

Technological Study of Bone Pointed Tools from the Neolithic Settlement of Târgu Frumos

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INTRODUCTION

The bone objects represent a neglected category of archaeological finds in the chalcolithic sites in the northeastern part of Romania, most of the studies regarding this type of artifacts being oriented to the classical typological based investigations. This is the case of many settlements from the Precucuteni culture, to which the site of Târgu Frumos belongs.

OBJECTIVES

Our study seeks to provide some insides into the technological knowledge regarding the bone tools fabrication held by the people of the prehistoric settlement of Târgu Frumos. The “know-how” is incorporated and thus can be revealed at each stage of the technological process, from the mental projection of the object, the choice of raw material, transformation techniques, to methods of maintaining the functional attributes of the tool. Being shared and transmitted within the community, it becomes an indicator of cultural tradition. We aim to reveal the technological conception behind the objects starting from the identification and characterization of manufacturing methods..

MATERIAL AND METHODS

The site has provided a large amount of artifacts, among which about 300 are bone, horn and boar tusk objects. The best represented category of bone tools is that of pointed tools which sums up 45 objects and 6 manufacturing products. The technological investigation of these artifacts starts with the identification of the traces produced by cutting, shaping and sharpening techniques. This was made using low power examination, first with the naked eye and then by means of a stereomicroscope (at 10x to 80x magnification). The next step consist in identifying the raw material and then, by means of mental reconstruction, the cutting procedures. This can also provide information about the possible saving strategies of the raw material. The ways the techniques and procedures are combined for obtaining the final product are used in the end, to define the technical methods of fabrication.

RESULTS

Raw material exploitation

The choice for raw material (as shown in the graphics from figure 1) follows another pattern than that of general animal exploitation. If in the last case the subsistence is assured mostly by cattle breeding, the fabrication of the pointed tools requires skeletal supports from small ruminants. The distinction between roe deer (*Capreolus capreolus*) and sheep/goat (*Ovis aries/Capra hircus*) bones is in some cases difficult to make, but even so, the number of *Capreolus* skeletal elements is much higher.

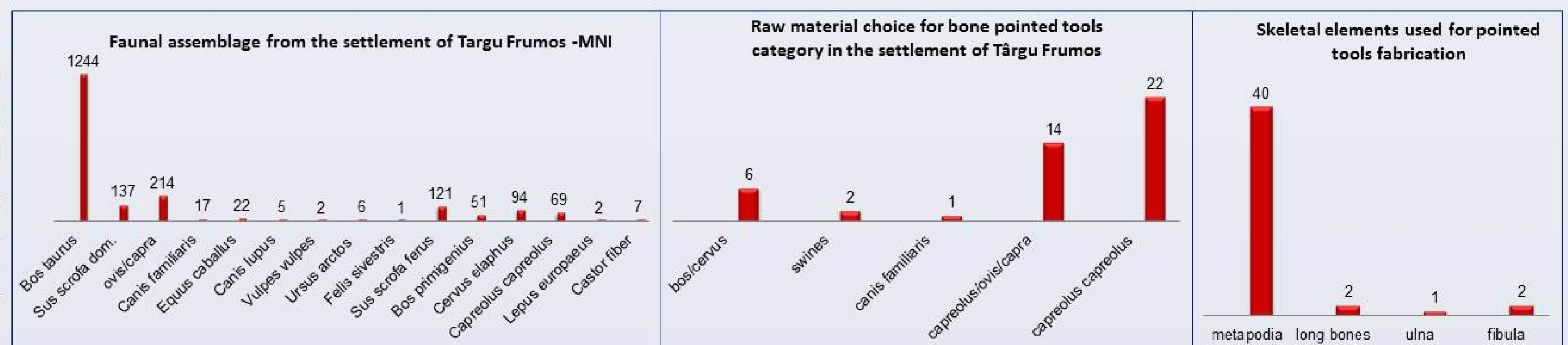


Figure 1. The exploitation of raw material in the settlement of Târgu Frumos.

The fabrication methods

I. Fabrication of pointed tools on ulna and fibula by non-modifying shaping (figure 2a) – though they represent two different skeletal elements, the technological processes of fabrication is the same in both cases. The supports can be obtained by two procedures, none of them letting traces because of the ulterior sharpening: knapping when the bones are still unified with their counterparts (radius and tibia), or detachment of the entire bone and then transversal debitage. The shaping, by grinding, comprises only the active part, so it does not modify the anatomical elements of the bone. In our collection there are two objects for this category, one made on swine fibula and the other on dog (*Canis familiaris*) ulna.

II. Fabrication of pointed tools on fibula by modifying shaping (figure 2b) – it follows the same procedure for obtaining the support, but the shaping covers the entire bone support, all anatomical features being modified. Only one object of this kind was found in the settlement.

III. Fabrication of pointed tools on long bone flake – most probably does not constitute an usual method of fabrication, but rather a random utilization of this kind of support (only one piece was found in the collection). The flake has been used in its primary stage, without any other technological intervention (shaping), so that the object presents only traces of use.

IV. Fabrication of pointed tools from metapodial bones – is the most common method, used in 40 cases, on bones mostly coming from small ruminants (roe deer, sheep, goat), but also from bovines and red deer (*Cervus elaphus*). The method comprises different cutting procedures, defined by the number of obtained supports:

- metapodials divided in half (figure 3a) – both sides of the bone are sawed lengthwise and partially in depth and then knapped. On the supports obtained, one of the epiphyses is removed by transversal debitage, the other one being preserved for handling. Shaping by transversal and diagonal grinding is applied on the distal and mesial part of the tool. 15 objects and 1 manufacturing product attesting this method were found in the collection.
- metapodials divided in fourth (figure 3b) – after the division in half, the supports are once more lengthwise sawed. The sawing is applied in 19 cases on the internal side of the support. The preserved epiphyses are always the proximal ones. Shaping occurs on the distal and mesial part of the tool and is made by grinding. Four tools present additional shaping interventions: drilling on the proximal part of one object and notching on other 3 tools. The notches seem to have no practical use, as shown by the high power examination of the area around them. 26 tools and 5 manufacturing products attesting the method were found in the collection.

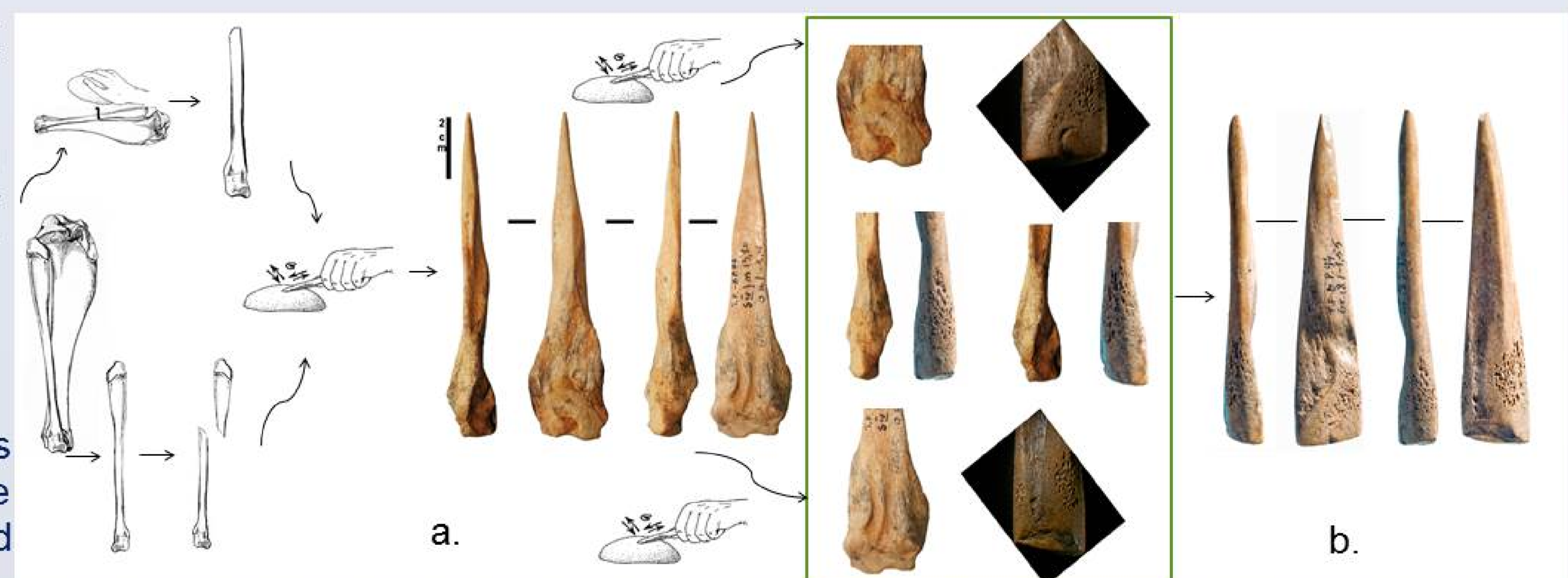


Figure 2. The fabrication of pointed tools on fibula by (a.) non-modifying shaping and (b.) by modifying shaping.

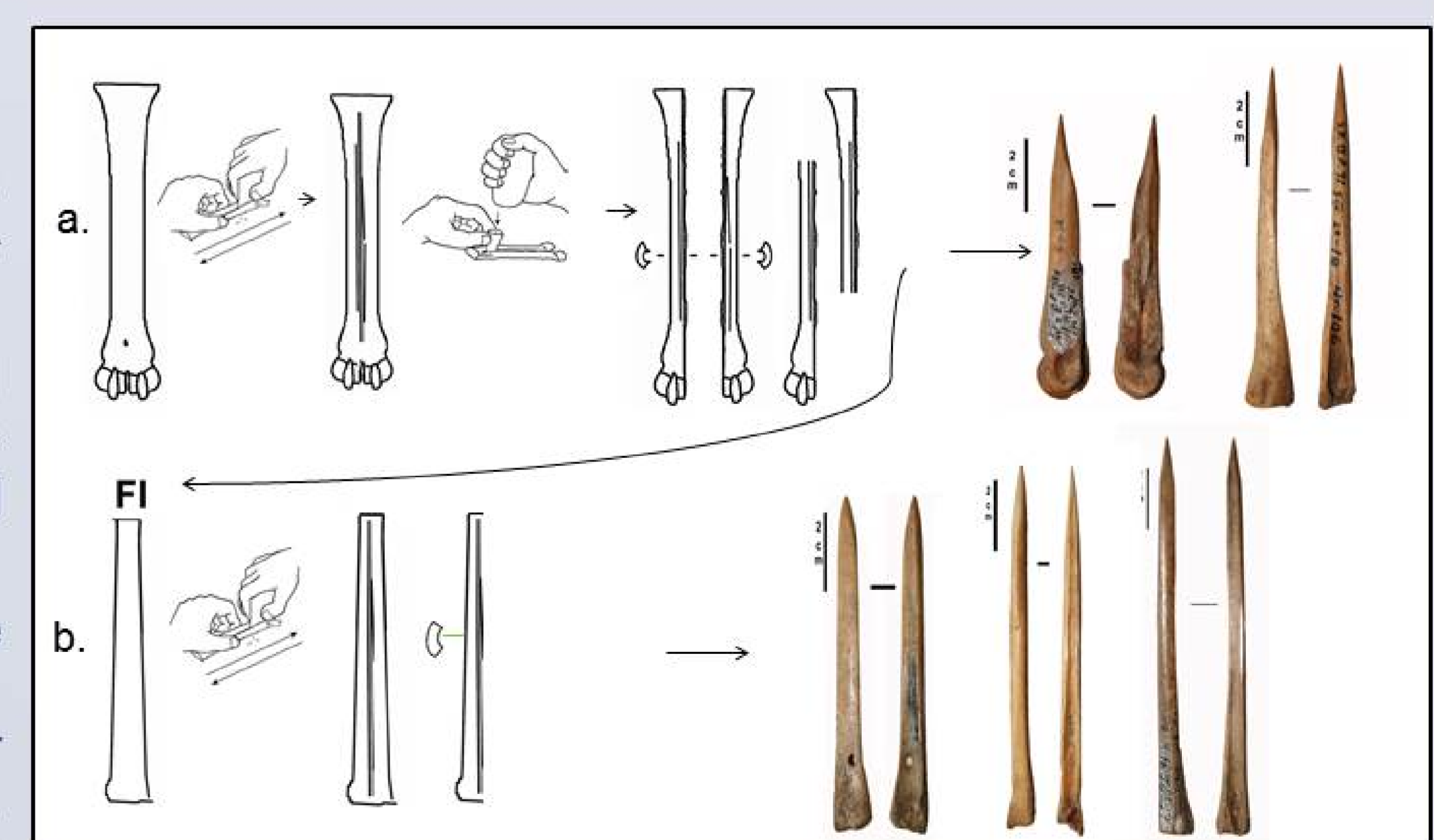


Figure 3. The fabrication of pointed tools on metapodial bones by (a.) half division and (b.) fourth division.

CONCLUSIONS

The examination of pointed tools from the settlement of Târgu Frumos reveals a rather simple technological conception which involves a low level of elaboration, with objects that preserve the natural morphology of bone. The raw material is rather “improved”, than “modified”, the shaping being used only to give the functional features of the tool. The cutting procedures and methods are simple and repetitive, the technological chain being easy to reproduce. The preference in using metapodial bones from roe deer could be explained in terms of metrical preferences and better mechanical properties. The only example in the collection that is an exception from this pattern is the tool made from fibula, by modifying shaping. We consider it an example of import from another cultural and technological group from the southern area of the Precucuteni culture (the Gumelnița culture), assumption based not only on technological observations but also on the archaeological context (the object was found in a domestic complex together with ceramic and lithic materials that show obvious southern influences). The same technological knowledge that we have identified for this collection are found in the material from other settlements of Precucuteni culture from Romania (Isaia, Târpești, Traian) and Ukraine, in Tripolie A settlements from Bernaševka and Luka-Vrubleveckaja. That leads us to consider this settlements part of the same technological group.

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