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LITHIC RAW MATERIAL DISTRIBUTION NETWORKS AND THE NEOLITHIZATION OF CENTRAL EUROPE

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The Linear Pottery Culture (LBK) is traditionally viewed as the earliest fully developed Neolithic culture in Central Europe. Contemporaneous pottery traditions such as La Hoguette or Limburg might to a certain degree have been associated with farming or horticultural practices, but the economy still should have been largely based on hunting and gathering (Erny-Rodmann *et al.* 1997; Kalis *et al.* 2001). According to the 14C-dates from traditional archaeological sites but also from palaeobotanical studies where human impact was dated, LBK should have made its appearance along the Rhine river by 5500 cal BC (Schweizer 2001) and should begin 100 to 150 years earlier in eastern Austria, western Hungary and Slovakia. These early manifestations of LBK have been termed "earliest" (Germ. *älteste*) LBK and are stylistically, technologically and economically distinguishable from later phases (Quitta 1960; Meier-Arendt 1966; Gronenborn 1999). Despite repeated postulations, that LBK evolved out of local Late Mesolithic traditions throughout Central Europe (Tillmann 1993; Otte and Noiret 2001), a more complex scenario of farmers migrating from the western Carpathian Basin and the acculturation of local groups into the newly founded settlements seems more plausible (Gronenborn 1997 ; 1999 ; Price *et al.* 2001). The combination of migration and local adaptation is visible in the lithic industry of the earliest LBK.

During Earliest LBK times all of the raw materials utilized at any of the sites have been manufactured into the complete tool range. Production has taken place locally as all major raw materials are represented by discarded waste flakes. Hence, during Earliest LBK none of the siliceous raw materials seem to have had a role as prestige items. The exchange of siliceous rocks and the manufacture of tools were part of ordinary economic activities. Earliest LBK craftsmen obtained the raw-materials for their tools from a variety of sources. Apart from several long distance networks many local or regional systems existed (Gronenborn 1997, 105-119). Generally these exchange networks, local, regional, or supra-regional have operated either internally or externally. Internally operating networks were those which were maintained by the LBK communities themselves, while external networks incorporated individuals or groups which were not part of the Earliest LBK societies. In order to understand the multiple and diverse social processes underlying these networks it is helpful to take a closer look at four long distance distribution systems. Two of these are based on internal connections:. that of radiolarite from the Bakony Mountains in Transdanubia and that of chert from Wittlingen on the Swabian Alb (fig. 2). The other two are based on external contacts, that of flints from the Maas Valley region and that of obsidian from Tokaj in the east Hungarian Bükk mountains (fig.1).

Obsidian was used widely during the sixth and seventh millennium B.C. in the eastern Carpathian Basin (Willms 1983). The beginnings of this distribution network go back as far as the Paleolithic (Radovanovic 1981, 100 ; Biró 1984) but a first peak was reached with the onset of an agrarian subsistence, during the Proto- Starcevo Culture (Vlassa 1972, 185-186). At this time obsidian was already taken north across the Carpathian ridge as it was found in Polish Late Mesolithic sites (Kozlowski 1989, 202). During the following centuries the amount rarely rises above 10 % at Starcevo-Körös sites but increases at the times of the early AVK (Kalicz and Makkay 1976) near the outcrop (fig. 1a). At Earliest LBK sites the presence of this material indicates external contacts, in this case to late Körös and early AVK.

External contacts are also evidenced on the western margins of Earliest LBK distribution range. At several sites in Hesse flint varieties from the Maas valley sources were found in different percentages, among which flint from the Vetschau/Lousberg outcrops near Aachen, Germany, seems to have been of considerable importance for the initial phases (Gronenborn 1997 b, 261). Rijckholt-flint from a source in the southern Netherlands is of major importance for the transitional periods to phase II. The outcrop at Rijckholt conti-

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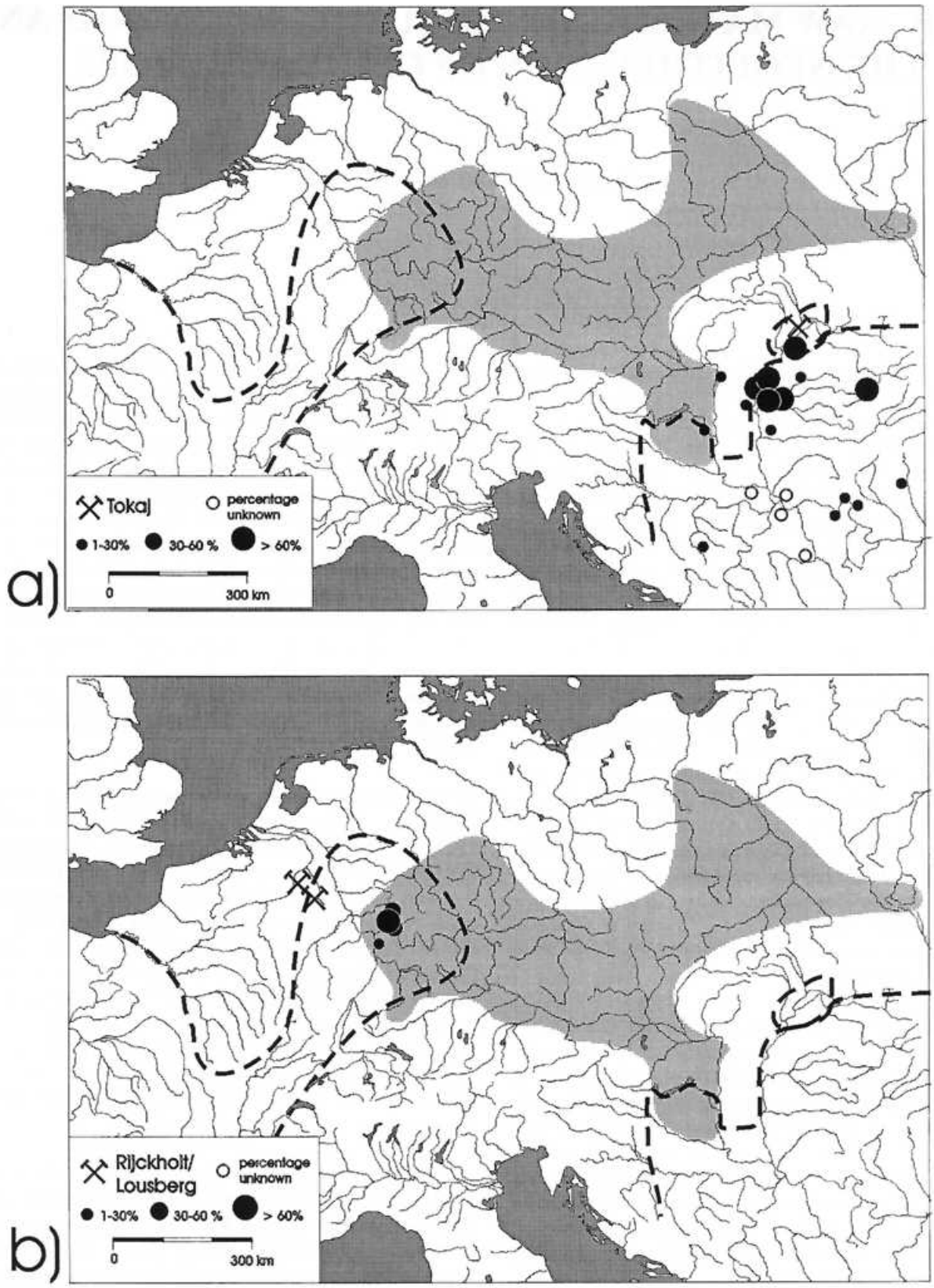

Figure 1. External lithic distribution network systems of Earliest LBK. Mapped are the distribution areas of La Hoguette, earliest LBK, Szatmár, and Stacrevo-Körös-Cris cultures. a) Obsidian; b) Mass-valley flints (after GRONENBORN 1997, 1999).

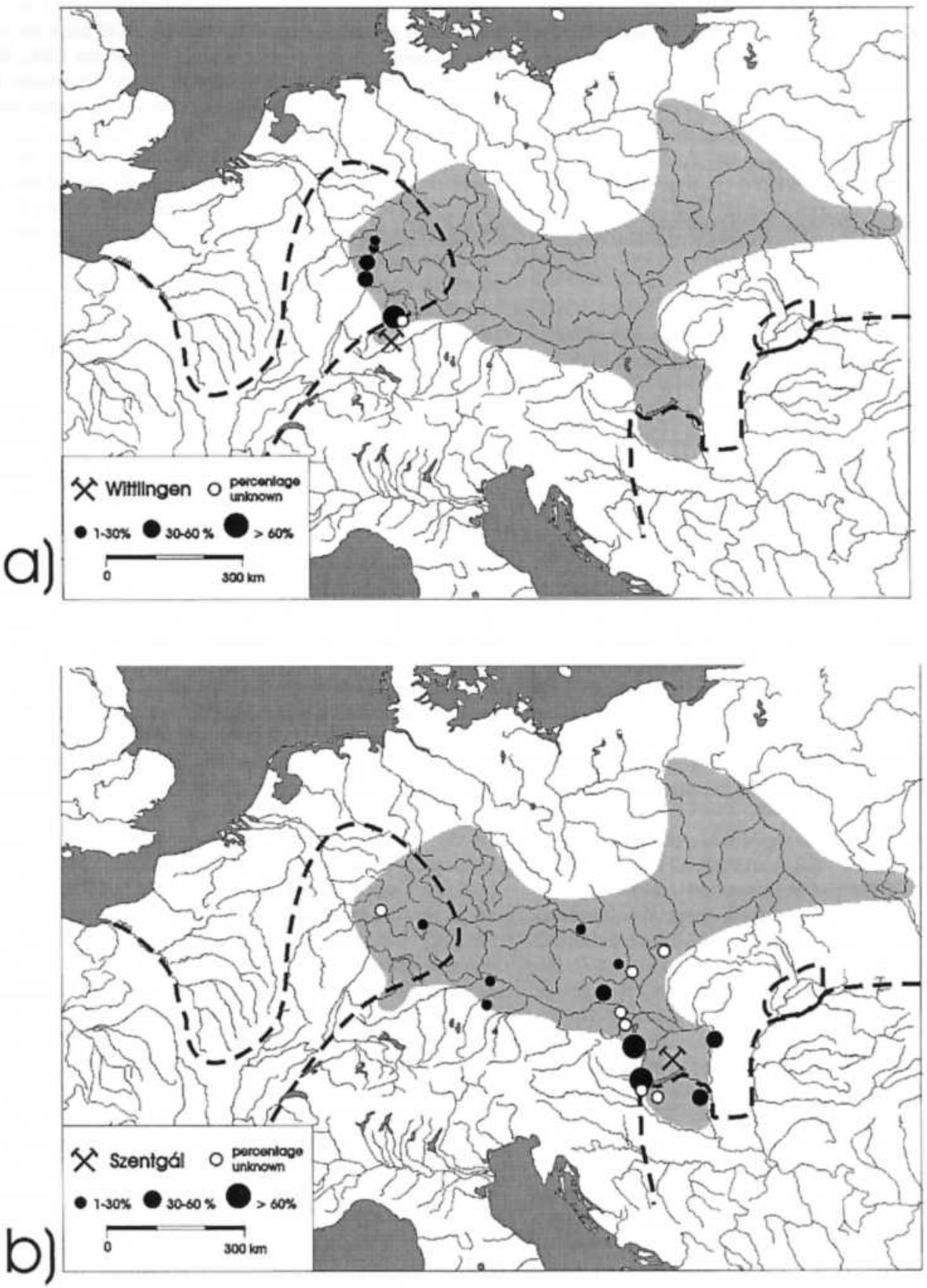

Figure 2. Internal lithic distribution network systems of Earliest LBK. a) Wittlingen chert; b) Szentgál radiolarite in earliest LBK and late Starcevo (after GRONENBORN 1997, 1999; KIND in prep.; MATEICIUCOVA 2001).

nued to be exploited during later LBK times (Zimmermann 1995, 110-115) and was mined extensively during the Aeneolithic (de Grooth 1991). The origins of the distribution system of Maas valley flint antedates the Neolithic period by millennia (Gronenborn 1997 a). Another Mesolithic raw material distribution system that has been incorporated into LBK society is that of chert from Wittlingen on the Swabian Alb (Abb. 2a). It was utilized in Mesolithic times and transported over considerable distances during the Late Mesolithic (see above), but later incorporated in the LBK networks. Such cherts have been found on several sites in Hesse and along the Upper Neckar. A contact network is indicated which reached down to the Rhine River and further to the Rhine-Main confluence area (fig. 1b).

A most notable raw material distribution system indicating supra-regional internal contacts is the one of radiolarite from the Bakony Mountains in Transdanubia, particularly the so called Szentgál variety. During the Earliest LBK Szentgál type radiolarite is distributed widely within the Carpathian basin (fig. 2b). The flaked stone assemblage from Pityerdomb, a site with Late Starcevo and earliest LBK components at the eastern margins of Transdanubia is exclusively composed out of Szentgál material (Bánffy 2000a, 377 ; 2000b, 179) and at the site of Neckenmarkt it still dominates the spectrum with about 90 % (Gronenborn 1997a, 20). The rate decreases further away from the outcrops and reaches about 30 % at the site of Brunn II (Gronenborn 1997a, 60; Mateiciucová 2001). But Szentgál type radiolarite was distributed much further west, as far as a site in the Rhine-Main confluence region where it is present with about 1 % (Gronenborn 1999, 169). This is at a distance of about 800 km from the source. Thus the distribution system of Szentgál radiolarites is certainly among the most extensive distribution networks of siliceous rocks during the Early Neolithic in Central Europe (Gronenborn 1994a, 138). The origins of this impressive network lie in the regional Mesolithic cultures of the Carpathian Basin. The material was used during Mesolithic times (Biró and Regenye 1991, 348-349 ; Biró 1991 ; Kertész 1994, I. Mateiciucová, personal communication) in eastern Hungary. Also it is found in considerable amounts on Starcàevo sites (Kalicz *et al.* 1998, 167). But presently there is no evidence that either during the Early or Late Mesolithic Szentgál type radiolarite was used in Bavaria or Lower Austria, although admittedly sites dating to the latter period are extremely scarce. It thus seems quite likely that the rapid and far reaching expansion of the distribution system to the west was ignited by the onset of the Earliest LBK. But the network did not continue for any greater length of time and seems to have collapsed with the beginning of phase II of the LBK (Gronenborn 1999, 169). From then on Szentgál type radiolarites continued to be distributed regionally within the later LBK in Transdanubia and remain of considerable importance in the Carpathian Basin up to the Aeneolithic (Biró and Regenye 1991, 348-349 ; Biró 1998).

Lithic technology in Earliest LBK times clearly derives from general Late Mesolithic traditions. It is based on the production of regular blades out of which a large proportion of tool types were manufactured, notably trapezes (fig. 3, 3). Apart from the trapeze other microlith types were used in various sub-regions of the overall distribution area of Earliest LBK, often indicating external contacts. One of these are triangular points at the western margin of Earliest LBK, the above mentioned so-called "Danubian points". Examples of these have been found at two sites in Hesse, associated with La Hoguette pottery and Maas Valley flints (fig. 3, 1-2). Several sites in southern Germany produced so-called asymmetric trapezes (fig. 3, 5). These are regionally limited and do not occur further east and are also considered to be a local Mesolithic component. A lunate was found at the site of Neckenmarkt in Austria (fig. 3, 6). In Central Europe such microliths have disappeared with the beginning of the Late Mesolithic, however they have remained regularly in use in southeastern Europe and are equally found in other Early Neolithic assemblages. Thus lunates in southeastern Earliest LBK assemblages demonstrate that the Transdanubian LBK lithic industry was influenced by surrounding groups and was well rooted in regional traditions. This is also becoming apparent in the ceramic assemblage of Pityerdomb where stylistic elements of earliest LBK pottery are associated with the late Starcevo tradition (Bánffy 2000).

Apart from microliths, scrapers, borers, and various cutting tools complemented the range of the Earliest LBK tool-kits. Of particular interest is a certain type of borer at the site of Schwanfeld in Frankonia (fig. 3,4). These borers resemble the so-called *mèches de forêt* of the late Early Mesolithic Sauveterrien of south-western France and northern Italy, a tradition which might have spread to Bavaria during the Late Mesolithic (Heinen 1998, 144; Street *et al.* 2001, 408 ff.). Hence stylistic resemblances to local traditions are evident in the complete tool range of Earliest LBK sites. Summing up all observations on lithic technology, typology and raw material distribution systems, it is presently possible to forward the general hypothesis that Earliest LBK lithic assemblages are composed of both surpa-regional as well as local traditions in raw material distribution, typology and technology (Gronenborn 1997a). Supra-regional traditions partly go back to a general Mesolithic heritage observed in all Early Neolithic lithic assemblages in Europe, but as in the case of Szentgál radiolarites some supra-regional phenomena can be attributed to the rapid spread of the Neolithic of Danubian tradition from its core zone in Transdanubia towards the west. Because of its rapidity this spread would have to be attributed to human migration (Gronenborn 1999 ; Petrasch 2001). Local traditions are interpreted as evidence for contact between Earliest LBK settlers and surrounding non-LBK groups (Gronenborn 1994a, 145-147).

Bibliography

BANFFY, E., 2000, Neue Daten zur Entstehung der Bandkeramik. In Karanovo Band III. Beiträge zum Neolithikum in Südosteuropa, edited by S. Hiller u. V. Nikolov. Wien: Phoibos, p. 375-382.

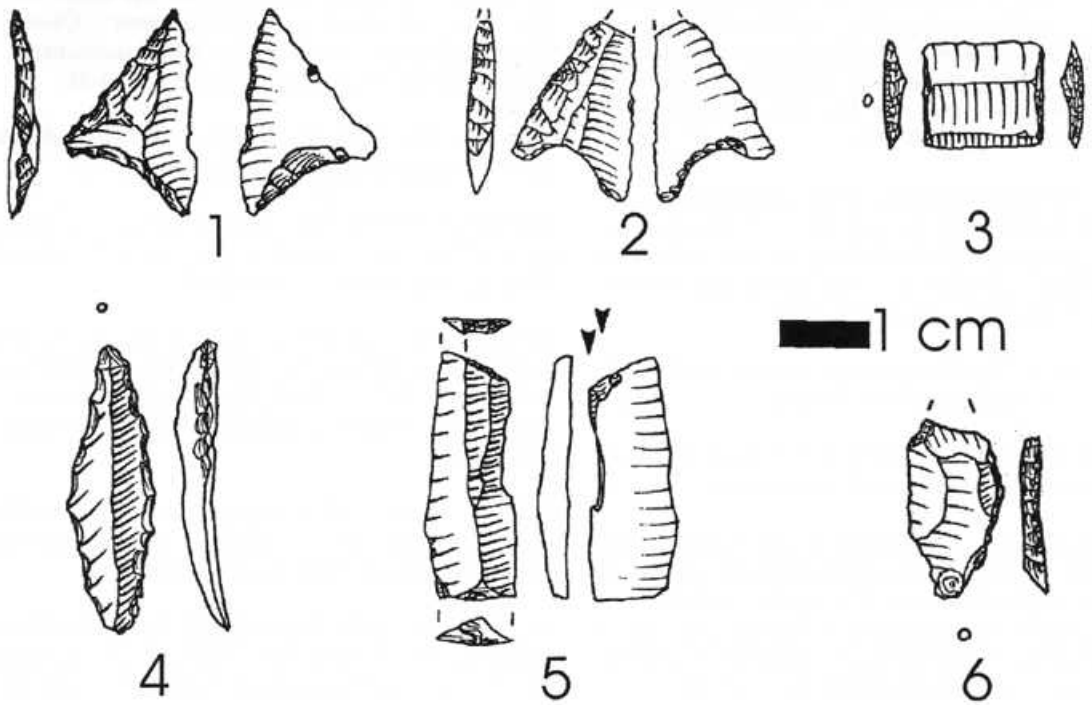

Figure 3. Earliest LBK tools and microliths (all after GRONENBORN 1997). 1-2 So-called pointe danubien (1. Bruchenbrücken, 2. Goddelau, Hessia, Germany); 3 trapeze (Enkingen, Bavaria, Germany); 4 mèche de forêt (Schwanfeld, Austria); 5 asymmetric trapeze (Mintraching, Bavaria, Germany); 6 lunate (Neckenmarkt, Austria).

BANFFY, E., 2000, The Late Starcevo and the Earliest Linear Pottery Groups in Western Transdanubia. In 7th Neolithic Studies. Documenta Praehistorica XXVII. Oddelek za Archeologijo Univerza v Ljubljani: Lubljana, p. 173-186.

BIRÓ, K., 1984, Distribution of obsidian from the Carpathian sources in Central European palaeolithic and mesolithic sites. *Acta Archaeologia Carpathica* 22, p. 5-42.

BIRÓ, K , 1991, Lithic industries in Hungary during the existence of Vinca culture. *Banatica* 11, p. 33-36.

BIRÓ, K.T., & REGENYE, J., 1991, Prehistoric workshop and exploitation site at Szentgál-Tüsköveshegy. *Acta Archaeologia Hungaricae* 43, p. 387-410.

BIRÓ, K. T., 1998, *Lithic Implements and the Circulation of Raw Materials in the Great Hungarian Plain during the Late Neolithic Period*. Hungarian National Museum (Budapest 1998).

ERNY-RODMANN, CH., GROSS-KLEE, E., HAAS, J. N., JACOMET, ST., & ZOLLER, H., 1997, Früher "human impact" und Ackerbau im Übergangsbereich Spätmesolithikum-Frühneolithikum im schweizerischen Mitteland. *Jahrbuch der Schweizerischen Gesellschaft für Ur- und Frühgeschichte* 80, p. 27-56.

GRONENBORN, D., 1994, Überlegungen zur Ausbreitung der bäuerlichen Wirtschaft in Mitteleuropa - Versuch einer kulturhistorischen Interpretation ältestbandkeramischer Silexinventare. Praehistorische Zeitschrift 69/2, p. 135-151.

GRONENBORN, D., 1997a, Silexartefakte der ältestbandkeramischen Kultur. Mit einem Beitrag von Jean-Paul Caspar. *Universitätsforschungen zur prähistorischen Archäologie* 37. Bonn: Habelt.

GRONENBORN, D., 1997b, Die Steinartefakte. In Ein Siedlungsplatz der Ältesten Bandkeramik in Bruchenbrücken, Stadt Friedberg/Hessen, edited by J. Lüning. *Universitätsforschungen zur prähistorischen Archäologie* 39. Bonn: Habelt, p. 257-332.

GRONENBORN, D., 1999, A variation on a basic theme: The transition to farming in southern Central Europe. *Journal of World Prehistory* 13, p. 123-210.

GROOTH, M. E. TH. de, 1991, Socio-economic aspects of Neolithic Flint mining : a preliminary study. *Helinium* 31/2, p. 153-189.

HEINEN, M., 1998, *Mèche de Forêt* - eine charakteristische aber weitgehend unbekannte Werkzeugform des Mesolithikums. In *Aktuelle Forschungen zum Mesolithikum*, edited by N. J. Conard & C.-J. Kind. Urgeschichtliche Materialhefte 12. Tübingen : Mo Vince, p. 133-146.

KALICZ, N., & MAKKAY, J., 1976, Frühneolithische Siedlung in Méhtelek-Nádas. *Mitteilungen des Archäologischen Instituts Budapest* 6, 13-24.

KALICZ, N., VIRAG, Z. M., & BIRO, K. T., 1998, The northern Periphery of the Early Neolithic Starcevo Culture in Southwestern Hungary - a case study of an excavation at the Lake Balaton. In Neolithic Studies, edited by M. Budja. *Documenta Praehistorica* 25. Univerza v Ljubljani, Filozofska Fakulteta (Ljubljana 1998), p. 151-188.

KALIS, A. J., MEURERS-BALKE, J., VAN DER BORG, K., VON DEN DRIESCH, A., RÄHLE, W., TEGTMEIER, U., & THIEMEYER, H., 2001, Der La-Hoguette-Fundhorizont in der Wilhelma von

Stuttgart-Bad Cannstatt. Anthrakologische, archäopalynologische, bodenkundliche, malakozoologische, radiometrische und säugetierkundliche Untersuchungen. In Zeit-Räume. Gedenkschrift für Wolfgang Taute Band 2, edited by B. Gehlen, M. Heinen & A. Tillmann. Deutsche Gesellschaft für Ur- und Frühgeschichte / Rudolf Habelt (Bonn 2001), p. 649-672.

KERTÉSZ, R., 1994, Late Mesolithic chipped Stone industry from the site Jástelek I (Hungary). In A Kökortól a Középkorig - Tanulmányok Trogmayer Ottó 60. Születésnapjára/ Von der Steinzeit bis zum Mittelalter - Studien zum 60. Geburtstag von Ottó Trogmayer, edited by L. Gábor. Szeged, p. 23-39.

KIND, C.-J., in prep., Die Steinartefakte aus der Siedlung der ältesten Bandkeramik von Rottenburg-Fröbelweg.

KOZLOWSKI, S. K., 1989, Mesolithic in Poland. A new Approach. Warszawa: Wydownictwa Universytetu Warszawskiego.

MATEICIUCOVA, I., 2001, Silexindustrie in der älstesten Linearbandkeramik-Kultur in Mähren und Niederösterreich auf der Basis des Silexindustire des Lokalmesolithikums. In From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in the Damjanich Museum of Szolnok, September 22-27, 1996, edited by R. Kertész & J. Makkay. Archaeolingua 11, p. 283-300.

MEIER-ARENDT, W., 1966, Die bandkeramische Kultur im Untermaingebiet. Veröffentlichungen des Amtes für Bodendenkmalpflege im Regierungsbezirk Darmstadt Heft 3. Bonn: Habelt.

OTTE, M., & NOIRET, P., 2001, Le Mésolithique du Bassin Pannonien et la formation du Rubané. *L'Anthropologie* 105, p. 409-419.

PETRASCH, J., 2001, "Seid fruchtbar und mehret euch und füllet die Erde und macht sie euch untertan": Überlegungen zur demographischen Situation der bandkeramischen Landnahme. *Archäologisches Korrespondenzblatt* 31, p. 13-26.

QUITTA, H., 1960, Zur Frage der ältesten Bandkeramik in Mitteleuropa. *Prähistorische Zeitschrift* 38, 1-38.

RADOVANOVIC, I., 1981, Padina - Early Holocene flint industry from the site of Padina in the Iron Gates. *Archeologicke Institute Belgrade Materialiae* Vol. 4. Belgrade.

STREET, M., BAALES, M., CZIESLA, E., HARTZ, S., HEINEN, M., JÖRIS, O., PASDA, CL., TERBERGER, TH. & VOLLBRECHT, J., 2001, Final Palaeolithic and Mesolithic Research in Reunified Germany. *Journal of World Prehistory* 15/4, p. 365-453.

TILLMANN, A., 1993, Kontinuität oder Diskontinuität? Zur Frage einer bandkeramischen Landnahme im südlichen Mitteleuropa. *Archäologische Informationen* 16/2, p. 157-187.

VLASSA, N., 1972, Eine frühneolithische Kultur mit bemalter Keramik der Vor-Starcevo-Körös-Zeit in Cluj-Gura Baciului, Siebenbürgen. *Prähistorische Zeitschrift* 47, p. 174-197.

WILLMS, CHR., 1983, Obsidian im Neolithikum und Äneolithikum Europas. Ein Überblick. *Germania* 61/2, p. 327-351.

ZIMMERMANN, A., 1995, Austauschsysteme von Silexartefakten in der Bandkeramik Mitteleuropas. Universitätsforschungen zur Prähistorischen Archäologie 26. Bonn: Rudolf Habelt.