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THE NEOLITHIC SITES HRDLOVKA AND HROBČICE IN THE CONTEXT OF STROKED POTTERY CULTURE IN NORTHWEST BOHEMIA, CZECH REPUBLIC

ABSTRACT: The changes in Central Europe at the end of the Linear Pottery Culture (LBK) are one of the most discussed issues in recent Neolithic archaeology. The initial uniformity, which was reflected in some aspects of material culture, seems to have fallen apart into smaller regional cultures. This paper aims to present recently analysed Stroked Pottery Culture (SBK) material from the Hrdlovka and Hrobčice sites (Teplice district), in the Czech Republic. Ceramics, lithics and animal bones have been analysed at the chronological levels of Early and Late SBK. For comparison, other Northwest Bohemian contemporary sites with a sufficient amount of finds and state of processing have been chosen: Hrbovice and Vchynice, and partly also Mšeno. Within this framework, uniformity in ceramic decoration is reported in Early SBK, while greater variability is observed in Late SBK. The evidence for inter-regional contact is also documented. The ceramic assemblage from the Hrobčice site shows a relationship to some Polish regions, represented by Samborzec-Opatów or, more likely, Malice group vessel.

KEY WORDS: Neolithic – Stroked Pottery Culture – Hrdlovka – Hrobčice – Northwest Bohemia – Ceramics – Animal bones – Lithics

INTRODUCTION

After the Neolithic way of life was established in Central Europe, the complex of Linear Pottery Culture (Linearbandkeramik or LBK, 5600/5500–5100 BC) covered a large area from the Paris Basin to the band of the Dniester River. The initial uniformity, expressed particularly in vessel decoration, began to disintegrate at the turn of the 6th and 5th millennia BC. One of the successor cultures was the Stroked Pottery Culture (SBK), from 5100 to 4600 BC (Pavlů, Zápotocká 2007: 27–28). Neolithic sites in Northwest Bohemia (Czech

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Republic) seem to be crucial for the genesis of SBK (Zápotocká, Muška 2007), which is visible in archaeological images in the change of vessel decoration (variants of strokes). Until Late SBK, development drew on local sources and traditions. After that, the increasing influence of the Lengyel Culture (in Bohemia 4600–4200 BC), another post-LBK culture, can be observed.

The Neolithic settlement structure in Bohemia was ordered in geographical units (regions and micro-regions) according to settlement spatial distribution, determined mainly by environmental factors (Zápotocká 2009). This paper is focused on the region which is geomorphologically bordered by Krušné Hory and České Středohoří Mountains. The region itself is formed by the shallow Podkrušnohorská pánev Basin; with suitable conditions for agriculture, its axis is set by the Bílina River (Pavlů, Zápotocká 1979: 289, Zápotocká 2009: 106–107). The aim of this article is to examine this region archaeologically, with respect to the Neolithic period by artefactual content (ceramics, stone industry) and some ecofactual specifics (animal bones).

This contribution does not aspire to be a comprehensive summary of SBK development in the region. The material comprises two recently analysed SBK settlements: Hrdlovka and Hrobčice, both in the Teplice District. A comparison of those sites with a sufficient amount of extracted material will be carried out using data from Phases II–IV of SBK periodisation. Some attention will also be paid to neighbouring regions, in particular Saxony, which seems to be closely connected to the Neolithic period in Northwest Bohemia. The issue of transitional LBK/SBK and SBK/Lengyel phases of the Neolithic period in the region is a topic of earlier studies (e.g. Link 2012a, Zápotocká, Muška 2007, Zápotocký 1996). This paper thus is a summary study concerning SBK development in Northwest Bohemia and attempts to set this region into the network of post-LBK Central Europe.

REGIONAL SCOPE OF THE NEOLITHIC PERIOD IN NORTHWEST BOHEMIA

In the context of Northwest Bohemia, special attention is paid to the micro-regions in the Middle Bílina River area: the west left tributaries are Lomský Creek and the Loučenský Creek, and Syčivka Creek is the right tributary of the Middle Bílina River (Beneš 1991a). One of the most intensively investigated archaeological regions in the Czech Republic is undoubtedly the Lomský and Loučenský Creek catchment areas in the fertile lowland of the Podkrušnohorská pánev Basin. In the 1970s to the 1990s, these areas were subjected to large-scale excavations in connection with extensive opencast brown coal mining (*Figure 1*). Like other well-investigated European regions, such areas can provide not only direct evidence about the Neolithic sites themselves, but also "empty" spaces between the particular Neolithic settlement sites. Such areas in the micro-regions of the Lomský and Loučenský Creek have been determined as a *polygon of total excavation* thanks to the conjunction of previous long-term archaeological field research followed by the large-scale unearthing of prehistoric sites in the fields in front of the opencast mine (Beneš 1991b), which confirmed previous knowledge of the spatial complexity of the Neolithic settlement sites. In the micro-regions of Lomský and Ločenský Creek, several Neolithic verified habitat areas such as Libkovice (Dobeš 1992, 1995, Křivánek 2001), Jenišův Újezd (Koutecký 1995) with the neighbouring cadastre of Mariánské Radčice (Dobeš 1990), Liptice (Rada 1986) and Ledvice (Stocký 1926: 167) have been registered. The Syčivka micro-region is characterised by the Hrobčice, Razice (Koutecký 1980), and Radovesice settlement concentration (Waldhauser 1975, 1982, 1984, 1985). Also, the presence of rondels (circle enclosures) at Vchynice (Řídký *et al*. 2012), Ústí nad Labem (Lissek *et al*. 2007), and Lišany (Smrž pers. comm.) have been identified within the regional Late SBK settlement network. The issues concerning rondels and the structure of settlement areas in the Late Neolithic period have already been summarised by Řídký (2011).

Hrdlovka Site

A field excavation located at Velký Fírek, south east of the former Hrdlovka, started in the spring of 1987 and continued until autumn 1990, led by J. Beneš (1991b). The uncovering of the surface was caused by the enlargement of the former Maxim Gorkij coal mine (the present day Bílina mine) and the archaeological excavation had a salvage character. The 8.35 ha area, situated on the low platform in the Loučenský Creek area, was divided in parts SJ, Z, V, and B. It revealed Eneolithic (Late Neolithic) (Beneš, Dobeš 1992) and Early Bronze Age burials (Beneš 1999), La Tène Culture and partly also an Early Medieval settlement (Meduna 2011). However, the most frequent component is represented by the Neolithic settlement. In total, 59 long house ground plans were recorded. Unfortunately most of them were excavated only in thin mechanical sections due to lack of time and the approaching mine frontier (*Figure 2*). Only 10 of them were excavated entirely, mostly in the SJ area and this area

has the best possibility of observing spatial relations between houses and sunken features. In spite of bad excavation conditions, Neolithic architectural development is recorded from the classical phase of the LBK (rectangular with dense inner rows), to the SBK (slightly trapezoidal with sparse rows), until the Lengyel period (boat-shaped) (Beneš 1991b). Also, an extraordinarily long house (47.5 m) has been registered. Soil conditions also allowed the observation of house construction details, e.g. different layers in northern trenches.

Hrobčice site

The multicomponent site of Hrobčice is located at the northern edge of present-day Hrobčice. A rescue excavation was carried out during January and February 2011, led by M. Sýkora, Institute of Archaeological Heritage Preservation of Northwest Bohemia in Most. At the 787 m^2 overburden area, 19 features were discovered (*Figure 3*), from which ceramic fragments, stone industry, daub, natural red dye, animal bones and bone industry, shells, and human bones occurring within two graves were recovered. Assemblage was processed during the years 2012 and 2013. Based on these analyses, settlement continuity from the LBK to Late SBK is supposed. Also, some recovered artefacts belong to the Eneolithic (Late Neolithic), Bronze Age, and Modern periods. Taking into account the small excavation area, it could be assumed that the site potential has not yet been fulfilled.

MATERIAL AND METHODS

In this study, material from sunken features (ceramics, stone industry, animal bones) is presented. In an attempt to avoid the problem of data distortion, only

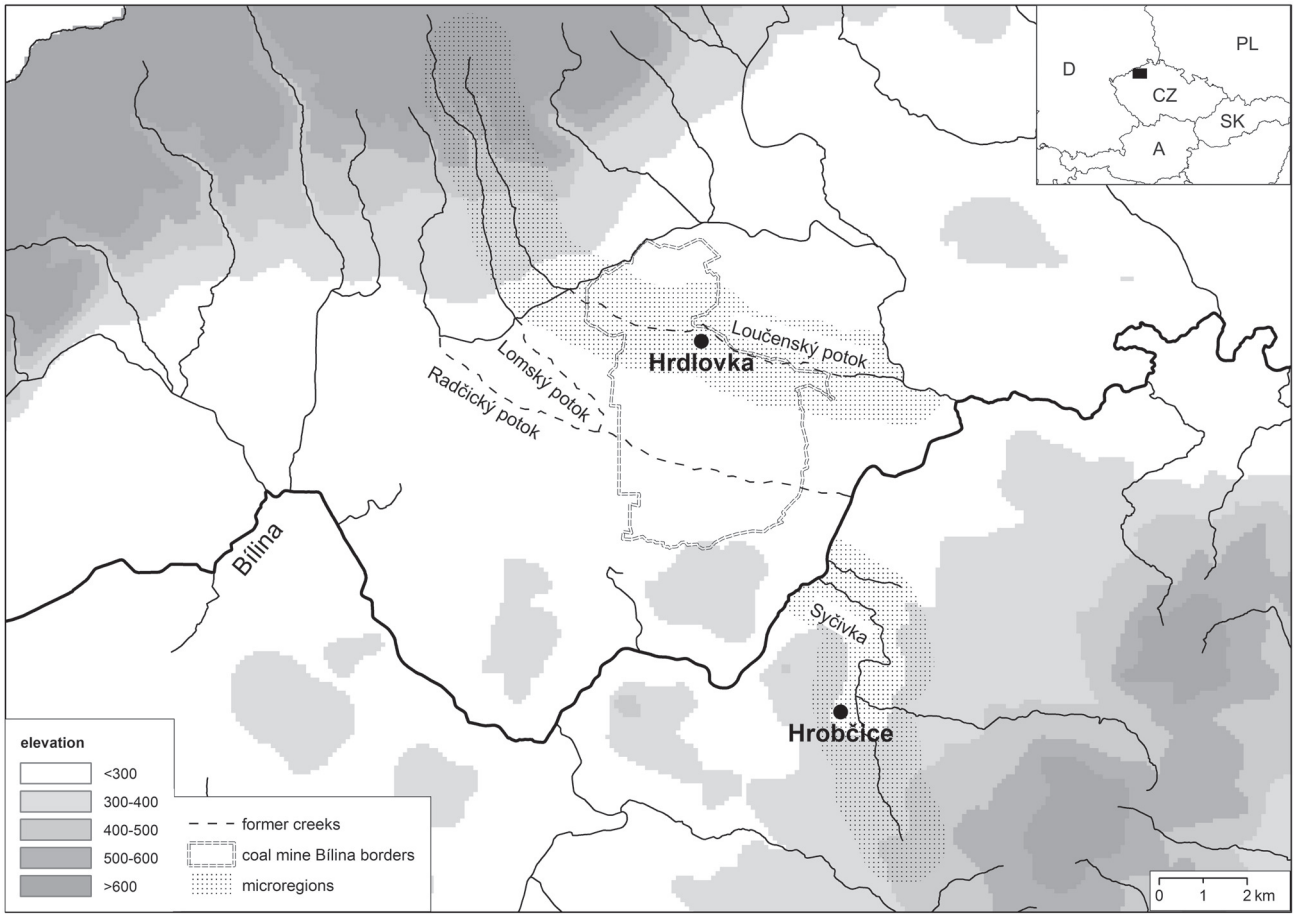

FIGURE 1. Hrdlovka and Hrobčice location in the Krušnohorská pánev Basin.

features with SBK ceramics were included in the analysis. Such kinds of chronologically consistent archaeological features and their contents are rather rare in the region, because the majority of prehistoric sites in the Central European lowland are not homogeneous but composed of chronologically heterogeneous components (Neustupný 1986), which are defined as spatial and chronological distinctive units in archaeological complexes spatially delimited in the landscape (Kuna *et al*. 2004: 18). Such complexes frequently create, in particular, features of multicomponent assemblages, which contain artefacts from different archaeological periods.

In case of the Hrdlovka multicomponent site, a large amount of Neolithic sunken features (25 %) with mixed LBK and SBK ceramics was observed. This mixture can undoubtedly be assigned to the transitional LBK/SBK phase only in the case of House III associated features (Vondrovský 2011). Further, other post-Neolithic ceramic intrusions in features indicate that including mixed assemblages into the analyses could produce data of a low level of reliability. The analyses were executed at the chronological level of Early (Phase II–III), Late (Phase IV) and also undifferentiated SBK when appropriate.

Ceramic fragments from features as chosen by the above criteria were assigned to the ceramic individuals during laboratory elaboration at the level of archaeological contexts (layer or feature). The descriptive system of Bylany was used (Květina, Pavlů 2007, Pavlů, Zápotocká 1978, Soudský 1967). Stroked ornamentation was described according to the system of Zápotocká (1978, 1998). The Hrdlovka assemblage consists of 873 ceramic individuals (1179 fragments,

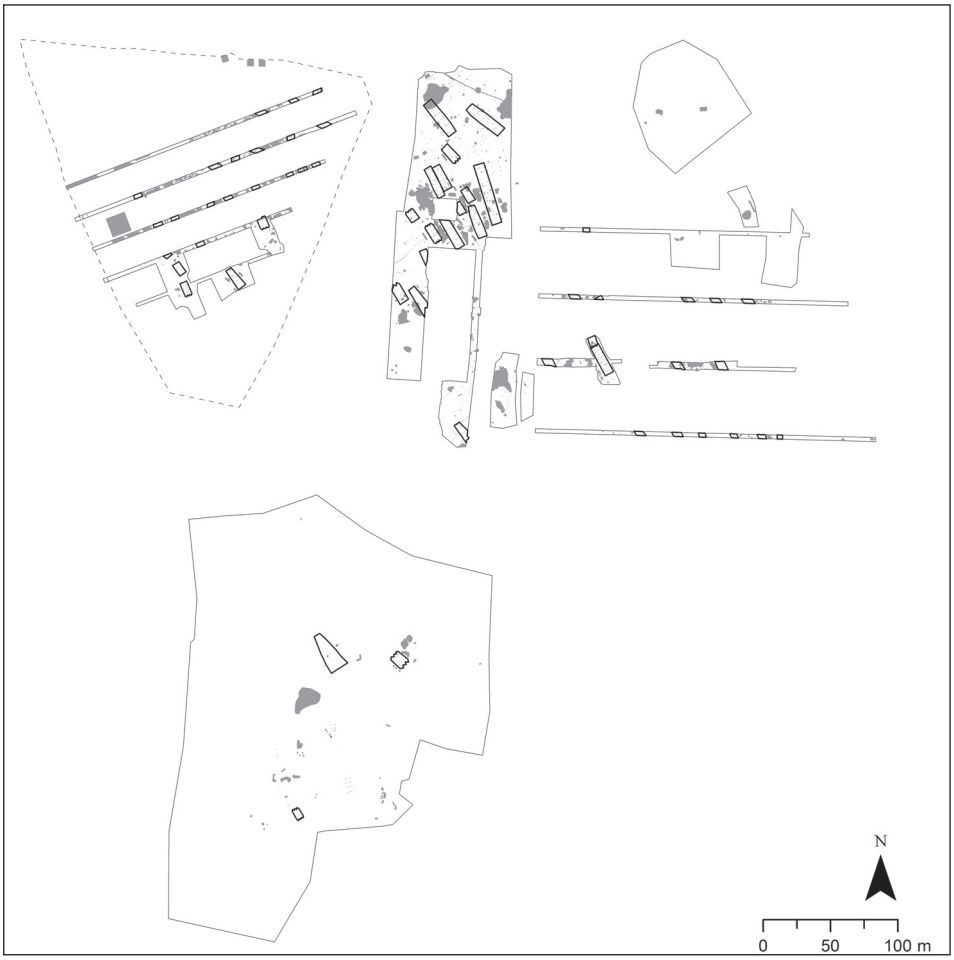

FIGURE 2. Hrdlovka site plan.

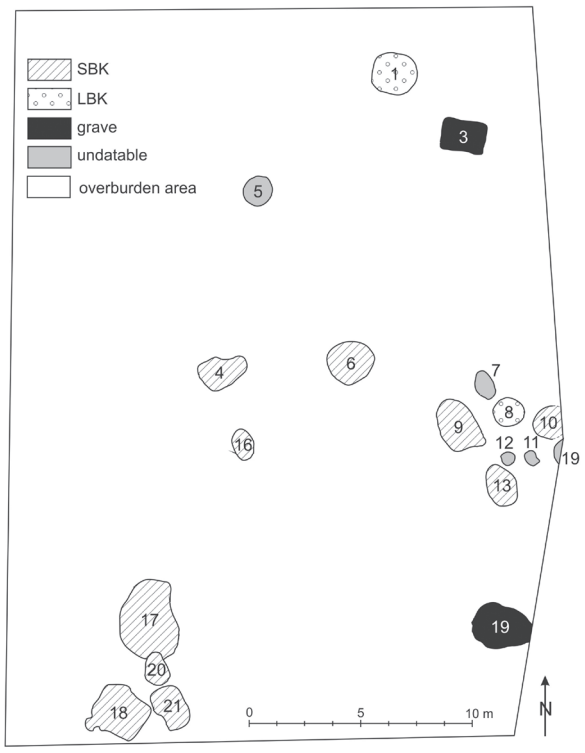

FIGURE 3. Hrobčice site plan (after Rauerová 2013: Fig. 5).

13,696 g) recovered from 27 sunken features. In Hrobčice, a total of 344 ceramic fragments (6285 g), belonging to 257 individuals, was obtained from 19 features.

The stone industry from Hrdlovka was evaluated using the method published by P. Šída (2007a). The most attention was given to the technotypological description and raw material determination. For comparison assemblages from Hrobčice (Popelka in Rauerová 2013), Hrbovice (Šída 2007b), and Mšeno (Šída 2007a) were used. The Mšeno site is located out of the region of interest, however, it is the only assemblage suitable for comparison. The use of statistical tests (chi-square test of independence) was defined by the assemblage structure. In many cases, the number of individuals was not sufficient for the analysis.

The osteological data are based on material recovered from Hrdlovka, Hrobčice, and Vchynice and totalled 449 identified faunal remains. All animal remains from the archaeological deposits were retrieved by hand. The archaeozoological analysis was carried out at the Laboratory of Archaeobotany and Palaeoecology in České Budějovice, between 2012 and 2014. Faunal spectra were established using the Number of Identified Specimens (NISP). The fragments of the antlers of red

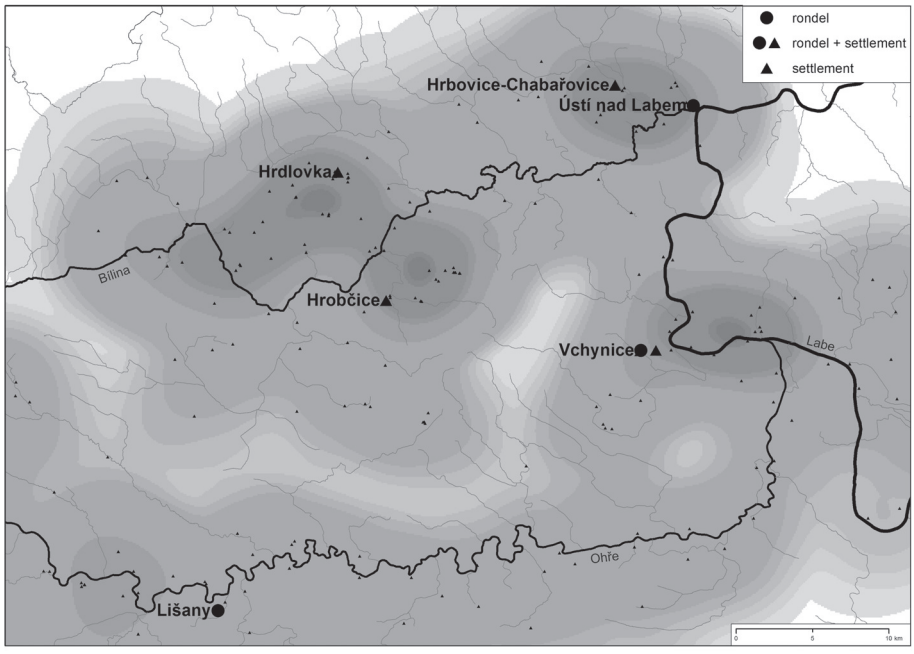

FIGURE 4. Important SBK sites in Northwest Bohemia mentioned in the text. The settlement structure projection is based on the Czech Archaeological Database (Version 2010).

TABLE 1. Early SBK (Phase II–III) ceramics characteristic.

		Hrdlovka	Hrobčice	Hrbovice	Vchynice
Individuals		221	57	76	116
Fragments		368	61	143	881
Features		9	5	7	1
Fine ware %		65	53	80	95
Coarse ware %		35	47	20	5
Knobs and handles %		5	2	7	9
Decorated %		24	25	41*	69
Decoration %	Stroked	96	100	100	96
	Technical	4	-	-	-
	Painted	-	-	-	4
Strokes %	Double small	84	79	74	99
	Double wide	14	-	10	-
	Multiple	-	-	16	-
	Combination	-	21	-	-
	Undetermined	2	-	-	1

* plus 1 intrusive LBK individual

deer and roe deer were not included in the final quantification. The significance of differences observed between taphonomical investigations was tested using a chi-square test of independence.

RESULTS

Ceramics

The Hrdlovka and Hrobčice ceramic assemblages were compared with other Northwest Bohemia sites, where a representative amount of SBK period material was recovered (*Figure 4*). The Hrbovice site is known especially because of its LBK/SBK transitional phase representation, but the site was also used during the later phases of SBK (Zápotocká, Muška 2007). The Vchynice site represents one of two confirmed SBK rondels in Northwest Bohemia. However, only ceramics from an adjacent SBK settlement were used for the purposes of this paper (Řídký *et al.* 2013). In the investigated region, the Žalany site has also revealed a representative amount of ceramics (Mašek *et al*. 1969). Nevertheless, the analysis here deals with ceramic fragments, not individuals; it is not therefore possible to compare it with the others. The small amount of individuals in the features assigned to SBK periods at some described sites does not allow statistical evaluation, therefore, comparison using percentage abundance is performed.

The ceramic assemblage comparison is summarised in *Tables 1–3*. In both periods fine ware forms the prevailing part of the assemblages although, in some cases, an equal proportion could be observed (e.g. Late SBK Hrdlovka). Projections (handles and knobs) on the ceramics are usually rare, and appearances do not account for more than 10% of the assemblage, the average for assemblages is 5%. Except rare individuals with technical, plastic, or painted decoration, strokes are the highly predominant method of vessel decoration at all sites. Only Hrbovice has 25% of technical decoration in unspecified SBK features, but here the assemblage is not constituted by a representative amount of individuals (23).

In the Early SBK spectrum of strokes, the double small strokes prevail. Only at the Hrbovice site was a higher ratio of wide double and multiple strokes observed. This could be explained by the classification of the ceramics to Phase III, where wide and multiple strokes are common. In agreement with the common development, the Late SBK phase shows a varied spectrum of strokes, where wide double (Hrobčice) and multiple strokes (Hrbovice) are predominant. Other types of strokes (rössen, striated, tremolo) are rare.

TABLE 2. Late SBK (Phase IV) ceramics characteristic.

		Hrdlovka	Hrobčice	Hrbovice	Vchynice
Individuals		472	115	19	346
Fragments		607	127	38	505
Features		5	3	1	5
Fine ware %		51	86	84	74
Coarse ware %		49	14	16	26
Knobs and handles %		3	5	5	3
Decorated %		16	37	42	45
Decoration %	Stroked	87	100	100	97
	Technical	13	-	-	-
	Plastic	-	-	-	1
	Painted	-	-	-	2
Strokes %	Double small	41	36	38	28
	Double wide	15	60	12	32
	Multiple	9	2	50	28
	Tremolo	11	-	-	1
	Rössen	11	.	-	-
	Combination	9	2	-	1
	Undetermined	4	-	-	10

TABLE 3. Unspecified SBK ceramics characteristic.

		Hrdlovka	Hrobčice	Hrbovice	Vchynice
Individuals		178	97	23	467
Fragments		202	109	35	707
Features		13	2	4	3
Fine ware %		40	66	74	79
Coarse ware %		60	34	26	21
Dnobs and handles %		2	5	9	3
Decorated %		10	28	13*	49
Decoration %	Stroked	94	100	75	98
	Technical	6	-	25	-
	Plastic	-	-	-	1
	Painted	-	-	-	1
Strokes %	Double small	65	85	67	36
	Double wide	18	7	-	21
	Multiple	6	-	33	36
	Striated	-	4	-	-
	Combination	-	-	-	1
	Undetermined	11	4	-	6

* plus 1 intrusive LBK individual

Stone industry

The percentage of the stone industry within the basic categories fluctuates from site to site. Unfortunately, most of the assemblages are too small from which relevant conclusions can be drawn. In the Early SBK period, the percentage of retouched tools varies from 5.5% in Hrobčice to 31.6% in Hrdlovka (*Table 4*). The Hrobčice site is considered to be a production site supplied by a nearby raw material source (Popelka in Rauerová 2013: Tab. 7–10). This could be a reason for the high number of flakes in the assemblage of the Hrobčice site. Other sites seem to be very similar without significant differences.

The assemblages of Late SBK from Hrdlovka and Hrbovice are too small to be used for comparison (*Table 5*). The Hrobčice site is different from the Mšeno site during Late SBK, and the difference is of the same type as during Early SBK. The number of flakes is much higher and the percentage of retouched tools is small. However, Mšeno assemblages of Early and Late SBK are nearly the same in terms of technotype composition. After this, these differences can be considered to be neither a result of different site activities nor of cultural differences.

During Early SBK, a higher use of Skršín quartzite is observed (*Table 6*). The highest proportion is detected in Hrobčice, which is the site neighbouring the raw material outcrop. In the Hrdlovka site, this material makes up 42.1% of the collection, in Mšeno 36.8%, and the lowest percentage can be seen in Hrbovice (6.7%). In the Hrobčice site, the Skršín quartzite amount is not significantly different between Early and Late SBK ($\chi^2 = 2.518$; $df = 1$; $P = 0.113$). In contrast, in the Mšeno site, a difference was observed ($\chi^2 = 30.329$; $df = 1$; $P < 0.05$).

The second most important raw material is silicites of glacigenous sediments (SGS). It was used in Hrdlovka for 52.6% of the artefacts, in Hrbovice for 46.7%, in Mšeno for 15.8%, and the lowest number can be found in Hrobčice (2.1%). Tušimice quartzite is an important raw material in the Mšeno and Hrdlovka sites. In Hrobčice, few pieces of Bavarian plattensilex were found. A large number of raw materials in Hrbovice and Mšeno remained undetermined. The raw material subsistence system during Early SBK was based on the use of Skršín quartzite as well as the silicite of glacigenous sediments, which was supported by the use of Tušimice quartzite. Plattensilex is very rare.

For Late SBK we do not have relevant data from Hrdlovka and Hrbovice (*Table 7*). In Hrobčice and Mšeno, an increasing number of SGS is observed, the rest of the assemblages were made from quartzites (mostly of the Skršín type). In Mšeno, one piece of Bečov quartzite was determined. The raw material

TABLE 4. Early SBK (Phase II–III), technotypological composition.

	Hrdlovka		Hrobčice		Hrbovice		Mšeno	
	Quantity	% of category	Quantity	% of category	Quantity	% of category	Quantity	% of category
Fragments	1	5.3	-	-	1	6.7	16	21.1
Blades	4	21.1	13	6.5	6	40	26	34.2
Flakes	6	31.6	153	76.9	5	33.3	21	27.6
Cores	2	10.5	5	2.5	-	-	1	1.3
Other	-	-	17	8.5	-	-	-	-
Debitage	13	68.4	188	94.5	12	80	64	84.2
Retouched tools	6	31.6	11	5.5	3	20	12	15.8
Chipped industry	19	100	199	100	15	100	76	100
Polished industry	2		-		6		-	
Other industry	3		3		11		10	
Total	24		202		32		86	

TABLE 5. Late SBK (Phase IV), technotypological composition.

	Hrdlovka		Hrobčice		Hrbovice		Mšeno	
	Quantity	% of category	Quantity	% of category	Quantity	% of category	Quantity	% of category
Fragments	-	-	-	-	1	33.3	36	20.3
Blades	-	-	11	16.9	1	33.3	52	29.4
Flakes	-	-	34	52.3	1	33.3	48	27.1
Cores	-	-	5	7.7	-	-	7	4
Other	-	-	9	13.8	-	-	-	-
Debitage	-	-	59	90.8	3	100	143	80.8
Retouched tools	1	100	6	9.2	-	-	34	19.2
Chipped industry	1	100	65	100	3	100	177	100
Polished industry	-		-		-		-	
Other industry	6		1		-		2	
Total	7		66		3		179	

TABLE 6. Early SBK (Phase II–III), raw material composition.

	Hrdlovka		Hrobčice		Hrbovice		Mšeno	
	Quantity	% of category	Quantity	% of category	Quantity	% of category	Quantity	% of category
SGS	10	52.6	4	2,1	7	46.7	12	15.8
Bečov quartzite	-	-	-	-	-	-	-	-
Skršín quartzite	8	42.1	177	92.7	1	6.7	28	36.8
Tušimice quartzite	1	5.3	1	0.5	-	-	13	17.1
Plattensilex	-	-	4	2,1	-	-	-	-
Non determined and other	-	-	5	2.6	7	46.7	23	30.3
Chipped industry raw materials total	19	100	191	100	15	100	76	100
Jizera mountains metabasites	2		-		1		-	
Other polished industry raw materials	-		-		5		-	
Polished industry raw materials total	2		-		6		-	
Other industry raw materials total	3		3		11		10	
Total	24		194		32		86	

subsistence system of Late SBK was more dependent on silicites of glacigenous sediments.

Archaeozoology

Archaeozoological assemblages constitute crucial material for the palaeoeconomical reconstruction and taphonomy of Neolithic sites. Initially, we tried to compare the taphonomic indicators between the assemblages to search for possible differences. The taphonomic data are presented in *Table 8*. The percentages of total remains for Early SBK, which have been identified at the genus or species taxonomic level

TABLE 7. Late SBK (Phase IV), raw material composition.

	Hrdlovka		Hrobčice		Hrbovice		Mšeno	
	Quantity	% of category	Quantity	% of category	Quantity	% of category	Quantity	% of category
SGS	1	100	6	9.2	3	100	148	83.6
Bečov quartzite	-	-	-	-	-	-	1	0.6
Skršín quartzite	-	-	56	86.2	-	-	15	8.5
Tušimice quartzite	-	-	1	1.5	-	-	2	1.1
Plattensilex	-	-	-	-	-	-	-	-
Non determined and other	-	-	2	3.1	-	-	11	6.2
Chipped industry raw materials total	1	100	65	100	3	100	177	100
Jizera mountains metabasites	-		-		-		-	
Other polished industry raw materials	-		-		-		-	
Polished industry raw materials total	-		-		-		-	
Other industry raw materials total	6		1		-		2	
Total	7		66		3		179	

TABLE 8. Results of taphonomic analyses.

	Hrdlovka early SBK	Hrdlovka late SBK	Hrobčice early SBK	Hrobčice late SBK	Vchynice early SBK	Vchynice late SBK
NISP %	36.1	57.6	52	33.1	29.1	26.3
Unidentified %	63.9	42.4	48	66.9	70.9	73.7
Root etching %	-	3	55.4	9.9	-	0.4
Permineralization %	1	-	35.4	3.3	45.9	21
Weathering %	95.9	39.4	48.6	1.7	75	58.9
Butchering/bone tools %	2.1	6.1	1.7	4.1	0.6	0.7
Tooth marks %	-	6.1	-	0.8	0.2	-
Total	97	33	175	121	516	453

(NISP) (*Table 8*), were the lowest at Vchynice and Hrdlovka. On the contrary, the highest percentage NISP for Late SBK was found at Hrdlovka. The chosen chi-square test confirmed important differences between sites from both chronological periods (Early SBK: $\chi^2 = 30.247$; $df = 2$; $P < 0.05$; Late SBK: $\chi^2 = 15.562$; $df = 2$; $P < 0.05$). Separately, we statistically compared NISP for the Early and Late SBK phases within each site. It was observed that the identified material from both phases at Hrdlovka and Hrobčice were significantly different (Hrdlovka: $\chi^2 = 4.684$; $df = 1$; $P < 0.05$; Hrobčice: $\chi^2 = 10.404$; $df = 1$; $P < 0.05$). Contrary to Hrdlovka and Hrobčice, an important difference in ability to differentiate assemblages from both periods at Vchynice was not confirmed (Řídký *et al.* 2013).

The difference in the number of weathering traces registered on the bone remains was statistically important between the two phases at Vchynice (Řídký *et al.* 2013), Hrdlovka ($\chi^2 = 52.184$; $df = 1$; $P < 0.05$) and Hrobčice ($\chi^2 = 75.882$; $df = 1$; $P < 0.05$). The variation in weathering data between the three sites was also recorded (Early SBK: $\chi^2 = 76.846$; $df = 2$; $P < 0.05$; Late SBK: $\chi^2 = 126.979$; $df = 2$; $P < 0.05$). Bones marked by the infiltration of mineral elements into porous skeletal tissues (permineralisation) were also observed (*Table 8*). Permineralised fragments were found more markedly at Vchynice and Hrobčice than at Hrdlovka. The permineralised elements from Vchynice and Hrobčice prevailed more in Early SBK than Late SBK. The proportion of etched bones was low at Hrdlovka and Vchynice (in both phases), whereas it was conspicuously higher in Early SBK at Hrobčice (*Table 8*). The presence of root etching indicates that the bones from Hrobčice existed in a plant-supporting sedimentary environment. Low frequencies of traces connected to human activities (e.g. evidence of butchering traces and bone artefacts) were observed, likewise with bones with carnivore gnawing marks on the bone surface (*Table 8*). It is suggested that: (1) the taphonomical history of all the assemblages is dissimilar depending on the micro-environmental conditions at the place of the each site; (2) the degree of preservation of osteological material varies between Early and Late SBK within individual settlements; and (3) the share of determined bones in the total amount of material from Early and Late SBK differed at Hrdlovka and Hrobčice, not at Vchynice. Given the above, the settlements are difficult to compare, e.g. on the level of taxonomic categories.

The next level of analysis was the faunal spectrum determination. The main taxonomic categories from the

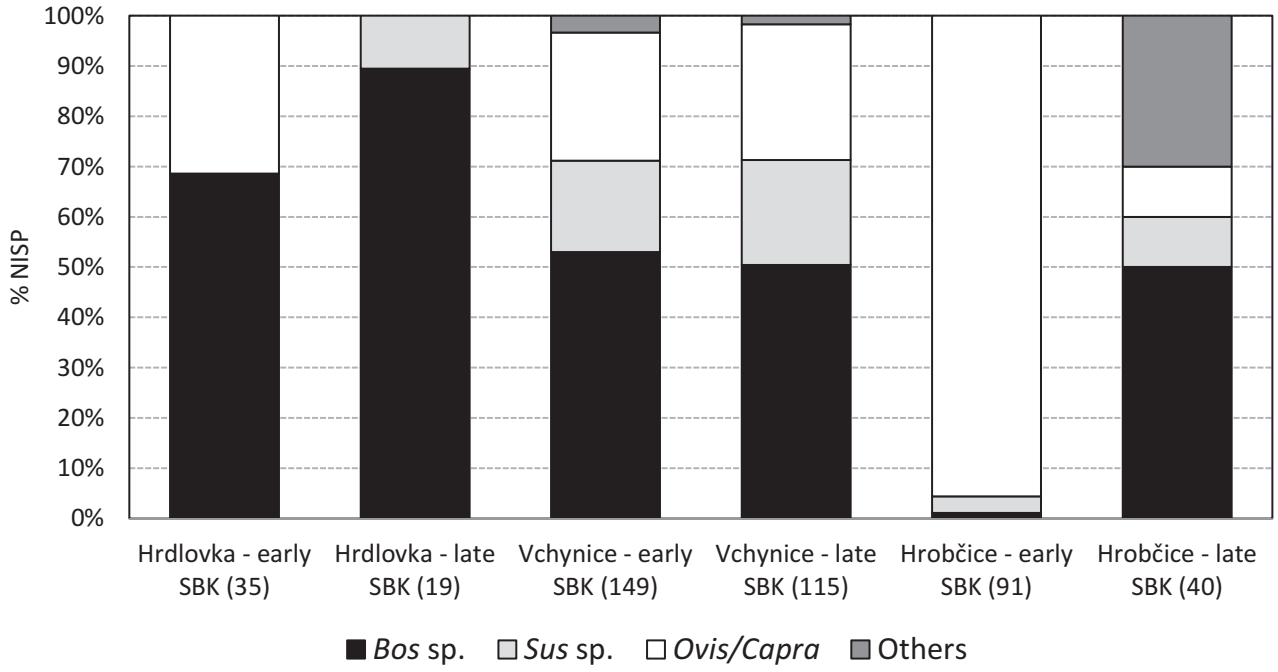

FIGURE 5. Faunal spectrum in two settlement periods at Hrdlovka, Vchynice, and Hrobčice, NISP. In brackets are the NISP totals.

studied settlements are shown in *Figure 5*. Given the determination difficulties, because some remains could not be reliably assigned to domestic or wild form, the following large categories were used: bovinae (*Bos* sp.), suinae (*Sus* sp.) and sheep/goats (*Ovis/Capra*). The category of Others included dog (*Canis familiaris*) and wild species such as aurochs (*Bos primigenius*), horse (*Equus* sp.), wild boar (*Sus strofa*), deer (*Cervus elaphus*), roe deer (*Capreolus*) and hare (*Lepus europaeus*).

DISCUSSION

The artefactual and ecofactual assemblages of Hrdlovka and Hrobčice were examined and compared in the context of other SBK settlements in the region of Northwest Bohemia. In some cases, the comparison was difficult because of the insufficient amount of individual findings. The interpretation presented below should be understood with regard to this limitation.

On the basis of the animal bones spectra, some aspects of SBK palaeoeconomy in the region may be suggested. According to the osteological data acquired, during the Early and Late SBK occupation at Hrdlovka, bovinae were predominant. Sheep/goats played a less important role in the animal economy. The bones and teeth of suinae and game from Early SBK at this site were missing. Only two fragments of suinae were determined in the assemblage from Late SBK. The number of bones of domestic animals at Vchynice did not differ significantly between the Early and Late periods of SBK. The remains of cattle dominated, while sheep/goats rank second. Also, the amount of remains of pigs was negligible. Due to the occurrence of bones of red deer, roe deer, wild boar, and hare, the surrounding landscape can be reconstructed as mosaic of mixed woodland and land without forest (Řídký *et al.* 2013), which is in agreement with other methods of landscape reconstruction in the Neolithic period of Bohemia (Beneš 2004). A completely different situation in animal composition from Vchynice and Hrdlovka was found at Hrobčice in Early SBK where sheep/goat bones and teeth completely dominated. The presence of these small ungulates might suggest that Hrobčice was in proximity to pasture land. Despite the small number of faunal findings at Hrobčice from Late SBK, their distribution changed in favour of bovinae and hunted animals, e.g. wild boar, hare, roe deer, and horse. Unfortunately, the assemblages from Hrdlovka and Hrobčice were too small to define the management system and attributes of the environment at both settlements.

Turning to the ceramic evidence, the Early SBK spectrum of vessel decoration in the region evinces quite a uniform range of double strokes organised in typical chevron motifs. This uniformity is disturbed only by the presence of wide and multiple strokes that indicate material of Phase III. The homogeneity in Northwest Bohemia is not surprising, bearing in mind that this is supposed to be the core area of the origin of SBK decoration and its subsequent development (Zápotocká 2009: 112–114). Analogical decoration could also be observed in Phase II in the Saxony area, to where this style spreads (Pratsch 1999). However, the lower representation of decorated ceramics compared to the sites located along the Elbe River could be observed in the case of the decorated/undecorated ratio of the Hrdlovka and Hrobčice assemblages.

A higher variability among the sites was observed in Late SBK (Phase IV). At the Vchynice site, the presence of painted and plastic decoration was observed but, in the case of painted decoration, the effect of sherd surface erosion must be taken into consideration. The painting of the vessel surface is commonly considered to be an imported element in Bohemian ceramics assemblages. Further, plastic decoration at the Vchynice site is as rare as in the studied area and as within the frame of Bohemian SBK pottery (Pavlů, Zápotocká 2007: 40). In the stroke techniques, the double wide stroke slightly prevails. This corresponds to the image known from the Litoměřicko region (Pavlů, Zápotocká 1979: 296). On the contrary, only the Hrdlovka site shows the presence of rössen strokes (11%). According to this criterion, Hrdlovka, unlike the Žatecko and Plzeňsko regions, was more connected with present-day German areas, from where rössen strokes come. Nevertheless, it should also be mentioned that, in the Litoměřicko region sites, the presence of rössen decoration was recognised (Zápotocká 2009: Tab. 12: 6–9).

A network of contacts could also be reconstructed by the vessel, the decoration of which refers to the Samborzec-Opatów or Malice groups of Little Poland, found within feature 18 at Hrobčice (*Figure 6*). Unfortunately, it is not possible to assign this feature assemblage to a specific SBK stage. However, based on the vessel profile it could be most likely assigned to the Malice group corresponding chronologically with the end of Late SBK (Rauerová 2013: 45–46, Zápotocká 2004: 34–41). The presence of this vessel, which is foreign to Bohemia, thus indicates contact between the region of Northwest Bohemia and that defined by the rivers Bug, Wisla, and Odra (Kozłowski 1996).

This may be in agreement with the chipped stone industry raw material spectrum, from the presence of SGS

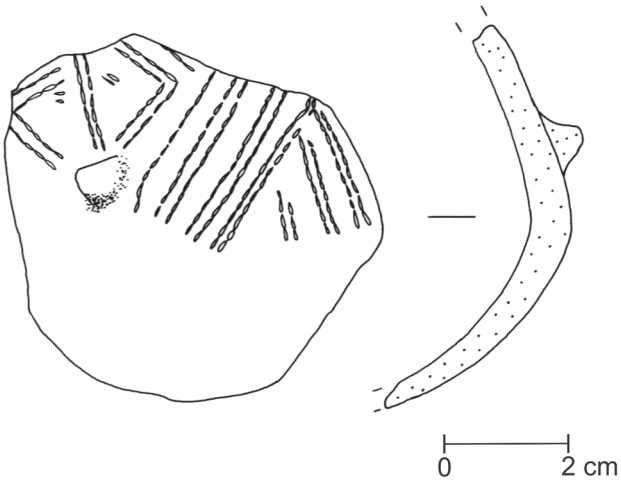

FIGURE 6. The vessel of Samborzec-Opatów or Malice group of Little Poland found within feature 18 at Hrobčice. Drawings by M. Rauerová.

which originated in Poland and the northern German area, mainly in the Late SBK period. In Early SBK, nearly the same ratio of Northwest Bohemian quartzites was observed. Among the observed sites, Hrobčice displays the highest ratio of Skršín quartzite, which could be explained by the processing character of the site, which was situated close to the outcrop. The descending ratio of Bohemian quartzites towards the north along the Elbe River is interesting. This trend could also be observed in the Saxon "Dresdener Elbtalweitung" area, where quantities of quartzites are very rare, sometimes only 1%. On the contrary, polished stone industry materials are also represented here by the Jizera Mountains metabasites (Link 2012b: 25–26). The Hrobčice material spectrum is completed by the presence of Bavarian plattensilex, which was registered also in the Hrdlovka LBK/SBK transitional phase House III assemblage. Nevertheless, historical contacts observed only by the changing stone industry raw materials supply are difficult to reconstruct because the mechanisms of raw material exchange are not well understood (Šída 2006).

It is apparent that Neolithic settlements occur within the same areas along the creeks of higher order during the whole Neolithic period (Beneš 1995: 66). The above-mentioned methodological approach enabled spatial reconnaissance of the Neolithic sites to their actual extension, despite the fact that only the Hrdlovka site has been studied here in the sense of its internal habitat units setting. The other Neolithic sites were evidenced only at a fragmentary level; the analysis of the spatial association of particular, more or less isolated, Neolithic features, shows clearly the cores of the Neolithic habitat areas (Beneš 1991b: Fig. 1). The regular distance between particular cores of habitat areas is also interesting. While the distance of habitat areas along the water stream axis varied from 1250 m to 2500 m, the distance between sites occurring in shallow valleys reached 2500–3000 m. According to these data, the habitat areas network is predictable and enables an understanding of the basal regularities existing in the Neolithic Podkrušnohorská pánev Basin landscape. The Hrdlovka site seems to be in a common context and is not an exceptional site. The remaining topic to solve could be the inter-settlement hierarchy, especially in relation to the rondel presence/absence in particular regions of Northwest Bohemia. Although there is new evidence available (*Figure 4*), our knowledge is at present too fragmented.

CONCLUSION

The artefactual and ecofactual evidence consisting of ceramics, lithics, and animal bones were examined from the Hrdlovka and Hrobčice sites in the context of the Northwest Bohemia SBK settlements. Despite a dense SBK settlement structure in the Podkrušnohorská pánev Basin, it was only possible to take into account some material assemblages for comparison, and the following trends were observed. The decoration of Early SBK ceramics seems to be unsurprisingly uniformly represented by small double strokes organised in chevron motifs. A higher variability could be observed in Late SBK. The majority of the decoration was made by wide double strokes. Contrary to the Litoměřice region, the Hrdlovka site shows a high ratio of rössen strokes. This pattern is more typical in Plzeňsko and Žatecko than in the Litoměřicko region. Without any doubt the vessel of Samborzec-Opatów, or more likely a Malice type of vessel, represents evidence of inter-regional contact. The animal bones show the standard Neolithic inventory. Nevertheless, more accurate results cannot be drawn with respect to the state of the osteological assemblage. The raw material for the stone industry consists mainly of SGS and Bohemian quartzites.

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