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Experimental basis in lithic arrows usage and hafting at the end of the last glaciation in the French Alps

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ABSTRACT

To identify lithic arrowheads from Prehistoric sites is very difficult because there is a great variability in their morphology and in the ways of hafting and throwing them. Variables playing in their use are numerous. Some experimental approaches try to explain traces in prehistorical lithic points by mean of paying attention at some of these variables. Many researchers have used morphological parameters to distinguish spear from arrowheads, showing which characteristics define the potential of each type of weapon in ethnographical examples. However, only an accurate use-wear analysis that pays attention on macro and micro-wear traces and which is grounded on systematically experimentation references, could help to understand their real context of use.

Several attempts have yielded results about facts as the absence of traces in used projectiles, breakages at the end of hafts or some characteristics like macro-wear and micro-wear traces. Many of these results were obtained in laboratory conditions by shooting at artificial targets since only few experimentation approaches use animals.

We present the results of experimental shots with bows of 53 exact copies of lithic pointed implements, arrows from the Mesolithic and Azilian layers from La Fru and Gerbaix Haut (from the Savoie and Haute Alpes regions in France) sites. Some of the results and conclusions of this experimental approach can be directly transferred to other contexts. Furthermore, methodological discussion is important for further experimental researches and archaeological interpretation.

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1. Introduction

Arrowheads are archaeological artefacts that are a part of complex technical systems, which reveal cultural features in human Prehistoric societies. In addition to its purely utilitarian features, these elements reveal stylistic features, so they are considered “fossil directors” in the cultural groups from Prehistory. The traceological analysis was established as a reference method for the study of lithic techniques from the second half of the twentieth century (Semenov, 1964; Keeley, 1980), specifically in functional aspects but also in relation to the manufacture and taphonomy of Prehistoric tools.

The study of hunting weapons like bows, spear throwers and both stone and animal hard materials projectiles, was the subject of different approaches which focus the problem and try to answer questions that arise from the technical, typological economic analysis (Barrière et al., 1972; Célérier, 1993; Junkmanns, 2001; Cattelain, 1991; Stodiek, 1996; Rozoy, 1971; Nuzhnyj, 1989 and Philibert, 2002; Montoya, 2002, among others). The observations on lithic ensembles, experimentation, discovery of projectile points related to animal or human remains (Cordier, 1990) and the use of ethnography (Wilkins et al., 2012) are the basis for the certainties and hypothesis on these artefacts uses and meanings reconstructions. Stone weapons have had special attention in International research. It began in the 90s in the Congress of Treignes and it increased in the late international conferences and publications, leading to significant progress in both results and hypothesis. Three congresses and their subsequent publications were focused on the aforementioned problems: the last two congresses of the Union International de Sciences préhistoriques (Pétillon et al.,

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Fig. 1. Wild boar with the experimental arrows.



Fig. 3. Experimental point with archaeological reference.



Fig. 4. Retouch on anvil.

2009) and the Congress of use-wear analysis Faro in 2012 (Marreiros et al., 2014). Moreover, the study of the Mousterian

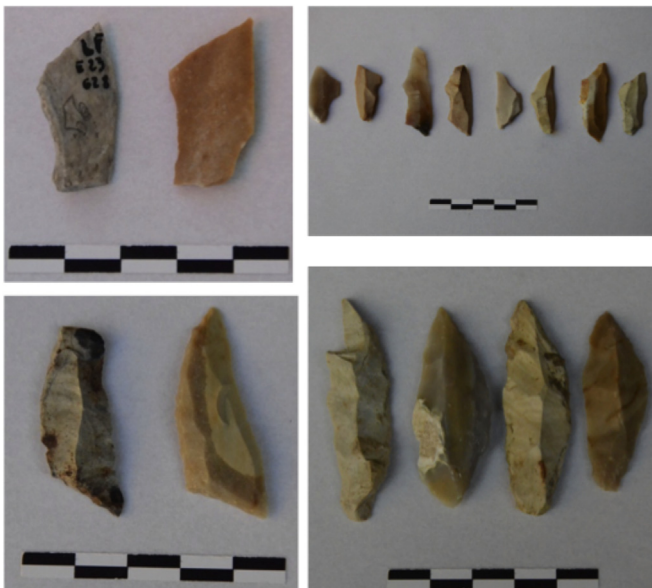


Fig. 2. Experimental points with their archaeological references.

points opened a debate on methodological problems identified by traceologists and recently published about the hunting behaviour (Rots and Plisson, 2014).

It is verified the existence of composed projectiles from the sets of remains of the Upper Paleolithic and Neolithic techniques, which were widespread after the use of the bow and the intensive use of raw materials reducing the size of the stone tools. There are exceptional cases of prehistoric arrows which include organic materials (wood, feathers, bonds and glues) although this is not the case in most of the stone tools, that are regarded as arrowheads or harpoon barb teeth, where only the stone element is preserved. On the other hand, the type of hunting weapon is the result of cultural choices and answers

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