

Functional Studies of Prehistoric Artifacts and their Socio-economical Meaning

Traceology continues to be the major method for the identification of prehistoric tool use and function since Sergej A. Semenov's fundamental work 'Prehistoric Technology' (1964) introduced this method to prehistorians worldwide over half a century ago. The analysis of microscopic wear traces and use-related residues provides significant information to various important aspects of archaeological research. Among them are questions on site functions and activities carried out in prehistoric settlements or the reconstruction of archaeologically invisible components of complex tool technology, e.g. hafting and composite tool design. Traceology has also significantly contributed to the debates on human behavioural complexity, adaptation to changing environments and cultural and cognitive advancement as well as other aspects of the evolution of the human intellect.

The *International Scientific Commission A17 on Functional studies of prehistoric artefacts and their socio-economic meaning* is devoted to the complex and manifold role of artefacts in human paleoecology and the reconstruction of ancient economic systems. This implies that the reconstruction of production and use of artefacts in the past is not just the re-enactment of processing of materials, human activities or prehistoric technologies but a matter of understanding the evolution of production techniques and their consequences for the people that produced and used the artefacts in a socio-economic context. The Commission A17 will ensure that the greatest possible effort is made to promote methodological advancement and support cutting-edge research that is aimed at widening the informative capacity of use-wear analysis, as well as establishing new data recording and relational database systems.

Session of Commission A17. Traceology in the 21st Century: Contributions to Archaeological Science and the Human Journey

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The identification of prehistoric tool use and the related activities has direct implications for the reconstruction and assessment of human behaviour and intellectual advancement. It is, however, a rather complex task that requires experimental frameworks, ethnographic data and the aid of microscopes. Traceology is an encompassing research system based on a detailed data and information pool that enables the analyst to identify and interpret wear patterns, residues and other surface alterations on artefacts. This 'traceological reference collection' is mainly supplied by experiments using tool replicas and imitating prehistoric working activities as realistically as possible. Complemented by archaeological accounts, ethnographic observations and technical knowledge, this experimental framework is crucial for the reconstruction of prehistoric tool uses and human behavioural responses to changing environments.

Although traceological analysis appears to be a straightforward method, its usefulness for the recognition of past human behaviour and human-environment interaction still depends on the understanding of tool use and mechanical processes as well as the research experience of the analyst. Optical microscopy using reflected-light and stereomicroscopes continues to be the methodological backbone of Traceology. In addition, technological innovations in microscopy and material analysis have been introduced in recent years, attempting to overcome specific problems and to achieve better results, among them laser confocal microscopy, scanning electron microscopy, GC-tandem MS, and more to use-wear and residue analysis.

We invite traceologists and archaeologists who work in the field of microwear and residue analysis to present their latest research and the application of new techniques and instruments to contribute to the methodological debate, and to bring prehistoric tool uses in context with technological advancement, subsistence strategies and adaptation to different environments.