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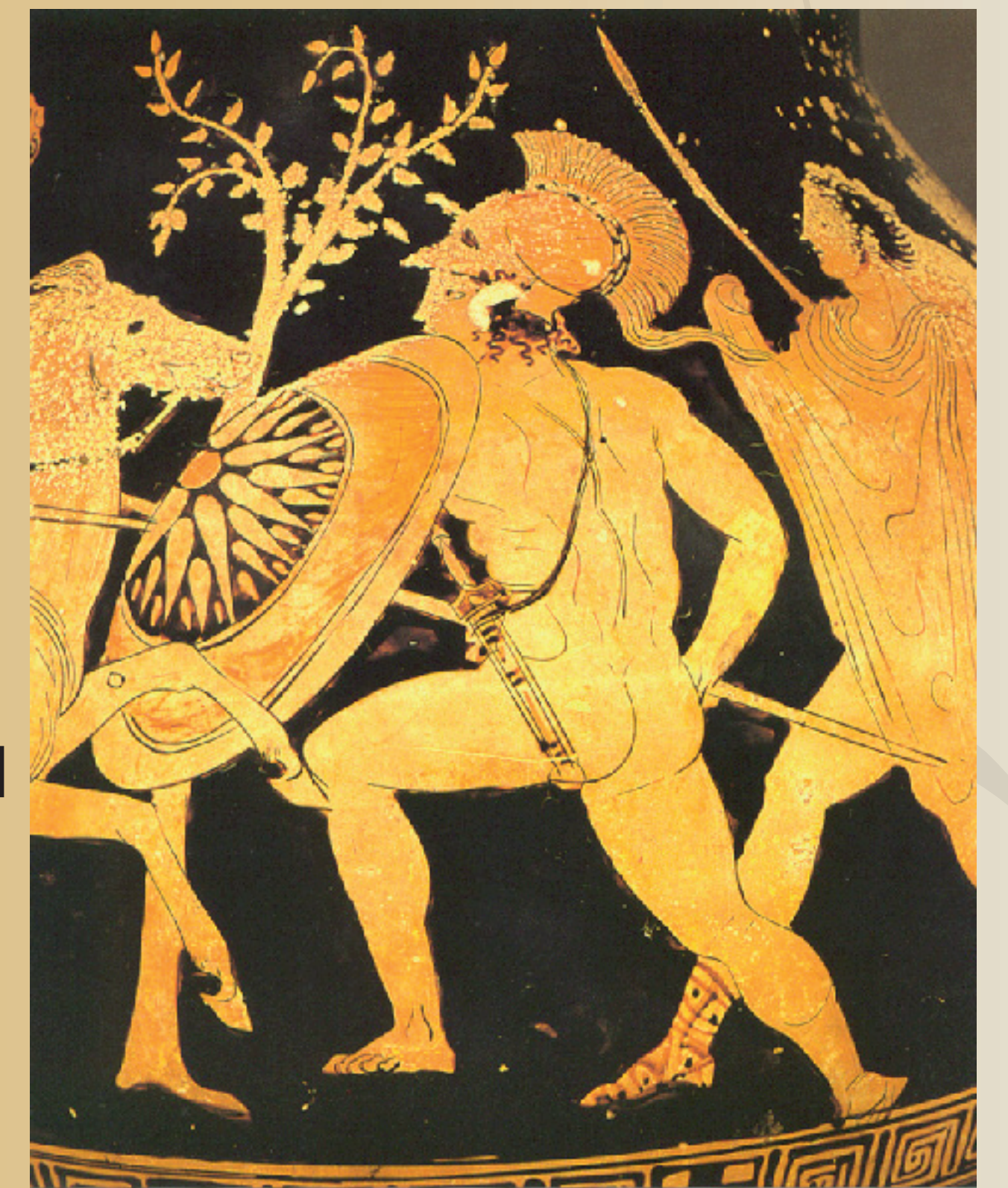
CASTING A BRONZE SWORD



A Bronze Age sword, the sword of Obernai (France), dated to the Late Bronze Age (1300-800 BC) was entirely reconstituted from an experimental metallurgical operation: the first time for an object of this size. Casting which lasted less than one hour allowed us to demonstrate the use and the relevance of the large-sized sandstone bivalve moulds for such a manufacturing, as well as the use of rudimentary bellows.

This experiment is part of a project dedicated to the origin of mining technologies and the processing of mineral resources in Europe.

The swords appear in the Middle Bronze Age and multiply during the Late Bronze Age with several typological variants. The bare bronze blade found in 1969 in Obernai (Bas-Rhin) and which was used as the model for this experiment, is connected with the Krautergersheim type.



Pelike (jar) V^e BC red-figure Museum: Warsaw.
Hoplite with his sword in the sheath



[First Metal]

It is probably from the VIIth Millennium BC that the copper metal industry appears, in a vast geographical area which extends from Anatolia to Iran, a region which is particularly rich in metalliferous deposits. At first, copper discovered in the native state was worked under cold conditions by hammering then warmed, to make it mouldable. These techniques, very rudimentary, allow the manufacture of small objects: awls, needles, pearls, hooks...

Later on, from the Vth Millennium, the copper industry developed in the Near East. Metallurgists, thanks to the know-how of the potters, who had mastered perfectly the ceramic firing process, succeeded in reaching temperatures up to 1000°C, necessary to obtain copper. The fusion of this metal in crucibles made with terra-cotta allows it to be poured into stone moulds of the shape of the different artefacts to be realized.

[Experimental Archaeology... Between know-how and gestures]

To develop weapons, tools or elements of bronze jewellery, by trying to reproduce techniques and actions of craftsmen of the Second Millennium, constitutes a particularly innovative field of research. Experiment allows the researcher to move beyond speculation and emphasize the importance of action, knowledge and know-how which represent a real anthropological dimension which is too often neglected in the analysis of the artefact.

Obviously, ancient populations of the Aegean mastered the metal; remains are there to provide evidence; it is a question of showing that they made objects while conjugating a whole series of complex parameters within the constraints of material and fire, a number of traditional skills and the existence of cognitive schemas.

[Conclusion]

The manufacturing of the Obernai sword allows us to approach the whole conceptual process in an objective way and to demonstrate the exceptional know-how of these first European metallurgists.



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