

---

# Personal ornaments at Star Carr: Integrating experimental archaeology, microwear analysis, and GIS to identify crafting spaces

Andy Needham<sup>\*†1</sup>, Jessica Bates<sup>1</sup>, Nicky Milner<sup>1</sup>, Chantal Conneller<sup>2</sup>, and Aimée Little<sup>1</sup>

<sup>1</sup>Department of Archaeology, University of York – United Kingdom

<sup>2</sup>School of History, Classics and Archaeology. Newcastle University – United Kingdom

## Abstract

We report on the discovery of a personal ornament crafting area at the Early Mesolithic (9300-8500 cal BC) site of Star Carr, UK. Microwear analysis, experimental archaeology, and GIS were used to understand the spatial patterning and use of awls, beads and pendants. During excavations from 2004-2015, three shale beads, a shale pendant, and 69 flint awls were excavated, recovered from a spatially discrete area. These finds expand the assemblage recovered by Clark in 1949-51: three amber pendants, 26 shale beads, one shale pendant, two cervid teeth pendants, and a probable bird bone bead. This assemblage constitutes the second largest but most diverse recovered from the UK. Good preservation and open area excavation provides the opportunity to integrate techniques and critically analyse tool function alongside spatial patterning.

New analysis using these techniques expands on previous findings, identifying further mineral working traces on some awls (including *mèche de foret*). Awls were used in a rotational motion on soft mineral, consistent with drilling shale, confirmed through experimental archaeology. GIS evidences spatial patterning of beads/pendants and awls to the west of the site. Taken together, this evidence suggests a craft working area focusing on personal ornament production. The high resolution nature of the site and open area excavation further facilitates a consideration of the social implications of this crafting activity at Star Carr.

The study highlights experimental archaeology as an important tool when used in tandem with microwear analysis to provide technical insight into the use of Mesolithic stone tools. The use of experimental archaeology to create a comparative assemblage suitable for use in microwear analysis, in this case related to bead and pendant manufacture with awls, is essential in facilitating the interpretation of archaeological tool function. Microwear analysis, used in combination with spatial analysis using GIS, offers the potential to identify craft activity zones and may have wider applicability in prehistoric other prehistoric contexts.

**Keywords:** Mesolithic, UK, personal ornaments, experimental archaeology, GIS, microwear analysis, craft

---

\*Speaker

†Corresponding author: [andrew.needham@york.ac.uk](mailto:andrew.needham@york.ac.uk)