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## CHAPTER FIFTY SIX

# USE-WEAR ANALYSIS OF EARLY NEOLITHIC LITHIC INDUSTRY OF PEIRO SIGNADO: A PIONEER IMPLANTATION IN SOUTH OF FRANCE

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### **Abstract**

Contemporary with the beginning of the western Mediterranean Neolithization, Peiro Signado is one of the oldest Neolithic settlements in the south of France. The site shows the installation, on the coast of Languedoc, of small pioneer groups with clearly Italian origins. The lithic industry is characterized by a bladelet production. Use-wear analysis brings to light the diversified forms of Neolithic economy corresponding to a technical system transported by the first settlers. This paper presents the first results of use-wear analysis that will be entirely published in the monograph of the site.

**Keywords:** Process of neolithization, Impressed ware, lithic industry, blades, sickles, trapezes.

## 1. Introduction

The Neolithization of the Mediterranean Basin involves complex processes and varied modalities in time and space (Guilaine 2001). In the western Mediterranean, Neolithization begins at 6000 cal BC in southern Italy and Sicily with the emergence of the Impressed Ware culture (Fig. 56-1). During the same chronological period along the coastlines of Liguria, Provence and Languedoc, appear small pioneer groups with a Neolithic economy and clear Italian origin (Manen 2000, 2002). This sporadic and very fast “colonization” preceded the development of the Cardial. Peiro Signado is an emblematic site of this early colonization phase.

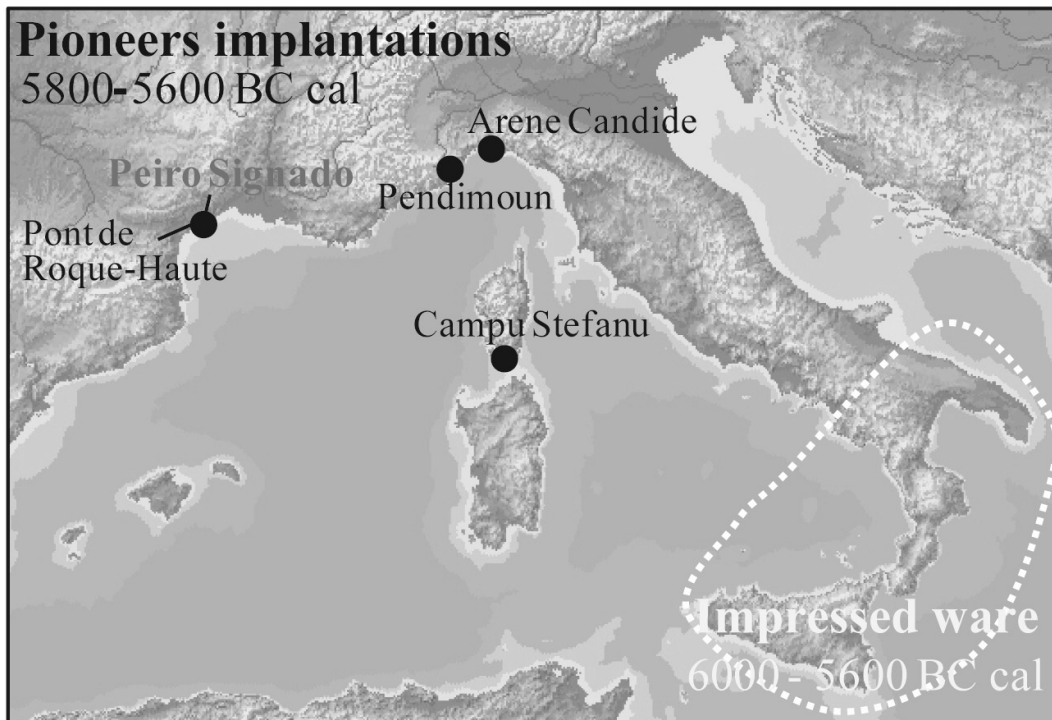


Fig. 1. Peiro Signado and the neolithization of Western Mediterranean (from Marchand and Manen, 2010).

## 2. Peiro Signado (Portiragnes, Hérault)

This open-air site is one of the oldest Neolithic settlements in the south of France, at the beginning of 6th millennium Before Christ (5700-5600 cal BC) and delivered one of the rare dwelling structures (Briois and Manen 2009). The documentation is very rich and reveals a totally established agro-pastoral economy. The lithic industry is mainly produced

at the expense of small pebbles of brown or blond flint, probably stemming from littoral deposits or fluvial formations derived from the Bas-Rhône. The obsidian, from the Tyrrhenian area, is also exploited on the site in small quantity (Briois and al. 2009). Knapping activities are oriented towards bladelet production (85%) produced by pressure technique. The retouched tools, which represent 22% of the lithic industry, are mainly made on bladelets (87%) (Briois 2000, 2005).

### **3. First functional data**

The preliminary use-wear analysis concerns a sample of 73 tools stemming essentially from an archaeological deposit connected to the rest of the built in perishable materials (on a total of 191). The study focused on some emblematic tools:

#### **3.1. Retouched or notched bladelets and scraping (planing) activities**

The nine analyzed bladelets present partial, irregular or notched retouch, of more or less depth. These bending fracture removals are always on the dorsal face. Eight working edges were observed on four artefacts (one retouched bladelet and three notched bladelets among which one was recycled as a borer). The used zones are the concave part of the notches (5), the retouch zones with slightly concave delineation (2) and unretouched edge (1) (Fig. 56-2). The asymmetric polish is little developed on the dorsal face, with a low degree of linkage of polished surfaces. On the ventral face, it is a shining marginal polish, forming a convex fluted bevel and few striations. This pattern corresponds to a transversal motion, the retouched dorsal face being the rake face and the rake angle is rather high, for the light scraping of rigid plant or soft wood.

These results suggest a techno-functional convergence with Late Mesolithic notched blades (Gassin and al. this volume). If this is confirmed by the complementary analysis, this convergence would support the perceptible affinities in the lithic sub-system of Castelnovian and Impressed Ware (Martini 2002)

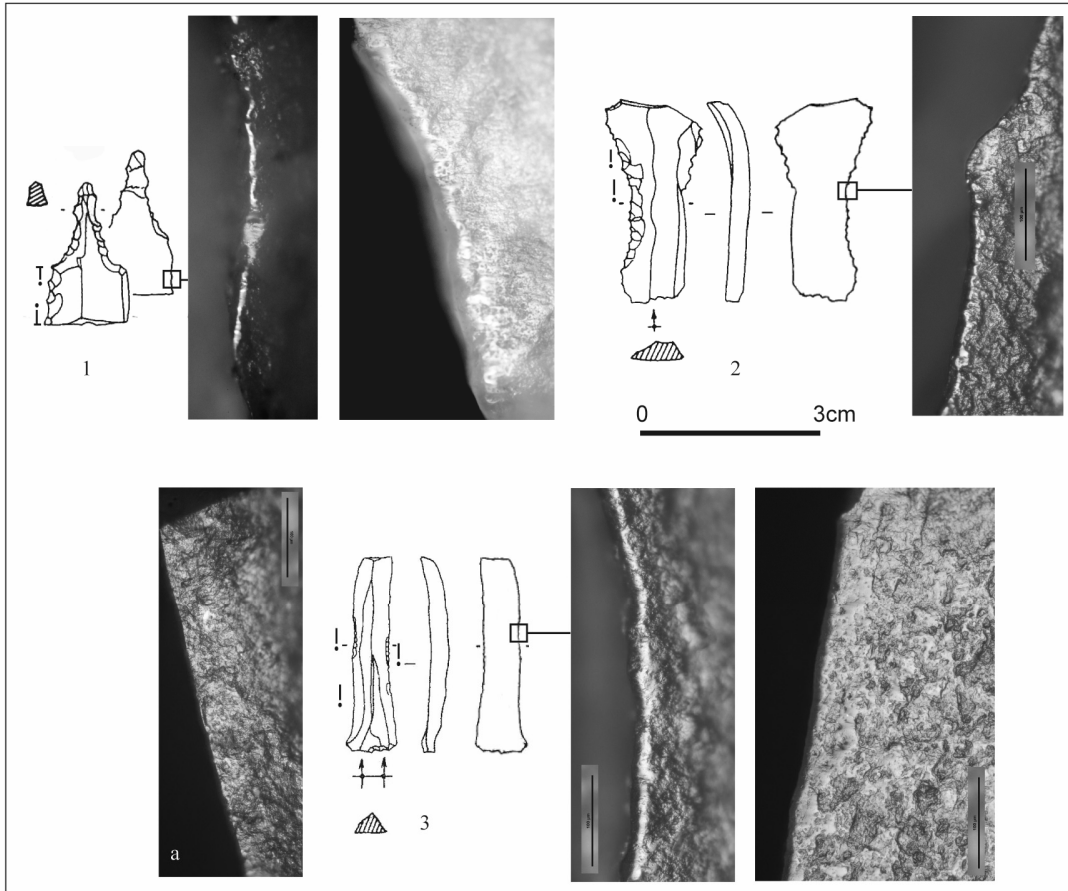


Fig. 2. Retouched or notched bladelets used to scrape vegetal materials. 1: Notched bladelet recycled in bored. 2: Notched bladelet. 3: Retouched bladelet. Asymmetric polish, tiny on the dorsal face (3a), shining fluted domed bevel on the ventral face, marginal to moderate invasiveness (end flank). All photographs taken at 200x.

### 3.2. The harvest implements: composite sickles with obliquely inserted elements

Peiro Signado delivered a total of 34 glossy blades, from the dwelling area, pit n<sup>o</sup>7 and out-off stratigraphy. These sickle elements are short, generally between 2.5 and 3.5 cm except in some ambiguous cases (too fragmentary blank), the traces develop in diagonal and result from an oblique insertion (Fig. 56-3). Blades are used on a single edge which is, most of the time, unretouched (12) but can be modified by regular semi-abrupt (1) or microdentate (8) retouch. The chronology of traces seems to indicate that these edge modifications can correspond to sharpening in the course of work or blank rectification.

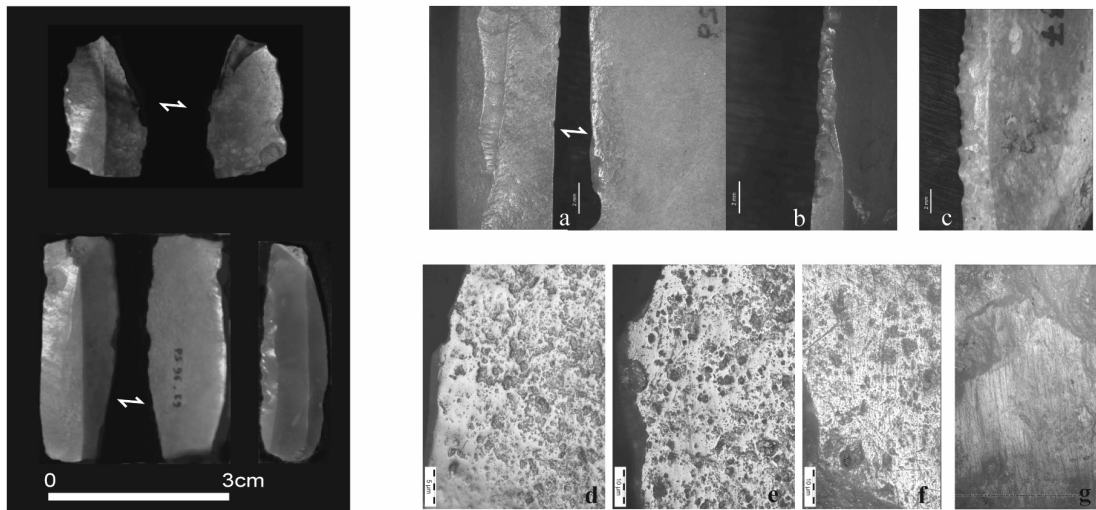


Fig. 3. Sickles blades with oblique gloss, working edges diversity (unretouched edges (a), regular semi-abrupt retouch (b), microdenticulate retouch (c)) and micropolish diversity (smooth coalescence (d), smooth to moderate striation (e, f), very strong striation (g)). All microscope photographs taken at 200x.

Polishes also offer a diversity inferred by the striation level. They raise a smooth coalescence in the majority of the cases (18), smooth to moderate striation (8) or very strong striation (4). These striation levels are not correlated with the edge modifications. The abrasion of some sickle blades could result from a low cutting of stem cereals allowing the recovery of thatches (for the cattle and/or for mud-box house); either of their uses to cut the stems on the ground (Clemente and Gibaja 1998), but we cannot exclude re-uses. The crossing of functional data and the results of archaeobotanical analysis (Marinval, work in progress) will allow the specifying of these hypotheses.

### 3.3. The symmetrical trapezes: transverse arrowheads

The geometric microliths are represented by a rather important number of trapezes (n=39 found during excavations in 1996-1997). Obtained by bending the breakage of bladelets, microliths are exclusively symmetric bitruncations. The truncations are always direct and rectilinear or slightly concave. The morphometric homogeneity of the trapezes is also characterized by a standardization of the widths ( $10 \pm 2\text{mm}$ ), like all the bladelets of the assemblage.

Diagnostic impact traces are observed on 11 microliths out of a total of 30 analyzed. Macro-fractures, burin-spall and spin off, are located on the points formed by truncation and the long base, oriented perpendicularly to the long base (9 cases) (Fig. 56-4, 1). On the long base, damage impacts

are flake scars, often continuous, bifacial, with trapezoidal morphology and step termination (6 cases out of 11) (Fig. 56-4, 2). On the short base, we observe micro-scars or transversal bending fractures (5 cases) (Fig. 56-4, 3). Linear micro-traces are identified on two trapezes (Fig. 56-4, 4), combining linear plastic alterations of the flint surface, abrasion of the microtopography and striations. They arise from microfracturing and crushing. The orientation of linear traces is also largely perpendicular to the long base. The recurring orientation of impact traces, as well as their distribution and combination, confirm the use of the trapezes as projectile points, and more precisely as transverse arrowheads.

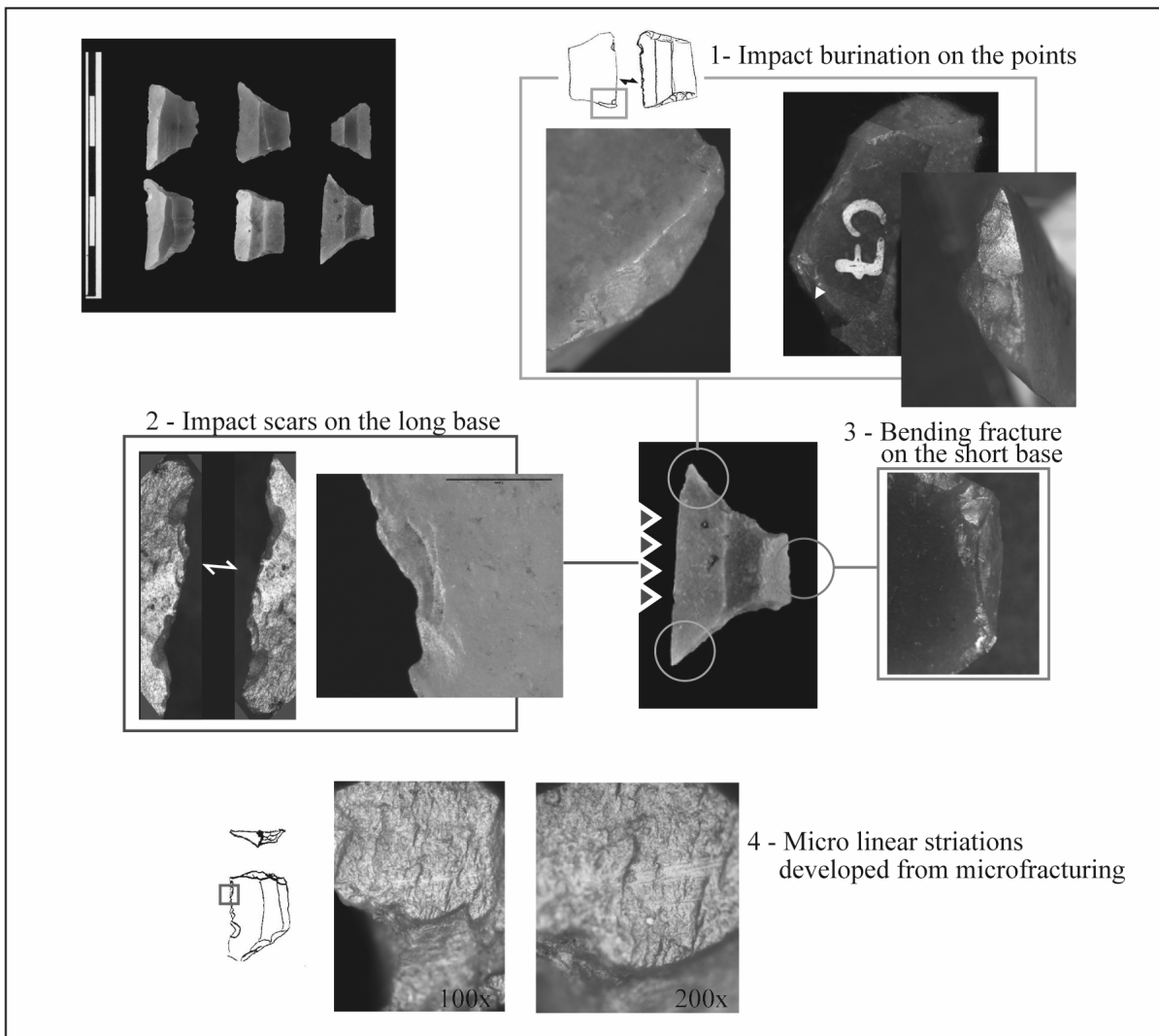


Fig. 4. Diagnostic impact traces on symmetrical trapezes used as transverse arrowheads.

Without underestimating their symbolic or social functions, these arrowheads and the arrows which they armed, probably served for hunting. To consider the part of hunting activities in the Peiro Signado economy is difficult from the only inserts and in the absence of the faunal remains which are very badly preserved on the site. However, the impact rate (37 %) and the important part of the trapezes in the industry spectrum (20% of the retouched tools) allow us to suppose that the hunting contribution was not insignificant, in particular in the raw material supply system (pelt, hide, bones, antler, tendons...).

#### 4. Discussion

At this stage of the study, we have a very partial vision of the technical processes operated by these pioneer groups. The exhaustive analysis of the Peiro Signado industries will allow a more ample questioning of the colonization paradigm.

The strategies of tool kit management appear to contrast with the investment in raw material acquisition. Peiro Signado leptolithic flint tools, little transformed, seem moderately exploited (few recycled, few multiple use), *carefree* of blanks economy. This report may be connected with the very productive character of pressure knapping but also with the lightness of bladelets extracted on the consumption site. We shall underline however the absence of quite close raw materials sources. We can then suppose that the access to the relatively distant zones of supply of flint pebbles in Bas-Languedoc, would have been favoured by the traditions of maritime mobility. In this context, the contacts with the Mesolithic populations remain hypothetical. Through the technical processes, to perceive (or not) the possible techno-functional links, such as they could be envisaged for notched bladelets, could contribute to the debate on the Castelnovian heritage in Impressed Ware and on the interactions between both cultural complexes (Dini and al. 2008; Perrin 2009; Radi and Ronchitelli 2002).

As a supplement of the agro-pastoral economy, these first farmers maintained predation activities, in particular hunting, in open air sites such as Peiro Signado and Pont de Roque-Haute or more intensively in caves and rockshelters such as Pendimoun, Arene Candide, Latronico and l'Uzzo (Vigne, Carrère, in Guilaine et al. 2007). Adaptation to local resources or cultural traditions transposed from the origin area?

Peiro Signado is affiliated to Ligurian Impressed Ware. Indeed, it presents very strong ceramic affinities with the early Neolithic of Arene Candide (Manen 2002; Guilaine and al. 2007). The comparison of lithic



industries is supplied with less convincing elements, in particular for 3 sickle blades, which according to B. Voytek, were inserted in parallel (Starnini, Voytek 1997). In South Italy, a new analysis of Torre Sabea glossy blades allowed the characterization, as at Peiro Signado, of an oblique insertion (Gibaja, Mazzucco, personal communication) but in other sites, as Favella (Fuolega; Voytek, in Tiné, 2009) or Ripa Tetta (Petrinelli Pannocchia 2007, 142; 2008), the parallel inserts seem the majority. Although more recent, the Adriatic Impressed Ware sites could offer convergent data, in particular Maddalena di Muccia (Petrinelli Pannocchia 2007, 143) where is attested oblique gloss on short blades, the component of sickles with dented edges. Here still, other elements of the lithic industry, such as geometric microliths, diverge from the Peiro Signado model. The re-examination of tools, the current analysis will bring precision on the sickles morphology, as that of Santo Stefano revealing probably the coexistence of various insertion types unless it is a chronological evolution (Petrinelli Pannocchia, this volume). But sickles being only one of the components to be considered, convergent or clashing components (sickle/arrowhead–lithic/ceramic), in the search for the complex processes which led these sailors-farmers on languedocian shores.

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