

The Châtelperronian of Grotte XVI, Cénac-et-Saint-Julien (Dordogne, France)

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ABSTRACT Considered from its apparition as an industry belonging to the Upper Paleolithic, the Châtelperronian corresponds with the beginning of this period in southwestern Europe. The presence of Mousterian elements in Châtelperronian assemblages has been interpreted as showing an affiliation between the Mousterian of Acheulian Tradition and this industry. Moreover, it seems that Châtelperronian assemblages found on top of Mousterian occupations are richer in Mousterian elements than what is observed in sites where Mousterian occupations are lacking. Because this

may indicate mixing between the archaeological levels, it appeared necessary to check the integrity of the Châtelperronian level identified within the sequence of Grotte XVI, where several Mousterian levels have been documented. In this perspective, we used information about the site formation processes as well as chronological, stratigraphic (three-dimensional plots, refittings) and techno-typological data. The results of these analyses show that this level is homogeneous and that contaminations with the levels beneath and above are relatively uncommon.

Introduction

Called *Lower Perigordian* by Denis Peyrony, *Lower Aurignacian* by Henri Breuil, the Châtelperronian (or Châtelperronian) has been considered by all who have studied it as a completely Upper Paleolithic industry ever since it was first identified. Appearing above the regional Mousterian sequence in southwest Europe, the Châtelperronian was first interpreted as either an initial stage of the Perigordian or a distinct and original Upper Paleolithic industry. Regardless of its industrial origin, its maker was presumed to be anatomically modern *Homo sapiens sapiens*. For F. Bordes, the taxonomic lineage “Lower Perigordian (i.e., Châtelperronian)-Upper Perigordian” had its origins in the terminal stages of the Mousterian of Acheulian Tradition, and he even went so far as to suggest, in the absence of any compelling fossil evidence, that anatomically modern humans were responsible for the entire sequence (Bordes, 1969). The later discoveries at Saint-Césaire, and the vital debate they engendered, falsified Peyrony’s and Bordes’ interpretations and empirically confirmed an unanticipated association between a Neandertal and a Châtelperronian assemblage. Thus, understanding the origin and development of the Châtelperronian has always been important to understanding the origin of the Upper Paleolithic and its relation to the appearance of modern humans in western Europe.

The scientific community accepted the techno-typological assignment of the Châtelperronian to the Upper Paleolithic early on with little dispute. When the author of the Châtelperronian was shown to be Neandertal, however, many prehistorians, lacking confidence in the Neandertals’ ability to produce blade industries, quickly tried to shift the definitional beginning of the Upper Paleolithic to the earliest Aurignacian. The maker of the Aurignacian, they believed, was surely anatomically modern, our direct ancestor, the only

one capable of really modern technological and symbolic behavior (Mellars, 1989; White, 1982; Demars and Hublin, 1989).

This essentialist view, human biological evolution inherently tied directly to technological innovation, has been seriously contradicted by the facts of the archeological record on the one hand and by numerous examples of technological convergence unrelated to biological change that have occurred throughout prehistory and that are of the order seen at the beginning of the Upper Paleolithic. Nevertheless, this concept survives and is still invoked by some in current debates on the emergence of the Upper Paleolithic. In this paper, we would like to present new data from the Grotte XVI (Dordogne, France) that we believe are quite germane to this discussion and consider their implications for the origins of the Upper Paleolithic in southern France.

Techno-typological characteristics of Châtelperronian industries

Properly considered as an Upper Paleolithic industry, the Châtelperronian is not without similarities, both typological and technological, to the preceding Mousterian techno-complexes from which many believe it issued. This rooting in the Middle Paleolithic, whether it be in the Denticulate Mousterian (as Leroi-Gourhan had it) or in the Mousterian of Acheulian Tradition (the view of Peyrony and Bordes), was supported by several major techno-typological traits common to the Châtelperronian and these Mousterian variants: blade and flake-blade production, the fashioning of backed knives, and the presence of Upper Paleolithic tool-types (endscrapers, burins, becs, etc.). At the same time, frequent stratigraphic superposition of the Châtelperronian over the Mousterian encouraged the idea of techno-typological (if not cultural) continuity, conforming to the new biological continuity suggested by the Saint-Césaire discovery. The simultaneous presence of Mousterian tool forms and newer techno-typological elements like blade production and backed points confirmed for some the transitional character of this industry. However, the presence of these same forms, sometimes numerically quite important, was also seen as evidence for assemblage mixing, either due to less than precise excavation techniques or to geological processes like cryoturbation or solifuction. A rigorous taphonomic critique of Châtelperronian assemblages was, therefore, warranted.

In an earlier paper, one of us (Rigaud, 1996) was able to show that:

- 1) Châtelperronian assemblages *rich* in lithics of Mousterian manufacture were systematically superimposed stratigraphically on a Mousterian layer, and
- 2) Châtelperronian levels *poor* in Mousterian artifact forms were either lacking Mousterian levels below or isolated from lower Mousterian layers by other Châtelperronian units rich in Mousterian types.

This coincidence is quite suspicious, and calls into question the stratigraphic integrity of many Châtelperronian assemblages, especially given that they were excavated with less than modern technical control on site formation. In that same publication, some reservations were developed concerning the homogeneity of the Châtelperronian levels from Saint-Césaire itself, based on information presented in a recent report on the site (Guilbaud et al., 1994). According to that report, Level *Ejop-supérieur*, which contained the Neandertal remains and the Châtelperronian assemblage from the site, comprised two distinct spatial

zones: one under the rockshelter overhang, the other on the open-air platform outside the shelter. The great majority of blade products and most of the Upper Paleolithic tool-types (becks, burins, Châtelperronian points), were found in the interior area, associated with the human remains and with a faunal assemblage dominated by reindeer (*Rangifer* sp.). Middle Paleolithic tool-types (sidescrapers, bifaces) were concentrated outside the shelter on the platform, associated with a fauna dominated by Bovids. This spatial segregation of objects led the original authors to argue,

“Although temporal association between the two zones cannot be demonstrated, research has not, until now, distinguished any stratigraphic differentiation that might reflect change through time... This view, however, cannot rule out the possibility that the materials were deposited sequentially in time. For example, material found in front of the rockshelter reflects a basically archaic technology with few upper Paleolithic attributes, and may have been deposited earlier than those covered by the rockshelter overhang, with significant proportions of technological elements of both upper and middle Paleolithic.” (Guilbaud et al., 1994).

In our view, the Châtelperronian assemblage from Saint-Césaire, rich in both Middle and Upper Paleolithic artifact types when considered as a whole, may be a mixture produced by geological processes given the spatial variation noted above. Such contamination may not have been perceptible during excavation in the varied contexts involved. Only fine scale research to establish stratigraphic and chronological relations across the various site areas will resolve this inherent ambiguity (Bordes, 1998).

In short, we do not advocate rejecting all Châtelperronian assemblages rich in Mousterian artifact types out of hand because of potential problems with interstratigraphic mixture. We do believe that the archeological integrity of such assemblages must be seriously assessed before they are interpreted in behavioral or evolutionary terms. As an illustration of such assessment, we turn now to the Grotte XVI, where a Châtelperronian level has been found that displays many of the “Transitional” characteristics discussed above.

The chronological data from Grotte XVI

Grotte XVI is situated in the Le Conte cliffs at the confluence of the Ceou and Dordogne rivers south of Sarlat (Fig. 1). The cave has yielded an archeological sequence beginning with a number of Mousterian levels, the last of which, Couche C, is richest in artifacts; C is also defined by an organic rich zone at the top of the stratum, evidence for a multi-phase and cyclical production of spatially extensive fires over the course of occupation (Rigaud et al., 1995). The assemblage associated with these fires is a Mousterian of Acheulian Tradition that has been dated by TL to an age between $58\ 000 \pm 5200$ and $69\ 900 \pm 4600$ BP; the maximum likelihood age is $64\ 600 \pm 3100$ BP (Guilbert et al., 1999).

Overlying this Mousterian level is Couche B divided, when possible, into Bc and Bf, based on a slight change in sediment color only sometimes visible during excavation. Couche B has been identified over nearly the entire excavated area in the main chamber of Grotte XVI, i.e., some 50 m²; on average, the stratum is around 10 cm thick. Three ¹⁴C age determinations have been obtained for Couche B: $>39\ 800$ BP (AA 2674); $38\ 100 \pm 1670$ (AA 2997); $35\ 000 \pm 1200$ (GifA 95 581)

This layer is overlain by two Aurignacian levels, Aib and Abb, which themselves have been dated to $29\ 740 \pm 510$ BP (GifA 94 201), $29\ 285 \pm 420$ BP (AA 6841) and $28\ 140 \pm 405$ BP (AA 6840).

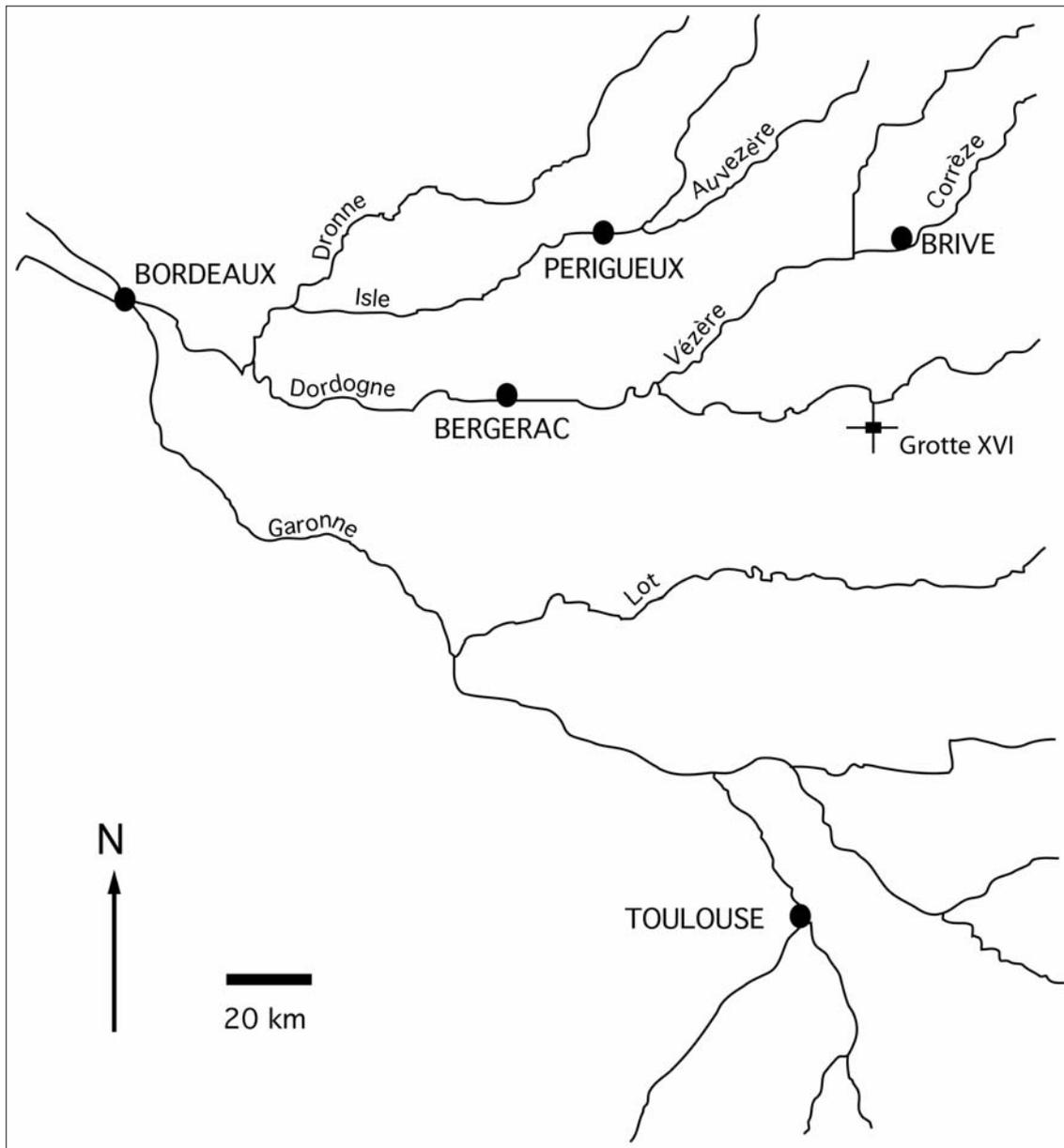


FIG. 1 – Location of Cave XVI.

Overlying the Aurignacian levels is a single Gravettian layer, **Couche Abc**, which has a ^{14}C age of $26\,340 \pm 470$ BP (AA 2670) and then a Solutrean level, **As**, which has a series of ages: $20\,460 \pm 260$ BP (AA 2993); $20\,410 \pm 380$ BP (AA 2991); $20\,280 \pm 220$ BP (AA 2992); $20\,230 \pm 270$ BP (AA 2669); $20\,070 \pm 330$ BP (AA 2668).

Finally, a Magdalenian level, **Couche Oa**, with two ^{14}C ages — $12\,530 \pm 105$ BP (AA 6842) and $12\,285 \pm 100$ BP (AA 6843), completes the Grotte XVI sequence.

The lithic assemblage from **Couche B**

The stone tool industry found in **Couche B** has strong Mousterian components, with sidescrapers (most simple with convex edges) composing more than 40% of the total tool

count. Sidescrapers *sur face plane* are common, and Quina elements are present but rare. Notches and denticulates make up 20% of the assemblage. Endsrapers and burins are present in small numbers, as are Châtelperronian points (N=4). We have proposed a Châtelperronian attribution for this collection, but, given the reserves we have already outlined, we too must develop arguments that will allow us to confirm or deny the homogeneity of this assemblage and show that it is clearly independent of the archeological materials contained in the levels above and below **Couche B**.

The stratigraphic integrity of the artifact layer in **Couche B**

Spatial Integrity

A number of vertical projection diagrams have been produced over the years for many locations within the Grotte XVI, many of them including **Couche B** artifacts in the projection. These diagrams, generated using a special DATADESK protocol programmed by F. Lacrampe (1996), allow the examination of fine scale stratigraphic distributions of artifacts in relation to geological layers. None of these projections has allowed us to identify definitively continuous sterile layers separating **B** from **Couche Aib** above and **Couche C** below. Nevertheless, vertical variation in the density of artifacts shows that a distinctive archeological level is surely present in **Couche B** (Fig. 2).

Refitting of Lithic Artifacts

At the present point in our studies of the Grotte XVI materials, we have applied only the method developed by J-G. Bordes for refitting lithic artifacts (Bordes, 1998). This method specifically concerns blades and blade fragments, and it thus has been applied only to the Châtelperronian and Aurignacian levels from Grotte XVI, there being far too few blade products in **Couche C** for appropriate application there. Of the 14 conjoins so far made, nine are within the Aurignacian level (**Aib**), three are within **Couche B**, and two refits link the very base of **Aib** and the very top of **B**. We cannot, therefore, exclude the possibility of localized mixing at the boundary between layers. For the most part, however, mixing concerns only a limited part of

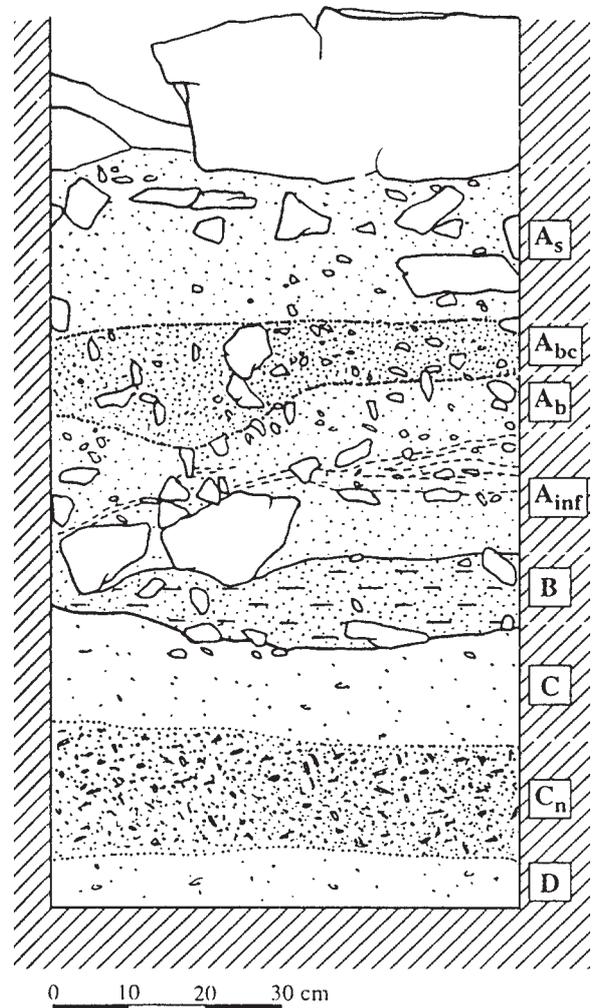


FIG. 2 — Archeostratigraphy of Cave XVI (after Guibert et al., 1999)

Couche **B**, and overall archeological assemblage integrity seems good when measured this way. We acknowledge that these results are preliminary and based on rather crude assessment criteria; in the future, we will expand our refitting program to examine finer scales of possible interstratigraphic mixture.

Techno-typological Integrity of the Couche B Assemblage

Supports for Tools

Tool blanks in the Couche **B** assemblage are principally flakes, some Levalloisian, along with blades (the blade index is 7%, much weaker than for level **Aib** above where the index surpasses 22%). Mousterian Couche **C** contains a number of elongated non-Levalloisian flakes but few true, regular blades that, according to Pelegrin (1995: 64 *et passim*) have negative scars on the dorsal face strictly parallel to the long axis of the piece resulting in a rectilinear shape oriented with the dorsal scar pattern.

Techniques of Percussion

In this analysis, we have classified a piece of debitage more than 3 cm in maximum dimension as produced by hard hammer percussion when the point of percussion is extruded or when the cone of percussion is clearly set back from the striking platform. In contrast, we have attributed pieces to soft hammer production that show lipped platforms and diffuse bulbs (and that do not exhibit extruded striking points) (Ohnuma and Bergman, 1982; Pelegrin, 1995, 2000; Wenbam-Smith, 1989, 2000). Among Couche **B** flakes larger than 3 cm in length, 79% were produced with hard hammer percussion; the remaining 21% show characteristics of soft hammer percussion removal. This is in marked contrast with the Aurignacian level immediately overlying **B**, where soft hammer debitage predominates. In Couche **C** below, there is little evidence for soft hammer percussion, which apparently was used only for the production of bifaces (an interesting fact beyond the scope of this paper), such as those illustrated in Fig. 3.

Individualization of Levels Based on Artifact Surface Alteration

In Couche **C**, more than 50% of the lithics exhibit alterations produced by exposure to fire (fissures, potlids, changes in color and structure). This is obviously due to the extensive fire features that cover the Couche **C** surface. The Couche **C** fire traces extend under almost the entire Couche **B** excavated area. Yet only some 7% of the lithics from Couche **B** show traces of fire alteration. Thus, it seems that Couche **C** materials have contributed in limited measure to the Couche **B** assemblage, but for the most part, these are separate assemblages.

Discussion

The vertical distribution of artifacts from levels **C**, **B**, and **Aib** shows that there are no sterile layers clearly separating individual archeological “occupations,” which is probably the norm in most cave and rockshelter sequences and in many open air sites as well. On the

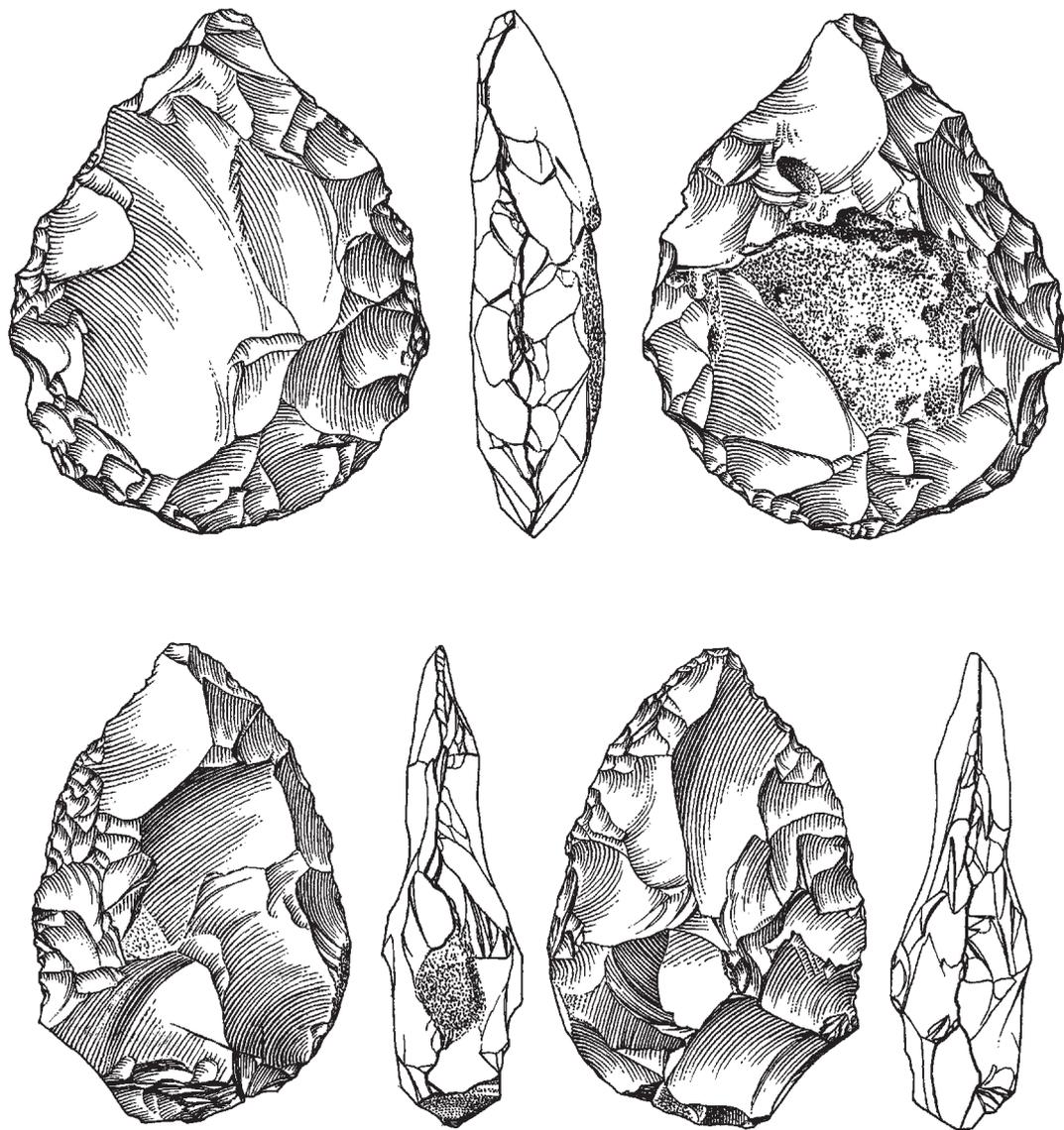


FIG. 3 – Bifaces, couche C, Grotte XVI (drawings by J.-G. Marcillaud).

other hand, vertical variation in the density of artifacts argues for the presence of distinct sheets of artifacts, each one having very little relation to the one above and the one below as indicated by the limited fitting we have documented at the boundaries between layers.

The distinctive technological and typological character of Couche **B**, the use of soft hammer percussion, and the different state of artifact surfaces between **B** and **C**, are also criteria that allow us to define Couche **B** as an independent archeological assemblage from **A1b** above and **C** below. Importantly, the presence of Châtelperronian points only in this level, along with the not insignificant number of Upper Paleolithic tool-types, allows us to suggest as the best working hypothesis we have in the present state of our analyses that the archeological assemblage from Couche **B** is attributable to the Châtelperronian .

Finally, ^{14}C age determinations by AMS indicate an age between $35\ 000 \pm 1200$ and $38\ 100 \pm 1670$ BP for Couche **B**, clearly more ancient than the overlying Aurignacian layers, dated to between $30\ 250$ and $27\ 735$ BP, and much younger than Couche **C** below, dated by TL to minimally $58\ 800 \pm 5200$ BP (Guilbert et al., 1999). We note that all ^{14}C ages are punc-

tual dates, each made on a single piece of compact large mammal bone; there is very slight probability of “aging” of the determinations resulting from these samples, either through contamination from organic materials in *Couche C* below or otherwise. Even considering the prudence with which we must approach radiometric ages produced with different techniques (^{14}C and TL) and any ^{14}C data older than 35 000 years, we believe that the Grotte XVI age series permits us to determine that the *Couche B* assemblage cannot be a mixture of *AiB* and *C* artifacts. There are no overlapping dates among the adjacent strata, as there should be if mixture is an agent in producing the *B* assemblage, and in fact, the ages for *Couche B* are internally consistent and place the layer unequivocally between the levels above and below in time. We take this as strong evidence for the stratigraphic integrity of the *Couche B* archeological assemblage.

A comparison of the *Couche B* lithics from Grotte XVI with the industry from Level 8 of Roc de Combe (Pelegrin, 1995), only 15 km away, shows that Levalloisian flakes are present in both these Châtelperronian assemblages. At Grotte XVI, the Levallois technique was practiced in place, as Levalloisian flakes are found in association with Levalloisian cores and core preparation products. The situation is different at Roc de Combe, where Levalloisian flakes found in the Châtelperronian were probably introduced to the site after being produced elsewhere; Pelegrin (1995, p. 86) has even suggested that they were possibly scavenged from earlier materials exposed by erosion or other effects in front of the site. At Grotte XVI, blade blanks for tools are less numerous than at Roc de Combe, but at the latter site, every category of Upper Paleolithic tool-type has roughly equal proportions of blade and flake supports. Only Châtelperronian points, far more frequent at Roc de Combe than at Grotte XVI, are made exclusively on blades; in other words, Châtelperronian blade production at Roc de Combe may have been oriented in large part toward the manufacture of Châtelperronian points. At Roc de Combe, 94% of the tool blanks were removed from their cores using soft hammer percussion (Pelegrin, 1995, p. 193). At Grotte XVI, no more than 15% of the tool blanks were extracted in this fashion. The relative paucity of Châtelperronian points found at Grotte XVI may be linked, at least in part, to the reduced effort at blade production exhibited by the *Couche B* assemblage.

Based on his analyses of lithic industries from the site of Grande Roche de la Plemartie at Quinçay, Lévêque (1987) proposes four “evolutionary phases” in the Châtelperronian sequence. The first, an Archaic Châtelperronian or Proto-Châtelperronian, is characterized by numerous sidescrapers, denticulates, and a few bifaces associated with burins, endscrapers on blades, and backed pieces (Châtelperronian points). An early Châtelperronian, rich in Châtelperronian points, follows this archaic phase; an evolved Châtelperronian in which Châtelperronian points are “finer” with more rectilinear backs overlies the archaic level. Finally at Quinçay, a Châtelperronian with regressive characteristics completes the sequence. On the face of it, the typological composition of the Archaic phase at Quinçay appears quite similar to the Châtelperronian of Grotte XVI *Couche B*; in the absence of more precise taphonomic data from Quinçay and a more accurate chronological context all around, however, similarities between these assemblages must remain evocative rather than demonstrated.

Conclusions

Our taphonomic, techno-typological, and chronometric analyses all indicate that the assemblage from Grotte XVI *Couche B* represents a homogeneous collection with little contamination from the assemblages above and below it in the site stratigraphy. Characterized

by typological and technological traits that are clearly Mousterian, the assemblage still shows some development of blade production technology associated with the presence of Upper Paleolithic tool-types. ¹⁴C determinations suggest an age between 33 800 and 39 770 for the assemblage. Given the nature of this industry and its chronology, we propose to consider it as an early, even initial phase of the Châtelperronian.

In coming analyses, we hope to compare the Couche B data with other Châtelperronian levels that are well dated and taphonomically comprehended. We will also look systematically at chronologically late Mousterian levels (mostly MTA) that have techno-typological characteristics “antecedent” to the Châtelperronian. These comparisons, we believe, will yield important information on the technological and typological modalities that were associated with the emergence of the first Upper Paleolithic cultures in Europe.

TABLE 1

Grotte XVI. Technological characteristics of lithic assemblages in levels C, B and Aib.

Level	C	B	Aib
Technique	Hard Hammer	Hard Hammer > Soft	Soft hammer > Hard
Method of Debitage	Production of elongated non-Levallois flakes	Levallois + Blades	Blades + Bladelets
Blade Index	13%	7%	22%

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