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## 65. *Couteaux de Rouffignac*: A new insight into an old tool

Davide Visentin, Sylvie Philibert, and Nicolas Valdeyron

At the entrance of Rouffignac cave (Dordogne, France) an important and complete Mesolithic sequence was identified during the excavations carried out by Claude Barrière in the middle of the last century. What was brought to light from the Early Mesolithic layers is a very peculiar assemblage characterized by the large dimensions of the blanks and a great variety and high percentage of domestic tools with respect to armatures. Among the other peculiarities of the site is the presence of the so-called 'couteaux de Rouffignac', backed knives characterized by basal notches. A new techno-functional analysis has been carried out on this specific tool in order to understand its role in the lithic assemblage and verify its correlation with a specific activity as implied in the typological definition of the tool itself.

**Keywords:** Early Mesolithic, Rouffignac backed knives, plant working, techno-typological definition, use-wear analysis

### Introduction

Located in Perigord (south-western France), the cave of Rouffignac is mostly famous for its Palaeolithic rock artworks. At the entrance of the cave, a Mesolithic occupation sequence was also brought to light by Claude Barrière, who excavated a large trench-pit (48 square metres on the upper levels) between 1957 and 1962. During fieldwork seasons, five main levels were identified and the three lower ones were attributed to the 'Epipalaeolithic' (Barrière 1972). In this paper, the data referring to layer 5b will be presented. This layer was radiocarbon-dated to the last part of the Pre-Boreal: 8611–8236 cal BC at 95 percent confidence (GrN-5514: 9150±50 BP, charcoal) (Barrière 1973). It represents the lowest Mesolithic level and was on typological grounds attributed to the Sauveterrian. Microlithic armatures include double backed points (*cf. Sauveterre*) and large isosceles triangles, along with proximal points with natural bases. Retouched tools are quite abundant with respect to armatures and feature a great variety of types. Among them an assemblage of 18 (19 according to Rozoy 1978) backed knives was identified. These tools were defined by Barrière (1972, 155) as 'more or less large blades with thick butts (Rouffignac technique), featuring a backed side, an oblique truncation and two opposed basal notches, often alternate'. He named them *couteaux-faucilles* (later known as Rouffignac backed knives) because of the presence of a bright polish on three of the specimens belonging to layer 5b, one from layer 5a, and one from layer 4. He believed this polish was due to the harvesting of wild Gramineae (Barrière 1965). Such attribution was based on the macroscopic analogy with cereal polishes.

The presence of use-wear (or presumed use-wear) led the author to include in this category also non-retouched artefacts, such as naturally backed blades.

According to Rozoy (1978), these tools are described as backed knives featuring one or two sub-proximal notches (either direct, indirect, or alternate). Regarding their function, he believed that the striking use-wear traces visible on the specimens of Rouffignac could not be due to the processing of vegetal materials as, by comparison with experimental and archaeological references, the latter should produce much more invasive polishes. He therefore proposed a new hypothesis: the cutting of a thin material, probably leather lying on a wooden support.

The two authors agreed on the way this tool was hafted. Barrière proposed that the backed knives were tied to correspond with the basal notches on a wooden or antler handle (he claimed that antler handles were actually retrieved during the excavation). Rozoy reported an additional hypothesis formulated by Francois Bordes, according to which the backed knives could have been suspended from a string tied to the notches (Rozoy 1978). In order to better understand this peculiar Sauveterrian tool and finally shed some light on its function, the Rouffignac backed knives (RBK from here onwards) assemblage of layer 5b was re-analyzed according to a multidisciplinary protocol encompassing the entire reduction sequence.

### Production and selection of blanks

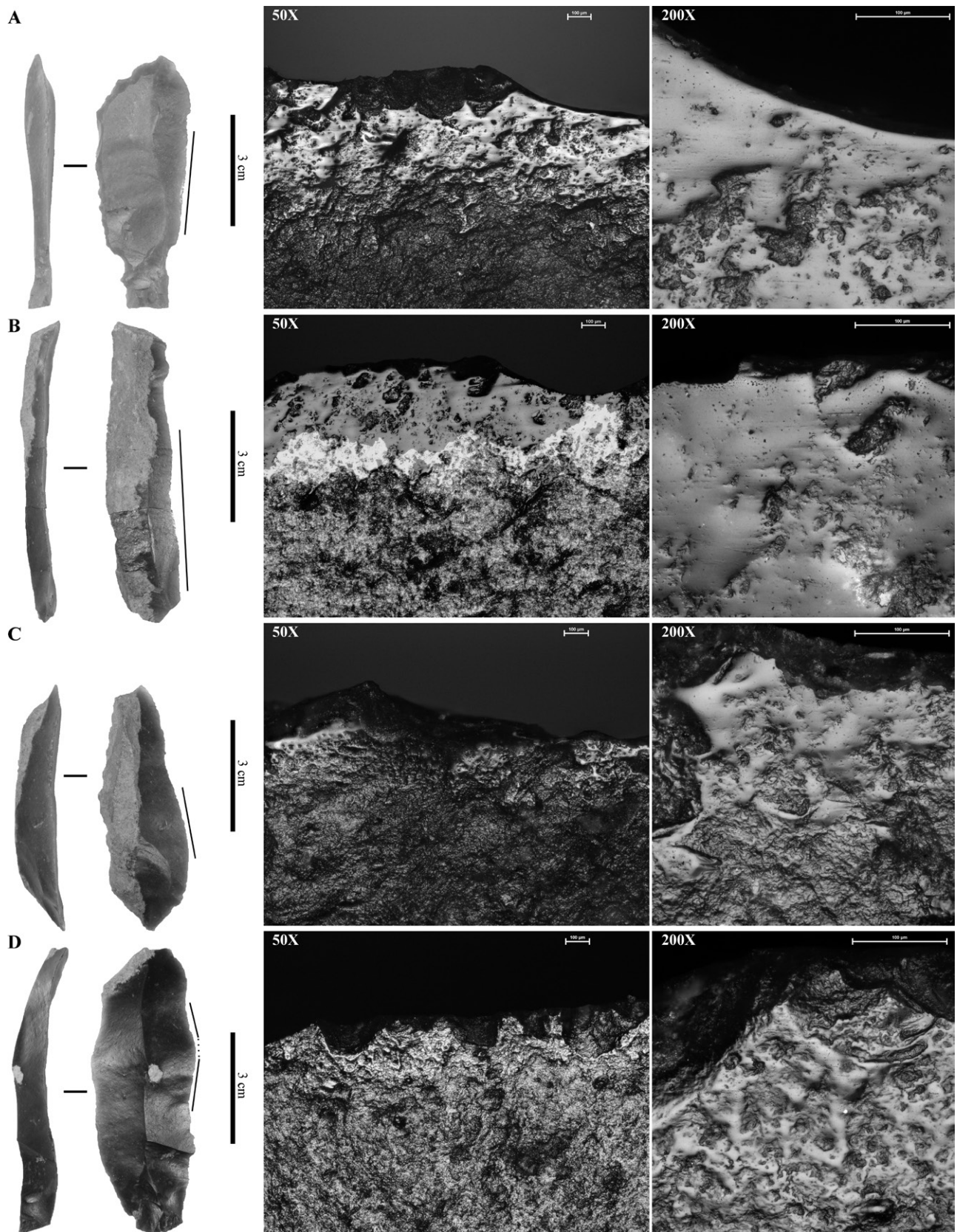
A technological analysis carried out on the totality of the lithic artefacts belonging to layer 5b has allowed the



**Fig. 65.1.** Rouffignac, layer 5b. Some of the blanks published as Rouffignac backed knives: 1–6. true Rouffignac backed knives; 7–9. backed knives; 10. denticulated blade; 11–12. blade-scrapers. Photographs by Davide Visentin.

reconstruction of the reduction sequences that provided the blanks used for the manufacture of backed knives (Visentin 2018). In total, the lithic assemblage includes 1981 artefacts, among which 33 cores, 18 armatures, 17 microburins, and 86 retouched tools. Technological data suggest the presence of a single reduction sequence devolved at the exploitation of the large cherty nodules, in which the cave is extremely rich. These nodules were collected either in primary or

secondary deposition (in the clayish residual soil), tested, and partially decorticated inside the cave (Dachary *et al.* 2016). Later they were transported to the entrance, where they were rapidly reduced (also thanks to the adoption of specific heat-fracturing techniques) in order to obtain some large elongated blanks (mostly blades, laminar flakes, and semi-cortical blades) and numerous large flakes (Visentin 2018). The latter were intended as blanks for the production



**Fig. 65.2.** Rouffignac, layer 5b. The four blanks that yielded use-wear traces connected with the working of reeds and details on the polishes. Photographs by Davide Visentin.

**Table 65.1.** Attributes of the four edges used for cutting reeds and of the relative polishes.

|   | Type of blank   | Length | Edge  |                 | Polish |                |                |           |              |
|---|-----------------|--------|-------|-----------------|--------|----------------|----------------|-----------|--------------|
|   |                 |        | Angle | Delineation     | Length | Proximal end   | Distal end     | Extension | Preservation |
| A | RBK             | 47 mm  | 40°   | straight        | 28 mm  | slightly degr. | cut            | 2000 µm   | good         |
| B | Backed knife    | 66 mm  | 40°   | straight convex | 16 mm  | degressive     | cut            | 760 µm    | medium       |
| C | Nat. backed bl. | 65 mm  | 40°   | sinuous convex  | 47 mm  | degressive     | slightly degr. | 650 µm    | good         |
| D | Blade           | 71 mm  | 35°   | sinuous convex  | 30 mm  | degressive     | degressive     | 450 µm    | bad          |

of bladelets through two reduction schemes. According to the first scheme (largely dominant), the striking platform was located on the ventral surface of the flake (or, more rarely, on one of the dorsal surfaces created by the previous removals) and the exploitation followed a direct *semitour-nant* method. According to the second scheme, flakes were used as burin-like cores. In any case, the aim of this smaller size production were wide bladelets to be transformed into backed points and triangles through retouch and the use of the microburin technique.

The production of the large elongated blanks was not as regular as that of bladelets, both in terms of methods adopted and modules obtained. These blanks were intended as tools to be used directly on the natural edges or after a shaping out phase. They are characterized by peculiar morpho-technological features that characterize the so-called Rouffignac style (Rozoy 1978) and are strictly connected with the knapping technique adopted. These blanks, in fact, were obtained through direct percussion with a hard hammer, striking far inside from the overhang that was not generally prepared. This technique explains the irregularity of the blanks and the wide morphology of the butts. The blanks for the manufacture of the RBKs were selected among such products.

### Typological variability

The RBK assemblage was composed of 18 tools according to the the archaeologist who discovered it (Barrière 1972), but it reaches 19 when we include one artefact that was marked as belonging to layer 5b but reported in the original publication in the table with the finds from layer 5a (Fig. 65.1). A critical and systematic typological re-examination, not biased by the presence or absence of more or less developed use-wear traces, has allowed a better understanding of this group of artefacts (reconstructed by comparing artefacts and original drawings) and of its real composition.

This re-examination led to an important reduction of the group's number, as the tools included in layer 5b that could be recognized as true RBKs were only seven (one of these has been attributed to this group only on the basis of the drawings as it was not identified in the assemblage). The techno-typological features that are believed to be

consistent with the definition of this particular tool-type are as follows:

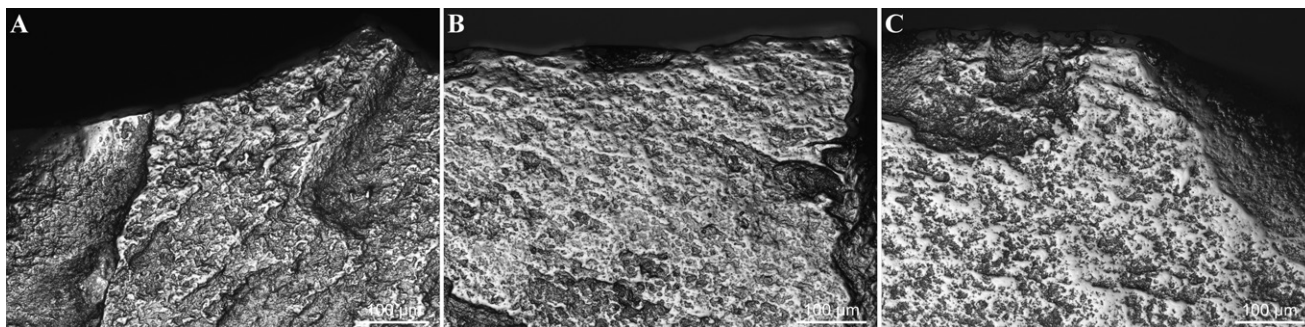
- 1) a long and fine (35 to 40 degrees) cutting edge;
- 2) two bilateral (direct or indirect) basal notches;
- 3) a backed distal oblique truncation;
- 4) a straight or a convex (in this case including the truncation) backed side.

The other 12 artefacts included in this category are represented by a wide set of blanks, including three regular backed knives, three naturally backed blades, two blade-scrappers, two denticulated blades, and two fragments featuring a simple retouch. Three of them yielded use-wear traces that will be presented next.

### Use-wear analysis

The three blanks with an evident bright polish, identified already in the first studies, consist of one RBK (Fig. 65.2A), one regular backed knife (Fig. 65.2B), and one naturally backed blade (Fig. 65.2C). A fourth artefact (a blade) (Fig. 65.2D) yielding comparable traces was added to this ensemble after a preliminary analysis conducted by H. Guilbaut (2010/2011).

On all of the artefacts a single active zone corresponding to the lateral cutting edge was identified (Fig. 65.2; Table 65.1). The state of preservation is highly heterogeneous as in some cases the surfaces are quite well preserved, while in others abrasive phenomena have partially destroyed the polish. Taphonomic micro-scarring of the edges, on the other hand, is diffused and generally abundant. A well-developed and defined bright polish is already visible at a macroscopic level and is associated with scalar, semi-circular oblique removals with a hinge termination, irregularly spaced on both aspects. The edge is well rounded and symmetrical, although the presence of almost continuous taphonomic damage to the edge does not allow it to be fully appreciated. The polish is characterized by a highly reflective aspect and appears matt and smooth in texture, with a domed topography. Striations are frequent and parallel to the edge. The polish is more invasive than the edge scarring reaching 2 mm (A) and its limits are well defined towards the inner parts of the tools, more degressive in the two extremities. The association of polish and edge



**Fig. 65.3.** Polishes developed on the edge of experimental blades used for working reeds (*Phragmites australis*): A: cutting dry reeds, 25 minutes; B: cutting fresh reeds, 30 minutes; C: cutting fresh reeds, 55 minutes. All photographs were taken at 200x. Artefacts belong to the experimental reference collection of Leiden University.

scarring is testified by the partial covering of the removals. These characteristics are consistent with the working of reeds, resistant and siliceous-rich plants. This attribution is based on both bibliographical references and the comparison with experimental ones (our own and those of the Laboratory for Material Culture, University of Leiden) (Fig. 65.3). The distribution and directionality of polish, striations, and removals indicate a longitudinal activity. Moreover, the asymmetric distribution of the polish on the scars suggests a preferential unidirectional movement. The inferred motion is thus a cutting activity that could be interpreted as the harvesting of reeds. The comparison with experimental references at different degrees of polish development indicates that this activity had been performed over several hours (in particular for tools A and B).

## Discussion

The techno-typological revision of the so-called RBKs confirmed the existence of a specific morphotype, featuring two basal notches and a backed and truncated side opposed to a cutting edge, although the original assemblage was drastically reduced to seven artefacts. The assumption that such a carefully manufactured tool was dedicated to specific activities, on the other hand, had to be rejected. It was possible to confirm that only one of these tools was actually used for working vegetal materials, while the others yielded no use-wear traces. Although the poor preservation state of the assemblage could have erased almost any possible use-wear traces, it can be excluded that these artefacts were used for the same task as the one with traces of working vegetal material due to the extensive polish it produces.

The functional analysis of the assemblage also allowed us to demonstrate that a specific activity was carried out on site, *i.e.* the prolonged harvesting of reeds. Such activity was identified on four working edges with similar features but belonging to different techno-typological classes of blanks. This seems to indicate that true RBKs were not

needed to carry out this task, for which a long cutting edge and a prehensile part were sufficient. Moreover, a hafting modality at the end of a handle (knife-like), that exploits the two basal notches, is not consistent with the use-wear distribution on artefact A (the polish would have been expected to reach the distal end of the tool).

These considerations lead us to discard the strict association between RBKs and plant working. Both the tools and the activity are attested on site, but they seem to belong to different operative schemes. Although it cannot be confirmed due to the absence of previous use-wear traces, it is not unlikely that artefact A represents a case of recycling or secondary use. Unfortunately, the almost complete absence of wear traces did not allow us to shed any light on the modality of use and hafting of the RBKs that is hinted at by the very specific morphology of the retouch and particularly the two basal notches.

RBKs are specific types of tools which are quite widespread in western Europe, although they are seldom present in large quantities. They constitute a good chronological marker, as they seem to be mostly connected to the earliest Holocene industries. Numerous RBKs have been identified during surface collections along a band of territory parallel to the French Atlantic coast (Gouraud 1980; Gouraud and Thévenin 2000), of which Rouffignac constitutes the southernmost point along with Cuzoul de Gramat (unpublished). RBKs have also been identified at a couple of Early Mesolithic settlements in the upper Rhône Valley (Dammartin-Marpain and Ruffey-sur-Seille: Séara and Roncin 2013). Such tools were also reported in the Sauveterrian sequence of Romagnano Loc III rockshelter in the Adige Valley (north-eastern Italy) (Broglia and Kozłowski 1984), although these latter do not seem to present the same morphological features of true RBKs. Unfortunately, no use-wear data that could substantiate the observations presented in this paper are available for these contexts yet.

## Conclusions

The integrated multidisciplinary analysis of the Rouffignac backed knife assemblage yielded by layer 5b of Rouffignac cave allowed a better understanding of this tool type. First of all, the reconstruction of the manufacturing modalities, from blank production and selection to the shaping out phase, allowed us to clarify their characteristic features and purge the original assemblages of the numerous varied blanks that were erroneously added to this category, mostly due to the presence of real or presumed use-wear traces. Although this early attempt to combine typology and traceology should not be looked down upon, the mixing of a specific functioning mode (a cutting knife) and a specific shape (the RBK) led to an over-representation of the sample of tools attributed to this groups and prevented its unequivocal definition as almost every cutting tool could have fit the category.

More over, the traceological analysis of four artefacts presenting polishes that could be interpreted as derived from as plant working and, in particular, reed cutting contributes to the current debate on the role played by vegetal materials in the economy of Early Mesolithic groups in Europe. In particular, the evidence from Rouffignac cave produced consistent information regarding an area in southern France for which this kind of evidence is still poorly represented compared to the northern European contexts. In this regard, it would be interesting to enlarge the analyzed sample with specimens coming from the other layers of the site as well as from other French or European contexts.

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