

Domestic tools, hafting, and the evolution of technology: The Upper Palaeolithic of Hohle Fels as a case study

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Introduction

Development of stone tool hafting is a central aspect of early technological evolution. While subsistence technologies are often extensively studied and debated, so-called domestic tools have received relatively little attention in discussions about technological competence, task planning and specialisation. We argue that these tool categories are actually very relevant for understanding large-scale and long-term patterns in the evolution of technology, since hafting is not an obligation but a choice for most domestic tools. Appearance of, or increase in, domestic tool hafting implies an increase in time investment and planning, both of which in turn have implications for task organisation and specialisation.

We present here the first results of an ongoing study that looks at tool use and hafting in the Upper Palaeolithic through a detailed functional analysis of assemblages from a number of European key sites. The subsample presented here is a selection of scrapers and burins from the cave site Hohle Fels (Swabian Jura, SW Germany) (Fig. 1). Thanks to its well-dated stratigraphic sequence, Hohle Fels offers an ideal setting for a case study. The levels under study here are Gravettian and Magdalenian. For future analyses, the results presented here will be compared with similar data from the Aurignacian and Middle Palaeolithic levels to evaluate more long-term changes in technology.

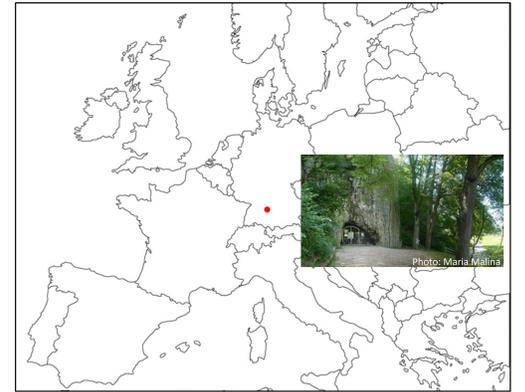


Fig. 1. Location of Hohle Fels.

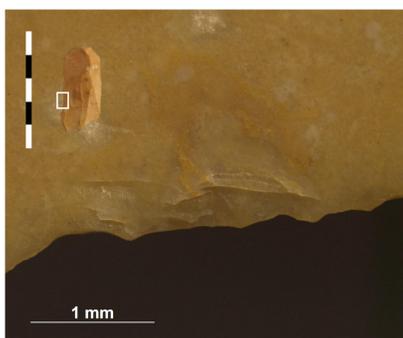


Fig. 3. Hafting scarring on the ventral proximal left edge of a Gravettian scraper in Bohnerz chert. Original magnification 63x.

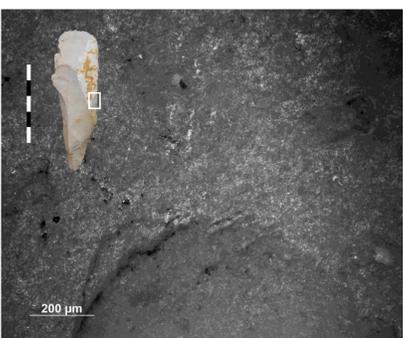


Fig. 4. Typical hafting wear feature, a striation associated with edge damage, found on the ventral medial right edge of a Gravettian scraper in local Jurassic chert. Original magnification 100x.

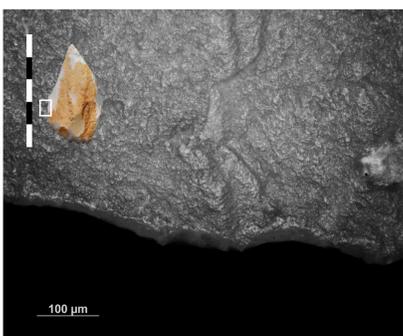


Fig. 5. Prehension polish from hand-held use on the ventral medial left edge of a Gravettian burin in Jurassic chert. Original magnification 200x.

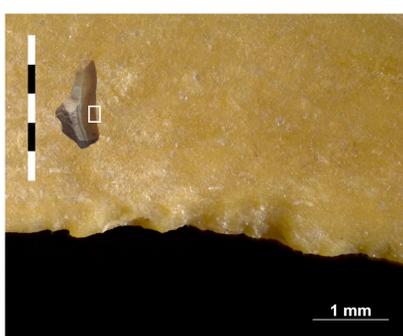


Fig. 6. Possibly hafting-related scarring on the ventral medial right edge of a Magdalenian burin in Bohnerz chert. Original magnification 40x.

Tool hafting heavily task-dependent

A sample of 159 scrapers and burins from Gravettian and Magdalenian levels of Hohle Fels shows that scrapers were extensively hafted. In contrast, not a single burin with definite hafting evidence has been identified so far (Fig. 2). Scrapers are above all hide-working tools: of the 36 pieces for which the exact worked material could be determined, 33 were used on hide only (Fig. 7). Edge damage and polish on the burins points to use on hard animal-derived materials (bone, antler, ivory, tooth) (Figs. 8–10). Thus we are dealing with two distinct functional categories that clearly differ from each other in frequency of hafting.

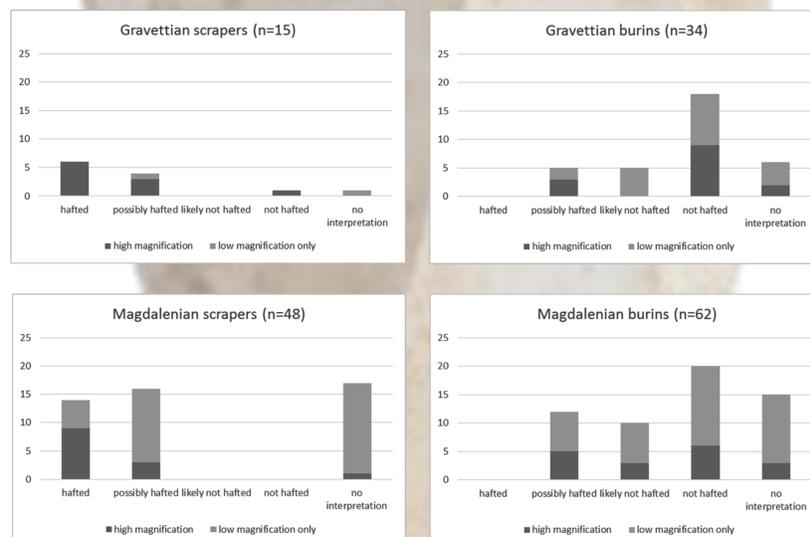


Fig. 2. Frequency of scraper and burin hafting in the Hohle Fels sample on the basis of low and high magnification functional analysis.

Explaining differences in scraper and burin hafting

Obvious evidence of resharping was found on 65% of the scrapers (n=40) and 36% of the burins (n=44), which suggests that even though a more expedient use of burins may be a contributing factor, it does not seem to fully explain the pattern. Instead, we suggest that the observed difference has to do with the nature of the tasks. For hide-working, advantages of adding a handle are quite obvious: it allows for additional applied pressure and provides a better reach. Working with burins generally involves much smaller gestures, and if the size and the shape of the tool are suitable for a good hand grip, adding a handle may not make a difference that would be worth the time investment. It may also be inappropriate for engravings requiring precise workmanship. For these reasons, we can hypothesise that scraper hafting is more frequent at Upper Palaeolithic sites, and perhaps also appears earlier, than burin hafting.

Differences between the Magdalenian and the Gravettian subtle

Scraper hafting has been documented already within the oldest Gravettian level examined here (AH IIc, c. 26,000–29,500 BP, Conard & Moreau 2004), and it remains dominant during both periods. Neither the Gravettian nor the Magdalenian sample has yielded a convincing example of a hafted burin. The proportion of possibly hafted burins appears to be slightly higher in the Magdalenian sample (Fig. 2). Yet, as hafting evidence is abundantly present on scrapers from both periods, we would expect to find at least a few clear examples among the burins as well, had burin hafting been a common practice at the site.

It seems that hide-working has been dealt with in much the same way during the Gravettian and the Magdalenian, using almost exclusively hafted tools. The examination of use-wear on burins shows that seven out of eight burins that seem to have been used on fresh or soaked antler come from the Magdalenian levels. Gravettian burins in general show a less well-developed polish, which makes determining the exact worked material difficult. Whether this reflects a true increase in antler-working during the Magdalenian, or is simply an artefact of different lithic raw material situation and/or increased duration of tool use, remains an open question.

Cited literature: Conard, N. J. and Moreau, L. 2004. Current research on the Gravettian of the Swabian Jura. *Mitteilungen der Gesellschaft für Urgeschichte* 13, p. 29–59.

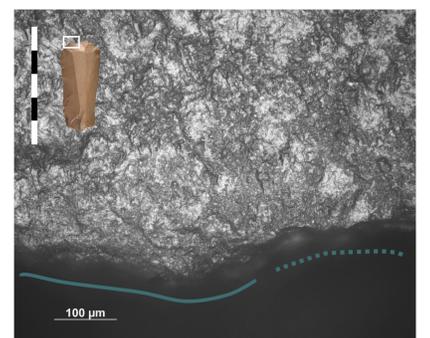


Fig. 7. Evidence of resharpening on the ventral aspect of the working edge of a Magdalenian scraper in red radiolarite. Solid line: edge rounding from hide-working, dashed line: concavities created by retouch flakes that cut through the use-wear. Original magnification 200x.



Fig. 8. Heavy edge damage on the right burin facet of a Magdalenian burin in green radiolarite. Original magnification 20x.

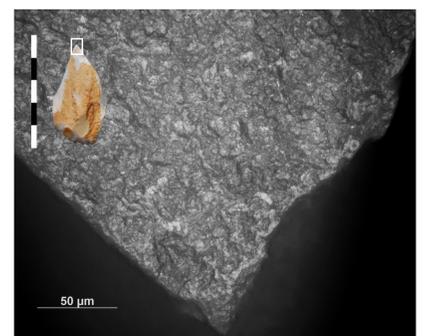


Fig. 9. Light use polish on the ventral aspect of the tip of a Gravettian burin in Jurassic chert. Original magnification 500x.



Fig. 10. Use polish on the ventral aspect of the tip of a Magdalenian burin in Bohnerz chert. Original magnification 200x.

