

## Abstracts

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### Fiber technology, rope-making, textiles and the *Lochstäbe* from the Aurignacian of the Swabian Jura

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At the end of the day, we know relatively little about fiber technology and textiles in the Paleolithic. Upper Paleolithic depictions, use wear and residues on tools, evidence of stringing ornaments, occasional impressions in clay, and claims of preserved fibers provide hints about these matters [1,2]. Given that most scholars are not looking for evidence of fiber technology, we can hardly be surprised that so little data on the topic exist. Here we suggest that researchers have known about artifacts for working fibers, string and rope for decades, but have been unable to recognize their importance. While we cannot yet prove it, we hypothesize that a number of perforated ivory artifacts (*Lochstab*, plural *Lochstäbe*) with carefully made spiral engravings inside their holes dating to the Aurignacian, are tools for working fibers and making string and rope. Previous researchers have argued that these objects that are well known from Vogelherd and Geißenklösterle represent decorated objects or mobile artworks [3,4]. In 2015 excavations in the Aurignacian deposits at Hohle Fels in the Ach Valley of the Swabian Jura led to the discovery of a beautifully preserved ivory *Lochstab* with four holes, each containing carefully carved, parallel, spiral engravings [5]. Due to its exceptional preservation, the new *Lochstab* from Hohle Fels opened our eyes to the likelihood, that this object is likely not a work of art, but rather a precisely made high-tech tool. Our paper presents the *Lochstäbe* from the Swabian Jura and similar finds from other contexts in Europe and considers the merits and problems with the artistic versus functional interpretation of these remarkable objects. The high aesthetic quality of these finds is readily apparent, but the most prominent aspect of the finds is the series of perfectly cut, deep, parallel grooves inside the holes themselves. These parts of the textitLochstäbe are significantly obscured from view, leading us to think that the carefully placed series of deep spiral cuts were made to achieve a functional goal rather than as a form of artistic expression. In light of the new discovery from Hohle Fels, we replicated these artifacts in different medium to test whether or not they could be used to produce string or rope. We build our functional interpretation on extensive experimental work involving reproduced *Lochstäbe*. Based on these tests, we conclude that the *Lochstäbe* are likely carefully made tools for working plant fibers rather than being works of art.

**References:**[1] Soffer, O., J. M. Adovasio, and D. C. Hyland. 2000. The "Venus"Figurines, Textiles, Basketry, Gender, and Status in the Upper Paleolithic. *Current Anthropology* 41: 511 – 537 [2] Owen, L. 2005. *Distorting the Past: Gender and the Division of Labor in the European Upper Paleolithic*. Kerns Verlag: Tübingen [3] Riek, G., 1934. *Die Eiszeitjägerstation am Vogelherd im Lonetal I: Die Kulturen*. Akademische Buchhandlung Franz F. Heine, Tübingen [4] Hahn, J., 1988. *Die Geißenklösterle-Höhle im Aichtal bei Blaubeuren I. Fundhorizontbildung und Besiedlung im Mittelpaläolithikum und im Aurignacien*. Theiss Verlag, Stuttgart.[5]Conard and Malina 2016. Außergewöhnliche neue Funde aus den aurignacienzeitlichen Schichten vom Hohle Fels bei Schelklingen. *Archäologische Ausgrabungen in Baden-Württemberg* 2015: 60-66