Studying seriality in material culture by geometric morphometrics - gold wild boars from the Arzhan-2 barrow, Tuva.

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In the field of material culture, seriality refers to the serial production of nearly the same object in terms of shape and size, yielding visually identical artefacts. Subtle variations may nevertheless occur, depending on the technologies used, or the number and reliability of moulds, for example. Geometric morphometrics based on landmark analysis, along with accompanying statistical techniques, provides methods well-suited for identifying small but archaeologically significant variations in shape and size within such datasets. In this study, we exemplify the efficiency of geometric morphometrics in a context of seriality, using a large series of centimetric-sized gold wild boars decorating a case for bow and arrows, discovered in the Arzhan-2 barrow of the early Scythian time. A total of twenty-seven 2D landmarks was collected for each specimen to assess the level of similarity between individuals with high precision, and to investigate the presence of subgroups, possibly indicating the use of several models. However, due to the homogeneous nature of the dataset, notable measurement errors may obscure the sought-after archaeological signal. To mitigate this, each specimen was measured twice by three different operators. Boas coordinates of the six replicates were then averaged, resulting in a reduction of the effect of measurement errors. Two distinct shape groups are identified, consisting of an approximately equal number of individuals. These findings suggest that the entire set of wild boars could have been produced via two separate manufacturing chains, possibly running in parallel, where two distinct, albeit very similar, solid models were involved. Within each group, discreet variations in size were observed. They are probably due to variable shrinkage during casting. These observations would have been difficult for the naked eye, even for an expert in the field, because the striking similarity within the series and the post-processing by the goldsmith obscure the shape signal originating from the moulds. Besides the original information provided here about the gold wild boars of Arzhan-2, it is worth emphasizing that the use of these techniques should be encouraged, particularly when applied to the study of seriality. The workflow described can easily be reproduced and adapted for almost any serially produced archaeological assemblage.

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