



## Neanderthal subsistence strategies in Southeastern France between the plains of the Rhone Valley and the mid-mountains of the Massif Central (MIS 7 to MIS 3)

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### ARTICLE INFO

#### Article history:

Available online 24 February 2011

### ABSTRACT

New investigations of finds from middle Rhone Valley sites (Le Figuier, Abri du Maras, Baume Flandin and Ranc Pointu 2) and from the mountainous southeastern area of the Massif Central (Sainte-Anne I, especially the unpublished data for unit J2) allowed assembly of new data on both chronological and environmental grounds for human occupation and consequently on Neanderthal subsistence strategies in this area.

The southeastern Massif Central region makes it possible to examine Neanderthal occupation modes in an area linking medium altitude territories with the plains of the Rhone River corridor. This work aims to determine site occupation events and territory management strategies for these two environments. The variability of the site occupation types in the middle Rhone Valley supports the hypothesis of human groups who anticipated their land use strategies, and suggests a particular type of circulating model for these areas. The evidence suggests that the human presence consists of brief stopping-places, short-term regular camps (interspersed with some occupations by carnivores), or long-term residential camps. The types of occupation observed in the two mountain sites of Velay (Sainte-Anne I cave and Baume-Vallée rock-shelter) *a priori* do not indicate occupations specific to an environment at this altitude. On the contrary, they suggest the existence of short-term regular camps, probably seasonally utilised and exploited when good seasons favoured the expansion of accessible territories. The sites in the plains of the Rhone Valley corridor indicate a greater variety of occupation types, but still within the framework of strong seasonal mobility.

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### 1. Introduction

Methodological and taphonomical advances, combined with archaeological data from numerous European sites, allow one to think beyond the simple hunting versus scavenging question for neanderthalers. Instead, questions can be raised about the Neanderthal subsistence modes. The debate about behavioural differences between Neanderthals and anatomically modern humans is presently focused on strategies for territorial exploitation (Boyle, 2000; Conard and Prindiville, 2000; Moncel, 2003; Szmidt, 2003, 2009; Fiore et al., 2004; Valensi and Psathi, 2004; Burke, 2006;

Grove, 2009; Daujeard and Moncel, 2010; Rendu, 2010; among others). Did these two hominid groups adopt differing subsistence strategies? Did the Neanderthals use more-or-less permanent residential sites, and exploit intensively their immediate surroundings (circulating model), while modern humans adopted a logistic behaviour showing a more organised spatial and temporal organisation, centred around their base camp (radiating model; Mortensen, 1972; Binford, 1982). New data shed light on this important debate. In Eastern Europe, Neanderthal occupation within continental mountains is found in the Alps, the Pyrenees and the Italian Piedmont mountain ranges. The sites are located in the “mid-mountain” environment at altitudes between 500 and 1500 m, where the topography, slope conditions and climatic conditions permitted suitable access and resource exploitation. The existence of these medium altitude sites raises the question about their function within these territories. Two possible hypotheses can be envisioned:

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- Neanderthal occupation of the altitudinal environment took place during periods of climatic warming, such as Marine Isotopic Stage (MIS) 3, leading to an expansion in exploitable territories – behaviour similar to that observed on the plains (Koslowsky, 1994).
- Occupation of the mountain sites corresponds to particular needs in the medium altitude zones and leads to original and particular occupation strategies developed for such sites.

Are these hypotheses reflected in the material culture? For example, the hypothesis of a culture specific to the alpine region has been discarded in the light of recent research (Bächler, 1940; Bernard-Guelle, 2002; Tillet, 2002; Bona et al., 2007). Some medium altitude sites have produced poor lithic assemblages that are composed of finished imported tools associated with abundant remains of bears; however, these sites suggest human stays of a very short duration (Cărciumaru et al., 2002).

Recent work has underlined a reasoned and diversified exploitation of mountainous massifs. For example, the Mousterian sites of Vercors, on the edge of the French Alps (1000–1500 m), similar to those in the Italian Piemont, indicate a large Neanderthal population and suggest the presence of highly mobile human groups which were adapted to seasonal movements in search of ungulates (red deer, roe deer or mountain sheep) within a territory which stretched between massif and plains environments (Peresani, 1998; Peresani and Sartorelli, 1998; Bernard-Guelle, 2002, 2005; Arzarello, 2003; Arzarello and Peretto, 2005). The numerous advantages available near Vercors (raw materials, diverse biotopes, differing landscapes) also led to repeated and regular occupations; especially short-term seasonal hunting camps complementary with those located in the plains (Bernard-Guelle, 2002, 2005).

The rock-shelter of Pié Lombard (250 m), in the Alps-Maritimes, can be considered as a “first stop” at the foot of the pre-alpine mountains, in contrast to coastal occupations that suggest occupations of larger territories. Petro-archaeological determinations confirm that the mid-mountain hinterland was frequented at altitudes above 1000 m (Porraz, 2005). In the French Pyrenees, the Grotte du Noisetier (825 m, MIS 3) shows evidence of a human presence that is not tied to faunal resources or lithics that are available in the surrounding areas. Exclusive exploitation of big game, namely red deer, equally presents in both foothills and plains, along with raw materials similar to the ones known from the sites at lower altitudes, do not justify the regular forays made by the Neanderthalers at this altitude. Instead, the scenario is more suggestive of a temporary stopping site or short-term camp (Mourre et al., 2008).

In the southeast quarter of the Massif Central, the mid-mountains are connected to the Rhone Valley by a succession of plateaus. The hydrographic basins in this region (Ardèche, Allier and Loire Rivers) are only separated by tiny interfluves and the topographical relief is not a barrier that prevents movement between the valleys. The movement of human groups between the different zones of this vast area during the course of the Pleistocene is a question which remains to be tackled in depth. Proposed models mostly associate cultural identity with oro-hydrographical patterns. Recent excavations in this geographic zone offer evidence from a corpus of sites that is sufficient to begin discussions about humans occupying specific territories and the circulation of human groups.

The southeast margins of the Massif Central offer a high degree of chronological and bio-stratigraphic resolution which gives opportunities to compare the subsistence, technical and raw material procurement strategies between the Rhone Valley and the mid-mountain region of the Velay-Vivarais (Raynal, 2007; Fernandes et al., 2008; Raynal et al., 2008).

Movement routes demonstrated by flint procurement in the mountain sites and in the sites of the plains attest that humans

circulated more frequently within an area of around 50–60 km in diameter and that they exploited a multiplicity of regional lithic outcrops. North–south movements are clearly demonstrated by a distinct presence of certain raw materials within the two considered territories. The current data provided by flint procurement give no evidence for east–west exchanges between the Rhone Valley and the Velay. However, the territories covered allow one to envisage and test the hypothesis of a Central-Eastern paleo-ethnographic unit, at least when considering the different Mousterian facies identified in the area since MIS 5. Were the raw materials fully representative of various Neanderthal group's cultural identities? Perhaps this question is related to the concept of modernity.

The sites of Sainte-Anne I (Haute-Loire, 737 m) and Baume-Vallée (Haute-Loire, 795 m) illustrate this type of Neanderthal occupation in the Massif Central mountains. In this paper, the preliminary and unpublished environmental, taphonomic and lithic data obtained for unit J2 of Sainte-Anne I, which is currently being excavated, and those of unit J1 as well as that from Baume-Vallée are compared with the more numerous sites of the plains and the low plateaus of the Rhone Valley. The variety of occupation sites along the Rhone corridor suggests a variation on the two systems of mobility proposed by Binford (1982); in other words a model of the circulating type that was “planned and organised” and which linked residential base camps with secondary short-term camps that function as seasonal hunting camps or as intermediate steps on an extended journey (Daujeard, 2008; Daujeard and Moncel, 2010).

Is there a single mode of occupation which is specific to the mid-mountains, located away from the Rhone Valley and that is distinct from the ones of the plateaus and plains bordering the Rhone Valley? Is it possible to observe, thanks to the subsistence strategies, the existence of specialised sites in a mountain context? Or should, on the contrary, the Massif Central be considered as a vast area that was uniformly exploited by the Neanderthalers, no matter what the altitude was?

## 2. Environmental and chronological context of the sites

The middle valley of the Rhone and its right bank tributaries form a strategic zone for studying the north–south and east–west migratory passages of human groups. This valley certainly played a major role in the peopling processes of regional river valleys and gorges (Fig. 1). The region has a pivotal role between the mid-mountains of the Massif Central and the mountainous areas of Vercors and the Alps. Its microclimates favoured the persistence of the human occupations throughout the Pleistocene. The middle Rhone Valley is part of a well-distinguished geological zone of limestone called Bas-Vivarais which runs along the Rhodanian corridor. Rich in watercourses, gorges and calcareous plateaus, it contains numerous shelters. Sites which contain Middle Palaeolithic occupation layers are well distributed along this part of the right bank of the Rhone Valley. From Valence to the Ardèche gorges, more than a dozen rock-shelters and caves have been recorded. Some, such as Payre or the sites of Soyons (Abri Moula and Grotte Néron), border the Rhone Valley, while numerous others are scattered along the tributaries of the Ardèche and the Chassezac Rivers. North of this limestone karst region is the igneous mountains of the Massif Central, where two high sites, Sainte-Anne I (737 m) and Baume-Vallée (795 m), have yielded several rich units of Middle Palaeolithic stone artefacts and bone remains.

The cave of Sainte-Anne I is a small cavity (approximately 50 m<sup>2</sup>) facing south at 737 m above sea level. It developed on a fracture in the tuff massif of the ancient volcano of Saint-Anne. It lies 150 m above the Borne Valley which is a tributary of the left

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