Median Bronze Spear Making Technology and Tech: An Practical And Shading Approach

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Short Communication

Introduction

The most common category of Scythian material culture, metal arrowheads, has, ironically, garnered the least attention. To begin, one question must be addressed: how were they cast? There have been no definite conclusions about arrowhead casting technology. For this, some sources suggest using a metal mould, while others suggest using the lost-wax casting technique [1-5]. Our understanding of casting method is important because it influenced the organization of the manufacturing process for this main category of material, and hence the supply of vital weapons to Scythian soldiers. The Scythians, a nomadic race of Central Asian origin, roamed the Pontic steppe north of the Black Sea from the eighth to fourth century BC. Modern cultures regarded them as powerful warriors and great archers. Scythian arrowheads are still utilised today as a primary archaeological indicator of their cultural presence or impact.

Description

Arrowheads were mass-produced and consumed throughout the Scythian period, with only a small percentage of them being reused. The rest was squandered forever, including through burial. The number of quivers containing arrowheads discovered in Scythian tombs and their capacity varies, although certain burials have shown several quivers (from two to sixteen) with a total capacity of up to 1,056 arrows, as well as individual quivers containing more than 100 identical arrowheads. Several burials have yielded quivers with arrowheads that are similar in shape..

Arrowheads were mass-produced and consumed throughout the Scythian period, with just a small percentage being re-used. The rest was squandered irreparably, including through burial. The number of quivers containing arrowheads recovered in Scythian tombs and their capacity varies, although certain burials have shown several quivers with a total capacity of up to 1,056 arrows, as well as individual quivers containing more than 100 identical arrowheads. In quivers from a number of tombs, arrowheads with similar shapes have been unearthed..

Experimental metal moulds

For the trial casting and to better understand the science of producing actual metal casting moulds, four moulds were made using various prototypes from various periods. The mould for simultaneous casting of three arrowheads found in Mosul served as the template for Mould no. 1, with the exception that the arrowheads in our mould do not have barbs. A bilobate arrowhead with a spur from , Excavation 24 of Zhabotin village, dating to the first half of the seventh century BC, served as the template for Mould. A trilobate arrowhead from Ordzhonikidze's Burial 1 Kurgan 26 served as the template for Mould Casting bronze directly into metal mould. Prior to casting, each metal mould was covered with nonstick ZnS coating. The temperature of the metal mould before the casting was between 270 and 350 °C.

Casting in green sand

A triangular arrowhead was cast in a green-sand mould using a wooden prototype to produce a comparative sample for metallographic investigation. Computer simulation of the heat exchange process Computer simulation of heat exchange processes using the finite element approach was used to assess the influence of the casting mould's material on the cooling rate at the crystallization front. This simulation was carried out inside the confines of the framework.

Conclusion

The effort presented here is the first of its kind in which an attempt was made to employ an integrated strategy to solve the problem of Scythian bronze socketed arrowhead production technology. Metal moulds for several types of arrowheads, casting experiments in these moulds, and metallographic analysis of archaeological and experimental arrowheads

Acknowledgement

Conflict of Interest

The authors declare that they are no conflict of interest.

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