

**Edge under stress -
Toward a Refined Methodology for Interpreting Scars on Flint Tools**

Solène Escarguel¹, Justin Coppe^{1,2}, Veerle Rots^{1,2}

¹ TraceoLab, Research Unit AAP, University of Liège, Liège, Belgium

² Fonds de la Recherche scientifique-FNRS, Brussels, Belgium

Corresponding author : solene.escarguel@uliege.be

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The role and potential of edge damage on stone tool's edges in use-wear studies have been significantly debated, in particular for the identification of tool uses other than projectiles. Despite important fundamental works in fracture mechanics, these insights have not yet been fully incorporated to improve functional interpretations. As a result, the potential of edge damage in use-wear analysis has largely remained underexploited. Yet, when tool surfaces are altered with few inferences possible from other traces such as polishes, edge damage plays a fundamental role.

Edge scarring occurs when localised stress exceeds a material's strength, and in the case of use, each scar marks a distinct moment. Several variables influence this process, such as edge angle, force direction, contact area, and material properties, but their exact role is not yet fully understood.

We present the results of an experimental study in which all scars on the used edges were described using an attribute-based system. Using statistical processing, we examined whether specific scar characteristics and patterning could be identified that would be specific for a given tool motion, contact material and gesture. We also evaluated which specific scar attributes are most valuable for functional inferences. The ultimate goal of this research is to develop a revised framework for interpreting scarring, centred on key attributes with functional significance, that would be broadly applicable.

This is especially useful when micro-wear is poorly preserved, as often seen for Middle Palaeolithic assemblages.