THE PLACE OF UNIT 18 OF EL CASTILLO CAVE IN THE MIDDLE TO UPPER PALEOLITHIC TRANSITION

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Abstract

The interpretative difficulties underlying discussions of the site of El Castillo Cave (Cantabrian Spain) are to a large degree based on the character of the assemblages themselves and their place within the Middle to Upper Paleolithic transition of the region than to the accuracy of the radiocarbon dates. Unit 18 at El Castillo contains evidence for the early presence of Upper Paleolithic elements alongside a strong Middle Paleolithic “matrix”, thus justifying the assignment of the assemblage to an “Aurignacian of Transition”. Nevertheless, the stratigraphy of the site, the integrity of the assemblage, and the character of some of the worked bone items have been repeatedly criticized. Here, we present arguments that weaken these criticisms and reaffirm the importance of El Castillo in the context of the Middle to Upper Paleolithic transition.

INTRODUCTION

El Castillo Cave is located in the municipality of Puente Viesgo (Cantabria, Spain), on a hillside of the same name that dominates the Pas river valley (Fig. 1). The mountain is markedly conical in shape and thus forms a point of reference for all routes between the coast and the Meseta. The presence of a series of fault lines has given rise to closed valleys such as Puente Viesgo, so that, from the cave, both the previously mentioned routes and the movement of herds of animals can be seen (Fig. 2).

The site of El Castillo provides a unique opportunity to study the Middle to Upper Paleolithic transition within the region. It contains 26 stratigraphic units that alternate between sterile and archaeological, reaching a total depth of 18–20 m at some points. This is in accord with earlier estimates made by H. Obermaier during his initial excavations, carried out by the Institute of Human Paleontology (IPH) between 1910 and 1914. Following the work of V. Cabrera (1984), El Castillo’s stratigraphic sequence contains three Early Middle Paleolithic units (26, 25, 24), two Mousterian units (22, 20), two Aurignacian units (18, 16), two Upper Perigordian units (14, 12), a Middle Solutrean unit (10), two Magdalenian units (8, 6), and an Azilian unit (4).

Early excavations carried out at the beginning of the twentieth century lacked present-day excavation methods. Nonetheless, the layers were analyzed horizontally, as documented in the field notebooks, and in the drawings, sketches and photographs made at the time, where each “anthropogenic” layer was considered a cultural unit (Cabrera, 1984). The stratification in El Castillo is very clear, and the cultural units, which are of black color, can easily be distinguished from the reddish sterile beds with which they alternate. Today, with refined methods, it is possible to distinguish different occupations within the different archaeological find horizons.

V. Cabrera (1984) assigned the stratigraphic levels currently in use, and compiled all of the stratigraphic information gathered initially by Obermaier (Obermaier, 1925). Since 1980, hori-
horizontal excavations have been centered on the area directly in front of the cave entrance. Here, Unit 18 (of Obermaier and Cabrera) is exposed over a total area of 40 m$^2$. However, owing to the morphology of the cave (Fig. 3) only 24 m$^2$ of the most distal part of Unit 18, furthest away from the cave entrance, have been excavated. Additionally, 3 m$^2$ along the longitudinal section of the profile wall left by Obermaier were also excavated. Despite the fact that the present area of excavation is restricted, the results obtained are similar to those of Obermaier, allowing for the subdivision of Unit 18 into three levels (from top to bottom: 18a, 18b, 18c).

Level 18a is sterile and overlies level 18b. In the exterior area, where only level 18b is present, a large concentration of bones has been found in association with a lithic industry that is predominantly made on limestone (cursorily knapped), rather than on quartzite or silicates. Dispersed fragments of carbon and abundant animal cranial remains – principally jawbones – have been found
together with the axial parts of the skeletons and show numerous marks of dismemberment (Pumarejo and Cabrera Valdés, 1992; Dari, 2003). This area can thus be considered to have been the primary area for butchering animals, using large, expedient cutting tools which can easily be replaced (Cabrera, Lloret and Bernaldo de Quirós, 1996). For such tasks, limestone appears to be the ideal raw material as it is abundant in larger pieces at the site and it is easily worked, whereas flint and fine-grained quartzite are available only as small-sized nodules.

Level 18c is best documented in the longitudinal cut and contains abundant concentrations of charcoal. Thin layers of charcoal (<1 cm) can be observed, and are rich in lithic artifacts and burned bone, but the structural proof that these concentrations represent in situ hearths is lacking. Instead they could equally represent refuse areas (Leroi-Gourhan, 1972: 239 and Fig. 172; O’Connell, Hawkes and Jones, 1991) where waste materials from living zones within the site were deposited following successive clean-ups carried out in the central habitation area. This latter interpretation is also supported by the location of these external areas in the cave: beside a large block, to one side of the cave’s entrance. In addition, the workshop residues are surprisingly numerous compared to the number of tools found. Thus, we surmise that the tools were worked close to the hearths, and that when these areas were cleaned; workshop and charcoal residues were collected and deposited together in this part of the cave.

Results obtained since 1980 have led to the proposal of a model of transition from the Middle to the Upper Paleolithic at a local scale, with the presence of an industry that we called “Aurignacian of Transition” in the levels corresponding to Unit 18. This “Aurignacian of Transition”, which could be related to the Neandertals, is sandwiched between the Charentian Middle Paleolithic of the underlying Unit 20 and the Archaic Aurignacian with Dufour bladelets from the overlying level 16.
RA DI O CAR BON DATES

A large number of radiocarbon and ESR dates have been made (Rink et al., 1997) from Unit 18 at El Castillo, with a total of ten AMS radiocarbon dates measured by three different laboratories: Tucson (Cabrera and Bischoff, 1989), Oxford (Hedges et al., 1994) and Gif-sur-Yvette (Cabrera Valdés et al., 1996). As a whole the results show no significant discrepancies (Table 1), despite being derived from different laboratories and from two different methods.

Based on these dates the base of Unit 18 (18c) can be estimated at around 40.0 ka $^{14}$C BP, while level 18b is assigned to ca. 38.5 ka $^{14}$C BP.

Table 1

<table>
<thead>
<tr>
<th>Level</th>
<th>Context</th>
<th>Date BP</th>
<th>Method</th>
<th>Sample Material</th>
<th>Laboratory Code</th>
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<td>18b</td>
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<td>Charcoal</td>
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dates, based on two different methods, leave little doubt as to the chronostratigraphical position and integrity of Unit 18.

Criticism has repeatedly been leveled against our hypothesis on the nature of the Middle to Upper Paleolithic transition at El Castillo, as well as the characterization of the assemblages from levels 18b and 18c. This criticism (Zilhão and d’Errico, 1999, 2003; Zilhão, 2006a, b) was based on doubts regarding: 1) the integrity of the stratigraphic sequence of El Castillo; 2) the integrity and validity of the radiometric dates; 3) the composition of the lithic industry; and 4) the character and nature of the bone industry and artifacts displaying symbolic expression.

Here we present new arguments that weaken the validity of this specific critique.

### STRATIGRAPHY AND RADIOMETRIC DATING

Roof collapses are of major importance for the formation of sediments at El Castillo, repeatedly creating “ramparts” that separated “closed sedimentary basins” towards the interior of the cave where deposits would be trapped, not eroded. These aspects of the cave’s morphology are responsible for clear and continuous sedimentation without any hiatuses and for special physical and chemical conditions (Goldberg and Sherwood, 2006) resulting from periods when water level rose and pools formed. These hydrological conditions affected the taphonomy of the site following the collapse of the roof that covered level 20.

Unit 18 of El Castillo is located between two sterile beds that result from the partial collapse of the cave’s roof (Fig. 4). Towards the base of the sequence, Unit 19 separates Unit 18 from the underlying Mousterian Unit 20. Unit 19 is composed of a large cone of blocks from the rock fall, which forms an external rampart on which were deposited yellowish-brown sandy clays, derived from low-energy sheet wash. This unit is overlain by sediments forming levels 18c, 18b and 18a (Fig. 5), which contain extensive evidence of repeated hominin occupation, and whose depths vary according to the area excavated.

A further collapse of the roof is documented above unit 18 (Unit 17), which caused significant retreat of the cave mouth and the alteration of the morphology of the site via the creation of a new exterior rampart, similar to that documented in Unit 19. This succession – sterile, anthropic, sterile – supports the claim that archaeological material did not move between units.

Unit 17 was covered by unit 16, which con-
tains a typical Archaic Aurignacian assemblage with Dufour bladelets.

In summary, Unit 18 was sealed by sterile levels (Unit 17), thus impeding contamination from either underlying Mousterian or overlying Archaic Aurignacian deposits (Fig. 5). The integrity of the unit’s archaeological materials is therefore unquestionable.

One of the principal criticisms repeatedly forwarded by J. Zilhão (Zilhão and d’Errico, 1999; Zilhão 2006a, b) addresses the existence of a “third” level within Unit 18 that would have contained the well-known Aurignacian I industry of Obermaier’s 1910–1914 excavations, and which was characterized by split-base bone points. It should be noted that in 2002 exhaustive cleaning re-exposed Obermaier’s sections as part of a new project to install a museum at the site, and which provided the possibility to document the full extent of the stratigraphy (Fig. 5). At that time no different stratigraphy could be observed that would point towards the existence of a new, hitherto-undetected, layer. It should also be noted that the idea of a third level within Unit 18 is based on texts by Obermaier that were later cited by V. Cabrera (1984), where the existence of a “Mousterian at the base” has repeatedly been quoted. This quotation should be taken in context, and it should not be forgotten that during the 1911 season, Obermaier had named what is today Unit 18 “Mousterian Alpha”. Following the discovery of the first split-base bone points in 1912, he renamed the layer “Aurignacian Delta”. This description implies, first, that Mousterian types are present from the base of the level onwards and, second, that Aurignacian material is also present in the lower part of Unit 18. In recent excavations, the authors have been able to establish that larger artifacts exist in the lower part of the level, which suggests that this phenomenon is due to the char-

Fig. 5. View of the stratigraphy of “El Castillo”
acteristics of the formation. Because this was an area that could be in-filled with water, it is logical to think that the largest pieces – and therefore the heaviest – would be those that would be most likely to sink in a muddy environment. This phenomenon would explain the opinion of Obermaier, and his constant preoccupation with “Mousterian at the base”, without necessarily implying the existence of another level. We must remember that Obermaier was writing in the beginning of twentieth century when “Mousterian” was considered to be a crude, big industry compared to the Upper Paleolithic.

LITHIC INDUSTRY

Another argument that questions the importance of Unit 18 for the understanding of the Middle to Upper Paleolithic transition within the region is related to the nature and integrity of the lithic assemblage. First, it was argued that the Unit 18 levels were “Chatelperronian”, possibly mixed with Mousterian (d’Errico et al., 1998). This simplistic assumption was based on the discovery of a single Chatelperronian point in level 18b, although such a cultural re-assignment would require a greater quantity of technological and typological evidence (cf. Pelegrin, 1995). In fact, many Aurignacian assemblages contain a few Chatelperronian points, but are not considered to be Chatelperronian, for example Cierro level 7 (n = 1), Arcy-sur-Cure level VII (n = 3), Roc-de Combe level 7 (n = 2), Labeko Koba level 7 (n = 2), Morín levels 8 (n = 5 atypical) and 9 (n = 4), Vascas (n = 3 gravettes) and Gatzarria level Cjn 2 (n = 3). Similar cultural re-assignments were proposed for other Aurignacian assemblages pre-dating 36,500 14C BP so as to fit the hypothesized “arrival time” of the Aurignacian in Europe (d’Errico et al., 1998). Such was the case with L’Arbreda, one of the most important and best-defined Archaic Aurignacian sites on the Iberian Peninsula, with radiocarbon measurements in a range similar to that of El Castillo (Bischoff et al., 1989; Hedges et al., 1994).

The Aurignacian characteristics of levels 18b and 18c were questioned on the grounds of a supposed lack of diagnostic Upper Paleolithic elements. Apparently the end-scrapers and burins presented by us in various publications do not qualify as “Upper Paleolithic”. Likewise, the lack of Dufour bladelets, which – in reality – are not particularly abundant in archaic, classical or typical Aurignacian contexts, is taken to indicate the “non-Upper Paleolithic” nature of the levels. In addition, it is argued that: “Some (end-scrapers, burins, borers) are Upper Paleolithic-like, but these types are common occurrences, albeit in small numbers, in Middle Paleolithic contexts (after all, Bordes’ type-list for the Middle Paleolithic does include an “Upper Paleolithic group” of re-touched tools” (Zilhão and d’Errico, 2003: 317–318). Naturally we are aware of an Upper Paleolithic-type group in Middle Paleolithic industries, but in such cases we are not aware of an Upper Paleolithic component that reaches 40.1% and 43.25%, as is the case in levels 18c and 18b, respectively (Cabrera et al., 2001).

A further argument employed to refute the integrity of the “Aurignacian of Transition” was that the assemblage presents a large percentage of pieces from the Mousterian substratum, namely, 49% in 18c, and 43.7% in 18b. For critics, this fact is a reflection of the Mousterian nature of these levels. However, we argue that this is not a reflection of their Mousterian nature, but of their Mousterian roots. Apart from epistemological considerations, there are many important Aurignacian assemblages with significant Mousterian content, such as Morín levels 9 (44%) and 8 (24.7%); L’Arbreda level H (18%); La Laouza level 2b (± 17%); Pataud levels 12 (46%) and 11 (29%) (Chiotti, 1999; Bazile and Sicard, 1999; Maíllo Fernández, 2003; Maroto et al., 1996).

It is paradoxical that the arguments given against the “Aurignacian of Transition” are so confused, for example, in relation to the industrial attribution of the collections. First, Mousterian and Chatelperronian (Zilhão and d’Errico, 1999), then Mousterian with occasional Upper Paleolithic type tools (Zilhão and d’Errico, 2003: 317) or Mousterian and Aurignacian (Zilhão and D’Errico, 2003: 317) are all put forward as alternative interpretations to explain the composition of the assemblage, the latter two even found on the same page! It is incomprehensible that the Aurignacian component of El Castillo’s Unit 18 has been minimized, whilst simultaneously placing so much emphasis on its being the product of a mixture between Mousterian and Aurignacian levels.
In order to place the discussion on the [claimed] Mousterian character of Unit 18 on a firmer footing, we performed a correspondence analysis using the statistical package SPSS 13.0 for Windows. The initial cross-table was done using 33 Cantabrian Paleolithic assemblages as rows (30 Middle Paleolithic assemblages in addition with 3 assemblages from El Castillo [Cst18b, Cst18c, and CstDelta, analyzed by Cabrera in 1984 from Obermaier’s 1914 excavations]). The columns were the absolute frequencies of 13 types of the Bordian type-list. The arrangement was the same used by Neira and Cabrera (1994) on correspondence analysis for the Cantabrian Middle Paleolithic, excluding the set O that corresponds to the numbers 55 and 62 of the Bordes type-list.

The contingency table was submitted to a symmetrical normalization provided by the SPSS package. The total inertia for the first two dimensions was 61.4%, and was considered acceptable. The types that contributed more to the first dimension’s inertia were the simple side scrapers, convergent side scrapers, notches, denticulates and retouched pieces. Those that contributed to the second dimension were the Upper Paleolithic types. The same results were obtained when the analysis was repeated using a principal normalization.

Accordingly, the El Castillo Aurignacian assemblages (Obermaier’s CstDelta and the new Cst18c and Cst18b) were clearly separated from the Mousterian and were more related with the Upper Paleolithic spectrum of assemblages (Fig. 6).

This also invalidates claims by J. Zilhão who argued that we were digging in a Mousterian level, and who propagated the existence of a “ghost level”, containing Aurignacian material to
explain the origin of split-base bone points that Obermaier had found during his excavation of the “Aurignacian Delta”.

**BONE INDUSTRY AND SYMBOLIC EXPRESSIONS**

The bone industry from El Castillo is small but significant. Level 18c has yielded two distal spearhead fragments made from deer antler, a “fish hook” made from a bone fragment similar to those found in the Aurignacian levels at Castanet (Aubernough and Cleyet-Merle, 1995), a poinçon made from an antler splinter, and some artifacts showing incisions and engravings in both levels 18b and 18c. This bone industry would place these levels alongside Unit 18 (Obermaier’s “Aurignacian Delta”) studied by V. Cabrera and the collection of ten split-base bone points which were uncovered in Obermaier’s excavations (Cabrera Valdés, 1984).

Level 18c contained a distal fragment of a chisel, showing a series of short, rectilinear incisions on the left edge of the upper side, with a transversal orientation with respect to the longitudinal axis of the tool (Cabrera et al., 2001). A medial fragment of an ungulate metapodial showing a series of incisions on the upper face was also found. The incisions comprise three deep marks with irregular outlines, two of which are parallel and perpendicular to the longitudinal axis of the piece, whilst the third takes an oblique direction, diverging in relation to the others. Of most interest is a fragment of flat bone that shows painted lines on the upper face. These form a figurative representation that can be interpreted as the head of an animal facing the right flank of the conserved bone fragment. Using SEM composition analysis, the presence of natural graphite has been detected. Level 18b contained various pieces, the most important being a proximal fragment of a hyoid bone, possibly from *Cervus elaphus*, decorated on the upper face with engraved and painted lines (Cabrera et al., 2001; Tejero et al., 2005). The decoration comprises lines that have been engraved and painted in black, representing what has been interpreted as the front leg of an animal. Analysis of the pigments that make up the painted lines has revealed the presence of manganese, which in turn suggests the use of a “pencil” made from this mineral, whose use would have left the marks present on the inner face of the bone. It should be added that the presence of manganese is only observed in the lines, and not in the marks left by roots that are also present on the surface of the piece.

Also found on this level was a triangular plaque of sandstone, showing four lines engraved on one of the faces. These lines appear on the flat side of the object, whilst the opposite side is naturally concave. The incisions are U-shaped in profile, and would seem to have been made with a thick-edged stone tool.

Continuing with marked bones, a fragment of deer metacarpus shows a series of parallel incisions (V-shaped in cross-section), transversal to the longitudinal axis of the piece. The location of the lines on the surface of the epiphysis do not seem to coincide with previously-observed butchery patterns; thus, for the moment, this fragment is included in the catalogue of incised bones, although without any apparent butchery purpose. These pieces are related to others found in Obermaier’s excavations, which had deep incisions on their upper faces (Cabrera, 1984; Corchón, 1986).

Some of these pieces have been criticized by Zilhão and d’Errico (2003) on the basis of a number of *ad hoc* considerations, including discussion of pieces that we had already rejected. Regarding the chisel, they proposed an explanation based on marks arising from the cutting action, although the model referred to for comparison (Defleur et al., 1999) does not present the regularity observed in this piece. In the same way, the observation that the incisions shown in this piece and in the metapodial are different from those of the other pieces retrieved from Unit 18 during Obermaier’s excavations is surely disingenuous, given that even in the Magdalenian, when engraving techniques were more standardized, different techniques can still be observed, even within the same specimen (Fritz, 1999). The same can be said with respect to the sandstone plaque, given that the lines are undulating rather than straight, such as those found on other sites which had been used as spearhead sharpeners (De Beaune, 2003).
TERMINOLOGY AND NOMENCLATURE

Lastly, Zilhão and D’Errico (2003: 326) lament the use of our “Aurignacian of Transition” appellation, arguing that it is confusing and proposing instead two different names: either “Evolved Mousterian” or “Transitional Mousterian”. In proposing a new classification for the assemblage retrieved from El Castillo’s Unit 18, they are implicitly admitting the homogeneity of the assemblage and, therefore, of the necessity of applying a new classification. If the opposite would be true, as they have repeatedly claimed, levels 18b and 18c would merely be the result of severe post-depositional alterations and would not require any new classification. Bearing in mind this qualification, the authors of this paper would like to observe that both “Evolved Mousterian” and “Transitional Mousterian” could also lead to confusion, given the implications that could be extracted, in the same way as they could be from the classification originally proposed. The adjective “evolved” implies that this is a special facies of the final Mousterian, attaining a “superior level” of development, in this case that of the Upper Paleolithic. On the other hand, “Transitional Mousterian” is inevitably linked to the question, transitional to what? Such a classification implies, just as the classification proposed by the authors of this paper does, an intermediate stage on the way to the Upper Paleolithic. Defining the assemblage of Unit 18 as “Transitional Mousterian” and not as “Aurignacian of Transition” must be linked to the widely accepted but unproven axiom that – in southwestern Europe – modern humans were the authors of the Upper Paleolithic in general and – more specifically – of the Early Aurignacian.

CONCLUSIONS

The results obtained from recent excavation of Unit 18 at El Castillo indicate that it is necessary to reconsider some of the traditional paradigms regarding the transition between the Middle and Upper Paleolithic. Based on the data presented thus far, the following conclusions can be drawn: 1) Unit 18 in El Castillo has not been affected by post-depositional processes to any significant degree; 2) typologically, levels 18b and 18c contain a significant quantity of Mousterian characteristics, combined with pieces that are typical of the Upper Paleolithic (e.g., end-scrapers, burins, and borers); and 3) repeated dating, performed on different samples, from different areas within the levels, and carried out in different laboratories, provides a consistent set of data that places the “Aurignacian of Transition” of Unit 18 of El Castillo roughly between ca. 40.0 ka $^{14}$C BP for level 18c and 38.5 ka $^{14}$C BP for level 18b.

From these data it can be seen that the transition between the Middle and Upper Paleolithic in Cantabria presents a series of local peculiarities that should be taken into account. Basically, they represent the transmission of ideas from the most recent Mousterian into the Archaic Aurignacian. These ideas include the persistence of discoid type débitage (in different forms) from the end of the Mousterian to the Archaic Aurignacian at sites such as El Castillo or Morín (Cabrera et al., 2001, 2004; Maíllo Fernández et al., 2004, in press; Maíllo Fernández, 2003). Game management strategies, on the other hand, are reported to have been quite similar during both the Mousterian and Early Upper Paleolithic in the Cantabrian region (Pike-Tay et al., 1999), suggesting some kind of “behavioral continuity”.

Innovations include the appearance of débitage using bladelets from prismatic cores, beginning in the late Mousterian (Cabrera et al., 2000; Maíllo Fernández, 2001; Maíllo et al., 2004), with some of the bladelets being inversely retouched in a semi-abrupt manner. The manipulation of some pieces in terms of symbolic expression, such as the decorated cobble from level 21a of El Castillo, must also be related to the engraved hyoid bone fragment, or the incised bone fragment from levels 18 at the same site. In this respect, other pieces could be added, such as the remains of malaco fauna interpreted as pendants, at the Lezetxiki site (Arrizabalaga, 2006).

Given all the above, the model used until now to explain the transition between the Middle and Upper Paleolithic, and the gradual replacement of Neandertals by Anatomically Modern Humans (AMH) must be questioned. The arrival of the Cro-Magnons from the Near East, carrying with them the Aurignacian, has been questioned by numerous authors. For example, the Kulturpumpe
model suggests that modern behavior and the Aurignacian has its origins in southern Germany (Conard and Bolus, 2003), from where it spreads across Europe via the Danube corridor as modern humans expanded and adapted to new environments (Svoboda, 2004). Another model proposes the origin of the Aurignacian in the Asiatic steppes (Otte and Kozlowski, 2003; Otte, 2004).

Nevertheless, all these proposals have a common, unchanging bias, which is that modern humans are the protagonists, whether they come from the Asiatic steppes or whether they first settled in southern Central Europe. In the case of the latter, it would not be unreasonable to ask what archaeological data exist to support the proposal that they arrived in Germany and created the Aurignacian. Or, to put it another way, what industry did modern humans produce before creating the Aurignacian that has passed unnoticed? The most plausible answer is that the traditional industry produced by Modern Humans was the Mousterian, as witnessed in the Near East (Vandermersch, 1988; Bar-Yosef, 2000). This idea is of particular importance if we take into account the fact that modern human fossil remains are scarce in the archaeological record until ca. 35.0 / 30.0 ka ¹⁴C BP (Garralda and Vandermersch, 2004). On the other hand, we have access to numerous Neandertal remains which present a very late chronology, such as the Vindija remains (Smith et al., 1999; cf. discussion on Oase 2; Rougier et al., 2007). In case of the Cantabrian coast, the infant remains found in level 18b, although not identified to species, could prove to be Neandertal (Garralda, 2006).

In our view, the data presented in this paper supports the hypothesis of an autochthonous Upper Paleolithic and of its associated so called modern behavior in the Cantabrian region. Unit 18 (layers 18b and 18c) corresponds stratigraphically to the “Aurignacian Delta” from Obermaier’s excavations, although the current spatial interpretation of this unit is different (Cabrera et al., 2001). Nevertheless, the cultural character of these layers and the data gathered thanks to methodological improvements since the 1910–1914 excavations have led us to label layers 18b and 18c as “Aurignacian of Transition”. We consider this technocomplex to represent a transitional industry.

We propose a mosaic Middle to Upper Paleolithic Transition model (Cabrera et al., 2001). This model supports the view that the Upper Paleolithic is not a homogeneous package, neither culturally nor chronologically (McBrearty and Brooks, 2000; Henshilwood and Marean, 2003). Accordingly, in the Cantabrian region we find traditional Upper Paleolithic elements within late Mousterian assemblages, as well as Middle Paleolithic elements within Aurignacian ones (Table 2). The former are exemplified by the bladelet production schemes found at sites such as El Castillo, Cueva Morín, Covalejos or Esquileu (Maíllo-Fernández et al., 2004; Sánchez-Fernández and Maíllo-Fernández, 2006; Matín et al., 2006; Baena et al., 2006). Other examples are the evidence for symbolic expression in El Castillo and Lezetxiki (Cabrera et al., 2004; Arrizabalaga, 2006). Among the Middle Paleolithic elements in later contexts we can highlight the presence of

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**Table 2**

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<th>Material Culture represented in each Archaeological period</th>
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<td>Bone industry</td>
</tr>
<tr>
<td>Ornaments</td>
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<td>Bladelets</td>
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<td>Blades</td>
</tr>
<tr>
<td>Carinated cores</td>
</tr>
<tr>
<td>Burins</td>
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<tr>
<td>Backed pieces</td>
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</tbody>
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El Castillo Cave
discoid technical schemes during the Early Aurignacian (Maíllo-Fernández, 2006) or the persistence of the same hunting strategies from the Middle to the Upper Paleolithic (Pike-Tay et al., 1999).

Essentially, we are dealing with a problem of definition. We must establish what we mean by “Upper Paleolithic”, “modern behavior” and “Aurignacian”. First, the Upper Paleolithic is presented to us as a package of specific features that in Europe correspond to the Aurignacian (Mellars, 2006). Such features have been documented in numerous cases (McBrearty and Brooks, 2000; Henshilwood and Marean, 2003). Second, modern behavior as we understand it from the definition of the Upper Paleolithic was already present in Neandertal settings (d’Errico et al., 1998; Zilhão, 2006a, b). Lastly, although there seems to be a consensus for the definition of the Early Aurignacian, there is a great deal of controversy over its earliest phases. As a result, we encounter a great variety of terms for the preceding industries, which are traditionally linked to the first arrival of AMH in Europe. For example, Mochien Méditerranéen (Cheynier, 1965), Correcian (Pradel, 1956), Protoaurignacian (Laplace, 1966), Archaic Aurignacian, Aurignacian 0, or, more recently, Early Aurignacian or Mediterranean Early Aurignacian (Bazile, 2002), and Fumanian (Mellars, 2006), terms that all refer to the same technocomplex. Added to this problem is the existence of technocomplexes such as the Szeletian, Bohunician, Bachokirian and all of the other so called transitional industries (Bar-Yosef, 2006), which are of key importance depending on the model favored.

The debate is triggered by the unknown biological authors of each of these industries, including the Aurignacian. The oldest remains of AMH are those from Peștera cu Oase, dated to around 35.0 ka 14C BP (Trinkaus et al., 2006), and these entail several taphonomic and chronostratigraphic issues. The human remains from Mladéc have yielded similar dates. However, they do not provide an explanation for the creators of the different industries during the period 40.0–30.0 ka 14C BP and their interaction.

A mosaic model encompasses a great variety of possibilities at a regional scale. Hence, conclusions obtained for the Cantabrian region should not be simplistically applied to other regions of Europe, as their “Middle to Upper Paleolithic transition” could have been different.

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