



TEREZA BLAŽKOVÁ

TESTIMONY OF ARCHAEOLOGICAL FINDS FROM THE NEOLITHIC RONDEL IN PRAHA-RUZYŇ, CZECH REPUBLIC

ABSTRACT: Over the past three decades, the research of Neolithic rondels has been one of the main subjects within Central European Archaeology. Until now, knowledge from recent excavations about these enclosures from within Bohemia has been limited. This study deals with a rondel in Praha-Ruzyně from the later Neolithic and includes discussion on Stroked Pottery Culture, the original rondel form and its later adaptations, analyses of finds, dating, and the subsequent in-filling of the rondel ditches. This rondel was researched in 2003 and 2006. It consists of two concentric ditches and three palisade trenches with a pair of entrances. Individual groups of finds from the rondel infill (pottery, stone industry, animal bone and daub) were quantitatively and qualitatively analysed and interpreted, and their spatial distribution was studied. The interpretation of material analyses and their spatial distribution attempts to suggest a tendency of relationships between the formation processes and the later infill of rondel features. This analysis showed that following the fulfilment of the rondel's primary function, there was a common practice of settlement disbandment and discard of materials. These materials were both intentionally and unintentionally (as a result of natural processes) deposited into the rondel's ditches within a relatively short period of time. This study builds upon research from another rondel – Vchynice – in northwest Bohemia (Řídký et al. 2012). The main contribution of our study is that enables us to compare the results of finds and spatial analyses with the results from research carried out at other rondel sites.

KEY WORDS: Late Neolithic – Stroked Pottery Culture – Rondel – Praha-Ruzyně

INTRODUCTION

Rondels are monumental enclosures built in Central Europe during the Late Neolithic period – 4900–4500 BC (in Czech periodisation) – and are often associated with Stroked Pottery Culture (hereinafter referred to as

SPC) and Lengyel culture (Moravian painted ware Culture). Within European archaeological literature, rondels are also known as circular enclosures, ring ditches, henges or Kresigrabenanlage etc. Rondels usually consist of one or more circular concentric ditch with a characteristic V-shaped profile, and one or more circular

Received 22 January 2015; accepted 4 February 2015.

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palisade wall/trench. They usually have a minimum of two entrances and the size of an enclosure can range from 30 m to 300 m in diameter. The functions of these enclosures are not fully understood. Interpretations vary vastly and economic, social, defensive, ritual and astronomical functions of rondels have been suggested (Podborský 2006). Květina *et al.* (2009) suggest that rondels may have been used as playgrounds. For more information about rondels in central Europe (see Bartels *et al.* 2003, Daim, Neubauer 2005, Petrasch 1990, Podborský a kol. 1999 and Řídký 2011 etc.).

Although the purpose of rondels are not clear, they do indicate a change within the structure of society in the Late Neolithic. There are few basic questions that are usually posed in connection with rondels which concern: their design and construction, the origin and direction of their entrances, and their function (Řídký 2011: 12). However, often the only available data for later analyses and interpretation are the artefacts and deposits recovered from rondel ditches. From the infilling of ditches it is possible to study both the archaeological finds – typology, distribution, and analysis (e.g. Bertemes, North 2007, Doneus 2001, Kinne *et al.* 2012, Řídký 2011) as well as the sedimentary layers and their soils (sedimentological and micro-morphological approach, e.g. Lisá *et al.* 2013). For this research we used the same methodology that was used on the site of the Vchynice rondel (Řídký 2012). This was to ensure that we could make direct comparisons particularly with regards to the spatial analyses of archaeological remains recovered from within the rondel's ditches.

Rondels were built in the settlement areas of today's lower Austria, Western Slovakia, Czech Republic, Hungary and Germany. There are over 150 known rondels in this area: (in 2011) 34 in the Czech Republic, 23 in Germany, 34 in Austria and 25 in Slovakia (Řídký 2011) and approximately 30 in Hungary (P. Barna *et al.* 2012). There are four known rondels in Prague, one of which is the discussed Praha-Ruzyně rondel.

AIMS

The main objective of the study is the complete processing, analysis and interpretation of the archaeological finds and archaeological features at the rondel, which is dated to the Later Neolithic period and SPC in Praha-Ruzyně, Praha 6 (based on Blažková 2013). The rondel was researched during salvage excavations in 2003 and 2006 (site on the map of the Czech Republic and Prague, *Figure 1*). This rondel was

one of only a few which have been almost entirely excavated.

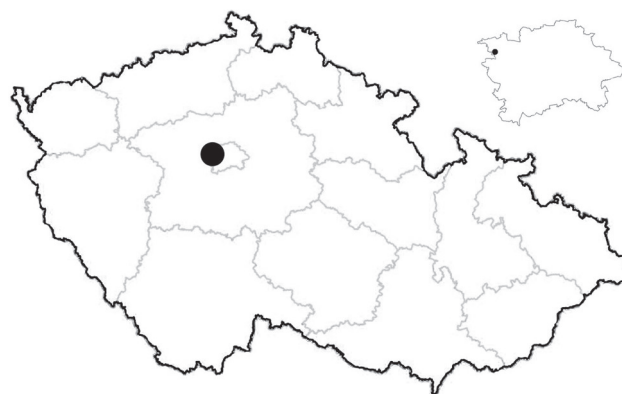


FIGURE 1. Location of the site in Czech Republic and Prague.

The quantitative, qualitative and spatial analyses and interpretation of archaeological finds from the infill of the rondel's features aims to:

- Show relations between finds located within the fills of the ditches by quantifying them and determining their spatial distribution – in both horizontal and vertical horizons – which should enable us to solve questions relating to the date and original function of the rondel.
- Reveal the nature and rate of ditch in-filling and review any relationships between the finds from the ditch deposits and the use of the rondel. In time it fulfilled its primary function and eventually in time of its decline.
- Discover the original form of the rondel, how it was constructed and any later adaptations.

THE MULTICULTURAL SITE OF NA HŮRCE IN PRAHA-RUZYNĚ, CZECH REPUBLIC

In the years 2003–2010 there were a series of preliminary surveys in Praha 6-Ruzyně, which revealed evidence of a multicultural settlement area including the discussed rondel enclosure with SPC. This area is situated near the street Na Hůrce on the western periphery of the cadastral district of Ruzyně, on the northern (left) bank of the Litovice stream (*Figure 1*).

The banks of the Litovice stream within the cadastral district of Ruzyně are rich in prehistoric finds. The northern bank between Hostivice and Ruzyně is set

within one of the most archaeologically researched areas in Prague (Lutovský, Smejtek a kol. 2005, Pavlů, Zápotocká 2013).

Right within the heart of the study area, M. Fridrichová from the Prague City Museum (hereinafter referred to as MMP) revealed – among other things – settlement pits relating to the SPC. This archaeological excavation was carried out in 1973 in preparation for engineering works in the location of a former coal-warehouse and garden centre (BZO 1973: 132). In 1999, excavations preceding the development of a ring road around Prague uncovered another part of the site which also included features from the SPC (Lutovský, Smejtek *et al.* 2005: 231–232). Furthermore, components of the

SPC are known from other archaeological excavations and stray finds recovered from within the broader vicinity of the site (e.g. Richterová 1980, Kovářik, Fridrichová 1982–83: 145 and others).

In August 2003, MMP carried out a salvage excavation on the locality of the rondel under the direction of M. Kostka. This preceded the development of a business park in the Karlovarská area. The excavation uncovered part of the enclosure and SPC features in the northern part of the rondel – nearly one third of which was excavated (*Figure 2*). The excavations recommenced in February 2006 and continued into June of the same year. This excavation was directed by M. Kuchařík (MMP) and an area of 1.5 ha on the southern

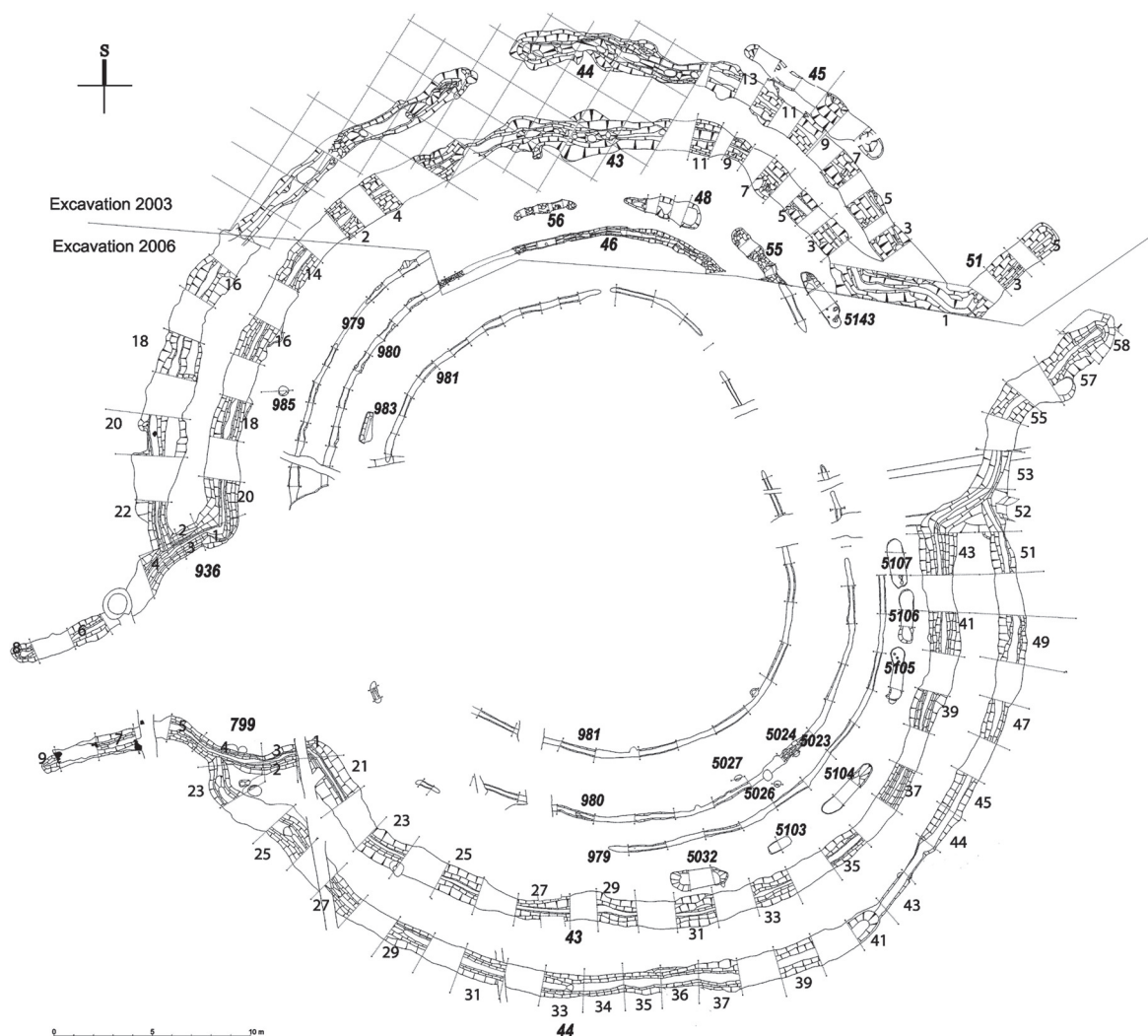


FIGURE 2. Plan of the rondel, with labelled features and sectors.

part of the site was researched prior to another phase of development. A survey of the entire rondel was completed and a large part of the SPC settlement site was excavated. Along with the Neolithic settlement, the excavations also uncovered features from an early Copper Age settlement, a burial ground from the Únětice Culture, features from a Late Bronze Age settlement and also evidence of a settlement dating to the Late Roman Period. The last phases of excavations took place between 2007–2010 under the direction of P. Hušták and M. Kuchařík (Labrys, o. p. s.) in the western part of the site. The excavation covered an area of 2.26ha and extended to the western border of the previously excavated SPC site. The preliminary outcomes from these excavations were summarised in Kostka 2004 and Kostka *et al.* 2011. However, the archaeological data and material have not yet been fully analysed.

STROKED POTTERY CULTURE SETTLEMENT SITE

During the excavations in 2003 and 2006, a total of 106 artefacts with SPC components (dated to SPC phase IVa–V) were identified within a thin cultural layer in a small area on the north of the site. Tens more SPC finds recovered from 2007–2010 are yet to be analysed and dated. The area of the excavations is situated on the slightly sloped southern hillside overlooking the Litovice stream – the present day's bed of which lies cca. 100 metres south from the boundary of the excavated area.

From analysing the ceramic finds it is possible to identify several chronological phases of the Stroked Pottery Culture (II/III-SPC V). The area of the SPC settlement site revealed the full plans of long houses with a north-south orientation (with a little deviation) and one exception of a house oriented northwest-southeast, located nearby the eastern edge of the rondel. Aside from the loam pit, there were easily visible circular or oval ground plans of storage pits which often contained a large amount of daub – some of which preserved the imprints of the impacts from construction components. A high concentration of several tens of silicate blades and flakes within features in the northwest part of the area most likely reveal the location of a chipped stone industry workshop. In several places the remains of cultural strata were uncovered. Detailed interpretation of the SPC site alongside the rondel and an assessment of temporal and spatial dynamics will be carried out following the completed processing of excavation materials (which I am currently undertaking).

THE RONDEL

The Ruzyně Rondel consists of two concentric oval-shaped ditches and three palisade trenches (*Figure 2*). Terrain within the southern part of the rondel was heavily reduced (0.5 m) as a result of modern encroachments and in some places the archaeological terrain had been completely destroyed. The state of rondel features and the excavated sectors from both excavations are depicted in *Figure 2*.

The diameter of the area enclosed by the outer ditch is approximately 50 m along the NNW-SSE axis and 45 m along the E-W axis. The diameter of the area enclosed by the inner ditch is approximately 43 m along the NNW-SSE axis and 38 m along the E-W axis. In comparison with other rondels in the Czech Republic and abroad, the Ruzyně Rondel can be categorised as a "small rondel" as classified by J. Řídký (2011: 14). This classification defines rondels with size between 20–70 m and typically has only one ditch. Despite this, the Ruzyně Rondel is not the only exception within this category to have more than one ditch. For instance, the Vochov I Rondel has a maximum diameter of 49 m (Pavlu, Metlička 2012: 134) and five concentric circles comprising of two ditches and three palisade trenches.

At Ruzyně, the inner ditch has a width which ranges between 1.1–1.8 m and a depth between 1–2 m. The outer ditch has a width which ranges between 0.9–2.30 m and a depth between 0.65–1.6 m. The ditches are 1.2–1.7 m apart. The ditches both have parallel inclined walls which, in the case of the inner ditch, develops into a V-shaped base and in case of the outer ditch – is more often than not – either U-shaped or flat (*Figure 3*). The outer ditch within the southern and south-eastern parts of the enclosure are noticeably more narrow and shallow, which could suggest (whilst acknowledging the previously mentioned reduction of the site by dozens of centimetres due to modern disruption – including the upper part of the ditch infill) a possible failure to complete the rondel within the Later Neolithic. One notable discovery was a longitudinal, ca 14 m long, ditch-like feature located on the northeast periphery of the enclosure. It may represent the initial construction of a third outer ditch. However, it is much shallower (around 0.2 m) and no other components indicate this.

The three palisade trenches are not preserved along the entire perimeter. The diameter of the space enclosed by the outer trench ranges between 30–33 m, the middle trench between 25–30 m, and the inner trench (feature 981) between 20–24 m. The width of the trenches ranges between 0.25 and 0.5 m, but each trench has roughly the

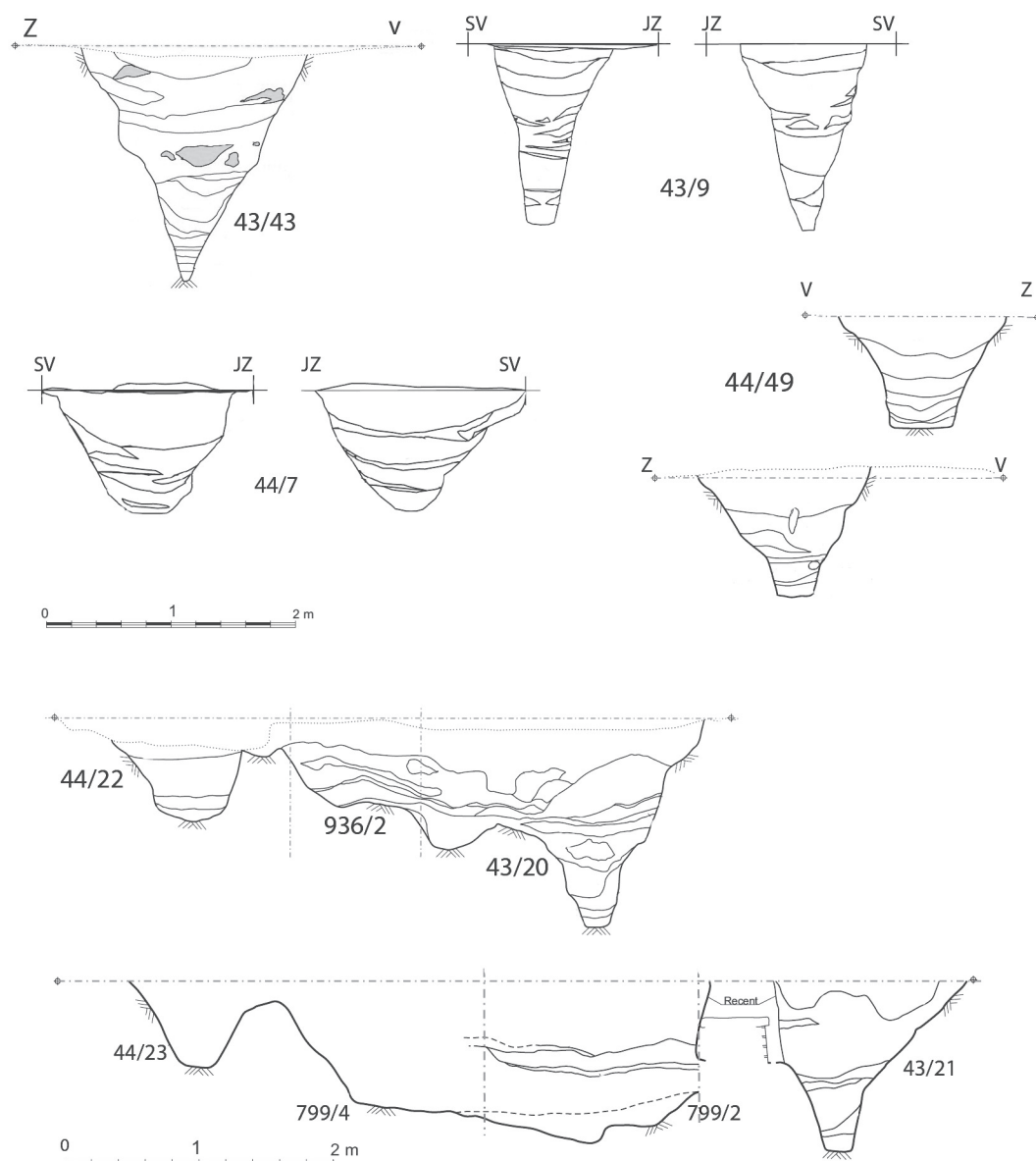


FIGURE 3. Sections of the ditches and entrance features.

same variable. Their depth ranges from 0.1 to 0.25 m and the middle trench is slightly deeper than the other two. The trenches have almost perpendicular walls, U-shaped bedded bases and only one unstratified infill. The first trench lies approximately 3 m from the inner ditch; the others are at intervals of 1.5 and 3 m. The trenches are interpreted as evidence of a triple embedded palisade – with the middle palisade as the tallest due to the deeper embedment. In the base of several parts of the palisade trenches and also along the perimeter, particularly in the

south-eastern part, we revealed post holes with diameters ranging from 0.3–0.4 m and a preserved depth of 0.1–0.25 m. These post-hole features did not contain any artefacts and their in-fill was identical to the upper infill of the rondel ditches. They may however, prove the presence of a wooden construction. In the area between the inner ditch and the outer trench, we revealed seven longitudinal, oval, trench-like features. On the base of three of these features we also discovered post holes. It is possible to interpret these post holes as relating to the

rondel construction and they may have supported the palisade wall. Apart from the palisade trenches, there are no remains of the above-ground construction preserved from the rondel enclosure.

Two entrances located on the NE-SW axis interrupt the ditches and trenches. The entrance areas consist of irregular, oblong outward reaching stretches of ditches. On the basis of terrain documentation, it is possible to assume a secondary completion of the passageway arms that attach to the inner ditch and sigmoidally protrude out of the area. The lengths of the passageways are 13.5 m on the south-western side, and 12 m on the north-eastern side. The cross-sections of the ditches are V-shaped and their width ranges between 0.8 and 2 m. Their depth ranges between 0.8 and 1.7 m.

In most of the excavated parts of these ditches there was an upper dark-brown layer of soil, which may be definitive of the horizon of the final phase of the site. The ditches of the rondel were filled with thin layers of alternating dark-brown and light beige soil (from loess), which were most probably created as a result of solifluction of the surrounding terrain. This indicates that the filling of the ditches occurred by two alternate processes. From the dark humus soil layers in the areas surrounding the ditches and the lighter layers, originating from the crumbling and collapsing walls of the ditches or perhaps other exterior construction features (such as ramparts) or possibly both of these variants. The deposits within the palisade trenches consisted of unstratified brownish-black soil.

ASSESSMENT OF THE ARCHAEOLOGICAL FINDS FROM THE RONDEL

Within the deposits of the ditches and entrance features of the rondel, several fragments of ceramic vessels, stone industry, daub and animal bones were discovered and collected. Individual categories of finds were analysed and appraised, and their spatial distribution determined. Due to the effort to compare the outcomes from the finds analysis, I proceeded to use the same methodology as used (in the case of finds analysis) in the research of the Vchynice Rondel (Řídký *et al.* 2012).

POTTERY

The analysis of the ceramic decoration and shape was conducted using a methodology based on the work of M. Zápotocká (Steklá 1959, Zápotocká 1970, 1978) and

adapted by J. Řídký (2011, 2012). Relative dating is derived from observation of the ceramic decoration and morphology, and based on the typochronology by M. Zápotocká (1959, 1970, Pavlů, Zápotocká 2013).

From within the rondel features we recovered a total of 993 ceramic sherds, which can be linked to 644 individual specimens (vessels) (65%). The pottery weighs a total of 1.571 kg. For a breakdown of pottery sherds and their locations (see *Table 1, Figure 4*).

It was possible to determine a vessel form from 83 of the pottery specimens (13%). The predominant form of vessel was a beaker-like container (33 pcs., e.g. *Figure 4: 2, 13, 18*), followed by bowl-like shapes (20 pcs.): five of which were crafted with a flat base (*Figure 4: 9*), 3 with rounded bases, 2 with sharply inclined profile and inverted rim, and 10 were not categorised. 12 specimens are cauldron-shaped (*Figure 4: 4, 21*), 9 high pear-shaped (e.g. *Figure 4: 5, 6, 14*) and there was the same number of pot-shaped vessels (*Figure 4: 7*). One hornlike protrusion of a vessel rim indicates a mortar-like shape. No vessel was preserved in one piece. The most complete example was a beaker-like shape cca of 70% (*Figure 4: 1*). The sherds are rather small with an average weight of 11.5 g.

In the assemblage, body sherds prevail (69%) over rims (22%) and bases (9%). The majority of measurable diameters from vessel rims ranges between 16–20 cm (27%), and fewer between 21–30 cm (21%), 11–15 cm (17%), 5–10 cm (5%), and a diameter over 30 cm was measured only three times (2%). Most of the bases are flat (89%), in four cases rounded (7%) and in one case footed (*Figure 4: 19*).

The ceramic material is in most cases floated, and in colour, shades of grey prevail over beige, black and ochre.

Technical additions are visible on 44 specimens, i.e. 7%. There are knobs, handles and hornlike projections. Knobs represent 47% of these additions; they are round and oval and of different size (e.g. *Figure 4: 1, 7, 13, 18*). Handles of different size are represented by 29% (e.g. *Figure 4: 12, 21*) and hornlike projections that indicate high pear-shaped vessels, 24% (*Figure 4: 14*).

37% of specimens are decorated: 95% with strokes, 3% with plaster decoration and colour incrustation was preserved upon 2% of specimens.

In total, there are 229 specimens decorated by strokes (*Table 2*) – 35% of all specimens. This ratio of non-decorated pottery to decorated pottery with stroked is lower in comparison to other sites in Central Bohemia, where it ranges between 45–60% (Řídký 2011: Tab. V.4). However, it may be compared to the pottery assemblage from the rondel ditch infill in Vchynice (Řídký *et al.* 2012: 649). Specific decoration techniques were determined

TABLE 1. Categorisation of pottery sherds according to shape and type. BC, Bowl-like shape without closer specification; BR, Bowl-like shape with rounded base; BF, Bowl-like shape with flat base; BB, Bowl-like shape, bell-like shape; H, High pear-shaped; B, Beaker-like shaped; C, Cauldron-shaped; CA, Cauldron-shaped with avoid rim; P, Pot-shaped; R, Rims in total; WS, Walls with sharp profilation; B, Bases in total; F, Flat bases; R, Rounded bases; Bf, Bases on foot; H, Hornlike projections; K, Knobs; Ha, Handle; Pf, Profile as a whole; W, Vessel preserved intact.

Representation of shapes					Types of shards																									
Feature	No of shards	No of specimens	Weight (g)	Total specified shapes	BC	BR	BF	BB	H	B	C	CA	P	Σr	5-10 cm	11-15 cm	16-20 cm	21-30 cm	>30 cm	Σw	WS	B	F	R	Bf	H	K	Ha	Pf	W
inner ditch 43	458	266	4134	37	6	3	4	2	4	11	4	0	3	65	2	14	22	13	1	186	17	15	12	3	0	4	9	6	3	1
outer ditch 44	378	257	5669	34	3	0	0	0	5	13	8	0	5	57	4	9	8	17	2	170	17	30	29	0	1	5	8	5	0	0
NE entrance S part 44/52-58	30	18	273	2	0	0	1	0	0	1	0	0	0	5	0	0	3	0	0	11	0	2	2	0	0	0	0	0	0	0
NE entrance N part 51	57	41	560	0	0	0	0	0	0	0	0	0	0	6	0	0	4	1	0	31	3	4	3	1	0	0	0	0	0	0
SW entrance S part 799	49	43	637	3	0	0	0	0	0	3	0	0	0	7	1	1	4	0	0	34	3	2	2	0	0	0	0	0	0	0
SW entrance N part 936	14	12	196	2	0	0	0	0	0	2	0	0	0	2	1	0	1	0	0	9	1	1	0	0	0	0	0	0	0	0
inner palisade trench 981	1	1	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
middle palisade trench 46	4	4	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
outer palisade trench 55	2	2	45	2	1	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0
In total	993	644	11571	80	10	3	5	2	9	31	12	0	8	143	8	25	42	31	3	447	42	54	48	4	1	9	18	11	3	1

TABLE 2. Pottery decoration. PD, Plastic decoration; CI, Colour incrustation; SD, Stroked decoration; SS, Simple-stroke; LD, Little double-stroke; BD, Big double-stroke; TS, Triple-stroke; TrS, Tetra-stroke; TmS, Tremolo-stroke; RS, Rössen-stroke; K, Kombination of strokes; V, V-motive; Ch, Chevron; Z, Zig-zag; B, Band; U, U-motive; Ch, Ches-board; A, Another motives; B, Bands under the rim; WL, On the walls; Σ r, Reutilized in total; Rd, Reutilized by drilling; Rs, Reutilized by smoothing.

Feature	Number of shards	Number of specimens	weight	Decoration type												Technology of stroke												Motive												Decoration placement			
				PD				CI				SD				SS	LD	BD	TS	TrS	TmS	RS	K	V	CH	Z	B	U	Ch	A	B	WL	Σr	Rd	Rs								
inner ditch 43	458	266	4134	3	1	107	1	4	53	29	4	1	0	1	21	2	4	17	3	1	0	8	90	2	2	2																	
outer ditch 44	378	257	5669	4	2	78	0	6	34	17	7	2	1	0	18	1	1	14	1	4	1	6	77	1	0	1																	
NE entrance S part 44/52-58	30	18	273	0	0	7	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0																	
NE entrance N part 51	57	41	560	1	0	19	0	0	13	1	2	0	0	0	4	0	0	5	0	0	0	2	15	0	0	0																	
SW entrance S part 799	49	43	637	0	2	9	0	2	2	1	0	1	0	0	1	0	0	0	0	0	0	8	0	0	0	0																	
SW entrance N part 936	14	12	196	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																	
inner palisade trench 981	1	1	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																	
middle palisade trench 46	4	4	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																	
outer palisade trench 55	2	2	45	0	0	2	0	0	0	0	1	1	0	0	0	0	0	1	1	0	1	0	2	0	0	0																	
In total	993	644	11571	8	5	222	1	12	104	52	14	4	1	1	44	3	6	37	4	6	1	17	198	3	2	3																	

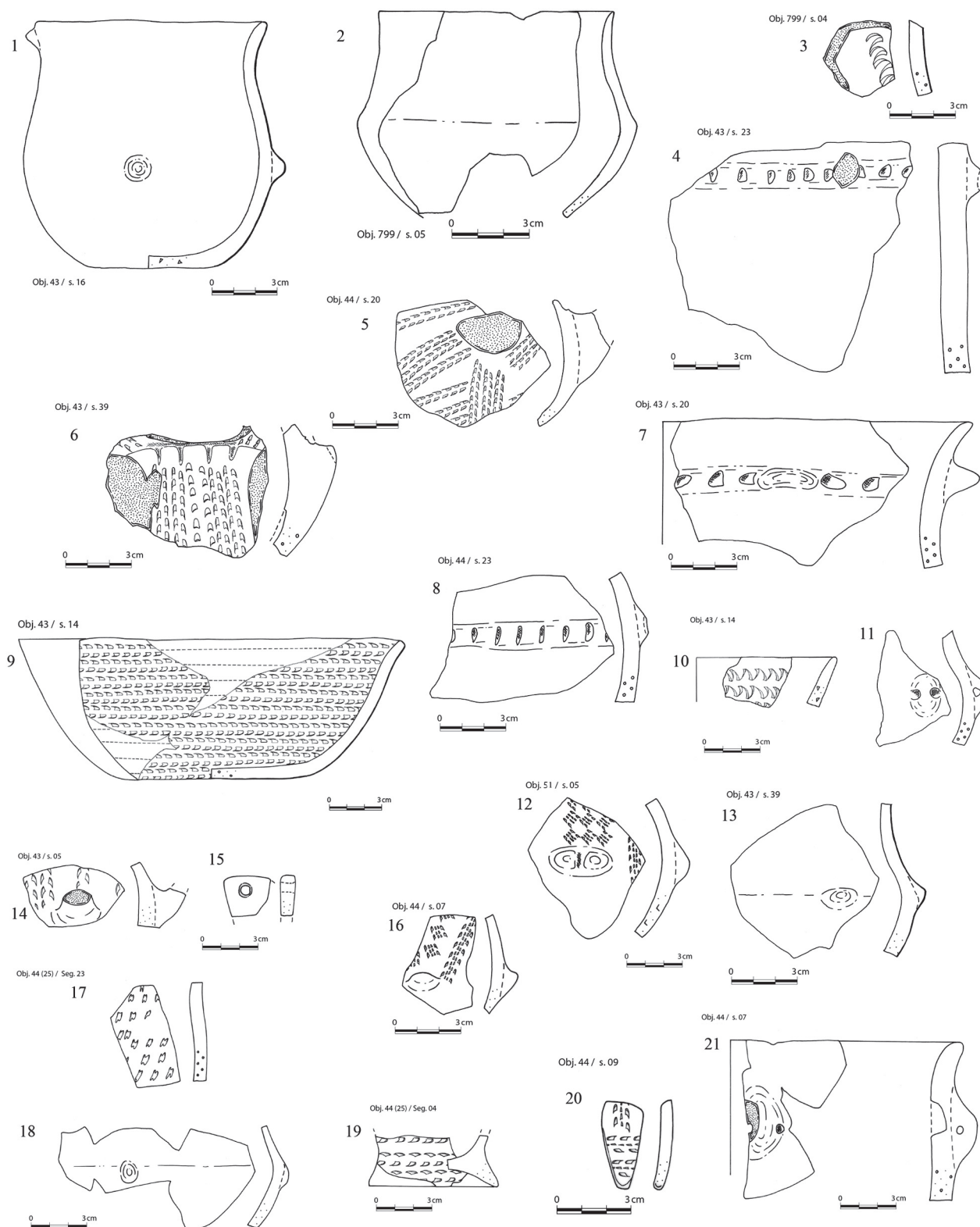


FIGURE 4. Representative example of pottery shapes and decorations.

within 194 stroked specimens and a total of 7 distinguishable decorative techniques were identified. Large double-stroked designs appear in most cases (55%, e.g. *Figure 4: 9*), followed by triple-strokes (27%), little double-stroke (7%) and tetra-stroke (7%, *Figure 4: 12*). In four cases there was a tremolling stroke (2%, *Figure 4: 3, 10*) and in one case rössen-stroke (0.5%, *Figure 4: 17*) and simple stroke. Sometimes we observed a combination of strokes such as the use of a simple stroke with large double-stroke (*Figure 4: 6*) or a combination of striated stroke with an incised line and rössen-stroke.

The positions of stroked decorations upon the vessels are in 8% of cases within bands under the rim and the remainder appear upon the vessel body. No interior decoration was present within any of the sherds. In total, it was possible to identify six main decorative motives within 105 specimens (46%). Here the predominant motive is V-shaped (43%), followed by bands (37%), zig-zags (7%) and chess-boards designs (6%, e.g. *Figure 4: 12, 16*). U-shaped motives represented 4% and chevron 3%. We also noticed subsidiary motives, for instance: the arrangement of triple-strokes into a circle or arc, the crossing of decorative bands of tetra-strokes, or different combinations, e.g. chess-board motive with bands.

We also found three reutilised sherds which were modified by polishing and – in two cases – with a perforated hole (whorl, *Figure 4: 15*) and one without a hole (smoother, *Figure 4: 20*). With regards to abrasion, most of the sherds were preserved with partially worn edges, sharp-edges. Completely worn-away edges were minimal.

From the rondel there were no sherds from earlier phases of SPC (phase I and II). Into the middle phase of SPC (phase III) we can date several specimens due to their typical shapes and styles, such as the use of little double-strokes and the bowl-like shape of the vessels with rounded bases. Most of the ceramic assemblage may be dated to the later phase of the SPC (cca 4800–4500 BC). We have examples of pottery which represent all phases of the period IVa, IVb and V.

The majority of chronologically-younger techniques such as large double-stroke, triple-stroke, tetra-stroke, tremolling stroke and rarely also the rössen and striated stroke, are represented within our assemblage. There are also a variety of motives of the stroked decoration style including a chess-board design and a decoration-piece with strokes divided into horizontal bands.

Concerning the shapes of the vessels, the high pear-like shape with horn-like protrusions, the coarse cauldron-shaped vessels with knobs, and the one example of a mortar-shaped vessel, are typical for the SPC phase

IVa. We also recovered examples of beaker shapes and shapes with a more sharply inclined profile. The coarse pottery recovered from this site has incised decoration on the rim and belly of the pot-shaped vessels (sharper in profile than the cauldron-shaped examples), which are typical of SPC phase IVb. The footed beaker and bowl-like bell shapes are also from this same phase. Within the assemblage, there are also undecorated beaker-like shapes with pointed bellies – decorated with slashes – as well as pot-like shapes, typical of SPC phase V.

STONE INDUSTRY

A total of 75 pieces of stone artefacts were excavated from the rondel (2.665 kg). The discussion of the stone industry assemblage proceeds from a study by D. Thurzo (2013).

The prevailing raw materials used for this chipped stone industry (18 pieces, 285 g) are the erratic flints (SGS). From this type we recovered blades (e.g. *Figure 5: 1, 2, 3, 5*), four partially exploited cores (one of Plattensilex) and a large quantity of flakes, which have been categorised as "manufacture debris". There was also one hammerstone and two scrapers with evidence of retouching. A representation of each kind of material, manufacture and morphological categorisation of the chipped industry is presented in *Table 3*. Materials (with the exception of SGS and Plattensilex type) are determined to originate locally or from within a close vicinity of the site.

In this assemblage, there are 17 pieces of polished stone industry (1.764 kg). From the examples produced from raw local material, only an amphibolite could be recognised and was probably imported from a distance of 0.5km. There were four fragments of axes and other manufacture debris, such as five drill-holed cores of axes or adzes (e.g. *Figure 5: 6, 7*). The raw material used tended to be the local amphibolite or another general metabasic rock.

Fragments from double querns are represented by 24 pieces (2.1601 kg) all of which were probably broken before their final deposition. The identification of the upper or lower part of the quern might have been determined with only a few pieces – due to the typical shape when viewed side-on. We predominantly recovered the upper parts of querns (*Figure 5: 9*) over the lower (*Figure 5: 10*). The majority of the querns were made from local ferrous sandstone as opposed to a conglomerate.

There were 16 other stone artefacts (3 kg), created using different techniques, such as chipping, polishing, cutting, and drilling. We identified two grinders, a working surface, several pebble hammers and also a little

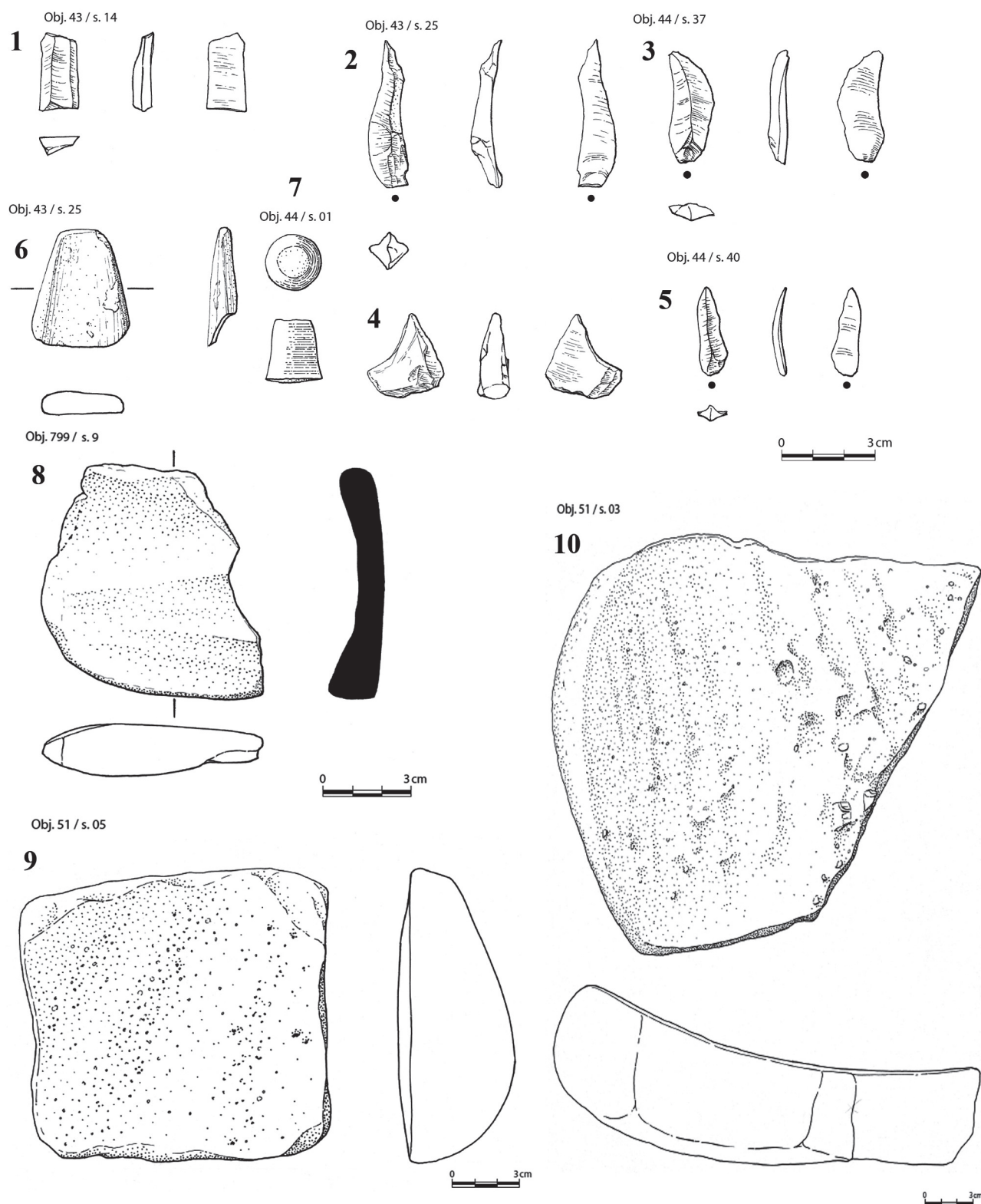


FIGURE 5. Examples of stone industry.

TABLE 3. Categorisation of stone tools according to manufacture and morphological properties. MD, Manufacture debris; SfT, Semi-finished tool; RM, Raw material.

The kind of raw material	Number	%	Manufacturing category					Morphological category			
			Tool	Frg of tool	MD	SfT	RM	Core	Flake	Blade	Tool
Bazaltoid	1	6			1					1	
Plattensilex	2	11		1			1	1			1
Flinty shale	1	6					1	1			
Acid subvolcanic rock	1	6			1				1		
Silicite	2	11			1		2	1	2		
SGS (erratic flint)	10	55	2	1	5		2	1	4	3	2
Brown stone	1	5			1				1		
In total	18	100	2	2	9	0	5	4	9	4	3

whetstone made from fine glauconitic sandstone. Particularly special finds were three fragments of silicified Ordovician concretion (Palaeozoic), the so-called "Šárka balls" from Letná strata, with holes that were created by worm-like organisms. On all three pieces there are traces of cutting or chipping and all three were found in one test-pet, which shows the intentional manufacture on-site using material which was imported from a distance of several hundreds of metres (Thurzo 2013).

DAUB

Daub is a material which is often neglected during the processing and analysing of the settlement sites, even

though it is very commonly found and it can have an indispensable potential. In my study I used a methodology in analysis based on the processing of daub from the rondel ditch in Vchynice by D. Stolz (Řídký *et. al.* 2012: 667–678).

At Ruzyně, within the infill of the rondel features we recovered 595 fragments of daub with a combined weight of 7.134 kg. Construction-markings were noticed on 40 fragments (7%). The colour of the daub material is most commonly ochre and beige. The size of the fragments ranged between 0.5 and 14 cm, and there were predominately small fragments of 0.5–3 cm (351 pieces and 59%) and fragments with size of 3–6 cm (218 pieces and 37%).

From the 40 fragments with constructionl-markings we noted 44 imprint types (Table 4). Here prevailed the imprints from cane (19 pieces, 43%, Figure 6: 2, 5), followed by

TABLE 4. Categorisation of daub according to construction imprints type. Nd, Number of daub fragments with imprints of construction features; A, imprints of rod without surface working, Ø 2–6 cm; AJ, imprints of rod with surface working, Ø 2–6 cm; B, imprints of hewn features without surface working; BJ, imprints of hewn features with surface working; C, imprints of billets without surface working, Ø >6 cm; H, imprints of cane without surface working Ø 0–1.9 cm; HJ, imprints of cane with surface working, Ø 0–1.9 cm; AB, combination of imprints of rod and hewn features without surface working; BH, combination of imprints of cane and hewn features without surface working; BHJ, combination of imprints of cane and hewn features with surface working; AC, combination of imprints of rod and billets without surface working.

Feature	Nd	A	AJ	B	BJ	C	H	HJ	AB	BH	BHJ	AC	0-3 cm	3-6 cm	6-9 cm	9-12 cm	12-15 cm
inner ditch 43	15	1	0	1	4	1	3	2	0	1	1	1	4	11	0	0	0
outer ditch 44	15	2	2	0	1	1	3	6	0	0	0	0	5	7	3	0	0
NE entrance N part 51	6	0	3	1	1	0	1	0	0	0	0	0	0	4	1	0	0
outer palisade trench 55	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
SW entrance S part 799	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
SW entrance N part 936	2	0	0	0	0	0	1	0	1	0	0	0	0	1	1	0	0
In total	40	3	6	2	6	2	8	8	1	1	1	1	9	25	5	0	0

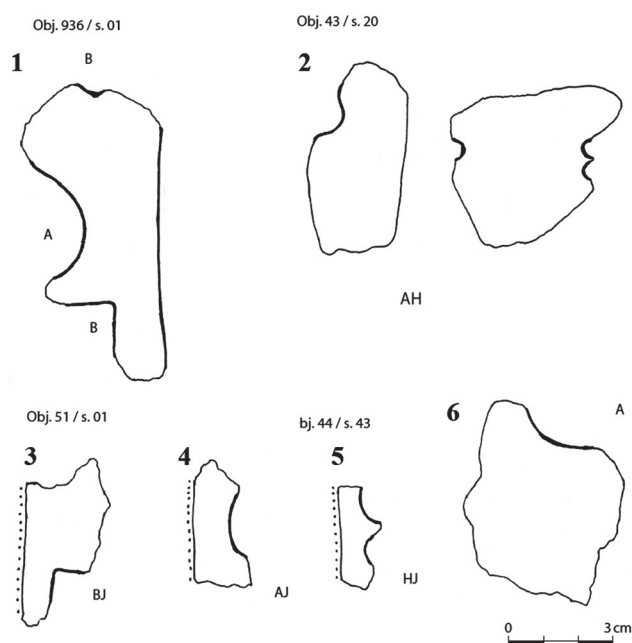


FIGURE 6. Examples of daub fragments with construction imprints.

imprints of rod (11 pieces, 25%, *Figure 6: 1, 2, 4, 6*) and hewn features (11 pieces, 25%, *Figure 6: 1, 3*) and billets (3 pieces, 7%), including combinations of more than one type. The surfaces of some daub fragments had been smoothed. Some of the smooth surfaces had a coating which resembled a plaster material or paint, but cannot be determined without further chemical analysis. Other daub fragments were cracked as a result of being exposed to high temperatures.

The fragments of daub from rondel's ditch deposits represent the remains of houses and other structures such as furnaces. It is most likely that the fragments are not remnants of the rondel construction, but more a more common type of settlement waste.

ANIMAL BONES

Archaeozoological analysis of osteological material was undertaken by D. Thurzo (2013). The osteological material showed similar results. The bones were very fragmented. The total number of fragments within the assemblage is 1571 with a weight of 29.553 kg, which were

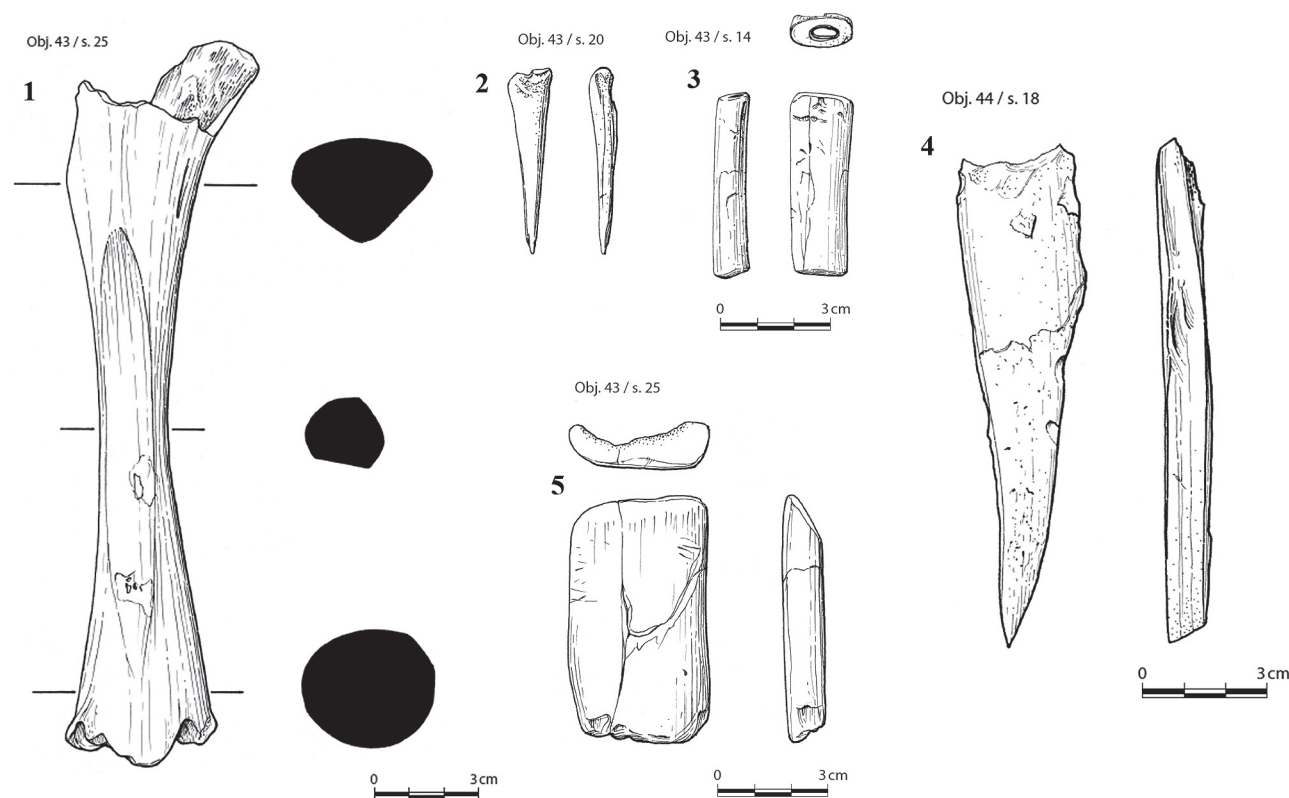


FIGURE 6. Examples of daub fragments with construction imprints.

connected to 772 specimens. We determined a specimen as a complex of one or more bones, which originally created a complex and undoubtedly belonged to one animal. The physical preservation state of the material is good, because the bones were only slightly porous and partially demineralised. Most of the assemblage is of greyish-yellow to a light-brown colour. Concerning the species, it was possible to determine 48% of specimens: 41% belongs generally to large mammals, 9% to medium-large mammals and 2% were impossible to determine at all. The determined finds of bones of the mammals indicated the presence of three species of farming animals, from which we recovered bones from all body parts. Cattle (73%), pigs (13%) and sheep/goat (11%). The remaining 3% belongs to deer (7 specimens) and horse (1 specimen). Other hunted animals were not discovered, but their presence cannot be completely excluded due to the high number of undetermined bones. The life expectancy age of animals was divided into the groups: juvenile, sub-adult and adult. In 198 cases, i.e. roughly one fourth of the assemblage – on basis of marks on the epiphysis of long bones and the state of teeth – 45% was determined as adult, 15% as sub-adults and 40% as juvenile. The vast age representation of slaughtered animals indicates that both juvenile and adult animals were eaten. Concerning the cattle, we can observe the preference of the slaughter of sub-adults – cattle which did not reach adulthood yet provided a sufficient amount of meat. Several bones present with pathological markings. Many bones have marks of cutting, breaking and chipping, which indicated a tendency to make use from all body parts, even parts which would not have provided much meat. The only undamaged bones originate from "finger articles" and parts of the vertebrae. There was not one long bone which presented without any evidence of meat processing or chipping. There is even evidence to suggest some effort was made to make use of bone marrow. Many bones have marks suggesting the separation of meat and ligaments with the use of a cutting tool. One noticeable butchering technique was the separation of a head from the body at the point of the first vertebra of an ox.

The well preserved surface on most of the bone fragments indicates that they were covered by sediment rather fast and were not exposed to climatic influences for a long time. Only a small percentage had evidence of burning.

We also identified 12 (1.5%, *Figure 7*) bone tools. Among them, (according to the terminology of K. Sklenář, 2000) a prick (*Figure 7: 4*), a point (*Figure 7: 2*), an awl, a graver, a chisel (*Figure 7: 5*) and "skates" (*Figure 7: 1*) and their associated fragments.

SPATIAL ANALYSIS OF FINDS FROM THE RONDEL

Two spatial analyses were carried out. First the horizontal, which shows a general distribution of finds in features of the rondel, and the positions of individual types of artefacts. With the exception of a few find, the artefacts weight and their relative density within test-trench deposits were studied. We calculated the capacity of each test-pit/trench which was then divided by the number of finds and their cumulative weight (g) which provided us with a figure representing the density of sherds (and other artefacts) per m³. This method of "relative density" was selected, in order to compare the number of artefacts in an undistorted manner, because each segment and test-trench consisted of different infill deposits resulting from their differing locations within the rondel and secondly due to the recent decrease of terrain in the southern part of the site. Thanks to this calculation it was possible to compare individual segments. Here we analysed the finds from both ditches and entrance features of the rondel from the excavations in 2006. From the excavations in 2003, we analysed only the test-trenches from both ditches within parts which did not lie beneath a cultural layer, and an entrance feature. Test trenches excavated which were located beneath a cultural layer were not comparable and could potentially skew the results (see *Figure 2*).

Furthermore, we also carried out spatial analysis of the finds to indicate the in-filling processes – potentially revealing the rate and content of ditch deposition. Due to the non-sequential documentation of finds recovered from mechanically dug trenches, the analysis was restricted to only 15 of the more precisely documented test-trenches.

SPATIAL ANALYSIS (HORIZONTAL)

The spatial positioning of artefacts within the rondel features reveals several tendencies. There was a higher concentration of artefacts within the outer ditch, as opposed to the inner. The concentration is also higher within the entrance features, especially in the SW entrance to the enclosure, where there is a much higher concentration of daub and bone finds. Within the ditches, the distribution of artefacts is fairly well-balanced with the exception of some segments which slightly exceed the average concentration of finds, and others have no finds at all. Within the inner ditch the finds were fairly evenly situated.

It is interesting, that within test-trench 43 in the outer ditch in the area where it narrows (see above), we recovered a large amount of polished and chipped stone industry and querns. However, due to the very small representation of stone industry, it is impossible to study the more general trends of its deposition. Animal bones were noticeably concentrated within the northern part of the rondel, within the upper parts of the ditches which were missing on the southern side of the site due to modern disturbances. An increased number of skull parts from an ox were not indicative as the representation of all body parts was proportional. Here, we did not reveal a layer with a larger concentration of daub, as was the case at the Vchynice Rondel (Řídký *et al.* 2012). Pottery within both ditches were evenly represented. An increased concentration was observed only in the northeast part of the outer ditch (test-trenches 5, 7, 9), where it was also vertically spatially analysed. Because the finds are concentrated specifically within the upper layers of the ditches (as it is shown below), it is possible, that in the southern part of the rondel the finds may have disappeared as a result of the recent disruption of the upper layers of terrain.

SPATIAL IN-DEPTH ANALYSIS (VERTICAL)

It was possible to vertically analyse 15 test-pits from the north-eastern area of the rondel, where the layers were methodically excavated in 20 cm stages.

Test-trenches 2, 3, 4, 5, 7, 9 and 11 (*Figure 2*) were located within the inner ditch (no. 43). Test-trenches 2 and 4 did not show any significant trend in finds deposition. The most commonly found artefacts were pottery and bones. In the test-trench 2 these finds were more concentrated within the upper parts of the ditch (0–60 cm), while in test-trench 4, the majority of the finds were in the lower part (60–180 cm) and within the upper part, finds were minimal (0–40 cm nothing and 40–60 cm 1 piece of bone). Concerning test-trench 2, it is possible to consider the possibility that pottery sherds were deposited in regular intervals. This is because the number of finds tends to increase evenly within each level of the ditch, rising towards the surface (up to the level of 0–20 cm). Test-trenches 3, 5, 7, 9 and 11 from the inner revealed the potential of two different trends of ditch-filling. Test-trenches 3, 5 and 7 shows evidence that most finds were located within the upper parts of the ditch (20–40 cm). The majority of finds were ceramic and the next most common was animal bones. However, this contrasts with test-trenches 9 and 11 where there is the largest concentration of finds within the middle and

lower parts of the trench (40–bottom, mostly around 80 cm deep). Here there were not only ceramic sherds and bone but also daub. Daub was almost entirely absent from three of the more southerly located trenches where only one piece was found. It was apparent that bones were more frequently situated close to the bottom (80–100 cm) and daub the middle parts (40–80 cm). The V-shaped base of the ditch suggests that a fast and intentional in-filling of the ditch with debris took place.

To understand the outer features of the rondel, the vertical analysis from test-trenches 5, 7, 9, 11 and 13 (where there was generally the largest concentration of finds in the upper and middle deposits) may help. It is possible to observe within these two test-trenches oriented to the south (5 and 7) a trend of more evenly distributed finds within all depths. More than half of these finds were ceramic, and the next most frequent were animal bones. Three test-trenches to the north (9, 11 and 13) have slightly more animal bones but a reduced quantity of ceramic. Also, most of the finds tend to be more concentrated within in the middle layers of the ditch (20–60 cm), which may indicate an intentional deposition of debris (especially bones) in this part of the ditch. There was almost no daub within the test-trenches of the outer ditch.

Furthermore, it was possible to spatially analyse all three test-trenches within the ditch in northern part of the north-eastern entrance (feature no. 51, test-trenches 1, 3, 5). Finds within these areas were distributed almost evenly and at all depths. There were however, a slightly higher concentration closer to the surface (0–20 cm) and in the lower parts (60 cm to bottom), which could indicate an initial intentional fast-deposition of debris.

CONCLUSION

Neither finds from the rondel nor its spatial organisation indicate a priori to its primary function. However, it is possible to consider its form above the ground. Reconstruction of the original above-ground rondel construction is possible from the excavated evidence. In addition to the discussed palisade trenches we also revealed the unusual oblong sunken features that were preserved in the eastern and south-eastern part of the site between the inner ditch and palisade. These features may be the remains of possible back-up walls for palisade, or a rampart. We cannot answer this question using the samples taken from these ditches nor on the basis of the in-field documentation.

We can suggest that the building of rondel took place in several phases. The unusual oblong (ca. 14 m long) ditch-like feature located on the outside of the rondel to the northeast may represent the possible beginnings of the construction of a third outer ditch. Differing depths of ditch bottoms and inconsistencies in the width of ditches, supports the theory of the gradual deepening of ditches (Trnka 1997). S-shaped ditches located in the entrance corridors are appear to be additionally attached to pre-existing ditches. According to the accessible outcomes of analysis, it is potentially the only rondel with an entrance of this type in Bohemia. Similar entrance features, which protrude out of the enclosure, appear in other sites, but the arms more usually reach out from the ditch, such as the Vochov II rondel (Pavlu, Metlička 2012: 24). Or they simply do not connect at all, such as the ditches at Rondel I in Kolín. An extraordinary feature is the interruption of the outer ditch in the north-northwest. It is probably not the location of another entrance; however it is clear the interruption was intentional. M. Oliva (2002: 170) states that "no rondel can be considered formally finished", whereas finished are only their ground-plan dispositions and not individual compositions.

The finds from Ruzyně rondel are not beyond the usual spectrum of settlement finds located within a secondary position. They can be interpreted as settlement debris, which infiltrated the ditches following the end of the rondel's initial function, and when the site ceased to be maintained. The debris was initially intentionally deposited and secondly re-deposited by natural processes from the surrounding terrain. The finds are not concurrent with the time of its original function, but they are pending. The ditch deposits are very similar in composition to other rondels e.g. in Vchynice (Řídký *et al.* 2012), Goseck (Berthemes 2007), Dresden-Nickern (Bartels *et al.* 2003) or Kamegg (Doneus 2001).

The deposits of the outer and the inner ditch shows indicated two different filling processes, with regards to the speed of infilling and its contents. While the inner ditch has a prevalence of ceramic finds and daub, the outer ditch contained far more animal bones and almost no daub. The difference in distribution is also visible in the north-south direction. In the northern parts of both ditches there is larger concentration of bones than in the south. They are typically deposited within the middle and upper parts of the ditch. The question is, whether the bones were intentionally deposited by a "butcher", as a result of "kitchen" debris, or by a natural solifluction process. The analysed part of the ditch of entrance feature has a different characteristic and is fairly well-balanced with regards to the types of finds, with a larger

density located within the lower layers. This indicates that the ditch was intentionally filled in with debris following the end of the original rondel function of the rondel. Likewise, with the northern test-trenches of the inner ditch. Unfortunately, because we do not have exact data to of the depths of each individual finds within the rest of the rondel ditches, it is impossible to create more general conclusions for the entire rondel.

According to the current dating of the finds from the ditches it is possible to assume that the filling of the ditches happened in relatively short time-horizon following the primary function during the later phase of the SPC. A similar scenario can be seen, e.g. in case of Kamegg, Vchynice, Těšetice-Kyjovice or Kolín rondels (cf. Doneus 2001, Lisá *et al.* 2013, Řídký *et al.* 2012) and in other cases. The immediate in-filling of features is also indicated by the cultural layer of the SPC (feature 25), which covers northern part of the Rondel. Finds from this layer have been identified as concurrent from the other artefacts recovered from the rondel.

So far the settlement site of the SPC has not been fully evaluated. This analysis will follow, and similarly include a discussion of temporal and spatial relations between the settlement site and the rondel.

ACKNOWLEDGEMENT

I would like to thank the European Association of Archaeologists session leaders for the invitation to this publication, especially to J. Řídký for his help with processing of findings and discussions. I also thank to the reviewers for their suggestions. Last but not least I thank to M. Kuchařík, the leader of the archeological research in Ruzyně.

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Tereza Blažková
Charles University in Prague
Faculty of Arts
Nám. Jana Palacha 2
116 38 Praha 1
Czech Republic
Labrys, o. p. s.
Hloubětínská 16/11
198 00 Praha 9 - Hloubětín
Czech Republic
E-mail: therezka@email.cz
E-mail: blazkova@labrys.cz