# The Solutrean of Altamira:
## The Artifactual and Faunal Evidence

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RESUMEN

Se presenta una clasificación de la colección entera de Obermaier del nivel Solutrense Superior de Altamira, que incluye 522 piezas líticas retocadas, 699 de material de desecho, otros objetos de piedra, 37 útiles de hueso y de asta, y los restos de fauna con procedencia solutrense segura. Se compara la distribución de útiles líticos de Altamira, sirviéndose de índices y gráficos cumulativos, con las colecciones del Solutrense Superior de Cueto de la Mina y de Laugerie-Haute Est. En tanto que el sílex predomina como materia prima lo mismo para puntas solutrenses que para el resto de la industria, la cuarcita en cambio fue utilizada relativamente con más frecuencia para fabricar puntas, que para hacer otros útiles. Las azagayas óseas presentan una gran variedad de secciones (incluso cuadrangulares), siendo representadas tanto las de bisel sencillo en la base como las de bisel central.

*La nueva identificación cuantitativa* de la fauna corrobora sustancialmente la lista de Obermaier de 1935, acerca de la relativa abundancia de las especies. Se confirma la presencia de foca y con menos seguridad también la de reno. La presencia de gamo no ha podido ser confirmada y las placas grabadas de collar, interpretadas anteriormente como de marfil de mamut, han sido ahora identificadas definitivamente como trozos de hiodes de caballo. Numéricamente, la más importante especie abatida fue el ciervo, pero resulta igual o inferior en peso de carne aprovechable a los grandes Bóvidos y caballo, también cazados durante la ocupación solutrense de Altamira.

Trata de los posibles hábitats ecológicos de los diferentes animales representados.

### INTRODUCTION

In 1924 and 1925, Profesor Hugo Obermaier conducted excavations in the vestibule of the cave of Altamira, the last and most important in a series of such investigations which began with the first collection of objects by Sautuola. Obermaier's excavation, still visible today, consisted of a large, roughly square trench located on the left side of the vestibule, between the cave entrance and the location of Alcalde del Rio's earlier excavation (now covered by the massive artificial roof-support between the vestibule and the entrance to the «Hall of Paintings»). The results of this latest excavation, along with a *résumé* of anterior archeological investigations in Altamira, were published ten years later in the magnificent volume, *The Cave of Altamira* by Breuil and Obermaier (1935).

Below rockfall and stalagmitic layers, Obermaier encountered Lower Magdalenian and Upper Solutrean levels, both located in the midst of layers of rockfall. He was unable to excavate further, due to a massive amount of rockfall below the Solutrean, at an average depth of 2.5 metres. According to the publication (1935: 178):

> «No clear-cut definite separation existed [between the Magdalenian and Solutrean levels] in the part excavated, but the Solutrean level was more reddish».

Naturally, especially given the large quantity of Solutrean points in the Altamira site, the two levels were distinguishable on the basis of their artifact assemblages, even if the exact depositional limits were not completely secure, in the absence, for example, of any separating sterile lens. Judging from the published section (fig. 164), the Solutrean level had a maximum thickness of about 0.5 m., and was probably excavated in an area of somewhat less than 8 by 6 metres, on the basis of inspection of the excavation in its present state. However, the actual volume of Solutrean cultural deposits excavated must have been substantially less than 24 cubic metres, since much of the Solutrean level (like the Magdalenian one) was filled with roof-fall blocks (1935: 177-9).

It is the purpose of this brief note to present a classification and preliminary analysis of the materials collected by Obermaier from the Upper Solutrean of Altamira —lithics, bone tools, and fauna— especially to provide a quantitative picture of the data already published by the excavator, to whose work one is referred for a more ample description of the investigations, complete with excellent illustrations of some of the materials recovered. The collections studied are located in the old museum constructed by the Duke of Alba at Altamira, and have been organized following indications on labels (and on German newspapers of the era) in Obermaier's handwriting. In addition, a small lot of seventeen Altamira Solutrean artifacts located in the Field Museum of Chicago, probably pertaining to Obermaier's excavations as well, has been added to the large lithic inventory compiled at Santillana. The Sautuola and Alcalde del Rio lithic collections displayed in the Museo Provincial de Prehistoria in Santander have not been amalgamated with the large and representative Obermaier collection, since they are both clearly highly selected, composed overwhelmingly of Solutrean points.

## Artifacts

Table I includes the classification of those pieces with clear Solutrean provenience, following the type-list for the Upper Paleolithic of de Sonneville-Bordes and Perrot (1954, 1955, & 1956). 52 of the 91 types are represented, a figure which attests to the completeness of the collection, as does the fact that most of the Solutrean points figured in the original publication (Breuil and Obermaier 1935) are present in it, despite their well-known suitability (or susceptability) for presentation to museums or private collectors. A Solutrean collection of similar size, that of Level E of Cueto de la Mina, excavated a few years earlier (Vega del Sella 1916), has at least one of each of 47 of the 91 de Sonneville-Bordes and Perrot types (Straus 1974).

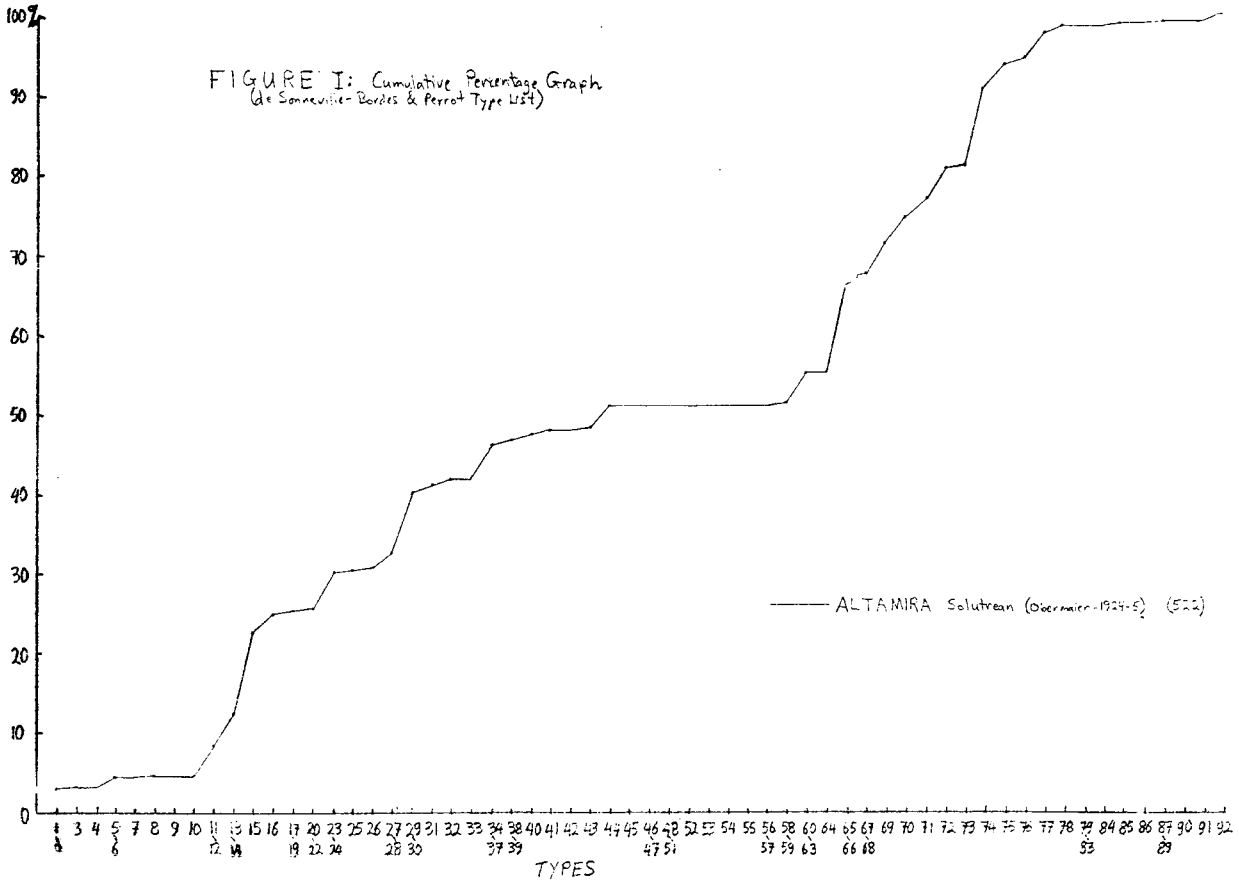
Figure I is a graphic representation of the Altamira Solutrean industry. It should be noted that there is a distinct similarity between this cumulative graph of the total provenienced collection of 522 pieces, and the one published by González Echegaray in a study of the Magdalenian III (1971: 326), based on a sample of 216 pieces. In terms of quantity of artifacts alone, Altamira, together with Cueto de la Mina, is the most important Solutrean site in Cantabria.

It is instructive to compare these two large and important sites by means of their respective artifact indices. The Altamira collection (see Table I) has 13.2 % Solutrean points, whereas Cueto de la Mina F, with 117 tools, has 15.4 %, and the combined Level E collection, with 584, has 15.9 %. Altamira remains somewhat lower in «Solutrean» characteristics, with 16.1 % of its (total) tools bearing some «Solutrean» retouch, as opposed to 24.8 % and 22.1 % in Cueto de la Mina F and E respectively. An important difference between Altamira and both Cueto de la Mina levels, is apparent in the proportions of endscrapers and burins: Altamira has 25.1 % endscrapers and 20.8 % burins (i. e. nearly the equal of the endscraper percentage); Cueto de la Mina F, on the contrary, has 35.0 % endscrapers and only 6.8 % burins, while Level E has 30.8 % endscrapers and only 6.8 % burins. This difference can hardly be fortuitous, and is possibly indicative of somewhat different activities in the two sites. Naturally, Altamira has much larger percentages of both dihedral burins and burins on truncations that Cueto de la Mina's assemblages, but in *both* sites, the former are more than twice as numerous as the latter.

Perforators, while rare at both sites —as is usual in the Cantabrian Upper Paleolithic— are

much more frequent (4.6 %) in Altamira's Solutrean than in either Cueto de la Mina F (with no perforators of «becs») or E (with 2.6 %). On the contrary, Altamira has only 12.8 % denticulate and notched pieces, as compared with 23.9 % (nearly double) in Cueto de la Mina F, and 17.8 % in Level E. All three industries have about 8 % of artifacts composing the so-called «Aurignacian» group index, while there is a range of from between 1.7 and 6.2 % for the «Perigordian» group, with the Altamira percentage (4.24 %) falling between those of Cueto de la Mina F and E.

re II also includes the published composite distribution (Smith 1966: Graph 10) of the Final Solutrean levels of Laugerie-Haute Est with shouldered points. Despite the notable lack of nucleiform endscrapers, which are a hallmark of the Cantabrian Upper Paleolithic in general, the absence of bladelet artifacts, and the richness of perforators (almost always rare in Cantabria), the Laugerie-Haute graph shows the same general tendencies as the two great Cantabrian sites. On the contrary, Altamira's Solutrean cumulative percentage graph has very little in common with those of Cueva




Aside from the differences in relative quantity of burins and endscrapers, etc., noted above, the Cueto de la Mina E assemblage generally resembles that of Altamira's Upper Solutrean, as can be seen in Figure II. Both these industries include relatively large numbers of shouldered points of various subtypes, as well as many laurel leaf points (including concave-base ones), and unifacial points. Figu-

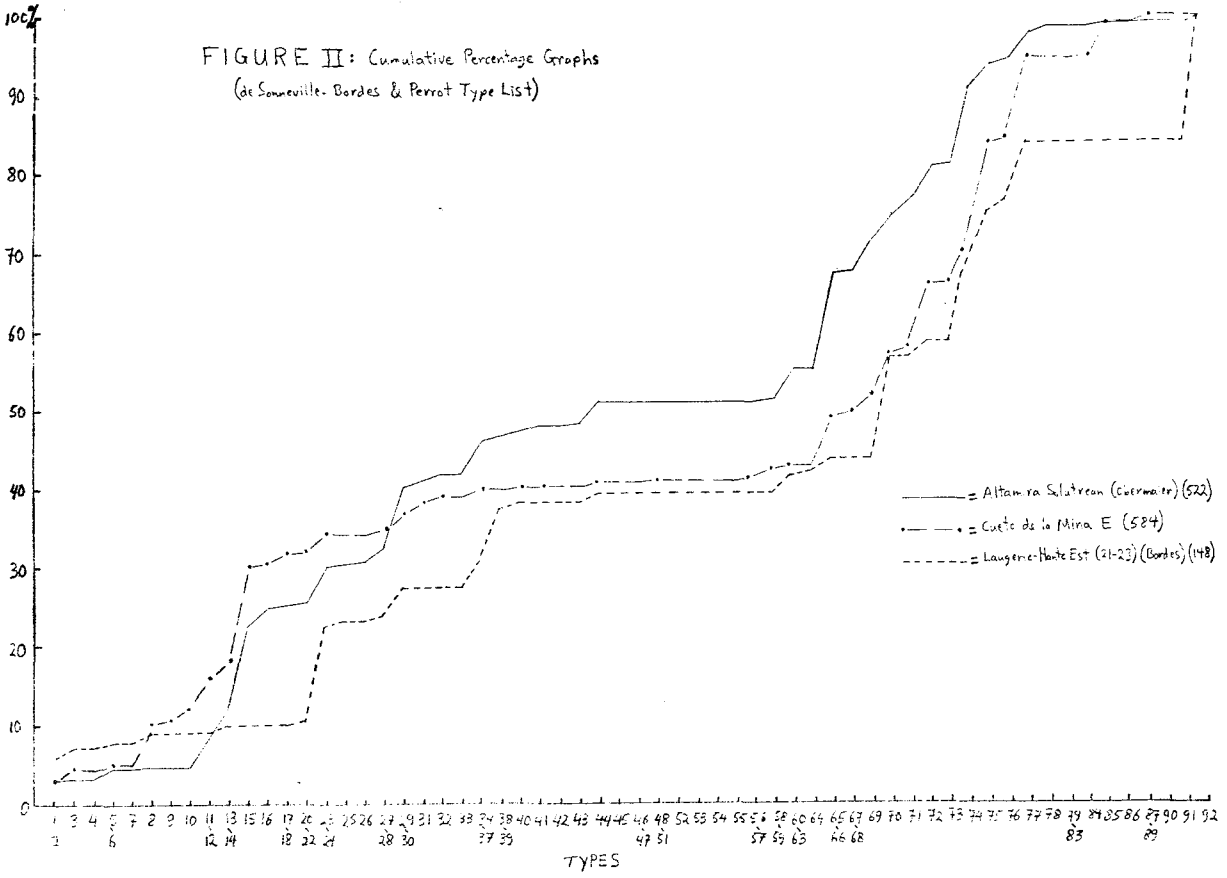
Morín or Cueva Ambrosio (see González Echegaray 1973: fig. 82), of the Solutrean levels of the Spanish Basque Provinces (Straus unpublished data).

Table I also lists the flaking debris and other lithics included in the Obermaier Solutrean collection from Altamira. While the number of blades, flakes, and bladelets is low, relative to the number

of cores and tools made on cores, it is sufficiently large to judge the relative care with which Obermaier dug in Altamira. Missing are many of the smallest flakes, bladelets, and chips, such as were collected in the recent excavation of Cueva Morín.

An interesting fact, also presented in Table 1, deals with the selection of flint versus quartzite for the manufacture of Solutrean points and other artifacts. While flint predominates as raw material for both, it is relatively *less* important in the making of points, whereas quartzite was apparently used relatively *more* for making points than for other tools. This phenomenon has also been noted in the collections of certain Solutrean occupations in Asturias (Straus 1974).

The worked bone and antler collection with Solutrean provenience is relatively small, but typical, consisting of 30 «points», 2 retouchers, 3 needle or pin fragments, one pierced needle, and at least one awl. The points include 7 of oval and circular cross-section with central flattening, 4 with single-bevel ends, and 2 with quadrangular cross-section. Many of these points are engraved, especially with diagonal tick-marks. In addition, there are a number of pierced animal teeth: pierced horse and large bovid incisors, red deer and fox canines, and pierced and engraved horse hyoid bone sections, commented upon below.




## Fauna

The 1935 publication of Obermaier's excavation in Altamira includes a list of animal species encountered in the Solutrean stratum (pp. 179-80), which, however, gives only a relative assessment of the abundance of each animal form. Permission was kindly granted by Dr. M.-A. García Guinea, Director of the Museo Provincial de Prehistoria, Santander, to transport the faunal collection stored at

TABLE I: Lithic Industry

ALTAMIRA Solutrean (Obermaier 1924-25)

(Santillana & Chicago collections) de Sonneville-Bordes & Perrot Type List (traslation after Moure)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Raspador simple | 2 | .39 % | 40. | Buril múltiple sobre truncatura retocada | 4 | .79 % |
| 2. | » atípico | 15 | 2.86 % | 41. | » múltiple mixto | 2 | .39 % |
| 3. | » doble | 1 | .19 % | 43. | » nucleiforme | 1 | .19 % |
| 5. | » sobre hoja retocada | 6 | 1.15 % | 44. | » plano | 16 | 3.06 % |
| 8. | » sobre lasca | 1 | .19 % | 58. | Hoja de borde rebajado total | 1 | .19 % |
| 11. | » aquillado | 6 | 1.15 % | 59. | Hoja de borde rebajado parcial | 1 | .19 % |
| 12. | » aquillado atípico | 14 | 2.69 % | 60. | Pieza de truncatura recta | 4 | .79 % |
| 13. | » alto en hocico | 12 | 2.30 % | 61. | » » » oblicua | 6 | 1.15 % |
| 14. | » plano en hocico | 8 | 1.53 % | 62. | » » » cóncava | 6 | 1.15 % |
| 15. | » nucleiforme | 54 | 10.34 % | 63. | » » » convexa | 3 | .59 % |
| 16. | Cepillo (Rabot») | 12 | 2.30 % | 65. | » de retoques cont. sobre 1 bor. | 45 | 8.62 % |
| 17. | Raspador - buril | 3 | .59 % | 66. | » de retoques cont. sobre 2 bor. | 19 | 3.63 % |
| 22. | Perforador - buril | 1 | .19 % | 68. | Hoja de escotadura | 1 | .19 % |
| 23. | Perforador | 14 | 2.68 % | 69. | Punta de cara plana | 20 | 3.83 % |
| 24. | » atípico («Bec») | 8 | 1.53 % | 70. | Hoja de laurel | 15 | 2.85 % |
| 25. | » múltiple | 1 | .19 % | 71. | Hoja de sauce | 14 | 2.68 % |
| 26. | Microperforador | 1 | .19 % | 72. | Punta de muesca solutrense | 20 | 3.83 % |
| 27. | Buril diedro recto | 8 | 1.53 % | 73. | Pico | 1 | .19 % |
| 28. | » diedro rebajado | 3 | .59 % | 74. | Pieza de escotadura | 50 | 9.58 % |
| 29. | » diedro de ángulo | 2 | .39 % | 75. | » denticulada | 17 | 3.26 % |
| 30. | » sobre rotura | 37 | 7.09 % | 76. | » esquirlada | 2 | .39 % |
| 31. | » múltiple diedro | 8 | 1.53 % | 77. | Raedera | 19 | 3.64 % |
| 32. | » curvo arqueado | 2 | .39 % | 78. | Racleta («Raclette») | 3 | .59 % |
| 35. | » sobre truncatura retocada oblicua | 12 | 2.30 % | 85. | Hojita de dorso | 1 | .19 % |
| 36. | » sobre truncatura retocada cóncava | 6 | 1.15 % | 89. | Hojita de escotadura | 2 | .39 % |
| 37. | » sobre truncatura retocada convexa | 3 | .59 % | 92. | Diversos | 5 | .96 % |
| 38. | » transversal sobre truncatura lateral | 3 | .59 % | | | | |
| 39. | » transversal sobre escotadura | 1 | .19 % | TOTAL: | | 522 | |

INDICES:

| | |
|---|---|
| Indice de útiles solutrenses: | 13.2 % |
| » » retoque solutrense: | 16.1 % |
| » » raspadores: | 25.1 % |
| » » buriles: | 20.8 % |
| » » perforadores: | 4.6 % |
| » » piezas denticuladas: | 12.8 % |
| » » raspadores «auriñacienses»: | 7,67 % |
| » del grupo auriñaciense: | 8.25 % |
| » » grupo perigordiense: | 4.25 % |
| » de buriles diedros: | 11.1 % |
| » » buriles sobre truncatura: | 4.0 % |

WASTE, etc.:

| | |
|---|---|
| Número de núcleos: | 56 |
| » » hojas: | 249 |
| » » lascas: | 204 |
| » » hojitas: | 83 |
| » » hojitas de golpe de buril: | 7 |
| » » trozos de ocre: | 102 |
| » » percutores: | 5 |
| » » piedras a molinar: | 7 |
| » » chopper / chopping tools: | 2 |

Proporciones de materia prima:

| | Sílex | Cuarcita | Cuarzo | Calcedo. |
|---|---|---|---|---|
| Puntas solutrenses | 79.1 % | 17.9 % | — | 3.0 % |
| Las demás piezas reto. | 89.3 % | 3.5 % | 5.9 % | 1.0 % |
| Debris | 80.1 % | 7.2 % | 12.3 % | 0.4 % |

L. G. Straus 1973

TABLE II: Fauna

ALTAMIRA Solutrean (Obermaier 1924-25) (Santillana collection)

Minimum Number of individual per anima Species

| | | |
|---|---|---|
| *Cervus elaphus* | 20 | (2 young) * |
| *Equus caballus* | 8 | (2 young) |
| Large Bovid (*Bos / Bison*) | 5 | (all adult) |
| *Capra pyrenaica* | 2 | (1 very young) |
| *Rupicapra rupicapra* | 2 | (1 very young) |
| *Capreolus capreolus* | 1 | (adult) |
| *Sus scrofa* | 2 | (1 quite ald) |
| *Rangifer tarandus* (?) | 1 | (1 fragment of antler badly croded) |
| *Ursus spelaeus* | 5 | (1 old, 3 yong, & 1 very young) |
| *Vulpes vulpes* | 2 | (1 very yong) |
| *Phoca cf. vitulina* | 1 | (1 phalanx) |
| *Gyps* or *Aegypius* (vulture) | 1 | |
| *Aquila* (?) | 1 | |
| Middle - size bird | 1 | |

* all individuals are adult, except where noted.

J. Altuna 1974

Mollusca
About 300 *Patella vulgata* of medium to large size
About 75 *Litorina littorea.*

Santillana to San Sebastián for definitive identification and quantitative analysis in the Laboratorio de Paleontología, Sociedad de Ciencias Naturales Aranzadi. The results of this study are presented in Table II in the form of minimum numbers of individuals per species.

In general, the quantitative analysis gives results corresponding to Obermaier's estimates of relative abundance: red deer (20 individuals minimum), horse (8), and large bovids (probably both *Bos* and *Bison*) (5) are all listed by Obermaier as «very abundant» (1935: 179). Mountain goat and chamois, both with a minimum of two individuals in the preserved collection, are listed as «fairly abundant», though fox and wild boar, also with two individuals each, are described by Obermaier as «rare» (1935: 179). Roe deer, with only one individual represented in the collection, is described as «rare». Not represented in the collection of recently re-identified remains are wolf, lynx, fallow deer, and mammoth, either due to misidentification in the original publication (as in the case of mammoth at least), or due to loss of the relevant bones or teeth of these species, which, at any rate, were originally published as «rare» or questionable i.e.: (*Dama*).

There is indeed a seal represented in the Solutrean of Altamira; however its new identification is based on a rear first phalanx, and not on a canine, as published in 1935 (p. 180). This canine is apparently missing. There is also at least one (probable) reindeer represented in the collection, based, as in the original identification, on one flat antler fragment, unfortunately rather eroded. There are no reindeer teeth or bones represented. The original identification of mammoth was based on four carved and pierced pendants, said by Obermaier to be of ivory (1935: 180 & 188). Although at least one mammoth is represented in the Solutrean Level E of Cueto de la Mina (Vega del Sella 1916) (identification kindly confirmed by E. Aguirre), these four Altamira pendants, of which photographs (1935: fig. 171) and measurements were provided by Obermaier, are cut sections of horse hyoid bones, both on the basis of their overall morphology and internal structure. There are no

remains of mammoth in the collections studied. The probable presence of reindeer in the Upper Solutrean of Altamira, Aitzbitarte, and Ermittia (Altuna 1972), and of mammoth in Cueto de la Mina E (Vega del Sella 1916) confirms, however, the picture of a rigourous, albeit fluctuating Upper Solutrean-age climate, as generally indicated by sedimentological and palynological studies in the upper levels of Cueva Morín (see Butzer 1971 & 1973, and Leroi-Gourhan 1971).

The 1935 listing of a doubtful fallow deer remains unconfirmed: there are no remains of this animal in the preserved Altamira Solutrean provenience collection. In effect, it would be unusual to find remains of this Mediterranean species in an Upper Pleniglacial deposit in Cantabria (especially if it be that of a stadial oscillation), though there are three possible parietal representations of *Dama* in El Buxu (Obermaier and Vega del Sella 1918: Plate 17), Castillo (García Guinea & González Echegaray 1966: 32 & fig. 4), and La Pasiega (González Echegaray & Moure 1971: 403). Unpublished identifications of *Dama* in the Solutrean of Castillo by Vaufrey also remain unconfirmed to date (along with that of *Dama* in the Magdalenian [?] of La Paloma [Hernández-Pacheco 1923: 21]).

The three birds (one vulture, one probable eagle, and a mediumsize bird) may well have been captured, or collected (already dead) for their feathers. The seal —the only one known from a Cantabrian Paleolithic midden deposit— was probably picked up on a nearby beach after becoming stranded at low tide, or after washing ashore dead. The presence —at least occasional— of seals in Cantabrian waters is in addition testified to by the two parietal engravings of this animal in Peña de Candamo (Hernández-Pacheco 1919: figs. 62 & 63). The some 300 limpets and 75 winkles —if at all representative of the original quantity of molluscs in the Solutrean level— would have contributed little to the diet, except in the way of providing variety. They could have been procured on coastal rocks only a couple of hours walk from the cave, even if the Würm-age sea level had been several score metres lower than at present, due to the narrowness of the neighboring coastal shelf. Obermaier (1935: 180) states that shellfish were far fewer in the Solutrean level than in the Magdalenian.

Clearly, red deer, essential a woodland animal at present, was the numerically most frequently hunted animal in the Altamira Solutrean, a status which it holds in all the studied Asturian Solutrean faunal collections (Straus 1974), and in all those of Santander and the Basque Country, except Bolinkoba (Straus unpublished data), Ermittia, and Cueva Morín (Atuna 1972). However, in terms of usable meat weight, the five large *Bovidae* —all adults— together with the eight horses, would potentially have more than equalled red deer in dietetic importance. Of course, red deer had more than simply a food use, since its antler tines were often converted into various types of tools, and its teeth into ornaments.

In addition to red deer, there are two other species represented in the Altamira Solutrean collection which would have preferred woodland or forest-edge habitats: roe deer and boar. Horse and, possibly, *Bos* and *Bison* would have lived on open grasslands, whereas reindeer can be found in a great variety of habitats —open or wooded (at least today)— given certain climatic limitations. The Würm glacial environment of the large rolling coastal plain surrounding the Altamira hill would have provided both large rich grasslands, as well as woodlands located in sheltered valleys, such as, perhaps, the deep, protected Santillana uvala.

There are four animals (two each of mountain goat and chamois) which, while not necessarily confined (except by active hunting with guns) to heights such as those of the Picos de Europa, where at least the chamois still lives today, prefer steep, rocky slopes or cliffs. The presence of these animals in a site in the midst of a large plain —albeit rolling— may indicate that the Solutrean hunters may have made occasional expeditions to foothills or areas with cliff-faces. (Hills of some 800 m. in altitude are located starting at a minimum of 11 km. north of Altamira, but there are steep slopes and cliffs dominating the course of the Rio Saja in places at less than half this distance. One of these cliffs, incidentally, contains the minor Solutrean site of Peña de Carranceja (see Cartailhac & Breuil [1906: 274], possibly a hunting camp for Altamira).

## Conclusions

In summary, the Obermaier collection from Altamira contains an important Solutrean lithic and

bone industry, comparable, within the limits imposed by possible functional and cultural differences among sites and regions, with some other typical Upper Solutrean assemblages. The equally important faunal collection includes a wide range of game animals (as well as fur and feather-bearing species), but seems to suggest a degree of specialization in red deer hunting, coupled with an at least equally heavy dietetic dependence on horse and large *Bovidae*. As its name implies, Altamira is situated on a hill with a commanding view of the surrounding plain, with many sheltered karstic hollows. In addition, this site, so famous for its rupestral art, is located within practicable walking distance of the seacoast and the Cordilleran foothills, with their respective Würm-age food and raw material resources.

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