

Mateiciucová, Inna

The Early Neolithic settlement of Moravia and Lower Austria against the central European background

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4. THE EARLY NEOLITHIC SETTLEMENT OF MORAVIA AND LOWER AUSTRIA AGAINST THE CENTRAL EUROPEAN BACKGROUND

4.1. The geographic spread of the LBK and its relationship to neighbouring cultures

The LBK can be divided into two basic geographical spheres:

- 1) the eastern sphere, covering the eastern half of Hungary, eastern Slovakia and northern Transylvania in Romania. It was within this area that, under the influence of the Körös and Criş cultures, the eastern offshoot of the LBK cultural circle developed. As the Alföld lowlands in Hungary form the centre of its distribution, it is named the Alföld LBK (AVK – Alföldi Vonaldisztes Kerámica; known in Slovakia as the Eastern Slovakian LBK).
- 2) the western sphere, covering an area stretching from the western half of Hungary (northern Transdanubia) across south-western Slovakia and Burgenland into Lower Austria, and continuing across Bohemia, Moravia and Little Poland, then northwards to the upper reaches of the Vistula around Kujavia and Chełmno-land. The LBK culture spread along the Oder into Silesia, and from there into Saxony, Thuringia, Bavaria and Hessen (**map 3**).

During the Flomborn phase, the LBK expanded into the upper Rhineland and settled in Alsace. Having crossed the Rhine into the Belgian and Dutch Limburg, it continued even further west and north-west into the Paris Basin and as far as the coasts of Normandy. It moved northwards along the Oder as far as the Baltic Sea, and eastwards along the Prut and Dniestr into Moldavia, western Ukraine and eastern Romania (Sielmann 1971, 99; Pleiner *et al.* 1978, 174–175; Lüning, Kloos & Albert 1989, 355–356, Abb. 1.; Małecka-Kukawka 1992; Kirkowski 1994; Whittle 1996, 157–158; Pavlů 1998b, 279).

The south-eastern periphery of the LBK – the Starčevo-Körös-Criş culture complex

The Hungarian offshoot of the LBK is known as the Transdanubian LBK. In its earliest phase, known as formative phase, the Transdanubian LBK extended across the whole of Transdanubia (**map 2**). To the south, it reached as far as the left bank of the Dráva, and to the west as far as the Danube. In the area delimited roughly by the rivers Kapos and Dráva, its distribution overlapped with that of the Starčevo culture. Stratigraphy and finds analyses have shown that the LBK appeared in this area only after the disappearance of the Starčevo culture.

According to N. Kalicz, the Transdanubian LBK originated in the northern part of Transdanubia at the same time as the Starčevo culture had reached the Linear B phase. During the latter's late phase – the Starčevo Spiraloïd AB – and until its extinction, the LBK was the northern neighbour of the Starčevo culture. Only later did the Transdanubian LBK shift further southwards into the former area of the Starčevo culture (Kalicz 1998b, 264).

During the formative period of the Transdanubian LBK, the Körös culture, located in south-eastern Hungary in the southern half of the Great Hungarian (Alföld) Plain, was also in its terminal phase. The Körös culture was a key influence on the formation of the eastern branch of the LBK. The earliest phase of the Alföld LBK is known under the term Szatmár group (Kalicz & Makkay 1972). The early phase of the Szatmár group shows close links to the local Körös-Méhteleg group, which mixes elements of the Körös and Criş cultures (Kalicz & Makkay 1976; Kalicz 1998a, 258). In eastern Slovakia, the Szatmár group matches the proto-Linear phase of the Eastern Slovakian LBK. The Szatmár group was contemporary with the terminal phase of the Körös culture (Šiška 1989; 1998, 271; Kaczanowska, Kozłowski & Nowak 1997).

The Starčevo, Körös and Criş cultures, the first Neolithic cultures in the Carpathian Basin, are parts of the early Neolithic Balkan complex, together with the proto-Sesklo, Sesklo, Anzabegovo, Gálábnik-Pernik and Karanovo I-II cultures. Kalicz believes that the Neolithisation of the southern part of the Carpathian Basin occurred through the migration of small bands into this region, and their subsequent symbiosis with the local Mesolithic population (Kalicz 1998a, 257). Although these cultures, particularly in their early phases, show many similarities, they had very different priorities in terms of settlement foundation. The Starčevo culture settled a relatively broad area (200–250,000 km²) that encompassed the area south of Lake Balaton, Croatia, Slovenia, Syrmia and northern Banat, and to the south extended along the river Morava into Macedonia and Pelagonia. Its eastern limits were the Danube and the valley of the Struma in western Bulgaria. Within these areas, downlands and plains were settled; sites occur most often along rivers and streams, outside inundation zones.

By contrast, the Körös culture, which occupied a far smaller territory (6,000 km²), favoured floodplains with a dense river network. Its settlements concentrate in the areas on the left bank of the Tisza, particularly in the catchment of the eponymous Körös. The limits of the Körös culture are formed by the river Maros in the north, by the Marusza river in the Banat and the Danube in the south, by the Transylvanian foothills in the east and by the Tisza in the west. The sandy region between the Danube and the Tisza was ignored by both cultures. The Criş culture, bordering the Körös culture to the west, settled almost all of Moldavia (200,000 km²; Kalicz 1998a, 257–258).

The Transdanubian LBK and the whole western branch of the LBK preferred areas geomorphologically similar to those settled by the Starčevo culture. Slightly undulating terrain shot through with watercourses was most commonly occupied. The eastern Alföld LBK, on the other hand, settled primarily in lowland areas.

The western periphery of the LBK – the Limburg and La Hoguette ceramic groups

The Limburg ceramic group was first described at the end of the 1960s (Modderman 1970). The ceramics of this group appear sporadically on LBK sites from the Flomborn phase (Ib according to Modderman) to the final phase. Hardly any separate settlements are known (with the exception of the site at Pontavert “Le Marteau”; Constantin, Coudart & Boureaux 1981, 171, Fig. 6). The group’s distribution overlaps with the western end of the LBK. As their name suggests, finds of Limburg ceramics concentrate in the Belgian and Dutch Limburg regions, while to the west

they appear in the Paris Basin and to the east as far as the Rhine (site Bochum-Hiltrop; van Berg 1990).

Their origin has yet to be fully clarified. Two hypotheses have been proposed (Constantin 1985, 144):

- 1) the Limburg group is a particular functional offshoot of the LBK;
- 2) the Limburg group represents a “non-LBK” population with Neolithic or perhaps even non-Neolithic subsistence strategies.

Further clarification of its origin and importance came in the 1960s with the discovery of ceramics known as the La Hoguette type (after the eponymous site in northern Normandy), on which influences of the Early Neolithic Mediterranean Cardial Ware are apparent. Only later, in 1983, did C. Jeunesse define the La Hoguette ceramics as a separate ceramic group, on the basis of finds made in Alsace (Jeunesse 1986). Like the Limburg pottery group, the La Hoguette ceramics appear most often in LBK settlements, but they do also occur on their own (e.g. in Stuttgart-Bad Cannstadt “Wilhelma”; Strien & Tillmann 2001). They are associated with sites dated to the earliest LBK phase, but persist into later phases (Jeunesse 1987; Lünig, Kloos & Albert 1989, 382–385). The focus of La Hoguette ceramic finds is along the upper Rhine between Alsace and the mouth of the Main, but they also appear deep within the distribution of the earliest LBK: in the west they have been identified as far away as Normandy, in the north they are known from Dutch Limburg, to the north-east they reach the river Weser in Thuringia, westwards they appear along the upper Main, and south-westwards they reach the foothills of the Alps (Jeunesse *et al.* 1991; Gronenborn 1997, 10–11).

Both the Limburg and La Hoguette groups display a preference for sandy areas outside or on the edge of LBK settlements. With only a few exceptions (the Limburg houses at Pontavert “Le Marteau”), no evidence for associated permanent structures has been found (architecture; Constantin, Coudart & Boureaux 1981, 171, Fig. 6; Constantin 1985, 102). Little is also known with regard to associated means of subsistence. The site of Stuttgart-Bad Cannstadt was occupied seasonally. The people hunted wild fauna here, but bones of domesticated sheep/goats and some wheat pollen and wheat grains were also found. It seems that these finds represent a “ceramic Mesolithic”, or a Neolithic with a heavy orientation towards hunting and gathering. Probably, the La Hoguette people were local Mesolithic populations, which adopted the manufacture of pottery and some other Neolithic elements from the west Mediterranean Early Neolithic Cardial culture (Jeunesse 1987, 19–21; Lünig, Kloos & Albert 1989, 382–385, 391–393; Kalis *et al.* 2001); sadly, the



Map 2. The Early Neolithic in central Europe.

present state of research allows no firm conclusions to be drawn.

4.2. The geographic distribution of the LBK in Moravia and Lower Austria

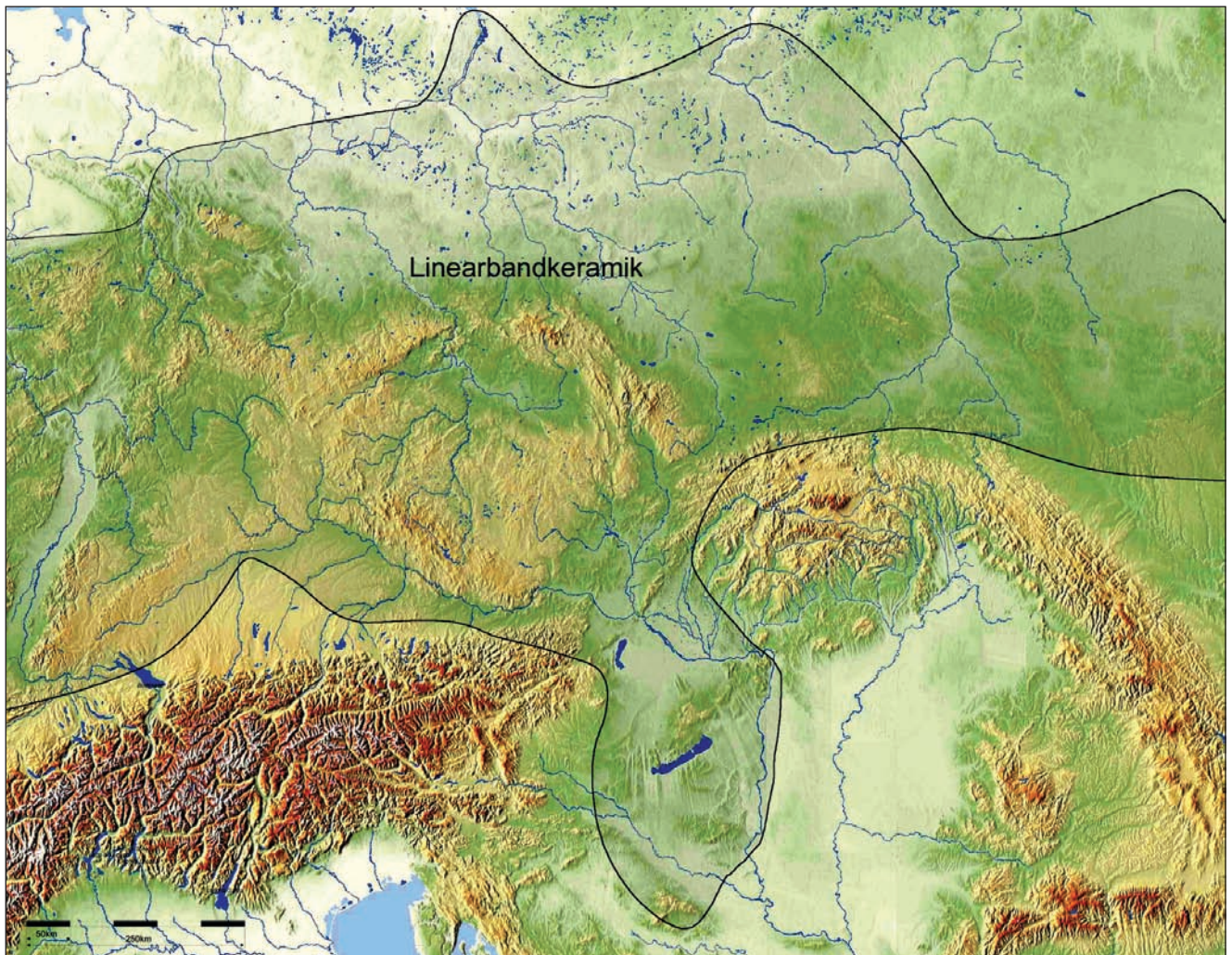
Moravia

LBK settlement in Moravia focuses in particular on the southern and central parts of the region. Concentrations of settlements are evident in south-western Moravia on the lower courses of the Jihlava, Oslava and Rokytná, and along the middle Jevišovka and Dyje (Thaya). This is mirrored by settlement patterns in Waldviertel and Weinviertel in Lower Austria, showing that this was a single cultural area (Leneis, Neugebauer-Maresch & Ruttkay 1995, Abb. 1, Abb. 6). Settlement also concentrated in the Brno Basin along the lower courses of the Svatka and Svitava, and stretched further north along both rivers. Another important axis was formed by the Morava, the fer-

tile catchment of this river and its tributaries offering suitable conditions for LBK society. The question of the marshy lower course of the river remains open, as there is no evidence of LBK settlement to date, but it seems likely that it lies hidden beneath the considerable sediments. Settlement penetrated further into eastern Moravia along the Bečva and the Dřevnice.

Settlements of the earliest phase of the LBK were founded along the Morava and its tributaries (at Žopy, Mohelnice, Kladníky, Žádlovice-Újezd), and in the catchment of the Moravian tributaries of the Dyje. The catchments of the rivers Svitava, Svatka and Jihlava were particularly favoured (Brno-Ivanovice, Želešice, Vedrovce “Za dvorem”, Těšetice-Kyjovice, Boskovštejn, Bojanovice).

After the relatively dense settlement of the middle phase of the LBK, there was a decrease in the later phase during which settlement, which had even expanded into less fertile areas in the middle phase, retreated to the wards already settled in the earliest phase. During this period, Moravia found itself at the



Map 3. Distribution of the LBK in central Europe.

interface of two different cultural spheres – those of the later Stroke-Ornamented Ware (Stichbandkeramik) and the Lengyel cultures. Šárka ceramics appear in the settlements west of the Morava river as a foreign element, while Želiezovce ceramics concentrate east of the Morava, in its catchment and along the lower Dyje (Podborský *et al.* 1993, 76–100; Čižmář 1998).

Lower Austria

In the earliest phase of the LBK, settlements in Lower Austria were founded on the most fertile soils, but exceptions also existed (Brunn is on a gravel terrace; Stadler pers. comm). The present state of knowledge suggests that settlement concentrated in the eastern part of Waldviertel and in Weinviertel, above all along the rivers Kamp and Schmida, which are left-bank tributaries of the Danube, in the catchment of the Pulkau, which flows into the Thaya (Dyje) and in the catchments of the Zaya and Rußbach, which flow into the March (Morava). A dense concentration of settlements has also been newly recognised at the southern edge of Vienna (Brunn am Gebirge,

Perchtoldsdorf), as well as in the catchment of the Leitha on the border with Burgenland.

In the later phases of the LBK, settlements were also founded south of the Danube along the courses of the Pielach and Traisen. Evidence of settlement in the later LBK was also found in caves in the foothills of the Alps. North of the Danube, settlement also expanded into the lower course of the Schmida, along the whole catchment of the Zaya and into the valley of the March (Morava; Lenneis, Neugebauer-Maresch & Ruttkay 1995, 14, Abb. 1, 24–28, Abb. 6).

In Lower Austria, too, the terminal phase of the LBK divides into two differently developing areas, with predominantly north-western (Šárka ceramics) or south-eastern (Želiezovce ceramics) influences. Just as Moravia, Lower Austria sees the abandonment of several settled regions in this period.

4.3. Relative chronology of the LBK in Moravia and Lower Austria (after R. Tichý) and general overview of dating in neighbouring regions

In Moravia, the internal divisions of the LBK are defined using the periodisation by R. Tichý (1962), developed after a quantitative evaluation of the archaeological excavations at Mohelnice (**table 3**). This was taken further in the 1990s by Z. Čížmář (1998). Tichý differentiated two main LBK phases (I & II), each further divided into the developmental subphases a & b, and a third phase (III) termed the 'Šárka' phase, which is already part of the Middle Neolithic. Lower Austrian researchers also regard the Moravian periodisation of the LBK as that which best reflects the local development in their region (Lenneis, Neugebauer-Maresch & Ruttkey 1995; Lenneis & Stadler 1995).

For Bohemia, a periodisation was drawn up by E. Neustupný (1956), who separated five (I–V) LBK phases. Phases IV and V match the late phase III in Moravia (Neustupný 1956; Tichý 1962, 293). At the end of the 1970s, I. Pavlů and M. Zápotocká (1979) devised a new periodisation of the LBK for Bohemia, based on preliminary studies on the development of the settlement area at Bylany and drawing on earlier works on this theme (Soudský 1954; Neustupný 1956; Vencl 1961). On the basis of this classification the development of the LBK is divided into Early, Middle, Late and Final phases; each phase is further subdivided into more detailed subphases.

In south-west Slovakia, the intensive study of the Neolithic resulted in a periodisation that synchronises well with developments in Moravia and Bohemia (Pavúk & Šiška 1971; Pavúk 1980). For eastern and central Slovakia, which underwent a somewhat different evolution with close links to the Carpathian Basin, a thorough classification of the eastern branch of the LBK was provided by J. Lichardus (1972) and later by S. Šiška (1989, 113–138, Tab. II).

4.4. Absolute chronology of the LBK on the basis of C¹⁴ dating

Archaeological excavations of LBK settlements in Lower Austria have yielded many new C¹⁴ dates, which

	A. Pavúk	R. Tichý	Z. Čížmář	E. Neustupný	I. Pavlů – M. Zápotocká				
Železovce group	III	Šárka stage	Nová Ves	V	IVb	Final LBK			
	IIb				IVa				
	IIa	III	Mohelnice feature CCXX	IV	III/IV				
	I				IIIb	Late LBK			
Late LBK	III	IIb	Vedrovice ditched enclosures	III	IIIa		Middle LBK		
					II	IIa		II	IIc
									I
	IIa	IIa ₂	II	II	IIa				
					I	IIa ₁		II	I/II
									I
Milanovce	IIb	Vedrovice cemetery	I	(IIb)	Early LBK				
Hurbanovo				IIb					
Bíňa Nitra	Ia	Žádlovice-Újezd Žopy	Ia	? (Ia)					

Table 3. LBK periodisation in Bohemia, Moravia and Slovakia (after Čížmář 1998, Tab. 1).

refined and partly modified the existing absolute chronology of the Early and Middle Neolithic (**table 4**). The majority of these dates comes from the sites Brunn am Gebirge, Rosenberg and Asparn-Schletz.

On the basis of recent measurements carried out in Vienna and their comparison with the results from other laboratories, we can move the origin of the LBK culture back to 5600 BC and date its end roughly to 4850 – 4700 BC (Lenneis & Stadler 1995; Lenneis, Stadler & Windl 1996; Stadler *et al.* 2000). The details are shown in the following table:

4.5. The problem of Late Mesolithic settlement in Moravia, Lower Austria and neighbouring regions²

Few Mesolithic stations are known in Moravia, and most of those identified lie on the sand dunes along the rivers Jihlava (Smolín, Přibice), Dyje (Dolní Věstonice, Šakvice, Pohansko u Břeclavi) and Morava (Mikulčice; Klíma 1953; 1970; Valoch 1975b; 1978; Hudec 1996; Škrdla, Mateiciucová & Přichystal 1997). Other sites

² This work does not include any new excavations of Mesolithic sites in North Bohemia (with the exception of a short reference in chapter 6.2.2.), some of which are Late Mesolithic according to the radiocarbon dating, because at the time of the work's submission they had not yet been fully analysed (Svoboda *et al.* 2003).

Country	No. of samples	1 σ range BC	2 σ range BC
Austria			
Total	46	5440–5070	5600–4850
Brunn am Gebirge	27	5480–5210	5700–5050
phase I	38	5450–5200	5600–4900
phases II and III	14	5220–4810	5300–4450
Czech/Slovakia			
Total	29	5450–4950	5700–4300
phase I	10	5440–5200	5600–5000
phases II and III	9	5500–4300	5800–4300
Germany			
Total	138	5320–4830	5600–4500
phase I	52	5600–5000	5900–4400
phases II and III	87	5230–4900	5450–4600
Whole region			
selected laboratories $\pm < 100$			
Total	133	5430–5000	5700–4700
phase I	66	5470–5070	5700–4800
phases II and III	62	5270–4990	5600–4700
all laboratories $\pm < 100$			
Total	280	5450–4850	5600–4400
phase I	99	5480–5070	5800–4500
phases II and III	162	5260–4900	5600–4500

Table 4. Absolute chronology of the LBK – duration and phases (after Lenneis & Stadler 1995, Tab. 5).

concentrate on the edges of a glacial moraine in north Moravia (around Příbor). With the exception of Smolín, all of the sites are known from surface artefact collection. The station at Smolín is the only stratigraphically secure site on the Morava; radiocarbon dates obtained place settlement in the Boreal. K. Valoch assigns the site to the Early Mesolithic period, the Beuronian A; the station at nearby Příbice is dated to the same horizon (Valoch 1975b; 1978, 59, 66).

At Dolní Věstonice-“Písky”, Šakvice and Mikulčice symmetrical trapezes were found made on regular blades. The trapezes here occurred together with segments. Segments are common in the Early Mesolithic of central Europe. They disappear in the western part of central Europe during the Late Mesolithic, while in the Carpathian Basin and the Balkans they are found in Late Mesolithic and Early Neolithic inventories, where they appear together with trapezes (see chapters 6.3.6. & 6.3.7.).

There are three possibilities for the dating of a site at which trapezes occur with segments:

- 1) it is a multi-phase settlement, where the segments reflect the Early Mesolithic and the trapezes settlement from the beginning of the Atlantic;

- 2) the site was settled in the Late Mesolithic;
- 3) the trapezes on regular blades are an admixture arising from the later Neolithic settlement.

The first of these three options needs to be considered in particular at Mikulčice, where a type XC Tardenoisian point (using the classification of S. K. Kozłowski 1980) was found alongside the trapezes, and may signal the existence of an earlier Mesolithic horizon. Tardenoisian points are known from the late Early Mesolithic sites at Smolín and Příbice. At Mikulčice the appearance of trapezes made on regular blades contrasts with a shortage of regular blades in the assemblage, and it is thus impossible to rule out later Neolithic and Eneolithic intrusions (Medunová 1997). A Mesolithic origin for the trapezes at Mikulčice is, however, suggested by the raw materials from which they were made; these were commonly used in the Mesolithic, and other Mesolithic artefacts here are made from them (Krumlovský Les II chert, Olomučany chert, gravel radiolarites and erratic silicites; Škrdla, Mateiciucová & Přichystal 1997, 52–55).

In the cases of Dolní Věstonice and Šakvice, the second option seems most likely, although in Dolní Věstonice some later intrusions are possible, as two sherds of the Stroke-Ornamented Ware were found (Šebela 2002).

The numerically poor assemblage from Šakvice deserves closer attention. In this assemblage, too, a trapeze made on a regular blade was found, along with four broad segments, of which three have double-sided, partially facial retouching. The closest analogies to these segments are the Betey type segments of the Mediterranean Early Neolithic (S. K. Kozłowski 2001, 269; Mateiciucová 2001a, 289, 297)³.

In Lower Austria, Mesolithic settlement is far less well known than in Moravia (Gulder 1953; AW Leitner 1984; Antl-Weiser 1986, 192–220; 1995, 83–90). All of the stations except Kamegg, which is partially stratified, are known from surface artefact collection (Berg & Gulder 1956; Leitner 1994). Sites concentrate in the catchment of the river Kamp (Kamegg, Horn-Mühlfeld) and south of Eggenburg (Limberg-Mühlberg, Burgschleinitz). Another station has been identified by the Danube (Wien-Bisamberg). Trapezes occurred at the sites of Wien-Bisamberg, Burgschleinitz and Horn-Mühlfeld. Their dating to the Late Mesolithic is, however, uncertain, as at any of these sites it is not possible to rule out mixing with later finds. For this reason the stations concerned are simply classed broadly as Mesolithic; typologically,

³ B. Klíma compares these to the Natufian and the Sauveterrian (Klíma 1953, 302). According to Valoch they are analogous to Helouan type segments (Valoch 1981, 54).

however, the majority of the artefacts reflect the Early Mesolithic. Only at Burgschleinitz do both W. Leitner and W. Antl-Weiser suggest a Late Mesolithic date. The trapezes here are made on irregular blades, however (Antl-Weiser 1986, 204), as is the case at Smolín, which is dated to the end of the Early Mesolithic (see above). With a single exception from Kamegg, segments have not been identified at the Lower Austrian stations (Leitner 1984; Antl-Weiser 1986, 210). The production of regular blades has not been securely demonstrated at any of the sites.

In south-western Slovakia, the majority of Mesolithic stations concentrate along the Váh (Sereď – “Mačanské vršky”, Dolná Streda – “Vršky”, Tomášikovo, Mostová; Bárta 1955; 1959; 1960). Other significant stations have been identified at Bratislava-Dúbravka and in the valley of the Žitava (Hurbanovo). The majority of western Slovakian Mesolithic chipped stone assemblages also come from surface artefact collection. Only the stations at Sereď-Mačanské vršky and Bratislava-Dúbravka have been investigated (Hromada & Cuper 1992). The chronological/stratigraphic interpretation of the profile from Sereď provided by J. Bárta was critiqued carefully and in detail by S. Vencl (Bárta 1957; Vencl 1969b). At Sereď and Dolná Streda trapezes made on regular blades were found together with segments. Judging from the illustrations of the blade artefacts, several could be termed regular (Bárta 1959, Tab. 1; Bárta 1981, Abb. 2). The stations along the Váh are most commonly assigned to the Sauveterrian, and are dated to the Late Mesolithic. The station at Hurbanovo, too, has yielded trapezes which date it to the Late Mesolithic (S. K. Kozłowski 1981; Hudec 1996).

In eastern Slovakia the station at Barca I, like that at Smolín, has been assigned to the Beuronian (S. K. Kozłowski 1981, 301). Specific evidence of south-eastern influences here comes from a bone point with limnosilicite blade insets found at Bear Cave near Ružín; obsidian blade fragments were also found. The limnosilicite blades set into the bone point are narrow and very regular, and were probably made by pressure flaking. Analogous material appears in the Late Mesolithic Janislawice culture in Poland and in the Late Mesolithic and Early Neolithic of the Pontic area (Bárta 1989, 458–460; 1990, 17).

Until recently very little was known about Mesolithic settlement in Hungary (Szekszárd-Palánk, Szödliget, Tarpa-Márki tanya, Kaposhomok; Dobosi 1972; 1983). This situation changed radically during the 1990s, when a series of Mesolithic stations were discovered in northern Hungary (Jászberény I, Jászberény II, Jászberény III, Jászberény IV, Jásztelek I), several of which were investigated archaeologically

(Jászberény I, Jásztelek I; Kertész 1991; 1993; 1996b; Kertész *et al.* 1994). Layer C at Jászberény I yielded radiocarbon dates that, together with a typological analysis of the chipped stone industry, place the site in the last third of the Boreal. R. Kertész maintains that layer C at Jászberény I is roughly contemporary to the stations at Jászberény IV, Smolín, Přibice, Kamegg, Mostová, Tomášikovo and Barca I (Kertész *et al.* 1994, 22, 28). Layer C at Jászberény I yielded segments, but no trapezes; by contrast, layer B2 at Jászberény I and layer B at Jásztelek I yielded segments together with trapezes. Segments were again found together with trapezes at the surface site of Jászberény II and at the Romanian Mesolithic sites of Ciumești II and Gilma. On the other hand, at the stations at Kaposhomok in Transdanubia, Tarpa-Márki tanya in north-eastern Hungary, Kamenitsa I in the Ukraine and Cremenea in Romania, trapezes appeared without segments (Kertész 1993, 89–90; 1994a, 33; Marton 2003).

On the basis of typological analyses and stratigraphic evaluations, the stations at Jásztelek I, Jászberény I (layer B2) and Jászberény II have been assigned to the Late Mesolithic (Kertész 1994b, 26; Kertész *et al.* 1994, 19). Kertész classes these sites into the same chronological horizon as the sites at Ciumești II, Gilma, Sereď, Dolná Streda, Hurbanovo and Wien-Bisamberg. The chipped stone artefacts from the stations at Tarpa-Márki tanya, Kaposhomok and Kamenitsa I have also been assigned to the Late Mesolithic (S. K. Kozłowski 1981; Kertész *et al.* 1994, 29–30). Kertész modified his earlier views two years later and dated layer B2 at Jászberény I and layer B and feature I at Jásztelek I to the later Boreal and the onset of Atlantic. Only the surface finds at Jásztelek I are related to the early Atlantic (Kertész 1996a, 23–24; 2002, 290).

In Transdanubia and Burgenland, there are a whole series of surface sites with microlithic industries for which the dating is uncertain (Dobosi 1972; Leitner 1984; Antl-Weiser 1986). Finds of regular blades with primary faceted platform remnants at several of these indicate similarities to the early LBK chipped stone industry, and suggest a later dating. The ceramics that appear at these sites, however, do not always come from Early Neolithic cultures, but also from Late Eneolithic and Bronze Age cultures that produced different chipped artefacts. A more thorough analysis of these sites might cast more light on the origin of the Neolithic in the eastern part of central Europe. Equally, it cannot be ruled out that some of the microlithic chipped industry assemblages with regular blades might come from the terminal Mesolithic, which is known in central Europe mainly from southern Germany (Gehlen 1988; 1999; Kind 1992; 1997a; 1997b).