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## HUMAN OCCUPATION SOUTH OF THE PYRENEES IN THE TARDIGLACIAL: THE CASE OF ZATOYA

**ABSTRACT** — According to this platitude, it has been claimed (Obermaier 1924: 207) that the Upper Palaeolithic cultures coming from France should have reached the north of the Iberian Peninsula (Cantabrian littoral and Catalonia) through the passes at the ends of the Pyrenean barrier. Likewise it was argued that another influx of African origin settled along the Spanish Mediterranean coast (in the Levant and in the south). This went a long way towards explaining the supposed differentiation of the peninsular Upper Palaeolithic into two facies: of European (Francocantabrian) and of African (Capsian) style.

The simplicity of that cultural process is no longer an accepted truth today. Carefully studied stratigraphies, palaeoclimatological analyses, typological identifications and C14 dates suggest quite a complex pattern of relations between zones, interstratification and acculturation. The dispersal of raw materials, environmental needs, and patent similarities in graphic expression (mobiliary or parietal art) can only be accounted for by postulating ideas and population movements between sites and far removed territories. Inside the Iberian Peninsula, these must have taken place within its main territories (such as the Cantabrian coastal area, the Levant or the Andalusian littoral), or towards zones inland (such as the Ebro basin, the Castilian plateau — 'Meseta' —, Extremadura or the Guadalquivir basin), and even including vast areas abroad (Aquitaine, French Midi, other Mediterranean countries).

**KEY WORDS:** Upper Palaeolithic culture — The Pyrenean barrier — Human expansion — The cave of Zatoasy

### INTRODUCTION

'The Pyrenees long have been a formidable land barrier between Spain and Portugal on the Iberian Peninsula and the rest of Europe, helping in some way to tie these two countries more closely to Africa than the rest of Europe, and to the sea.' (The New Encyclopaedia Britannica 1983, XV, 315).

### THE PYRENEAN REGION

The Pyrenees extend east-west for 440 km and are linked in the west to the Cantabrian Mountains by the Basque Mountains. Quite a number of peaks

are above 2,500 m in altitude (the Aneto peak is 3,405 m high). A height of no less than 1,600 m is maintained all along the 300 central km in the axial line of the chain. The frontier between France and Spain roughly coincides with this longitudinal axis, but the slopes on either side descend asymmetrically: two thirds of the total 55,000 sq km. of the Pyrenean area lie in the Spanish territory. The northern slope is shorter and descends abruptly; on the Spanish side the descent is more prolonged and less abrupt, terraced in various planes and parallel interior ridges. Most rainwater is collected in the watersheds of the rivers Garonne (Aquitaine) and Ebro, respectively.

Quite a number of climatic regionals can be distinguished in the current climatology of this vast

territory (Gaussen 1974). The Atlantic ocean makes its influence felt right across the plain of Aquitaine on the northern side of the Pyrenees, bringing rain and warmth to the climate; but it hardly affects the Ebro basin, cut off as it is from the coast by the Basque Pyrenees and the adjoining Cantabrian Mountains. The Ebro basin, on the southern slope of the Pyrenees, has climatically been described as a 'continent in miniature' (Sorre 1949: 37). It has a peculiar barometric regime all the year round, with a hotter climate during the summer and a rather cold one in the winter: in Huesca, for instance, the fluctuation of average temperatures is almost 19° C. This, then, is a dry and extreme climate of a continental character.

It is a long time now since A. Penck (1885) and H. Obermaier (1906, 1924) established the first catalogue of glacial formations in several valleys in the Spanish Central Pyrenees: west to east, in Gállego (at an altitude of 800 m), Ara (850 m), Cinca (700 m), Esera (1,000 m), Noguera Ribagorzana (1,000 to 1,100 m), Flamisell (1,060 m) and Valira (1,000 m). It is accepted that the limit of permanent snow lay at an altitude of around 1,700/1,800 m in glacial Spain, as opposed to the current limit *circa* 2,800 m (on the northern slope).

#### HUMAN EXPANSION INTO THE PYRENEES AT THE END OF THE PLEISTOCENE

Years ago some texts, which are now standard, defined clearly the process by which prehistoric man occupied such mountain regions in Europe as the Alps (Dellenbach 1935) or the Pyrenees (Méroc 1953).

We know of no sites above 500 m in altitude in the Cantabrian coast area during the Upper Palaeolithic. Towards the end of the Magdalenian and in the immediate Epipalaeolithic (Azilian, ...) new routes were being opened for seasonal migration towards zones lying higher than the ones so far inhabited, relatively wellwooded and more suited to the hunting of certain animals.

In the Veneto-Trentino, Italy, (Broglia 1975) the sites from the 'Evolue' Epigravettian (end of the Upper Palaeolithic) are never situated above 600 m, while those of the Final Epigravettian are already located on the prealpine uplands between 1,000 and 1,500 m. In the Dolomites some open-air sites, like the seasonal camps of the Sauveterrian and Tarde-noisian Epipalaeolithic, attain the exceptional altitude of 2,000 m.

Those who have studied this process of expansion on the northern slope of the Pyrenees (Méroc 1953, Clottes 1974) have considered the Magdalenians to be dynamic groups who gradually settled the uplands (never above 1,000 m) in the middle watersheds of the rivers. What had up till then been virgin territories, owing to the adverse weather conditions, were progressively colonised towards the end of the Tardiglacial. More than 70 sites from the Magdalenian can be recognized today (Clottes 1987) at the maximum

concentration point in the central section of the Pyrenees (Hautes Pyrénées, Haute Garonne, Ariège).

The Magdalenian in the central Pyrenees exhibits two different kinds of habitat (Clottes 1974: 82–83): the permanent or semipermanent habitat, and the seasonal or temporary one. Permanent occupation sites (like Duruthy, Isturitz, La Vache or Enlène) are furnished adequately and are richly equipped with tools and mobiliary art. Those for temporary use (like Les Eglises, L'Oeil or Cauna de Belvis) are, according to J. Clottes, 'mere camping sites for hunters, perhaps solely for the summer time, their equipment being generally poor and functional, limited to the essential tools and weapons.' A number of papers (Sieveking 1976; Bahn 1984, Clottes 1982, 1987) have outlined the seasonal occupation systems at various sites and their integration into larger territories. Cauna de Belvis (Aude), occupied in the Upper Magdalenian, is the highest inhabited place in the French Pyrenees, at 960 m (Sacchi 1986: 35–38).

When in 1975 we began the excavation of the site at Zatoya (Navarre), investigators were practically unaware of the existence of remains from the Tardiglacial (Evolved Magdalenian, Terminal Palaeolithic *sensu lato*) in the large inland territory of the Iberian Peninsula south of the Pyrenees, which corresponds to the Ebro basin. It was commonplace in the bibliography to consider this zone to have been uninhabited in the cold oscillations of the final Würm, contrasting within the rich occupation density detected in neighbouring areas along the Cantabrian and Mediterranean coasts and on the northern slopes of the Pyrenees.

The first explicit references to human occupation south of the Pyrenees during the Tardiglacial era have been published only very recently. In the early 80's works of parietal art were identified in the caves of Fuente del Trucho and Forcón (Huesca) by V. Baldellou and A. Beltrán; P. Utrilla's excavations in the caves of Abauntz (Navarre), with levels of the Early or Middle Magdalenian and of the Azilian, were published in 1982; in 1984 V. Baldellou and P. Utrilla found levels of the Solutrean — and in 1987 of the Upper Magdalenian or of the Azilian — in the cave of Chaves (Huesca); in 1984/1985 A. Cava excavated a stone-workshop from the Terminal Palaeolithic (Dryas III, probably) in the rock-shelter of Portugain (Navarre); in Cova del Parco (Lérida), J. Maluquer de Motes and J. M. Fullola have been excavating a site of the Evolved Magdalenian; in 1988 M. A. Beguiristain and C. Jusué published identifications of Magdalenian lithic industries in the township of Olite (Navarre), and I. Barandiarán in the cave of Alaiz (Navarre).

It is customary to distinguish different ecological mountain sections in the Pyrenean relief: low (at an altitude of 600 to 1,000 m), middle (1,000 to 1,600 m) and high (above 1,600 m). According to this, the sites identified so far for the Tardiglacial south of the Pyrenees are for the most part situated in the low mountain zone (Abauntz at 630 m, Fuente del Trucho at 640 m, Chaves at 660 m, Alaiz at 825 m, Zatoya at 900 m., Portugain at 920 m); the situation of the site

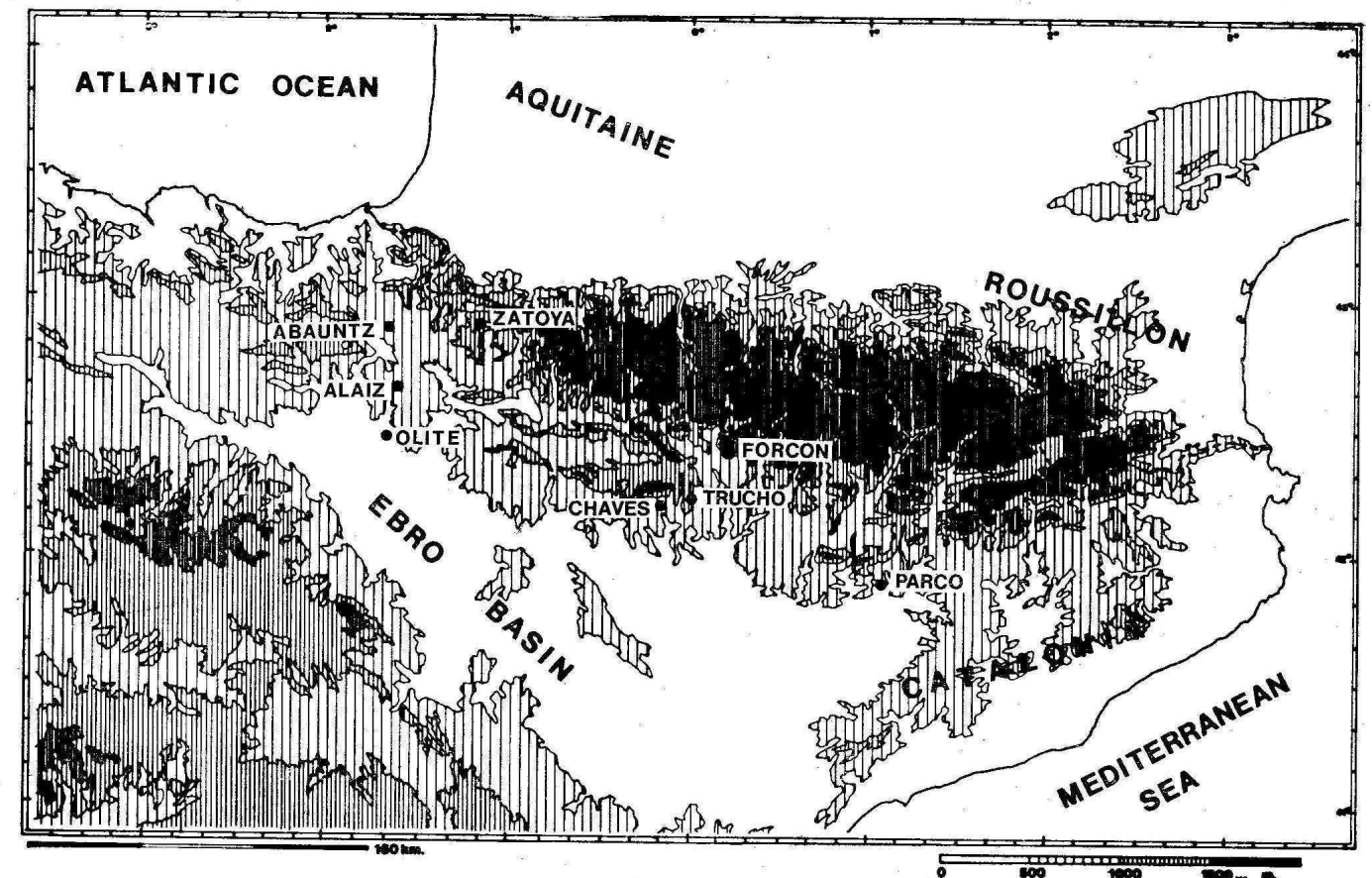


FIGURE 1.

with mobiliary art at Forcón (1300 m) can be deemed an exceptional case, lying as it does in the full ecological domain of middle mountain zone (Figure 1).

#### THE OCCUPATION OF THE SITE OF ZATOYA IN THE NAVARRAN PYRENEES

##### CONDITIONS OF THE SITE

The cave of Zatoya (in the north of Navarre, 42°54'00" N lat) lies at an altitude of 900 m, in a zone of moderate oceanic influence; with 1,300 to 1,500 mm of annual rainfall and an annual average temperature of 8° to 10° C (0° to -1° of average winter minimum and 23° to 21° of average summer maximum). In the present-day landscape deciduous trees (oak, hazel, ash) are dominant; they are surrounded by the Scots pine forest (*Pinus sylvestris*) characteristic of the middle mountain. The micromammals (*Rodentia*, *Chiroptera*) found in the archaeological deposit of the cave correspond to the conditions which in the Tardiglacial and in the Holocene occurred in the mountain zones of relatively humid Sub-Atlantic climate: some grassland and huge expanses of forest.

In 1975, 1976 and 1980 we excavated a sample of 14 sq m from the archaeological deposits in the threshold and entrance to the cave (the total area of which is of about 135 sq m). There is a detailed monograph (Barandiarán, Cava *et alii* 1989) on the excavation and on the significance of the site.

The archaeological layers at Zatoya accumulate to a thickness approaching 2.50 m. On a Pleistocene-base deposit (level III, archaeologically barren, with remains of *Ursus spelaeus*) there are five archaeological layers, interspersed with a number of stratigraphical discords (*hiatus*): IIb (Upper Magdalenian); II (Final Magdalenian or Azilian) with BC C14 dates in 9890 ± 240 (Ly-1400), 9670 ± 360 (Ly-1599), 9530 ± 270 (Ly-1399, = o > 8990 (Ly-1458); Ib (Middle Epipalaeolithic/Mesolithic) in 6310 ± 550 (Ly-1457) and 6200 ± 220 (Ly-1398); I (Early Neolithic) in 4370 ± 280 (Ly-1397); s (Chalcolithic or Early/Middle Bronze Age, with funerary deposits), (Figure 2).

The human occupation of the cave of Zatoya began in the Dryas II (level IIb for the most part), and continued in Alleröd (end of IIb, level II), probably in the Boreal (Ib) and in the Atlantic (I).

#### CLIMATIC CHARACTERISTICS OF THE TARDIGLACIAL AND THE HOLOCENE

There are available general climatological descriptions of the Tardiglacial in the Cantabrian littoral and on the northern slope of the Pyrenees (western and central sections), based on a series of palinological and sedimentological analyses.

A. Boyer-Klein (1987) starts off from an analysis of spore and pollen samples made by A. Boyer-Klein and Arl. Leroi-Gourhan in Zatoya and other sites relatively close to the Cantabrian coastline (Riera and Tito Bustillo in Asturias, Juyo and Rascaño



in Cantabria, Erralla in Guipúzcoa), the foothills of the western Pyrenees (Duruthy in Landas, Berroberria in Navarre) and the central French Pyrenees (La Vache, Enlène and Les Eglises in Ariège). The Dryas I appears slightly wooded, very cold and dry. The Dryas II is also extreme and cold — less rigorous in Berroberria, which lies at an altitude of 120 m and 18 km away from the present Atlantic coast, of short duration in Aquitaine — barely two centuries, according to H. Laville. The scanty data available for the Dryas III indicate, after the temperate and humid improvement of the Alleröd, 'a brutal degradation characterized by a strong regression of woodland ... even though the cold does not lead to the total disappearance of thermophilous species (like *Quercus* and *Corylus*) and the regression of ferns is limited; in Aquitaine (Paquereau 1976) the Dryas III seems to be cold and relatively humid.

Well into the Holocene, the Boreal brings a generalized mildness of the climate: there is a notable extension of pine (in countries of Mediterranean

environment or inland) and of hazel (in the Atlantic regions); steppe formations with patches of woodland (holley, elm, lime and hazel) can be seen in Aquitaine. During the Atlantic period the western temperate forest with its diverse combinations of deciduous species becomes finally dominant, while in the Pyrenean middle mountain fir increases. It is in the Atlantic period that the postglacial climatic optimum has been defined for these regions.

A comparative sedimentological study (Hoyos 1988) of six important Cantabrian sites (Paloma, Caldas and La Viña in Asturias; Juyo and Rascaño in Cantabria; Erralla in Guipúzcoa) sets a geochronological framework for the regional Tardiglacial: Dryas I (M. Hoyos's Cantabrian III phase) between 14,350 and 13,350 BC; episode of Anglès (Cantabrian IV) between 13,350 and 12,700; Cantabrian V ('Middle' Dryas I, Prebölling and 'Final' Dryas I) between 12,700 and 11,350; Bölling (Cantabrian VI) between 11,350 and 10,350; Dryas II or Middle Dryas (Cantabrian VII) between 10,350 and 9,650; Alleröd

(Cantabrian VIII) between 9,650 and 9,150; and Dryas III or Upper Dryas (Cantabrian IX) between 9,150 and 7,850. In the Holocene we have Preboreal (7,850 to 6,800), Boreal (6,800 to 5,500) and Atlantic (5,500 to 3,000/2,500 BC), etc. For the site of Rascaño we get the following: Dryas II, of short duration, is cold, with evident signs of gelivation, more humid on the beginning than in the second half; Alleröd, of cool and humid to very humid climate, shows phenomena of karstic reactivation; Dryas III, of non-rigorous cold, is dry in the beginning, and then more humid in the later two thirds, with solifluction and gelivation (Laville, Hoyos 1981: 208–210).

The fauna hunted in the Cantabrian region in the transition from the Tardiglacial to the Holocene (Upper Magdalenian to Azilian) show (Altuna 1979: 92–95) some common features: the final disappearance of reindeer (always scarce in this zone), the dominance of red deer, the decrease of wild goat, chamois and horse, and the subsequent increase of roe deer and wild boar (above all towards the end of the Azilian and in the subsequent development of the Middle Epipalaeolithic).

#### THE OCCUPATION OF THE SITE OF ZATOYA

The location of the cave (i. e. altitude, distance from the Atlantic coast and meteorological profile) makes it difficult even today to occupy it in winter, and must have drastically limited human presence in colder periods at the beginning of the Holocene and, of course, of the Tardiglacial.

The archaeological record of our excavation points to Zatoya as a model of a temporary hunting site. The portal of the cave could easily have taken in a party of 12 to 18 people for the most benign spells of the year. In zones close-by landscape is varied — rocky places, forest, grassland — and teems with a diverse population of ungulates. In the Tardiglacial (levels IIb and II), a relatively open forest is dominant, with patches of oak and alder in mild periods, and of pine in the most rigorous. The faunal list points to the dominance of red deer, the relative abundance of horses and the scanty presence of reindeer. In the Holocene (levels Ib and I) the forest becomes quite thick, with mixed oak forest, elm and lime. Hazel dominates in the Neolithic, and juniper and box increase considerably, with the subsequent spread of wild boar.

As for the remains of reindeer from level IIb, we must bear in mind their climatic significance for peninsular prehistory. The species, scarce in the Cantabrian sites, is abundant in those of the French Pyrenees from the Upper Magdalenian (Clottes 1987: tabl. II), from Dryas II (when it is found in Belvis, for instance, with BC C14 date in  $10,320 \pm 280$ ), is still present in Alleröd (even in lowland sites like Duruthy and Dufaure, in Landes), and is directly replaced by deer almost everywhere.

The hunting of ungulates provided the prehistoric occupants of Zatoya with sufficient meat supplies. According to the zooarchaeologists K. Mariezkurrena and J. Altuna, sucklings were repeatedly captured

(either newly-born or a few months old) in every cultural stage represented in the site. The bodies were not even skinned or quartered when caught, but were carried whole into the cave. Innumerable traces of boning and breaking are visible on the bones of adult ungulates from the Upper and Terminal Magdalenian, probably as a result of attempts to cut ligaments off the extremities (phalanges, ulnae, tarsi/metatarsals) and break the main bones (humeri, tibiae, radii, metapodii) for marrow.

The first hunters at Zatoya, like those of so many other sites in the Cantabrian Magdalenian as well, took up large-scale deer hunting. Deer remains amount to 65.2 % out of the total for the macromammals found in level IIb. The numbers are reduced progressively afterwards: 50.6 % in level II, 27.2 % in level Ib, and 8.0 % in level I. Alternatively, wild boar will increase in importance, replacing deer as the staple macromammal. Wild boar remains account for 4.6 % of the total of macromammals found in level IIb, 17.8 % of those in level II, 42.4 % of those in Ib, and 59 % of those in level I.

The archaeozoological analysis mentioned above has enabled us to determine the ages of the young ungulates, and the season of the year when they were hunted. Human occupation at Zatoya was kept to a minimum in the cold oscillations of the Tardiglacial — level IIb —, and was somewhat more prolonged for moderate spells — level II — and during the Holocene — levels Ib and I. By no means were there any hunters at Zatoya in the cold season. Level IIb remains — newly-born deer captured in June, a young colt captured in May or June — point to short occupation, from the end of the spring to early summer; the site is abandoned in late summer. The hunting time becomes extended to almost half a year — the winter season and immediate months excluded — in level II: wild boar, roe deer and wild goat were captured between May and September. Hunters in level Ib stay in Zatoya from late spring to late autumn. There is no evidence to support the claim that Zatoya was inhabited during the winter in the Neolithic (level I).

The hunters who met in the entrance to the cave each year brought along with them a certain number of implements made out of fine flint, and some cores of the same mineral. They replenished their stock or completed their equipment with mediocre siliceous varieties which were abundant less than 1 km away from Zatoya.

According to the archaeological analysis of A. Cava, lithic tools of foreign origin were always more abundant than those made of local stone. In that fine flint they made 85.7 % of the artifacts in level IIb, 86.8 % of those in level II, 67.8 % of those in Ib and 76.5 % of those of level I. There is, however, a differential use of the two categories of flint according to tool-type. Arrowheads (backed points in the Final Palaeolithic and in the Epipalaeolithic — levels IIb, II and Ib; and microlithic geometrics in the Neolithic — level I) were systematically made in good imported flint, whereas artifacts put to other uses — handicraft or domestic —, such as burins, perfora-

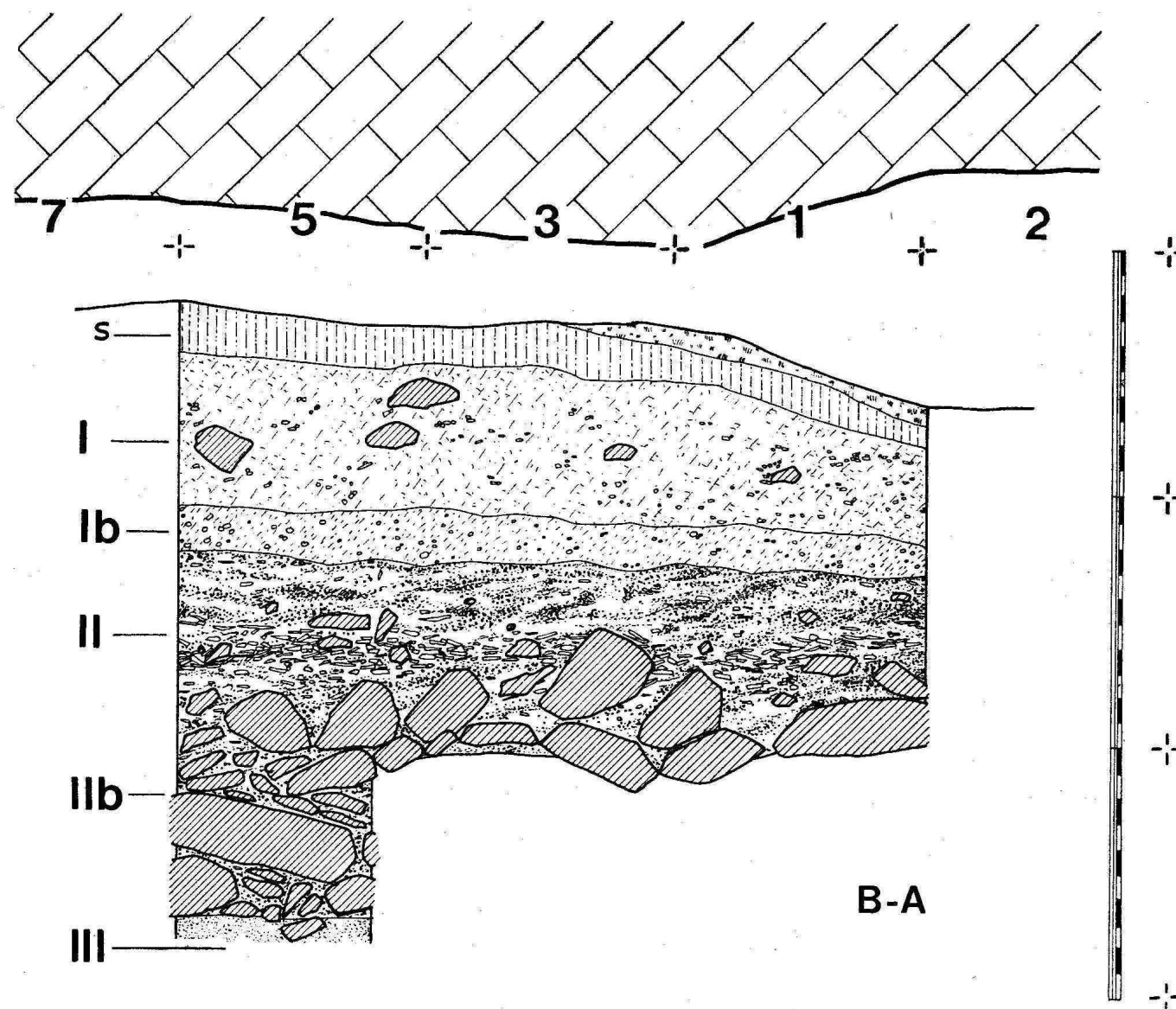


FIGURE 2.

ZATOYA (Navarra)



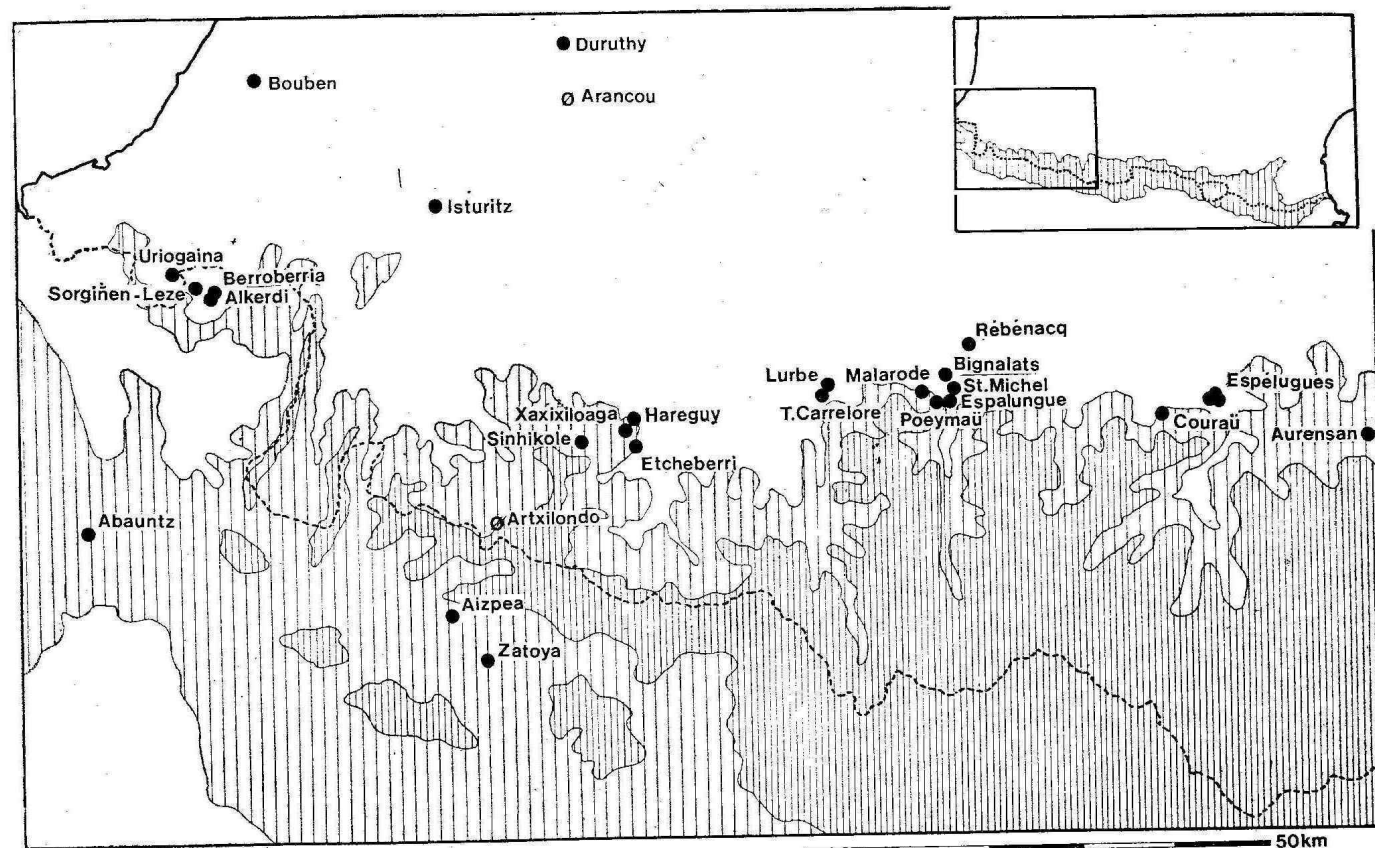


FIGURE 3.

tors, scrapers and notches, were made of local inferior flint and other stones. We can imagine that as the annual stay became longer, hunters must have used up their imported tool and raw materials supplies, and would have to exploit the site resources more regularly.

Personal ornaments and mobiliary art, abundant in contemporary permanent occupation sites, cannot be found in Zatoya (as is to be expected of a model of temporary occupants specialized in hunting). There are not any antler or bone tools specialised in functions other than hunting, such as harpoons, pierced sticks or needles. The low ratio of burins in levels IIB and II — they are a mere 10.99 % and 8.99 % of the total numbers for the lithic industries, respectively — can be explained by looking at their functional relation to antler and bone-work, so scarcely represented in the Magdalenian levels of this temporary occupation sites.

We have not been able to locate the sites that joined Zatoya to form a common territorial occupation/exploitation structure. People who arrived at the site in the Dryas II must have come from lower regions. The only two sites for short occupation, located — the rock-shelter of Aizpea, in the course of excavation; and the open-air site of Artxilondo — are in the high Irati, between Zatoya and the neighbouring forest of Arbailla in Zuberoa (Sinhikole, Xaxixiloaga, Hareguy, Etcheberri) and the valley of Ossau in Bearn (Poeymau, Bignalats, St. Michel d'Arudy, Espalungue, ...), to the north and east.

The more open zones of the middle and lower Adour in Laburdi (group of Gastelu/Isturitz, ...) and of Landes (Duruthy, ...), to the north and west, may also have been related to Zatoya (Figure 3).

The distance between Zatoya and the other contemporary sites south of the Pyrenees — such as the Ebro basin or the Cantabrian coast — is bigger. It is probable that with time we shall discover intermediate archaeological sites which make up different exploitation territories, but for the time being we are just starting. In the Ebro basin, to the south and east of Zatoya, some sites have been located in Navarre (Abauntz, Alaiz, Olite, ...) and in Huesca (Chaves, Forcón, Fuente del Trucho). To the north-west and west the closest sites in the Cantabrian coast area (Berroberria, Alkerdi and others in Navarre; Aitzbitarte, Torre and Altxerri in Guipúzcoa) are more than four days' journey away from Zatoya.

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