Cataract has already given a clear example of the uprooting of local communities and the loss of their customs, traditions, and ways of life. On the same token, the Kajbar Dam, under construction in the Third Cataract area, represents a very real threat to the continuity of the Mahas habitation present there at least since the medieval period; while the proposed dam at the Dal Cataract might bring under water the most important archaeological sites of Soleb, Sedeinga, Sesibi, and Sai. This past is not important neither for the present Islamic government of the Sudan nor for the multi-national enterprises responsible for the creation of a new national identity based purely on capitalist principles. Presently, the pre-Islamic periods are systematically ignored in Sudanese schools and thus in the consciousness of the future citizens of the state.

In neighbouring Ethiopia, in contrast, the most important sites of the late antique and medieval past, mainly Aksum and Lalibela, constitute an integral part of the national and religious identity and are continuously venerated by the Ethiopians. In this sense, we find it revealing that these sites remain on the margins of archaeological research – but nevertheless in the heart of tourist interests and development of related facilities. So, the bulk of this research is of limited scope focusing mainly on Early Man and the (pre-) Aksumite past. It is to be noted that the fieldwork is almost exclusively done by foreign missions. The larger number of archaeological excavations and research in the Sudan can function as a support and not as a hold-back for issues of rescuing and promoting the cultural landscape of the Middle Nile.

V

VAN DER RYST, Maria M., University of South Africa, South Africa: *Olieboomspoort shelter: home is where the hearth is*

Data recovered from the last 2000 years of hunter-gatherer occupation at the Olieboomspoort shelter in the Limpopo Province, South Africa, are used to demonstrate how formal spaces were differentially structured over time by multi-band clusters and small hearth groups to meet particular social and economic requirements. The two main pulses of intensification and changes in organisation at approximately 2000 BP and again at 1500 BP correspond to the movement of herders and African farmers into the lowlands of the Waterberg. The basic spatial pattern of hunter-gatherer open camps and cave/shelter sites manifested at Olieboomspoort in an area-focussed communal space contiguous to the talus and private hearth-focussed activities with sleeping hollows against the wall. Differential uses of space through time, and the spatial distributions of the different classes of material remains and waste, are demonstrated by using a model of unconstrained cluster analysis.

VAN DER VEKEN, Anneleen & Koen Bostoen, Musée royal de l'Afrique centrale, Belgium: *A reconsideration of lexically based assumptions on the early diffusion of metal working in Central Africa*

Reflecting on the historical implications of his Comparative Bantu studies, Guthrie (1970) concluded that "the speakers of the proto-language probably knew how to forge iron before the Bantu dispersion began". This conclusion was of major historical importance, since it was assumed to provide lexical evidence for the then widely held belief among historians, archaeologists and ethnologists that the diffusion of iron metallurgy was linked to that of the Bantu languages. Ever since, the history of metal working has continued to arouse linguistic interest, not at least because direct archaeological evidence is still scarce and dates for the earliest emergence of metal working remain indecisive, especially in Central Africa. More recent publications relying on lexical evidence threw a new linguistic light on the diffusion of metallurgical know-how, and changed our understanding of the role this technology played in the Bantu language dispersal. Nevertheless, many issues are still unexplained. Moreover, a recent linguistic study by van der Veken on the transmission of a modern metallurgical technique, i.e. aluminium casting in West Africa, whose origin and diffusion are quite well known, casts some new doubts on the possibility to draw far-reaching conclusions on the ancient history of metallurgy from lexical data. In the present paper, the so far lexically based assumptions on the origin and early diffusion of iron working in Bantu-speaking Africa will be reviewed in the light of these new insights.

VAN DER VEKEN, Anneleen & Alexandre Livingstone Smith, Musée Royal de l'Afrique centrale, Belgium: *Crossing Borders II: new data on material and immaterial culture in the Luba area (Katanga, DRC)*

Central Katanga (DRC) has been the focus of scholarly attention since the arrival of the first explorers up until today. Thanks to extensive archaeological surveys and excavations, the

archaeological sequence goes back to the 9th century AD. This region is also home to one of the most famous ancient savannah kingdoms of south central Africa, that of the Luba. According to historians using oral historical data, the Luba kingdom goes back to at least the 18th century AD. However, the connection between the people living in the area today and those who inhabited central Katanga in the past is not clear. Indeed, the material culture uncovered during the excavations displays both elements of continuity and dramatic changes throughout the sequence, particularly as regards ceramic morphological and ornamental styles. To explore the recent history of the area and the cultural variations observed in the archaeological sequence, we are developing an approach based on the integration of archaeology and historical linguistics. To do so, we have decided to study the spatial distribution of contemporary ceramic traditions, pottery manufacturing processes and vocabulary as an interface between the present and the past.

This paper presents the ongoing research of our project. We will briefly outline the distribution of technical traditions in the area to show how some of the primary shaping technologies were identified on archaeological vessels going back to the 10th century AD. We will then outline the first results of our dialectological study. Finally, we will consider the connections between the Upemba depression and the broader framework of south-central Africa.

VAN DOORNUM, Bronwen, Natal Museum, South Africa: *Hunter-gatherer–farmer interaction in the Shashe-Limpopo confluence area, South Africa: the K2 period (AD 1000–1220)*

Hunter-gatherers have occupied the Shashe-Limpopo confluence area (SLCA) for at least 11,000 years. During the last 2000 years, the arrival of various groups of farmers, including the Zhizo and Leopard's Kopje people, lead to complex and changing relationships with the indigenous hunter-gatherers. Differences in farmer social structure and identity played a role in how they interacted with hunter-gatherers, and vice versa. Hunter-gatherers appear to have had a variety of responses to the presence of farmers, ranging from distancing themselves and retreating, to settling in close proximity to farmers and entering into mutually beneficial relationships. For example, during the K2 period (AD 1000–1220), the proximity of certain hunter-gatherer sites to farmer settlements suggests close relationships between the two groups. These relationships included providing specialised services, such as helping farmers control rain. Current research shows that hunter-gatherers and their places formed part of the K2 farmers' ritual landscape. In addition, hunter-gatherer material culture occurring on K2 period rain-control hills and in shelters on the slopes of these hills differs from that of more classic 'residential' material culture found at other hunter-gatherer sites in the SLCA. Taken together, these factors suggest that hunter-gatherers played a role in SLCA farmer rain control.

VAN GRUNDERBEEK, Marie-Claude, Musées de la Ville de Bruxelles – Maison du Roi, Belgium: *Environment in Rwanda in the Early Iron Age: a case study*

Several aspects of the environment and human interference study in Early Iron Age Rwanda were published in distinct articles. This communication aims to show how Emile Roche, Hugues Doutrelepont and Marie-Claude Van Grunderbeek proceeded, relating conclusions to come to a whole picture. This will be completed by (hopefully) new results on phytolith analysis.

VAN NIEKERK, Karen Louise, University of Cape Town, South Africa: *A preliminary report on the fish remains from the Middle Stone Age sites of Blombos Cave and Klasies River with reference to the taphonomy of fish bones from Later Stone Age assemblages in the southern Cape, South Africa*

There are currently only two well stratified Middle Stone Age sites in southern Africa that have preserved marine fish remains, namely Blombos Cave and Klasies River, both located along the southern Cape coast. The question of whether these fish remains accumulated through human activity is important as fishing would indicate an awareness, and broadening of, the diet base at a time period where other evidence for increasingly modern human behaviour is becoming apparent.

In order to determine whether these remains were accumulated through human agency, it is necessary to develop a better understanding of the taphonomic processes that influence the preservation of fish bone. The fish assemblages from these sites are small relative to those from Later Stone Age sites, but both contain bones of large specimens that are unlikely to have been brought in by birds or other small predators. Due to the greater antiquity of the MSA assemblages, it is assumed that what remains is not fully representative due to natural processes of attrition over thousands of years. Therefore the better preserved fish remains from several Later Stone Age sites were analysed to gauge the survivability of specific elements per species and under varying conditions. The material from the LSA layers of Blombos Cave, open Garcia State Forest sites, Nelson Bay Cave and Hoffman's Cave has been analysed for comparison. This data can then be used to better interpret the presence and absence of species and elements in the less well preserved MSA assemblages.

Evidence for fishing during the MSA would support other research that suggests that the origin of modern human behaviour is of much greater antiquity than previously assumed, and that much of this evidence is currently seen in the area of the southern Cape, South Africa.

VAN PEER, Philip, Katholieke Universiteit Leuven, Belgium: *An interpretation of Upper Palaeolithic origins in Northeast Africa*

This paper examines the late Middle Stone Age archaeological record in northern Africa from a demographic perspective. It is argued that population dynamics in the context of changing environmental conditions during MIS 5 have laid out the conditions for technological and social change in subsequent MIS 4. One particular trajectory of change has led to the emergence of an Upper Palaeolithic lifestyle in the Lower Nile Valley. Consequently, this area is proposed as a core area for the long term historic processes reflected in the MIS 3 archaeological records of western Eurasia.

VERMEERSCH, Pierre, Katholieke Universiteit Leuven, Belgium: *'Out of Africa 2' and Egypt – an evaluation*

Many authors accept that AMH originated (mainly) in Africa at the end of the Middle Pleistocene. There is still some discussion which geographical corridor was used to reach Asia.

Based on MtDNA and on Y-DNA most authors suggest that AMH first left Africa crossing de Bab-el-Mandab. The Nile Valley is considered as not important because no haplotypes of the early AMH are present in the actual population. The implications of such a model will be evaluated against the data provided by research in the Egyptian Nile Valley.

Very few human fossils have been found in the Nile Valley and in Arabia. Taking in account that 'Out of Africa' is generally situated around 70 ka BP, the climatic and geomorphologic conditions in the Arabian and the Egyptian area during this time period will be analysed. In Arabia, the absence of good comparable Middle Palaeolithic sites reduces the potentialities of understanding the human occupation in the critical period. An important reduction of the human population in the Nile Valley occurred during the later Middle Palaeolithic and the Upper Palaeolithic. Along the Red Sea humans are absent during OIS 3. During OIS 3, dunes from the Sahara had invaded the Egyptian Nile Valley, damming the valley at several points. Large intra-valley lakes were created along which Late Palaeolithic fishers have settled. The catastrophic events (dam breaching) in the Egyptian Nile Valley at the start of the Tardiglacial (Bølling) resulted in the disappearance of a human population in the Egyptian Nile Valley. The repopulation of the Egyptian Nile Valley started with the increased dryness of the Sahara around 5500 BP. Therefore, the present Egyptian population should not be used for DNA studies related to 'Out of Africa 2'. Finally one should take into account the presence of a very early Upper Palaeolithic in the Egyptian Nile Valley.

VOGELSANG, Ralf, Universität zu Köln, Germany: *New excavations and dating of the Middle Stone Age layers at Apollo 11 (Namibia)*

The rockshelter 'Apollo 11', situated in the southwestern part of Namibia, exhibits one of the most important MSA stratigraphies in southern Africa. This is not only due to finds of painted slabs dated to *c*. 27,000 BP, but also to an extraordinarily comprehensive cultural sequence covering all major MSA phases. Unfortunately, at the time of analysis, numerical ages obtained by using radiocarbon dating were only available for the youngest MSA complex. In the meantime, alternative dating methods with a larger time range, such as OSL and ESR dating, promise to bridge this gap. For this reason, the old trench was re-opened in 2007 and half a square metre was excavated. The improved excavation method is expected to allow a better chronological classification of the lithic assemblages. In collaboration with Zenobia Jacobs, Bert Roberts and Rainer Grün, sediment samples for OSL dating and tooth samples for ESR dating were collected. If the measurements prove successful, Apollo 11 might become one of the best-dated MSA sites in southern Africa.

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WADLEY, Lyn, University of the Witwatersrand, South Africa: *Compound adhesives as evidence for modern cognition in the Middle Stone Age*

Plant resin, iron oxides and sometimes fat were used together for compound adhesives at Sibudu Cave at least by 70 ka. Replication of compound adhesives (using various combinations of Acacia gum, iron oxide ground from naturally occurring nodules and beeswax) demonstrates the complexity of the process. Making reliable adhesive involves a calculated manipulation of disparate ingredients such as Acacia gum and iron oxide ground from naturally occurring nodules. After lithic inserts are attached to their hafts with wet adhesive, the composite tools must be slowly and carefully dried near a fire, using controlled heat. If heat is not used, the adhesive takes nearly a week to set; if the weapons are placed too close to heat the adhesive forms air pockets and is weakened. The plasticity of plant gum, the aggregate-size of ground iron oxides and the heat of fires are variable factors that require a slightly different recipe and processing procedure for each hafting event. The method is sufficiently complex that it seems to provide circumstantial evidence for modern working memory capacity (WMC). Effective glue allows flexible placement of lithic inserts. At Sibudu, different sizes of Howiesons Poort segments were rotated differently on their hafts – for example, transversely, longitudinally, diagonally – resulting in a variety of end-products for disparate tasks. This act, requiring mental rotation of a single shape to achieve worthwhile end-products (different from rotating cores during knapping), is a complex span task of the kind that psychologists use today to measure WMC, that is, the ability to control attention to keep relevant representations in active memory or easily retrievable from inactive memory. Individual differences in WMC correspond to differences in circuitry associated with the prefrontal cortex, which is related to complex behaviours.

WALZ, Jonathan, University of Florida, USA & N. Thomas Håkansson, Lund University, Sweden/University of Kentucky, USA: *Gonja revisited: archaeology & regional political ecology in the South Pare Hills and Eastern Pangani Valley, Tanzania*

Renewed interest in the long-term histories of mainland northeast Tanzania has focused attention on the people of the Eastern Arc Mountains and areas first informally investigated by archaeologists more than forty years ago. Many archaeological and historical studies of human-environment relationships in eastern Africa have taken for granted that long-term ecological processes were only the result of immigrations and variations in population densities. Such studies are locked in a view that production was the sole result of local subsistence requirements and use values. This inability theoretically to conceive of an exchange-based economy, together with the construction of a pre-colonial/colonial duality of use values versus commodities, still permeates many archaeological and historical analyses. Based on field visits to the South Pare Hills and archaeological and ethno-historical research in the vicinity of Gonja (since 2003), we argue to the contrary that regional and international exchange systems contributed to the development of landesque capital beginning in the early second millennium. Reconnaissance near Gonja identified more than twenty new archaeological sites concentrated along the skirt of the South Pares dating to as early as the later first millennium AD. Surface and excavated evidence of shell bead manufacture and, later, intensive iron production and agricultural

terracing accompany indications of coastwise international exchange. Emergent political ecologies tied to population shifts toward mountain fringes, the arrival of plains-based pastoral communities, and fluctuations in political power bolstering rainmaking elites, influenced local land use and altered landscapes. Although originally reinforced by the booming caravan trade of the mid to late 19th century, established political ecologies (rooted in chiefly power) and small-scale centralization eventually succumbed to environmental stresses and the effects of colonial demands on labor. This case study emphasizes how political and economic circumstances at particular junctures of history and at different scales account for long-term social change in the vicinity of Gonja. A historical anthropological approach, integrating a range of source material, demonstrates how regional and world systems integrations and interactions shaped land use beneath the South Pare Hills since the later first millennium AD.

WILKINS, Jayne, University of Toronto, Canada, Luca Pollarolo & Kathleen Kuman, University of the Witwatersrand, South Africa: *Prepared core technology at Kudu Koppie and the modern human behaviour debate*

The aim of this paper is to describe the prepared core reduction strategies employed at Kudu Koppie, a stratified terminal Earlier Stone Age/Sangoan and MSA archaeological site located in the Limpopo region of northern South Africa, and relate lithic reduction to the variables of time and raw material. A technological analysis of the prepared cores and endproducts of Kudu Koppie suggests that both the Sangoan and MSA toolmakers employed the Levallois Volumetric Concept, but often exploited a nodule's natural convexities and form. The MSA toolmakers used a greater variety of prepared core methods and more intensely exploited cryptocrystalline nodules, the scarcity of which may have resulted in a more 'formalized' application of the Levallois Volumetric Concept. These observations are considered in light of their cognitive and economic implications, and within the context of the behavioural modernity debate.

WILLOUGHBY, Pamela A., University of Alberta, Canada: *The Middle and Later Stone Age of Iringa, southern Tanzania*

The Iringa region lies in the southern highlands of Tanzania. It is best known for its Acheulean sites such as Isimila Korongo, first studied by F. Clark Howell in the 1950s. But it also contains numerous large granite koppies with associated rockshelters. In the summer of 2006, Pamela Willoughby, Pastory Bushozi and Katie Biittner collected artifacts from the surface of three rockshelters – Mlambalasi, Magubike and Kitelewasi. Test excavations were also carried out at Mlambalasi and Magubike. Mlambalasi contains a record of the historic period, the Iron Age, a Holocene Later Stone Age (LSA), LSA human burials, a Pleistocene LSA and the Middle Stone Age (MSA). The first test pit at Magubike contains the Iron Age, the LSA, and a LSA to MSA transitional industry or a true MSA. A second test pit contains the Iron Age above 1.6 metres of MSA deposits. Seven fossilized human teeth were recovered from these MSA deposits. Faunal remains (bones and shells) were recovered from all sites. This paper reviews the cultural history

of Mlambalasi and Magubike in the light of current models of the origins of anatomically and behaviourally modern humans.

WILMSEN, Edwin N., University of Texas, USA, David Killick & Dana Drake Rosenstein, University of Arizona, USA: *The social geography of pottery in Botswana as reconstructed by optical petrography*

An optical petrography research program was initiated in order to determine the extent to which pots, represented by shards excavated at various sites in Botswana, moved from place to place and what could be deduced from this about interactions of peoples who made and used them. We have analyzed 267 shards from 23 EIA sites, 7 shards from 3 historic sites of known calendar date, and 10 shards from pots made in 2006 by local potters. Clays from 74 sources in all parts of Botswana, including those from which the modern pots were made, were also analyzed. This allows us to associate with a high degree of confidence the majority of shards in our sample with clays from specific geological environments. Not only pots but also clays circulated among sites, as is true among potters today. The petrographic study is integrated with parallel studies of the circulation of glass beads (from the Indian Ocean trade) and specularite mined in the Tsodilo Hills to trace pathways of internal exchange and the relation of these pathways to wider inter-regional networks.

WINTJES, Justine, University of the Witwatersrand: *Seeing Sibudu seeds: illustrations of the more frequent Iron Age plant fruiting structures from excavations at Sibudu Cave, KwaZulu-Natal, South Africa*

WURZ, Sarah, Iziko Museums of Cape Town / University of Cape Town / University of Stellenbosch, South Africa: *Debating modern behaviour in South Africa*

South Africa is one of the geographical areas where some of the earliest evidence of what is defined as symbolic behaviour has been discovered. Finds of engraved ochre and shell beads from Blombos Cave, engraved ochre from Klein Kliphuis, and engraved ostrich eggshell from Diepkloof are surprisingly early expressions of symbolic behaviour. These finds contribute to the trend to separate discussions on the evolution of modern symbolic behaviour from the European Upper Palaeolithic. The evolution of symbolic capabilities is increasingly seen as an earlier rather than later phenomenon. In 2003, Henshilwood & Marean for example discussed three 'earlier modern behaviour' models which place the origins of modern behaviour at various times before 40,000 years ago. An Earlier Upper Pleistocene model places the origin at the Acheulian/MSA boundary 250,000 years ago, and a Later Middle Pleistocene model places the origin nearer to the end of the Middle Pleistocene at OIS 6/5. Another model sees the evolution of modern behaviour as a gradual process developing some time in the Middle Stone Age. Archaeological evidence forms the backbone of models on the origins of symbolic behaviour, but knowledge from other disciplines should constrain hypotheses based on archaeological remains.

There is clearly a need to discuss the biological implications of modern behaviour models, especially with regard to brain evolution. However, evidence from brain sciences needs as careful evaluation as information from the archaeological record. A number of principles, for example, whether current cognitive neurological functioning is relevant to the evolutionary history of such functioning and whether the evolution of symbolic behaviour is tied to a mutation or co-evolutionary process must be considered. If it is assumed that symbolic abilities are the result of a co-evolutionary process in which behaviours drive the direction of brain development, then modern symbolic behaviour may have been a behavioural trait of the ancestor of Neanderthals and modern humans. There are indeed some suggestions that modern-type behaviours are associated with multiple species. Other models suggest that a neural mutation at 50,000 years ago, perhaps involving FOXP2 gene involved in speech and language, was important in the evolution of modern symbolic behaviours. These models would place less emphasis on co-evolution. This paper will discuss these issues by integrating perspectives from musicology and developmental psychology with South African Middle Stone Age material cultural expressions in the Upper Pleistocene.