
Building a model for material flow patterns in North Swedish river systems – Part 1

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Abstract

Lithics are an important element of inferences into mobility among hunter-gatherers. Establishing the provenance of the material from which the lithic artefacts are produced is an important aspect of prehistoric resource strategies, linked to the concept of the *chaîne opératoire*, as well as providing an insight into possible exchange networks. One critical component, however, is the identification and comparison of the materials with possible geological sources, something which is not always so straightforward to undertake.

While the bedrock in Northern Sweden has been well studied, and as a consequence is well understood, the effects of the Last Glacial has displaced a lot of materials from their sources, making quartz and quartzite widely available as surface finds with vague provenance. Perhaps due to this situation, provenance studies of these materials have been lacking, but in recent years The Environmental Archaeology Lab at Umeå University, Sweden, has been experimenting with Near Infrared (NIR) spectroscopy and Hyperspectral Imaging techniques on lithic artifacts. They have proven useful in chemical characterization of quartz and quartzite materials, allowing us to separate them into different classes based on provenance. This presentation will be discussing an ongoing PhD project with the goal of expanding upon the above approach. Using NIR, pXRF and Raman spectroscopy the project aims to build a more robust classification of quartz and quartzite points found in the County of Västerbotten. A combination of multivariate statistics and GIS-modelling will be used to test models for material flow patterns and to link these to settlement and mobility in Northern Sweden. A significant advantage of the methodology is that it is both non-destructive, and relatively cheap, allowing us to process and work with larger datasets of artefacts. While the geological sources are still somewhat vague, the underlying dataset should still provide a robust insight into possible source areas and material flow in the North Swedish river systems.

Keywords: Spectroscopy, Lithics, Provenance, Mobility, Material flow, Chemometrics, Raman, NIR, XRF, Quartz, Quartzite, Sweden, Points

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