

1. Introduction

1.1. Research Framework

A Brief Retrospective on the Pyrenean Archaeology

The investigative approach to mountain areas has radically changed within the European Archaeology over the last twenty years. For a long time, indeed, many of the European mountains had been considered marginal places, where the human presence was limited to occasional forays or migrations. In addition, mountains were considered peripheral compared to the historical and social processes that were contemporarily taking place at lower altitudes.

According to this perspective, the archaeology of mountain zones has mainly been based on indirect sources, thus extrapolating data from the historiography or ethnography of the past century. Until the beginning of the new millennium, the predominant view regarded mountains as isolated spaces where human life was strongly conditioned by a hostile environment, being then often described as primitive and underdeveloped contexts (Della Casa & Walsh 2007; Gassiot et al. 2016).

About the Central Pyrenees, the first theories about the ancient occupation of mountain areas were elaborated during the twenties and thirties of the last century. These theories are known as *Cultura Pirenaica* and *Cultura Megalítica*, according to the concepts coined by Bosch Gimpera and his student L. Pericot respectively (Pericot 1925; Bosch Gimpera 1944; Pericot 1950). These two terms were quite successful amongst archaeologists and ethnographers and the idea of the existence of a 'Pyrenean culture' persisted until few decades ago.

In this context, the archaeology of the Pyrenees has almost exclusively been based on the study of megalithic phenomena. Megalithism is one of the aspects that have drawn much attention within the Iberian Archaeology since the mid-nineteenth century (Basch 1942, 1944; VV.AA. 1987). The origin and meaning of such monuments were mainly investigated following an ethnic/culturalist approach; their appearance was explicated in terms of migration and colonization processes, generally associating such evidence with ahistorical pastoral transhumant practices (see Jimenez 2006 and references therein). However, apart from this theoretical perspective, the empirical basis of the research was extremely poor. As already stated, the main archaeological findings were megalithic sites and surface finds, mostly ceramic vessels and/or macrolithic tools. Therefore, the main theories were largely constructed on aprioristic beliefs and not on the analysis and interpretation of archaeological data.

This situation well persisted until the seventies of the last century, when a number of systematic surveys and excavations of large caves started to be carried out. Amongst the main archaeological works of that period, one can mention the research led by V. Baldellou of the Museo Provincial of Huesca in Aragon: the excavation of Cueva de Chaves started in 1974-75; that of Espluga de la Puyascada in 1975; the surveys at Cueva del Forcón in 1976, and the surveys at Cueva de la Miranda

in 1975-76. Other works in the region were undertaken by I. Barandiarán with the surveys at Huerto Raso in 1969 and, in the western area of the Pyrenees, in Navarra, at Cueva de Zatoya in 1975-76 (for a general overview over the prehistory of Huesca region see Baldellou 1990).

In Catalonia, excavations were carried out at Cova Colomera by J. de la Vega in 1973, at Cova del Parco by J. Maluquer de Motes from 1974 until 1986, and at Balma del Gai by M. Llongueras and J. Guilaine between 1977 and 1978. In the same area, M. Cura, J. Padrò and their collaborators collected surface materials dated to prehistoric times at the sites of Valldany and Espluga Negra (for a review of research in the Segre-Montsec area see Maluquer de Motes 1988; for a general overview of the Neolithic research in Catalonia see Pié 1991; for Palaeolithic research see Estévez & Vila 2006).

With regard to the French or Northern Pyrenees, several archaeological excavations were undertaken as early as the 19th century, mainly in connection with the interest in Palaeolithic art and material culture. This is the case of Grotte du Mas-d'Azil in the Pyrénées ariégeoises that was investigated by Édouard Piette from 1880 to 1890 and, later, by Henri Breuil from 1901 to 1902. Édouard Piette also excavated several other caves in Piedmont, amongst which Grotte de l'Éléphant at Gourdan (Haute-Garonne) from 1871 to 1875, Grotte d'Espalungue at Saint-Michel d'Arudy (Pyrénées-Atlantiques), and Grotte de Lortet (Hautes-Pyrénées) from 1873 to 1874. Another site that was excavated in that period is Grotte du Gargas, specifically by Félix Régnauld from 1884 to 1887 and, later, by H. Breuil and É. Cartailhac from 1911 to 1913. In addition, the excavation of Grotte du Tourasse at Saint-Martory (Haute-Garonne) can be mentioned, which was carried out by Gabriel de Mortillet from 1891 to 1892, and also the researches of Félix Garrigou at Grotte du la Vache at Alliat and Grotte de Niaux (Ariège) in 1866 (for a detailed reconstruction of early French archaeology see Groenen 1994).

Most of these researches focused on the peripheral areas of the Pyrenees and only rarely archaeological works were carried out in the inner mountain area. Excavations at higher altitudes gradually began from the seventies, for example at Balma de Montbolò at ca. 600 m.a.s.l. (Pyrénées-Orientales), Abri Jean-Cross on the Corbières Mountain at ca. 600 m.a.s.l., and Roc du Dourgne in the Aude Valley at ca. 700 m.a.s.l., all of them under the direction of J. Guilaine and his collaborators. Later, beginning from 1979, the same research group undertook the excavation of Balma Margineda in Andorra at ca. 900 m.a.s.l. (Guilaine et al. 1974, 1979, 1993; Guilaine & Martzluff 1995).

In the Cerdanya, some of the first archaeological excavations over large areas were conducted by P. Campmajó at the sites of Llo (ca. 1.600 m.a.s.l.) and L'Avellanosa (ca. 1.550 m.a.s.l.), both spanning the Neolithic and Bronze Age. In 1976 J. Rovira started the excavation of the Cova d'Anes (Prullans, Bellver de Cerdanya) (for an overview of the archaeological researches in Cerdanya see Mercadal 2009).

The first congress that was specifically dedicated to the

archaeology of the Pyrenees was actually organized in the seventies: the *Col·loqui Internacional d'Arqueologia de Puigcerdà*. The first edition goes back to 1974 and relied on the participation of some of the most influencing scholars of that time, such as J. Guilaine, P. Campmajó, J. Vaquer, J. Padró, J. Rovira, J. Maluquer de Motes, and M. Cura. Congresses dedicated to the Pyrenees had also taken place previously, although they did not specifically revolve around archaeological topics, such as the *Congreso Internacional de Estudios Pirenaicos*, the editions of which were organized by the Instituto de Estudios Pirenaicos de Zaragoza since 1950.

In 1979, in Pau (Pyrénées-Atlantiques), the *Groupe Archéologique des Pyrénées Occidentales* (GAPO) was founded, which has represented a reference point for the archaeological researches in southern Aquitania, from Palaeolithic to Medieval times. Its publications, the *Cahiers du Groupe Archéologique des Pyrénées Occidentales* were issued from 1981 until 1991, later changing its name in *Archéologie des Pyrénées Occidentales et des Landes*.

This scenario attests to an increased and renewed interest in the history and prehistory of the Pyrenees. As from about the seventies and throughout the eighties and nineties, scholars' investigations have moved from specific subjects (e.g. Palaeolithic art, Megalithic phenomena, etc.) towards a more general reconstruction of human occupations in the mountain areas. Systematic excavations of large sites gradually took place, along with more consistent field surveys. Nevertheless, apart from a few exceptions, the prevailing approach was still based on a culturalist perspective, namely, identifying and characterizing cultural entities on the basis of the typological analysis of the material record (mostly lithics or ceramics); the understanding of the socio-economic organization of these communities and their relationship with the mountain environment still had a marginal role. Moreover, it is remarkable that the large majority of archaeological works were carried out in the outer parts of the mountains, generally situated below 1.000 m.a.s.l. Until recently, the only investigated sites located at higher altitudes were Espluga de la Puyascada (1.320 m.a.s.l.) (Baldellou 1985), the site of L'Avellanosa (ca. 1.550 m.a.s.l.) (Campmajo & Guilaine 1971), and Llo in Cerdagne (ca. 1.600 m.a.s.l.) (Campmajo 1983).

The reasons for such a scenario are quite clear: the valley bottoms and piedmont areas are the most accessible and so it is logistically easier to manage a survey or an excavation there. Not secondarily, the external mountain ranges were also the most populated areas, where more public works and infrastructure projects were carried out —thus facilitating the discovery of archaeological sites. Valley bottoms are also better known, from an archaeological point of view, thanks to the activity of local historians and scholars as well as because of the numerous clandestine excavations. Actually, most of the archaeological works of that time followed reports from amateur archaeologists rather than being programmatic or systematic researches. On the contrary, archaeologists almost completely ignored the high-altitude areas; these were considered to be pristine landscapes in the past as well in the present, scarcely affected by human dynamics. The only exception was the transhumant practice; however, transhumance was often seen as an unchanging and marginal activity with

little impact on the environment, which had not gone through significant changes as if it was 'frozen in time' (Jimenez 2006).

It was at the end of the last century that the Pyrenean Archaeology changed direction. The turning point was the establishment of two new guidelines in the archaeology of mountain areas: 1) a more intensive and systematic survey of high-altitude areas; 2) a conclusive implementation of palaeoenvironmental and palaeoecological analyses, for either archaeological or lake/peat-bog sequences.

The first relevant work is probably the research of C. Rendu and her collaborators in the Endveig Mountain located in the French Cerdagne (Rendu et al. 1995, 1996; Davasse et al. 1997; Galop 2000; Rendu 2003). Rendu and her team succeeded in ascertaining the presence of long-term human occupations in the subalpine and alpine regions since Neolithic times; moreover, they demonstrated the influence of human presence on the shaping of the alpine landscape. The project included a combination of archaeological data —obtained through extensive survey and stratigraphic excavations— with palynological and anthracological data, on both local and regional scale. Similar researches also took place in the Ariège region for the study of the long-term forest history and the impact of metallurgy, including the combination of phytogeography, palynology, anthracology, history, and archaeology (Bonhôte & Vernet 1988; Davasse & Galop 1989, Davasse et al. 1997).

Such projects exported to the Pyrenees a research model that had already been tested in the Alps, where surveys and excavations were underway since the early seventies, mainly due to the large amount of evidence of hunter-gatherer occupations above 2.000 m.a.s.l. (among others, Bintz & Desbrosse 1979; Bagolini & Broglio 1985; Fedele 1986; Bagolini & Dalmieri 1987). Since the nineties, the archaeological excavations of Late Palaeolithic and Mesolithic sites have been integrated by palaeoenvironmental studies, thus framing the archaeological data within the relevant landscape and climate dynamics. This multi-disciplinary approach has allowed a better reconstruction of the settlement strategies and the man-mountain relationship (Alciati et al. 1994; Fedele & Wick 1996; Orombelli & Ravazzi 1996; Walsh & Mocchi 2003).

Apart from producing new and innovative results, such approaches have been extremely stimulating for other scholars too, who began to carry out more and more investigations with similar perspectives in other areas of the Pyrenees. As a result, since the first decade of the twenty-first century, several new projects have been set up in Andorra (Palet et al. 2006; Ejarque 2010; Ejarque et al. 2010), in the Pyrénées-Atlantiques in south-western France (Galop 2000, 2006; Galop et al. 2007, 2013; Rendu et al. 2013), in the Basque country in north-western Spain (Galop et al. 2001; Mazier et al. 2009; Cugny et al. 2010), and in the Catalan Pyrenees in north-eastern Spain (Gassiot et al. 2010a, 2010b, 2012b, 2014; Pélachs et al. 2011; Catalan et al. 2001, 2013).

Even if the studied areas represent only a small portion compared to the extension of the Pyrenees, the amount

and quality of data have grown exponentially during the last decade. The archaeological works are filling in the gaps in information that has hitherto been a strong limit to any historical reconstruction of the Pyrenees and surrounding regions. One of the main objectives of these projects was actually to provide an empirical basis for the study of the Pyrenean Mountains, whose archaeological reconstructions have too often been based on ahistorical biases and preconceptions. Moreover, in the light of the progressive abandonment—and the ensuing low levels of industrialization—of this region during the last fifty years, the Axial Pyrenees have turned out to be an ideal area for the study of climatic and landscape dynamics and man-environment interactions during the last 10,000 years.

Trends and Problems in Pyrenean Archaeology

If one considers the evolution of Pyrenean archaeology during the last ten years, it is quite clear that most of the developed projects have turned their attention to the high-altitude areas, from 1.600-1.700 m.a.s.l. up to the highest peaks at ca. 3,000 m.a.s.l. According to this, such researches should be defined as ‘High-Altitude Archaeology’ rather than ‘Pyrenean Archaeology’, since one of the trending topics is the human adaptation to high altitudes and the consequent interactions with landscape and climate. The reconstruction of Pyrenees’ human population as a whole (and of the social dynamics connected with that) can be considered an important, although secondary, topic.

Apart from definitions, such a point should be taken into account when one evaluates how the most recent discoveries of the so-called ‘High-Altitude Archaeology’ have been accepted by the rest of the scientific community. A slight separation probably exists between the works carried out in the sub-alpine and alpine areas and the investigations at lower altitudes. Actually, at least in the Iberian Peninsula, there is little dialogue between ‘traditional’ and ‘High-Altitude Archaeology’, generally limited to precise quotations; there is so far no real integration between the two disciplines. High-Altitude Archaeology’s discoveries are often not included (at least not yet) in the regional papers about the evolution of the prehistoric societies in the NW-N-NE of the Peninsula (see Rojo et al. 2012a and the various regional articles therein). This situation is probably consequent on the different methods applied and, in particular, on the different objectives of the two ‘branches’. Indeed, clear differences exist about the type of archaeological evidence studied by these disciplines.

Mountain zones are traditionally considered poor in terms of archaeological findings, especially if compared to the sites located at lower altitudes, where archaeological deposits are richer, at least about artefacts. It is not by chance that the main datasets relevant to high-altitude areas are based on surface prospections and palaeoecological surveys; material records are extremely scanty or even absent. In this respect, one has also to consider that, in mountain areas, excavations are generally limited to stratigraphic surveys of a few square metres; they rarely cover extensive areas and this actually prevents from recovering large archaeological assemblages. However,

the shortage of material records is also due to a combination of other variables that do not depend on the excavation techniques adopted. Many factors are determining in preserving archaeological materials; among those, the type and characteristics of the materials/artefacts, the geographical context in which the site is located, the settlement pattern (open-air, cave, burials, etc.), its position, its sedimentary history, etc.

In general, one may assert that the higher a site is located, the more the topographical, physical and logistic difficulties are for the transportation of large quantities of objects and artefacts, especially for raw materials and productions exogenous to the area. This can then explain the generally poor evidence of archaeological records in the mountain areas.

Such ‘material scarcity’ is probably one of the reasons that have brought mountain archaeologists to adopt different strategies for the study of human activity. The extraordinary proliferation and improvement of palaeoecological and paleoenvironmental studies of mountain contexts during the last ten years may also be seen in this light. In some part of the Pyrenean chain, for example, the study of the human peopling has been tackled almost exclusively on the basis of palaeoecological analysis (mainly pollen data, but not only), while the archaeological dataset is either absent, marginal or only employed as a reference (see, for instance Cugny et al. 2011, Riera & Turu 2011 or Rius et al. 2012). Moreover, as it is extremely time-consuming and often logistically complicated, also requiring large teams to run the surveys, systematic prospections have only been carried out in some specific geographic or administrative districts, whereas the large majority of the Pyrenees can still be regarded as a virgin, not-studied, area.

On the contrary, most of the archaeological researches carried out at lower altitudes have based their interpretation on a sound archaeological dataset grounded on decennial excavations of large deposits, usually over extensive areas. The material record is generally abundant (even if these contexts too are subject to the aforesaid preservation conditions), and is commonly studied in depth in terms of typological and technological patterns. In these cases, palaeoecological analyses are often subsidiary to the archaeological researches, being mainly intended to provide a sort of environmental background of the site or, eventually, confirm the presence of anthropic traces. Prospection works, apart from a few exceptions (see for example Montes & Domingo 2001-2002; Montes et al. 2000, 2003; Alcalde et al. 2008, Alcalde & Saña 2009; Oms et al. 2009), are generally absent or limited to the surroundings of the sites, whilst a deep and diachronic archaeological knowledge of the area, in which the site is located, is generally lacking. Moreover, even if some prospections works have been carried out, in the most cases they were focused toward the identification of new archaeological deposits or the revision of old excavations, but only rarely gave raise to new proposals and models on prehistoric landscape exploitation and settlement patterns.

Such different approaches, even if partially constrained by environmental or practical situations, have brought about a sort of separation between the two fields. On the one hand, high-altitude sites are often considered controversial and scarcely reliable by archaeologists. As

a matter of fact, the shortage of materials often makes it difficult to put forward any interpretation of the sites following the traditional chronological/cultural classification; moreover, the small size of the excavated areas often prevents from achieving a clear understanding of the stratigraphic sequence. On the other hand, researches at high-altitude areas, given the logistical difficulties and the little prospects in terms of material findings, often relegate the archaeological works to the background, in favour of more detailed paleoenvironmental and palaeoecological analyses. In addition, the archaeological evidence is often used only to confirm the presence of human groups in certain areas during a certain period and is not always integrated with the discussion of the data. More attention towards the general social and historical context would probably be necessary for a better understanding of both landscape and human dynamics in high-altitude areas.

Recent projects carried out in the National Park of Aigüestortes i Estany de Sant Maurici, in the Central Catalan Pyrenees, have shown that a real integration of these approaches allows a better reconstruction of human interactions with the landscape to be achieved (Gassiot et al. 2012b, 2014; Catalan et al. 2013). The archaeological reconstruction should then comprise systematic prospections, full-site excavations, analysis of the material record, and a detailed analysis of the archaeological deposits; all these data should be integrated within a small-scale study of the landscape evolution through archaeological sites and soils, also in the light of the environmental and climatic evolution emerging from lacustrine and peat-bog sediments of the region. Finally, the data obtained should be integrated within a broader cultural and geographical context, since 'no man is an island', nor are archaeological sites, either in mountains or plains.

Objectives and Materials of This Work

It is undeniable that during the last decades great advances have been made within Pyrenean Archaeology; fresh data has been published contributing to the understanding of many aspects previously overlooked or ignored. For example, palaeoecological and archaeological surveys in mid- and high-altitude areas have made it clear the importance of pastoral activities in the shaping of the mountain landscape during the last 6.000-5.000 years (see Ejarque et al. 2010; Pélachs et al. 2011; Gassiot et al. 2014). However, which is the herding model we are referring to? Many authors have been recently talking of transhumant pastoralism (Geddes 1983; Oms et al. 2012, 2013; Rojo et al. 2013; Polo Díaz et al. 2014), others have called into question short-distance transhumance forms (or transterminance) (Oms et al. 2008), while others criticized the use of both concepts, defending an intensive mixed-farming economy (Antolín 2014). Nevertheless, most of these proposals are based on the analysis of only one site or few sites over small geographical areas; Pyrenees are rarely considered in their integrity and often conclusions are drawn without seeing the whole picture. Moreover, it is difficult to define the role and extent of the herding activities within a certain economic system, when the other productive activities, such as agriculture, hunting or fishing, are neither clearly defined nor their roles

clearly explained. It is a fact that both crop and animal husbandry were practiced by the first Neolithic groups that inhabited the NE of the Iberian Peninsula, but even so there is a lack of interpretative models to understand the manner in which those activities were integrated within the overall economic system and how interacted in the context of mountainous areas.

Following this perspective, the main purpose of this work is to represent an insight into the economic organization of the first agro-pastoral communities that occupied the mountain spaces of the Southern Central Pyrenees between the sixth and the third millennium cal BC. Compared to the scenario described in the previous paragraphs, this work turns out to be somewhat 'cross-the-board', as it aims at combining some of the different approaches that have contributed to the historical and archaeological reconstructions of the Pyrenees during the last thirty years. Such an integration is accomplished on different levels, from a geographical and methodological point of view.

First, from a geographical perspective, I shall include in this analysis different environmental contexts, with altitudes between about 600 and 1.800 m.a.s.l., thus considering alpine, subalpine and upper and lower mountain zones. Within this setting, I shall focus on four archaeological sites located in different geological, topographical and vegetation contexts.

The selected sites differ from one other for several reasons: because of their geographical position, their excavation history, and their physical characteristics. I have included old excavations located at lower altitudes—traditionally considered as reference sites for the establishment of regional chrono-cultural sequences—as well as small caves situated at higher altitudes, which have been recently excavated and have yielded a relatively poor amount of material record. I shall thus integrate a varied archaeological record, as a result of diverse, but complementary, researches.

From a methodological point of view, this work will mainly deal with the analysis of artefacts and, more precisely, flaked stone assemblages. Stone or lithic tools traditionally represent one of the 'index fossils' in prehistoric research. However, this analysis will mainly focus on a socio-economic classification of the lithic record, brushing aside the traditional techno-typological approaches that have so far represented the dominant approach for the study of stone tools, at least in the Pyrenean area.

Finally, I shall try to integrate this data within a broader context and the interpretation will rely on both archaeological evidence and palaeoecological/paleoenvironmental outcomes, also taking into account the discoveries and advances made during the last thirty years in both lower and upper parts of the Pyrenean mountains.

I am aware of the magnitude of the problem and that the topic is too wide-ranging, in both geographical and chronological terms, to be tackled only by the study of lithic collections coming from a few archaeological sites. Nonetheless, I am confident these analyses can give new

insights into the economic and settlement organization of the human groups that inhabited the Pyrenees during the Middle Holocene. Indeed, the lithic record shows some interesting features that have so far drawn little attention within the Pyrenean archaeology:

i. lithics represent one of the most common category of finds in prehistoric deposits; their ubiquity and good preservation allow for the establishment of comparison between different assemblages and so between different sites;

ii. since they are rocks, they can be analysed in terms of petrographic features; their geological provenance can thus be ascertained and traced. To this point, lithics represent a spatial marker and the investigation of them may provide insights into the land frequented by human groups and also the mobility of these;

iii. as 'artefacts', lithics are products of specific craft activities that can be characterized from a technological point of view. This analysis will provide information about the strategies of mineral-resources management, their ways and places of production, their maintenance and transportation;

iv. as 'tools', lithics are employed in different production processes. The traceological analysis of their surfaces and edges allows one to distinguish the type of processes in which they were used; it will then be possible to reconstruct some of the tasks and actions prehistoric groups performed and thus put forward a functional interpretation of the various sites.

To sum up, this work mainly aims at reconstructing the ways lithic resources were exploited at different sites of the Southern Central Pyrenees between the sixth and the third millennium cal BC. A socio-economic approximation of the material record will bring to highlight the variability between sites located in different altitudinal and environmental contexts and identify possible settlement- and resource-exploitation patterns. By integrating the achieved data within a broader economic and environmental context, it will be possible to contribute to the understanding of how the prehistoric groups organized themselves in mountain environments.