

NEW APPROACHES FOR CHERT SOURCE PROVENANCE STUDIES

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Provenance studies of chert and flint raw materials (silicites) are an important component of archaeological research. The identification of the sources of rocks used for the production of chipped stone tools plays a significant role in the interpretation of lithic assemblages, e.g., revealing routes of migration, intercultural exchange and circulation networks of lithic raw materials (e.g., BARFIELD, 2003; PAWLIKOWSKI, 2008; ZVELEBIL, 2006). A transdisciplinary concept (“Multi Layered Approach” - MLA) presents a clear possibility for successfully sourcing chert and flint. The proposed method consists of a tripartite analytical system: Visual (macroscopical), microscopical and petrological/geochemical. For geochemical analysis, Laser Ablation-Inductively Coupled-Mass Spectrometry (LA-ICP-MS) was applied. LA-ICP-MS allows for the detection of trace element concentrations (0.1 ppm) in rock materials and has been well established in lithic raw material research (SPEAKMAN & NEFF, 2005; BRANDL et al., 2011; BRANDL et al., 2013). For the present undertaking, the MLA was applied to three case studies: 1) the differentiation between two tabular chert sources, (lacustrine – marine); 2) the assignment of radiolarites from the Lower Austrian Krems-Wachtberg site (Upper Palaeolithic) to the Northern Calcareous Alps and to Carpathian sources; 3) the identification of the sources of gunflints dating to the Napoleonic War-period from Schloss Neugebäude (Vienna). Our results demonstrate that it is not sufficient to rely on a single analysis method for chert sourcing. Only a combination of methods with different layers of resolution can lead to a successful determination of the provenance of chert artifacts.

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