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The Mousterian site of Roca dels Bous (Lleida, Pre-pyrenees)

In a 1973 review, Emili Sunyer mentions an important Mousterian sequence in the first slopes of Pyrenees of Lleida. This short letter which brought us to Roca dels Bous (Mora, 1988), constituted the origin of our investigation of the human settlement located in the Eastern Prepyrenees (Fig. 1A). During these years, the field work carried out at Roca dels Bous, Tragó, Cova Gran de Santa Linya, and recently at Abric Pizarro, show this area to be key to analyse the human presence in the Upper Pleistocene and the Holocene in the Iberian Northeast.

Deconstructing Palimpsests

Roca dels Bous (X = 321.266, Y = 4.638.067, UTM H31 N ETRS89) is located at Cingle de la Cascalda, an Eocene limestone and Oligocene conglomerates cliff more than 40m high on the right edge of the Segre river, 275m A.S.L. (Fig. 1B). This slope's deposit is 20m thick and has a fluvial terrace that is minted on its basis over the substrate (Fig. 1C).

The excavation is focused on the upper platform (Fig. 1C), where a first level –R3– arose, dated by ¹⁴C AMS in 38.8±1.2 ky BP (AA 6481).

The excavated sequence reaches 1.5m deep. In a sedimentary level, it is a sequence of little consolidated breccia of sand and shale, plenty of angular medium-small size debris, and large autochthonous blocks coming from the weather erosion of the shelter's limestone. Up to now, 100 m² of levels N10 and N12 have been excavated. Other levels have been

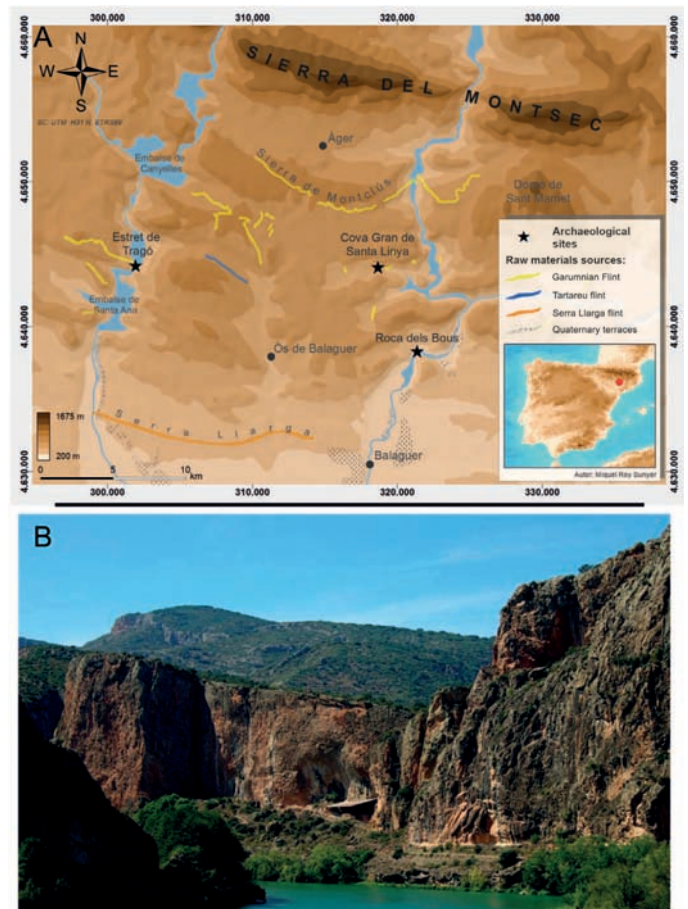


Figure 1. A) Roca dels Bous, Cova Gran de Santa Linya and Cova del'Estret de Tragó topographic location; silex and metamorphic rocks' deposits topographic location at Noguera Prepyrenees. B) Roca dels Bous.

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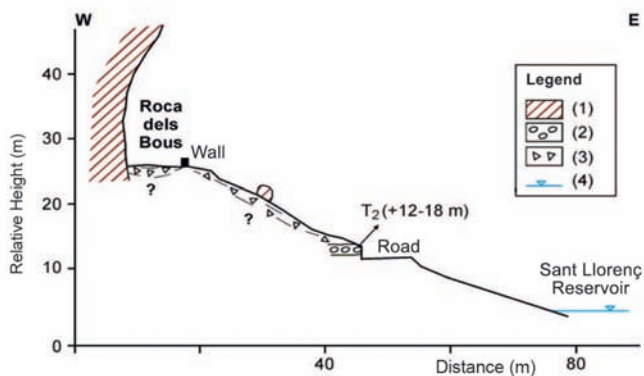


Figure 1. C) Archaeological site profile.

detected in several surveys, N14 and S9, which could be extended by similar surfaces.

The complex site formation processes of the deposit make it difficult to follow these archaeological units' dispersion. Two alluvial fans are located in the deposit's ends, one on the E side which articulates the sediments' income with a slope of 10°-15° to the southwest; the other, on the W side, is sub-horizontal -5°- sloping to the southeast. These riverbeds form a depression covering an important part of the excavated area.

These carbonated surfaces homogenize the sediments' colouring. To surmount the lack of visibility, we assume that lithic and bone remains are sedimentary particles. Their systematic coordination defines accumulations with horizontal and vertical dispersion separated by sterile, delineating surfaces with inclinations and depressions derived from the sedimentary accretion of the lateral cones (Fig. 2A).

The large excavated combustion structures show the regular use of fire and confirm the archaeological geometry of these units. Similarly, they allow detection overlapping which involves the settlements' sequence. These *fusion/fission* phenomena indicate that the sedimentary rhythms are not homogeneous (Fig. 2A). The archaeological levels are added to short-term events which were staggered during a term scale that is difficult to evaluate (Mora *et al.*, 2008; Martínez-Moreno *et al.*, 2010).

Artefacts and Behaviours

Contextualizing these processes is essential to analyze the variability observed in the Mousterian

artefacts. Determining the origin of raw materials is a priority, and silex and quartzite outcrops feeding Roca dels Bous have been identified. They basically manage metamorphic rocks which abound in the fluvial deposits in this area. Silex rocks are not a local resource, although they appear in two regional outcrops: (1) the Garumnian formation which extends by Montclús and Tragómountains, (2) Serra Llarga (Oligocene) (Fig. 1A) (Roy *et al.*, 2013). There is no lack of rocks in this area to produce artefacts, so the changes in the composition of raw material and how this affects lithic assemblages describes the techno-cognitive and techno-economic environment of these Neanderthal groups. This conception can be evaluated in levels N10 and N12, resulting in remarks which affect the debate about *Mousterian variability* causes (Mora *et al.*, 2008).

In N12, excavated along 105m² and 20cm thickness, 22 hearths and the accumulation of 90 kg of rocks shaping a set of more than 23.500 artefacts are identified, of which all the segments related to the knapping process are present. The metamorphic rocks constitute 80% of the assemblage (Fig. 1C). However, retouched and small expediently knapped flint fragments are selected. These behaviors suggest the transport of finished pieces and small blanks from which little supports are obtained from 15-20 km. Retouched quartzite pieces are large with denticulate edges while the flint ones are small and instruments shaped with continuous fronts (Fig. 2B).

N10 suggests remarkable differences. This level follows along 95 m² with 10cm thickness, where 20 hearths were excavated. A radical decrease in artefacts can be seen -about 2100 pieces- which represent the transport of 11 kg of raw material. Sixty-six percent of the instruments are flint manufactured, although from the weight, the distribution between metamorphic rocks and flint is well-balanced suggesting that the flint artefacts are small, as seen in N12. There are more flint cores than quartzite cores, although they likewise point out a managing from the expedient methods as well as centripetal recurring methods which conform volumes under 5 cm (Fig. 2B). The retouched are preferably shaped of flint -80%- , the denticulate being more frequent than the continuous-edge pieces, as well as the quartzite supports (Martínez-Moreno *et al.*, 2010; Mora *et al.*, 2008).

The retouched pieces are usually fragmented and some remounts suggest that they are repaired

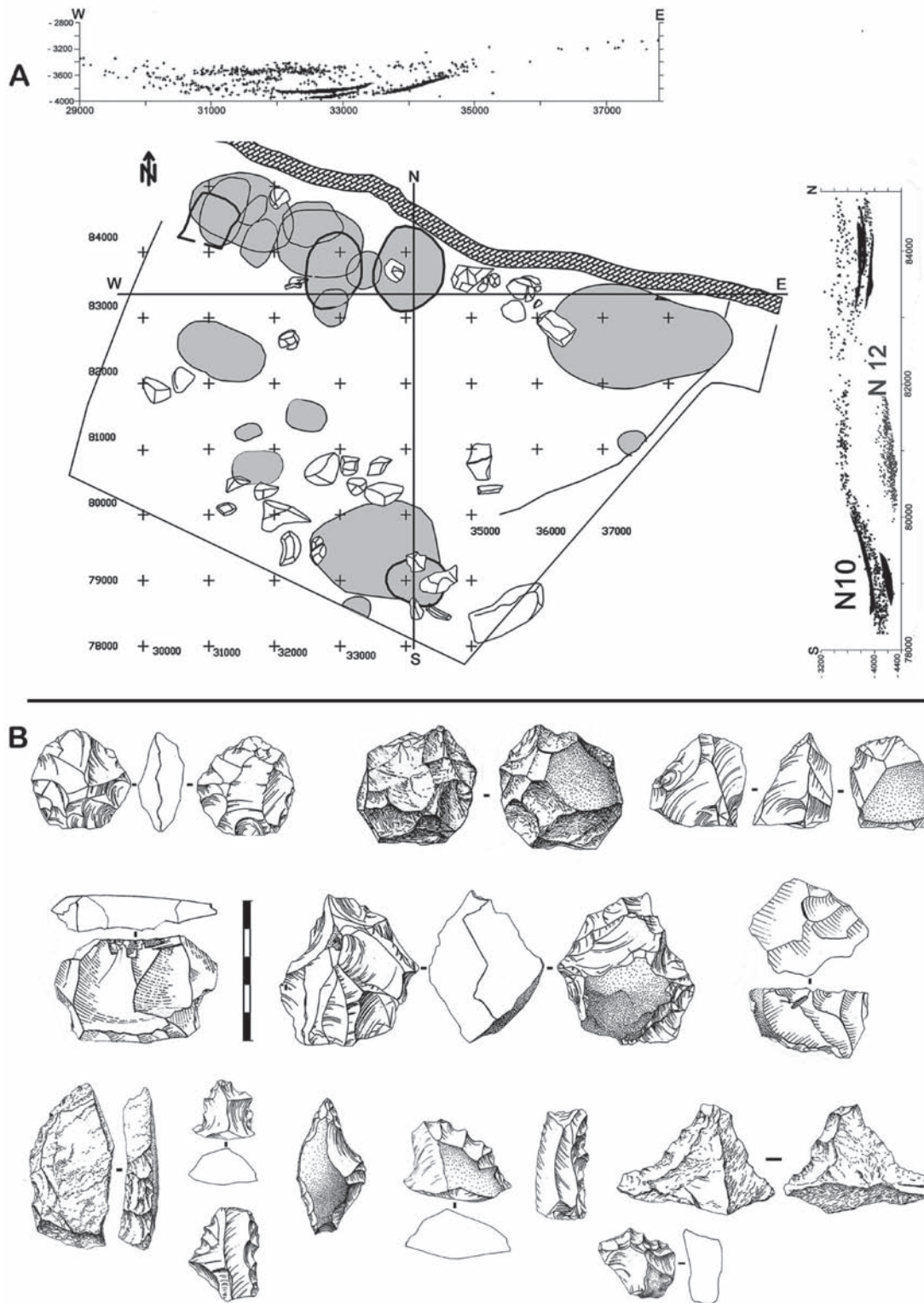


Figure 2. A) N10's excavated hearths distribution. Vertical projection, E-W –up– and N-S –right–, in which the hearths' overlapping and *fusion/fission* phenomena inside the level can be discerned. In the N-S projection, the sterile between N10 and N12 can be seen. B) Cores trends on silex and metamorphic rocks extensively exploited until configuring small volumes (up), retouched tools (down).

instruments (de la Torre *et al.*, 2012). Many re-touched pieces suggest their recycling. The double patinas identified in some pieces could correspond to artefacts recovered on the site or in the surrounding landscape which are reactivated to obtain new supports (Mora *et al.*, 2008).

This intense management does not obey the lack of this material in the area, allowing us to approximate these groups techno-cognitive environment. Likewise, especially N10 suggests short-term activities; the archaeological site served as a stop in the movements between residential displacements. If so, Roca dels Bous represents a web of Neanderthal settlements inside this regional environment in the Prepyrenees of Lleida and Huesca (Mora *et al.*, 2008).

Future prospects

These arguments, discussed in other contributions (Casanova *et al.*, 2009; Martínez-Moreno *et al.*, 2010; de la Torre *et al.*, 2013), point out that these techno-typological tendencies do not re-

spond to techno-economic factors such as the lack of raw materials in the environment. N12 notes the option of using local rocks.

These behaviours related to flint management must be attached to a fragmented *chaíneo peratoire* along a wide techno-temporal scale, converting Roca dels Bous into a privileged place in the movement of Neanderthal groups (Mora *et al.*, 2008; de la Torre *et al.*, 2013).

The settlement's strategic position allows an effective control of the seasonal animal movements, especially equids (horse and wild ass) and deer, between the Ebro Depression and the Pyrenees. This short-term settlement-pattern should be attached to annual cycle short periods in which the environment offered opportunities to obtain prey and transport them to the archaeological site.

The inferences from Roca dels Bous, and in general the pre-Pyrenees settlements at Noguera, suggest that this area will have a prominent role in the investigation of the Middle Palaeolithic in the Northeast of the Iberian Peninsula.

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A key sequence in the Western Mediterranean Prehistory: Cova Gran de Santa Linya (Pre-Pyrenees in Lleida)

This large rock shelter was discovered in 2002 during a survey program coordinated by the Centre d'Estudis del Patrimoni Arqueològic de la Prehistòria (CEPAP). This settlement contains a large chrono-cultural sequence covering Middle Paleolithic, Early Upper Paleolithic, Magdalenian, Neolithic and Chalcolithic. The use of this site by hunter-gatherers and farmer-shepherds turned the

place into a key location for analyzing human settlement of the Pyrenees during Prehistory.

Geographical situation

Cova Gran (X=318541, Y=4643877, UTM H31N ETRS89) is located in the eastern Pre-Pyrenees, in Lleida (see Fig.1A in *Roca dels Bous*

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PLEISTOCENE AND HOLOCENE HUNTER-GATHERERS IN IBERIA AND THE GIBRALTAR STRAIT:

THE CURRENT ARCHAEOLOGICAL RECORD



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