

ISKM 2019 Sessions and Session Abstracts

Special theme session:

* Bedrock and Alluvial: Primary and Secondary Raw Material Sources. (session organized by András Markó and Sándor Józsa)

Rocks of alluvial origin have been popular raw materials since the beginning of the stone tool production. There is a number of advantages of the pebble working compared to the rocks from primary raw material sources: during the fluvial transport or the marine abrasion the poor quality, inhomogenous part of the pieces were partly removed and the better quality raw material could have been collected from the sometimes loose matrix and not from solid mother rock. On the other hand, it is easy to select the pebbles of optimal size and morphology which made possible to start and proceed the knapping with a minimal amount of waste material.

During the analysis of the archaeological assemblages with an elevated ratio of pebble raw materials there is a number of crucial points. First, in the absence of the characteristic cortical surfaces or fossil remains it can be difficult to determine if a given artefact or a group of artefacts were made on a pebble or a nodule raw material. Secondly, in the fluvial formations of large geographical distribution a number of very different knappable raw material types can be found together. Finally, the same pebble types could have been collected from various formations lying at various distances in different directions from the archaeological sites, which makes problematic to determine the raw material transport or the territory of a human group.

What are the possibilities or the limits of the provenance studies in the case of the "pebble industries"? Is it possible to decide if the presence or the high ratio of the pebble raw material in a given assemblage is an intentional choice of the human group or is it determined by the accessibility of the different source regions? More specifically, is the microlithic character of several Lower and Middle Palaeolithic industries in Central Europe determined by technological or environmental/ecological factors?

* Raw material exploitation strategies: mining and surface collecting (session organized by Elisabetta Starnini and Paolo Biagi)

This session examines the ways prehistoric and historic communities of various periods and geographic areas exploited and collected different types of knappable raw material.

The topic is of crucial importance since it will help achieve a deeper understanding of behaviour, cognition abilities and social organization of human groups in different situations and contexts.

The purpose of the session is to invite researchers focussed on the study of raw material availability, procurement strategies, mining and quarrying, methods and techniques employed to extract and manage lithic resources from early prehistory to historic times.

Other topics to be addressed include the definition of the technologies employed for extraction, their development through time, and their relationships with human evolution and social structure.

We encourage contributions related to the state of the arts in the various themes involved as well as presentations of specific cases, such as for instance, studies on variables among which are raw material quality and exploitation strategies, difficulty

of terrain and raw material availability, techniques and cost of extraction, rhythms of the increase and decrease of the exploitation of the resources over time.

*** Ancient lithic trade and economics (session organized by Otis Crandell, Patrick Julig and Xavier Mangado Llach)**

One of the primary objectives of lithic studies is the reconstruction and understanding of prehistoric trade, and economic systems. Trade and economics tells us a lot about the interactions of individuals, households, and settlements across wide geographic areas. These interactions may be between people of a similar cultural group, or even represent inter-cultural interactions. When conducting large scale research, covering multiple sites, we may look at social interactions not only as practical acquisition but also as a social phenomenon, in particular the lines of contact that join people and groups, lines through which other products, knowledge, and people themselves may have moved.

In archaeology, we often seek to better understanding the strategies of ancient peoples regarding how and where (sources) they acquired the raw materials and worked products found at archaeological sites, and how these strategies were influenced by cultural preferences, traditions, logistics, and available resources. We ask questions regarding preferences for certain raw material characteristics - functional or aesthetic - and whether different values were placed on specific materials. We often also look at how these phenomena change over time. Regarding trade and economics, some prehistorians investigate the appearance and development of specialised occupations related to lithics.

This session will look at topics such as (but not necessarily limited to) trade routes, use of imported versus local materials, differential selection of specific types of raw materials, and specialised occupations related to lithic materials in prehistory.

*** Stone tool production and processing techniques (session organized by Leslye Valenzuela and Sol Sánchez-Dehesa Galán)**

Beyond flint: the effect of raw material on artefact style, function and production techniques.

The archaeological record attests to the use of different raw materials, techniques and methods for the production of tools through time, showing that knappers possessed a detailed knowledge of their geological landscape and of the physical properties of a diversity of rock types. Nevertheless, issues relating to how lithic raw materials can influence and even predetermine knapping decisions and end products (tools) remain relatively understudied and warrant further exploration.

In this session, we aim to draw together researchers working across a diversity of geographical and chronological contexts whose work primarily concerns non-flint raw materials with different or idiosyncratic mechanical properties, and that document how prehistoric knappers confronted the intrinsic constraints of “non-standard” materials on artefact style, function, and production techniques. We particularly encourage work incorporating experimental observations (within the frame of an archaeological questioning), and oriented toward the following issues: a) whether assemblage variability results from raw material constraints or human choices, b) the influence of raw material mechanical properties on innovation in knapping strategies, and c) the technical attributes that are more, or less, useful for determining knapping techniques on “non-standard” lithic raw materials.

* Polished stone tool production: knapping before and after polishing (Katalin T. Biró and Judit Antoni)

Polished stone tools represent the eponyme technical novelty for the “new stone age”, the Neolithic period. The final elaboration of the surface of the artefact by grinding / abrasion / polishing added new physical qualities, a more efficient and lasting working edge to certain tools, e.g., axes, adzes, wedges and picks. It is well known that the invention of the technique of polishing much preceded the appearance of productive economies and survived the Neolithic period at least till the general appearance of metal tools - and weapons - for the same functions. Moreover, the specific demands for producing long-lasting and durable polished stone artefacts lead to the formation of the largest supply systems in (European) stone age. The “chain of operation” for producing polished stone artefacts, however, involves a knapped phase in the ontogeny of the object; prospecting, mining, extraction and pre-form fabrication, just like traditional chipped stone implements, similar to handaxes of cores. It is not by chance that the largest “flint mines” in Europe were in fact producing suitable raw materials for the manufacturing of polished stone tools. Having studied the process of polished stone tool production on specialised settlements in Hungary and in contemporary ethnographical materials we became interested in the “knapped” phase of the life of polished implements. It is also noteworthy, that quite a few polished stone tools have an “afterlife” as re-worked artefacts, by re-shaping or knapping. We recommend our session to the interest of specialists working in a diachronic context embracing the life of the tool from extraction till rejection and re-use.

* Use-wear analysis of different stone raw materials: specific features and variability (session organized by Natalia Skakun, Maria Gurova and Laura Longo)

The pioneering research of the Russian scholar S. A. Semenov on prehistoric technology (1957), introduced a particular well-argued and formulated method of functional determination of the stone tools named traceology or use-wear analysis. The present-day agenda of the use-wear research is remarkably rich and provides multilateral approaches to reliable identification and determination of prehistoric tools' function. Despite the general and common mechanisms and principals of formation, distribution and interpretation of the complex of macro and micro use-wear traces, there is significant variation (working edge damages, topography and intensity of polishing and attrition) depending on the raw material of the prehistoric tools. Many aspects of these characteristics and variability remain still underestimated, underrepresented and insufficiently explained. The session invites papers presenting experimental and interpretive studies of use-wear on different rocks, application of various techniques and methods providing insight on the problem of the impact of stone raw materials into traceological practice and theory.

* Geology of knappable materials (session organized by Rajna Šošić Klindžić and Antonín Přichystal)

The correct classification of lithic knappable materials has to be based on geological knowledge of their natural occurrences. This approach can help us to understand what are differences between flint and chert, chert and limnosilicite, jasper and radiolarite, quartzite and silicite. Also it can help us detect different raw materials that are common and very similar in appearance and structure but originate in different and distant geographical areas. In addition in some part of the world without

larger sources of high quality silicites there were used various silica minerals or volcanic glasses (e. g. Central America). Similarly in Central Europe we have ascertained very specific raw materials such rock crystal, siliceous weathering products of serpentinites, fine-grained acid volcanics, silicified woods or petrified corals. The session should solve both correct classification of traditional raw materials and draw our attention on unusual materials used for knapping.

*** Characterising lithic sources (session organized by Marta Sánchez, Mar Rey Solé and Adrian Burke)**

Rocks were used since the beginning of human history and are also one of the best preserved materials in archaeological sites, especially those from very ancient sites. The study of lithic sources is essential to knowing more about human behavior and the relationships human communities had with their environment. In the last decades we have witnessed the development of several analytical techniques used to characterize lithic sources and artefacts, with different results depending on the method used and the rock type studied.

This session will focus on all methods that may be used to characterize lithic artefacts as well as potential geological sources. Particularly, this session wants to encourage discussion about the use of several complementary analytical techniques when characterizing lithic sources.

*** Lithotheques: collections of comparative raw materials (session organized by Katalin T. Biró and Jehanne Affolter)**

In recent decades, the raw materials provenance studies- siliceous or otherwise - has led researchers to build reference collections or "lithothecas" in their respective countries. At the beginning, each one built up his collection in a more or less empirical way, introducing as his work progressed the sections that seemed important to him. This has led to the parallel development of several databases that partially overlap with respect to the samples described.

Since in prehistoric times borders were either non-existent or completely different from current administrative borders and boundaries, these databases often contain headings specific to each region, whether it is geographical data, material names or scientific analyses.

However, the current trend is to network researchers in order to pool knowledge, make the results available to as many people as possible and avoid repeating the same sample collection work a thousand times over. This is ongoing work in France, for example. But since everyone has compiled in practice their catalogues according to the specificities of their region, the databases present compatibility problems that make them difficult to use by others than their respective designers.

The aims of this session will be, on the one hand to take stock of the different modes of cataloguing used in order to define the headings that should be included in all catalogues and, on the other hand, to make progress in sharing information on a European or even global scale.

*** Gemology: obsidian and quartz as gemstones (session organized by Gábor Papp, t.b.a.)**

Rocks and minerals typically used to produce knapped implements, mainly varieties of quartz, siliceous rocks and obsidian were also used to produce personal ornaments, objects of prestige and insignia, jewellery and amulets in a wide range. Moreover, the technique of knapping by heavy and light percussion tools was applied in producing more prestige and ornamental items made of rocks and minerals, often encountered in long distance trade.

We invite lectures and communications on these specific utilisation of the lithic raw material, their characterisation and technological studies.

*** Experimental flint knapping (session organized by Tóth, Zoltán Henrik and Robert Graf)**

Experimental flintknapping is one of the most exciting area of archeology for both researchers and amateurs. Flintknapping survived stone age. Blades for mediterranean threshing boards (lat. tribulum, turkish döven) as well as replicas and modern interpretations of ancient stone tools have to be knapped. Modern surgery also benefits from obsidian blades, the using of arrows with knapped points becomes more and more common for bowhunting.

The knowledge of mining and processing raw materials for knapping helps to bring us closer to many problems (e.g. heat- and water treatment; flintknapping strategies; archaeometry, etc.). Experimental flintknapping usually does not stop at the finished stone tool: it includes the documentation of using (cutting, hunting, scraping etc.) the hafted blade/insert, too.

In this section, you have the opportunity to present your results of the various flintknapping strategies We envision some of the following broader themes to be addressed: technological descriptions of the production process, the functionality of blades/bladelets, their evolution over time, their relation with the flake productions. Of course, any other presentation related to the experimental flintknapping is welcome.

*** Blade and bladelet evolution in Europe from the Middle Palaeolithic to the Transitional Period - A technological revolution or contingent changes? (session organized by Giulia Marciani and Leonardo Carmignani)**

Traditionally the production of a sequence of blades and/or bladelets on the European continent was considered a distinctive trait of modern behaviour. However, a preference towards laminar/lamellar production has been documented dating from the Middle Palaeolithic (MP). This issue is a crucial topic in current scientific prehistoric debate, not least because of the role of elongated tools in the transition to the Upper Palaeolithic (UP) and the possible mutual influences between different groups which populated the European continent.

Over time, blades were produced utilizing a variety of debitage concepts which differ in their conceptual idea and in the final technical features of the desired products. Furthermore, bladelets production in MP, even less frequent than blades, constitute a burning issue that remain still poorly understood.

The purpose of this session is to invite reflections on the blade/bladelets phenomenon: the aim is to discuss the validity of the paradigm of “blade/bladelets = modernity”.

We intend to disentangle this issue working towards a definition of the various debitage concepts, methods and techniques used to produce blades and bladelets. We want to evaluate their relations and evolution over time, considering specific contextual issues: possible raw material constraints, their functions, their production systems and their temporal and spatial distribution over time.

In particular, this session wants to encourage the discussion of the role of blades/bladelets production in the course of human evolution.

We envision some of the following broader themes to be addressed: technological descriptions of the production process, the functionality of blades/bladelets, their evolution over time, their relation with the flake productions.

We encourage presentations of specific cases, as well as contributions related to the state of the arts in the various European regions.

* Lithic technology of recent periods: Modern and Mediaeval (session organized by Michael Brandl and Gerhard Trnka)

This session explores the breadth of technologies and economic backgrounds involved in the post-prehistoric use of siliceous raw materials. Although the heydays of chipped stone tool technology lie in deep prehistory, specific elements of this economic branch survived significantly longer. Oftentimes under-regarded in archaeological research, the use of siliceous raw materials for various tasks was pervasive until very recently. Examples include fire making as the most persistent phenomenon, implements for threshing sledges, glass and porcelain production and nota bene the military significance in the form of gunflint production.

During the first half of the 16th century, the prototype of the flintlock mechanism was developed in Spain and eventually took over during the 17th century. The increasing need for gunflints used for the flintlock resulted in the establishment of extensive gunflint industries throughout Europe between the late 17th and early 19th centuries. The largest centers were located in England (Brandon) and France (Meusnes), and in former Galicia (now Poland and the Ukraine) supplying the Austrian army predominantly during the Napoleonic Wars. Gunflint industry consequently gave rise to a final boom in lithic technology.

Research has laid more attention on these recent phenomena of lithic technology during the last decades, resulting in a plethora of scientific publications (e.g. Ballin 2012; Emy 1978; Luedtke 1999; Weiner 2012). However, the field is still in its incipient stages. Therefore, we want to encourage researchers to present newest outcomes and the state of the art in post-prehistoric lithic studies, specifically the technological and socio-economic background of the various uses of siliceous materials.