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## The coexistence of Acheulean and Ancient Middle Palaeolithic technocomplexes in the Middle Pleistocene of the Iberian Peninsula

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#### ABSTRACT

Two clearly differentiated techno-complexes can be recognised in the Iberian Peninsula during the second half of the Middle Pleistocene: the Acheulean and the Middle Palaeolithic. In this paper we present the current state of research on both technological entities, and propose that they represent two different industrial traditions. The Acheulean, a techno-complex that originated and developed in Africa, is considered to have reached Western Europe via Gibraltar, and developed only to a limited extent. In contrast, relict populations with a different technological tradition would have been present on the European continent since the late Early Pleistocene and developed a technological tradition was based on the development of *chaînes operatoire* of *débitage*. From MIS 10 on these industries had reached a high degree of complexity and diversity.

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#### 1. Introduction

The Iberian Peninsula has only lately begun to play a leading role in the most recent debates about the evolution of the European Ancient Palaeolithic (i.e. Otte, 1996; Jaubert, 1999; Roebroeks, 2006; Delagnes et al., 2007; Hopkinson, 2007; Sharon, 2007; Rolland, 2010). The historical development of the discipline throughout the 19th and 20th centuries traditionally took place in France, where the concepts of the Acheulean and Mousterian were born (Sackett, 1981; Monnier, 2006; Groenen, 2008). Although investigations in Africa have dramatically altered our notion of the Acheulean techno-complex in recent decades (Isaac, 1969, 1972; Gowlett, 1986; Clark, 1994; Lycett and Gowlett, 2008; Diez-Martín and Eren, 2012), we believe that previous schemes underpin many hypothesis regarding the technological traditions documented in the Early and Middle Pleistocene of Southern Europe (Tuffreau, 2004; Nicoud, 2013).

Sites of this period currently known in Spain (Fig. 1) are very numerous in the fluvial formations of the Atlantic basins and have well-established chronologies (Bridgland el al., 2006; Santonja and

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Villa, 2006; Santonja and Pérez-González, 2010). This is based both on a detailed knowledge of the morphostratigraphic sequences of the valleys in which they occur, and on a significant number of numerical dates (Santonja and Pérez González, 2002; Falguères et al., 2006; Cunha et al., 2008; Martins et al., 2009, 2010; Panera et al., 2011; Moreno et al., 2012; López-Recio et al., 2013; Pérez-González et al., 2013; Santonja et al., 2014a,b). The present synthesis regarding the Acheulean and Ancient Middle Palaeolithic is focused on these chronological aspects.

The concept of technocomplex that we adopt here is based on the assessment of the *chaînes operatoires* (Geneste, 1985; Perlès, 1991; Soressi and Geneste, 2011) and on the distinction between *débitage* processes focused on the production of flakes from the systematic exploitation of blanks and shaping processes, whose aim was the production of unique tools through the implementation of well defined knapping schemes (Böeda et al., 1990; Boëda, 1991; Inizan et al., 1992; Boëda, 2001). Through making use of these concepts, we believe it is possible to distinguish two clearly-differentiated techno-complexes in the SW European Pleistocene: the Acheulean and Industries of cores and flakes that ultimately evolved into what is commonly known as the Middle Palaeolithic and Mousterian. The Acheulean techno-complex is characterised by the predominance of *chaînes operatoires* (*c.o.*) of *façonnage*, often lacking exclusive characters, together with independent or

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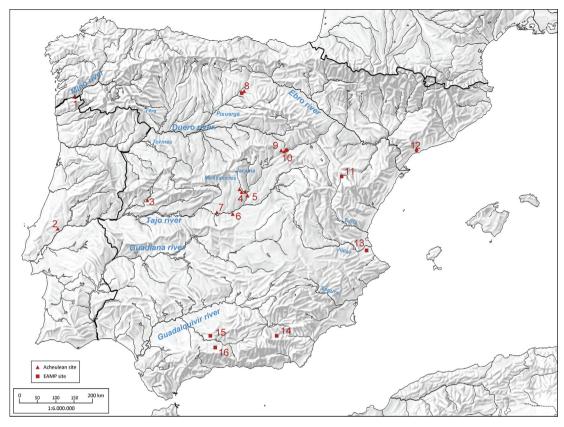


Fig. 1. Map of the Iberian Peninsula indicating the rivers and sites mentioned in the text. 1: Porto Maior; 2: Gruta da Aroeira; 3: El Sartalejo; 4: Manzanares river sites; 5: Jarama river sites; 6: Pinedo; 7: Puente Pino; 8: Atapuerca sites (Galeria and Gran Dolina); 9: Torralba; 10: Ambrona; 11: Cuesta de la Bajada; 12: La Boella; 13: Bolomor cave; 14: Solana del Zamborino; 15: Cueva del Angel; 16: Cave of Las Grajas.

interactive *c.o.* of *débitage* (Boëda, 1991). Flake and core industries would assimilate other techno-complexes in which the *c.o.* of *débitage* take preference, not excluding the presence of *c.o.* of *façonnage*, which can become complex in Mousterian contexts (Boëda, 2001; Molines et al., 2001). Finally, an alternative hypothesis to the traditional evolutionary proposal is discussed, as well as other more recent hypotheses, which define the independent origin of the European lithic industries with bifacial macro-tools.

## 2. The European Acheulean. The sequence in the Iberian Peninsula

In the European continent the Acheulean techno-complex is a phenomenon clearly restricted to the southern regions, the manifestations of which become increasingly weak northwards up the River Rhine, and is unknown in Central Europe and the Russian plain (Fig. 2). This suggests that it probably arrived on the continent via a southern route (Santonja and Villa, 2006; Doronichev and Golovanova, 2010; Bar-Yosef and Belfer-Cohen, 2013; Rocca, 2013).

The Acheulian techno-complex in the Iberian Peninsula and in southern France shows technological features in common with the African Acheulean (Clark, 1994; Sharon, 2007). Shaping is dominant in the *c.o.* of these industries, and production is often oriented towards obtaining large flakes that can be used as blanks for making large bifacial artefacts. The elaboration of tools by retouch is not common. The essential characteristics of these industries — the presence of cleavers, for instance — remains largely unclear in the more northern latitudes, even in regions originally described as "classic Acheulean", such as the Somme basin in the north of

France, where the techno-complex was first recognised and defined in Europe (Jaubert and Servelle, 1996; Santonja and Villa, 2006; Mourre and Colonge, 2007; Tuffreau et al., 2008; Turq et al., 2010).

The Acheulean is mainly found in open-air sites, and its presence in caves has only been reported from a relatively restricted number of locations, namely, the lowest levels of l'Aragó in southern France, the Gruta de Aroeira in Portugal and, to a lesser degree, in Montmaurin, Haute Garonne, France, and Galería, Atapuerca, Spain (Lumley and Barsky, 2004; Turq et al., 2010; Hoffmann et al., 2013; Ollé et al., 2013; García-Medrano et al., 2014). In the case of Galería, the updated information for the lithic assemblage has been described for complex stratigraphic units (GII and GIII), but it is not defined for the archaeopalaeontological levels (GIIa, GIIb; GIIIa, GIIIb), making it difficult to interpret the intensity of Acheulean presence at this site. In the Iberian Peninsula, the Acheulean lithic industries are equally generally recorded in open air contexts. They reach a high density in certain fluvial formations of the Atlantic coast, from the Miño river (Galicia) to the Guadalquivir river (Andalucía) (Santonja and Pérez-González, 2002, 2010). Sometimes, high concentrations of lithic industries can be observed, for which parallels can only be found in Africa (Fig. 3).

#### 2.1. The Tagus Basin sequence

One example, which may be viewed as representative of the evidence from all these basins, is that of the Tagus Basin, especially in the middle course of the River Tagus and the lower courses of the Manzanares and Jarama rivers (Table 1). The largest known

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