Rock and Roll: 13th International Symposium on Knappable Materials

Tarragona, Spain
4th-7th October, 2021
Multi-scalar Characterization of Raw Materials

Session 1: Multi-Scalar Approaches to Raw Materials Characterization

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The advent of innovative characterization techniques combined with our increasing knowledge of the natural processes responsible for the genesis of lithic raw material resources are helping us understand past human behavior. However, researchers seeking to do so must apply multi-scalar approaches: i) identifying all potential tool stone sources exploited by prehistoric peoples; ii) each potential source must be characterized through systematic sampling and the use of different analytical techniques (e.g., macroscopic, mineralogical and geo-chemical analysis) to bracket the sum variance of the available raw materials; and iii) this collective variance may be described, quantified, and compared to all other potential sources and the archaeological assemblages under study to fully understand raw materials procurement and technological management strategies.

The tasks of surveying, sampling, analyzing, bracketing variation, and eventual comparison to other sources and archaeological assemblages can be daunting, as different scales of observation are combined. The presenters in the session have undertaken this challenge and continue research started years ago. The inclusion of new instrumentation and multi-method studies is proving to be the most effective strategy but collaboration between labs, programs, and research teams is needed. Additionally, the application of multi-scalar source data to human behavior is developing multiple testable frameworks. The case studies explored in this session demonstrate how the progression of research models along with characterization techniques and novel instrumentation, source sample databases, and statistical methods has great potential in understanding ancient mobility, interaction, technological organization, resource selection, and several other anthropologic questions. The continued research in raw material characterization provides a robust mechanism for studying the past that will shape the future of the field of archaeology.