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Podium Presentation Session 3, Thursday 14:40-15:00

Investigating the co-occurrence of Neanderthals and modern humans in Belgium through direct radiocarbon dating of bone implements and Late Neanderthal remains

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The dynamics of the transition between Late Neanderthals and early anatomically modern humans (AMHs) is the subject of intense debate: the location and duration of the coexistence of the two human populations. As well as their relation and the cultural exchanges that could have occurred during this transitional period, referred to as the Middle Paleolithic to Upper Paleolithic Transition (MUPT), is still being discussed (d'Errico, 2003; Hublin, 2015). The precise chronological position of the different cultural facies, as well as the human remains associated with them, are therefore key elements that delineate the chronological framework within which Neanderthals and AMHs could have interacted. It bears upon the dynamics of colonization of Eurasia and the replacement of the last Neanderthals by AMHs. There is increasing evidence of admixture and co-existence of Neanderthals and AMHs in Central and Eastern Europe (Hajdinjak et al., 2021). Northern and Western Europe appears as a different scenario. Genetic analyses show the absence of genetic flow from early AMH to late Neanderthal populations as well as the absence of Neanderthal genes in Northern European Early Upper Paleolithic modern humans (Posth et al., 2016). However, this interpretation is based on a limited number of hominin specimens because of their scarcity in the archaeological record.

Mousterian and Aurignacian bone industries, associated with Neanderthals and AMHs respectively, are present in much larger quantities, and can also be used to define the timing of both occupations. Few radiocarbon dates, measured on ultrafiltered collagen, have been produced for these industries. These data showed a possible coexistence of Mousterian (42,300–39,900 cal BP) and Aurignacian (41,650–39,250 cal BP). We decided to reevaluate the chronology of the latest Mousterian and earliest Aurignacian cultural evidences using the compound specific radiocarbon dating approach (CSRA), which is the most robust pretreatment method. Our new data obtained on diagnostic bone implements (bone points and bone retouchers) show that the latest Mousterian occurrence possibly ended around 45,900–42,900 cal BP (95% probability) and that the earliest Aurignacian started around 42,100–40,300 cal BP (95% probability) - a date that is much older than the dates previously obtained on the same objects. Considering also the dates on Lincombian-Ranisian-Jerzmanowician industries, this new data tends to confirm that there may have been a hiatus implying that Neanderthals and AMHs did not co-exist in this region.



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Podium Presentati on Session 4, Thursday 16:50-17:10

New Evidence for the Middle to Upper Palaeolithic Transition Interval in the Danube Gorges of the Balkans

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Over the past few years, new investigations in northern Bulgaria at the site of Bacho Kiro have revived the likelihood that the "Danube corridor" [1] route served as a primary axis for the dispersal of modern humans into Europe. The association of modern humans with material remains of Protoaurignacian and Aurignacian provenance and/or transitional industries, would push the start of the dispersal across this region to 47 ka [2]. Furthermore, fossil remains from the cave site of Peștera cu Oase in the Romanian hinterland of the Danube Gorges area of the north-central Balkans provide genetic evidence of admixtures between Neanderthal and modern human populations [3] that might have taken place precisely along this transitory corridor. Yet, there is still relatively little in the way of evidence about, on the one hand, the last Middle Palaeolithic, and by proxy Neanderthal, and, on the other hand, the Initial and Early Upper Palaeolithic, and by proxy modern human, settlement of the region. Our recent investigations in the Danube Gorges area have brought to light two new sites, Tabula Traiana Cave and Dubočka-Kozja Cave, with Middle to Upper Palaeolithic deposits [4-5]. The application of modern standards of recovery and recording have enabled us to apply a suite of cutting edge and state-of-the-art methodologies backed by extensive radiometric dating of these sites' deposits. In this paper, we will present most recently obtained radiocarbon accelerator mass spectrometry (AMS) measurements, which allow us to discuss the chronological attribution of different levels of the two sites with more certainty. We will also offer further details regarding the knapped stone assemblages, including the results of use-wear analyses on a select number of artefacts. Finally, this evidence is integrated with the results obtained through the analyses of the faunal assemblages and by characterizing taphonomic factors that impacted their formation. Complementary data come from a relatively large pool of unidentifiable bone samples analyzed through the application of proteomic fingerprinting known as the Zooarchaeology by Mass Spectrometry (ZooMS), which has allowed us to better characterize the animal taxa composition of the faunal assemblages from the two sites and identify agents of bone accumulation. The results indicate a late continuation of the Middle Palaeolithic presence characterized by a Levallois-derived lithic industry at one of the two sites and the broadly contemporaneous appearance of the Early Upper Palaeolithic tools in the lithic assemblage of the other site. We discuss how the locations of the two sites in this specific landscape zone along the Danube might have influenced their respective uses.

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