



Book of abstracts

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**XV-1. Current research on
settlement dynamics and cultural
variability during the Middle Stone
Age.**

The Emergence of the Middle Paleolithic Technological Concepts in the Levant: a view from Misliya Cave (240-160 ky), Mount Carmel, Israel.

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The late Lower Paleolithic and the early Middle Paleolithic witnessed significant technological, behavioral, and anatomical changes among hominin populations in Africa, Europe and the Near East with emerging new and more complex subsistence and technological behaviors, including the appearance of the Levallois and laminar technologies as early as 300 ky ago. In the Near East, the period between 400,000 and 150,000 years ago witnessed a succession of three techno-complexes: the Late Acheulian, the Acheulo-Yabrudian and the Early Middle Paleolithic (EMP). In spite of several decades of research, even today, many of the characteristics of these techno-complexes are still poorly understood.

Here we present the EMP lithic industry of Misliya Cave, dated to 240-160 ky. The lithic assemblage of the cave shows evidence for all stages of the reduction sequence, indicating that knapping was conducted at the site. The industry is generally elongated containing 42% of artifacts with blade dimensions. Diverse technologies were used at the site for the production of a wide array of blanks, among them Levallois points, Levallois flakes, and blades. One of the dominant reduction strategies involved preparation of triangular convergent Levallois cores. These cores exhibit flat and slightly convex flaking surface at the proximal part and abrupt triangular section at the distal part of the flaking surface. The geometric configuration of the core surfaces allowed production of series of convergent Levallois points, flakes and blades. Classical centripetal oval Levallois flakes are virtually absent in the studied assemblages.

The laminar volumetric concept is attested by the semi-rotating method of blades production, known from other EMP sites in the region. The majority of the thick blades with parallel edges were produced from the unidirectional and bidirectional semi-rotating cores using the wide surface of the nodule. In addition, blades were produced using the narrow edges of tabular flint nodules. The toolkit is dominated by a variety of retouched points and blades.

The EMP layers of Misliya cave and other contemporary Levantine sites document the emergence of novel technological concepts in the region, including full-fledged Levallois technology and laminar technology. This Levallois & Laminar technological package of the EMP points to a major conceptual and technological change in comparison to the preceding Acheulian and

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Acheulo-Yabrudian, suggesting a technological break between the Lower and the Middle Paleolithic in the Levant.

Keywords: Middle Paleolithic, Levant, Levallois, Laminar, lithics, Early Middle Paleolithic, technological behavior

Variabilité des comportements alimentaires au début du Pléistocène supérieur en France septentrionale : saisonnalité ou variations climatiques ?

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Durant tout le Pléistocène supérieur, la France septentrionale constitue un carrefour biogéographique naturel entre les îles anglo-saxonnes, le Nord-Ouest de l'Europe et l'Europe de l'Est. Le début du Pléistocène supérieur regroupe à la fois l'interglaciaire Eemien (stade isotopique marin 5e) et le début Weichsélien (stades 5d à 5a). Plusieurs gisements paléolithiques moyens de cette période offrent l'opportunité de comparaisons cohérentes, tant du point de vue diachronique que biogéographique, sur les comportements de subsistance des Néandertaliens. Trois sites ont permis la réalisation d'études archéozoologiques complètes, Caours (Somme), Le Rozel (Manche) et Mutzig (Bas-Rhin). Les restes fauniques mis au jour dans ces trois gisements sont très nombreux, et permettent d'appréhender certains comportements de gestion du gibier des Préhistoriques, de l'acquisition jusqu'au transport et au traitement des proies. L'étude des populations animales s'est majoritairement basée sur la réalisation de profils de mortalité, mais également sur la détermination de la saisonnalité d'occupation des niveaux archéologiques d'après le matériel dentaire des jeunes individus. Les vestiges ont fait l'objet d'une observation macroscopique méthodique, dont le but a été de déterminer la part et les actions de l'Homme sur l'assemblage osseux. Il en ressort que si les activités de boucherie sont bien documentées sur tous les sites au travers de la récupération de la viande, de la moelle et de la langue, les utilisations des carcasses à but non-alimentaire (récupération de la fourrure et de la peau, utilisation des os comme retouchoir et carburant) sont plus ponctuelles et variables d'un gisement à l'autre. L'homogénéité des comportements humains se marque également dans la sélection des cervidés au détriment des autres familles, ainsi que dans le transport sélectif des cadavres en fonction de la taille des animaux. La sélection d'individus en particulier, en fonction de l'âge et/ou du sexe, dénote en revanche d'une grande variabilité des comportements, qui découle d'une adaptation constante des Hommes à leur milieu.

Keywords: grands mammifères, paléolithique moyen, France septentrionale, saisonnalité, courbes d'abattage, subsistance.

*Speaker

Umbeli Belli and its significance for the final MSA of southern Africa

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The final MSA of South Africa represents one of the most enigmatic periods of the Stone Age. Several researchers undertook investigations in the transitional phase between Middle (MSA) and Later Stone Age (LSA), but we still know surprisingly little about the end of the MSA itself. In the light of an increasing awareness that the original criteria used to distinguish the MSA and LSA such as the presence of personal ornaments, organic tools and art are no longer valid, this lack of research is curious. Most assemblages associated with the final MSA date between roughly 40 and 20ka, but many of them require re-dating and a detailed reinvestigation. While the majority of these assemblages provide strong LSA characteristics such as bladelets, bipolar cores and the near absence of MSA points, the assemblages from KwaZulu-Natal, specifically Sibudu and Umhlatuzana remain exceptional. Numerous bifacial and unifacial points and occasional hollow based points have been considered to be the most characteristic features. In 2016 we were able to relocate the archaeological site Umbeli Belli ca. 100km south of Sibudu and excavate a stratigraphic sequence of about 1.50m subdivided into 9 archaeological horizons. Umbeli Belli provides a large assemblage of lithic artifacts from the final MSA and LSA. The MSA yielded among many other tools four hollow based points. Thus, in awareness that four isolated points cannot be used to characterize an assemblage of several thousands of pieces, we examined the uppermost MSA assemblage associated with layer 7 with a preliminary focus on the retouched tools. Here we show that the hollow based points from Umbeli Belli are only a minor feature embedded within a diagnostic technocomplex. Furthermore, we present new OSL dates and evaluate the relevance of Umbeli Belli for discussions about the changing lifeways at the end of MIS3.

Keywords: South Africa, final MSA, lithic technology

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Tempo and rhythm of cultural change and site use during the Still Bay, Howiesons Poort and Sibudan of Sibudu Cave, South Africa

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Thanks in large measure to the important excavations by Lyn Wadley between 1998 and 2011, Sibudu Cave is one of the best studied Middle Stone Age sites in southern Africa. Since 2011 a team from the University of Tübingen has led annual excavations at Sibudu to extend the cultural stratigraphic sequence of the site and to refine observations and interpretations about the lifeways of the site's inhabitants. Here we present high resolution stratigraphic observations on changing patterns of lithic technology and multiple classes of material culture over the course of the Still Bay, Howiesons Poort and Sibudan occupations of the site. We discuss the changing activities documented at the site and examine the nature and intensity of occupations over these periods.

Keywords: Lithic technology, Middle Stone Age, settlement dynamics, diachronic change

*Speaker

Investigation of Middle Stone Age occupation deposits in Blombos Cave, South Africa: evidence for changes in site use and settlement dynamics in the Southern Cape during the MIS 5b-4 (94 – 72 ka)

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The archaeological assemblage recovered from the Middle Stone Age levels (c. 101–70 ka BP) in Blombos Cave (BBC), South Africa, is central to our current understanding of the technological and cultural development of early modern humans in southern Africa during the Late Pleistocene. However, the micro-stratigraphy in which this assemblage has been recovered has not yet been studied in detail. Over the course of multiple excavation seasons, more than 40 micromorphological block samples have been collected from the BBC deposits. A sediment-based investigation of the archaeological deposits in BBC thus offers an excellent opportunity to advance our knowledge of this significant archaeological sequence. In this paper, we focus on the formation of MSA occupation deposits in BBC dated to MIS 5b-4 (94 – 72 ka). By combining micromorphology and microspectroscopy with three-dimensional, high-resolution field documentation we have been able to identify patterns of human site-use and occupational intensity in three discrete MSA occupation phases: the M1 phase (71 ka), the Upper M2 phase (77 ka) and the M3 CI phase (94 Ka). Through a digital framework we have also examined the spatial distribution of prehistoric depositional events, allowing us to characterize lateral and diachronic variation in the use of cave space, the placement of site structures and the occurrence of site maintenance. Our results show that the MSA phase in BBC which experiences the most rapid cultural and technological development (i.e. the Still Bay, 77-71 ka) is characterized by periods

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of more frequent, short-term human occupation. By contrast, the occupation phase in the lower parts of the MSA sequence (e.g. M3 CI, 94 ka), which show considerable less varied material culture, is characterized by considerably fewer but longer or more continuous cave visits. We suggest that the variation in MSA occupation intensity in BBC, which coincides with shifts in local climate, vegetation and sea-levels, can best be explained by changes in local site function and hunter-gatherer mobility and subsistence strategies. If the MSA occupation pattern in BBC is indicative of larger and more regional settlement dynamics, we hypothesize that an increase in residential mobility towards the end of MIS 5 may also have affected the nature and frequency of social interaction within and between prehistoric populations living in the Southern Cape during this time period.

Keywords: Geoarchaeology, Micromorphology, Middle Stone Age, Site Formation processes, Occupation intensity, Site use, Site Structure

Variation in Middle Stone Age landscape-use behaviour in the Tankwa Karoo (Northern Cape, South Africa)

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Southern Africa is a critical location for understanding the origins of modern human behaviour in the Middle Stone Age (MSA), about 300 to 40 ka. Current evidence from excavated, often coastal, cave sites indicates the emergence of complex technological, social and symbolic behaviours at least 100 ka. However, cave sites considered alone give a spatially and temporally restricted picture of MSA lifeways, overlooking human behaviour beyond the cave. The restricted environmental focus on coastal and near-coastal montane ecosystems further limits the scope for capturing variation in MSA behaviour in the South African interior. In this paper, I examine the open-air surface artefact record of the inland, marginal environment of the Tankwa Karoo in the Western/Northern Cape region. I ask whether variation in stone tool distribution and technology can be observed in time and space.

This paper presents the results of ‘off-site’ surveys in the Tankwa Karoo which have mapped the location of over 20,000 Earlier, Middle and Later Stone Age stone artefacts across the landscape. Artefacts lie on a deflated ‘desert pavement’ land surface, forming a rich palimpsest of evidence for past occupation of the region. These assemblages provide information on lithic technology, provisioning and site use, which can be dated on a relative techno-typological basis and used to track change through time and across environmental zones. The 100-km-long study area encompasses west-to-east transitions in vegetation, geology and aridity, allowing a detailed examination of variation in behaviour between these contrasting but contiguous settings.

My results show that settlement is tethered to the reliable water sources of the westerly mountain fringe in earlier time periods, but towards the later part of the MSA, more complex patterns of movement can be tracked through raw material transport, seeing substantial use of the arid desert to the east. Furthermore, new types of later MSA technological behaviour, previously unrecognised by coastal cave-oriented studies, have been identified. Cores and post-Howiesons Poort-like unifacial points using the Nubian preferential Levallois technique occur in large numbers at the open-air site, Tweefontein, as well as distributed across the landscape. I propose this technology represents a specific adaptation to this desert environment, bringing a new perspective to modern human behavioural flexibility in the MSA.

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Keywords: MSA, landscape use, South Africa, lithic technology

Blade production in the Middle Stone Age assemblage from Montagu Cave, South Africa: preliminary observations on the C.M. Keller collection

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The Howiesons Technocomplex Poort of Southern Africa presents a major change in the Middle Stone Age assemblages. Geometric pieces and segments produced by laminar blanks are among the derived lithic forms that define these assemblages. Significant alterations in raw material economy along with an increased use of fine-grained materials in addition to local quartzite are among the other changes observed during the same period. This situation would facilitate the adoption of small laminar elements and mark the onset of a process described by some as 'microlithization'. Here we examine a sample of material from the excavation by CM Keller and colleagues at Montagu Cave, curated at the Phoebe Heard Museum of Anthropology and Human Evolution Research Center (HERC), UC Berkeley, with three main questions in mind. First, how does HP compare assemblies (eg Klasies River)? Second, are the changes observed a consequence of the adoption of a new form of projectile? And third, what does it tell us about the shift toward bladelet-based assembling characterizing Later Stone Age technocomplexes? The preliminary observations proposed here that Howiesons Poort Blade technology is largely consistent between western and southern regions of South Africa. This technology is particularly suitable for the production of geometric tools, but also other potential blanks. Finally, small blade blanks are produced as a whole, thus raising the issue of raw materials. how do you compare HP assemblies (eg Klasies River)? Second, are the changes observed a consequence of the adoption of a new form of projectile? And third, what does it tell us about the shift toward bladelet-based assembling characterizing Later Stone Age technocomplexes? The preliminary observations proposed here that Howiesons Poort Blade technology is largely consistent between western and southern regions of South Africa. This technology is particularly suitable for the production of geometric tools, but also other potential blanks. Finally, small blade blanks are produced as a whole, thus raising the issue of raw materials. how do you compare HP assemblies (eg Klasies River)? Second, are the changes observed a consequence of the adoption of a new form of projectile? And third, what does it tell us about the shift toward bladelet-based assembling characterizing Later Stone Age technocomplexes? The preliminary observations proposed here that Howiesons Poort Blade technology is largely consistent between western and southern regions of South Africa. This technology is particularly suitable for the production of geometric tools, but also other potential blanks. Finally, small blade blanks are produced as a whole, thus raising the issue of raw materials. are the changes observed a consequence of the adoption of a

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Keywords: Middle Stone Age, lithic technology, South Africa

Early MIS 5 lithic technology at Klasies River - a re-evaluation of variability and conventions based on new data from current excavations

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Middle Stone Age research mostly focuses on innovative bursts, such as the Howiesons Poort and Still Bay technocomplexes. But what were the technological traits leading to these phases of innovation and associated "modern types of behavior"? The analysis of MSA assemblages dating to MIS 5 could be the key to that question. Klasies River main site contains an extensive MSA sequence and the current Witness Baulk excavation allows for a more in depth and detailed investigation of early variability. Two phases are recognized in the MSA II or Mossel Bay technocomplex, the MIS 5c phase occurring in layer SMONE; and the MIS 5d phase in layer BOSONE, that appears to be a transitional industry. We argue for a rather smooth transition from the technological phases of MSA I that appear in the underlying layer 37 in the Witness Baulk. Within the two phases that are discussed, a common tradition occurs, but with variability in core reduction sequences and end product morphology. The stability of one main reduction sequence in each phase speaks for a long-term technological tradition at this locality. . Antecedents to the Howieson Poort technocomplex may be in the presence of pyramidal, prismatic blade and narrow face bladelet cores that form a small but persistent element of SMONE and BOSONE. Increased communication between local groups during MIS 4 favoured innovations, which show roots in the MIS 5 technology.

Keywords: Middle Stone Age, South Africa, lithic technology

*Speaker

**XV-2. Current research on
settlement dynamics and cultural
variability during the Middle
Paleolithic.**

Entre traditions techniques et déterminismes environnementaux : étude techno-économique des occupations moustériennes de Baume-Vallée (Solignac-sur-Loire, Haute-Loire, France)

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La question du peuplement néandertalien et de son évolution au cours des variations climatiques du Pléistocène demeure encore aujourd'hui au cœur de nombreuses problématiques, de même que celles ayant trait aux déterminants de la variabilité culturelle du complexe Moustérien. À l'échelle du territoire ouest-européen, de nombreuses études macro régionales ont récemment conduit à d'importantes avancées concernant ces deux aspects. Pour autant, d'autres espaces géographiques, livrant également des enregistrements archéologiques du Paléolithique moyen, viennent aujourd'hui s'intégrer dans cette réflexion.

C'est le cas du Massif central, vaste espace de moyenne montagne occupant une majeure partie du territoire français et longtemps considéré à tort comme peu propice aux occupations humaines paléolithiques. En effet, soumise aux rigueurs des conditions périglaciaires durant une majeure partie du Pléistocène récent, fortement impactée par les masses glaciaires et les phénomènes éruptifs quaternaires de la Chaîne des Puys, des Limagnes et du Bas-Vivarais, cette région se distingue d'un point de vue paléoenvironnemental des grands espaces moustériens voisins (Bassin aquitain, Bassin parisien et Vallée du Rhône). Elle livre cependant de nombreuses occupations néandertaliennes et offre ainsi la possibilité de s'interroger sur les modes d'occupation du territoire par cette humanité ainsi que sur la notion de frontières et de territoires culturels au Paléolithique moyen.

Dans ce contexte, l'imposante archéo-séquence du gisement de Baume-Vallée permet d'aborder la diachronie culturelle et matérielle en fonction des évolutions environnementales. Les données techno-économiques livrées par les séries de Baume-Vallée permettent de reconsidérer les stratégies d'exploitation du milieu, les circulations de matières premières lithiques et l'extension des aires de traditions techniques moustériennes. Les résultats obtenus mettent ainsi en avant le poids des choix culturels face aux déterminismes biologiques et environnementaux au cours du Paléolithique moyen récent.

*Speaker

Keywords: Paléolithique moyen, Massif central, Traditions culturelles, Techno, économie, Néandertal, Matières premières lithiques, Dynamique de peuplement

Technological variability and settlement dynamics of the Neanderthal groups of the Ciota Ciara cave (Borgosesia, VC, north-western Italy)

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The Ciota Ciara cave opens on the west side of Monte Fenera (Borgosesia, VC, north-western Italy) at 670 m a.s.l. and at today it represents the only Middle Palaeolithic site systematically investigated through a multidisciplinary approach in north-western Italy. The technological analysis and the study of the supply areas of lithic raw materials have been recently completed, leading to relevant results concerning the technological and economic behaviour of the Neanderthals which occupied the site during Middle Palaeolithic. The lithic assemblage of all the archaeological levels investigated is dominated by vein quartz associated with the exploitation of a local bad quality flint (spongolite) available in primary and secondary deposition on the top of Monte Fenera. Levels 14 and 15 show the presence of two different and good quality raw materials brought to the site as finished tools: a reddish rhyolite available close to the Sessera stream (~2,5 km in a straight line) and a reddish-brownish radiolarite collected close to primary outcrops located on the Lombard side of Lake Maggiore (Lombardian Radiolarite Group, ~30 km in a straight line). On the other hand, a specific methodology has been elaborated for the identification of the supply areas of vein quartz in secondary deposition. The technological study of the lithic assemblage allows instead to make some interesting consideration about technological variability, conditioning of the raw materials and more generally on the criteria useful for the identification of Levallois and discoid reduction sequences. The results obtained allow for the first time to define the economic behavior and the land use dynamics put into action by the Neanderthal groups present between Piedmont and Lombardy during Middle Palaeolithic.

*Speaker

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Keywords: Piedmont, Middle Palaeolithic, vein quartz, Levallois and discoid technology, land use dynamics

Short and close in time. Overlapped occupation from the layer 56 of the Molare rock shelter (Southern Italy)

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The Molare rock shelter (S. Giovanni a Piro, Salerno, Italy) is a key site to carry out high-resolution chronological studies in the broader context of Italian Mousterian peopling dynamics. The stratigraphic sequence is to be referred to the MIS 5 and is characterized by the presence of a number of thin anthropic levels (often they consist of quite undisturbed living floors) alternated with sterile layers of various thickness. Even if the excavated area covers only a part of the original site, macro-evidence of the spatial organization of the settlement (e.g. position of hearths, structures etc.) is quite variable through the sequence. However, broader analyses are necessary for better understanding the archaeological record and to detect continuities or discontinuities related to survival or change of settlement dynamics and economic strategies through time. This paper concerns data from layer 56. This anthropic level is quite thin and was interposed between two thick layers of sterile clay. Its upper part, directly in contact with the overlying clay sediment can be considered as a living floor. However, taken as a whole, this level because of its thickness can also be considered as a short-term palimpsest. Since taphonomic studies indicated a good preservation state of the anthropic context, we combined lithic technology (implemented by RMU analysis) with the study of spatial distribution patterns of archaeological finds; such an approach allowed us to correlate microstratigraphic variations of layer 56 with two different short-term occupations, probably separated by a short chronological gap. At an intra-site scale, the two occupations appear to be characterized by different patterns of space management and use. This may either reflect punctuated settlement dynamics or be expression of a continuum.

Keywords: Middle Palaeolithic, Palimpsest, Living floor, Lithic technology, Spatial analysis, GIS

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New Excavation at Skhul Cave, Israel: contextualizing early *Homo sapiens* in the Middle Paleolithic Levant

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MIS 5 is regarded as a central interlude of *Homo sapiens* dispersal into Asia. Nevertheless, sites containing their diagnostic anatomical remains outside Africa from this particular stage remain extremely scarce. Qafzeh and Skhul are exceptions, and both demonstrate early symbolic behavior expressed in the presence of burials and the use of pigments and shells. Skhul was extensively excavated in 1931-1932 by McCown and reported to include two Middle Paleolithic layers, yielding ten hominins, some of which clearly represent intended burials. Due to the lack of systematic collection of finds and the coarse-grained excavation techniques typical of the early 20th century, our ability to extract behavioral patterns and reconstruct the site’s environment, is limited. In order to discern adaptive patterns of early *Homo sapiens* in the Levant, returning to Skhul seemed imperative. It was long believed that Skhul was excavated down to bedrock in 1931-1932, but careful reading of McCown’s text and figures suggests that the northern edge of the deposits remains intact and buried under the 1930’s excavation dump. After initial discovery of these deposits in 2016 and first season of excavation in 2017 we have identified in this locality a series of four superimposed layers with a total depth of ca. 1 meter. The two upper layers are rich with flint artifacts and faunal remains. The flint tools and waste are heavily white patinated as typical to the upper Middle Paleolithic layer (B1) of McCown’s excavations. While the new excavation is limited to the northern edge of the site, it can still provide significant insights

*Speaker

into the site's stratigraphy and its formation. The recovery of stratified, *in situ* assemblages enables a correlation between various disciplines of material culture, environmental proxies and chronology. Preliminary results of the new excavations of the *in situ* layers, primarily addressing the character of the lithic industry and faunal remains, demonstrate a more complex picture than previously reported. The nature of the material found within the 1930's excavation dump, which enables a complementary perspective over McCown's excavations, also provides insights into the extent of the missing elements within the 1930's published assemblages and a more comprehensive picture of the behavioral patterns of early *Homo sapiens* at the site.

Keywords: Skhul Cave, Human Evolution, Middle Paleolithic, Homo sapiens

Understanding the chronological meaning of Neanderthal technological blade strategies

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Over the last fifty years, archaeological excavations and extensive technological analyses have documented the diversity of ‘technological blade strategies’ - the production of stereotyped elongated material - throughout the European Middle Palaeolithic. Specifically, research has highlighted the existence of laminar-based methods of blade production from the offset of the Middle Palaeolithic (and much earlier in other regions), contemporary with Levallois blade production methods, in addition to widespread evidence for laminar strategies in north-west Europe during MOIS 5, sometimes noted as the Technocomplexe du Nord-Ouest (Depaepe, 2007). However, while we know of their presence within the Neanderthal toolkit, a consideration of their long-term chronologies and the persistence of technological behaviours within both blades strategies remains unaddressed. With such an extensive record for technological blade strategies in the European Middle Palaeolithic now documented, we possess the interpretive potential to examine and understand the nature of diachronic change and social transmission through both technological blade strategies, and fundamentally their chronological meaning.

This talk will first contextualise the evidence for both laminar and Levallois technological strategies until the end of MOIS 5 (c. 71,000 BP). It will highlight the appearance of at least sixty-five laminar and forty-two Levallois blade-bearing European contexts prior to c. 71,000 BP, and observations in their spatio-temporal framework. Secondly, through analyses (including traditional and geometric morphometrics) of twelve archaeological contexts this talk will address whether technological punctuation and continuity is observed, and address the nature of cultural change on varying levels of resolution throughout this period. Finally, using theories of artefact design and ‘performance attributes’ (Skibo and Schiffer, 2001), coupled with an extensive experimental dataset of both blade strategies, the talk will discuss the retouch potential of Levallois blades and the portability potential of laminar blades as one possible explanation for understanding aspects of technological change noted throughout the European Middle Palaeolithic. Through this combined approach, integrating an experimental and archaeological data, the ‘true’ chronological meaning of these strategies can now be better understood.

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Keywords: Neanderthal, Blades, Middle Palaeolithic, Technological Variability

Knapping and crushing: Percussion activities at the open-air site of Neshet Ramla (Unit III), implications for understanding the range of activities in the Middle Paleolithic.

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Thanks to the fast burial and the minor post-depositional disturbances and deformations, the Unit III at Neshet Ramla (dated to ca.130 ky) is characterized by a great preservation of the archaeological features and has yielded more than 27000 flint artifacts, several thousand of faunal remains, numerous combustion features and other anthropogenic features. Moreover, the Unit III has also revealed an important amount of hammerstones, anvils and other worked manuports. Even though, the passive and active percussions elements (*ie*; non-knapped assemblage) are indispensable tools to proceed to a wide diversity of technical and domestic's activities like flint knapping, food processing or butchering, they are hardly found and barely described within the Middle Paleolithic record.

Here we present and characterize the non-knapped stones from the Unit III at Neshet Ramla, which represents the largest non-knapped stone assemblage recorded in the Levantine Middle Paleolithic. Around 140 hammerstones (divided into different categories), 15 anvils, few polished/abraded and striated pebbles were identified within this layer. The technological study of the stones includes general morphological and metrical data together with a description of the types of marks and wears and their location and extends on the active surfaces.

The different types of marks identified among the sample are pits, crashed marks and scores (scratches/small lines). The morphology of the active surfaces is either plane/flat or rounded/angular. Some pebbles exhibit both types of active surfaces and different types of marks, indicating a change in the motion/gesture and a probable change in the way the hammerstone was used.

Comparisons with the published experimental materials and preliminary experiments conducted by us, show that most of the pebbles/blocks were used for flint knapping, other for abrasion during the core's preparation and at least one of them for the retouching/shaping of tools. Finally, some of the artifacts were probably used for bone crushing and were identified as "*percuteur de concassage*", mainly on basis of their general morphology, weight and heavily percussion marks (crashed and battered edges).

*Speaker

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Brought together, the data concerning the non-knapped (*ie*, percussion) assemblage provides valuable information about the intensity, diversity and spatial distribution of the activities performed within the Unit III at Neshar Ramla.

Keywords: MIDDLE PALEOLITHIC, LEVANT, HAMMERSTONES, RETOUCHERS, CORE ABRADERS, SITE FUNCTION

Micoquian, what is it? The multiple use of the term to designate assemblages. A research historical reflection.

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Since the first use by O. Hauser in 1916, the term Micoquian has been used in very different ways to describe assemblages. This talk would like to shed light on the research history of the term use. We want to discuss who, when and where the term Micoquian was used to classify assemblages in the course of research. A key point in time will be the period before, during and immediately after WW II, as it is evident that the massive diversification of the use of the term began in these years and continues to this day. In the course of research, numerous Lower and Middle Paleolithic assemblages were covered with the term. The term was used here for assemblages that are chronologically separated by several millennia. Recent research has dealt with the Micoquian problem” by introducing new terms for chrono-spatial units (Pradnikian, Keilmessergruppen, Mousterian with Micoque-option, etc.). At this point in time, we are able to identify four chronological positions for the use of the term (late Lower Paleolithic, early Middle Paleolithic, earlier Late Middle Paleolithic (MIS 5) and later Late Middle Paleolithic (MIS 4 and 3)). The term was used throughout the European context. Originally, the term only referred to the assemblages of the eponymic site La Micoque excavated by O. Hauser. The same author used the term in the time between the two world wars also for numerous other inventories in Western, Central and Eastern Europe, which he settled in time after the Mousterian and before the Upper Paleolithic. In the course of the 1980s and 1990s several inventories in Western Europe were described, which are said to have a similarity to Micoquian (keywords Micoquian influence), whereby mostly the presence of asymmetrical bifacial objects was used as a decisive argument. This talk would like to shed light on the handling of the term in the course of research history and to discuss the extent to which the term is still used today.

Keywords: Micoquian, Keilmessergruppen, Pradnikian, MicoquoPradnikian, assemblage designation, chronological position

*Speaker

Lithic technology during the early Middle Palaeolithic: a case study from the Southeastern and Southwestern France.

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The beginning of the Middle Palaeolithic in Western Europe (MIS 9/6) is traditionally associated with the emergence of new flaking methods, judged more complex. We know today that these new technical behaviours can't be limited to the Levallois concept, even if Prepared Core Technologies (PCT) seem to appear early during this period (White *et al.*, 2003 ; Wisniewski, 2014 ; Soriano et Villa, 2017). Moreover, a high variability is attested with the other main *débitages* concepts (Hérisson *et al.*, 2016 ; Carmignani *et al.*, 2017).

Areas involved in this study correspond to two distinct regions of the South of France, both rich in good quality raw materials (mostly flint). In Southeastern France, the material studied come from several layers of Orgnac 3 attributed to MIS 9/8. In the Southwestern area, it concerns several sites from MIS 10 to 6: La Micoque L2/3, Petit Bost L.2, Pech de l'Azé II L.7a, b,c and Combe Brune 2 L. VIIa.

We focus on the identification of the *chaînes opératoires* present in each site. A technological analysis was made in order to understand lithic systems from the raw material used to the production of blanks. Tools were also studied in details (retouched tools and/or shaped tools). The objective is both to understand their relationships with the main productions identified and to compare the tool-management of these sites to data already published.

General results show a high variability within the ways to produce blanks. It is perceptible at an inter-sites but also at an intra-site level. Almost all characteristic methods used during the classical Middle Palaeolithic are represented : Levallois, Quina, Disco'id, etc. Even if these typical concepts of the MP are present, the real specificity of these assemblages is the importance of algorithmic concepts, such as S.S.D.A. or the more particular Trifacial concept. From the shaping perspective, handaxes are always represented, although the proportions vary widely. As well as the flaking methods, varying tools are produced by shaping. Levallois technology is attested in almost all assemblages (except at Orgnac, L.6 and 7) but it is clearly dominant only in two series : in the layer 2 of Orgnac 3 and layer VIIa of Combe-Brune 2. Another typical component of the Middle Palaeolithic industries is the use of cores-on-flakes (ramification, *e.g.* Bourguignon *et al.*, 2004). They are commonly used in all these assemblages. Concerning the retouched products, two main strategies of tools manufacture and management were identified, according to the different flaking methods used.

To summarise, during the period between MIS 10 and 6 in these two regions of Southern France,

*Speaker

various components of the classical Middle Palaeolithic are already established, coupled with algorithmic flaking methods, and handaxes that are still present. It appears to be a perfect technical crossing between what happens before and what will happen next.

Keywords: Middle Pleistocene, Lithic Systems, Tools management

Lithic assemblages from the Middle Paleolithic of Geißenklösterle Cave, Germany: New insights on Late Pleistocene Neanderthal technology and behavior from the Swabian Jura

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Due to its long research history and wealth of archeological sites, the Swabian Jura has played a crucial role in key debates for the Paleolithic of Europe. One of the best-known sites, Geißenklösterle Cave in the Ach Valley, has yielded a depositional sequence that includes both Middle and Upper Paleolithic occupations separated by a geogenic horizon. Here we present lithic analyses of the Middle Paleolithic horizons (AH IV-VIII) dating between ~90-45 ka, studied by a combination of attribute analysis and *chaîne opératoire* approach. The lithic analyses suggest that Neanderthals predominantly used locally available Jurassic cherts to manufacture small blanks and tools via multiple reduction strategy with a focus on Levallois methods. Artifacts made from other raw materials occur as isolated pieces. Apart from various modalities of Levallois technology, knappers employed Kostienki, bipolar and platform methods. Scrapers and splintered pieces are the most frequent tool types, while notches, denticulates or bifacial implements are absent. Low densities of archeological finds, the export of selected products and the lack of features indicate repeated short-term occupations of the site in a settlement system of high mobility. There is some diachronic variation in the sequence at Geißenklösterle, but the assemblages share more techno-typological similarities than differences overall. Although the caves of the Swabian Jura have produced numerous Middle Paleolithic assemblages belonging to various cultural taxonomic complexes, regional comparisons suggest that the five find horizons from Geißenklösterle all fit within the Swabian Mousterian. This technocomplex is defined by the use of local raw materials, small lithic assemblages, frequent Levallois reduction, multiple scraper forms, and an almost complete absence of bifacial technology including *Keilmesser* and *Blattspitzen*. In sum, the upper Middle Paleolithic assemblages at Geißenklösterle provide new insights into the technology, mobility and demography of late Neanderthals living in southwestern Germany prior to the arrival of anatomically modern humans.

*Speaker

Keywords: Swabian Jura, lithic technology, site use, mobility patterns

Scrapers and bifacial pieces: technical characteristics of the Yabrudian industries from several Levantine sites

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Can we consider the Yabroudian a facies of the Middle Paleolithic in the Middle East? The results of technological analyses done on assemblages of Yabroudian industries from the Levantine sites of Yabroud I (steppe zone), Tabun (costal zone), and Adlun (costal zone) show that scrapers were the dominant tool and that bifacial pieces were also utilized. These tools, which sometimes include scalariform retouches and are a part of the Yabroudian material, differ in their technology from the typical bifaces of the Upper Acheulean. The retouched flakes are present in several types in the classification created by L. Bourguignon (Bourguignon 1997). The cores are predominantly those of the Quina concept. The use of the soft-hammer technique is exhibited by the presence of flakes resulting from retouching and resharpening. The typical scalariform retouches are dominant and the atypical scalariform retouches are also present in certain contexts. The Yabroudian demonstrates a chaîne opératoire based primarily on the débitage, with a regular practice of shaping. The Yabroudian facies coexist in certain levels with typical Middle Paleolithic industries, such as the Levalloiso-Mousterian and the laminar industries. These analyses from several Levantine sites have revealed aspects that bring the Yabroudian closer to the Middle Paleolithic.

Keywords: Middle East, Levant, Lithic Technology, Yabrudian, scrapers, bifacial pieces

*Speaker

While the ashes were falling down. Neanderthal technical behavior and settlement pattern on the tephra layer 14 of Oscurusciuto rock shelter (Southern Italy)

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The Italian Peninsula for its peculiar morphology, geographical position, and highly variable and fragmented landscapes is very interesting for the Palaeolithic settlement dynamics. A key site that stands at a crossroad of different areas of southern Italy is the Oscurusciuto rock shelter, which is very important for the understanding of Neanderthals subsistence, and settlement strategies as it gives a long reliable deposit of about 6 m thick, made up of several levels of Middle Palaeolithic occupation.

In this research, we would like to focus on the level SU 14 which is a thick deposit of tephra identified as Mount Epomeo green tuff. In this level of 60 cm thick, traces of human occupation can be seen only a few centimetres under the top of the layer. It represents a brief occupation of the rock shelter while the volcanic ashes were falling down. The volcanic eruption of Mount Epomeo was a violent explosion which happened ~55,000 years BP and that caused catastrophic collapses of the Ischia islands, underwater massive avalanches of debris and possibly tsunami events. The pyroclastic materials injected into the atmosphere, affected wide areas generating notable alterations of ecosystems.

This peculiar feature of the SU 14 raises questions regarding the impact of the falling of volcanic ashes on human communities. This level offers the unique opportunity to study the settlement and the technological choice taken by Neanderthal constrained by a strong environmental event. Consequently, compare this evidence with the previous and subsequent occupations at Oscurusciuto.

*Speaker

We intend to reach these purposes by the application of an integrate and multidisciplinary methodology. The analysis of the lithic material comprised the technological method, for the description of the economic behaviour, identification of the phases of the reduction sequence, the definition of concepts, and objectives of debitage. The Raw Material Units and refitting studies allowed to better understand the fragmentation of the operative chain and the mobility patterns. Faunal remains, highly fragmented, include a minimum number of three aurochs and a single small ungulate. In addition, data were processed into a GIS platform, by means of geostatistical procedures, spatial organization of the camp and, possibly, its function in the settlement dynamics of the Final Mousterian in Southern Italy.

Keywords: Tephra, Lithic Technology, RMU, Refitting, GIS

Neanderthal hunting seasonality and Mobility Patterns

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Neanderthal mobility pattern has become a major topic in recent research in Paleoanthropology. In particular, the temporal organization of activities in the Neanderthal's territory has been largely used to discuss their management of food resources and scheduling abilities and indirectly to approach their cognitive capacities.

The late Middle Paleolithic in Southwestern Europe is characterized by major climatic fluctuations that had direct impacts on Neanderthal eco-systems. Sedentary and migratory ungulate populations alternated in the environment. Neanderthal hunter-gatherers, were forced to adapt their mobility to the migration pattern of their prey, conducting to a reorganization of the activities within their territories in function of the seasonal cycle.

In this context, seasonality is a key topic for reconstructing and understanding the settlement patterns developed by these human communities.

We proposed here to tackle this specific topic through a cementochronological analysis of sites from Southwestern France, attributed to the late Middle Paleolithic. Ungulate teeth from sites attributed to the MIS 4 and 3 with available zooarchaeological data were selected. The sampling was based on the MNI and postmortem modifications were systematically looked for. The results were then compared to comparative collections prior being interpreted in term of season of death.

Our study shows that different Neanderthal populations developed specialized strategies to cope with the seasonal fluctuation of their prey. Innovative hunting strategies were established as a response to the ethological specificity of their games. The development of seasonal hunting specific locations had for consequence the reorganization of human settlement dynamics and the adoption of different mobility patterns.

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Keywords: Neandertal, Cementochronology, Zooarchaeology, Mousterian, Subsistence strategies

The emergence of the laminar phenomenon during the Middle Pleistocene in the Levant.

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1

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The transition from the Lower to Middle Paleolithic is complex in nature, primarily caused by the new cultural innovations of the Middle Pleistocene. The systematic production of blades emerged in the Levant during this transition. This distinctive blade production has been discussed since the early 21st Century (Meignen 1998; Monigal 2002; Nishiaky 1989; Wiseman 1993; Vishnyatsky 2000; Shimelmitz 2009; Wojtczak 2014). In the late Lower Paleolithic, this phenomenon was first recognized by Garrod and Rust during their work in Palestine and Syria during the latter part of the twentieth Century. Their research clearly showed two distinct industries Pre-Aurignacian and Amudian. Since then many more sites have been found to contain both in their stratigraphies; Yabrud I, Tabun, Abri-Zumoffen/Adlun, Masloukh, Zuttiyeh and Qesem Cave. These blade industries have been associated with term Acheluo-Yabrudian and dated back to between 400,000 – 200,000BC (Gopher et al.2010). The subsequent Early Middle Paleolithic industries also contained a systematic production of blades, which were situated above the Yabrudian /Acheluo-Yabrudian and directly under the Levantine Mousterian. In spite of the differing names; Hummalian, Abou Sif, or Tabun D, there are many similarities in technological and typological characteristics. All are dated to around 200,000BC (Mercier et al., 2007; Richter et al., 2011).

Primarily, technological and typological analyses illustrate different characteristics between the blade production of the Late Lower and the Early Middle Paleolithic. Reviewing the emergence of blades in the Levant will allow us to develop a better understanding of the direct relationship between the lithic record and settlements during the Middle Pleistocene. In order to construct a chronological model in the Levant during this period, we will pay special attention to the time frame relating to the emergence of blades and their techno-typological pattern. Using a wide range of perspectives, as well as all recent discoveries in the Levant, we will discuss the human occupation and settlement dynamic variability during this period.

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Keywords: Hummalian, Blade industry, Early Middle Paleolithic, Late Lower Paleolithic, Laminar, Levant

Looking for Hidden Neanderthals – A Raw Material Approach

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The density of Middle Palaeolithic occupation in Moravia (Czech Republic) is rather low. Mapping known sites we noted two or three clusters (Moravian Karst, Svitava River and Krumlovský les Regions) and several dispersed individual spots (Přerov-Přemostí, Brno, Šipka and Čertova díra Caves). There is only one site – Kůlna Cave in the Moravian Karst - where we noted the superposition of several Middle Palaeolithic layers, representing a longer time span. Latest findings at Moravský Krumlov IV or Brno City (Faculty of Art Courtyard) clearly demonstrate our Middle Palaeolithic map is highly incomplete because many sites are still not excavated or they were destroyed by both geological and anthropic processes. The most important problem is the identification of archaeological sites because Middle Palaeolithic layers in Moravia are usually situated 3-5 m below the surface. One way of recognising and reconstructing the Neanderthal world is to take into account the results of raw material distribution studies. On the base of raw material composition at known sites (e.g. Kůlna or Šipka Caves), we can identify regions that should be used or visited by Neanderthals, where we can look for new sites (Czech-Moravian Highlands, Karpatian Flysh Zone and White Karpats). Distribution maps can also help to study both diachronic and synchronic aspects of settlement strategies of Neanderthals. We are able to identify different patterns of behaviour of Neanderthals during the last interglacial and Weichselian Interpleniglacial.

Keywords: Middle Palaeolithic, raw materials, site prediction, settlement strategies, Moravia, Czech Republic

*Speaker

Site occupation intensity and the paleoclimate of Geißenkl'osterle and Hohle Fels caves (Ach valley, southwestern Germany) during the Middle and Upper Paleolithic

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The exceptionally long tradition of Paleolithic research in Germany has resulted in a detailed prehistoric record of the Ach and Lone valleys spanning the Middle Paleolithic to Holocene periods. During the early excavations of Geißenkl'osterle cave by Joachim Hahn a period nearly devoid of anthropogenic deposit was identified directly preceding the beginning of the Aurignacian (Hahn, 1988), like that documented by R.R. Schmidt (1912) at Sirgenstein cave. New excavations at Geißenkl'osterle as well as Hohle Fels cave documented further evidence for a period of exceptionally low occupation and/or regional abandonment by Neanderthal groups before the arrival of modern humans (Conard & Malina, 2001, 2002, 2004, 2005). These findings lead to the development of the "Population Vacuum" model arguing that Neanderthals had all but abandoned the Ach Valley before Aurignacian groups arrived (Conard, 2003; Conard & Bolus, 2006; Conard, Bolus, Goldberg, & M'unzel, 2006). This paper tests this model using new material records from the Middle Paleolithic and early Aurignacian deposits Geißenkl'osterle and Hohle Fels caves. A new paleoclimatic reconstruction of the Ach valley based on small mammals (rodents, insectivores, and bats) from both sites is compared to past sedimentary, botanical and faunal records to test the assumption of direct environmental causality inherent in early descriptions of the model (Conard, Bolus, Goldberg, & M'unzel, 2006). This paleoclimatic record is then compared with density data from new studies of the lithic and faunal assemblages in an attempt to discern a temporal record of site occupation intensity through the Middle Paleolithic and early Aurignacian periods (~48,000 – 33,000 kya). The diachronic density of small mammal remains is also considered as a line of evidence for human site occupation intensity independent of human decision-making. Lastly, evidence for anthropogenic modification of all material types (including burning, trampling, and fragmentation) is considered as a further proxy of site use. Comparing these different material records against a detailed diachronic climatic signal produces a record of variability in settlement dynamics and organization in the Ach valley at both an intra- and inter-site scale. The picture of Neanderthal adaptive strategies derived from this comparative framework allows us to test the Population Vacuum model in

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light of the late Middle Paleolithic climatic context and earlier Neanderthal behavioural and technological adaptations.

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Keywords: Middle Paleolithic, Swabian Jura, Small mammal, Site occupation intensity, zooarchaeology

Neanderthal economic organization and land use in Discoid lithic technology

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Neanderthals used different models of mobility and exploitation of resources across their territory, especially in the last period of their occupation of the Eurasian continent: these differences are probably related to adaptation behavioral strategies and responses at many ecological and cultural levels. Neanderthals bearing Discoid technology are known to be more mobile and linked to an opportunistic exploitation of the lithic raw material, embedded in the daily food procurement, also thanks to the high adaptability of the discoid knapping method to a qualitative wide range of raw materials. However, we have no defined data for most of the geographical contexts where this technocomplex was present. In Grotta di Fumane (southern alpine fringe) the final Mousterian is denoted by the succession of well defined cultural entities: sandwiched between Levallois layers (A5+A6 and A10) there is layer A9, characterized by the variability of the Discoid method applied to different sets of blanks and raw materials. To this lithic assemblage, fully excavated for more or less 60 m² and strong of nearly 9,000 pieces, we applied a techno-economical analysis designed to figure out the spatial fragmentation of the reduction sequences, also based on the characterization of cortex origin and raw materials through geological surveys and experimental comparisons. Results point out that the raw materials collected within 5km, by far the most used, show complete and ordinary reduction sequences, which were further attested by multiple refittings. Beyond this area, semi-local raw materials (5-10 km) are introduced in a specific way in relation to mass utility/energetic cost ratio and reduced according to their different physical qualities. These data, combined with the presence of lithotypes and fossils collected from distances of ten to hundreds of kilometers and the recycling of old patinated artifacts, indicate complex and diversified behavior: opportunistic and daily exploitation in local territory related to residential occupation of the cave, confirmed by several fire places, the exploitation of a wide faunal range and a number of lithic UMPL; logistical planning of the economical organization in the semi-local to exotic territory according to quality and distance of available raw materials sources.

Keywords: Neanderthal, mobility, Middle Paleolithic, Mousterian, Discoid, resource exploitation, Discoid, Lithic raw material.

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Tracking the Neanderthal campsites: Applying GIS and geostatistical methods to the archaeolevel Ob of Abric Romani

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Ethnoarchaeological research has shown that the intra-site spatial distribution of material is related to the social behaviour of human groups. As a consequence, intra-site spatial analysis of archaeological remains can be very informative on past human behaviour. However, several handicaps due to intrinsic features of the archaeological record hinder this type of inference. Firstly, some post-depositional processes can disturb the anthropogenic distribution patterns. To solve this matter, an spatial approach from a taphonomic point of view can be a powerful tool. Secondly, the sedimentary dynamics of most sites, especially in karstic contexts, favour the formation of archaeological palimpsests. This fact makes the comparison between archaeological assemblages (low temporal resolution) and ethnoarchaeological models (high temporal resolution) very difficult. Here again, an intra-site spatial analysis can be very helpful applying high-resolution methods including archaeostratigraphy, Raw Material Unit (RMU), and refits. Despite all this, the analysis of spatial patterns remains a complicated and often subjective task. Here because spatial studies have implemented computer-based tools like Geographic Information Systems (GIS) and statistics. Here we propose the application of GIS and geostatistical methods to the Middle Palaeolithic archaeolevel Ob at Abric Romani site (Capellades, Barcelona), a travertine rock shelter with a high resolution sequence. Level O is dated around 55 ky. It has been studied from a spatiotemporal point of view both from lithic and faunal remains, including archaeostratigraphic, planimetric and refits analysis. As a result, several archaeolevels were identified (a, b and c) and, from two of them (a and b), site function (mainly as a campsite), intra-site structure (identifying different activity areas), and settlement dynamics (number of individuals and duration length) were proposed. The present work includes the determination of the spatial structure (Ripley's K function), the quantitative definition of the clusters (*k-means*), the analysis of material from each cluster, the analysis of vertical dispersion of these clusters and the interpretation of the refits (both lithic and faunal). These methods help us to improve the interpretation of the archaeological assemblage in a transdisciplinary approach and facilitate the comparison of data and results at different levels: between the lithic and faunal remains of the same assemblage, and between this assemblage and others. In turn, this work allows us to explore what is the contribution that GIS and statistical methods provide in the study of Neanderthal spatial behaviour.

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Keywords: Neanderthals, Abric Romani, intra, site spatiotemporal analysis, GIS, geostatistics, refits

New perspectives of the Middle Paleolithic in the caves of Portoselvaggio at Nardo, Lecce in southern Italy.

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The traces of the oldest human occupation in the Salento Peninsula are found in the Late Pleistocene and are culturally known as ‘developed Tayaziano’. Through initial research activities of the Museo della Preistoria di Nardò (Nardò – Lecce) we began to revise this scheme and reexamine the assemblages from Grotta dell’Alto, Grotta-Riparo Marcello Zei, and Grotta Capelvenere. The sites are located in close vicinity to one other in the Natural Park of Portoselvaggio and they have been studied by Brozatti in the second half of the last century. The lithic industry was reanalyzed based on the reconstruction of production schemes (*chaîne opératoire*) and techno-functional classification of artifacts. In addition to flakes, there is a production of triangular and laminar blanks, which can be partially attributed to Levallois schemes. Interestingly, the Levallois schemes seem to appear before the development of Levallois in the Salento region commonly recognized at the end of MIS 4. Besides the Levallois, there are other systems of lithic production, which are attested by the presence of cores. In addition, the reanalysis and correlation of chronostratigraphic, paleoenvironmental and techno-cultural data from these sites provide us with important information regarding the mode of human dispersal in this area of southern Italy. In this scenario, we ask the question of evolution and diffusion of the technoculture in the Mediterranean between MIS 5 and 4.

Keywords: Middle Paleolithic, Levallois, Southern Italy

*Speaker

The Middle Paleolithic open air site with preservation of plant remains of Aranbaltza III and its implications in the understanding of neandertal settlement dynamics in the Northern Iberian Peninsula.

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The eastern part of the Cantabrian region is characterized by the presence of several Middle Paleolithic sites, most of them located in caves and rock-shelters (Axlor, Amalda, Arlanpe, Arrillor, Lezetxiki, El Cuco, Ventalapera). The chronology of these sites ranges from ca. MIS6 to MIS3. The ongoing research on some of these sites reveals a high degree of variability in lithic provisioning and subsistence strategies that can be tracked through time (Rios-Garaizar 2017, Rios-Garaizar and García-Moreno 2015). Nevertheless, this vision is biased by the practical absence of open-air sites of this age with good preservation of archaeological materials and spatial relationships (Arrizabalaga et al. 2015).

The open air site of Aranbaltza III (Barrika, Northern Iberian Peninsula) is located near Bilbao, close to the current shoreline, and it is one of the rare examples in the Cantabrian Region of well preserved archaeological record in open air. The site is located in a big archaeological complex where MIS3 Middle Paleolithic (Aranbaltza I), and Chatelperronian (Aranbaltza II) occupations have been also identified (Rios-Garaizar et al. 2012).

The site presents a ca. 4 m deep sequence with MIS3 Middle Paleolithic (Levallois) archaeological units on top, several sterile levels in between, and MIS5-4 archaeosedimentary units in the base. These units are characterized by an incredible good preservation of plant remains, including some wooden tools (Rios-Garaizar et al. under preparation), and many ecofacts. Such incredible preservation is unknown for sites of this age (ca. 90 kyr) below latitude 48. This poses a rare opportunity to obtain insights about coastal landscape exploitation and the use of plant materials by neandertals.

Also, the nature of the archaeological record is very different than the archaeological evidence from other Middle Paleolithic sites in the region, most of them located in caves or rock-shelters and situated far away from the coast. These differences are observed in raw material selection: almost exclusive use of local flint vs combination of local raw materials with imported flint; absence of ramified productions; or the low investment in tool configuration and curation. This opens new ways for investigate the links between technology, landscape, site type and site function.

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Keywords: Middle Paleolithic, Open Air, Plant remains, Wooded Tool, Lithic Technology, Settlement Dynamics

Formations superficielles et occupations paléolithiques en France septentrionale : Développement et applications d'un Système d'Information Géographique (SIG)

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Depuis quelques années, de nombreux chercheurs du Nord de la France travaillent à la mise en place d'un outil relevant des Systèmes d'Informations Géographiques (SIG) à partir d'un important corpus de données géologiques et archéologiques. Il permet de travailler à différentes échelles, de la région au site jusqu'à l'indice de site et de cartographier les formations superficielles, les gisements et les indices d'occupations paléolithiques, tout en travaillant de manière homogène sur l'ensemble des sites fouillés. En effet, la réflexion scientifique sur ces périodes anciennes s'appuie essentiellement sur les artefacts lithiques et sur le contexte chronostratigraphique dans lequel les occupations prennent place. L'enregistrement, l'étude et l'exploitation de ces données font appel à un faisceau de disciplines scientifiques complémentaires (géologie, géomorphologie, préhistoire, paléontologie, archéozoologie, palynologie...). L'utilisation des Systèmes d'Informations Géographiques (SIG) et les possibilités d'acquisition, d'affichage, d'analyse, et d'édition qu'ils offrent constituent dans ce cadre un apport indéniable. Cet outil permet bien sûr l'élaboration rapide de cartes et de documentation pour la réalisation de synthèses sur les peuplements préhistoriques de France septentrionale, du Paléolithique inférieur au Paléolithique supérieur ancien. Mais plus largement, les analyses de données, la visualisation rapide des résultats, etc. permettent de tester relativement rapidement de nombreuses hypothèses de travail et ainsi d'avancer dans la compréhension des sites, des liens qu'ils entretiennent entre eux et avec leur contexte paléoenvironnemental. La présente communication se propose d'illustrer quelques exemples d'utilisation des SIG dans l'étude des occupations paléolithiques du nord de la France, selon plusieurs problématiques d'étude et d'échelles d'analyse. Dans un premier temps pourront être présentés des exemples plus spécifiquement liés aux contextes géomorphologiques, et dans un deuxième temps des exemples d'exploitation " archéologique " des bases de données contenant les informations sur les vestiges lithiques et fauniques issus des fouilles paléolithiques. Ce découpage est relativement artificiel dans la mesure où l'ensemble des données est indissolublement lié.

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Keywords: SIG, France septentrionale, Archéologie, paléoenvironnement

What if anything does the discovery of Middle Paleolithic in China tell us about population movements during the Late Pleistocene

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For many years now, there have been debates about whether the term ‘Middle Paleolithic,’ generally associated with Neanderthals in western Eurasia, was even applicable to China and adjoining areas. As a result, a two-phase model of the Chinese Paleolithic record has been increasingly suggested: Early and Late Paleolithic. However, recent discoveries from Chinese Central Asia and Inner Mongolia have largely changed our knowledge of Middle Paleolithic in the region. Since the beginning of this century several lithic assemblages with Levallois technology and Middle Paleolithic typological tools in northern China have been located. Here we will introduce the stratigraphy, chronology, and the general lithic technology of Jinsitai and Sanlong caves in Inner Mongolia, and Tongtian cave in Xinjiang Province. A preliminary comparison with the artifact assemblages from the Russian Siberian Altai sheds light on our understanding of population movements and technology diffusion in eastern Eurasia during Late Pleistocene.

Keywords: East Asia, Middle Paleolithic, population movements

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Entre nord et sud ? Le site paléolithique moyen de Roc-en-Pail, centre-ouest de la France / Between north and south? The Middle Palaeolithic site from Roc-en-Pail, western-central France.

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Découvert fortuitement à la fin du 19e siècle en marge d'une carrière alimentant des fours à chaux, le site de Roc-en-Pail (Chalonnnes/Loire, France) a été fouillé dans les années 1940-1950 puis en 1969 par le Dr. Michel Gruet. De nouvelles recherches de terrain, débutées en 2014 et poursuivies depuis 2016, permettent de renouveler les connaissances sur un site unique pour le centre-ouest de la France par l'ampleur de sa stratigraphie, qui atteint 5 mètres. Un lambeau de basse terrasse est recouvert par d'épais dépôts de versant, accumulés au pied d'un coteau calcaire désormais disparu, entièrement exploité par la carrière. Plusieurs couches livrent des industries lithiques du Paléolithique moyen associées à une faune abondante. De la microfaune est par

*Speaker

ailleurs présente tout au long de la séquence. Cette séquence stratigraphique pourrait s'étendre entre le MIS 5 et le MIS 3. Roc-en-Pail présente une des occupations les plus septentrionales pour le Moustérien de type Quina. La position du site, au niveau de la Loire, conduit à s'interroger sur l'interface entre les blocs méridionaux et septentrionaux du peuplement néandertalien dont on sait qu'ils se caractérisent par des traditions techniques distinctes. The Roc-en-Pail site (Chalonnnes/Loire, France) was accidentally discovered at the end of the 19th century on the fringes of a quarry supplying lime kilns. It was excavated in the 1940s and 1950s and then excavated in 1969 by Dr. Michel Gruet. New field research, begun in 2014 and continued since 2016, allows us to renew our knowledge of a unique site for central-western France by the extent of its stratigraphy, which reaches 5 metres. A remnant of a lower terrace is covered by thick slope deposits, accumulated at the foot of a limestone hillside now disappeared, fully exploited by the quarry. Several layers provide Middle Palaeolithic lithic industries associated with abundant faunas. Microfauna is also present throughout the sequence. The stratigraphic sequence could range from MIS 5 to MIS 3. Roc-en-Pail presents one of the northernmost occupations for the Quina type Mousterian. The position of the site, close to the Loire, leads us to wonder about the interface between the southern and northern blocks of the Neanderthal settlement, which are known to be characterised by distinct technical traditions.

Keywords: Paléolithique moyen, France, Pays de la Loire, site de plein air, Quina

Analyse technologique et techno-fonctionnelle comparative des faciès moustériens de la bordure est et sud de la mer Caspienne

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Le Proche et le Moyen-Orient, au croisement de l’Afrique, de l’Europe et de l’Asie, constituent une région assez unique marquée par une histoire longue et diversifiée. Cet espace a souvent été considéré au Paléolithique moyen comme un lieu de passage d’hommes anatomiquement différents : *Homo Sapiens* et Neandertal. Mais pour plusieurs raisons, les chercheurs ont concentré leurs recherches, sur la région du Levant et Zagros. Le sud et l’est du pourtour de la Mer Caspienne sont en revanche nettement moins étudiés.

Si le Moustérien du Proche-Orient est marqué par la prédominance de débitages de type Levallois, au-delà du Torus, à l’ouest de la Caspienne, c’est-à-dire en Azerbaïdjan et en Géorgie, les industries lithiques se caractérisent par des pièces bifaciales dites micoquiennes. Dans ce contexte, que se passe-t-il à l’est et sud de la mer Caspienne entre ces deux grandes aires d’influences ?

Une étude approfondie des outillages lithiques par une approche technologique et techno-fonctionnelle a été menée sur quatre assemblages d’Iran et du Turkménistan. Les informations obtenues indiquent que la tradition bifaciale (micoquienne) est bien présente dans certaines industries turkmènes. Il semblerait donc que le Turkménistan et l’est de l’Iran représentent un carrefour où les deux complexes techniques, le Levallois et le Micoquien ont pu se rencontrer.

La mise en évidence de cette diversité de systèmes techniques semble indiquer une complexité des dynamiques de peuplements pendant le Moustérien. C’est grâce à la mise en évidence des phénomènes de ruptures et de continuité que l’on tentera de percevoir et reconstituer ces phénomènes de peuplements, la mobilité des groupes humains préhistoriques, ainsi que l’interaction entre les hommes et les espaces qu’ils ont occupé.

Keywords: paléolithique moyen, technologique, technofonctionnelle, Iran, Turkménistan

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Variabilité et diversité des industries lithiques au Paléolithique moyen, en Europe Orientale et au Proche-Orient : entre innovations, diffusions et acculturations

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Cette présentation discutera des questions de variabilité et de diversité des industries lithiques durant le Paléolithique moyen, entre l’Europe Orientale et le Proche-Orient. . Si de façon très globale l’apparition et le développement des systèmes de débitage à enlèvements prédéterminés dont le Levallois marquent une limite entre le Paléolithique inférieur et le Paléolithique moyen, la réalité archéologique est bien plus complexe qu’une simple vision dichotomique entre un Paléolithique inférieur caractérisé par des outillages façonnés – faciès acheuléen – et un Paléolithique moyen lui-même dominé par l’utilisation d’outillages débités et normalisé – faciès moustériens. Cette période est en effet le témoin d’une succession ou d’une coexistence de systèmes de productions lithiques divers et variés, de débitage et/ou de façonnage et, par conséquent, de faciès technico-culturels distincts. Les explications des changements techniques opérés durant le Paléolithique moyen ainsi que de leurs diverses manifestations techno-culturelles en Europe et au Proche-Orient, sont certainement multiples et étroitement liées : facteurs géo environnementaux, socio-économiques, culturels... Parmi l’ensemble de ces facteurs, celui relatif à une évolution intrinsèque et conceptuelle des outils lithiques sera discuté. Les phénomènes de changements et de diversités pouvant résulter d’innovations techniques ayant convergé ou diffusé au sein de différents espaces temps engendrant alors de possibles phénomènes d’acculturations voire de substitutions techno-fonctionnelles.

Keywords: Paléolithique moyen, Europe, Proche, Orient, industries lithiques, diversité, variabilité

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