

Experimental insights into thermal damaging of flint artefacts in prehistoric fire-places

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Summary

Burning largely affects flint tools from prehistoric sites. It alters use-wear traces on the tools, and because of this, they are usually discarded from use-wear analysis. This potentially causes a significant loss of knowledge about prehistoric life. To study this effect, we developed a protocol for burning used flint tools in an open fire setting. We achieved to reproduce slightly, moderately and heavily burnt pieces. Experimental replicas were put into the fire. Wear traces were analysed before and after burning in order to gain a better understanding of the processes affecting their preservation.

Introduction & aim

The effect of burning on the preservation of use-wear traces is insufficiently investigated at the moment. However, the practice to discard burnt artefacts from use-wear analysis causes a potential information loss.

We developed an experimental and semi-quantitative method to study the effect of burning on use-wear traces.

Methodology

1. Test different fuels for burning by measuring duration of the fire and temperature changes in and around of the fire:

- fire woods known from our archaeological sites (pine for Early Mesolithic, oak for Late Mesolithic)
- bone as fuel (often found in hearths during Prehistory).

2. Reproduce burning features of flints (flakes from geological material were positioned at different distances from the centre).



Fig 1: fire of pine and oak wood with deer bones



Fig 2: fire of oak and pine wood with bones and flint samples

3. Test the method on experimentally used replicas



4. Analyse the results



Conclusion & outlook

- The developed methodology allows to
 - reproduce lightly, medium and heavily burnt artefacts
 - study the preservation of use-wear traces in different stages
- The use-wear traces are still clearly recognisable on medium burnt pieces, these should be included in the analysis of archaeological assemblages
- In this experiments medium burnt pieces reached c. 420°C and show discolouration, cracking and some potliding.
- In the case of heavily burnt samples, it is not clear until what degree use-wear traces are recognisable.
- Next steps are to further investigate heavily burnt flint and connect geological features to the preservation characteristics.

