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Romanian Lithotheque Project: Knappable stone resources in the Mureş Valley, Romania

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Objectives

The objectives of the study are to catalogue and characterise sources of knappable stone materials in order to identify the provenance of Stone Age artefacts found in Transylvania (Romania). This presentation will focus specifically on sources in the Mureş Valley region (Fig. 1), i.e. the Southern Apuseni Mountains and the Southern Carpathians, respectively.

Samples and methods

The samples collected from different geological occurrences of knappable materials in the Southern Apuseni Mountains and Southern Carpathians, and ranging from Neogene sandstones to Jurassic ophiolites, represent the physical lithotheque.

Based on the macroscopic and microscopic features of the geological samples, a database was established. The database contains categories of characteristic features including appearance (fabric, lustre, translucency, grain size and surface roughness/smoothness), colour (based on the Munsell Colour System) and colour patterns, descriptions of the rind (called *cortex* by archaeologists) and visible inclusions. Within each of these categories there is a set of characteristics, each with specific means and terminology for recording measurements. These characteristics and how they are classified are described in previous publications (Crandell, 2005, 2006). The database contains also information about the geology and lithostratigraphic unit of the host rock. Several thin sections were made from samples from each source location. The database contains also macroscopic images of the samples and microphotos in polarized light.

In the first stage of the study, several petrographic types of material which might have been used for chipped stone tools by Stone Age people were identified. For example, jasper, chert, rhyolite, sandstones etc.

Geological Sources

Based on investigations of possible geological sources of material for chipped stone artefacts, the identified occurrences were grouped based on similar macroscopic and petrographic characteristics, geological origin and location within contiguous geographic areas. These groups are presented in detail, in the following.

There are numerous sources of lithic material in the middle course of the Mureş River suitable for producing chipped stone artefacts. The main rock types are: chert, jasper, rhyolite, quartzitic sandstone, siliceous shale and microgranite. Most of the sources are spread over large areas (often over 50 km long) with numerous surface outcrops, but some are restricted to very small areas (as small as a valley a few hundred metres long). Within the large source areas, the materials at various locations (Fig. 1) often look similar. Studies by other researchers demonstrate that although materials within source areas appear the same their chemical content often varies by location. (Luedtke and Meyers, 1984).

The most geographically extensive lithologies containing such materials are the “West Metaliferi jasper”, the “East Metaliferi jasper” and the “Trascău chert” in the Southern Apuseni Mountains and “Strei sandstone area”, in the Southern Carpathians, respectively (Fig. 1).

The *West Metaliferi jasper* is associated mainly with Neogene pyroclastic andesites of the Metalliferi Mts., extending from Săvârşin to Bretea Mureşană (e.g. outcrops at Bulza and Fintoag) (Gherasi et al., 1965; Lupu et al., 1986, 1991). The jasper occurring in the Gurasada area is related to Late Cretaceous-Early Paleogene andesitic to dacitic pyroclastic rocks, so-called banatites (Constantina, 2008).

The *East Metaliferi jasper* is associated with Late Jurassic volcanics (basalts, basaltic andesites, and andesites) in the eastern part of the Metalliferi Mts., from Balsa to Techereu. (Lupu et al., 1966; Borcoş et al., 1981; Ghiurcă, 1999, 2000).

The *Trascău chert* comes from the Late Jurassic to Early Cretaceous limestone of the Trascău Mts. and occur from Vințu de Jos in the south, to Cheile Turzii in the north (e.g. outcrops at Meteș, Ampoița, Cetea and Remetea) (Lupu et al., 1966).

The *Strei sandstone area* is located south of the Deva city. These siliceous sandstones of Badenian age (Gherasi et al., 1965) crops out along the Strei river and might provide knappable material. Loose blocks in the recent alluvial sediments are found as well.

The *Lithotheque* and the associated database is useful to archaeologists and archaeometrists for making analogies with artefacts and identifying raw material sources, thus helping to determine trade routes and trade directions.

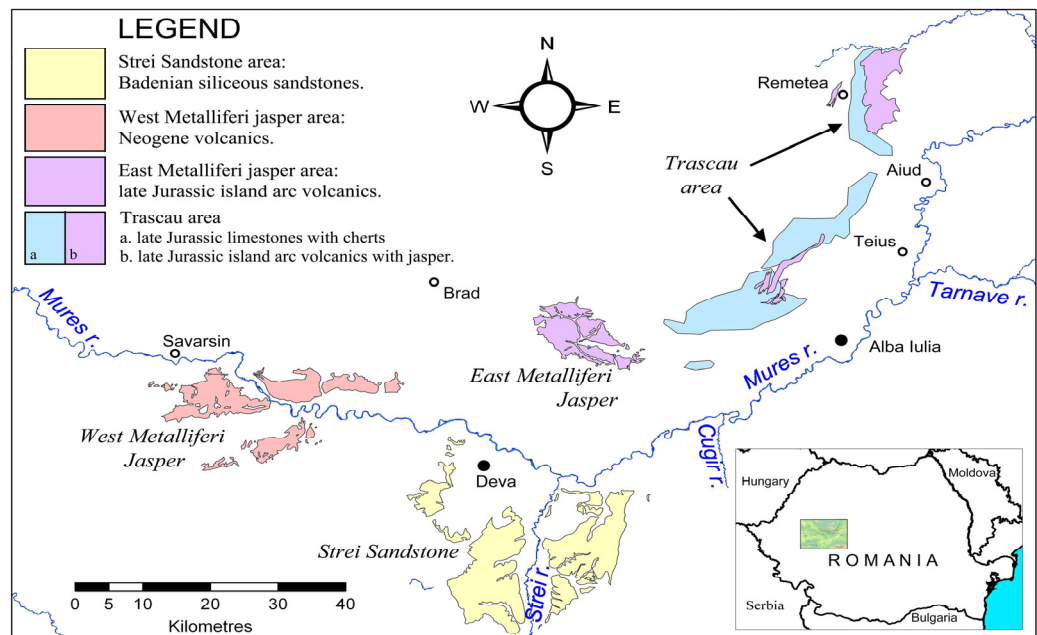


Fig. 1. Geological sources of knappable rocks in the Southern Apuseni Mts. and Southern Carpathians. The insert in the upper-left shows the position of the map within Romania. The map is based on Gherasi et al. (1965), Lupu et al. (1966, 1986, 1991), and our own field data.

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