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The environment of the last hunters-gatherers and first agropastoralists in the western Mediterranean region, between the Rhone and the Northern Apennines (7th - 6th millennium cal. BCE): Attractiveness of the landscape units and settlement patterns



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ABSTRACT

In the north western Mediterranean, in the area between the Rhone River and the Northern Apennines, the last Mesolithic societies (Castelnovian) and the first Neolithic societies (Impressed Ware or Impressa) coexisted during the first half of the 6th millennium cal. BCE (Before Common Era). Linking the two settlement distribution patterns (mainly high lands and low lands for the Castelnovian versus Mediterranean coastal areas for the Impressa) to their specific environmental backgrounds during that period of coexistence enables us to document the attractiveness of the various available landscape units as a function of the subsistence practices (hunting, fishing and gathering versus agro-pastoralism). Pollen and charcoal data from 41 archaeological sites along with contemporaneous natural (off archaeological sites) sequences (hereafter referred to as "off-site sequences") from three windows (Provence/Western Liguria, the middle Rhone valley/Prealps and Southern Alps, Eastern Liguria/Northern Apennines) were examined in order to reconstruct the vegetal landscape in the surroundings of the Mesolithic and Neolithic settlements between 6500 and 5400 cal. BCE. The importance of environmental versus cultural factors in the settlement preferences of both groups is discussed in order to document our reflection concerning non-consensual issues, such as the existence of interaction or avoidance behaviours or the sharing (or not) of parts or all of the territory and of its natural resources. The results notably highlight the expansion of fir forests that, based on ecological and accessibility criteria, could be considered as rather inauspicious for settlement and hunting as well as for pastoral activities. This expansion may have influenced the settlement patterns of both cultural complexes, leading populations to locate their settlements principally within landscape units that remained clear of extensive fir forests. It appears that, despite being motivated by the prevailing subsistence activities, the choice of an area of land for settlement is deeply guided by various other cultural factors which are less directly dependent upon natural resources. Thus, in an area providing a large range of possibilities, the landscape in which the groups establish themselves could be considered as just one of many cultural characteristics.

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1. Introduction

Before the irreversible disappearance of hunter-gatherer groups

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and the development of agro-pastoralism, the Tosco-Liguro-Provençal area, located between the Southern Alps and the Northern Apennines (North-Western Mediterranean, currently astride France and Italy), was occupied by the last Mesolithic populations (Castelnovian) and the first Neolithic ones (Impressed Ware, hereafter referred to as *Impressa*), which coexisted *lato sensu* during the first half of the 6th millennium BCE (all calibrated dates are

given BCE: Before Common Era). Material evidence of direct interaction between both groups is still lacking, but their coexistence at a regional scale, previously controversial, is now supported by a set of reliable radiocarbon dates which demonstrate an obvious overlap between the end of the Castelnovian and the beginning of the Impressa. On the one hand, new dates were recently obtained for deposits from the last stage of the Castelnovian at i.e. La Baume de Montclus (Beta-253161, C10B. 6990 ± 40 BP: 5984-5771 cal. BCE (26) and Beta-253160, C7, 6660 ± 40 BP: 5646-5512 cal. BCE, Perrin et al., 2009), La Grande Rivoire (Beta-282247, GR08.T17.d28.554.LGM(F), 6490 ± 40 BP: 5527-5367 cal. BCE, Nicod et al., 2012) and Monte Frignone II (LTL-2656A, US2, 6624 ± 45 BP: 5626-5487 cal. BCE, Dini and Fioravanti, 2011). They confirm and strengthen the dating evidence previously obtained at Lama Lite, in the Tosco-Emilian Apennines (Rome-394, US6, 6620 ± 80 BP: 5710-5391 cal. BCE, Dini and Fioravanti, 2011). On the other hand, the earliest Impressa is now accurately dated (from Cerealia caryopses) in Western Languedoc, Eastern Provence and Western Liguria, where it clearly predates the Castelnovian terminus (e.g. Pont de Roque-Haute: LY-9676, pit F1, 6820 ± 35 BP: 5755-5638 cal. BCE, Guilaine et al., 2007; L'abri Pendimoun: GrA-29403, US28889, 6725 \pm 45 BP: 5720-5560 cal. BCE, Binder and Sénépart, 2010; Arene Candide: OxA-23072, US10, 6778 ± 39 BP: 5728-5628 cal. BCE; San Sebastiano di Perti: GrA-25715, 6760 ± 45 BP: 5733-5575 cal. BCE, Biagi and Starnini, 2016). This coexistence took place in an area ranging from the Mediterranean coastal low lands to the adjacent mountain ranges, during the period of maturation of the mixed forest that characterizes the Early Atlantic palynozone. In this area, settlements reliably attributed to the Castelnovian and the *Impressa* cultural complexes are scarce and, in spite of recent improvements, are rarely satisfactorily dated (Castelnovian: Perrin, 2013; Perrin and Binder, 2014; Maggi and Negrino, 2016; Marchand and Perrin, 2017; Impressa: Binder and Maggi, 2001; Manen and Sabatier, 2003). Although they are partly coeval, remains of the material culture of both groups have so far never been found together on the same site. We, therefore, have to acknowledge that tangible evidence of any syncretism between them is totally lacking for now. Beyond this, on a regional scale, the two groups reveal different settlement distribution patterns: the Castelnovian sites are mainly found in the high lands and low lands rather than at medium altitudes (Binder, 2000; Biagi, 2001; Perrin, 2008; Perrin and Binder, 2014), whereas the known Impressa sites are only located on the coastal fringe (Binder and Maggi, 2001; Guilaine and Manen, 2007; Manen, 2014). On the Impressa sites, it is occasionally observed that a portion of the lithic resources originate from territories thought to have been "under the Castelnovian control" (Binder et al., 2008 p. 53), because of the absence of nearby coeval Neolithic sites. This suggests either an exchange relationship or the sharing of certain supply territories. Furthermore, the two cultures have different subsistence economies (hunting, fishing, gathering versus farming) which we assume implies different environmental managements, spatial organisations and mobility gradients (nomadic versus semi-sedentary ways of life respectively). In this area, the coexistence of these two populations, which have very different ways of life, and the scarcity of evidence of a direct relationship between them raises crucial and nonconsensual issues about their interactions and the admixture process (Binder and Guilaine, 1999; Perrin, 2013; Perrin and Binder, 2014).

Assuming that the distribution patterns of the few dated archaeological sites of both groups are, at least partly, representative of their settlement strategies, the Castelnovian and the *Impressa* populations may have preferred to settle in different and separate territories. This distinctive distribution might be linked either to an avoidance strategy (Binder and Guilaine, 1999; Binder,

2000; Binder and Maggi, 2001) or to their respective technical, economic and cultural characteristics involving the appeal or lack of attractivity of different landscape units. Thus, documenting the environment of both groups enables the possible locations and the modalities of their hitherto hypothetical interactions to be identified. In order to discuss the weight of environmental *versus* cultural factors in the location strategies of both groups, we have reviewed environmental data from archaeological sites along with nearby and contemporaneous natural, off archaeological site, sedimentary sequences (hereafter referred to as "off-site sequences"). Taking account of similarities or discrepancies in the attractiveness of landscape units is a new and challenging way of documenting interaction or avoidance behaviours between the hunter-gatherer and the agro-pastoralist groups.

2. Regional setting

2.1. Environmental framework

The Tosco-Liguro-Provençal area stretches from south to north between c. 43 and 45°, from the Mediterranean Sea to the transition between the Southern and the Northern Alps, and from the west to the east between c. 4 and 10° , from the Rhone valley to the Northern Apennines (the Tosco-Emilian Apennines).

In this area, the Alpine, Apennine and Pyreneo-Provençal ranges converge and plunge into the Mediterranean Sea, resulting in very narrow and discontinuous coastal plains, especially in the area stretching from Eastern Provence to the Northern Apennines. Nowadays, the topography and the climate, mainly Mediterranean (summer drought, heavy seasonal rainfall, wind, frequent fires) but progressively shifting towards a more mountain character (cold winter, snow), favour erosion processes of limestone (widespread) and crystalline (more localised) substrata (Fel, 1962; Gouvernet et al., 1971).

These conditions result in a zonation of the vegetal association which is usually described as being staged in 6 belts, from the thermomediterranean stage, limited to restricted locations on the coast, to the alpine stage, above the treeline. Assuming that the evergreen formations, which are currently characteristic of the mesomediterranean belt, mainly spread after the mid-5th millennium in response to anthropic disturbance, the zonal vegetal associations during the first half of the 6th millennium BCE consisted of deciduous supramediterreanean oak forests, mixed oak/beech/ conifers (pine, fir) mountain associations, and conifer (spruce, larch, pine, juniper) subalpine formations (Ozenda, 1985; Renault-Miskovsky et al., 1992; Karatsori, 2003; Branch and Morandi, 2015). The alpine treeless formations were probably present in the Southern Alps, which culminate at high altitude (4102 m a.s.l), but it is likely that scattered trees reached the summits of the Northern Apennines (2165 m a.s.l.).

2.2. Cultural framework

2.2.1. The Castelnovian

The Castelnovian is the latest aspect of the Mesolithic in Southern France and Italy (Marchand and Perrin, 2017). It spread from Southern Italy to Northern Italy and hence to Southern France between *c.* 6600 and 5600/5400 BCE (Binder, 2013; Binder et al., 2017). It is regarded by several archaeologists as a filiation of the North Africa Upper Capsian (Binder, 2000; Perrin, 2009; Binder et al., 2012) and its subsistence economy was mainly based on the hunting of ibex (*Capra ibex*), chamois (*Rupicapra rupicapra*), red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), boar (*Sus scrofa*), but also smaller prey such as marmot (*Marmota marmota*) and Leporidae (Courtin et al., 1985; Biagi, 2001; Nicod et al., 2012;

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