L’ARBREDA’S ARCHAIC AURIGNACIAN DATES CLARIFIED

Joaquim Soler Subils, Narcís Soler Masferrer and Julià Maroto

Universitat de Girona, Facultat de Lletres, Plaça Ferrater i Mora 1, 17071 Girona, Spain
joaquim.soler@udg.edu, narcis.soler@udg.edu, julia.maroto@udg.edu

Abstract

In recent years several authors have expressed their doubts as to the validity of L’Arbreda’s Archaic Aurignacian dates. In this paper we reaffirm their validity and address recent criticisms on the early age of the assemblage. To support our arguments, we provide further data on the spatial context of both finds and dated samples.

INTRODUCTION

The Paleolithic sites of Serinyà (Catalonia, Spain) (Fig. 1) provide a fairly complete record of the Middle and Upper Paleolithic from the north-eastern Iberian peninsula. Most of the sites in Serinyà have long stratigraphies and together offer valuable insights into the prehistory of this area during the last 250,000 years. The most significant sites are Bora Gran d’en Carreres (Upper Madalenian), Reclau Viver cave (Aurignacian, Gravettian, Solutrean, Neolithic and Metal Ages), L’Arbreda Cave (Middle Paleolithic, Upper Paleolithic, Neolithic and Metal Ages), Pau Cave (Gravettian, Solutrean, Neolithic and Metal Ages) and Mollet Cave (Middle Paleolithic and Aurignacian) (Soler, 1999).

Another relevant find near Serinyà is the Neandertal mandible from Banyoles (Maroto, 1993). It was found in 1887 in the vicinity of Mata, in a lacustrine area in Banyoles. Recently, combined non-destructive ESR and U-series analysis yielded an age of 66,000 ± 7000 BP for this mandible (Grün et al., 2006). The lake of Banyoles also provides a 30,000 year record of climate changes (Pérez-Obiol and Julià, 1994), which complement the results obtained in neighboring caves (Burjachs and Renault-Miskovsky, 1992). L’Arbreda Cave preserves one of the longest continuous stratigraphic and cultural sequences in this area and provides the most accurate information in the eastern Pyrenees about the changes that occurred between the late Middle and early Upper Paleolithic (Maroto et al., 1996). Of special interest are the 14C AMS dates which document the chronology of this rupture. In short, they indicate an early presence of the Archaic Aurignacian in the eastern Pyrenees, which, combined with other archaeological data, indicates a very abrupt local change between the Middle and the Upper Paleolithic.

The dates for L’Arbreda’s level H (Archaic Aurignacian) cluster around ca. 38,300 ± 500 14C BP and those for level I (Late Mousterian) around 39,900 ± 600 14C BP (Bischoff et al., 1989; Soler and Maroto, 1993; Maroto et al., 1996) (Table 1). The Archaic Aurignacian level H has been studied from several perspectives: the typology and technology of the lithic and bone artifacts (Soler, 1986; Ortega, 2002; Ortega et al., 2005), the overall cultural distinction between the late Mousterian and the Archaic Aurignacian (Maroto, 1994), palynology (Burjachs and Renault-Miskovsky, 1992), anthracology (Ros, 1987) and zooarchaeology (Maroto, 1994; Maroto et al., 1996). We assume that those changes parallel the arrival of Homo sapiens sapiens in the eastern Pyrenees (Maroto et al., 1996).
From level H, four different samples of charcoal gave the following AMS dates: 37,700 ± 1,000 ¹⁴C BP (AA-3779), 37,700 ± 1,000 ¹⁴C BP (AA-3780), 39,900 ± 1,300 ¹⁴C BP (AA-3781), 38,700 ± 1,200 ¹⁴C BP (AA-3782) (Bischoff et al., 1989). A conventional ¹⁴C date yielded a result of >33,500 ¹⁴C BP (Beta-46690) (Soler and Maroto, 1993), which does not contradict the first dates. Finally, two more AMS dates were obtained on bones from level H: 37,340 ± 1,000 ¹⁴C BP (OxA-3729) and 35,480 ± 820 ¹⁴C BP (OxA-3730) (Hedges et al., 1994) (Table 1). The average of 38,300 ± 500 ¹⁴C BP has been calculated excluding the date of 35,480 ± 820 ¹⁴C BP because it does not overlap with the other dates, and that of 33,500 ¹⁴C BP (Maroto et al., 1996: 227).

For the latest Mousterian (level I) there were three AMS dates from three different samples of charcoal: 39,400 ± 1,400 ¹⁴C BP (AA 3776), 34,100 ± 750 ¹⁴C BP (AA-3777) and 41,100 ± 1,600 ¹⁴C BP (AA-3778) (Bischoff et al., 1989; cf. Soler and Maroto, 1993). A later AMS date on bone yielded a result of 44,560 ± 2,400 ¹⁴C BP (OxA-3731) (Hedges et al., 1994) (Table 1). The average of 39,900 ± 600 ¹⁴C BP has been calculated using all four available dates because all of them are similarly dispersed (Maroto et al., 1996: 221).

A conventional ¹⁴C date of 25,830 ± 400 ¹⁴C BP (Gif-6422) for level H was reported earlier by Delibrias et al. (1987), which we reject because it falls outside the mean temporal range of the Archaic Aurignacian. It has since become apparent that this recent age results from the sampling of different squares, some of which were situated within the younger, Evolved Aurignacian of level G (Soler and Maroto, 1993). Aside from this one exception, we believe all other dates are valid and consistent with L’Arbreda’s stratigraphy and with the cultural contexts they date.

Dates from L’Arbreda have become controversial because of their importance to debates surrounding the chronological boundary between the Middle and the Upper Paleolithic in Mediterranean Western Europe. The chronometric results from L’Arbreda are not isolated. In Catalonia, the sites of Reclau Viver (near L’Arbreda in Serinyà) and Abric Romani (Capellades) have also yielded very early dates for the Archaic Aurignacian. The Archaic Aurignacian level A from Reclau Viver gave an age of 40,000 ± 1,400 ¹⁴C BP (Maroto et al., 1996) and that from Abric Romani 37,000 ± 2,000 ¹⁴C BP (Bischoff et al., 1994). These sites offer comparable, coherent, and, from our point of view, acceptable dates for the Archaic Aurignacian in Spain. On the other hand, for historical reasons they do not provide the same secure context as those coming from L’Arbreda. Reclau Viver and Abric Romani were dug with stratigraphic controls, but from Reclau Viver there is no detailed documentation of the specific location of the finds and the dated samples. At Abric Romani, the samples were collected from the rock-shelter’s wall. The dates from both sites are in accord with the dates from L’Arbreda, and the ¹⁴C dates from Abric Romani do not contradict the associated U-Series dates (Bischoff et al., 1994). However, because of these concerns, we argue that the most acceptable dates for the interface between the Middle and the Upper

Fig. 1. Location of Serinyà in the eastern Pyrenees
Paleolithic in the eastern Pyrenees come from the modern excavations at L’Arbreda (Table 1).

However, the dates from L’Arbreda’s Archaic Aurignacian level H have been questioned (d’Errico et al., 1998) and eventually rejected (Zilhão and d’Errico, 1999, 2000, 2003; Zilhão, 2006). The apparent reason for their rejection is because the dates are too early to support two of their hypotheses: a) Castelperronian inventories with personal ornaments pre-date those in Aurignacian contexts, and b) modern humans arrive in Iberia at a later date.

Most disturbing is the fact that the same dates that Zilhão and d’Errico discard, are later recruited in favor of their hypothetical biocultural frontier along the Ebro river: “It would therefore seem that the valley of the Ebro functioned for some 5000–10,000 years as a major biocultural frontier: to the north, Western Europe, was occupied from ca. 40,000–38,000 years B.P. (as unequivocally shown by the dates obtained for L’Arbreda and Abric Romani [Bischoff et al. 1989, 1994]), by modern humans producing an Aurignacian material culture; to the south, the rest of Iberia continued to be occupied ca. 30,000–28,000 years B. P., by Neanderthals with a Middle Paleolithic material culture” (d’Errico et al., 1998: 19).

In order to invalidate L’Arbreda’s chronostratigraphic sequence, Zilhão and d’Errico focused on issues of possible sample contamination, potential stratigraphic disturbances, and inconsistencies in the interpretation of site formation. These criticisms are highly inconsistent with our field data, and because they continue to be espoused (Zilhão 2006), we address them systematically.

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**Table 1**

<table>
<thead>
<tr>
<th>Square</th>
<th>Level</th>
<th>Depth (cm)</th>
<th>Cultural Attribution</th>
<th>Method</th>
<th>Sample</th>
<th>Lab-code</th>
<th>Date</th>
<th>STD</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>D2 &amp; D3 &amp; ES*</td>
<td>H*</td>
<td>505 - 540*</td>
<td>Archaic Aurignacian*</td>
<td>14C charcoal</td>
<td>Gif 6422</td>
<td></td>
<td>25,830</td>
<td>400</td>
<td>Delibrias et al., 1987</td>
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<td>H</td>
<td>E3: 510-520</td>
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<td>14C charcoal</td>
<td>Beta-46690</td>
<td>&gt;33,500</td>
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<td>Soler &amp; Maroto, 1993</td>
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<tr>
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<td>H</td>
<td>514</td>
<td>Archaic Aurignacian</td>
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<td>37,340</td>
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<td>Maroto et al., 1996</td>
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<td>14C AMS 1 bone</td>
<td>OxA-3730</td>
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<td>AA-3779</td>
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<td></td>
<td>Maroto et al., 1996</td>
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<td>AA-3777</td>
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<td>750</td>
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<td>1,600</td>
<td></td>
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<td>OxA-3731</td>
<td>44,560</td>
<td>2,400</td>
<td></td>
<td>Maroto et al., 1996</td>
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<td>Reclau Viver</td>
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<tr>
<td>B</td>
<td>Level B</td>
<td>Typical Aurignacian</td>
<td>14C AMS 1 bone</td>
<td>OxA-3728</td>
<td>33,780</td>
<td>730</td>
<td></td>
<td>Maroto et al., 1996</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Level A</td>
<td>Archaic Aurignacian</td>
<td>14C AMS 1 bone</td>
<td>OxA-3726</td>
<td>30,190</td>
<td>500</td>
<td></td>
<td>Maroto et al., 1996</td>
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<tr>
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<td>* mixed with the Evolved Aurignacian of level G</td>
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L’ARBREDA’S ARCHAIC AURIGNACIAN (PROTOAURIGNACIAN)

L’Arbreda’s level H has been excavated along a surface of 14 m². No spatial management structure was identified during the excavation, perhaps because the level has been only partially excavated. However, level H shows a high degree of integrity as indicated by the diversity of the faunal and lithic remains. Because of the low NMI of large mammals in a diversified spectrum, the absence of intensive lithic reduction, and the overrepresentation of retouched bladelets, we interpret level H as resulting from short-term occupations by small human groups.

In total, the lithic remains of level H consist of about 2,300 objects longer than 1 cm and many more small lithic fragments. From a typological point of view the level is characterized by a high proportion of Dufour bladelets, which represent 40.0% (n = 92) of the retouched products. Retouched blades represent 11% of the tools (n=25). Burins, most of them flat or dihedral, are abundant (9.6%, n = 22) and are only slightly better represented than end-scrapers (7%, n = 16), which are mostly thick (bladelet cores). Simple end-scrapers are rare. We find Aurignacian blades (4.4%, n = 10), composite tools (mostly end-scrapers and burins on blade, 2.2%, n = 5), Font-Yves bladelets (0.9%, n=2) and some truncated elements (0.4%, n= 1) in low frequencies. Scrapers (7.5%, n = 17), denticulates and notches (10.5%, n = 24), most of them produced on flakes of local raw materials other than flint, represent the remainder of the retouched tools (Maroto et al., 1996, Ortega et al., 2005).

The bone industry is not abundant but is diverse in the typological forms identified and it is characteristic of the Archaic and Ancient (or Typical) Aurignacian. There are three bone points with split bases, two spatulas, two awls, and a proximal fragment of a probable ivory spear point (Maroto et al., 1996). The presence of three split-base bone points in L’Arbreda indicates that such artifacts were already present in the Archaic Aurignacian (Protoaurignacian), as the Ancient or Typical Aurignacian are not represented here. The level above, level G, is clearly an Evolved Aurignacian with losangic bone points and household features (hearth).

Level H, as in all the other Upper Paleolithic levels, is dominated by a high proportion of raw materials (71% of the lithics >1 cm) coming from very far away. They are mostly flints with fine knapping qualities which do not occur in this north-eastern region of Catalonia but were transported over distances of more than 100 km. Most come from the northern slopes of the Pyrenees and the southern areas of the Mediterranean Languedoc (Ortega, 2002, Ortega et al., 2005).

Blade and bladelets were primarily produced on these imported raw materials. This fact allows us to easily isolate the products of such operational chains from those focusing on the production of flakes, which always relied on local raw materials such as quartz and quartzite.

L’Arbreda’s level H has all the attributes characteristic of the Archaic Aurignacian (Protoaurignacian): large, rectilinear Dufour bladelets, the marginal presence of the director types of a Typical Aurignacian, and the implementation of diverse bladelet production methods, with flakes used as cores for the production of the big and rectilinear Dufours (Ortega et al., 2005).

In comparison, the Mousterian level I differs significantly from the Archaic Aurignacian level H, both in terms of typological and technological characteristics, displaying different lithic raw material procurement and management strategies (Maroto et al., 1996).

SAMPLE CONTAMINATION AND CONTEXT

In their discussion on the supposed general chemical contamination of bones from L’Arbreda Zilhão and d’Errico refer to the conventional date on charcoal from the Archaic Aurignacian level H of 25,830 ± 400 ¹⁴C BP (Gif-6422). In the original publication of this sample the authors declared clearly that “seul l’âge du niveau le plus profond à l’Arbreda: 25 830 ± 400 ans (Gif-6422), niveau attribué à l’Aurignacien ancien paraît un peu jeune. Mais les dates satisfaisantes obtenues pour les niveaux supérieurs indiquent que la grotte de l’Arbreda est un gisement bien protégé, apparemment à l’abri des contaminations récentes; et ce résultat ne paraît donc pas, à priori, plus suspect que ceux qui ont été obtenus pour les niveaux sus-jacents” (Delibrias et al., 1987: 135). We
have already explained the reason for such a young date. Therefore, in the absence of any other aberrant date and, on the basis of the coherence shown by the rest of dates, claims about any supposed general contamination of L’Arbreda cannot be supported.

With respect to L’Arbreda’s dates, Zilhão and d’Errico also address the controversy regarding possible discrepancies between $^{14}$C AMS dates on bone and those on charcoal. In response to the radiocarbon results on charcoal for L’Arbreda’s level H that date to around ca. 38.0 ka $^{14}$C BP, Zilhão and d’Errico affirm that the earliest northern Spanish Aurignacian never pre-dates ca. 35.0 ka $^{14}$C BP when bone samples are considered. In reality, no inconsistencies have been observed between the dates on charcoal and those on bone at L’Arbreda. Instead, claimed differences between both kinds of sample are not exclusively related to a single site, but have to be attributed to lab equipment and sample preparation methods (Jöris et al., 2003). However, Zilhão and d’Errico’s arguments are faulty because they omit an AMS date on bone from L’Arbreda’s level H of 37,340 ± 1,000 $^{14}$C BP (OxA-3729; Maroto et al., 1996).

Having omitted sample OxA-3729, they suggest a series of possible reasons why the charcoal dates from level H turned out much older than the remaining bone date of 35,480 ± 820 $^{14}$C BP (OxA-3730). The first argument is that the charcoal samples could reflect the presence of an inherited soil component in the sediments (Zilhão and d’Errico, 1999: 21). In this way, “the topographic features of the site suggest that what has been dated is the samples of inherited charcoal from eroded soils older than and not associated with the archaeological components of the levels where they have been collected. In the framework of the extreme climatic instability of oxygen-isotope stage 3, erosion and redeposition must have affected soil covers and karstic fills, particularly at sites such as l’Arbreda, a very open rock-shelter where the finer element in the deposits corresponds to the redeposition, through washing or gravity of the sedimentary cover of the plateau above the shelter’s overhang” (Zilhão and d’Errico, 1999: 21).

As the excavators of L’Arbreda, we are not aware of any eroded soil related to the levels in question that could lead to such conclusions. Our observations are confirmed by sedimentological (Bischoff et al., 1989) and magnetic susceptibility analyses (Harrold et al., 2003). It is also unclear as to how the climatic instability of oxygen-isotope stage 3 (OIS 3), which is not reflected in L’Arbreda’s sediments, should have affected the site, as it remains unknown whether L’Arbreda was an open cave, a closed rock-shelter, or a closed cave at that time. What is true is that L’Arbreda, due to its infilling, the collapse of its roof during the late Solutrean, and its Holocene sediment cover, looks very different now from its OIS 3 appearance.

In particular, Zilhão and d’Errico speculate that some unspecified topographic similarities with the site of El Castillo (Puente Viesgo, Cantabria) explain possible re-deposition of the charcoals sampled at L’Arbreda. We, the excavators of the site, cannot understand what they mean by this “topographic parallelism” (Zilhão and d’Errico, 1999).

Here, we repeat our claim that the archaeological context of the dated samples is secure and clear, a contention we support by providing distributions of the finds and the provenance of the dated samples (Figs 2–4).
THE SEDIMENTOLOGICAL NATURE OF L’ARBREDA’S LEVELS

Zilhão and d’Errico go on to focus their criticism on the integrity of L’Arbreda’s stratigraphy. For their purposes they resurrect the date of ca. 37.0 ka $^{14}$C BP, which they have previously omitted, and consider the dates against the stratigraphy. They say that, “the fact that the AMS date on bone for the lowermost Aurignacian of l’Arbreda (35.480 ± 820 BP) [OxA-3730] is younger than that obtained for another bone sample in intermediate position between the early and the late Aurignacian (37.340 ± 1000 BP [OxA-3729] and the existence of a 34.100 ± 1000 BP (AA-3777) result on charcoal for the underlying Mousterian suggest a complex stratigraphic situation” (Zilhão and d’Errico, 1999: 23).

In general, the criticism centers on our excavation and interpretative techniques as well as on a confused stratigraphy. They claim that “because of the way the site was excavated (by artificial horizontal spits that could not account for the natural inclination of the strata), and because of the stratigraphic inversion of some results, picking only the earliest of them as those really associated with the first Aurignacian of the site was an erroneous procedure” (Zilhão and d’Errico, 2003: 316).

We agree that many of our common concerns could be resolved more easily if L’Arbreda showed clear sedimentological differences between the different levels, but this is not always the case: most of the recent Pleistocene filling of L’Arbreda, from the Mousterian until the late Solutrean, is too similar to allow for the distinction of any clear sedimentological facies. The reason for this homogeneity is likely the common source of the sediments and the nature of trans-
port. The vast majority of the material infilling L’Arbreda originates from the Usall lacustrine platform located near the site. In fact, the travertine cliff where the caves in Serinyà are found constitutes the western edge of this lacustrine area. The terra rossa sediments found at L’Arbreda originate from the Usall’s Quaternary limestones, and other sediments originate from two small Eocenic hills composed of marls and sandstones. Due to constant stream activity and overflows related to the proximity of a lacustrine area and a cliff, water was more or less continuously streaming from the neighboring Usall lacustrine platform and represents the main source of sediment accumulation. The effects of climatic variation on the sediments never altered the composition of the source sediments enough to create any sedimentological break in the cave.

Excavation at L’Arbreda is not only difficult due to this sedimentological context, but also because of the slope of some levels and the presence of many decimetric and metric blocks of travertine, which combine to hamper efforts to trace the extension of particular levels. In the absence of any clear sedimentological boundaries on the vertical axis and the discontinuous nature of levels on the horizontal axis, we proceeded to excavate the levels by artificial 5 cm thick spits. All lithic objects larger than 1 cm were plotted, and the spit system allowed us to delimit spatial orientation of all objects including those without coordinates. When possible, we combined this method with a true excavation in extension of the levels.

In some squares where two levels are in close stratigraphic proximity, this method has problems because a few objects from two different levels may be found in the same spit. But this situation did not result in the confusion that Zilhão and d’Errico claim. Those spits never provided samples for radiometric analysis. Samples were never collected from such contexts because we were aware of L’Arbreda’s characteristics and the con-

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Fig. 4. Distribution of the finds from L’Arbreda Cave along Profile 4/3 (east-west, 20 cm wide)
straints of our excavation strategy. In the case of square E2, where the charcoal samples from level H and level I were collected, four spits (20 cm) between levels H and I were not sampled in order to avoid any potential contamination. Therefore, we are confident that we dated only samples from secure contexts. We only sampled charcoal and bones from the splits that contained only Aurignacian or Mousterian objects.

THE ARCHAEOLOGICAL NATURE OF L’ARBREDA’S LEVELS

The delineation of L’Arbreda’s levels is one of the main concerns of the critics. In general, Zilhão and d’Errico claim, incorrectly, that L’Arbreda and other key sites are palimpsests and that the dates from such sites are not so clear as others. In fact, palimpsests are only “the cumulative products of intermittent episodes of deposition resulting from high residential mobility” (Galanidou, 1997: 1). Most of the Paleolithic record is composed of palimpsests and we learn to deal with them without considering them a defect of the record (Galanidou, 1997).

At L’Arbreda there are remains from several occupations, spanning the Middle Paleolithic to the Bronze Age. In that sense, we could describe it as a palimpsest (and still a moderate one, with good preservation of the remains), but that does not imply that the occupations are disturbed. Precisely for this reason, L’Arbreda is an interesting place to study cultural and temporal changes during the Paleolithic, particularly those that occurred at the boundary between the Middle and Upper Paleolithic. Our excavation methods and interpretations reflect an appreciation of this fact.

Our concept of what is an archaeological level coincides with the Dictionnaire de la Préhistoire. “Niveau: Ensemble d’éléments (vestiges, sédiment) qui se trouvent dans la même position stratigraphique” (Leclerc and Tarrête, 1988).

In the same way, at L’Arbreda, the results of many different intermittent occupations have been identified in situ and grouped in levels, which are archaeostratigraphic units as valid as any other. Sometimes we could follow them along their horizontal extension, but usually we could not. Therefore, at L’Arbreda, and here is where Zilhão and d’Errico miss the point, the levels are defined by their archaeological remains (vestiges) and not by their sedimentological components. The levels are separated from each other by archaeologically-impoverished spaces and travertine blocks. In some places the levels are very near one another or are in close contact. In these cases, the spits with such contact were defined and their contents omitted when the radiocarbon sampling took place.

SPATIAL PLOTS

Because some of the questions and suppositions raised by the critics can be answered and rejected with the distributions of the finds, we introduce them here. The spatial plots from L’Arbreda presented in figures 2–4 display all piece-plotted objects that were contained in a variable strip from the cave, which we always mapped in situ (Fig. 2). The width of the slice is different in every plot in order to account for the slope of the levels and to include only the pertinent data. The raw data displayed come from the excavation profiles and field books, which are regularly digitized, entered in a database, and analysed and displayed with a GIS program (GRASS Development Team 2007).

The criticisms we consider here are twofold: first the existence and nature of L’Arbreda’s levels and, second, the issue of miss-sampling. The second criticism has been expressed in several ways:


On the contrary, in the first publication of the AMS dates in 1989, the assemblages of objects related to the dated spits were already presented, showing in every case the clear Mousterian or Aurignacian nature of each spit sampled (Bischoff et al., 1989). However, because the distribution of the finds and the samples, and their relationship to the levels has been published, the plots
presented here will enhance the amount of data available.

**Interpretation of plot near profile (D/E)**

In this plot the finds found between the eastern 10 cm from the D squares’ row and the western 50 cm of the E squares’ row are plotted (Fig. 3). The filled black rectangular symbols represent the bone samples dated by $^{14}$C AMS (Maroto et al., 1996). The dashed boxes indicate the spits where charcoal samples were collected and dated in a previous dating effort (Bischoff et al., 1989). The open rectangular symbol indicates a split-base bone point.

The distribution of the finds shows that in all cases the samples were clearly collected in the H and I levels. There is a very low possibility of contamination or miss-sampling, because, to the south, a huge travertine block separates the H and I levels. To the north, some splits between the two levels were left aside and not sampled (light grey points). Therefore, in square E2, the levels are in direct contact, but those spits were not sampled, as has been claimed (Zilhão and d’Errico, 2000).

Because of the huge travertine block mentioned, level H slopes slightly towards the north. The plot clearly shows the association between the samples (OxA-3730 and OxA-3729) and the level H which they are supposed to date. Finally, the dates of 37,340 ± 1,000 $^{14}$C BP (OxA-3729) and 35,480 ± 820 $^{14}$C BP (OxA-3730) could only be considered inverted if the latter one was dating the underlying level, but in fact they both date the same level. Furthermore, both dates are statistically identical at 2σ and should be read as contemporary (Hedges et al., 1994). The age difference is minimal and we are near the limit of the dating method. Only those expecting too much precision from $^{14}$C dating could suggest such inversions (Zilhão and d’Errico, 2003: 316).

**Interpretation of plot near profile 4/3**

In this plot the finds comprise a 20 cm slice between the columns of rows 3 and 4 (Fig. 4). It has been chosen to show the association between level H, containing a typical Aurignacian split-base bone point, and a large travertine block isolating this level from the underlying Mousterian level I.

A black filled rectangular symbol marks the bone sample in level H (Archaic Aurignacian) that gave a date of 37,340 ± 1,000 $^{14}$C BP (OxA-3729). Very close to it, a black stroked rectangular symbol represents an Aurignacian split-base bone point. Therefore, the distribution of the finds clearly illustrates, yet again, the correct association between the samples and the levels which we wanted to date, and the isolated position of this sample in regard to the Mousterian level I. No “direct contact” (Zilhão and d’Errico, 2000) between levels H and I existed here. Therefore, we reject the criticism of miss-sampling and reassert the archaeological significance of the results and of our interpretation.

**CONCLUSIONS**

In this paper we have presented a wide variety of data regarding criticisms that arose during the last few years, almost exclusively by Zilhão and d’Errico who expressed their doubts on the validity of the dates of L’Arbreda’s Archaic Aurignacian. In order to reject these criticisms we have clarified aspects of the site’s stratigraphy and excavation methods. We have also presented new stratigraphic and horizontal distributions of the finds and the samples dated. In light of these new data, concerns regarding the coherence of L’Arbreda’s stratigraphy, chronometric miss-sampling, and the cultural attribution of level H can no longer exist. Therefore, as long as confidence in the radiocarbon method remains, the significance of the dates from L’Arbreda cannot be discounted.

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