



## Socio-economic organization of Final Paleolithic societies: New perspectives from an aggregation site in Western France



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### ABSTRACT

Overlooked in larger European syntheses for some time, northwestern France now plays an important role in a dynamic research program investigating the very end of the Lateglacial in Western Europe. The discovery of the well-preserved open-air site of La Fosse has allowed for significant advances in our understanding of different aspects of the Younger Dryas–Holocene transition in this region. This homogenous lithic assemblage adds further precision to the Lateglacial chrono-cultural sequence and provides essential new information for investigating techno-economic changes that appeared during this period. A techno-functional study of the lithic material combined with a spatial analysis of artifact distribution provides insights concerning the site's function. Several lines of evidence also shed light on occupation duration, activities carried out on-site, and the likely composition of the groups who occupied the site. The combination of the above lead us to interpret La Fosse as a large residential site. Following this, we propose a new mobility and land-use model for hunter-gatherer groups from the Younger Dryas–Preboreal transition in which La Fosse functioned as an aggregation site. This model confirms several previous hypotheses emphasizing the logistical character of mobility strategies of these societies. Finally, this scenario adds further details and precision concerning both the status and connections between different groups of sites within a complex socio-economic system.

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### Introduction

Research concerning the end of the Lateglacial in northwestern Europe has recently benefited not only from the discovery of new sites but also the emergence of an important new research dynamic combining the reassessment of old collections with renewed fieldwork. Following a nearly two thousand years period where substantial technological simplifications are evident in both the methods and objectives of stone tool production (Célérier, 1994, 1998; Valentin, 1995, 2008; Bodu and Valentin, 1997; Chollet and Dujardin, 2005; Naudinot, 2010; Mevel, 2011), much more elaborate and technically demanding debitage patterns re-emerged during the second half of the Younger Dryas. This new desire for flat, regular and standardized blades with rectilinear

profiles can be seen across a significant geographic area spanning from southwestern France to southern Scandinavia. This wide distribution demonstrates the circulation of particularly robust technical concepts incorporated within a substantial techno-complex (Valentin, 2008; Naudinot, 2010, 2013). We proposed “Pre-Mesolithic straight and bladelet industries” these last years to name this techno-complex (Naudinot, 2010, 2013). We admit that the choice of P2SBI is not necessarily the best to render the particularities of the industries of these groups. As we developed these last years, the flatness of the blades and bladelets produced is probably a better structural character of this system than the straightness of the blanks. We demonstrate this hypothesis in Western France (Naudinot, 2013) and tracked it in other areas like in Southwest France. Recently, B. Valentin tested our hypothesis in the Paris Basin and Northern France and found the same phenomenon (Valentin et al., 2013). We thus propose to make this structural character the common denominator of these industries and propose a new term to designate this techno-complex: “Flat Blades and Bladelets Techno-complex”.

Several different, nearly contemporaneous technological traditions with still unclear internal trajectories of change are

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subsumed within the FBBT: (1) the Ahrensburgian/Epi-Ahrensburgian on the Northern European Plain, extending into Southern England and across northern France, (2) the Swiderian spread across western Poland and into the southern Ukraine, and (3) the Laborian/Epi-Laborian cultural complex, which is essentially concentrated in the southern half of France from the Paris Basin to the Pyrenees and bordered to the southeast by the Epigravettian techno-complex. While Epi-Paleolithic micro-blade traditions from the Iberian Peninsula differ substantially from these industries, the so-called Carneira facies of the Magdalenian in Portugal (Zilhao, 1997) shows some similarities with laborian/epi-Laborian lithic equipment to the FBBT. Alongside these traditions, certain sites with distinctive characteristics are found in areas of northern France and southern England that are particularly rich in high-quality siliceous raw materials. These sites have been grouped together as Long Blade, Bruised blade, or “Belloisian” assemblages and share stone tool production systems geared around the manufacture of regular blades of sometimes extraordinary size. Previously viewed simply as workshop sites (Bodu and Valentin, 1992; Fagnart, 1988, 1997; Valentin, 1995), they are today considered specialized Laborian/Epi-Laborian and/or Ahrensburgian/Epi-Ahrensburgian occupations (Valentin, 2008; Fagnart, 2009) situated in close proximity to both hunting grounds and flint sources (Valentin, 2008). Current research on societies from the Pleistocene-Holocene transition focus on investigating sites function, links between sites, mobility strategies, and land-use patterns (Valentin, 2008; Fagnart, 2009; Naudinot, 2010, 2013; Bodu et al., 2011; Jacquier, in preparation, 2014 and in press).

This article forms part of this new research dynamic and provides fresh perspectives concerning work carried out in northwestern France. Having been neglected for some time, this region is now a key area for addressing these types of socio-economic questions thanks to the re-analysis of old collections alongside the discovery of new sites. With the chrono-cultural background fundamental to any palethnological study now well established (Marchand et al., 2004; Naudinot, 2008, 2010, 2013), our work focuses on the socio-economic organization of these Lateglacial societies.

The favorable preservation conditions of the archaeological levels at the site of La Fosse near Villiers-Charlemagne (Mayenne, France; Naudinot and Jacquier, 2009, 2013), hitherto unknown in the region, have rapidly progressed our understanding of these different aspects. Although the substantially acidic soils of the Armorican Massif have unfortunately destroyed all organic materials, the techno-cultural homogeneity of the well-preserved lithic assemblage nevertheless makes the site particularly informative. An integrated techno-functional approach combined with an investigation of the spatial distribution of the archaeological material has allowed us to address questions concerning the site's socio-economic status as well as more general questions concerning mobility strategies and the ways in which these hunter-gatherer groups exploited the landscape during the Pleistocene-Holocene transition.

### The site of La Fosse

The site of La Fosse lies on the left bank of the Mayenne River. Located on a small alluvial plain near a large meander, the site is dominated by an imposing landscape of marked relief culminating some 100 m above the valley (Fig. 1). The remains of the Lateglacial occupation were found lying directly on a thick bed of colluvial sediments composed of variously sized blocks and pebbles (sometimes as large as 1 m) that was sealed by a clayey-silt matrix. The lithic material was concentrated at the summit of this stratigraphic unit. It is covered by approximately a meter of fine silt. This silt

deposit is particularly homogenous in terms of texture, granulometry, and color (Naudinot and Jacquier, 2013). The excavated surface currently extends over 90 square meters from which more than 30,000 lithic objects have been recovered.

Located on the margins of a large crystalline massif, the site is at a significant distance from the nearest sources of raw materials, forcing flintknappers from La Fosse to provision themselves from distant flint outcrops in order to fulfill technically demanding debitage objectives. All of the extremely varied lithic materials (all flint) exploited at the site are non-local and provide evidence for an extensive provisioning territory (more than 200 km for some flint types). While most of the provisioning zones have already been documented, determining the origin of several different flint types remains problematic as they were procured from secondary contexts along waterways, such as the Loire River, draining the region's sedimentary basins. Additional petrographic analysis is ongoing and will undoubtedly provide more details concerning the sources of the different raw materials.

Like other terminal Lateglacial sites in Western Europe, the lithic technology of La Fosse was geared around the production of flat blades, sometimes of substantial size, and rectilinear bladelets integrated within the same *chaîne opératoire*. These regular products come from specific, standardized debitage methods that require significant skill (Naudinot, 2010, 2013) – blocks of raw material with rigorously prepared crests were exploited using soft-stone percussion from two opposed and carefully abraded striking platforms. Such preparation and reduction strategies permitted the sought-after flat and rectilinear blanks to be detached from large surfaces with minimal longitudinal and transverse convexities.

Unlike the dedicated production of blades and bladelets, the flake component of the assemblage represents by-products from the shaping and management of blade and bladelet cores. Numerous un-modified blanks were used in various activities, while others were transformed into different types of retouched tools; predominantly end-scrapers, truncated tools, and burins (Fig. 2). On the other hand, bladelets were reserved for the manufacture of projectile elements. These particularly well-represented weapons portray substantial typological variability when compared to the more consistent hunting equipment of Azilian groups from the Bølling-Allerød interstadial.

### The socio-economic role of La Fosse

#### *Evidence for a wide range of activities carried out on-site*

Despite the considerable distance separating La Fosse from the exploited flint outcrops, the production of blanks and their transformation into tools is very well represented. Moreover, evidence for the entire *chaîne opératoire* from the introduction of entire cortical nodules to the ultimate discard of used tools is present. A technological analysis of the lithic material reveals two main production objectives: (1) different-sized blades destined for various domestic activities and (2) bladelets primarily designed to be transformed into projectile points (Fig. 3).

Hunting activities are well-attested too by the presence of 665 projectile points and fragments, certain of which bear diagnostic impact fractures based on the criteria outlined by Fischer et al. (1984) and O'Farell (2004). Macro- and microscopic use-wear analysis of 2108 pieces, 185 of which were retouched tools, also revealed evidences for a range of other activities (Fig. 4, Jacquier, 2014, in preparation). Butchery traces are evident on 22% of use zones (UZ), primarily the edges of un-retouched blades. Hide working is also especially well represented, evident on slightly less than 50% ( $n = 225$ ) of UZ, approximately half ( $n = 88$ ) of which can be

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