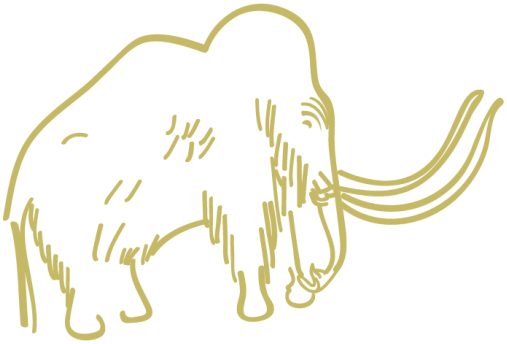

2018 Paris
4-9 juin
uispp
Union Internationale
des Sciences Préhistoriques
et Protohistoriques
XVIIIe Congrès

Book of abstracts

XVIII° CONGRES UISPP PARIS JUIN 2018
18th UISPP WORLD CONGRESS, PARIS, JUNE 2018

Table of contents

VI-1. "Man the hunter" revisited – Pleistocene Archaeology in the 21st century

As a matter of fat: Animal fat, human hunting preferences and an ontological perspective on human-animal relationships, past and present

Ran Barkai * [1]

[1] Tel Aviv University [Tel Aviv] – P.O. Box 39040, Tel Aviv 6997801, Israel

Animal fat is the densest source of energy available in nature. Recent hunter-gatherers are extremely fond of animal fat, and often periods of famine are considered those when animal fat is not plentiful. Early humans and animals shared habitats during the last two million years across the Old and New Worlds, and humans consumed and (most probably) hunted animals throughout times and space. However, the significance of fat often goes unnoticed in reconstructing human hunting preferences and human dependency on specific animal taxa. Past and present hunters had clear preferences towards animals rich in fat, and this dependency shaped both hunting patterns and human relationships with animals. Adopting an ontological perspective, and relying on extensive relevant anthropological and archaeological evidence, it could be argued that past and present hunters perceived animals as equal co-dwellers and as agents characterized by personhood and social relations, while at the same time being dependent on animal-derived calories for successful adaptation. I will argue that both the archaeological and the anthropological records are consistent with such a statement, and that taking this perspective into account could allow us to better evaluate the Pleistocene archaeological record. The dependency on animal fat for maintaining the necessary caloric balance coupled with the view of animals as other-than-human persons and as agents capable of thinking, feeling and interacting, must have led to a very particular relationship between humans and animals. These relationships are reflected at Paleolithic sites, and an acquaintance with the relevant anthropological perceptions might assist in revealing such patterns in the archaeological record. I will try to demonstrate that the ontological and cosmological perspective could be served in order to better evaluate the following aspects, among others: the conduct of hunting itself; carcass dismembering, butchering and transporting; meat and fat sharing, the treatment of inedible animal body parts; the special treatment of animal body parts (such as the use of bones as tools etc.) and of course the central role of animals in Paleolithic depictions and imagery. Such insights are relevant to the topics of this session, and might be an interesting take on building a new agenda for the study of hunting in the Pleistocene.

Keywords: fat, human animal relationship, hunting preferences, ontology, cosmology, paleolithic

*Speaker

Application of stable isotope analyses to examine prey mobility in two Middle Pleistocene sites

Marian Bailey *† [1], Liora Kolska Horwitz [2], Ian Moffat [1], Anthony Dosseto [3], Marie-Hélène Moncel [4,5]

[1] Flinders University – GPO Box 2100, Adelaide 5001, South Australia, Australia
[2] The Hebrew University of Jerusalem (HUJ) – Jerusalem 91905, Israel
[3] University of Wollongong – Northfields Ave, Wollongong NSW 2522, Australie, Australia
[4] Histoire naturelle de lHomme préhistorique (HNHP) – Museum National d'Histoire Naturelle, Université de Perpignan Via Domitia, Centre National de la Recherche Scientifique : UMR7194 – Institut de Paléontologie Humaine 1, rue René Panhard 75013 Paris, France
[5] CNRS-National Museum of Natural History (CNRS-MNHN) – Musée National d'Histoire Naturelle - MNHN (France) : UMR7194 – IPH 1 rue René Panhard; 75013 Paris, France

An important topic arising from the original "Man the Hunter" conference held in 1966, has been the extent and nature of hominin mobility and landscape use. Zooarchaeological analyses have been used to explore this issue through examination of species representation, age/sex profiles and cementum bands in teeth. Here we demonstrate how stable isotope analyses of faunal remains can complement such data.
To this end we applied strontium, oxygen and nitrogen isotope analyses of faunal samples from two Middle Pleistocene faunal assemblages from different geographic regions, both dated to marine isotope stage 7; the site of Holon, central Israel and the site of Payre in south-east France. This research expands on previous studies into the lifeways of Middle Pleistocene hominins at these sites (e.g. Chazan and Horwitz 2007; Moncel et al. 1993).

Results of the strontium analysis of 14 aurochs (Bos primigenius) teeth from Payre, shows a low level of mobility in marine isotope stage 7 for 11 samples, while three samples indicate increased mobility at this time. These samples have strontium values that correspond to the Massif Central, ca. 35km from Payre. At Holon, the strontium analysis of 15 teeth of fallow deer (Dama cf. mesopotamica), aurochs and straight-tusked elephant (Palaeoloxodon sp.) shows a shorter minimum distance of mobility for all samples. However, the relatively uniform geology surrounding Holon provides less opportunities for discriminating short distance mobility.

At present, it is unclear whether the greater degree of prey mobility observed at Payre reflects a different hunting strategy by Homo neanderthelensis, the amelioration of climate in that region during MIS 7a and 7c, or simply reflects the greater discrimination in strontium values for the diverse geology of geographic regions of France as opposed to Israel. With further multi-isotope analysis we hope to discriminate between these options.

*Speaker
†Corresponding author: marianbailey95@gmail.com

References

Chazan, M. and L.K. Horwitz (eds.) 2007. *Holon A Lower Paleolithic Site in Israel.* American School of Prehistoric Research Bulletin 50. Peabody Museum of Archaeology and Ethnology, Harvard University. Cambridge Mass., USA, 214 p.

Moncel, M.-H., Bahain, J.-J., Falgue'res, C., El Hazzazi, N., Kalai, C., Mjahad, M., Patou-Mathis, M., Renault-Miskovsky, J., 1993. Le site de Payre (commune de Rompon, Ardèche). Un site Paléolithique moyen ancien dans un contexte d'abri effondré: premier bilan des études pluridisciplinaires: position chronologique. Paléoenvironnement, Paleoclimatology Quaternaire 4, 159–173

Keywords: geochemistry, mobility, homo erectus, neanderthal

Man the Hunter in the Pleistocene Arctic Siberia

false [*] , Vladimir Pitulko [*] [†] [1], Pavel Nikolskiy[‡] [2]

[1] Institute for the History of Material Culture, RAS – 18 Dvortsovaya nab. St Petersburg 191186, Russia
[2] Geology Institute, RAS – 7 Pyzhevskiy lane Moscow 119017, Russia

Evidence of injuries associated with human hunting on the bones of Pleistocene fauna is overall very poorly represented in the archaeological record. Worldwide, there are around 20 specimens of Pleistocene faunal remains with such damage, mostly on reindeer bone, with a few on human bones. Proboscideans in this set are represented by widely known examples from Kostenki (Russian Plain), Lugovskoye (West Siberia), and Manis (North America).
Recently, the number of specimens providing direct evidence of people hunting their contemporaneous Pleistocene fauna increased significantly due to the finds from Arctic Siberia (N=11), notably, from the Yana site complex (locales YMAM, Yana-B, and Yana-NP). While most of them indicate mammoth hunting, there is direct evidence of hunting Pleistocene bison (YMAM, Yana-B, and Yana-NP), reindeer (Yana-NP) and brown bear (Yana-). Mass procurement of mammoths at the Yana complex of sites was primarily due to their tusks as important raw material for manufacturing of hunting equipment and then other items including all kinds of decorations and tools.

Direct evidence of mammoth hunting also comes from the west Taimyr Peninsula (the Sopochnaya Karga mammoth), Nikita Lake site and other locations in the northern Yana-Indigirka lowland, including an extremely rare instance of traces on carnivore remains. In addition to the brown bear atlas from Yana-, which dates to the LGM, a hunting lesion is noted on a Pleistocene wolf humerus from the Bunge-Toll/1885 site (Yunigen Creek, Yana River valley). The latter, along with the Sopochnaya Karga mammoth kill, provides the oldest evidence for human presence in the Arctic ~45,000 years ago. These pieces of evidence are quite important in that for the first time faunal remains taphonomy securely demonstrates the anthropogenic signal in the absence of human-made objects and allows dating the event by direct AMS 14C dates and site geology.

These finds show that both simple bone-tipped projectiles, and bone-tipped projectiles equipped with lithic insets were used for hunting. However, bone injuries often remain unrecognized: only the most credible examples with embedded tool fragments are considered by researchers. Less recognizable examples (with no foreign objects), which are logically more numerous, are not considered by scientists because there is no possibility to identify the human-caused impact pattern. We can argue that some of the animals especially mammoths died due in a repeat encounter with humans.
This work is supported by Russian Science Foundation project No. 16-18-10265-RNF.

[*]Speaker
[†]Corresponding author: pitulko.vladimir@gmail.com
[‡]Corresponding author: wberingia@gmail.com

Keywords: Pleistocene, Arctic Siberia, human hunting, bone injuries, mammoth

Early hominin predatory behavior in the African Early Pleistocene: a review of the evidence

Manuel Domíguez-Rodrigo * [1]

[1] Complutense University of Madrid (UCM) – Spain

The past 40 years have seen an increase in the taphonomic evidence for two million-yeal-old hominins acquiring animal protein of smal and medium-sized animals through hunting. This increase in taphonomic knowledge has unveiled that most of the early Pleistocene archaeofaunal assemblages are either poorly preserved, result from the action of non-hominin mammalian carnivores or are mixed palimpsests produced by independent use of the same spaces by hominins and carnivores. This mix has produced confusion in the past and scavenging models are still based on the inability to separate agency in site formation. Of the classical African sites prior to 1.5 Ma, only FLK Zinj (Tanzania) and Kanjera (Kenya) have been argued to be fully or almost fully anthropogenic. It is only in these anthropogenic assemblages that primary access to carcass resources has been taphonomically confirmed. Lingering partisans of passive scavenging hypotheses are basing their interpretations on archaeological deposits resulting from "common-amenity" scenarios or on flawed assumptions of other more discrete assemblages as will be shown here. Recent discoveries of new anthropogenic sites in Bed I of Olduvai Gorge (PTK, DS) contribute to confirm and expand interpretations of early hominin hunting behavior. Here, we will show that much of the former scavenging models were artefacts of method more than empirical evidence of carcass acquisition strategies by hominins. New machine learning methods applied to taphonomic analyses of Olduvai's Bed I sites show a much better resolution than previous analyses. The scavenging hypothesis, which still enjoys some predicament among some researchers, is today more a reflection on academic dynamics than of heuristics.

Keywords: Human evolution, Zooarchaeology, Taphonomy, hunting, scavenging

*Speaker

Division of labor in human evolution

Almudena Estalrrich * [1]

[1] Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria (IIIP-UC) – Avda. de los Castros, s/n, 39005 Santander, Spain

Following the emergence of the *Hominini*, the biological evolution of the tribe has been always accompanied by cultural changes, and behavioral patterns were underlying the relationships among individuals.
For several years during the Late Pleistocene, *Homo sapiens, H. neanderthalensis, H. erectus, H. floresiensis*, and Denisovans shared the planet. At one point, *H. sapiens* began to express a complex behavior, that allow us to remain the solely *Homo* species in the world, and the path in which it originated and developed is now being traced using the techniques of archaeology, molecular biology and ancient DNA studies, and paleoanthropology. One of these behavioral key changes that are though to have contributed and helped the first humans to adapt, spread, and evolve into who we are today, is the division of labor between individuals from the same group.

The study of the archeological record in Eurasia concluded that gender-specific activities appear at the beginning of the Upper Paleolithic when Homo sapiens did a similar economic and technological tasks to modern hunter–gatherer societies, suggesting that women and men were participating in different activities within their groups.

However, recent studies and new techniques have allowed distinguishing patterns of variation among individuals and behavioral specializations within the hominins from more than a million years ago.

For example, Neandertals also performed many sophisticated tasks usually associated only with modern humans. For example, they constructed complex shelters, made pendants and other jewelry showing traces of ochre dye, practiced patrilocality as mating behavior, and had the knowledge and used medicinal plants and hafting materials. Their manual laterality and its ontogenetic development were both similar to modern humans, and show evidences of social learning, an emerging sexual division of non-foraging labor and individual specialization of some types of work within the group.
And the research is still in progress, increasing our knowledge about the behavior of the species that once were sharing the planet with us and could trace the evolution of the human behavior during the course of the biological evolution of our genus.

Keywords: Division of labor, behavioral specialization, Middle Pleistocene, Late Pleistocene, Neandertal

*Speaker

Plant use in the Palaeolithic

Karen Hardy * [1]

[1] Karen Hardy – Departament de Prehistòria Facultat de Filosofia i Lletres Universitat Autònoma de Barcelona 08193 Bellaterra Barcelona, Spain., Spain

Remains of plants rarely survive in the Lower and Middle Palaeolithic periods, yet the small amount of evidence there is, fits well with basic dietary requirements, as human and hominin populations could not and cannot survive exclusively on animal produce. But beyond this, the wide range of plant species found cannot be explained only in terms of dietary essentials. Palaeolithic plant assemblages can contain a mixture of nutritional species, plants that are both nutritional and medicinal, and plants with only medicinal properties. Plant secondary compounds offer the potential for numerous non-dietary uses, and the need for these may have driven at least some of the plant species collected. Parasitic infections are treated by animals using plants in both preventative and curative medicinal ways, and there is little doubt that medicinal plants were also used in this way by Palaeolithic populations. Recent evidence for the ingestion of medicinal plants by a Neanderthal is a good example of this. Likewise, there is evidence that suggests some plant-based technologies may have developed very early in the Palaeolithic. Plant use among traditional societies in high latitude and high-altitude places today and in the recent past, suggests that even in these locations, plant resources are available to fulfil essential dietary and medicinal requirements.

Keywords: Plants, Palaeolithic, food, medicine, raw materials

*Speaker

Landscape and land use in human evolution, 50 years later - are we still trapped in ethnographic interpretive frame works?

Ariel Malinsky-Buller * [1], Reuven Yeshurun * †

[1] MONREPOS Archaeological Research Centre and Museum for Human Behavioural Evolution – Schloss Monrepos D - 56567 Neuwied, Germany

Over the last 50 years since the seminal book of "Man the hunter" has been published landscape became an even more loaded term. Major paradigmatic shifts in the discourse both in ethnography of hunter-gatherers as well as within the paleoanthropology have added weight to the term landscape and hominin models of landscape exploitations. Yet, ethnographic interpretive models such as residential or logistical mobility and the role of base camp still dominate our reconstructions of past hunter-gatherer's life ways. Yet, this terminology is not an evolutionary model rather a static representation of ideal frameworks that been extrapolated into the paleolithic. In this lecture, we investigate whether the Paleolithic field is mature enough to find other models within its own record, independent from ethnography? Can we portray paleolithic life ways in an intrinsic interpretative reconstruction within evolutionary framework, i.e., non-linear trajectories and contingent processes.

Keywords: Behavioral evolution, landscape, land use patterns, ethnography

*Speaker

†Corresponding author: ryeshuru@research.haifa.ac.il

Division of Labor in the Evolution of Human Foraging Societies

Aaron Stutz * [1]

[1] Emory University [Atlanta, GA] – Department of Anthropology 1557 Dickey Drive Atlanta, GA 30322, United States

Human foragers rutinely take on separate, simultaneous tasks, and they share or exchange the resulting products. Division of labor-when linked with sharing or exchange practices-can socially distribute risk of foraging failure. It can even increase how efficiently foraging groups extract energy and nutrients from their surroundings. While entailing new time-allocation and social conflict-of-interest costs, division of labor can generate complicated, but resilient patterns of social interdependence. It can render reciprocal altruism asynchronous, creating the long-term relationship-building potential of delayed reciprocity. It can also open the rich possibility of exchanging very different goods, for example, food for tools or tool raw materials. Thus, division of labor builds on collective action and altruistic costly signaling, increasing the benefit:cost ratio of food sharing, gift exchange, and active teaching of technological skills. Among the great apes, foraging and tool use involve only limited cooperation. Division of labor in omnivorous human foragers is a unique, evolutionarily derived social behavior. Since the seminal *Man the Hunte*r conference (Lee and DeVore 1968), archaeologists and anthropologists have emphasized the importance of gendered division of labor in the evolution of hominin hunting and gathering. Evolutionary models have tended to favor the hypothesis that gendered division of labor would have co-evolved with pair-bonding and paternal investment in offspring, constituting an early feature of hominin adaptation, possibly predating the genus *Homo* (e.g., Lovejoy 1981). Recent cross-cultural analyses of ethnographically documented foragers have provided an alternative model, raising the possibility that gendered division of foraging labor-with transfer of calories, nutrients, and socio-embodied capital over an extended juvenile period-only emerged in the Late Pleistocene (Caspari and Lee 2006; Kuhn and Stiner 2006). In this essay, I argue that a reconsideration of the evolutionary and ethnographic models-viewed in light of recent archaeological research on the Paleolithic-can provide a more comprehensive, synthetic understanding of division of labor in human evolution. It is suggested that division of labor has involved three aspects that gradually co-evolved as flexible biocultural adaptation to a terrestrial, omnivorous, extractive and socially intensive niche. These include omnivorous central-place foraging and food-resource pooling; dyadic delayed-reciprocal exchange of raw materials, tools, snacks, and dependent care; and ritualized collective action for provisioning of public-goods-like resources, including big game hunting, defense of rich patches of nutrient-dense plant and animal resources, and acquisition of larger raw material packages.

Keywords: Division of Labor, Paleolithic, Food Sharing, Exchange, Human Longevity, Hunting

*Speaker

and Gathering

Hunter-gatherers of the alte Lower Pleistocene: Kilombe as a rift valley example

John Gowlett * [1]

[1] University of Liverpool (UoL) – United Kingdom

Kilombe in the central rift valley of Kenya is best known for its large Acheulean site complex dated to about one million years. Recent work has shown that research must take account of the whole mountain of Kilombe, an extinct volcano with a base around 15-20 km across, and rising to around 2300 metres. The mountain sits on the western side of the rift valley. Hominins exploiting its environments would have been at an ecotone, and had the possibility of foraging at both higher and lower levels. The main site appears to have been situated by a small ponded area on small stream descending from the mountain flanks, and joining with the ancestral Molo river lower down. Fauna is sparse, but sufficient to show that hippopotamus and bovids were plentiful in the area. Stone tool raw materials suggest a concentration on local sources, but with occasional links with far distant areas. The paper evaluates the kind of foraging that might have been possible in this area within the broader range of models that are now employed in lower Pleistocene studies, taking into consideration the likely capabilities of early *Homo* and the nature of co-operation in groups in the light of ideas such as the social brain hypothesis. It uses ranges of hunter-gatherer population densities to estimate possible group sizes and interactions on the landscape.

Keywords: Acheulean, hunter, gatherers, landscape, rift valley, modelling, networks

*Speaker

The role of Hunting/Scavaneging from a European perspective

Jordi Rosell * [1,2], Ruth Blasco [3]

[1] Institut Català de Paleoecologia Humana i Evolució Social (IPHES) – Spain
[2] Universitat Rovira i Virgili (URV) – 43007 Tarragona, Spain
[3] Centro Nacional de Investigación sobre la Evolución Humana (CENIEH) – Paseo Sierra de Atapuerca 3, 09002 Burgos, Spain., Spain

The arrival to Europe of the main hypotheses on the marginal obligated scavenger in the 70s of the last century was supposed to be a significant salutary lesson for zooarchaeological methods related to the studies of Neanderthal (and precedent hominin) subsistence strategies. Since then, the discovery of new sites and the application of a more accurate and precise zooarchaeological approach have transformed and enriched the main perceptions of the behaviour of this human lineage. Currently, the scientific community accepts the hunting capabilities of these hominins, focusing studies on the diversity of methods used to obtain prey and the use of animals for food and other significant aspects, such as ornamental elements. From this perspective, a high variability in the hunting techniques and the obtained prey is observed, which can be related to the ecological conditions of the surrounding environment, the functionality of the site and occupational length (e.g., short-term occupations, seasonal occupations, long-term occupations, etc.). This work aims to highlight the diversity in the human strategies used to obtain animal resources among the Neanderthal lineage from its origin in the Middle Pleistocene and its disappearance during the Upper Pleistocene as a sample of its behavioural plasticity. The examples observed from the main European sites, which are located in different climatic and ecological contexts, show a significant capability of these hominins to obtain a high diversity of prey (from small vertebrates to pachyderms) using several techniques, among which scavenging is perceived a valid and compatible choice.

Keywords: Zooarchaeology, Pleistocene, Europe, Neanderthals, Subsistence strategies

*Speaker

Techniques d'extraction et de préparation des aliments d'origine animale au Paléolithique : un état de la question

Sandrine Costamagno *† [1]

[1] Travaux et recherches archéologiques sur les cultures, les espaces et les sociétés (TRACES) – Université Toulouse 2, Centre National de la Recherche Scientifique : UMR5608 – Maison de la Recherche, 5 allée Antonio Machado 31058 TOULOUSE Cedex 9, France

Les premiers représentants du genre *Homo* ont su, très tôt, tirer profit des ressources alimentaires d'origine animale. Les traces de boucherie (stries, traces de percussion) attestent en effet, dès les débuts du Pléistocène, d'une consommation régulière de viande et de moelle (e.g. Dominguez-Rodrigo *et al.* 2014). Pour autant, pour certains (Aiello & Wheeler 1995 ; Wrangham 2009), c'est la cuisson des aliments et non pas l'augmentation de la part protéinique animale dans le régime alimentaire qui serait le facteur clé à l'origine de l'augmentation progressive de la capacité crânienne de notre genre. Si cette hypothèse, aux regards des témoignages archéologiques, est difficile à soutenir, il n'en reste pas moins qu'elle éclaire d'un regard nouveau ces questions relatives à la préparation des aliments. Depuis quelques années, les techniques d'extraction et de préparation à des fins alimentaires des ressources animales font ainsi l'objet de recherches spécifiques menées en parallèle aux questions relatives aux modalités d'acquisition des carcasses. Un des premiers enjeux de ces travaux est le développement de nouveaux outils analytiques permettant d'interpréter les traces de boucherie présentes sur les ossements archéologiques en termes de procédés techniques et autres préparations culinaires. Reposant le plus souvent sur des référentiels actualistes, ces études ont par exemple permis la mise en évidence de signatures archéologiques distinctes selon que la viande est destinée à une consommation immédiate ou différée (Soulier & Morin 2016) ou selon que la moelle est consommée cuite ou crue (Costamagno & David 2006). Le deuxième enjeu se situe dans une perspective évolutive : à quel moment de l'histoire évolutive de l'Homme ces différents procédés techniques ont-ils été maîtrisés ? Les enquêtes transchronologiques doivent ici pister les indices archéologiques témoignant de ces différentes techniques d'extraction/préparation afin, dans un second temps, d'inférer l'impact de ces innovations d'un point de vue adaptatif et socioéconomique sur les populations humaines. Enfin, au sein de chaque société, les pratiques alimentaires témoignent de codes culturels et d'usages sociaux (e.g. Levi-Strauss 1964 ; Flischer 2001 ; Costamagno 2014), l'enjeu ultime de ces approches est donc de mettre en évidence de potentielles cultures alimentaires paléolithiques. Principalement basée sur l'Eurasie, cette contribution se propose de faire un état des lieux des avancées obtenues dans ce domaine au cours des dernières décennies et de dégager de futures pistes de recherche. **Aiello L.C., Wheeler P.** 1995**,** The expensive-tissue hypothesis: the brain and the digestive system in human and primate evolution, *Current Anthropology* 36 : 199-221. **Costamagno S.** 2014, Introduction au colloque "Histoire de l'alimentation humaine : entre choix et contraintes". In Costamagno S. (ed.*), Histoire de l'alimentation humaine :*

*Speaker

†Corresponding author: costamag@univ-tlse2.fr

entre choix et contraintes, actes du 138e congrès du CTHS, Rennes avril 2013, CTHS, Paris, p. 7-15. **Costamagno S., David F.** 2009, Comparaison des pratiques bouchères et culinaires de différents groupes sibériens vivant de la renniculture, *Archaeofauna*, 19 : 9-25. Domínguez-Rodrigo *et al.* 2014, On meat eating and human evolution: A taphonomic analysis of BK4b (Upper Bed II, Olduvai Gorge, Tanzania), and its bearing on hominin megafaunal consumption, *Quaternary International* 322-323 : 129-152. **Fischler C.** 2001, *L'Homnivore*, Paris, Odile Jacob. **Levi-Strauss C.** 1964, *Le cru et le cuit*, Paris, Plon. **Soulier M.-C., Morin E.,** 2016, Cutmark data and their implications for the planning depth of late pleistocene societies, *Journal of Human Evolution* 97 : 37–57. **Wrangham R.** 2009, *Catching fire. How cooking made us Human*, New York, Basic Books.

Keywords: Archéozoologie, Paléolithique, procédés techniques, alimentation

The role of fire in human evolution

Katharine Macdonald * [1]

[1] Faculty of Archaeology, University of Leiden – Postbus 9514 2300 RA Leiden, Netherlands

Fire has long been perceived as one of, if not the key, human technological innovations, underlying human evolutionary success, including our widespread distribution, and directing subsequent adaptations. This technology can be used for many purposes, from keeping warm, to cooking food, managing the landscape, making tools and extending daylight hours. The influential 'Man the Hunter' volume underplayed the role of fire, although the contributors recognised some of these important applications. Archaeologists and palaeo-anthropologists have devoted considerable effort to identifying evidence for the use of fire in the distant past. Nevertheless, there continues to be widespread disagreement about when fire became a part of the behavioural repertoires of our lineage, and which hominin species first used fire, with suggestions ranging from *Homo erectus* 1.8 mya to relatively recent Anatomically Modern Humans. This is mainly the case because the remains of fire are fragile and preserved only in ideal conditions. While it seems clear that fire would have been a valuable tool in more temperate, seasonal environments, this inference is not clearly supported by the archaeological evidence. This paper aims to outline our current knowledge concerning the record for fire use, and relate this to the chronology for hominin dispersal into cooler regions. Recent debates and critiques of the evidence have stimulated new analyses, making this a rapidly changing field. I will address both the strengths and limitations to the evidence, and try to point to ways forward, including information needed from other disciplines. There is clearly still room for progress in refining the interpretation of fire evidence, as well as developing new proxies for fire use. Perhaps equally important is the need to take an example from 'Man the Hunter' and consider fire as a behavioural strategy that was adaptive for hominins, with a suite of existing behavioural and biological characteristics, in a specific environmental context.

Keywords: Lower and Middle Palaeolithic, fire use, human evolution

*Speaker

Man the hunter revisited – Pleistocene Archaeology in the 21century: An Introduction

Lutz Kindler *† [1,2], Olaf Jöris‡ [2,1], Sabine Gaudzinski-Windheuser§ [1,2]

[1] MONREPOS Archaeological Research Centre and Museum for Human Behavioural Evolution (MONREPOS) – Schloss Monrepos D - 56567 Neuwied, Germany
[2] Johannes Gutenberg University Mainz, Institute for Ancient Studies, Dept. for Pre- and Protohistoric Archaeology (Uni Mainz Archaeology) – Germany

50 years ago, Richard B. Lee and Irven DeVore edited and published "Man the Hunter", one of the most influential books of its time, revolutionising the agenda of Pleistocene Archaeology. In "Man the Hunter", large game hunting was not considered simply as a way of subsisting, but as a way of life. For the first time, the consequences of hunting for our social structure and behaviour were discussed in an evolutionary perspective – which had tremendous impacts on the definition of research topics in Palaeolithic Archaeology.
In the introduction to the session, we highlight these impacts on archaeological theory and interdisciplinary discourses, field and laboratory methods to study the Pleistocene archaeological record and our reasoning about the characteristic features in human evolution that made us humans so special. As Palaeolithic Archaeology progressed in the last 50 years, so did the "Man the hunter"-paradigm and narrative, which found additional support and evidence, but also fundamental opposition and critique. However, and despite all major advances in the study of human evolution, the major research questions for Palaeolithic Archaeology raised by "Man the hunter" are still vital and essential today.
With the historic survey of "Man the hunter", we set the agenda for the discussion of these major topics and the archaeological record in the session: hunting, fire, plant use, food preparation, division of labour, landscapes and land-use as well as the social context of archaeological sites.

Keywords: Man the hunter, Palaeolithic Archaeology, Human behavioural evolution

*Speaker
†Corresponding author: kindler@rgzm.de
‡Corresponding author: joeris@rgzm.de
§Corresponding author: gaudzinski@rgzm.de

Home bases, central place foraging and the social context of archaeological sites

Lutz Kindler *† [1,2]

[1] MONREPOS Archaeological Research Centre and Museum for Human Behavioural Evolution (MONREPOS) – Schloss Monrepos D - 56567 Neuwied, Germany
[2] Johannes Gutenberg University Mainz, Institute for Ancient Studies, Dept. for Pre- and Protohistoric Archaeology (Uni Mainz Archaeology) – Germany

One of the major outcomes from "Man the hunter" was the question of the social contexts encrypted in the material record of Palaeolithic sites. As a consequence, the "home base"-model and later the "central place foraging"-model, finalised mainly by Glynn Isaac, became the most influential, but also controversial contribution combining human behavioural evolution and the archaeological record. These models addressed the social interactions at archaeological sites. The oldest Palaeolithic sites in Africa should represent secure locales to which individuals imported different kinds of foods and goods, which were than shared and processed. Especially the corporate responsibility for food in early humans directed our social evolution and is at the very base of typical human characteristics, e.g. division of labour or language. Although appealing from an explanatory perspective, the reconstructed social behaviour remained invisible in the archaeological record. In addition, with the rising awareness of the importance of taphonomic and other site formation processes creating palimpsests at almost all sites, the archaeological record and social behaviour and interaction became separated again. But the questions didn't vanish: What were they doing at all these sites and how, does this relate to human social evolution? How can we identify and determine social behaviour in the archaeological record, in a deductive and/or inductive form? What kind of social behaviour do we have to demonstrate at archaeological sites and what kind of social behaviour we can imply? How has archaeology progressed in reconstructing the evolution of human social behaviour? With reference to recent studies of Lower and Middle Palaeolithic sites our current state of knowledge is discussed in this talk.

Keywords: Home base model, central place foraging, Palaeolithic Archaeology, Human behavioural evolution

*Speaker
†Corresponding author: kindler@rgzm.de

Man the hunter revisited – Pleistocene Archaeology in the 21century: Conclusion

Lutz Kindler *† [1,2], Olaf Jöris‡ [2,1], Sabine Gaudzinski-Windheuser§ [2,1]

[1] MONREPOS Archaeological Research Centre and Museum for Human Behavioural Evolution (MONREPOS) – Schloss Monrepos D - 56567 Neuwied, Germany
[2] Johannes Gutenberg University Mainz, Institute for Ancient Studies, Dept. for Pre- and Protohistoric Archaeology (Uni Mainz Archaeology) – Germany

After discussing crucial topics for Palaeolithic Archaeology raised by "Man the hunter", that directed research in the last 50 years, the last contribution to the session encourages all participants to general statements on our current state-of -the art in reconstructing human evolution from the archaeological record and which future directions for research are suggested.

Keywords: Man the hunter, human behavioural evolution, Palaeolithic Archaeology

*Speaker
†Corresponding author: kindler@rgzm.de
‡Corresponding author: joeris@rgzm.de
§Corresponding author: gaudzinski@rgzm.de

VI-2. Mettre en évidence le cycle annuel de nomadisme des chasseurs-collecteurs paléolithiques et mésolithiques: enjeux, méthodes, et études de cas.

Landscape and Creativity in the Mesolithic: An Example from Kokořínsko, Czech Republic

Katarína Kapustka *† [1], Karolína Pauknerová [2], Matthew Walls * ‡ [3]

[1] Czech Academy of Sciences [Prague] (ASCR) – Národní 3, 117 20 Prague 1, Czech Republic
[2] Center for Theoretical Study, Charles University and Czech Academy of Sciences (CTS) – Czech Republic
[3] University of Calgary – 2500 University Dr NW Calgary, Alberta, T2N 1N4, Canada

In this paper, we consider how Mesolithic communities in Central Europe used local nuances of landscape as tools to creatively manage relationships a changing environment. We approach this from the vantage of Kokořínsko – a unique area of sandstone formations that comprises a network of incised valleys that converge and drain into the Elbe River. Often perceived as a sort of hinterland to Mesolithic movement along the Elbe corridor (as exemplified by the nearby site of Hořín), the position of Kokořínsko in regional subsistence patterns and landscape management is under-studied. In 2017, we began a systematic survey of this complex area, and our preliminary results demonstrate high selectivity in site locations. In particular, rock shelters positioned at the intersection of deep gorges attracted multiple Mesolithic occupations through time. Such locations continue to offer a high frequency of encounters with wildlife whose movements are channelled along these narrow passages. We interpret the meaning and importance of such sites as rooted in opportunities for both subsistence and environmental monitoring, and consider implications for understanding the wider lifeways of Mesolithic Bohemia. Indeed, Kokořínsko has become a protected landscape, critical to monitoring and understanding ecological change in the present. At Kokořínsko, we perceive creative dimensions of Mesolithic adaptation and sustainability that are inadequately captured if framed as economic strategy alone. Drawing on Gregory Bateson's perspectives on creativity and ecology, we consider the efficacy of landscape in how Mesolithic communities renewed stability between their community and a dynamic environment.

Keywords: Mesolithic, Central Europe, Landscape, Hunter, Gatherer Theory, Creativity, Ecological Management

*Speaker
†Corresponding author: culakova@arup.cas.cz
‡Corresponding author: matthew.walls@ucalgary.ca

Subsistence strategy in the early Holocene High Arctic (Zhokhov site, Arctic Siberia)

Vladimir Pitulko * [1], Aleksei Kasparov [2]

[1] Institute for the History of Material Culture, RAS – 18 Dvortsovaya nab. St Petersburg 191186, Russia
[2] Institute for the History of Material Culture, RAS – 18 Dvortsovaya nab. St Petersburg 19186, Russia

The Zhokhov site is one of the northernmost archaeological sites in the world (76◦ N), indicating that the High Arctic regions had been human-populated as early as 9,000 years ago. The site yielded an enormous number of osteological remains (NISP = 54,850 bone fragments total) that allow reconstructing the subsistence strategy practiced by Zhokhov inhabitants.
This was a peculiar terrestrial adaptation model based on reindeer and polar bear hunting. Total yield for the reindeer counts to NISP=14,614 bone fragments (MNI=245) while the polar bear is presented by NISP=5915 bone fragments (MNI=130). Seals produced NISP=6.

Reindeer constitutes two thirds of the harvested animals. Its tooth eruption sequences previously showed that the animals from the Zhokhov collection were killed mainly during spring and summer. Study of season of death performed on tooth cementum record demonstrates that in the random reindeer sample of 29 specimens, 12 animals died in spring, 11 in fall, three in winter, and another three in summer. Out of 48 samples analyzed, 24 animals died in fall (from September to early December), nine – in spring (April-May), four – during the second half of the summer, and 13 – in winter (end of December – end of January). As with tooth cement rings, it appears that reindeer were also hunted in winter which means that sparce semi-sedentary reindeer population existed nearby.

Polar bears killed by Zhokhov hunters are adult animals and mostly medium size individuals. Typically this means females. To confirm sex and age structure of the polar bear group hunted on the Zhokhov Island we have analized their mandibles (N=40). This kind of selection can be explained only by hunting tactics when hunters were killing female bears at dens during the winter time. By dental cementum analysis we have identified season of death which falls within the winter time, from December to March.

Mortality data for reindeer and polar bears depict the yearly subsistence cycle. The Zhokhov site is found to be a base camp occupied year-round with modest summer activities, while wintertime is characterized by intense polar bear hunting. Most reindeer were hunted in the fall. Subsistence strategy of the Zhokhov hunters was largely facilitated by the fact that at the time of occupation, Zhokhov island was still part of the coastal Siberian plain margin. The local adaptation was also found to have included systematic use of sled dogs.
This work is supported by Russian Science Foundation project No. 16-18-10265-RNF.

*Speaker

Keywords: Early Holocene, Stone Age, Arctic, archaeozoology, subsistence cycle, seasonality

Causes of hunter-gatherer mobility in the western Carpathians in the Upper Pleniglacial

György Lengyel *† [1], Robert Anczkiewicz [2], Nina Kowalik [2], Alexander Pryor [3], Jarosław Wilczyński [1], Piotr Wojtal [1]

[1] Institute of Systematics and Evolution of Animals, Polish Academy of Sciences – Poland
[2] Institute of Geological Sciences, Polish Academy of Sciences, Research Centre in Cracow – Poland
[3] University of Exeter – United Kingdom

Among the most studied periods in Palaeolithic archaeology is the Last Glacial Maximum (LGM) some 24,000 years ago (24 kya) when the Eurasian Ice Sheet (EIS) expanded to the 52∘N latitude and brought the coldest environment to the Western Carpathians of the last 130,000 years. The EIS retained this position until 20 kya and started retreating northward 19 kya, causing climatic amelioration for this area. This environmental change in this area is seemingly synchronous with changes in human site distribution. Before the LGM, Late Gravettian people were highly mobile and foraged around the Western Carpathians. By the LGM the Epigravettian hunters moved their sites to the Carpathian basin, reduced mobility and hardly foraged across the mountains. With the climatic amelioration, the site density in the Carpathian basin became thinner and the Epigravettian hunters recommenced long range mobility across the mountains. Because Epigravettian people were mainly reindeer hunters, and reindeers seasonally migrate over large areas, it can be supposed that the changes in site distribution were related with the foraging behaviour of the prey. The density of human occupation in LGM in the Carpathian Basin may be because reindeer shifted foraging area to this area and ceased seasonal migration across the mountains. Thus, humans halted northward foraging, and adapted their tools to less mobility. The human reoccupation of the northern periphery after EIS started retreating could be because reindeer recommenced northern migration. The range of human mobility increased again. The aim of this paper is to test whether the formation of the archaeological record of the Western Carpathians in the Upper Pleniglacial is significantly affected by prey animal ecology, which is studied through stable isotope sampling for strontium (87Sr/86Sr), oxygen (δ18O), carbon (δ13C), and nitrogen (δ15N).

Keywords: hunter, gatherer mobility, hunting, animal migration, Upper Palaeolithic

*Speaker
†Corresponding author: lengyel.isea@gmail.com

Multiple mobility patterns during the Late Pleistocene (Late Upper Paleolithic-Late Epipaleolithic) in the Near East and multiple ways to interpret them: Methodological considerations on a complex cultural evolution

Christophe Delage * [1]

[1] Histoire naturelle de l'Homme préhistorique (HNHP) – CNRS : UMR7194 – Institut de Paléontologie Humaine 1, rue René Panhard 75013 Paris, France

The topic of mobility and settlement patterns has been particularly developed since the 1970s in the early prehistory of the Near East. Between 25,000 - 12,000 (uncal.) BP, corresponding to the Late Upper Paleolithic and the Epipaleolithic, the Near East witnessed numerous settlements. These have allowed scholars to reconstruct several mobility patterns, from whole communities movements to aggregation sites to sedentism. Yet various questions may arise from these interpretations: is sedentism at Ohalo II similar to that during the Natufian? Is Kharaneh IV a true aggregation settlement? What kind of sites are 'Ein Gev I, Neve David, 'Uyun al-Hammam? Drawing from the available data published in the literature this contribution re-interprets the diversity and evolution of settlements systems and mobility patterns within a novel framework articulating kinship, demography, and mobility.

Keywords: Near East, Late Upper Paleolithic, Epipaleolithic, mobility, settlement patterns

*Speaker

The annual cycle of nomadism during the Upper Pleniglacial in South-Western France. The contribution of Reindeer exploitation at La Madeleine (Dordogne): hunting season and antler exploitation.

Laure Fontana * [1], François Xavier Chauvière *

[2]

[1] ArScan (Archéologies environnementales) – CNRS : UMR7041 – Maison René Ginouvès. 21, allée de l'université 92023 NANTERRE CEDEX, France

[2] Office et musée d'archéologie de Neuchâtel, Laténium – Espace Paul Vouga, 2068 Hauterive, Switzerland

The integrative analysis of Reindeer (as a main game) and its antler exploitation is one of the principal ways of investigating the annual cycle of nomadism of Upper Pleniglacial hunter-gatherers in Western Europe. On the one hand, the identification of Reindeer hunting seasons at a micro-regional or a regional scale is required to enable us to know when, in the course of the year, human groups and reindeer were living at particular locations. On the other hand, the study of Reindeer antler exploitation, from an economic perspective, may provide evidence of on-site manufacturing and especially its proportion, as well as the characteristics of antlers acquired near the sites (importance, type, and exploitation goals). Thus, we can contribute to identify annual cycles of nomadism if we determine for each site: 1) the type and proportion of procurement, exploitation and use activities, related to Reindeer antler, 2) hunting and settlement seasons. The case of Solutrean and Magdalenian sites in South-Western France is a good example of the potential of faunal remains when analyzed with this global perspective. We will present new data on hunting seasons and antler exploitation patterns at La Madeleine (eponymous site of the Magdalenian) to identify the status of this site within the annual cycles of nomadism (concerning Upper Magdalenian level 25 and Middle Magdalenian level 27 from Bouvier's excavations). These results will be put in perspective with other regional on-going studies to put forward some hypotheses about the mobility of human groups and the economy of animal resources in this area.

Keywords: chasseur, collecteur, mobilité, économie des ressources animales, Renne

*Speaker

Migrations paléolithiques

Marcel Otte * [1]

[1] Universite de Liege – Belgium

Un fait est clair : le changement radical entre les réseaux d'échanges du paléolithique moyen et du paléolithique supérieur en Europe. Autant dans les matériaux utilisés que dans les styles techniques, les néandertaliens ont délimité des aires géographiques régionales restreintes, du moins dans leurs grandes tendances culturelles, par exemple : " Moustérien typique ", " Keilmessergruppe " ou " Akkaien ". Des migrations internes ont pu y avoir lieu mais sous une forme limitée. Par contre, on observe des " raids " éphémères, comme à La Micoque (Dordogne), où les pièces bifaciales, apparues brusquement, montrent des mouvements expansifs à partir du centre européen rhénan. Tout ce scénario change brutalement avec le paléolithique supérieur, manifestement marqué par des processus migratoires permanents, de toutes natures et comme substantiels aux nouveaux modes de vie propres aux populations modernes en Europe. Déjà, leurs arrivées, successives et massives, ne peuvent avoir résulté que de migrations organisées : l'appel exercé sur ces nomades cavaliers vers l'extrémité eurasiatique occidentale a déterminé des flux massifs de populations habituées aux mouvements rapides dans les steppes asiatiques. Une mythologie, nouvelle et conquérante, a été la seule motivation pour justifier de telles conquêtes, immenses et définitives, arts inclus. Toutefois, à l'intérieur de l'Europe, devenue " moderne ", des traces de mouvements migratoires s'observent, sous des modalités tout différentes : ce sont des axes saisonniers, comme on les observe à Pincevent, en Pyrénées, en Moravie, en Moldavie. Ils sont d'amplitudes plus limitées que les vagues migratoires originelles, mais requierent la monte de chevaux pour justifier la rapidité et l'homogénéité de leurs emprises sur les paysages. La dispersion très vaste, des matériaux comme des styles, démontre l'ampleur de ces nouveaux réseaux migratoires : ils définissent de véritables aires culturelles aisément reconnaissables, et en totale opposition avec ce que furent les aires moustériennes, beaucoup plus limitées. Cependant, au fil de leur évolution chronologique, les civilisations paléolithiques ont, elles aussi, migré sous une forme globale et définitive, comme durant le Magdalénien, typiquement occidental, progressivement étendu au nord et au centre du continent : de Paris à Cracovie, par exemple. De tels mouvements migratoires se superposent donc à ceux de valeur saisonnière, sans s'y confondre. Néanmoins, les prospections élaborées durant les mouvements épisodiques ont naturellement sollicité les migrations à de plus grandes échelles. Sur le plan théorique, autant que de façon pragmatique, il ne semble donc pas opportun de distinguer, radicalement et dès le départ, les différentes modalités migratoires dès que l'on s'attache à des entités culturelles homogènes qui incorporaient les unes et les autres dans leur modes de vie coutumiers. En ce sens, les modèles migratoires issus des sciences ethnologiques, fondées sur la synchronie, ne conviendront jamais pour expliquer ou pour comprendre des mécanismes " historiques " du paléolithique, dont précisément le fondement se déroule durant le long terme. Nos modèles en préhistoire européenne sont à élaborer et à tester ici même et sur nos propres matériaux archéologiques. Armée d'une légitime ambition, la préhistoire doit élaborer des concepts, autant fondés sur les universaux anthropologiques que sur les mécanismes historiques, si

*Speaker

évidents mais si mystérieux.

Keywords: Migrations, mobilité, synthèse, préhistoire, modèles

Nomadisme magdalénien et azilien à travers le Plateau suisse : Au fil des ans, une saison ou deux à Monruz et à Champréveyres.

Marie-Isabelle Cattin * [1]

[1] Office du Patrimoine et de l'Archéologie de Neuchâtel (Suisse) (OPAN) – Espace Paul Vouga 2068 Hauterive, Switzerland

Localisés au pied de la chaîne du Jura suisse, les campements magdaléniens et aziliens de Neuchâtel-Monruz et Hauterive-Champréveyres (Suisse) se caractérisent par une forte introduction de silex d'origines allochtones. L'analyse pétrographique des matières siliceuses a permis d'identifier des lieux d'approvisionnement sur l'ensemble de la chaîne du Jura, mais également au-delà. L'étude techno-économique met en évidence les diverses formes d'introduction de ces types de silex. D'autres matériaux (lignite, ambre, coquillages fossiles) ont été utilisés pour la confection de parure révélant également des provenances parfois très lointaine. C'est donc un espace parcouru ou connu qui apparaît, ainsi que le contenu des bagages (armes de chasse, outils, matières premières, etc. que les Préhistoriques transportaient avec eux dans leurs déplacements). Toutefois, des questions surgissent également quant aux parcours empruntés, aux relations établies ou à la circulation des individus et des idées.
L'étude des faunes livre des informations quant aux saisons d'occupations des sites et l'analyse des foyers renseigne sur la multiplicité des occupations. Ces données, confrontées à celles du matériel lithique, ouvrent le champ des interrogations sur le bagage des préhistoriques : qu'est-ce qui est introduit et à quel moment ? Quelques indices permettent de supposer que certains matériaux seraient plutôt arrivés au printemps, d'autres à l'automne. De même, au fil des périodes, des territoires ne semblent plus fréquentés alors que d'autres sont découverts. Les connaissances des lieux varient, signifient-ils l'impossibilité de se rendre à certains endroits ou la disparition temporaire de certains lieux d'approvisionnement ou uniquement un changement dans la connaissance des territoires ?

Enfin, des variations dans les quantités des matières introduites et la présence parfois importante des matières locales permettent de s'interroger sur les moments de l'année plus ou moins propice à la nomadisation sur de longue distance.
Ces différentes données ont permis de suggérer des hypothèses de fréquentation du territoire en fonction des saisons et cela au cours des diverses occupations, mais aussi de proposer de possibles circuits circulaires reliant le Jura souabe (au sud de l'Allemagne) à la vallée du Rhône (au sud de Genève). Combien de groupes fréquentaient ce territoire et quelle était l'amplitude de leur déplacements restent cependant des questions en suspens.

*Speaker

Keywords: Territoire, Magdalénien, Azilien, Suisse, matières premières, saisonnalité

Comparative analysis of occupation rhythms within the Palaeolithic sequence of La Grotte Mandrin (Malataverne, France)

Ségolène Vandevelde * [1,2], Jacques Brochier [3], Christophe Petit [4,5], Ludovic Slimak [6]

[1] Archéologies et Sciences de l'Antiquité (ArScAn) – CNRS : UMR7041 – Maison René Ginouvès Boîte 3 21, allée de l'université 92023 NANTERRE CEDEX, France
[2] Université Paris 1, Panthéon-Sorbonne (UP1) – Université Paris I - Panthéon-Sorbonne – 12 place du Panthéon - 75231 Paris Cedex 05, France
[3] Maison méditerranéenne des Sciences de l'Homme (LAMPEA) – CNRS : UMR7269, Université Aix-Marseille – 5 rue du Château de l'Horloge, 13094 Aix-en-Provence Cedex 2, France, France
[4] Archéologies et Sciences de l'Antiquité (ArScAn) – Université Paris I - Panthéon-Sorbonne, CNRS : UMR7041, Université Paris X - Paris Ouest Nanterre La Défense – Maison René Ginouvès Boîte 3 21, allée de l'université 92023 NANTERRE CEDEX, France
[5] Université Panthéon-Sorbonne (UP1) – Université Panthéon-Sorbonne – 12 place du Panthéon - 75231 Paris Cedex 05, France
[6] Travaux et recherches archéologiques sur les cultures, les espaces et les sociétés (TRACES) – Université Toulouse 2, Centre National de la Recherche Scientifique : UMR5608 – Maison de la Recherche, 5 allée Antonio Machado 31058 TOULOUSE Cedex 9, France

The search for high resolution in archaeology is a growing preoccupation; this can be seen in particular with the multiplication of sessions focusing on this issue in international conferences in the recent years (for example: "Multidisciplinary approach in the definition of high-resolution events to interpret past human behaviour" – WAC8, 2016, Kyōto; "Advances in Archaeological Palimpsest Dissection" – UISPP 2014, Burgos; etc.). Social organisation of human groups can indeed only be studied with a very high temporal resolution.
Understanding the social organisation of human groups in one location and at different scales, and being able to distinguish these different scales (from the annual cycle to the multi-year cycle), are major anthropological issues. Lithic and faunal studies are often used to infer models of annual nomadic cycles, whether applied separately or integrated. The assemblages studied are cumulative and do not provide any information on multi-year social cycles.

Other methods can also provide information on the organisation of human groups. At the scale of an archaeological site, Fuliginochronology (from Latin *fuliginosus, fuligo*: soot, fuliginous and Greek $\chi\rho\lambda\gamma\alpha$ [khrônologia]: chronology) provides new data, which may complement those previously mentioned. It also brings a new resolution for studying archaeological sequences. This method, applied to carbonates, aims to analyse soot deposits trapped in speleothems that consist in very high temporal resolution archives of the human occupations of caves and rock shelters. This material is still understudied and yet, it has an important informative potential for the archaeologist, since it allows a micro-chronological approach to chronicle the human occupations

*Speaker

in a cavity for a period of several years, with a sub-annual to decadal resolution. The analysis of fuliginous calcite deposits makes it possible to study two criteria offering unique insights: the site's occupation frequency and the differences in the rhythmicity of occupations between the several stratigraphic units and therefore between the archaeologically recognised cultural phases.

In this talk, we will present the method, its potential and its limitations. We will rely in particular on the case of the Grotte Mandrin, rock-shelter site of the Middle Rhône Valley (France), which contains archaeological assemblages attributed to different cultural and / or biological groups (Neanderthal *vs* Anatomically Modern Human). We will try to compare the rhythmicity of occupations, which are underpinned by humans groups' organisation in their territory.

References

Vandevelde, S., Brochier, J.É., Petit, C., Slimak, L., 2017a. Establishment of occupation chronicles in Grotte Mandrin using sooted concretions: Rethinking the Middle to Upper Paleolithic transition. *Journal of Human Evolution* 112: 70-78. https://doi.org/10.1016/j.jhevol.2017.07.016

Vandevelde, S., Brochier, J.É., Desachy, B., Petit, C., Slimak, L., 2017b. Sooted concretions: A new micro-chronological tool for high temporal resolution archaeology. *Quaternary International* XXX: 1-16. https://doi.org/10.1016/j.quaint.2017.10.031
Vandevelde, S., Dupuis, C., 2017. Voyage au bout de la suie. Chroniques des occupations humaines à la Grotte Mandrin [Ashes to ashes, soot to soot. Human occupations chronicles at Grotte Mandrin site], in : Cleyet-Merle, J-J., Shunkov, M.V., Le troisième Homme, Préhistoire de l'Alta ́i [The third Man, Prehistory of the Alta ́i], exhibition, Musée National de Préhistoire, Les Eyzies-de-Tayac, video : https://halshs.archives-ouvertes.fr/medihal-01580618

Keywords: fuliginochronology, rhythmicity of occupations, soot, carbonates, micro, chronology

Quand l'Arctique est devenu nomade. Climat, comportements humains et non humains et construction de niche

Charles Stépanoff * [1]

[1] Laboratoire dánthropologie sociale (LAS) – École des Hautes Études en Sciences Sociales, Collège de France, Centre National de la Recherche Scientifique : UMR7130, Ecole Pratique des Hautes Etudes – bât. A, 52, rue du cardinal Lemoine 75005 Paris, France

Au cours des XVIIIe et XIXe s. l'Eurasie arctique traversée par le Petit âge glaciaire a connu une transformation spectaculaire : depuis la Laponie jusqu'au détroit de Béring, les économies autochtones semi-sédentaires de chasse-cueillette ont été remplacées par un nouveau mode de vie marqué par une forte mobilité et l'élevage de grands troupeaux de rennes. De nombreux scénarios, climatiques, économiques ou politiques, ont été avancés sans parvenir à rendre compte de l'ampleur du phénomène. Seule une approche intégrée peut permettre d'éclairer les interactions complexes qui se sont jouées entre climat, comportement animal et stratégies humaines. Dans notre analyse appuyée sur des cas ethnographiques récents, nous montrons comment les rennes domestiques et leurs éleveurs ont construit une niche écologique hybride excluant progressivement la chasse. Dans un parallèle entre toundra et steppe, nous examinons comment le cas du renne peut éclairer certaines évolutions des sociétés centrasiatiques de l'âge du Bronze à la suite de la domestication du cheval.

Keywords: nomadisme, renne, pastoralisme, Sibérie

*Speaker