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Understanding sudden environmental and societal change through coupled geochronological and artefact shape analyses

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Over the last twenty years, advances in geometric morphometric methodologies have revolutionised how archaeologists understand changes in artefact shape and form (size plus shape) throughout the Quaternary period. Such methodologies provide a high resolution of artefact coverage, and allow a critical analysis of previous taxonomic classificatory schemas and human tool-use in the past. Despite this, methodologies into artefact shape through geometric morphometrics have not been integrated within an extensive geochronological framework to better understand periods of high environmental stress and, with respect to archaeology, how past societies reacted to such stress.

The Laacher See volcanic eruption (c. 13,000 BP) in western Germany is believed, given its hypothesised characteristics, to have had profound impact on the lifeways of hunter-gatherers towards the end of the Late Palaeolithic (Riede, 2017). It is however unknown how this eruption resonates on an assemblage level on varying levels of resolution; extensive quantitative analyses are limited, and shape-based analyses are absent. This poster details on-going research into how artefact shape and form of two major artefact classes within the technological repertoire, arch-backed and large tanged points, transform prior and immediately following the Laacher See eruption. Through a European-wide analysis of point types, all with absolute dates, changes in the shape and form of these artefacts are modelled, and the effect of the eruption on artefact shape and form hypothesised. Further analyses incorporating a wider temporal framework, and climatic data for the period in question, are also detailed in an attempt to differentiate between effects of sudden environmental change and shape variation more generally.

Through this approach coupling geometric morphometric and geochronological analyses, a greater understanding of how sudden environmental change can be documented within the artefact record for the period in question can be sought, and further detail in how human societies reacted to such cataclysmic events can be provided.

Riede, F. (2017). Splendid Isolation: The Eruption of the Laacher See Volcano & Southern Scandinavian Late Glacial Hunter-Gatherers. Aarhus University Press.