

## HOW DID STONE AGE COMMUNITIES EXPLOIT THE AVAILABLE RESOURCES?

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*In the natural world, the key to successful survival among individuals and species is obtaining as big a slice as possible of the available resources when competing for these resources as well as the efficiency with which these resources are exploited. In the case of most living beings, these efforts involve the acquisition of resources needed for nutrition and reproduction. Human beings have from the very beginning – in the historical and archaeological sense – made use of the culture they created, whereby they eclipsed by far their competitors. The oldest material relics of human culture are knapped stone implements, whose manufacture called for additional resources, specifically lithic raw material suitable for working. The earliest stone tools were made from larger pebbles, a raw material that literally lay at the feet of ancient knappers in the fluvial deposits of river terraces. The many million years of the Palaeolithic saw the evolution of ever more sophisticated tool-making technologies and the conscious selection of the lithic raw materials. Simultaneously, a better knowledge and understanding of the surrounding world enabled the exploitation of various other resources. A look at the successive periods of the Palaeolithic reveals one salient tendency, namely that in addition to easily accessible local resources, better-quality raw materials from more distant deposits played an increasingly important role. The warming during the Holocene after*

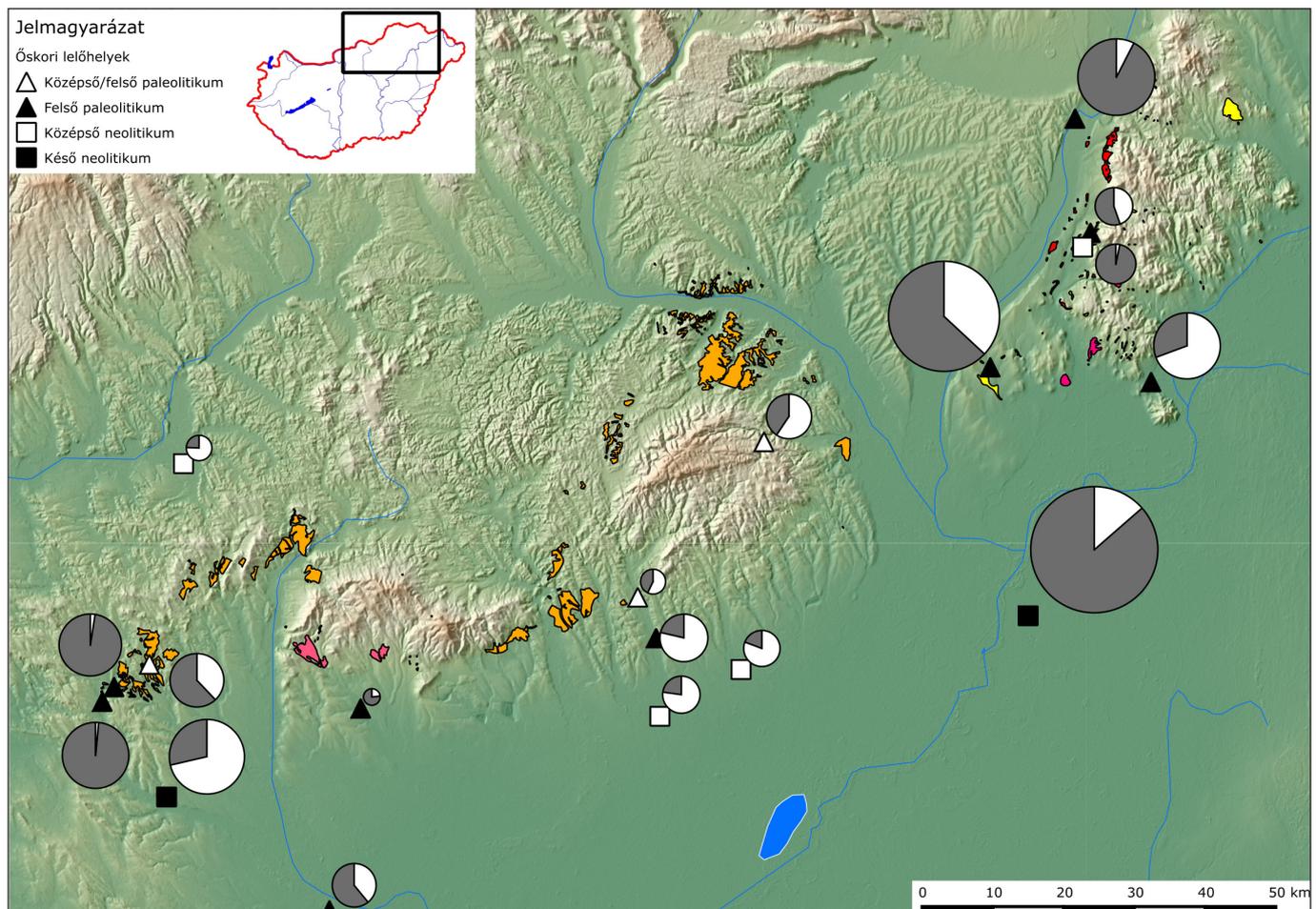


Fig. 1. Geological formations containing limnosilicite (yellow, orange and red areas) in the North Hungarian Range and their proportion (in grey on the pie chart) on the region's Stone Age sites. The proportions of the pie chart conform to the size of the lithic assemblage (diagrams: Norbert Faragó)

*the Pleistocene Ice Age and the simultaneous environmental changes transformed the life of the hunter-gatherer groups as well as the strategies of how various resources were exploited. The emergence of food production and the associated Neolithic subsistence strategies and sedentary lifestyle led to another profound transformation.*

Our research project focuses on this intriguing prehistoric process in a region of northern Hungary, the Bükk and Mátra foothills. The two micro-regions located at the foot of the North Hungarian Range make for an excellent study region to investigate this issue. Located between the northern fringes of the Hungarian Plain and mountains, it provided a suitable habitat for human groups during all periods of the Stone Age, as evidenced by the great number of archaeological sites. The region abounds in various siliceous lithic deposits. This richness of lithic resources can be explained by the geological process that led to the formation of the Carpathian Range during the Alpine orogeny. The several hundreds of million years old Triassic and Jurassic rocks of deep marine origin are rich in radiolarites and hornstones as well as in metarhyolite (also termed quartz porphyry in archaeological contexts), which can solely be found in the Bükkszentlászló area. Tens of millions of years ago, in the Miocene, the area was characterised by intensive volcanic activity, as a result of which the thermal springs transported silica to the surface, which silicified the shoreline of the Pannon-Sea and the sediments in its lagoons, from which the rich diversity of rocks of differing quality known as limnosilicite in archaeological contexts was formed in the Mátra and Bükk foothills.

Viewed from a longer chronological perspective, the exploitation of these lithic resources was influenced by a variety of factors and the changes in these factors: accessibility, familiarity with the area, cultural-technical demands and traditions. Our research project focuses on the period between the Middle Palaeolithic and the Middle Neolithic, i.e. between roughly 130,000 and 7000 years ago. The climatic oscillations of the Ice Age and the concomitant changes in the Earth's surface (erosion and sediment accumulation) as well as the vegetation changes (deforestation and reforestation) variously exposed or, conversely, concealed the outcrops of siliceous rocks, meaning that they were not always readily accessible to the human groups settling in the region. On the testimony of the archaeological record, new human groups arrived to the region during several periods. About 120,000 years ago, Neanderthals settled in the region (Mousterian culture); new groups arrived some 35,000 years ago, who can be identified with *Homo sapiens*, anatomically modern human (Aurignacian culture), while the first food-producing groups settled in the region roughly 7500 years ago (Alföld Linearbandkeramik). Each immigrant group obviously had to familiarise itself with locally available resources and thus the already known sources were initially utilised, as shown by the non-local lithic raw materials uncovered on the sites. The mobile lifeways of the Palaeolithic hunter-gatherer groups also played a role in the appearance of non-local raw materials; in contrast, the sedentary lifeways more typical of the Neolithic would suggest that rocks from more distant deposits reflect the existence of various exchange networks. The choice of a familiar and accessible raw material

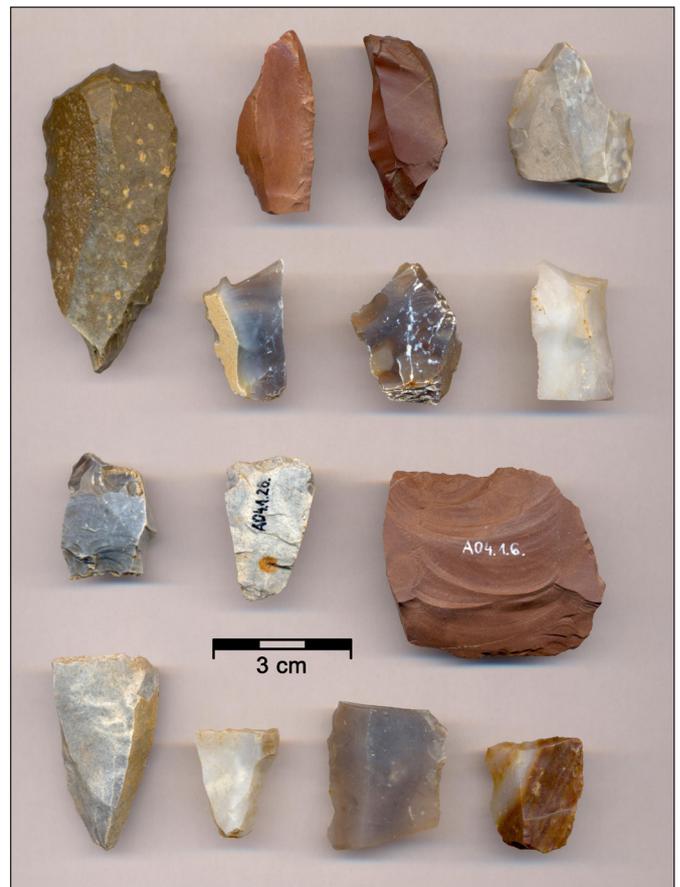


Fig. 2. Knapped stone implements made from various siliceous rocks from the Andornaktálya-Zúgó-dűlő site (photo: Zsolt Mester)

resource and the mode of its exploitation by a particular human group largely depended on technical behaviour and cultural preferences. The suitability of one or another rock type (its quality, quantity, colour, etc.) for a particular group was largely determined by the types of tools, the technological demands of the manufacturing procedures and the norms prescribed by tradition.

Our research project addresses this complex issue from several perspectives. Using geological maps, we plan to identify those siliceous rock deposits that may have been raw material sources for Stone Age groups. These deposits will be categorised according to archaeological criteria because each resource category calls for different exploitation strategies. Each variety of the rocks collected from the deposits will be characterised through geological analyses in order to enable their identification in archaeological assemblages. Additionally, we shall experiment with knapping in order to test their quality and to determine to what extent they were suitable for producing knapped stone implements. The potential accessibility of each deposit in various periods of the Stone Age will be determined through geomorphological and sedimentological analyses, which in turn will provide a spectrum of the available choices in the study region. The entire lithic assemblages from the archaeological sites associated with each period will be studied in detail to determine which raw materials were used (and which were not) by

particular Stone Age groups. The technological and typological analyses of the lithic assemblages will shed light on how the lithic raw materials were procured, how they were processed and what kinds of tools and implements were produced. These will then be set against the qualitative traits of each raw material type, the accessibility of its source and the technical and cultural demands of the human groups living in the region, as a result of which we will be able to map the diachronic changes in the attitudes of the human groups living in the study area to lithic resources as well as the role of environmental and cultural factors.

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Fig. 3. Experimental knapping of lithic tools from Bükk quartz porphyry (metarhyolite) (photo: Institute of Archaeological Sciences, Eötvös Loránd University)

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