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A NEW LOOK AT THE END OF THE MIDDLE PALAEOLITHIC SEQUENCE IN SOUTHWESTERN FRANCE

Jacques Jaubert¹, Jean-Guillaume Bordes¹, Emmanuel Discamps¹ and Brad Gravina²

¹ University of Bordeaux 1, PACEA UMR 5199 (CNRS-UB1-MCC), France
² Bordeaux, France
Email : j.jaubert@pacea.u-bordeaux1.fr

Abstract

In the south west of France the majority of research concerning the Middle-to-Upper Palaeolithic transition tends to focus upon the Chatelperronian and Aurignacian at the expense of the end of the Middle Palaeolithic. This contribution attempts to rectify this shortcoming by demonstrating that the classic model of a direct MTA-Chatelperronian filiation is no longer valid as these two techno-complexes are in fact separated by two final Mousterian phases: a Discoid-Denticulate Mousterian followed by a Levallois Mousterian with large scrapers.

Key Words

Final Mousterian - Discoid - denticulates - Levallois - Mousterian of Acheulean Tradition (MTA) - southwestern France
In particular regions of Eurasia, where Mousterian assemblages have produced dates contemporaneous with the arrival of the first anatomically modern humans, different hypotheses have been advanced to account for the persistence of certain final Neanderthals populations, including their possible isolation (Carbonell and Vaquero, 1996; Camps and Szmidt, 2008) in such areas as the south of the Iberian peninsula and Gibraltar (Finlayson et al., 2010), the Crimea (Pettitt, 1998; Chabai, 2003; Monigal, 2006), or even the Caucasus (Golovanova and Doronichev, 2003). For the rest of western and central Europe, the question of the end of the Middle Palaeolithic is sometimes overlooked given the presence of certain techno-complexes commonly referred to as ‘transitional’. These industries immediately succeed the local Mousterian and are therefore often attributed to the final Neanderthals: for example, the Chatelperronian (Pelegrin, 1995), Ulluzian (Peresani, 2008) or Lincombian-Ranisian-Jerzmanovic (LRJ) (Flas, 2006). It is due to the persistent interest of researchers in this single ‘transition’ and its associated industries that the very end of the Middle Palaeolithic remains insufficiently studied. In this contribution we would like to return to the final Neanderthal occupation sensu stricto of Western Europe, more particularly, as it pertains to the south west of France.

The main elements and historical background of the ‘classic’ hypothesis concerning the end of the Middle Palaeolithic and the emergence of the Upper Palaeolithic in the south west of France can generally be resumed by the following:

- According to early researchers, the Mousterian of Acheulean Tradition (MTA) industries, such as those originally defined by D. Peyrony (1930) and then F. Bordes (1953), occupy the summit of stratified sequences.
- The MTA was subsequently subdivided by F. Bordes into two variants (Bordes, 1981); the Mousterian of Acheulean Tradition A (with numerous bifaces together with scrapers and backed knives) followed by an MTA-B (reduction in the quality and number of bifaces in favour of backed knives and Upper Palaeolithic tools types). Transitional (A-B) levels can exist such as those described at Pech de l’Azé I (Bordes, 1954-55).
- The MTA-B, given its place at the top of several Mousterian sequences and below the Chatelperronian (the «Lower Perigordian» following Peyrony’s original terminology (1933) or the «Castelperronian» for others (Lévêque et al., 1993; Rigaud, 2000)), is still considered to be a natural candidate for the emergence of this transitional industry (Pelegrin, 1990) which is itself ultimately succeeded by the Aurignacian.
- Several authors (Peyrony, 1948; Bordes, 1968; Pelegrin, 1995) have considered the MTA-B variant, for reasons both stratigraphic and typo-technological, as the origin of the ‘Perigordian’, a no-longer recognized techno-complex, but one whose former ‘Perigordian I’ has become what we know today as the Chatelperronian or Castelperronian (Lévêque and Vandermeersch 1980, Rigaud 1996).
- While still linked to the Mousterian of Acheulean Tradition, the Chatelperronian is, on the other hand, markedly different from the initial phases of the Aurignacian. Known as the Aurignacian I or Early Aurignacian with split-based bone points, this techno-complex, described as being monolithic over a substantial geographic extension, is considered to be intrusive in western Europe (Peyrony, 1933; Bordes, 1972). According to this view, known as the ‘replacement model’, the Aurignacian in general is often conflated with the Aurignacian I in particular and has come to be seen as the material proxy for the anatomically modern human colonisation of Europe, most famously represented by the remains of Cro-Magnon man (Stringer and Andrews, 1988; Mellars and Stringer, 1989)
- Despite still being sparse during the second half of the 20th century, the human remains that were associated with the MTA as well as the Chatelperronian or ‘Lower Perigordian’
were generally attributed to (Combe-Capelle) or assumed to be (Pech de l’Azé I) modern human and not Neanderthal. The coexistence of these two human lineages, as well as the variability of regional sequences across Europe, has led researchers to propose a polycentric model for the emergence of the Upper Palaeolithic. In terms of lithic industries, this model relies heavily on the presence of Upper Palaeolithic tool types in late Middle Palaeolithic assemblages such as endscrapers and burins, but above all, backed knives in the MTA-B (Bordes, 1972). The hypothesis of a gradual in situ evolution of the Upper Palaeolithic was relegated to a minority position in the eighties (Cabrera-Valdes et al., 2001; Maillo et al., 2004; Bernaldo de Quiros et al., 2010).

• The 1979 discovery of a Neanderthal skeleton from a Chatelperronian context at Saint-Césaire (Lévêque and Vandermeersch, 1980) lent further credibility to the stratigraphic position of the Chatelperronian human remains from Arcy-sur-Cure already attributed to the « Palanthropians » (Neanderthals) by Leroi-Gourhan (1958). Despite the fact that F. Bordes (1981) considered the Saint-Césaire discovery to be somewhat « awkward », a new paradigm was born whereby the Chatelperronian assemblages became the handiwork of the Neanderthals and were thus seen as representing a genuine ‘transition’ whose configuration could result from either acculturation (Demars and Hublin, 1989) or, given that the Chatelperronian was now seen as a Neanderthal epiphenomenon, a local evolution from a Mousterian substrate. Furthermore, the emergence of symbolic expression was no longer inherently connected to the appearance of modern humans (d’Errico et al., 1998).

• The few human remains recovered from MTA contexts have now been attributed to the Neanderthals such as at Pech de l’Azé I (Maureille and Soressi, 2000) or Jonzac (Jaubert et al., 2008; Richards et al., 2008).

• The reanalysis of the several MTA assemblages dated to within MIS 3 has clarified lithic production sequences (Soressi, 2004; Soressi et al., 2007, 2008; Guibert et al., 2008) and has reaffirmed the existence of a laminar component within the MTA geared towards the production of backed knives and Upper Palaeolithic tool types. This has lead some to suggest that this industry could be the origin of the Chatelperronian (Pelegrin and Soressi, 2007).

• This body of work as a whole has functioned to reinforce the replacement model which sees a population of anatomically modern humans, bearing the Aurignacian, who colonised Neanderthal Europe, be it still ‘Mousterian’ or ‘transitional’ (Mellars, 2004, 2006).

The debate concerning the ‘transition’, which has progressively emerged from the above outline, illustrates the fact that the other final Middle Palaeolithic cultural manifestations besides the MTA are rarely considered. However, we have recently shown that the MTA is not the final expression of the Mousterian in south-western France (Jaubert, 2010a, 2010b). Despite recent positions to the contrary (Pelegrin and Soressi, 2007), this demonstration significantly weakens, if not annuls, the theory of a direct and gradual succession of the type MTA A → MTA-B → Archaic ‘Castelperronian’ (Lévêque et al., 1993) → Chatelperronian.

At least one lithic techno-complex (LTC), if not two, follow the MTA in several well dated sequences: a Denticulate Mousterian with Discoidal debitage (Thiébaut, 2005; Thiébaut, 2007) and potentially a Levallois LTC with large scrapers (Asselin, 2006; Jaubert, op. cit.). This is also true in regions on the margin of, or outside the MTA phenomenon, such as in Bourgogne with the Arcy-sur-Cure sequences (Girard, 1978, 1980, 1982; Lhomme et al., 2005) or, as is the case on the other side of the Rhone valley, with the Neronian as originally proposed by Combier (1990) and more precisely characterised by L. Slimak (2004, 2008).
Furthermore, a recent reconsideration of the relevant faunal data has also permitted the construction of a new bio-stratigraphic framework for the end of the Middle Palaeolithic and the beginning of the Upper Palaeolithic (Discamps et al., in press). Taking into account the stratigraphic data and available absolute dates, it has been possible to correlate significant changes in the character of faunal assemblages with the regional bioclimatic record (Sánchez Goñi et al., 2008). At least three different techno-complexes from the end of the Mousterian can be placed between the Quina Mousterian (correlated with Heinrich event 6, ~60 ka BP) and the debut of the Upper Palaeolithic (correlated with Heinrich event 4, ~40 ka BP) (Fig. 2).

We would like to discuss the two LTC the mark the end of the Middle Palaeolithic of southwestern France as well as the relevant archaeological sequences (Fig. 1).

**The Discoid-Denticulate Mousterian**

This industry is defined in techno-typologically terms by a Discoid debitage (sensu Boëda, 1993; Peresani ed., 2003) principally associated with a notch and denticulate tool-group; Clactonian notches, diverse types of denticulates, Tayac points, etc. (Thiébaut, 2005, 2007). The scraper component is generally very poorly, if not sporadically, represented. Even if the majority of assemblages employed by F. Bordes to formulate ‘his’ definition of Denticulate Mousterian (Bordes, 1963) can be confused, this new definition is more precise than the original defini-
tion, which should no longer be employed. In fact, several forms of a ‘Denticulate Mousterian’ exist that, apart from their typologically ‘denticulate’ component, differ radically; for example, Combe-Grenal level 20, though attributed to a Quina Mousterian laden with denticulates, it is still not a Denticulate Mousterian *sensu stricto* (Faivre, 2008), this is similar to other industries attributable to a Levallois Mousterian with denticulates such as at Roc-de-Marsal (level III, Thiébaut, 2003), La Quina (level 7, Park, 2007) or Jonzac (level 9, Thiébaut in Jaubert, 2008).

In addition to the different sequences at Arcy-sur-Cure, this LTC is known from numerous sites in south-western France (Thiébaut, 2005) and always in a stratigraphically coherent position: Combe-Grenal (levels 11 to 16) Brouillaud (level D) Hauteroche (level 1, 3), Sandougne (levels A-B), Chadourne (c. A, A-B), La Quina Amont (levels 4a, 4b, 5, 6a, 6b, 6c), Les Rochers de Villeneuve (level N), Saint-Césaire (Egpf-Egpg-Egf or c. 10-11-12 after Thiébaut *et al.* 2009), le Placard (level 6), Les Fieux (levels J-K), Roc-de-Combe (level B), Puycelsi (level A), Roc-en-Pail (level 5) among others.

From an archeo-stratigraphic point of view the following can be established:

- When this LTC is present in the same sequence as the Chatelperronian, it never follows or is interstratified with the latter and therefore systematically underlies it as can be seen at Roc-de-Combe and Saint-Césaire. This is also the case outside of the South West such as with the Grotte du Renne and Grotte du Bison at Arcy.
- At least three sites present sequences where the Discoid-Denticulate Mousterian overlies the MTA; Saint-Césaire, La Quina, and Brouillaud.
- When this LTC is found in the same sequence as the Quina Mousterian, it systematically overlies it as at Placard, Hauteroche, Combe-Grenal, La Quina, Chadourne, Puycelsi, and Roc-en-Pail (Mellars, 1969, 1996).
- Several cases of recurrences or unexpected interstratifications (Les Fieux, Combe-Grenal (top of the sequence), Le Moustier) require verification or further discussion as to whether or not the initial attribution of this LTC was indeed correct as well as the LTC that complete the sequence.

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Fig. 2: *Chronological framework of the Final Middle Paleolithic. Synthesis of proposed correlations between paleoclimatic records (Bay of Biscay sea surface temperatures, after Sánchez-Goñi *et al.*, 2008), hunted fauna, and lithic techno-complexes (after Discamps *et al.*, in press). The three principle techno-complexes from the end of the Middle Paleolithic are highlighted.*
The Discoid-Denticulate Mousterian has produced direct dates from the following sequences:

- La Quina (43 ± 3.6 ka BP);
- Saint-Césaire, level 10: 40.9 ± 2.9 ka BP (mean of 9 TL dates); level 11: 38.2 ± 3.3 ka BP (mean of 2 TL dates) and level 12: 42.4 ± 4.3 ka BP (TL) (Lévêque et al., 1993);
- Roc-de-Combe, 44,700 ± 2,900 and 50,000 ± 2,400 in radiocarbon years (Bordes, 2002).

It has also been indirectly dated at Rochers de Villeneuve by a terminus ante quem provided by the overlying level dated to between 40.7 ± 9 and 45.2 ± 1.1 ka BP (infra). If we exclude the significantly older date from Roc-de-Combe, the time period concerned is therefore between 38.2 and 44.7 ka BP. To our knowledge, no human remains are clearly associated with this assemblage type.

While the fauna associated with this LTC is dominated by horse and bison (Fig. 2, Discamps et al., in press), complex subsistence practices (specialized, communal, and seasonal hunting strategies associated with surplus food storage, anticipation of prey movements and needs scheduling) concerning Bison have been identified at Mauran, La Quina, and Puycelsi (Rendu et al., in press).

Based primarily on the construction of archeo-stratigraphies from the South-West of France and surrounding regions (the Bourgogne and Centre-Ouest) our hypothesis maintains that this LTC follows the MTA, which was up until now considered to be the last Mousterian facies in France. This is no longer the case. Given that the ‘hyper-mousterian’ techno-typological profile of this LTC diverges considerably from that of the MTA (no laminar products nor Upper Palaeolithic tool types) it cannot therefore be considered as a legitimate candidate for the origin of the Chatelperronian. Furthermore, when the Chatelperronian is present in the same sequence it directly follows this lithic techno-complex, which once again accentuates the rupture between the Middle and Upper Palaeolithic and leaves no space for any concept of a ‘transition’.

**The Levallois Mousterian with large scrapers**

In the same manner, although very different from the previous example, another LTC is also stratigraphically posterior to the MTA: a Levallois Mousterian with large scrapers. Typologically, it could be confused with certain Ferrassie Mousterian assemblages due to the presence of Levallois debitage (recurrent centripetal) and a tool component dominated by scrapers, particularly, double scrapers and well-crafted, sometimes sizeable, double-convergent scrapers. Our present knowledge can be summarized by the following:

- This LTC is known from the sequence of Rochers de Villeneuve (c. Jr) in the Vienne where it overlies a Discoid-Denticulate Mousterian (Asselin, 2006) and is dated to between 40.7 ± 9 and 45.2 ± 1.1 BP. MtDNA analysis of a human femur fragment recovered from this level has confirmed its attribution as being Neanderthal (Beauval et al., 2005, 2006).
- Levels E, F1, and F2 from the Grotte du Bison at Arcy (Yonne) present a comparable succession whereby a Levallois Mousterian overlies a Discoid-Denticulate LTC (Lhomme et al., 2005).
- Level J (J1-J2-J3-J4-S) of Le Moustier (Lower Shelter) is also relevant given the fact that it is stratigraphically posterior to both an MTA level (H) and a poorly defined Denticulate level (I) dated to 40.9 ± 5 ka. Level J, which contained the Neanderthal burials (Maureille, 2002) was dated by to 40.3 ± 2.6 ka BP and undoubtedly merits further attention. Unfortunately, the material recovered by Peyrony demonstrates an over-representation of larger pieces and retouched tools suggestive of a recovery bias. However, very preliminary observations
of the material indicate the co-occurrence of both discoid and Levallois debitage. This layer is overlain by a still poorly published Chatelperronian level dated to 42.6 ± 3.7 ka BP (Valladas et al., op. cit.).

- It is very probable that level Ejop sup of Saint-Césaire (Charente-Maritime), attributed to the Chatelperronian during excavations (Lévêque et al., 1993), contains to some extent a Levallois component that can be linked to this techno-complex with large scrapers (Bordes et al., 2010).

- While the fauna is once again dominated by Bison and Horse (Fig. 2), assemblages securely attributable to human agents appear much more rare than was the case with the Discoid-Denticulate Mousterian. This techno-complex is for the moment essentially represented by paleontological sites demonstrating only an ephemeral human presence with lithic remains often associated with hyena dens, a carnivore particularly abundant during this period (Discamps, 2010). This is the case at Rochers de Villeneuve and perhaps at Les Plumettes in the Vienne (Airvaux, 1987; Primault, 2003).

Discussion
Before the Early Aurignacian, Proto-Aurignacian, and the Chatelperronian (Bordes et al., this volume) the South-West of France witnessed an ultimate phase of Neanderthal occupation that cannot be confused with either the debut of the Upper Paleolithic, the arrival of the first modern humans, or even the ‘transitional’ industries. This occupation is clearly more recent than the Mousterian of Acheulean Tradition industries of MIS 3. At least one, if not two, lithic techno-complexes (LTC) have recently been dated and documented:

- a Discoid-Denticulate Mousterian (Thiébaut, 2005, 2007) followed chronologically by
- a Levallois Mousterian with large scrapers which still requires further documentation.

These LTC, estimated to date between 45 and 39 ka BP, have been studied from a techno-typological standpoint based on the identification of one or several main products and groups of associated tools, only once their stratigraphic integrity had been verified by a taphonomic analysis (geoarchaeological, systematic inter-level refitting, etc.)

The veritable Mousterian character of these lithic techno-complexes does not detract from their modernity and in no way supports the idea that the disappearance of the Neanderthals was due to their following a ‘dead end’ cultural trajectory. It only serves to highlight that for long periods of time during the Pleistocene, human groups were not only substantially tied to their surrounding ecosystems, but were considerably limited by paleo-historic mechanisms.

Interdisciplinary approaches (litho-stratigraphy – geoarchaeology - dating programs – paleoanthropology – paleogenetics - palaeontology – biochronology – archaeozoology - lithic techno-typology - use-wear analysis - pigments) must be employed in the coming years to refine this framework. In addition to confirming, and where necessary, clarifying this new archæo-sequence, one of our principle objectives was to contribute new and updated information to the debate surrounding why the Neanderthals disappeared in western Europe.
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