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OF LITHIC TERRITORIES, ANCIENT AND MODERN

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Abstract. In lithic provenance and distribution studies, the used reference collection or lithotheque often constitutes the limiting factor for successful identification. Inherently limited in scope, most collections have an understandably regional focus. This frequently causes lithics "exotic" to the area to go unrecognized. As printed publication of raw material descriptions with good photos is very costly, not easily updated, and again necessarily limited in scope, digital publication on the Internet seems at the moment the only feasible road to follow. We suggest a virtual reference collection spanning the whole of Europe to counter the problem of regionalization.

Résumé. Dans les études de provenance et de diffusion des matériaux lithiques, la collection de référence utilisée, ou lithothèque, constitue souvent le facteur limitant la réussite des identifications. De portée par nature limitée, le plupart des collections se concentre, de manière compréhensible, sur une aire régionale. Cette situation a pour conséquence d'empêcher l'identification d'origine des matériaux "exotiques". Etant donné que la publication imprimée de descriptions de matières premières accompagnées de photographies de qualité est très couteuse, difficile à mettre à jour, et encore une fois de portée limitée, la publication numérique paraît actuellement la seule voie possible à suivre. Nous proposons une collection de référence virtuelle couvrant l'Europe entière pour contrer le problème de régionalisation.

Introduction

Lithic raw material provenancing studies are rightly gaining in popularity in the last two decennia as they constitute one of the best, and most objective, ways of tracing prehistoric communication and mobility. Unfortunately, the discipline is not advancing as rapidly as would be desirable due to many incompatibilities in the methods used, national and regional traditions, as well as fragmentation of information. Looking across Europe, we see a strong tendency in the north-west, e.g. Great Britain and the Netherlands, to rely on geochemical characterisations of flint (Aspinall & Feather 1972; De Bruin *et al.* 1972; Thompson *et al.* 1986; Kars *et al.* 1990), a line of research also followed with great energy in parts of Central and Eastern Europe (Biró *et al.* 2000), whereas in the francophone regions there has been a long tradition in the use of petrological, especially micropalaeontological and microfacial, methods (Masson 1981; Séronie-Vivien & Séronie-Vivien 1987).

On the other hand lithic characterisation and identification in Germany has been nearly wholly macroscopical, and in countries like Austria until the last few years virtually non-existent. Another not to be underestimated hurdle in the development of method and exchange of results is the fragmentary nature of publication and speech barriers due to publication in local or regional series.

Approaches to lithic sourcing

Apart from the practical differences mentioned above, there are two distinct, and complementary, approaches to lithic sourcing: an assemblage oriented one and a material oriented one. In the first case the provenience of raw materials in a given collection, either on a site or at a regional level, is studied to establish supply zones, cultural choices and possible ranges of contact. In the material approach the temporal and spatial distribution of a distinct raw material is studied to uncover large scale communication networks and cultural provinces.

Both types of study are based, and this is of course a truism, on the correct identification of the raw materials present. Theoretically a positive identification can only be made by exclusion of all other possible materials. This would require a reference collection containing samples of all possible lithic sources, even if they should have no known prehistoric use. As this is clearly impossible, the most practical approach is to restrict any used lithotheque to regional materials, which usually represent over 90% of all identified materials, supplemented with those long distance materials known to occur in the region.

This is where material oriented research starts to play a very practical role. It is only possible to decide which materials can be expected to occur in a region, and should be included in the local collections for reference, when spatial and temporal

distribution of a lithic resource are adequately known. But as large supraregional distribution studies can only be based on previously published sites, this may soon lead to a vicious circle. Less well-known materials remain unrecognised, and end up in the "unknown/other" group and therefore give an incomplete picture of the true material distribution.

Three recent examples and a classical case

To illustrate the problem outlined above, we would like to give a few examples where this deadlock was broken, resulting in new insights into prehistoric contacts and communication networks.

Lessini Flint

Before the 1990s, transalpine flint transport was thought to be nonexistent. With the find of the "Iceman" at the Hauslabjoch and the identification of his lithic tools as being made out of Lessini flint from Northern Italy, a few Southern German archaeologists started to wonder if this material might have crossed the Alps in other contexts. Only two years after the find of "Ötzi", the first article listing nine daggers made out of Lessini flint in Bavaria, some of which had gathered dust in collections for decennia, was published (Tillmann 1993). The flint from the Monti Lessini and the neighbouring area of Val di Non is now being identified regularly within Late Neolithic sites in all of Southern Germany and large parts of the Northern Alpine region.

Szentgál Radiolarite

The typical red silex from Szentgál-Tüzkoveshegy, in the Hungarian Bakony Mountains just north of Lake Balaton, has been a well-known raw material source in the Carpathian Basin for a long time. After small excavations on the mining site in the mid-1980s, the resulting publication (Biró & Regenye 1991) and subsequent studies on the material's distribution insured a widespread recognition of this type. Szentgál radiolarite has by now been identified in much of Central Europe, as far as the Rhine-Main-confluence in Western Germany, nearly 800 kilometres from the source (Gronenborn 2003). It may be safely assumed that if high quality colour photographs had been available in the international literature of this extremely typical flint, these long-distance connections would have been uncovered long before.

Grand Pressigny/"Silex tertiaire rubané"

In a large-scale material oriented study covering Belgium, Luxembourg, The Netherlands and the north-western part of Germany, all artefacts published as being made out of the famous Grand Pressigny flint from Western France were reviewed (Delcourt-Vlaeminck 1998). Out of the 360 pieces that could be located in musea and private collections in this region, only 189 pieces could be positively identified as being made of Touraine flint, which gives a staggering misidentification rate of 47.5%. It seems that the going practice had been to describe anything that is dagger-like, brownish and made out of non-local flint as Grand Pressigny.

An unexpected, and very positive, spin-off of this study was the discovery that over 20% of the reviewed material was made of tertiary chert from the Paris Basin, more commonly known as Romigny-Lhéry Flint, thus uncovering a new network of long-distance distribution of lithic material. The formerly assumed similarity between such, even on a macroscopic level, fundamentally different raw materials, underlines the necessity of not only precise genetic and petrological description of material types but also a comprehensive system to ensure their widespread availability.

Helgoland flint

At the 1983 IVth International Flint Symposium a geological paper on the red Turonian flint from Helgoland was presented (Schmid 1986). An attending Dutch archaeologist suddenly realised that one of the pieces in the collection of the museum where he worked must haven been made out of this very typical material. In a by now classical study he then reviewed a large number of collections in Northern Germany and the Netherlands and was able to outline the distribution of this type of material in the Neolithic and Bronze Age (Beuker 1988).

The examples above illustrate the immediate benefits that result from a presentation of source characteristics to an international community of lithic researchers, by both descriptive and visual means. Unfortunately, the lack of a structural platform for data interchange between specialists leads to a situation where, even when individual sources are studied in depth, this knowledge often remains within a regional or even local scope.

Towards a European reference collection

By now, there must exist dozens, if not hundreds, of larger and smaller reference collections, covering nearly the whole of Europe. Most of these are only cursorily published, if at all, and knowledge about their existence, and access to them, is often restricted to a few local specialists.

To counter regionalization and promote knowledge about lithic materials across national, and often even regional, boundaries the information amassed locally should be made public much more efficiently. To reach this goal, there are several ways that can be followed. One possibility is to create a centralised, Pan-European reference collection. A project to do so was already started in the 1980s, in the form of the central LITHOTHECA (Biró & Dobosi 1991; Biró *et al.* 2000) in the Hungarian National Museum in Budapest. Useful as such a central depository is, there are several problems attached to it, the most important of which are the physical storage in just one place and the detachment of the stones from their regional contexts.

The second approach is to publish regional lithotheques fully in print, as has been done exceedingly well in two very recent publications on the north-western parts of the Alpine Arch (Affolter 2002; Bressy 2003). The disadvantages of this form of publication are the enormous costs of printing full

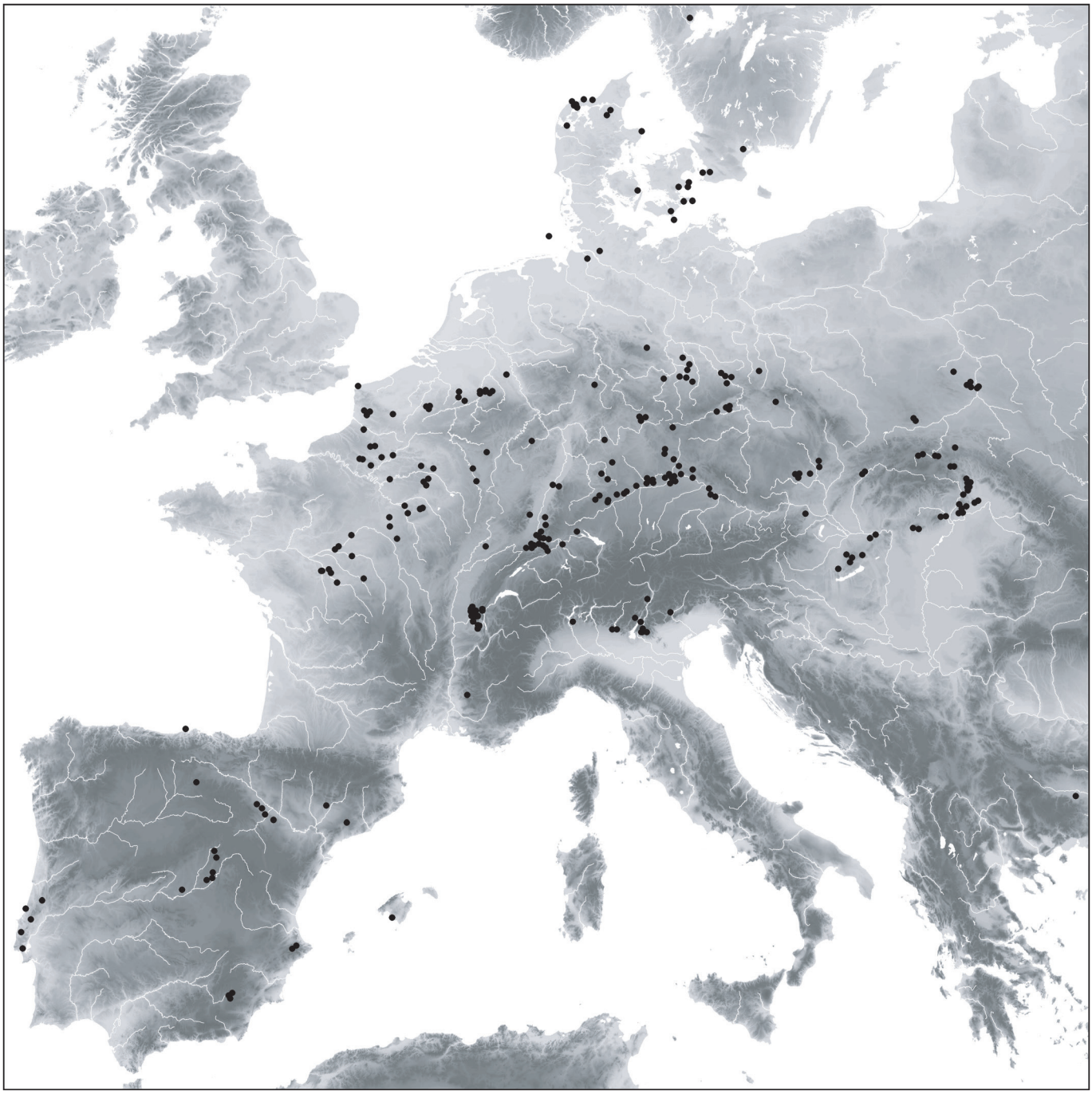

Figure 1. Distribution of samples in the FlintSource collection (january 2005).

details on exposures and sites, especially the reproduction of high-quality (micro)photographs, and the fact that errors and omissions cannot be easily corrected. Again, such a publication can only be regional in scope, and frequently regional series are not easily available in many smaller and less specialised libraries.

Currently, the most accessible, cost-effective and maintainable method for publication of graphics-heavy data like raw material descriptions is the Internet. Unfortunately, this possibility has been nearly completely neglected until now. In all, there are only three European websites with in-depth presentation of lithic raw materials: one regional (Bavaria, Southern Germany), one national (the Hungarian materials from the aforementioned LITHOTHECA), and one international: FlintSoure.net.

A possible online platform for lithic sourcing

The FlintSource project started in 1999 as the combination of two small reference collections for projects in The Netherlands and Eastern Germany. It has been our goal to combine precise locational information on lithic sources with raw material descriptions, high resolution photos and general archaeological descriptions on extraction, distribution and use of the different types of material. Another focus has been to create an extensive, up to date literature list, covering all aspects of lithic raw material studies.

As work progressed, it became clear that the database should cover most of Central and Western Europe to contain all raw materials that could be expected in those regions, and the project quickly grew towards an all-European enterprise (fig. 1). Out of dissatisfaction with the inaccessibility of most existing collections, it was decided to make the data in the course of time available to a wider public. Being a ongoing project, publication on the internet with its unrestricted access as well as good possibilities for expanding and updating presented itself as the most practical solution.

This approach eliminates problems such as accessibility and difficulties connected with the publication of high-resolution photos as well as content maintenance, but it does not address the fundamental problem of regionalization of knowledge. By actively building a physical collection, the samples are dislodged from their regional context and local unpublished information about the sources is not taken into account. In the worst case this could lead to a distorted image of the uniqueness or prehistoric use of individual sources or materials. To solve these shortcomings, input by regional lithic specialists as well as the incorporation of existing collections would be necessary. At the moment of writing one such project is in progress for the Bugey area in eastern France, and others are in preparation.

The Flintsource.net website offers at the present time a practical platform for flexible publication of lithic raw materials, either as a point of entry for other web-based or printed resources or as a medium for in-depth description of individual types and sources. Future plans include the possibility for the publication of either original articles or of those that have appeared elsewhere in print and might be difficult to find for foreign specialist, as well as the creation of a newsletter for international information and discussion. In this way we hope to widen the scope of lithic raw material research and invite all colleagues to contribute to the project.

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