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First insights into the identification of bone and antler tools used in the indirect percussion and pressure techniques during the early postglacial

É. David [a, *], M. Sørensen [b]

[a] The CNRS UMR 7055 Laboratoire Préhistoire et technologie, Nanterre Université, Maison Archéologie Ethnologie, 21, allée de l'Université, 92023 Nanterre Cedex, France
[b] The Saxo Institute, Department of Archaeology, University of Copenhagen, Karen Blixens vej 4, 2300 København S, Denmark

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ABSTRACT

With the interest for the technological options that were taken by the prehistoric groups to subsist, there is a field of research left empty in terms of archaeological records dated to the 8th and 7th millennia cal BC. It concerns the tool kit made from bone and antler used in Europe by stone knappers to work the lithic raw material by pressure and indirect percussion. Based on morpho-technological aspects, this paper presents a first list of recognized archaeological osseous artefacts employed in indirect and pressure lithic reduction. These are punches, pectoral and shoulder sticks, as well as bone elements involved in the lever systems. This investigation is made in the frame of a larger research project aiming at discussing both origin and agent responsible for the introduction of the "inset technology"—conical core pressure blade concept together with the slotted bone tools—appearing in the southern Scandinavia at ca. 7300 cal BC. Results are promising and experiments enabling characterization of the bone and antler tools used in the debitage by pressure and indirect percussion will be soon undertaken.

1. Introduction

The emergence in northern Europe of knapping techniques involving the work of lithic cores by pressure and/or indirect percussion (punch) is a relatively new field of study (Inizan, 2012). Yet in prehistory, the evolving of lithic knapping techniques that were alternative to direct percussion techniques have without doubt constituted completely new possibilities when shaping and designing the most important raw material of people's life world: the siliceous rock. Microcrystalline siliceous rocks, such as flint, chert and obsidian, and other isotropic materials (Pelegrin and Texier, 2004), are characterized by conchoidal fracturing properties and surgical sharp cutting edges when fractured. Pressure and punch techniques must have constituted important and attractive technologies to learn and develop in a stone age society, because the application of these techniques made it possible to serially produce extremely symmetrical, long and thin lithic blank-products: the termed blades. Moreover, it should be emphasized that lithic blades obtained by pressure has been demonstrated to have an edge quality that in sharpness exceeded any other tool that has ever been produced by man in Stone Age (Buck, 1982).

From recent experimental investigations, a brief summary of the morphological criteria's which defines blades produced by the pressure can be summing up: there are extreme regularity, rare occurrence of ripples, straightness, a small bulb in combination with lip formation and, most importantly, the occurrence of small exhausted blade cores with negatives showing extreme regularity. Using pressure techniques (Fig.1-1 and 2), the products are very rectilinear (only the distal part tends to end with a pronounced curved languet shape), small (2–6 cm) and with a 90° angle from ventral face to platform (Sørensen, 2006). Conversely, the products made by the indirect percussion (Fig.1-3 and 4) are longer, from 6 to 12 cm in length, less regular, showing an 80–90° angle. As already discussed by Pelegrin (1988), the punch technique can produce blades that are close in dimensions and shapes to the blades made by pressure, when the core is distally supported, e.g., by using the feet to hold the core as shown in an experiment made by Bordes and Crabtree (1969). However, the possibility of obtaining extreme regularity of the ventral face and dorsal arises as observed

* Corresponding author. CNRS, UMR 7055 Laboratoire Préhistoire et technologie, UPOND-MAE, 21 allée de l'Université, F – 92023 Nanterre Cedex, France.
E-mail addresses: eva.david@cnrs.fr (É. David), miksr@hum.ku.dk (M. Sørensen).

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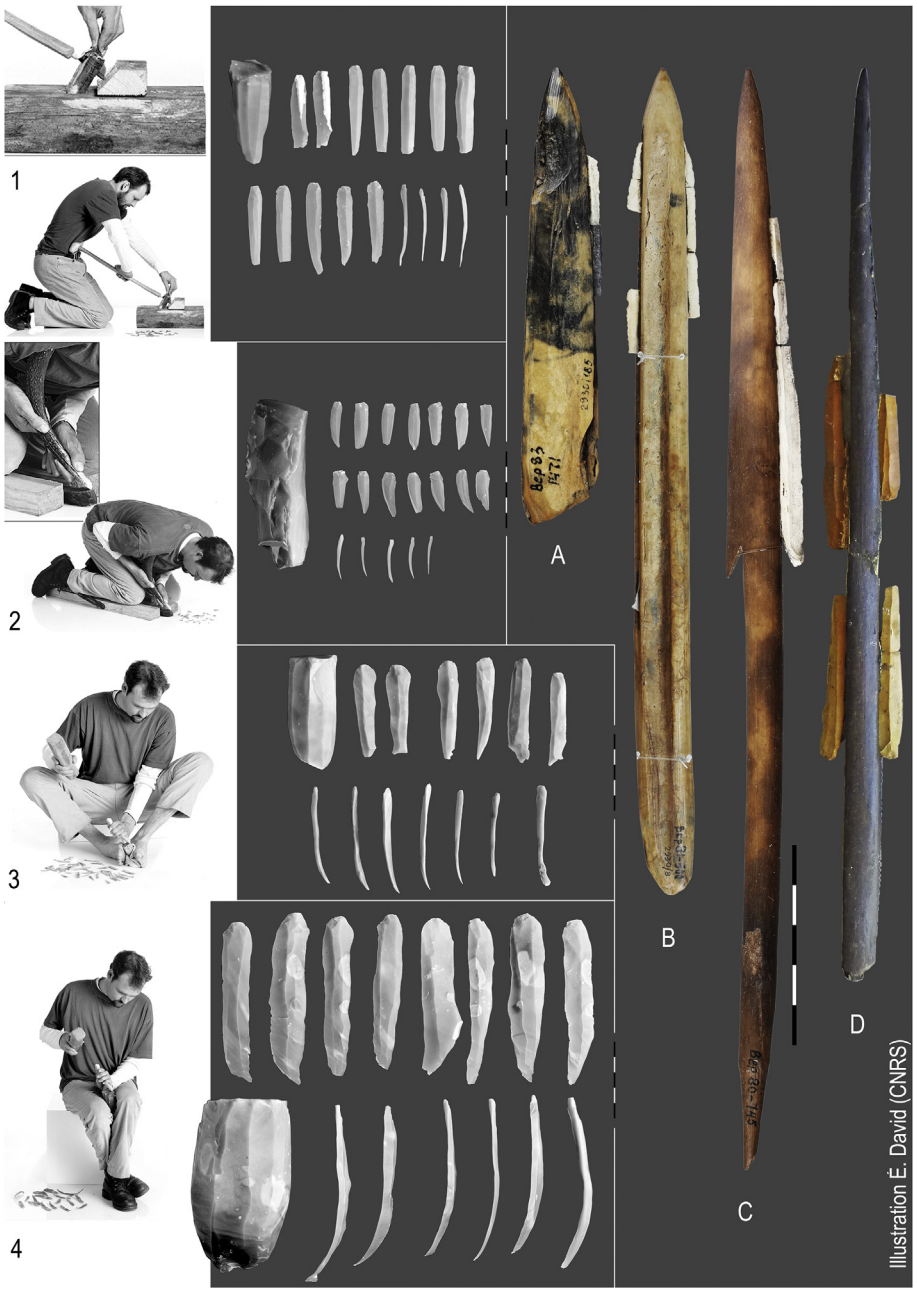

Fig. 1. The introduction of the indirect and pressure techniques in southern Scandinavia matches that of the slotted elements (bone tools with lithic insets). 1–4 – Experimental results on flint blades extracted by pressure (1 and 2) and punch techniques (3 and 4), using a bone or antler stick as an intermediate piece hold in hands (Sørensen, 2006); A-D – Main Mesolithic slotted-types found around ca. 7300 cal BC, here from Veretye (A-n°Bep83–1471, a bone knife, B-n°Bep81–500, a bone spearhead, and C-n°Bep80-745, a bone barbed (arrowhead) point (Photos I. M. Berg-Hansen) and Sværdborg (n°x5056, a bone fine notched arrowhead point. Photo É. David). Scale subdivision in cm.

from the products made with the pressure mode is not observed on the blades made by indirect percussion that show instead an irregular delineation, generally in the form of waves or ripples on the surfaces. The criteria for punch and pressure techniques does have an overlap and single blades can therefore often not be attributed with certainty. Meanwhile, the combination of the criteria can often allow a reliable verification after a careful investigation is made on large assemblages that include (blade) cores (Pelegrin, 1984; 1988; 2006; 2012).

In northern Europe, the emergence of the pressure and punch techniques is currently under study within the *Nordic Blade Technology Network* (Sørensen et al., 2013). The group has published unexpected results concerning the timing and geographical location of the pressure and punch techniques in northern Europe for the postglacial period (Sørensen et al., 2013; Sørensen, 2012). Already during the Preboreal chronozone in western Russia, ca. 9000 cal BC, a highly developed pressure blade concept was utilized within the Post-Swiderian complexes (Hartz et al., 2010; Sørensen et al., 2013). There, the technological concept involved the serially production of extremely regular blades, up to 20 cm long and 25 mm in width (Kolosov, 2008, p.62; Zhilin, 2012). According to the latest research on the knapping by pressure, this corresponds to reduction mode involving the standing pressure technique, and probably even lever pressure systems (e.g., Pelegrin, 2012).

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