LITOTHECA - AN EFFECTIVE HELP FOR PROVENANCE STUDIES
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Background

The determination of the sources of archaeological finds is one of the most current problems in archaeological research. The main reasons for this probably lie in two factors:

1. Typology, being very well-, sometimes over-, developed has certainly reached its limits in answering our questions concerning the human past.

2. Quick, effective, non-destructive analytical techniques have now been developed, with the help of which we have the hope of answering very specific questions concerning the movements of objects prospected, exploited and worked by prehistoric people.

In this article, I would like to comment on related efforts concerning a single element of human material culture, in the form of stone tools. Today, these have a very subordinate role in human life. In the remote past, stone tools were essential equipment, and constitute the bulk of archaeological finds from early prehistoric times.

The need to determine the source of stone artefacts arose early. In Hungary, the first pioneers of prehistory expressed an interest in the topic (Bömer 1866), and many individual efforts were devoted to the determination of the provenance of lithics on significant Palaeolithic sites such as Széleta cave (Vendel in Kadic 1915), Szulayuk cave (Vendel in Kadic 1938), or the open settlements of Erd (Dienes in Gábor-Csák 1968) and Tata (Végh-Viczői in Vértes et al. 1964).

If we look carefully at these sites, we discover that none of them lies far from the source area of its raw material, whether mountain region sites or gravel beds, and that, except for a small portion of the Széleta material, they are fairly old - Middle Palaeolithic or early Upper Palaeolithic. The raw material determination of younger sites lying further from the contemporaneous regions, such as the Upper Palaeolithic Ságvár or the Late Palaeolithic/Epipalaeolithic Székszár, are seemingly less developed, with only brief remarks on the general types of raw materials (Gábor 1964, 1965; Vértes 1962). The geologist making the analyses is quite often not named. We know, however, from personal communication that the stone artefacts were examined by one of the leading personalities of those days, E. Vádász, a distinguished geologist and author of the still-indispensable manual Geology of Hungary (Vádász 1960). So the material was in the very best hands. Can we give a reason therefore, why the best-informed geologist of those times could make no sufficient determination?

Two very important factors which we must mention here are time and interest. Vádász, being a very good geologist, devoted all his interest and time to geology. He recognised the kind and geological age of the lithics as being 'mesozoic silices', and deduced the two nearest regions where such rocks can be found, '... of the Mecsek and Szakony Mountains'. Certainly, he was right. Without a very detailed, laborious and time-consuming study of each raw material outcrop within a very wide geographical region nobody can say more. But is this determination enough for a prehistorian? I believe not.

As we move forwards in time, things get worse and worse. For the Holocene assemblages, even the typological elaboration of the materials is missing, apart from rare exceptions, until the mid-1970s (Bácskay 1976). The investigation of historical and recent stone tools has only just started (Hála 1986; Biró 1987). And as we get nearer to the present the geographical range of potential provenances gets wider. The range of contacts gets wider, documented, on the basis of obsidian distribution, to a radius of 500 km from the Upper Palaeolithic onwards (Biró 1984), and even more by the Late Neolithic (Williams et al. 1984). Obsidian, however, is only one of a number of raw material types used by prehistoric man, certainly a very good indicator for distribution studies, but not sufficient to answer more complex questions of supply, contact and trade.

The LITOTHECA

For a better knowledge of different raw materials, the Hungarian Geological Survey started a systematic survey of raw material outcrops yielding rocks suitable for the manufacture of stone artefacts. A brief summary of the work started by the proceedings of the International Flint Symposium (Biró 1986). On the basis of fieldwork, a systematic survey of collections, and great help from geologists working in different regions of the country, it was possible to create a map and a detailed, meaningful, meaningful units among the raw material varieties, as had previously been done for Poland (Lech 1981), Czechoslovakia (Biró 1987), Britain (Prichystal 1980) and Bulgaria (Bachev 1984). Working on the actual lithic assemblages, however, we could certainly feel existing deficiencies: the lack of comprehensive knowledge of all the important raw material varieties that were accessible - not to us, but to the prehistoric population of the region. Speaking for Hungary, this means at least the whole Carpathian Basin, and even beyond, as documented by the quite frequent finds of Polish raw material types in Hungary.

Largely to satisfy this need, we organized the First International Conference on Flint Mining and Lithic Raw Material Identification in the Carpathian Countries, where Hungarian raw materials were displayed and offered for exchange, and collecting trips arranged to the most important source regions of Hungary. At the same time, we asked for reference samples from possible geological sources in the neighbouring territories, utilized in the archaeological assemblages. The resultant material is the basis of the LITOTHECA, stored and handled in the Hungarian National Museum.

The LITOTHECA is the result of the scientific knowledge of several generations of geologists and archaeologists. Nobody can pretend that all of the lithic specialists who have been researching existing sources prospected and exploited by prehistoric people during several thousand years. Still, there is no substitute for practical knowledge of the raw material itself. The solution is, naturally, proper sample collections, containing hand specimens, information, and exchange material, hopefully collaborating with a network of reference sample collections. The limits of the
collection, in geographical terms, should be the reach of the prehistorical peoples. As the distribution of indigenous material types depends on quality, aesthetic value and, to some extent, quantity, we can expect that this range of relevance will be totally different for low quality local materials and high quality material. This is true even for high quality material. This is why we might then start characterising the raw materials to be collected for long distances, whereas it might be sufficient to collect inferior quality raw materials from local sources only (Renfrew 1977; Torrence 1986).

To date, the material which we have in the LITOTHECA is fairly representative for Hungary, but certainly not convincing for the neighbouring areas. There are gaps which have to be filled mainly for Austria, Yugoslavia and parts of Romania, where systematic sourcing has not been performed as yet; and even for better-elaborated regions like Czechoslovakia, much of the evidence of which we know from the literature is missing from the collection. Neither can we be content with the collection of secondary source raw materials (pebbles) from Hungary itself. For the moment, the collection is primarily concerned with raw materials for chipped stone implements, and will hopefully be extended to polished implements as well. The fulfillment of the LITOTHECA means, in all probability, many years of hard work ahead. We hope that by means of raw material sample exchange, we can save time and work for ourselves as well as for our colleagues.

**Exchange**

The set of reference samples in itself is a most valuable help; a tool for research, like a pen or a hammer. If we want to use it properly, we need more than that: a complete set of existing information and a systematic series of analyses, covering the whole collection. This is how we can turn the LITOTHECA from a heap of stone into valuable information. This work is in the initial phase as yet. The present state of the collection was reported at the Fifth International Symposium on the Rock Art (Biró and Dobosi 1987). We have already finished cataloguing and arranging the first acquisitions (the 'Someg fond'), compiled specific information sheets for each sample containing the available scientific information on the pieces, and are just creating a proper database for the material.

In this work, we have received much help from colleagues working in related fields, and it was a most useful experience to visit the regional Lithotheca of Bordeaux, founded in 1982 and reorganized as collection since 1984 (Demars 1982). The basic difference between the French regional system (of several regional lithotecas) for each sedimentary basin and the Hungarian one lies in their scope. Based on the fact that, at least since the Upper Palaeolithic, we must think about trade and circulation of raw material exceeding existing political boundaries and geographical units, we decided on a much larger scope. This cannot be achieved without international cooperation. We therefore rely upon the help of our colleagues in many respects. At the same time we are glad to offer all the facilities and information of our LITOTHECA to anybody interested. These are the following:

1. Inspection and study of the LITOTHECA basic collection, held and curated in the Hungarian National Museum. Contact person: Dr Viola Dobosi, Hungarian National Museum H-1370, Museuim krt. 14-16, Budapest, Hungary. Parts of the basic collection are reference samples, hand specimens from any part of the world with petroarchaeological relevance, with special regard to Central and Eastern Europe, as well as the Carpathian Basin. Also as a part of the basic collection, we keep control material, analytical reference pieces (thin sections), microweansitistical preparations, and powdered samples from published analyses.

2. Access to the exchange sample collection of the more significant Hungarian sources and some foreign localities. The actual Exchange List is a part of the Data Bank: pieces can be obtained for hand specimens and analyses, together with existing information.

3. Access to the Data Bank currently set up at the Archaeological Institute, based on all the information available on the hand specimens, including name(s), synonyms, general data on the rock (occurrence, geological age, description, discriminative features, reference, analyses and known archaeological data), and specific features concerning the hand specimen (inventory number, provenance, collector, character of the source, specific description and references or analyses concerning the piece itself). The provenance data are given according to localities as well as geographical coordinates. The data Bank is intended to serve as an interactive system for the registration of increasing amount of information on the material of the LITOTHECA, and possibly to be extended to store other information of petroarcheological relevance. We are glad to offer information on any object belonging to the Liththeca.

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When completed, data for the LITOTHECA will be available from the Hungarian National Museum as well.

We do hope that, partly as a response and partly driven by the same needs, we shall for the same reasons, we shall for the exchange of information from our colleagues, as we have received already. We hope that our LITOTHECA and perhaps several similar collections might be of very great help for anybody working in raw material characterisation studies.

The LITOTHECA, however, is not a magic box that would immediately take away all existing problems in characterisation. Like it or not, we must remember that most lithic assemblages will be subjected to macroscopic analyses only (in the very best case, with further analyses on selected samples). Thus we can use the LITOTHECA in this way. What are the limits of macroscopic identification? What is the accuracy of such investigations? Where are the sources that are no longer separable from the naked eye? Do they possibly interact? Can they be separated, anyway? Or, just the other case: how many different varieties are known from one and the same source? Do they have anything in common at all? These are the first questions to decide, before extending results to the archaeological material. And, as a 'by-product', a lot of the existing problems can be cleared away: sources recognised as 'mythical sources' and rejected, references checked, terminological controversies solved. Provenance studies, I am convinced, still preserve as
much personal judgement as typology does; however, with an exchange of the most concrete evidence - the rock samples - it can be reduced to the level of fact.

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FLINT ALTERNATIVES WORKSHOP: A REPORT ON THE SEMINAR HELD AT THE ARTIFACT RESEARCH UNIT, ROYAL SCOTTISH MUSEUM, 2 – 3 April, 1987

by Sinead McCartan

Discussions of the flaked stone tools of prehistoric Britain concentrated upon the use of flint as a resource. In many areas, however, good quality flint is lacking, with the result that a wide variety of other materials had to be exploited. This presents certain problems for the archaeologist and these are only just beginning to be approached. Across northern Europe a number of lithic specialists are now involved in research related to the prehistoric exploitation of those raw materials used as alternatives to flint, and the workshop was organised to provide the opportunity for discussion of the problems encountered and suggested solutions. Participants from four European countries attended and there was also a contribution form the United States.

The proceedings got under way with an outline of the current issues facing lithics specialists in Scotland and Ireland (Wickham-Jones and Woodman). Four general questions emerged:

1. Are we aware of the range of potentially exploitably raw materials?
2. What understanding do we have of the physical properties and flaking characteristics of materials such as volcanic tuffs, slate and quartz?
3. Are we able to recognise worked alternative raw materials in the field?
4. How does the exploitation of a particular raw material affect the final tool morphology and lithic assemblage?

Subsequent lectures dealt with some of these points and papers examined the exploitation and analysis of a range of raw materials, including quartz, rhyolite, sandstone and quartzite (Henson, Clark, Holm and Taffinder). The potential and use of replicative studies was discussed (Moloney), as was that of microwear (Finlayson). In addition, one paper examined the application of theoretical models (Barber).

On the second day, practical work allowed for participants to try their skills on a selection of raw materials including rhyolite, chert, Bunter pebbles, Rhum bloodstone, and quartz. Finally, a visit to the prehistoric gallery of the Royal Museum of Scotland provided the opportunity to view at first hand the range of materials used in prehistoric Scotland.

The workshop was intended primarily as a forum for discussion and plenty of time was left for debate. Discussion was lively and intense throughout the meeting. No specific publication is intended, but further meetings are planned. In future, each meeting will concentrate upon one area of this vast subject. It is clear that there is much to learn: related research is at different stages in different countries. By providing a setting for discussion, future workshops should assist in the development of a greater understanding of the 'alternative' lithic industries.