Lithic taphonomy of the Châtelperronian/Aurignacian interstratifications in Roc de Combe and Le Piage (Lot, France)

JEAN-GUILLAUME BORDES

ABSTRACT The goal of this paper is to present the main conclusions of a taphonomic analysis of the lithics from Roc de Combe and Le Piage in order to test the reality of the Châtelperronian/Aurignacian interstratifications diagnosed at these two sites. The analysis includes data from unpublished sources and uses the search of refits across stratigraphic units as a testing device. Results are that the interstratifications do not correspond to a real archeological sequence, but are actually the result of post-depositional processes. At Roc de Combe, interstratified levels 9 and 10 were not recognized during the excavation and correspond in fact to a selection of putatively diagnostic tools in what appears to be a mixed zone that includes artifacts belonging to technocomplexes (from Mousterian to Gravettian) which, elsewhere at the site, follow the classic Aquitaine sequence. At Le Piage, the spatial and stratigraphic distribution of Châtelperron points was used to demonstrate the presence of an interstratification, but the refits show that those items derive from a zone located above the rockshelter and are redeposited on top of undisturbed Aurignacian assemblages. Portions of these sites are well-preserved and contain important cultural information contributing to an improved understanding of the Middle to Upper Paleolithic transition in western France.

Introduction

Currently, most researchers tend to attribute the Châtelperronian to the Neandertals (Lévêque and Vandermeersch, 1980; Hublin et al., 1996) and the Aurignacian to modern humans (Gambier, 1993; Stringer, 1994). In this framework, the interstratifications between Châtelperronian and Aurignacian diagnosed at Roc de Combe and Le Piage — two sites located less then 4 km from each other (Fig. 1) and excavated and published simultaneously (Bordes and Labrot, 1967; Champagne and Espitalié, 1967) — are crucial in supporting the idea of a long contemporaneity between these groups of people in southwestern Europe. These two sites also play a major role in the “Neandertal acculturation” model, which explains the Châtelperronian as imitation or adoption by the last Neandertals of some behaviors of the modern human Aurignacians (Demars and Hublin, 1989; Hublin, 1990; Otte, 1990, 1996; White, 1993, 1996).

However, an alternative model suggests that the Châtelperronian is an independent local development out of the Mousterian. This model is based on the assertion that the Châtelperronian chronologically precedes the Aurignacian. Revisiting numerous stratigraphies in Europe and discussing information drawn from technological comparisons of bone and lithic industries, supporters of this model have raised doubts about the reality of these interstratifications (d’Errico et al., 1998; Zilhão and d’Errico, 1999). This reappraisal...
of the data, mainly based on the published evidence, did not, however, solve the debate (Mellars, 1998, 1999).

The goal of this paper is to disentangle the issue of the interstratifications by carrying out a first hand re-analysis of the evidence. In order to achieve this, the relevant lithic assemblages from the two sites were analyzed with a taphonomic approach (Dibble et al., 1997), using stratigraphic refits (Tixier, 1978; Villa, 1982; Petraglia, 1992; Le Grand, 1992, J.-G. Bordes, 1999) and the spatial and stratigraphic distribution of diagnostic tools. Our study uses materials and data that were not published by the excavators, namely the lithics recovered through sieving and their field notes.

Roc de Combe

Roc de Combe was discovered by Labrot in 1950. It is a small cave located at the base of a Cretaceous limestone cliff oriented to the south. The entrance bifurcates to form a small rockshelter a few meters wide (Fig. 2). The first excavation of the site was carried out by Labrot in 1959, followed in 1966 by a field season with François Bordes and a team from the University of Bordeaux. The latter consisted in the opening of a 1 to 3 m wide trench perpendicular to the cliff, following the axis of the cave.

The published data concern only the 1966 excavation, and this study also deals with the material from that excavation alone. Approximately 80% of the artifacts larger than 3 cm were plotted, representing 10,225 objects. The sediments were systematically dry sieved, allowing the recovery of the small characteristic artifacts (retouched bladelets, regular blade fragments, etc.). The lithics were incompletely published (Bordes et Labrot, 1967). Subsequently, Roc de

According to Bordes and Labrot (1967), the archeostratigraphy of Roc de Combe is, from top to bottom, as follows (Fig. 3): four Gravettian levels (1 to 4); two late Aurignacian levels (5 and 6); three early Aurignacian levels (7a, 7b, and 7c); one Châtelperronian level (8); one Aurignacian level (9); one Châtelperronian level (10); several unpublished Mousterian levels. The study of the stratigraphic sequence as published enables us to identify three distinct cultural zones:

- an area inside the cave (lines I to N), where the archeological sequence is the classic one for southwest France and some Mousterian objects are found under the Châtelperronian of level 8, on top of a roof collapse;
- in front of this roof collapse (lines D to H), levels 1 through 7 were dug by Labrot in 1959 and levels 8 through 10 by Bordes and Labrot in 1966;
- above and in front of the latter (lines A to E), there is a thick homogeneous Mousterian level in the slope deposits outside the cave.

What are the typo-technological characteristics of the Mousterian, Châtelperronian and Aurignacian levels recognized in these zones? To answer this question, we will look at the artifacts from row 9. This row is important because it is the only that ranges across all three zones. Moreover, the stratigraphy published by Bordes and Labrot was constructed follow-
ing observations made on row 9, which, on the other hand, contains 62% (6348 pieces) of the plotted artifacts.

Above the roof collapse: lines I-N, the classical sequence

In this zone, the published plots are identical to that drawn during the excavation. This shows that the limits between the archeological levels were observed at the time of excavation (Fig. 4). According to the excavators, these limits correspond to different geological facies. Each of the archeological assemblages is very rich and shows a homogeneous typo-technological composition. The few pieces that seem to be intrusive (two Châtelperronian points in the Aurignacian and three Dufour bladelets in the Châtelperronian) were plotted in the excavation and are located in zones that may have undergone ancient reworking (Bordes and Labrot, 1967). A systematic search of inter-level refits carried out on laminary fragments made of local raw materials (Table 1) confirms the conclusions reached by Pelegrin (1995) on the basis of pieces made on exogenous raw materials. The lack of refits between these levels corroborates the independence of the assemblages recovered therein. Their characteristics, listed below (Delpech, 1983; Pelegrin, 1995; Bordes and Labrot, 1967), can thus be used as a reference in assessing the composition of the other zones of the site.

**TABLE 1**

Roc de Combe, rows I, J and K, levels 7 (early Aurignacian) and 8 (Châtelperronian).

<table>
<thead>
<tr>
<th></th>
<th>Level 7</th>
<th>Level 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 8 (N=125)</td>
<td>—</td>
<td>4 (3.2%)</td>
</tr>
<tr>
<td>Level 7 (N=160)</td>
<td>10 (6.2%)</td>
<td>—</td>
</tr>
</tbody>
</table>

Number of refits on blade fragments ≥ 20 mm wide. Despite the low percentage of refits found, which is partly the result of the small area excavated (1 m²), these results confirm the independence of the two assemblages.
The late Aurignacian (levels 5 and 6; 934 plotted pieces) is characterized by the production of twisted bladelets from carinated endscrapers and busked burins. These blanks are frequently retouched into Dufour bladelets of the Roc de Combe subtype (Demars and Laurent, 1992). The rest of the assemblage is dominated by blades extracted by unipolar debitage, endscrapers, burins and retouched blades (Fig. 5, no. 1-3). Reindeer (83%), followed by horse (5%) and bovine remains (5%), dominate the fauna.

The early Aurignacian (level 7; 450 plotted pieces) contains no split base points but has two pièces à languettes, which have the same chronostratigraphic value (Fig. 5, no. 5). The lithic industry is classic for the early Aurignacian of southwest France (Sonneville-Bordes, 1960): high frequency of thick blades, often with typical Aurignacian retouch; presence of single or double endscrapers; few burins; wide carinated endscrapers associated with few large, non-twisted Dufour bladelets (Fig. 5, no. 4 and 6-9). Cores are unipolar and made on blocks that show little preparation. Blanks are generally wide and thick. Reindeer represents more than 95% of the identified faunal remains.

The Châtelperronian (level 8) contains 767 plotted pieces. The lithic industry features 20% Châtelperronian points and 10% truncated blades. The list is completed by endscrapers on flake, retouched blades, and burins. Denticulates and sidescrapers represent about 10% of the material. Aurignacian retouch is absent. The laminar exploitation of the cores leads to the production of straight, relatively thin, and fairly short blades, which are used to make Châtelperron points. Cores are often produced from the sides or the ventral faces of large and thick flakes. A second, opposite striking platform, helping in the control of blank morphology, is often found (Fig. 6, no. 1-3). The fauna is composed of 41% reindeer, 39% bovines and 15% horse.

The production method and the type of retouch differentiate the zone’s Châtelperronian and Aurignacian assemblages. Small chipped artifacts, mostly found amid the sieved material, include numerous unretouched blade and bladelet fragments that are also characteristic of these technocomplexes.

Due to the limited depth of the excavation in this zone, only 56 plotted artifacts belong to the Mousterian. The assemblage can be distinguished from the preceding ones due to its frequent use of quartzite (6 pieces, 3 of which are sidescrapers), absent in the overlying Upper Paleolithic assemblages. Typologically, the assemblages also differ. Eighteen sidescrapers and
6 denticulates are found in the Mousterian, which is also characterized, technologically, by the prevalence of the levallois and discoidal production methods (Fig. 6, no. 4-6).

**In the slope: lines A-E, the Mousterian**

Based on typo-technological and sedimentological criteria, two different archeological assemblages were defined in this zone during the excavation. At the top, there was a brownish level with poor cohesion and few artifacts. Given the importance of this level, more will be said in the next section.
The rest of the material corresponds to 2377 plotted pieces, forming a homogeneous, unpublished assemblage that only contains Mousterian artifacts. Preliminary study of this material suggests close resemblance to the Mousterian located above the roof collapse inside the cave. A discoidal method is used for the production of pseudo-levallois points, which are in some cases retouched into transversal or double déjeté sidescrapers. Numerous denticulates are produced with adjacent clactonian notches. Some levallois flakes, often

![Diagram of Châtelperronian elements](image-url)

FIG. 6 – Roc de Combe, squares I9, J9 and K9. Diagnostic elements of the Châtelperronian in level 8 (1-3) and of the underlying Mousterian (4-6) (after Sonneville-Bordes, in press and Pelegrin, 1995). 1-2. Châtelperron points; 3. core exploiting the ventral face of a flake; 4. outrepassé levallois flake with inverse proximal retouch; 5. double sidescraper on a pseudo-levallois point; 6. simple convex sidescraper with bifacial thinning on the right side. Drawings by P. Laurent (1-2) and M. Reduron (3).
made from non-local materials, are also present, and quartzite flakes are extremely common. The associated fauna is abundant and dominated by large mammals such as bovines and horses. Reindeer are nearly absent.

**In front of the roof collapse: lines D-H, the interstratification**

This zone includes squares F, G and H, situated between the two zones described above and the upper part of the deposits excavated in the slope. Archeological assemblages in this zone were not recognized as such during the excavation but constructed from the vertical distribution of the artifacts (Fig. 7). As a result, no material from sieving is associated with this area. Based on the plotted pieces and the published stratigraphy, the interstratification is defined in squares E-H by the presence of Châtelperronian level 8 on top of Aurignacian level 9. No refits were made in this zone. Thus, our analysis was strictly typo-technological and principally based on a systematic comparison of the artifacts from this sector with those from the others. The main results concerning row 9 are presented below.

In the area where the published stratigraphy shows an overlap between levels 9 and 10, level 8 contains 240 pieces, representing 30% of that level’s total (Fig. 8 and Table 2). Taken alone, square H9, that is, 17% of the material from level 8, represents 56% of this overlap. It is important to note that level 8 was recognized as such during the excavation and that the material from level 8 in this zone shows no typological or technological discontinuity with that from level 8 in the other zones. Underlying this unit, the 8.1 ensemble only contains Châtelperronian and Mousterian artifacts; there is no trace of Aurignacian here. Therefore, this square presents the same cultural sequence observed in squares I, J and K, despite the fact that the base of the Châtelperronian is considerably mixed with the top of the Mousterian.
TABLE 2
Roc de Combe, row 9. Number of plotted pieces per level and square based on labeled pieces.

<table>
<thead>
<tr>
<th>Level 7</th>
<th>Level 8</th>
<th>Level 9</th>
<th>Level 10</th>
<th>Mousterian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>K9</td>
<td>143</td>
<td>274</td>
<td>—</td>
<td>—</td>
<td>422</td>
</tr>
<tr>
<td>J9</td>
<td>192</td>
<td>199</td>
<td>—</td>
<td>—</td>
<td>427</td>
</tr>
<tr>
<td>I9</td>
<td>102</td>
<td>54</td>
<td>—</td>
<td>—</td>
<td>171</td>
</tr>
<tr>
<td>H9</td>
<td>8</td>
<td>128</td>
<td>23</td>
<td>24</td>
<td>183</td>
</tr>
<tr>
<td>G9</td>
<td>—</td>
<td>69</td>
<td>14</td>
<td>12</td>
<td>98</td>
</tr>
<tr>
<td>F9</td>
<td>5</td>
<td>43</td>
<td>24</td>
<td>28</td>
<td>100</td>
</tr>
<tr>
<td>E9</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>21</td>
<td>471</td>
</tr>
<tr>
<td>D9</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>3</td>
<td>709</td>
</tr>
<tr>
<td>Total</td>
<td>450</td>
<td>767</td>
<td>63</td>
<td>89</td>
<td>2604</td>
</tr>
</tbody>
</table>

In square G9, the various assemblages observed during the excavation contain diagnostic artifacts belonging to the Gravettian, the late Aurignacian, the early Aurignacian, and the Châtelperronian. According to the published stratigraphy, this is an area where we should only find Aurignacian and Châtelperronian artifacts (Fig. 9 and Table 3; see for example assemblage B1). Moreover, the stratigraphic organization of these artifacts is unclear. Obviously, this pattern suggests a significant reworking of the archaeological deposits.

TABLE 3
Roc de Combe. Summary of the chronocultural attribution of pieces in the interstratification zone. Example from square G9.

<table>
<thead>
<tr>
<th>Aurignacian</th>
<th>Châtelperronian</th>
<th>Gravettian</th>
<th>Upper Paleolithic</th>
<th>Middle Paleolithic</th>
<th>Unspecified</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 (B)</td>
<td>1</td>
<td>4</td>
<td>1 Noailles burin</td>
<td>12</td>
<td>7</td>
<td>60</td>
</tr>
<tr>
<td>sieved B</td>
<td>2</td>
<td>0</td>
<td>—</td>
<td>11</td>
<td>—</td>
<td>8</td>
</tr>
<tr>
<td>9 (B1)</td>
<td>1</td>
<td>1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>12</td>
</tr>
<tr>
<td>10 (B1)</td>
<td>—</td>
<td>1</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>sieved B1</td>
<td>1</td>
<td>0</td>
<td>1 grave point</td>
<td>30</td>
<td>—</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 microgravette</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>—</td>
<td>0</td>
<td>—</td>
<td>4</td>
<td>—</td>
<td>8</td>
</tr>
<tr>
<td>sieved C</td>
<td>—</td>
<td>0</td>
<td>—</td>
<td>2</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>54</td>
<td>18</td>
<td>124</td>
</tr>
</tbody>
</table>

The B assemblage is supposed to belong to the Châtelperronian; the assemblages from Bt and C are supposed to belong to the Châtelperronian and the Aurignacian.
A similar pattern is observed in square F9. Here, the definition of level 8 thins out (43 plotted artifacts, representing less than 5% of the level’s total), and mixing is clear in its lower part.

Square E9 is not represented in the stratigraphy of Bordes and Labrot. Field notes indicate that level 8 had been excavated by Labrot in 1959. Since the material from this excavation is not available, this square cannot be studied. However, data on level 9 obtained in square E8 fit the observations made in G9 and F9.

Squares A9 through D9, where a low percentage of Upper Paleolithic tools are found, some of which were attributed to levels 9 and 10, fit the pattern above. Those tools are associated with Mousterian-like artifacts and no clearly defined Châtelperronian context overlies this mixed assemblage.

In sum, our analysis of row 9 shows that Aurignacian artifacts underlying an unworked Châtelperronian level are nowhere to be found at the site. The same conclusions apply to rows 8 and 10. These results are consistent with the stratigraphic distribution of the diagnostic pieces from levels 9 and 10 published by Bordes and Labrot (1967) and Sonneville-Bordes (in press) (Fig. 10). A single piece comes from square H, a medial fragment of a Mousterian double sidescraper (no. 6); the rest come mostly from the front of the deposit, an area where level 8 is not homogeneous (Fig. 11).
FIG. 10 – Roc de Combe. Distribution of plotted pieces illustrated as belonging to levels 9 and 10 (Sonneville-Bordes, in press). The only piece located in a square where level 8 is homogeneous is the medial fragment of a double converging sidescraper (H10-1246; no. 6) or Mousterian point. Drawings by P. Laurent.

FIG. 11 – Roc de Combe. Position on the profile and the stratigraphy of the pieces illustrated in Fig. 10.
**Discussion**

This critical review of the Mousterian, Châtelperronian and Aurignacian assemblages of Roc de Combe supports the new interpretation of the site’s archeological sequence presented in Fig. 12.

The I-L zone contains a well-defined archeostratigraphy. Its various assemblages can clearly distinguish on typological and technological grounds, and the sequence shows no significant reworking of the artifacts, with the exception of some admixture between the Châtelperronian and the Mousterian, notably in square H. The artifact assemblages contained in the different stratigraphic units conform to the normal archeological sequence of, from bottom to top, Mousterian, Châtelperronian, early Aurignacian, late Aurignacian, and Gravettian.

The archeostratigraphy of the E-H zone was not recognized during the excavation, but constructed afterwards on the basis of the vertical distribution of some pieces in an area that is reworked (with the partial exception of level 8 in square H, which is valid). The different archeological units constructed *post-facto* contain artifacts that, in the other parts of the site, are found separately, in levels that belong to different technocomplexes. This is especially true of the assemblages defining the interstratification, which contain artifacts from all the technocomplexes documented in the site, from Mousterian to Gravettian. Therefore, the Roc de Combe data cannot be used to demonstrate an interstratification of Châtelperronian and Aurignacian.

Farther in the slope, the Mousterian assemblage is quite different from the overlying Upper Paleolithic. The discoidal method dominates, levallois flakes are rare, and the frequency of quartzite is high.

**The chronostratigraphical and historical contexts**

At Roc de Combe, 10% of the lithic collection comes from a geologically reworked zone. Removing this material does not change assemblage composition or the published artifact counts (Bordes and Labrot, 1967; Pelegrin, 1995) in any significant way. Moreover, my
results confirm Pelegrin’s doubts (1995, p. 86) about the Mousterian-like sidescrapers (made on levallois blanks and featuring Quina retouch) found in the assemblage from level 8, which all come from the reworked zone or from the base of the level, in direct contact with the underlying Mousterian. Where it was found relatively intact, level 8 is indeed “culturally” Châtelperronian and contains no significant Mousterian products.

How can we explain the disparities in the nature of the published archeological levels from Roc de Combe? First, they seem to have had distinct sedimentological and taphonomic histories, a hypothesis that requires testing by new excavations. It is quite likely, for instance, that the roof collapse in lines H through K effectively isolated the Châtelperronian from the Mousterian, explaining the lack of contamination of the former by the latter in this part of the site.

The interstratification zone, which contains numerous large rocks in a mixed sediment, was a headache for the excavators, as suggested by the field notes they left. Moreover, profile collapses and non-authorized excavations occurred after Labrot’s initial 1959 work, contributing to further disturb the archeostratigraphy. Finally, it is important to put this question in its historical context. When he was working at Roc de Combe, Bordes was still heavily influenced by the model developed by D. Peyrony of a parallel development of the Perigordian and the Aurignacian.
gnacian, a model under challenge at the time. Moreover, in 1966, a little before the beginning of the excavations at Roc de Combe, F. Bordes visited Le Piage with his wife, D. de Sonneville-Bordes, and with J.-Ph. Rigaud (oral communication J.-Ph. R.). F. Bordes observed the presence of Châtelperronian points sandwiched between two Aurignacian levels at Le Piage, which may have predisposed him to finding this type of stratigraphic arrangement plausible.

**Le Piage**

Le Piage is located on a Coniacian calcareous foothill. Above, to the south, there is a cave, and, in the opposite direction, a large rockshelter (Fig.13). It is important to note that Châtelperronian level F1 is limited to a small area near the rockshelter. In that area, three Aurignacian levels — K, J and GI — are found below F1, while another Aurignacian level, F, overlies it. These four Aurignacian levels also exist everywhere else at the site. A palimpsest of early Magdalenian (with *raclettes* and Solutrean occupations overlies the early Upper Paleolithic sequence (Champagne and Espitalié, 1981).

Excavations at Le Piage started with a trench perpendicular to the cliff, which later on made it impossible to stratigraphically connect the northern and southern portions of the site. Although sediments were not sieved, excavation methods were scrupulous, as proved by the numerous Dufour bladelets in the material, and proceeded through arbitrary horizontal levels (*décapages*). Only the tools recognized in the field were plotted; the rest of the material was bagged by level and square. A single field book has been found. It contains information on 560 artifacts, which, unfortunately, do not represent a valid sample of the site’s archeostratigraphy. The results from Le Piage were instrumental in the H. Laville’s (1975) chrono-climatic sequence of the Périgord region. Moreover, according to P.-Y Demars (1990), Le Piage is supposedly the only site in Aquitaine to show a stratigraphic succession of Aurignacian Ia and Ib.

**Analysis**

The Châtelperronian and Aurignacian assemblages, that is, more than 100 000 pieces, were completely studied. However, as a result of this richness, systematic refitting has only been attempted with specific raw materials.

The spatial distribution of all artifacts follows the same pattern as that of the tools (Fig. 14). Levels K, J and GI have identical spatial distributions and cover the entire site, whose southern part is clearly the richest. Level F is made of two distinct concentrations: one in the southern area, above the maximal artifact density in GI, the other above and beside F1. The latter is found only in the northern area, where Aurignacian material occurs at very low densities. Therefore, at Le Piage, the interstratification is based on a very small number of artifacts.

A typological and technological analysis of pieces belonging to all the stages of the reduction sequence completes the evidence gathered from the tools. It is important to note that certain types of tools (such as splintered pieces and retouched blade fragments) had not been considered in previous studies of this material. Since their inclusion considerably modifies the percentages of the different tool-types, arguments based on the archeostratigraphy of Le Piage that have used published percentages need to be reconsidered.

Some tools typical of the Mousterian (probably an MTA) and the Châtelperronian, accompanied by the corresponding debitage debris, come from the bottom of level K
FIG. 14 – Le Piage. Distribution of the tools recovered in the different archeological assemblages identified at the time of excavation (percentage weight of each square in the total for each level; after Champagne and Espitalié, 1981, modified).
These pieces are concentrated in a small hollow in the bedrock, which may explain their preservation (an episode of erosion seems to have removed from the site the remainder of the Châtelperronian occupation). Other Mousterian and Châtelperronian artifacts were identified in level F1 as well. These complete the published list of tools (Champagne and Espitalié, 1967; Demars, 1996). Finally, level F also contains some Châtelperronian and Mousterian tools, especially in the northern portion of the site (Fig. 16, no. 5).

The stratigraphic and spatial distributions of lithic refits (Fig. 17 and Table 4) show that most are made across the southern zone and between levels F and GI. Their general orientation is southwest-northeast, and the same applies to the refits involving levels GI, J and K. It is important to note that no refits were made between the two distinct horizontal concentrations of level F material. Inversely, several refits were made across the entire surface of levels GI, J and K. Moreover, some refits were made between F1 and GI and between F1 and F.
TABLE 4
Le Piage. Number of intra and inter-levels refits found in the assemblage. Figures in brackets refer to the number of pieces involved in the refits.

<table>
<thead>
<tr>
<th></th>
<th>K</th>
<th>J</th>
<th>GI</th>
<th>F</th>
<th>F1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>35 (79)</td>
<td>17 (45)</td>
<td>2 (4)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>J</td>
<td>—</td>
<td>5 (10)</td>
<td>6 (12)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>GI</td>
<td>—</td>
<td>—</td>
<td>132 (333)</td>
<td>21 (43)</td>
<td>2 (4)</td>
</tr>
<tr>
<td>F</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>16 (50)</td>
<td>3 (6)</td>
</tr>
<tr>
<td>F1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>10 (25)</td>
</tr>
</tbody>
</table>

FIG. 16 – Le Piage. Some of the pieces plotted in Fig. 15. 1-4, level K; 5, level F1. 1. levallois core; 2. refitted levallois flakes; 3-4: bifacial thinning flakes; 5. biface tip.
Discussion

These results support a new interpretation of the archeological sequence present at Le Piage (Fig. 18). In the southern part of the site, artifacts of the Châtelperronian and of the Mousterian of Acheulean Tradition are at the bottom of the sequence. These assemblages underlie an Aurignacian occupation contained in deposits that seem to follow a southwest-northeast slope. It would be risky, however, to attempt further subdivision of this occupation on the basis of refitted pieces alone. Our results also suggest that the southern concentration of level F corresponds in fact to the top of level GI in that part of the site. A technological analysis, still in progress, suggests differences between the base and the
top of this Aurignacian sequence. In the northern part of the site, levels F1 and F contain a lithic assemblage composed of a mix of Châtelperronian, Aurignacian and Mousterian artifacts.

Formation processes were shaped by a dynamic system. The site seems to correspond to the merging of two flow cones. The first cone would result from karstic activity in the southern cave, which would explain the general orientation of inter-level refits. The latter, however, are better explained as a consequence of difficulties in the separation and definition of levels during excavation than by processes of natural disturbance. In fact, artifacts from this zone are relatively well preserved, the number of refits is high, the overall bone preservation is good, and an accumulation of burned bones was identified. The second cone would be caused by a flow of collapsed debris originating in the fill of the rockshelter above the site. To this cone would belong at least the level F1 deposits and the northern concentration of level F. Testing of this model requires new excavations.

The role played by each of these two sediment sources is still not completely understood. Two opposite hypotheses can be entertained. The optimistic hypothesis is that only the material from F1 and F north would have been derived from those sources, accumulating in secondary position on top of a huge cone corresponding to the rest of the Le Piage deposits. In this scenario, Aurignacian levels K through G1 would be valid entities across the entire site. The pessimistic hypothesis is that the northern part of the site consists of a buildup of collapsed materials from the northern rockshelter. If so, all of the northern area would be mixed up and should be removed from the sample (Fig. 18). Because we prefer to take a conservative attitude, the latter hypothesis has been adopted in our ongoing typo-technological analysis of the Le Piage Aurignacian lithic assemblages.
Conclusion

A set of models has been presented to explain the causes of occupation mixing at Roc de Combe and Le Piage. These hypotheses need to be tested through new field observations in order to determine more precisely the formation processes operating at each site. However, results derived from a careful analysis of their archaeological assemblages challenge some ideas about the Middle to Upper Paleolithic transition. The hypotheses presented by F. Lebrun-Ricalens for Le Piage (1998, in litteris), and, more recently, by J.-Ph. Rigaud for Roc de Combe (1998, 2001), and by d’Errico et al. (1998) and Zilhão and d’Errico (1999) for both sites, are confirmed by our data: the Chatelperronian/Aurignacian interstratifications at Roc-de-Combe and Le Piage result from post-depositional processes, often combined with errors in stratigraphic observations. The taphonomic analysis also shows that portions of these sites are well preserved and that a techno-typological analysis of the industries they contain is warranted and will contribute new data on the beginning of the Upper Paleolithic in the Aquitaine region.

Acknowledgments

I would like to thank Denise de Sonneville-Bordes, Fernand Champagne, Foni Le Brun-Ricalens, Jacques Pelegrin, João Zilhão and Jean-Philippe Rigaud for their help. I would also like to thank Benoit Desjardins and Eugene Morin for their help in translating the original text. This research is part of a Ph.D. dissertation carried out at the University of Bordeaux I-IPGQ, UMR 5808 of the CNRS, and has been funded by a CNRS-Région Aquitaine BDI fellowship.

REFERENCES


LITHIC TAPHONOMY OF THE CHÂTELPERRONIAN/AURIGNACIAN INTERSTRATIFICATIONS IN ROC DE COMBE AND LE PIAGE (LOT, FRANCE)


