



Human palaeontology and prehistory (Prehistoric archaeology)

The Caune de l'Arago stone industries in their stratigraphical context



Les industries lithiques de la Caune de l'Arago dans leur contexte stratigraphique

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ABSTRACT

The Middle Stratigraphical Complex of the Caune de l'Arago cave site (Eastern Pyrenées, France) is dated to between 690,000 and 400,000 years old. The site contains successive, spatially distinct archaeological levels. At the base of the sequence, Unit I (OIS 14), where the P levels are among the earliest Mode 2 assemblages presently known in western Europe, contains finely shaped handaxes and a cleaver. Situated above this ensemble, Unit II (OIS 13) has revealed a series of artefact levels lacking handaxes and cleavers. Coiffing the sequence, Unit III (OIS12) has provided numerically rich faunal and lithic assemblages in association with *Homo heidelbergensis* remains. This paper analyses the stone industries from each artefact level taking into account raw material variability and highlights subtle technological and typological differences. This intrasite study uses a multidisciplinary approach to examine common elements and differences between levels, taking into consideration how external impact factors might have influenced global assemblage features. The Caune de l'Arago's long stratigraphical sequence provides an exceptional opportunity to observe both change and stability in Mode 2 stone-tool manufacture over a period spanning nearly 300,000 years, within the context of contrasting paleoenvironmental conditions.

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R É S U M É

Le complexe stratigraphique médian du site de la grotte de la Caune de l'Arago (Pyrénées orientales, France) date d'environ 690 000 à 400 000 ans. Le site comporte des niveaux archéologiques successifs, spatialement distincts. À la base de la séquence, l'unité I (OIS 14), où les niveaux P sont parmi les plus précoces parmi les assemblages de mode 2 actuellement connus en Europe occidentale, contient des bifaces finement façonnés et un hachereau. Au-dessus de cet ensemble, l'unité II (OS 13) révèle une série de niveaux à artefacts ne comportant ni biface, ni hachereau. Coiffant la séquence, l'unité III (OS 12) a fourni, en nombre, des assemblages lithiques et fauniques associés à des restes d'*Homo heidelbergensis*. L'article analyse les industries lithiques de chaque niveau d'artefacts, en prenant en compte la variabilité du matériau brut, et met en évidence des différences typologiques et technologiques subtiles. L'étude intrasite utilise une approche multidisciplinaire pour examiner les éléments communs et les différences entre niveaux, en considérant comment

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les facteurs d'impact externes pourraient avoir influencé les caractéristiques globales des assemblages. La longue séquence stratigraphique de la Caune de l'Arago offre une opportunité exceptionnelle d'observer à la fois le changement et la stabilité dans la fabrication d'outils lithiques de mode 2 sur une période couvrant environ 300 000 ans, dans un contexte de conditions paléoenvironnementales contrastées.

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1. Introduction

The Caune de l'Arago cave is carved into a limestone cliff overlooking the Gouleyrous Gorges (Tautavel, eastern Pyrenees, southern France). Over millennia, the Verdoube River that sculpted the Gorges provided hominins with fresh water and raw materials for the manufacture of their stone-tools (Fig. 1). Explored by core drilling in the 1980s (de Lumley et al., 1984), the cave's 15 m thick infill is divided into three major sedimentary complexes known to contain numerous distinct artefact levels. The bulk of the infill is attributed to the *Middle Stratigraphical Complex*, deposited between 690,000–400,000 years ago (Table 1). Many of the archaeological levels have been explored during more than 40 years of excavations, revealing

intermittent hominin occupations of varying intensity. While some levels have yielded fossils belonging to a wide variety of large mammals, others translate species-specific hunting practices. Combined biostratigraphical and sedimentological analysis have contributed to reconstructing climatic change throughout the cave's occupation during most of the Middle-Middle Pleistocene. This paper examines the main features of the industries from each of the different levels taking into account multidisciplinary studies in order to interpret subtle changes observed in the lithics over time (Barsky, 2001; Barsky and Grégoire, 2001; Barsky and de Lumley, 2004, 2005, 2010; Byrne, 2004; Filoux, 2007; Grégoire et al., 2006, 2008; de Lumley, 1976a, 1976b; de Lumley and Barsky, 2004; de Lumley et al., 2004; Moigne et al., 2005, 2006; Pois, 1999; Quilès et al., 2004; Rivals et al., 2006, 2009; Wilson, 1988).

The Caune de l'Arago stone assemblages constitute a significant contribution to knowledge about the arrival and subsequent development of Mode 2 (Clark, 1977) in southern Europe. The cave's long stratigraphical sequence provides an exceptional opportunity to study hominin evolution in this region during this little known period of human Prehistory. The rich archaeological heritage contained within its imposing deposits offers a rare occasion to define technical diversity within a precise chronological, climatic and behavioural framework. The different archaeological levels have yielded thousands of pieces of stone waste and shaped tools knapped from an exceptionally wide variety of rock types. Although some authors (Byrne, 2004) have proposed raw material determinism as a stabilizing factor explaining the relative homogeneity of Caune de l'Arago industries over time (dominance of vein quartz), this paper highlights the more subtle typological and technological differences in the industries from each occupation level.

The hominin occupation levels discovered within stratigraphical **Unit I** were buried in layered, sandy deposits during a cold, dry climatic phase (OIS 14). While levels M, N and O have yielded few artefacts, a series of levels known as "P" are attributed to short-term hominin stays (Barsky and de Lumley, 2005, 2010). Higher up within the Unit, artefact levels K and level L indicate short stays of hominins practicing species-selective hunting targeting reindeer (de Lumley et al., 2004; Moigne et al., 2006). In the P levels, on the other hand, the faunal assemblage is dominated by horse, reindeer and bear (Moigne et al., 2006; Filoux, 2007). There, bear remains are generally found near the cave walls and in anatomical connection. They are mostly attributed to elderly individuals and it is likely that they died naturally during hibernation. In contrast to the horse, reindeer, bison and red deer fossils, carnivore bones don't show traces of human intervention. The small bovid fossil accumulation (argali, thar) is attributed to carnivore predation (Rivals

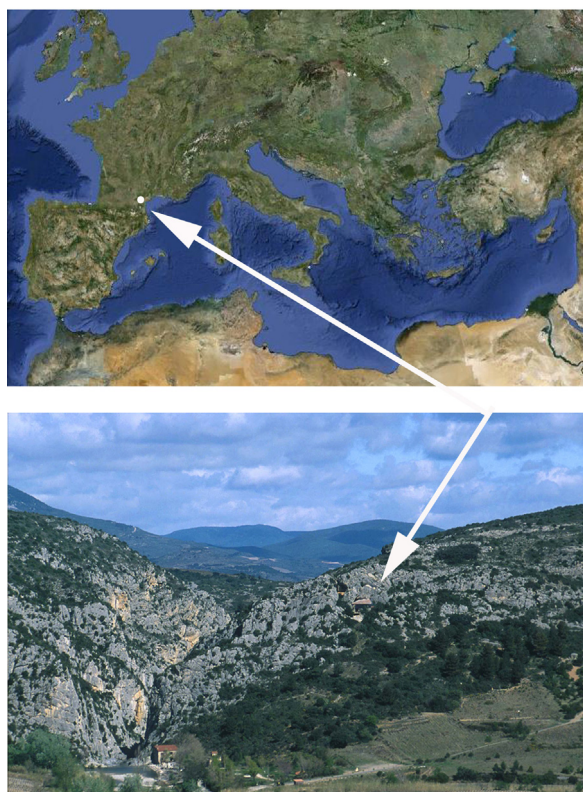


Fig. 1. Top: geographical situation of the Caune de l'Arago cave site in southern France (Tautavel, Pyrénées-Orientales). Bottom: view of the Caune de l'Arago at the mouth of the Gouleyrous Gorges.

Fig. 1. En haut : situation géographique du site de la grotte de la Caune de l'Arago dans le Sud de la France (Tautavel, Pyrénées-Orientales). En bas : vue de la Caune de l'Arago à l'embouchure des gorges de Gouleyrous.

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