



2016, *In press*



***Homo sapiens*, Neanderthals and *Homo heidelbergensis* occupations in Vila Nova da Barquinha (Central Portugal)**

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Since 2000 my research has been focusing the ancient human occupation in Portuguese Middle Tagus basin, particularly in the region of Vila Nova da Barquinha. I'm part of a research team that has been studying the geological evolution of the region by characterizing and dating the quaternary deposits (sedimentary deposits with ages between 300ky and 25ky) and studying its human occupation. Particularly I've been engaged in the study of the human occupation in the open air archaeological site Ribeira da Ponte da Pedra, the only site in Portugal with a sequence of Lower Paleolithic (300 ky- 175 ky), Middle Paleolithic (80 ky) and Upper Paleolithic (hearth structure dated from 25 ky). The site only preserves stone-tools, therefore, through their techno-typological, experimental and functional analyses I have been able to have some insights on human behavioral and adaptive patterns in the region since Lower to Upper Paleolithic. Despite the absence of organic and human remains, the absolute dates allow the association of the occupations by *Homo heidelbergensis*, Neanderthals and *Homo sapiens*.

The Lower Paleolithic assemblage was investigated (through technological, experimental and functional analysis) within the scope of my Ph.D., and I had the opportunity of supervising the study of the Middle Paleolithic in the context of R. Graziano's Master

thesis (techno-typological analysis) and part of the Upper Paleolithic within T. Bojnak's Master thesis (techno-typological analysis). Given the results of these studies it can be said:

- The Lower Paleolithic occupation (300 ky-175 ky), is somehow different of coeval occupations in the Tagus valley since the exploitation of local raw material is based on the production of medium size flakes unidirectional and unifacial detached from selected quartzite river pebbles, cores are present, but in low quantity, bifacial tools and cleavers are rare (Figure 1). Experimental studies were developed to create a reference collection for the functional analysis and to understand the patterns of edge modification observed on flakes and worked pebbles. The results indicate that subsistence activities were done at the site (possible work of wood, bone and butchering) and that some atypical edge modifications of flakes and worked pebbles might be the consequence of their utilization on the work of wood and bone.

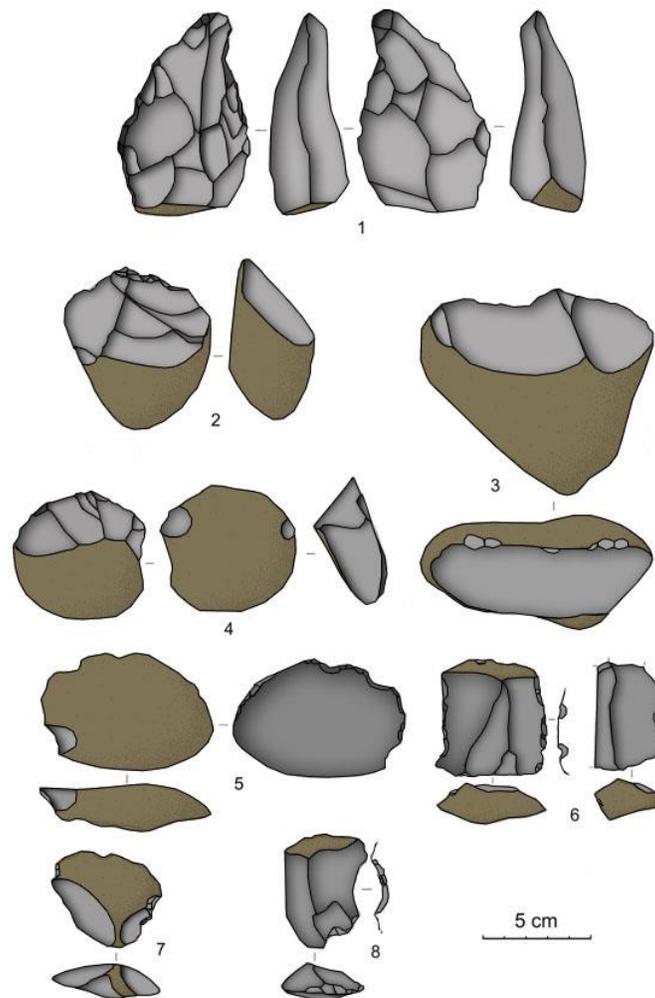


Figure 1: 1 – Bifacial tool; 2-3 – Worked Pebble, 4 – Core; 5-8 – Retouched Flakes.

- The Middle Paleolithic (80 ky) assemblage is completely based on the production of flakes; unidirectional unifacial debitage is present, like in the Lower Paleolithic, but more complex methods have higher percentages, while bifacial technologies are residual (one small quartzite Handaxe).

- Finally, the Upper Paleolithic remains associated with the hearth structure correspond to a Gravettian occupation (25 ky). However the stone-tools assemblage is essentially on quartzite, thus lacking other characteristic elements of this chronology. The study of part of this assemblage showed an exploitation of quartzite pebbles partially in accordance to that recognized in the Gravettian sites Terra do Manuel, Abrigo do Alecrim, Caldeirão Cave and Fonte Santa.

After 15 years of research on Ribeira da Ponte da Pedra and the Vila Nova da Barquinha region, numerous other archaeological sites have been found. Most of them are only on the surface, but some, such as the Lower and Middle Paleolithic sites Fonte da Moita and Bonito were able to be excavated. From the set of data, we have abundant information, but three main questions emerge where I presently focus my research:

1) Where are the human occupations from before 300 ky? The oldest human occupation in the Portuguese Tagus Valley dates back to 428 ky in the nearby Aroeira/Galeria Pesada cave. Thus, coeval open air human occupation must exist. Moreover, they are abundant from Indonesia to Spain, in caves, rockshelters and fluvial terraces since before 1 million years ago, meaning that there is no reasonable explanation besides survey different areas within this and other regions in the Portuguese territory;

2) What were *Homo heidelbergensis* and Neanderthals from Lower and Middle Paleolithic doing dozens of thousands of years ago in Ribeira da Ponte da Pedra? The combination of the excavation of Ribeira da Ponte da Pedra and the study of the stone-tools assemblage and of the sediments will result on a detailed understand of these past human occupations. Also, the results will allow the comparison with other Lower and Middle Paleolithic contexts in the region, and that will bring relevant insight to the understanding of the transition between these periods.

3) Why is the Upper Paleolithic assemblage of Ribeira da Ponte da Pedra so different from others of the same period? The complete techno-functional study of the Upper Paleolithic stone tools of Ribeira da Ponte da Pedra is crucial to better understand the variability within the Gravettian occupations, to correctly identify others already or to be found and also to better understand how the setting and site function influences the stone-tools assemblage.

In order to achieve some answers to this question more field work has to be done. Together with the Quaternary and Prehistory research group of the Geosciences center of University of Coimbra I will engage on territorial surveys, continue the excavations on Ribeira da Ponte da Pedra and consequently study the stone tools recovered on booth field work activities.

Editors

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