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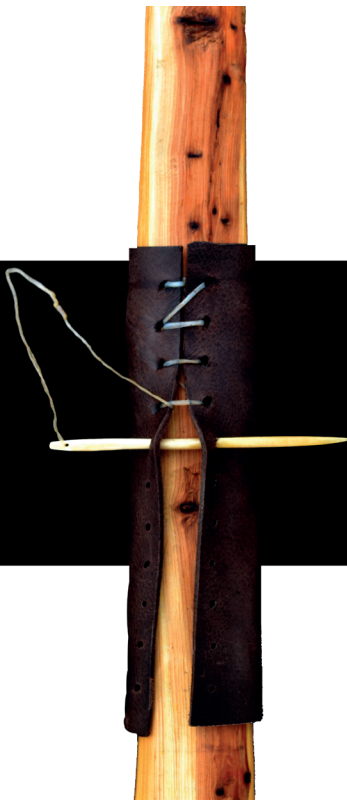
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ON THE POSSIBLE USE OF FLAKE-BULBS FOR RETOUCH DURING THE EARLY MIDDLE PALAEOOLITHIC IN SOUTHEASTERN FRANCE: FIRST RESULTS OF AN EXPERIMENTAL APPROACH

CYRIELLE MATHIAS¹, CYRIL VIALLET¹

ABSTRACT

In the early Middle Paleolithic site of Orgnac 3 (France, MIS 9), some flakes and cores deliver percussion marks on their edges and surfaces, similar to those carried by lithic hammers or bone retouchers. If cases of cores used as hammers or retouchers are known, the use of flakes for this type of activity is rarer. Also, in order to verify the link between the traces present on the bulb and the use in percussive activities such as retouching, an experiment was carried out. Developed according to three distinct movements, it makes it possible to highlight various macro-traces. These traces are sufficiently characteristic to diagnose a use in direct launched percussion, in order to retouch a tool. These first experimental data make it possible to consider the larger scale analysis of this manufacture technique.

RÉSUMÉ

Dans le site Paléolithique moyen ancien d'Orgnac 3 (France, MIS 9), certains nucléus et éclats livrent des traces de percussion sur leurs arêtes et leurs surfaces, similaires à celles portées par les percuteurs lithiques ou les retouchoirs en os. Si des cas de nucléus utilisés en percuteur sont connus, l'emploi d'éclat pour ce type d'activité est plus rare. Aussi, afin de vérifier le lien entre les traces présentes sur la face inférieure et l'emploi de l'éclat en percussion pour la confection d'un outil, une expérimentation a été réalisée. Développée selon trois mouvements distincts, elle permet de mettre en évidence des macro-traces variées. Ces dernières sont suffisamment caractéristiques pour permettre de diagnostiquer un usage en percussion lancée directe pour cet éclat, afin de retoucher un outil. Ces premières données expérimentales permettent d'envisager l'analyse à plus grande échelle de cette technique de confection.

Keywords: Percussive tools, Retouchers, Early Middle Palaeolithic, Experiment.

Mots-clés: Outils percussifs, Retouchoirs, Paléolithique moyen ancien, Expérimentation.

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Introduction

A flake with marks on the bulb (pits and striations, visible to the naked eye) was identified in the layer 6 of Orgnac 3 (Ardèche, France), attributed to the early Middle Palaeolithic or a final Acheulean (MIS 9) (MONCEL 1999; MICHEL *et al.* 2013). Marks on these flakes look similar to those visible on bone retouchers, already noticed in this layer (MOIGNE *et al.* 2014).

If the use of bone retouchers is already documented and seems to begin during the Lower Palaeolithic (MOIGNE *et al.* 2014), increasing during the Middle Palaeolithic (MALLYE *et al.* 2012), those in stone are poorly documented. Nevertheless, some experiments were conducted in recent years on cores and bifaces in order to demonstrate their percussive role in the French Middle Palaeolithic, as hammers or retouchers (THIEBAUT *et al.* 2010).

A stone retoucher is traditionally defined as a pebble or a stone of globular shape, smaller than hammers, with crushing marks on an extremity, on a surface or both (ARCHAMBAULT DE BAUNE 1996). Recurrent during the Upper Palaeolithic, they are mostly small pebbles. The particularity here is that it is a bulb-flake that is bearing apparently those stigmata.

Starting from these observations, an experiment was conducted in order to characterize marks identified on the bulb of this flake: by what gesture, for what purpose? Several hypothesis of gestures for the use of this flake may be suggested. Due to dimensions and mass of the archaeological piece, we chose to test gestures of “confection” (=retouch), in three different motions. The aim was to identify the marks produced by each method and by the way to test their efficiency to determine their interest.

Experimental protocol

For this experiment, and related to the composition of the lithic components of the layer 6 of Orgnac 3, we have produced flakes obtained by S.S.D.A. methods such as unipolar and bipolar simple flaking (ASHTON 1992), with a large and open striking platform (n=5). The raw materials used were strictly the same as those employed on the site: flint slabs from the Barjac-Issirac riparian basin, which can easily be found in its surrounding area. We used two types: with micro and macro-fossils (01, 02).

Three activities were performed (tab. 1, fig. 1A): retouching with a direct percussive motion, with a motion of flexion, and with a flake-anvil in an indirect way. The aim was to make side-scrapers as we can mostly find in the archaeological record.

Experimental pieces were observed under a stereomicroscope Optika SZM-SMD and then compared with the archaeological material.

N° exp.	Motion	Raw material	Dimensions	Weight	Angle ventral surf./ striking plat.	N Blows
RS01	Percussive	Flint 01	99x63x23	110g	123°	1200
RS02	Percussive	Flint 01	160x145x30	300g	127°	600
RS03	Percussive	Flint 02	93x85x21	160g	136°	2000
RF01	Flexion	Flint 01	75x50x14	64g	120°	400
RI01	Indirect/Anvil	Flint 02	107x81x27	270g	128°	600

Table 1. Main characteristics of flakes experimented, motions tested and number of blows.

Experimental results

First results show that the use of a flake-bulb for the retouch in a motion of flexion is ineffective. Nevertheless, small crushing marks, linear and punctiform (craters), can be observed on the used area (600 flexions).

The use of a flake-anvil is not efficient at all, probably due to the convexity of the bulb which hindered the holding during the activity. Moreover, traces are very scarce (few marks for 600 blows).

The most relevant method is the direct percussion, which produce a full range of removals. Macro-wears appear early (before 600 blows) and increase proportionally (1200 and 2000 blows). They are numerous and more pronounced than in the retouching motion of flexion.

The flake bulbs are thus highly effective for confection in a motion of direct percussion. According to their mass and weight, they could even be employed for flaking.

Marks related to this activity consist of incipient cones (traces « *en coups d'ongles* ») and crushing marks (punctiform, linear) resulting from the repetition of the percussion, forming small craters and outlined-incipient cones. The size of these macro-wears varied from 0,2 mm to 1 mm.

To summarise, morphologically quite similar macro-wears can be produced with each methods. A distinction can be highlighted for the direct percussive motion, by the high proportion of marks and the presence of incipient cones (outlined or not). As might be expected, this is the only really efficient retouching method.

Archaeological data description

The tool with these marks is a semi-cortical flake from a unipolar flaking with a dihedral striking platform (dimensions: 49x27x19mm). The angle between the ventral surface and the striking platform is 120°.

Marks are located on the ventral surface, precisely on the bulb and on the junction-edge with the striking platform. We can notice a graduation in the deterioration of the surface by the incipient cones, which are often outlined. A scar is present at the intersection between the surfaces (fig. 1B).

The nature of macro-wears on this flake, by their characteristics and development, correspond to those obtained during the experimental phase in direct percussion. The small dimensions of the tool induce a probable use as a flake-retoucher more than as a hammer.

Conclusions and Discussions

There are few mentions of flakes with crushing marks on the bulb in literature (« *à bulbes piquetés* »), all founded during the Mousterian, in Russia or Algeria (PLISSON 1988; TIXIER 2000). In all cases, it concerns only one or two tools by layer. Tixier put forward two options, regarding the work of PRASLOW (1984): the use as retoucher in a percussive motion, or an intentional percussion towards the bulb of the flake intending to facilitate its hafting. Here, hafting seems not to make sense due to the absence of a valuable edge.

Because of the presence of only one flake and few cores with these stigmata in the layer 6 of Orgnac 3, we can argue that this trend is quite opportunistic and can be considered as a recycling phenomenon, common during MIS 8 to 3. Despite the presence of local flint on the plateau, pebble stones can only be found in the Ardèche and Cèze's alluviums, distant of 5 km. In that way the use of flint knapped material can be a response to a temporary need.

If the function of retoucher seems now to be the more plausible, further analysis and experiments are still in progress to determine precisely for what purpose these bulb-tools were used for.

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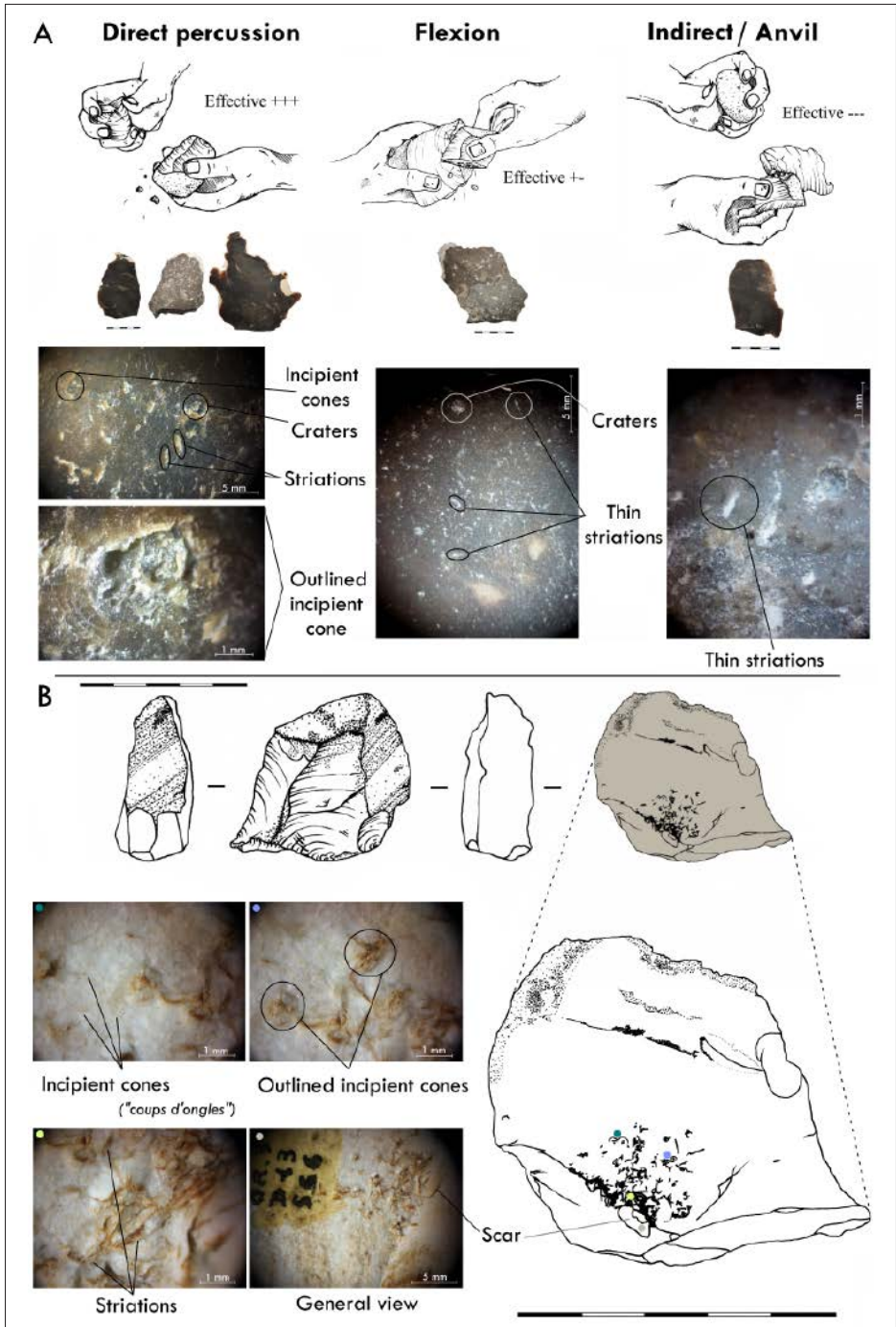


Figure 1. A: The three motion tested, photographs of the experimental flakes and associated macro-wears; B: Drawing of the flake from Orgnac 3, location of macro-wears and details.