CHAPTER 5

The material culture of the DSP landscape

Compiled by P. Guldager Bilde
with contributions by P. Attema, S. Handberg, M.E. van Kruining,
M.J.L.Th. Niekus & K. Winther-Jacobsen

In this chapter we shall present the material culture of the DSP landscape in terms of settlement and funerary architecture, pottery, and lithics, and though not material culture proper, the chapter ends with a brief discussion of the osseous remains found in three trial trenches. A more detailed discussion of the burial architecture, foremost the kurgans, is included in Chapter 6.5.

5.1 SETTLEMENT ARCHITECTURE | P. GULDAGER BILDE WITH CONTRIBUTION BY K. WINTHER-JACOBSEN

As part of the DSP, various settlement types featuring stone walls made of local limestone blocks were inventoried (see Appendix 1). Structures of cut and sometimes dressed blocks are, however, only found at the larger sites, such as the Černomorskoe Settlement, farmhouses around Černomorskoe including the Vetrenaja Bay farm, Panskoe I-IV (see Chapter 4.3.2), Skalistoe 5 (see Chapter 4.2.2), and Masliny 1. On the Hillsides, in many cases only stone slabs are visible on the surface revealing the presence of quite another type of architecture. Geomagnetic surveys conducted at a number of sites with such slabs have provided a reliable picture of both their architecture and layout. Below, the following features are discussed; pit houses, houses(?) with stone foundations, household pits, double pens and ash hills. Of the pit houses, only a single specimen was excavated, but the presence of further pit houses is suggested from geomagnetic survey, and they are known from excavations in other places. T. Smekalova has suggested that a circular anomaly (DSP07-H07-02 Feature 2) with an approximate diameter of 18 m is the imprint of a nomadic tent, a *jurt*. However, without excavation this cannot be verified. The presence of household pits and (double) pens for rearing animals are vivid testimonies to mixed farming at individual Hillside settlements. A final category of architecture to be discussed is burial structures. They were constructed from stone, mudbrick, and turf.

5.1.1 Pit houses | P. Guldager Bilde

Pit houses or dugouts, in Russian *zemljanki*, are huts partially dug into the ground. It is a widespread type of architecture especially in the northern hemisphere above 32° northern latitude. In the 20th century, they were common especially in South Russia between the rivers Dniepr and Bug (e.g. Feist 1913, 125), and many are the examples that exiles to the *gulag* lived in such dugout pit houses (e.g. Appelbaum 2003, 190). In antiquity, particularly in the Northern Pontic region, they were commonly employed by indigenous tribes as well as by Greek settlers. Because they are dug into the ground, temperature and humidity remain the same throughout the year, and in addition, they are well sheltered from the wind. Thus, less energy is required to maintain stable temperatures inside, which must have been of importance in windy Crimea.

On Hill 11 an assemblage of pit houses was located. One of the houses was fully excavated (DSP07-H11-02 Feature 9). It measures 5.7 x 4.1 m with a maximum depth of 1.27 m and with the entrance towards S. The house had several successive floor levels. Finds from the excavation make it clear that the house dates to the Late Classical-Early Hellenistic period (see Appendix 1). At Skalistoe 2, six or seven weak positive anomalies are possibly the traces of pit houses. Previously, this site was excavated by V.A. Kolotuchin, on which occasion house foundations of field stones were brought to light (Kolotuchin 1973; 1987). The settlement phases are dated to the Late Bronze Age as well as to the Hellenistic period, and we have no means of ascertaining to which period the pit houses belong.

At our current level of knowledge, they have been sparingly identified in the Tarchankut. Pit houses were excavated in the Late Bronze Age settlement of Baj Kijat 1 (Kolotuchin 2003, fig. 48) and Hellenistic pit houses have been excavated in Masliny, where they were connected with a number of household pits and an ash hill outside (to the E of) the Masliny (1) Settlement (Ščeglov 1978, 82-83). Similar structures have been found at Tarpanči (Ščeglov 1978, 82-83) and in the Černomorskoe Settlement. In the latter, they were connected with Late Scythian culture of the Late Hellenistic and Roman period (Užencev 2006, figs. 51-52).

5.1.2 Houses (?) with stone foundations | P. Guldager Bilde

In Hillside settlements, stone slabs were frequently encountered on the surface, which allude to the presence of stone architecture. Two types of walls have been observed: single- and double-faced built walls of local slabs and boulders and filled in with small-sized rubble. The stone is local limestone, mostly unworked or occasionally slightly chipped. Many of the structures appear to have had one or two rooms.

Rectangular structures		
Size category	m²	Number of structures
1	up to 49	28
2	50-99	18
3	100-149	9
4	150-199	10
5	200-249	5
6	250-299	4
7	300 and more (up to 1,320)	8

Table 5.1. Number of structures according to size category.

Rectangular structures				
Site	**Size category**	**Feature no.**	**m2**	**Date range**
DSP07-H01-01	1	4	30	BA, LC-EH
		17	30.4	BA, LC-EH
		15	36	BA, LC-EH
		12	44.8	BA, LC-EH
	2	3	51	BA, LC-EH
		9	70	BA, LC-EH
		13	88	BA, LC-EH
	3	14	103.5	BA, LC-EH
	4	10	152.5	BA, LC-EH
		6	153	BA, LC-EH
		16	157.5	BA, LC-EH
		2	176	BA, LC-EH
	5	11	200	BA, LC-EH
	6	5	270	BA, LC-EH
	7	1	371.3	BA, LC-EH
		7	486.4	BA, LC-EH

Rectangular structures				
Site	**Size category**	**Feature no.**	**m2**	**Date range**
DSP07-H02-01	1	2	28	BA
DSP07-H02-02	1	2	49	BA, LC-EH
	2	1	99	BA, LC-EH
	3	3	100	BA, LC-EH
	4	5	160	BA, LC-EH
		4	196	BA, LC-EH
DSP07-H04-01	1	2	36	LC-EH
		1	48	LC-EH
	3	4	109.25	LC-EH
	5	3	221	LC-EH
DSP07-H04-02	6	2	280.5	EM?
DSP07-H06-01	2	2	54	?
DSP07-H07-01	6	2	260	BA?/LC-EH
DSP07-H07-02	4	1	150	BA?/LC-EH
DSP07-H08-01	1	12	22.5	BA, LC-EH?
		4	42	BA, LC-EH?
		10	49	BA, LC-EH?
	2	3	60	BA
		6	87.5	BA, LC-EH?
	3	7	115	BA, LC-EH?
		1	136.5	BA
		11a	144	BA, LC-EH?
	4	9	165	BA, LC-EH?
	7	11b	696	BA, LC-EH?
		8	1320	BA, LC-EH?
DSP07-H09-01	2	1	75	EM
DSP07-H09-02	3	1	105	EM?
DSP07-H10-01	1	6	35	LC-EH
		4	36	LC-EH
	2	3	70	LC-EH
	7	2	340	LC-EH
DSP07-H11-02	1	18	30	LC-EH
		11	35.75	LC-EH
		13	36	LC-EH
		8	45	LC-EH
		5	48	LC-EH
	2	12	63	LC-EH
		9	70	LC-EH
	4	16	180	LC-EH
	5	14	225	LC-EH

Rectangular structures				
Site	**Size category**	**Feature no.**	**m2**	**Date range**
DSP07-H18-01	2	3	50	LC-EH
	3	5	117	LC-EH
	5	2	216	LC-EH
	6	4	255	LC-EH
DSP07-H22-03	2	8	68.25	Modern
DSP08-H07-03	1	5	16.5	EM?
		4	20	EM?
		6	40	EM?
	2	3	63	EM?
DSP08-H08-02	1	1	16	EM
DSP08-H12-01	1	11	49	LC-EH?
	2	6	64	LC-EH?
		3	88	LC-EH?
		7	90	LC-EH?
	3	8	126	LC-EH?
	4	13	162	LC-EH?
	5	4	202.5	LC-EH?
	7	5	836	LC-EH?
		2	912	LC-EH?
DSP08-H13-01	1	1	6	BA?/ LC-EH
		3	16	BA?/ LC-EH
		4	16	BA?/ LC-EH
		6	30	BA?/ LC-EH
		5	36	BA?/ LC-EH
DSP08-H16-01	2	3	52.5	?
	7	2	720	?

Table 5.2. Distribution of rectangular structures at DSP sites according to size.

Based on the measurements of the individual features in the site catalogue (Appendix 1), it has been possible to obtain an overall idea of the size variation of the structures.[47] Ca. 82 structures have been measured. We may conclude that over half of the buildings are less than 100 m² (Table 5.1). Considering the fact that they are structures in a rural setting, this is hardly surprising. However, there is a fair number of larger buildings with an area between 100 and 300 m², 28 in total as well as up to eight large to very large, complex buildings. It is difficult to form an opinion about how regular or irregular the individual structures are, because their current state of preservation make them appear more irregular than they probably are. In all likelihood, they are all living units. It is interesting to observe that at three sites, which we may consider complex, all size categories were encountered (DSP07-H01-01, DSP07-H08-01, DSP08-H12-01). The former is a site with Bronze Age as well as Late Classical-Early Hellenistic components, whereas the last two are exclusively dated to the Late Classical-

[47] Please note that the measures are obtained from the geomagnetic maps. It is likely that the area of the individual structures is a bit too large, because the outside of the walls are measured, and this outside border may be the representation of stones, which have fallen away from the house. Nevertheless, since the same method is used concerning all of the houses, the measurements can, at any rate, be compared.

Early Hellenistic period. It should also be noted that at site DSP07-H10-01, where a category 7 structure was noted, roof tiles were found as the only Hillside site (Appendix 2A-B). The latter structure was measured geomagnetically and with the Total Station. In all likelihood, this is a farmhouse with at least four rooms around two sides of a courtyard.

In one of the excavated stone-built structures, a hearth was discovered (DSP08-H14-01 Feature 2). It is constructed of stone slabs 3-5 cm thick, 5-10 cm high measuring 1.20 x 0.9 m. It is placed directly on the bedrock and thus pertains to the earliest phase of the structure. The finds made inside the hearth date to the Late Bronze Age (**Cat. 555-564**). Similar hearths were found in other Late Bronze Age settlements, such as Baj Kijat 1 (Kolotuchin 2003, figs. 41-46, 47.2).

5.1.3 Household pits | P. Guldager Bilde

A number of settlements featured household pits (Table 5.3). They could be seen as patches in the terrain of more intensive vegetation and they were verified in the geomagnetic survey. Household pits occur in clusters (50-200 m²) near buildings and one or a few isolated pits were identified inside buildings; they also occur in larger clusters at some distance away from any architecture (200-500 m). Three pits were excavated (DSP07-H01-01 Feature 18, DSP07-H10-01 Feature 5). The mentioned pits are roughly circular in plan and piriform in section with a concave bottom. One is only 0.47 m deep with a diameter of the mouth of 0.86 m and a maximum diameter of 0.96 m. The second one has the same shape; it is 0.76 m deep with a 0.9 m diameter of the mouth and a maximum diameter of 1.47 m. In the bottom level were found grains of cereals.

Site	Feature		Approx. area m²	Date	Excavation
DSP07-H01-01	18	Large cluster of ca. 32 pits	202	LC-EH?	Yes
DSP07-H01-01	20	Large cluster of pits	268	LC-EH?	
DSP07-H04-02	1	Cluster of pits	?	Early Modern?	
DSP07-H07-01	4	Cluster of ca. 12 pits	84	BA?/LC-EH	
DSP07-H08-01	5	Cluster of pits?	560	BA, LC-EH?	
DSP07-H10-01	5	Cluster of pits	55	LC-EH	Yes
DSP07-H10-01	7	Cluster of pits	47	LC-EH	
DSP07-H11-02	10	Cluster of pits	197	LC-EH	
DSP07-H11-02	15	Cluster of pits?	168	LC-EH	
DSP07-H11-02	17	Cluster of pits?	76	LC-EH	
DSP07-H11-02	6	Diffused cluster of pits	200	LC-EH	
DSP07-H18-01	1	Cluster of pits	80	LC-EH	
DSP07-H18-01	6	Cluster of pits	95	LC-EH	
DSP08-H12-01	12	Large cluster of pits	300	LC-EH/?	
DSP08-H12-01	14	Large cluster of pits	500	LC-EH/?	

Table 5.3. Distribution of pits at DSP sites in terms of number, size, and chronology.

All three excavated pits yielded finds of the Hellenistic period. This is in concordance with the general picture that pits on all locations are foremost associated with Hellenistic surface finds. The presence of storing facilities shows that the settlements in all likelihood were permanent or semi-permanent.

5.1.4 Double pens | P. Guldager Bilde

In four individual localities double pens were recorded during the geomagnetic surveys (DSP07-H01-01 Feature 8, DSP07-H02-01 Feature 1, DSP07-H06-01 Feature 1, DSP07-H08-01 Feature 2; Table 5.4). The last-mentioned was further investigated by means of a 2 x 2 m trial trench. This provided an idea about the construction of these pens. It had a broad double stone wall built of large blocks, which was filled-in with rubble.

The double pen has been and still is in use among herdsmen in regions of Central, Southern, and Eastern Europe such as Ukraine, Romania, Bulgaria, Greece, Hungary, Slovakia, and Serbia (Vuia 1964, 60; Podolak 1987; Chang 2000; Chang & Tourtellotte 1993, 256, fig. 6). In Slavonic language, the small pen is called *strunga* and its function is to gather the sheep prior to milking, and when they are milked they are let into the larger enclosure connected with the *strunga*, where they also sleep. Frequently, the pens are made of perishable materials, such as brushes or sticks, leaving no traces for survey archaeologists to discover. However, they could also be constructed from field stones as is the case with the ones found in the DSP study zone. Their significant size and quite monumental construction technique makes it likely that they were intended for more or less permanent, long-term use.

	Location of *strunga*	Approximate Ø	
DSP07-H01-01 Feature 8	W, upslope	21.5 m	38 m
DSP07-H02-01 Feature 1	S, upslope	28 m	48 m
DSP07-H06-01 Feature 1	SW, upslope	28 m	45 m
DSP07-H08-01 Feature 2	SW, upslope	22 m	30 m

Table 5.4. Location of *strunga* at DSP sites.

According to Podolák, when pens are placed on a slope, the *strunga* is always uphill in order to avoid accumulations of dung and urine in the milking area thus keeping the milking area clean. This is also the case with the four double pens found in the DSP survey.

In connection with other settlements on the slopes were localized further curvilinear structures, which may also be pens (DSP08-H12-01 Feature 9 Ø ca. 20 m; DSP08-H16-01 Feature 4, last-mentioned concentric and thus perhaps a double pen).

The excavation of DSP07-H08-01 Feature 2 provided a date in the Late Bronze Age for this particular pen. Late Bronze Age sherds were also collected in the vicinity of DSP07-H01-01 Feature 8 and DSP07-H02-01 Feature 1, but in connection with DSP07-H01-01 Feature 8 also Hellenistic pottery was found. Taken into account that this type of pen is known throughout time and space in animal-rearing societies it is problematic to couple them exclusively to the Bronze Age period, even though this is the date suggested by the majority of our find assemblages.

5.1.5 Ash hills | P. Guldager Bilde

Even though ash hills (in Russian *zol'niki*) are not an architectural element proper, they are, nevertheless, a significant feature of the settled DSP landscape and therefore they merit a brief discussion in this section. In general, ash hills are characteristic of Northern Black Sea sites. In the DSP study zone we find them connected with all periods of activity. Ash hills are common in settlements of the Late Bronze Age Sabatinovka culture (Gerškovič 1999, 43-45; Chişinău 2005). A large ash hill was found at Baj Kijat 1 and a similar ash hill was also observed at one of the two major Bronze Age settlements identified during the survey (DSP08-F06-01). In addition, several of the Bronze Age sites on the slopes were associated with ashy soil (DSP07-H01-01, DSP07-H02-01 and DSP07-H08-01). Ash hills were also connected with sites of the Hellenistic period such as the Černomorskoe Settlement, Burun Eli 4, Masliny 2, Panskoe I, Skalistoe 5, and DSP08-F04-01 Feature 3, and they are especially characteristic of the Early Modern, Tatarian sites, e.g. Kurama Kostel', Panskoe II, and DSP08-H07-03 Feature 1 and 2. The ashy soil of the ancient and Early Modern settlements can be clearly distinguished on Google Earth (e.g. Figs. 4.148, 4.167, 6.11).

In scholarly literature, their function has been debated. Currently, many researchers are of the opinion that the Greco-Roman *zol'niki* are to a large extent the remains of cultic activity (e.g. Rusanova 1998; Vinogradov, Butjagin & Vachtina 2003, 817). This may be the case in some instances, an example being, e.g., the large Cape Takil' ash hill in eastern Crimea, which is located far from any settlement (Vinogradov, Butjagin & Vachtina 2003). However, in the DSP study zone, no ash hill can readily be connected with cultic activity. On the contrary, in most cases they are most probably to be understood as dumps of garbage and other refuse including ash from the hearths. Perhaps brushes and shrubs were used as fuel, when houses were heated and food was prepared. These types of fuel produce much more ash, because when compared with proper wood the calorific value is low wherefore large volumes are needed in order to obtain the required

heat. In addition, ash hills may represent clean up of a larger area after a fire, which is probably the case with some of the ash hills in Panskoe I and with the ash hill over part of the Skalistoe 5 farmhouse.

5.1.6 Hydrological installations (wells and dams) | P. Guldager Bilde & K. Winther-Jacobsen

Three types of hydrological installations have been recorded: wells, dams and possible check dams, but no actual cisterns were identified. The most prominent well is the Early Modern stone well in the village of Sneznoe, a village occupied after 1897 (Fig. 5.1). The Early Modern villages such as Snežnoe tend to be located along the geographical line where the water-bearing Sarmatian limestone bedrock is closest to the surface and consequently where access to the highest quality water was most accessible (Smekalova 2007, 83-85). Due to the short duration of the project and their main locations in the occupied villages, the wells were not systematically investigated. The 1890s map indicates the location and number of wells in each of these villages with a K (that is, *kolodec*, a drawing well) or with a dotted circle. There may have been difference between the two, since at some sites both occur (Table 5.5).

	Dotted circle	K (*kolodec*)	Dotted circle with K
Coastal zone/Lowland Ridge (from W to E)			
Ak Mečet		2	
Šeichlar		2	
Burun Eli	7		
Tubaka	3		
Baj Kijat	3	1	
Časilmaj/Čigiltaj	3		
Kirgiz Kazak		1	
N branch of the Vodopojnoe Ravine (from W to E)			
Kirleut	11	1	
Kurman Adži	7		
Tok Džol’	1		
Otus	4		
Dauldžar’	2	1	
Kul’ Džakin	1		
Baim	1	1	
Tatarian Čongurči	1		
Foot of Hillsides (transition between Pediment and Hillsides, from W to E)			
Aldermenskaja Skala			1
Karlav			3
Musali			1
Kipčak Učkuju			1
Kurama Kostel’			2

Table 5.5. List of wells occurring in the Tatar villages according to the map of the 1890s.

The toponym of Kipčak Učkuju means the Kipčak village of three wells (Jankowski 2006, 1125-1126). The village is known at least since the time of Mukhin’s map of 1817; on the 1890s map, only one well is noted.

Two types of dams were recorded: one consisting of stone walls constructed across a small ravine with relatively steep sides (DSP08-H02-03). The walls are double faced and constructed of standing slabs. The bedrock behind the dam was flat, which is the natural structure of this local type of limestone. The other type of dam consists of two L-shapes earth

banks constructed across a shallow ravine on the top of the ridge (DSP08-H07-04). No finds were directly associated with either structure, but the latter is spatially associated with DSP08-H07-03, a small Early Modern settlement, and the former is spatially associated with a Bronze and Late Classical-Early Hellenistic settlement (DSP07-H02-01-02).

A course of stone on the shallow bank of a ravine at the bottom of the Hillsides associated with DSP07-H11-01 may be the remains of a check dam (Fig. 4.198). However, it was not associated with finds and may also be associated with Early Modern and Modern activities at the same location.

5.2 FUNERARY ARCHITECTURE | P. ATTEMA

In the campaigns of 2007 and 2008, one of the teams mapped and documented kurgans in the survey area on Hill 19. Here we discuss their morphology and architecture. On basis of this investigation, a catalogue was compiled containing standard descriptions, photographs, a schematic plan and two cross-sections perpendicular to each other. At kurgans where geomagnetic surveys were carried out, maps and interpretation of the results were added in the catalogue entries. In all, 31 kurgans were recorded with Total Station in order to obtain digital terrain models (DTM's) of each individual kurgan and in relation to each cluster. Geomagnetic surveys were carried out at nine of these (Fig. 4.204-227).

The kurgans on the surveyed slope appear in eight distinct groups based on intermediary distance (DSP07-H19-01-06, DSP08-H19-07-08). Within each group, diameters and height of kurgans varied. Their present form, however, will in all cases have been altered by excavation, looting and/or erosion. It is thought that all kurgans would have had a so-called krepis wall that would have held the soil of the mound in place. If true, this would mean that all kurgans mapped by us, originally were smaller in diameter, as we must assume that soil from the mound has washed over the krepis wall to form the sloping mounds that we see today. As can be noted in the descriptions in the catalogue, at a number of kurgans, indeed, remains of a possible krepis wall were noted at the surface (most significantly DSP07-H19-03 Kurgan 10), although they nowadays rather appear as stone circles and not as carefully constructed retaining walls. But even allowing for considerable changes over time to have happened to the original morphology of the kurgans on this slope, we may note differences within clusters. The cluster comprising DSP07-H19-01 Kurgans 1-4, for instance, has three larger and higher (1-3) and one clearly smaller and lower specimen (4). This height/diameter differentiation applies to all other groups except for the cluster made up of DSP07-H19-05 Kurgans 16 and 17 both of which show approximately the same diameters and height in their present form. As far as the grave architecture is concerned, we must rely on the information furnished in excavations carried out during the North-West Crimean expedition (pers. comm. S. Koltuchov). In the campaigns between 1970 and 1973, three tombs were excavated (DSP07-H19-01 Kurgans 1-3). Two of these (1 and 2) showed the mounds to have an approximately E-W orientated stone chamber that could be entered by means of a N-S orientated dromos. Chamber and dromos are constructed of standing orthostats as well as flat-lying stones. From the same orientation that was adopted by the mound builders for the chambers in Kurgans 1 and 2 we may deduce that the kurgans were either constructed at the same time, or that chamber and/or dromos remained visible so that the next kurgan could be placed in line with an existing one and could be reopened for additional burials. For some kurgans it was possible to reconstruct the orientation on basis of still protruding headstones (DSP07-H19-03 Kurgans 8 and 10). These correspond with Kurgans 1 and 2. The described type and its orientation is said to be typical for Northwestern Crimea and is interpreted as a family tomb where multiple burials took place.

On basis of the said excavations, it is assumed that, although not many datable artefacts had been found in the chamber graves, these graves date between the late 5th and late 4th century BC. Such a dating seems now confirmed by ceramic finds from a trial trench dug during this campaign SW of DSP07-H19-01 Kurgan 3 at a spot where a clear anomaly had turned up in the geomagnetic survey. As far as the dating is concerned, we should realize that no stratigraphical relationship was established between test pit and kurgan. Reportedly, the artefacts collected from the mounds in the excavations during the 1970s consisted of iron knives and arrow heads. Apparently, the excavated mounds had already been robbed of other materials. The sherds found in the test pit may tentatively be connected to ritual practice: it is possible that feasting occurred around the burial mounds, and the amphora sherds in the test pit could testify to this (pers. comm. T. Smekalova).

5.3 POTTERY | S. HANDBERG & K. WINTHER-JACOBSEN

5.3.1 Introduction | S. Handberg

The total number of pottery fragments pertaining to all the chronological periods represented in the DSP ceramic material, excluding modern finds, amounts to 9,725 fragments. In addition, the 10 excavations undertaken on the Hillsides produced 1,198 fragments (Table 5.6). All rims, bases and handles as well as fragments with characteristic decoration were recorded as diagnostic. The total share of diagnostic pieces among the survey finds makes up 820 fragments, i.e. 8.4%, the corresponding number of diagnostic pieces from the excavations constitutes 158 fragments, i.e. 13.2%.

Excavation	Number of frs.
Hill 01-1 trench 1	124 + 2 oven frs.
Hill 01-1 trench 2	19
Hill 19 kurgan 3	9
Skalistoe 5	540 + 1 oven fr.
Hill 10-1 trench 1	108 + 1 oven fr.
Hill 10-2 trench 1	28
Hill 8 trench 3	20
Hill 8 trench 4	101
Hill 14-1 trench 5	98
Hill 11-2 trench 6	151 + 1 oven fr.

Table 5.6. Distribution of pottery fragments from the DSP excavation areas.

The chronological distribution of the pottery makes clear that the majority of the finds fall within the Late Classical and Early Hellenistic periods (Table 5.7). Hellenistic finds datable to after the 3rd century BC are very few and although some fragments have been tentatively dated to the Byzantine and Medieval periods, there is a general lack of pottery in the survey area until the Early Modern period, i.e. the 18th-19th century AD. The second largest concentration belongs to the prehistoric period. A fairly large number of Middle and Late Bronze Age fragments were recognized, although a Bronze Age date for 746 of these is not entirely secure (see below, Section 5.3.2.1).

Period	**Approx. Dates**	**% of pottery**
MBA-LBA	18th-12th century BC	19.9
LC-EH	4th-3rd century BC	65.5
Byzantine/Medieval	6th-13th century AD	0.3/1.3
Early Modern	18th-19th century BC	5.1
Unknown date	?	9.6

Table 5.7. Chronological phases with distribution of the DSP pottery.

As described in Chapter 2.4, all finds were recorded according to their primary function and divided into 'function groups': '*architecture*', '*transport amphorai*, '*tableware*', '*handmade pottery*', '*utility ware*', and '*lithics*'. The three groups '*tableware*', '*utility ware*' and '*transport amphorai*' correspond roughly to the tableware, processing and storage functional

groups employed on some Mediterranean surveys.[48] These groups were supplemented by an additional category termed '*indeterminable*' that contains fragments, which could not be securely placed in any of the functional groups. Because no other architectural remains were found during the survey, '*architecture*' consists exclusively of fragments of roof tiles. Due to the difficulties in determining the specific functions of the fragmented handmade pottery, it was decided to catalogue these simply as '*handmade pottery*'. The '*utility ware*' group includes mostly pottery used in households, such as *louteria*, basins and cookingware, but storage vessels like *pithoi* were also included in this group, however, the numbers are very small. The distinction between transport amphorai and storage vessels is deceptive, as amphorai in the Northern Black Sea area are often reused for the storing of for instance grain as was the case in Panskoe I U6.[49]

The overall distribution of the survey pottery according to functional groups (Table 5.8) shows a remarkable preponderance of handmade pottery with 4,140 recorded fragments. The second largest group is the transport amphorai with 1,870 fragments. The tableware amounts to 697 fragments, 252 of which belong to the Early Modern period, whereas only a very limited number of utility ware, mostly of Early Modern date, was identified.

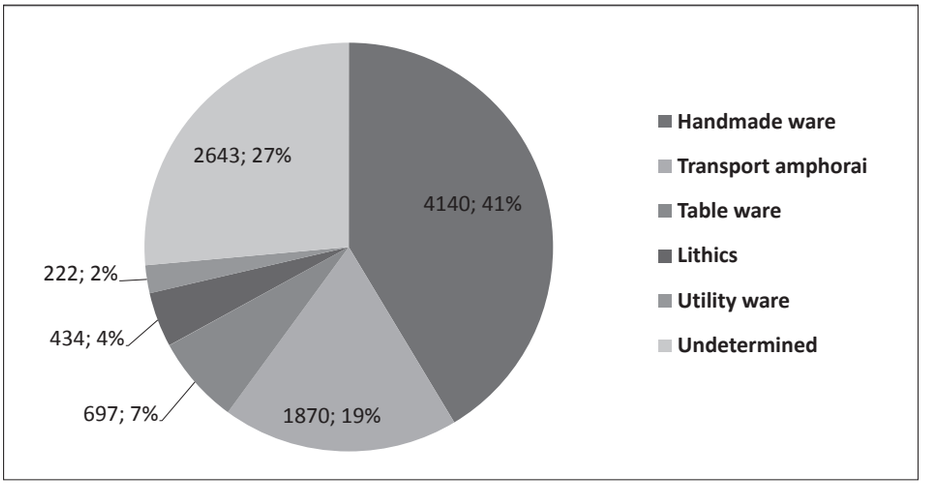

Table 5.8. Overall distribution of the survey pottery according to functional groups, all periods.

Considering the absolute sizes of the different groups it is important to keep in mind the large chronological span of the finds, which covers the period from the Middle Bronze Age ca. 1800 BC to the Early Modern pottery of the 18th-19th centuries AD. The predominance of the handmade pottery is to a large extent caused by two factors; first of all, the prehistoric pottery exclusively consists of handmade pottery and the two major Bronze Age sites DSP08-F03-02 (Skalistoe 2) and DSP08-F06-01 contributed with a total of 1,423 fragments. Secondly, the general low firing temperature and hence friable composition of the handmade fabrics increases the breakage rate of these vessels.[50]

The ascription of fragments to the different function groups was in most cases rather straight forward, although the number of fragments in the *indeterminable* group is substantial with 27%. The handmade pottery was easily identifiable among the wheelturned pottery, whereas the dating of this group is more problematic (see more below, Section 5.3.3.5.1). A characteristic feature of the composition of the DSP pottery assemblage is the lack of coarseware fabrics, which are found in abundance on surveys in the Mediterranean. Taken together, the handmade pottery and transport amphorai constitute 62% of the collected Late Classical/Early Hellenistic material. The large group of undetermined fragments only includes wheelmade pottery and consists almost exclusively of fragments of levigated red or reddish brown clay sometimes with mica or pyroxene inclusions.

[48] For the development of the typology based on the Northern Keos Survey data, see Whitelaw 1998; for the Laconia Survey, see Shipley 2002; for the Boeotia Survey, see Bintliff, Howard & Snodgrass 2007, 39-42.

[49] Cf. Januševič & Ščeglov 2002, the Chersonesan amphora Cat. Ad 10.

[50] Firing temperatures above 800° Celsius have, however, been recorded for some of the handmade pottery from Panskoe I U/6, see Kovnurko 2002, 320-321 (group 2).

5.3.2 The Middle and Late Bronze Age pottery | S. Handberg

The Late Bronze Age period of the Crimea is characterised by several 'cultures', the most prominent of which are the later period of the Srubnaja 'culture', the Sabatinovka and the Belozerka 'cultures'. It was previously thought that the Sabatinovka 'culture' of the lower Dnieper area and the Crimea developed out of the Srubnaja 'culture'. Recently, this assumption has been generally abandoned, and the Sabatinovka 'culture' is now seen as an autonomous group (Gerškovič 1999, esp. 75-77). It is roughly divided into three periods, an early period that overlaps with the later period of the Srubnaja 'culture', a middle 'independent' period and a late phase, which overlaps with the Late Bronze Age/Early Iron Age Belozerka 'culture' (Toščev 2007, 194-195).

Thus, the Srubnaja and the Sabatinovaka 'cultures' are now viewed as more or less synchronous groups occupying somewhat different geographical areas. In addition to these, a few groups are defined in terms of pottery assemblages like the so-called 'merhwulstkeramik' (*Mnogovalikovoj keramiki*), and the Kamenka-Livencovka group from eastern Crimea. The differentiation of the material assemblages, especially the ceramic material, has proven particularly difficult and ascriptions are still contested (Toščev 2007, 173 with further references).

Most of the pottery recovered during the survey is related to either the Sabatinovka or the Kamenka-Livencovka groups. The material cultural expression of the Sabatinovka group, especially the pottery, shares features with the Noua 'culture' of the western Black Sea area and 'cultures' of western Siberia.[51] However, recent opinions regard it as having developed out of the 'Mehrwulstkeramik' tradition. The Kamenka-Livencovka group in Crimea is believed to have played a major role in the formation of the Sabatinovka pottery, and it has even been proposed that the group first originated here.[52] The recognition that there was a close link between the 'Mehrwulstkeramik' and the Sabatinovka pottery departs from earlier opinions that the two groups were unrelated.[53]

The scholarly literature on the Bronze Age of the Northern Black Sea area and the Eurasian steppe zone in general is extensive, even so, no single coherent classification of Late Bronze Age ceramics exists. Ceramic classifications are still largely based on eponymous sites, like the Sabatinovka site in the Lower Dnieper, the Kamenka-Livencovka group on the Kerč Peninsula and the Early Iron Age Kizil Koba Cave in the Chatyr-Dag Mountain in the Crimean Foothills. Most problematic is the lack of a clear typological differentiation between the different ceramic assemblages and the inconsistencies in the use of terminology and the taxonomy for the different types of ceramics. The general low level of rigorous taxonomic uniformity in descriptions of especially pottery, but also burial types has blurred the borders of the specific expressions of the material culture associated with the different 'cultural' groups.[54] The characteristic features of the Sabatinovka pottery group is not very clear from the existing literature as few synthetic works exist. A recent synthetic account and typology has been proposed by J.P. Gerškovič, which has been followed in the DSP classification to the extent it has been possible to ascribe fragments to specific types (Gerškovič 1999). The lack of common identifying traits for the Sabatinovka pottery is partly caused by the lack of closed deposits and stratigraphy. Also, with the exception of Kirovo, none of the relevant sites for the later period have been extensively excavated (Toščev 2007, 197). Similarities among the groups are profound and V.A. Kolotuchin has noted the difficulties in differentiating between the different 'cultural' groups of Bronze Age Crimea on account of their material culture (Kolotuchin 2003, 10). The Late Bronze Age period in the Crimea was most likely permeated by a 'cultural' osmosis. Thus, the development can only be traced in broad terms.

In the Late Bronze Age period the Northwestern Crimea and the Tarchankut Peninsula in particular, is characterised by settlements of the Sabatinovka and the Belozerka 'cultures' best represented by the two larger settlement of Baj Kijat and Burun Eli not far to the NE from the survey area (Kolotuchin 2003). In fact, almost all settlements of the Late Bronze Age in the Crimea are now ascribed to either the Sabatinovka or Belozerka 'cultures' (Toščev 2007, 175 with further references). However, the Bronze Age pottery from the DSP has close connections to the eastern Crimea with several parallels to the material from Kirovo on the Kerč Peninsula as well. A connection between the western and eastern Crimea is furthermore supported by the unique finds of moulds for a sickle of similar type found at both Burun Eli and Kirovo (Toščev 2007, 191). The above-ground, stone constructions for houses as well as the ash hills are typical of settlements of

---

51 For a good short overview with references to the relevant literature, see Parzinger 2006, 536-539.

52 See, e.g., Toščev 2007, 173 with further references, but see also Gerškovič 1999, 79.

53 Leskov & Merpert 1967, 177-180. For recent discussions of the origin of the Srubnaja cultural group and its relationship to the Sabatinovka group, see Kolotuchin 2003, 6-10; Gerškovič 1999, esp. 75-77.

54 See e.g. Kolotuchin 2003, 41-42 and Gerškovic 1999, 47-50 for this problem.

the Sabatinovka 'culture' and both features were identified at Bronze Age sites in the DSP survey area (see Sections 5.1.2 and 5.1.5 above*)*.[55]

5.3.2.1 The DSP Bronze Age pottery

A total of 1,701 fragments of Bronze Age pottery were found during the survey. The majority of the prehistoric pottery belongs to the Late Bronze Age period, i.e. ca. 16th-12th century BC, and only 98 fragments could be dated to the Middle Bronze Age exclusively. However, the distinction between Middle and Late Bronze Age pottery is not always straightforward and 63 fragments have been dated broadly to the Middle or Late Bronze Age.

The very fragmentary state of the material from the survey poses a considerable problem in comparing individual pieces to better preserved, published examples.[56] Some general observations on the Bronze Age pottery can be made. The clay of the Middle and the Late Bronze Age is often described as having a black core caused by lack of oxidization and a low firing temperature. Sand and lime particles as well as organic material are typically added or naturally occurring in the clay.[57] The bodies of vessels of the Middle and Late Bronze Age are sometimes covered with horizontal striations created by tools used to dress the surfaces.[58] Smoothed or polished surfaces can be found during the Middle and Late Bronze Age, but are perhaps more frequent in the Middle Bronze Age. During the initial recording of the survey pottery, we encountered the problem of securely identifying Bronze Age fragments and especially body fragments. This problem arose because Late Classical and Early Hellenistic handmade and wheelturned pottery often appeared on the same sites as diagnostic Bronze Age material.[59] However, as more diagnostic Bronze Age fragments emerged, it became increasingly easy to distinguish between the Late Classical/Early Hellenistic handmade pottery and the Bronze Age pottery. Some features, such as the striations seen on **Cats. 326** and **454** and the smoothed or polished surfaces on **Cats. 268**, **668** and **674** became more and more prominent and were never observed on the diagnostic fragments belonging to the later periods. It was also observed that the wall thickness of the handmade fragments generally tends to be larger in the Bronze Age pottery. The most characteristic general feature of the Bronze Age pottery is, however, the fabric. The core of the Bronze Age fragments is almost always dark grey or black. The texture often appears somewhat granular, and there is usually a relatively high inclusion of sand. The colour of the surface of the pottery provides another indication of a Bronze Age date. Whereas the Late Classical and Early Hellenistic handmade pottery often has red or reddish brown surfaces (see Section 5.3.3.5 below), the Bronze Age pottery predominantly has a greyish or sometimes black surface. In some cases the surface is light, generally ranging from pink (5YR 8/4) to a pale brown (10YR 7/4), but the colour of the surface can vary from light to grey on the same fragment as seen for instance on **Cat. 780**. Even with these criteria, 746 fragments have only tentatively been allocated a Bronze Age date (marked as *Bronze Age?* in the finds lists).

Some characteristic Bronze Age fragments among the DSP finds can be singled out. A few fragments (**Cats. 295**, **298** and **451**) have a characteristic yellow surface, which is smoothly polished. This group finds clear parallels in the late Middle Bronze Age pottery from Planerskoe I, where they are often decorated with impressed cord decoration (Toščev 2007, 110). A similar decoration is seen on the DSP fragment **Cat. 298**). The use of impressed cord decoration was especially favoured in the Kamenka-Livencovka group and is often found on fragments at Kirovo in layers contemporary to the Planerskoe fragments (Gerškovič 1999, 78; Leskov 1970, fig. 3). The lower layers from Planerskoe I and Kirovo as well as the settlement of Kamenka, and hence the Kamenka-Livencovka group, are ascribed to the Catacomb 'culture', i.e. the Middle Bronze Age (Toščev 2007, 143, 160). However, the practice of using impressed cord decoration continued into the Late Bronze Age period (Gerškovič 1999, 79).

Fragments with deeply incised furrows like **Cats. 672** and **779** are similar to finds from the upper layer at Planerskoe I and typical of the post-Catacomb period, i.e. the transition from Middle to Late Bronze Age. Similar pieces are also found at Kirovo and Kamenka in the eastern Crimea (Leskov 1970, fig. 3.5-6, 12-14; Rybalova 1974, fig. 14.1,2). A few

---

55 Gerškovič 1999, 43-45. For more generally on the Bronze Age ash hills, see Chişinău 2005.

56 See Kolotuchin 2003, 41 for the problem of identifying fragments from settlements.

57 Cf. e.g. Toščev 2007, 100 and 153 for a description of the clay fabric from Planerskoe I and Kimmerik.

58 Rice 2005, 136-141 for the technique. See, e.g., Gerškovič 1999, 8 and 48 and Toščev 2007, 129, 190 for examples of this practice.

59 A similar problem of dating the handmade pottery was encountered at the site of Bezymyannaya near Chersonesos, where the handmade pottery has variously been suggested to date from the Hellenistic period until the eighth or ninth century AD, see Arthur 2000, 46-47.

fragments with heavily combed surfaces (e.g. **Cats. 287** and **665**) have been found during the survey, and a cup with similar decoration comes from the robbed kurgan 3 in field DSP08-F04-04 (**Cat. 250**). Clear parallels for this type of decoration are found at Planerskoe I, and it is most typical of the Middle Bronze Age.

The largest group of the diagnostic Late Bronze Age fragments found during the survey belongs to J.P. Gerškovič's 'Type T' (*Töpfe*) or "Type VT" (*Vorratsbehälter*) of the Sabatinovka group (Gerškovič 1999, 50-59). Both of these types are characterized by tall pots with out-turned rim and a rather broad neck. There is often a horizontal relief moulding on the exterior below the rim, which is either left plain or furnished with impressed or incised decoration. Since the diameter of the rim is the decisive factor for discriminating between the two types, ascriptions are difficult when dealing with fragments. Although with minor variations in the shape of the rim, the same types are also common at the two larger nearby Late Bronze Age sites of Baj Kijat and Burun Eli (See e.g. Kolotuchin 2003, fig. 49-52).

5.3.2.2 The shift to Belozerka pottery

The transition from the Late Bronze Age period to the Iron Age is connected with the emergence of the Belozerka 'culture'. Although distinguishing between burial mounds of the Sabatinovka and the Belozerka 'cultures' is problematic (Toščev 2007, 191), the Belozerka pottery shares some distinctive features like the tall cylindrical necks of many of the larger vessels and the rounded or slightly biconical lower parts (Parzinger 2006, 538). The Belozerka pottery is present on the Tarchankut Peninsula at Baj Kijat (Kolotuchin 2003, 42-44, 120-121 fig. 53-54). Chronologically, the beginning of the Belozerka 'culture' is traditionally dated to the 12th century BC continuing until the 10th or 9th century BC. No fragments among the DSP pottery can positively be associated with the Belozerka pottery.

5.3.3 Pottery of historical antiquity | S. Handberg

Almost all the finds datable to the period of Greek presence in the survey area can be dated to the Late Classical and Early Hellenistic period (see above, Section 5.3.1). In total, 6,322 fragments can be dated to this period. Thus, the main period of activity in the historical period in the survey area was the 4th century BC. This chronologically rather narrowly defined period is confirmed by the finds from the excavations (Appendix 1). The functional distribution is presented in Table 5.9.

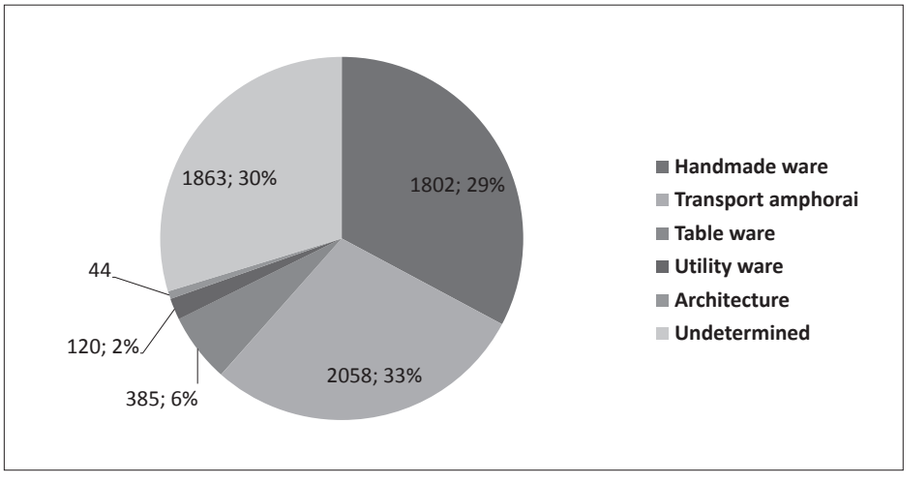

Table 5.9. Distribution of the survey pottery according to functional groups, historical periods.

Unfortunately, comparable information on the distribution of pottery in the rural landscape of the entire western Crimea is scarce.[60] Although 5th century BC finds have been recorded in the DSP area, the number is negligible compared to the evidence from the 4th century BC (see Section 5.3.3.6). On the Herakleian Peninsula in the home chora of Chersonesos,

[60] Kutajsov 2006 has a discussion of the chora of Kerkinitis, but without any mention of the distribution of pottery. The surveys in the Chersonesan home *chora* are generally unpublished, see Zubar' & Kravčenko 2003.

the majority of the pottery dates after the middle of the 4th century BC and continues into the 3rd century BC, but in some cases, as in the building on land plot 5, the assemblage is confined to the 4th century BC.[61] However, a substantial occupation from the late 5th and first half of the 4th century BC is recognized at Panskoe I (Chapter 4.3.2.1). Apart from the different functional groups presented below, mention should also be made of a terracotta egg (**Cat. 778**) found in 2008 in Field 2 and apparently not associated with a site. A similar terracotta egg was found in room 13 in building complex U6 at Panskoe I and the excavators suggested that it could be associated with the worship of Asklepios or Hygieia but the egg was also used in Dionysian rituals.[62]

5.3.3.1 Transport amphorai

The most reliable type of pottery in respect to dating is the transport amphorai. Out of the 1,802 identified amphora fragments datable to the Late Archaic through Hellenistic periods, four major provenances can be recognized: Herakleia Pontike, Chersonesos, Sinope and Thasos (Table 5.10). Apart from these, a few other less prominent groups are present too; those are Chian, Mendean, and Knidian productions. However, a substantial number of fragments could not be attributed to known production centres (Table 5.11). In total, 21 different amphora fabrics were recorded although most groups only included a small number of fragments. The largest group of amphora fragments with an unknown provenance consists of fragments of red fabric. 322 fragments were ascribed to this group although the group is not strictly speaking homogenous and includes fragments both with and without quartz and feldspar (but no inclusions of mica or pyroxene).

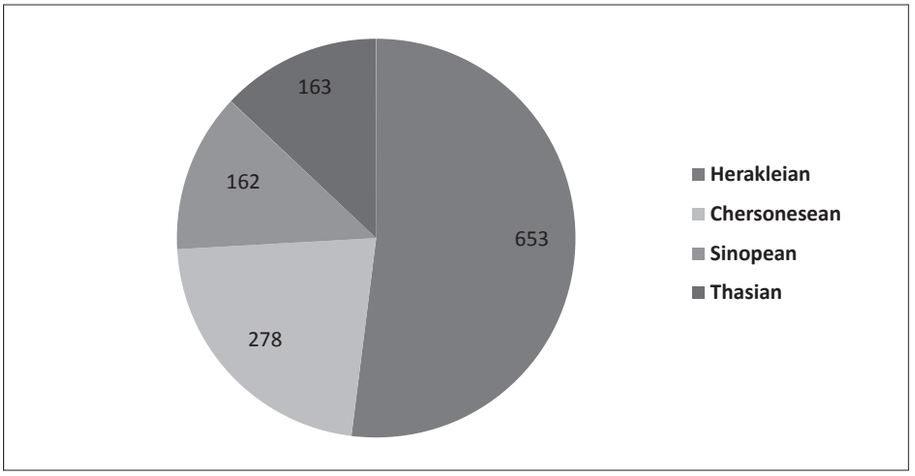

Table 5.10. Distribution of major amphora types of known production place.

[61] For land plot 5, see Nikolaenko 2003, 136; see also more generally Carter et al. 2000, 714.

[62] See Ščeglov 2002b, 221 Cat. G20 and for the same terracotta in the same publication Rogov 2002, 274, Cat. M22. For dedications of eggs to Dionysos see Plut. Quaest. Symp. II.3.1 (discussed in Harrison 1992, 627-628).

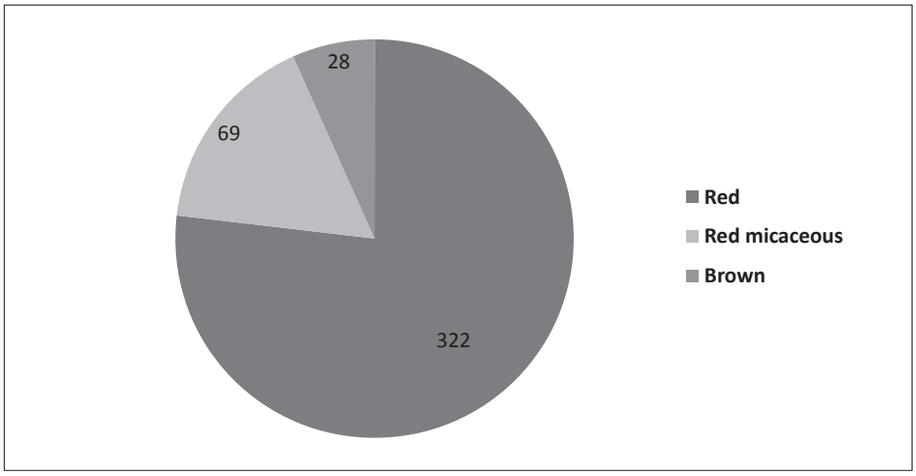

Table 5.11. Distribution of amphorai of unknown production place according to the largest fabric groups.

No formal criteria for the selection of amphora wall fragments were established. Amphorai from Panskoe I stored in the Museum in Černomorskoe and amphorai in the collection of the Museum in Evpatorija were studied prior to the survey and served as reference material. In addition, morphologically distinctive pieces observed among the surface material from several sites on the Tarchankut Peninsula, which were visited during the survey campaigns, complemented the museum collections.

5.3.3.1.1 Amphora fabrics

Several of the amphora fabrics are distinctive compared to other classes of pottery. The Sinopean amphorai are recognizable by the presence of abundant black volcanic pyroxene,[63] the Thasian amphorai are characterized by a reddish fabric and a high number of mica particles (Whitbread 1995, 165-197). Although the colour range of the Herakleian amphorai varies from brown and light-brown to a light-red, most fragments are identifiable on account of the almost ubiquitous gritty surfaces and lesser number or absence of black pyroxene inclusions.[64] Wall fragments of Chersonesean amphorai are more difficult to positively identify, as there seems to be substantial variability in the fabric, but a reddish colour and a higher amount of lime inclusions are characteristic of the majority of the diagnostic pieces (see Whitbread 1995, 238-242). Chian amphorai are not very common in the DSP survey area, but a number of fragments have been ascribed to this production. Wall fragments of Chian amphorai were particularly difficult to identify due to the fact that the fabric is rather 'anonymous' without characteristic inclusions. Furthermore, the fabric possibly changed over time (Whitbread 1995, 135-153; Lawall 1998, 78 with further references).

When compared to the amphora assemblage in Panskoe I U6, the large number of Herakleian amphora fragments found on the survey is surprising. At U6 Chersonesean amphorai are the prevalent type with the maximum number of examples amounting to 168 compared to a maximum of eight examples of imported Herakleian amphorai (Kac et al. 2002, 104-107, table 1). The Herakleian amphora fragments found during the survey have all been dated to the 4th century BC since the production peaked during this century, but also because none of the Herakleian stamps found at Panskoe I U6 can be dated to the 3rd century BC (Kac et al. 2002, 105). The higher number of Herakleian amphorai may suggest a more intense activity in the survey area before the last quarter of the 4th century BC when Chersonesean amphora became the predominant amphora type. A similar pattern with Herakleian amphorai appearing earlier than the Chersonesean amphorai has been observed in Olbia (Lawall 2010, 378, Period 3, summary).

332 diagnostic amphora fragments were collected during the survey. If we compare the relative numbers of wall fragments of the four larger provenances with the relative number of diagnostic fragments (Table 5.12), we see that wall frag-

[63] For analysis of the Sinopean amphora fabric, see Whitbread 1995, 234-244.

[64] M. Lawall et al. present detailed descriptions of the fabrics of stamped Herakleian amphorai from the lower city (Sector NGS) in Olbia Sector NGS, see Lawall et al. 2010, Cat. L55-, L57-L58, L111-L112. See also the characterisation of Herakleian amphorai from Panskoe I U/6 (Ščeglov & Selivanova 2002).

ments in the total collection of amphorae appear to be overrepresented in relation to the diagnostic fragments. Especially the number of Herakleian wall fragments seems to be overrepresented, which suggests that some of the wall fragments recorded as Herakleian may, in fact, not be Herakleian at all.

Amphora type	Diagnostic frs.	Undiagnostic frs.	Ratio of diag/undiag frs.
Herakleian	20.48%	35.7%	1:1.74
Chersonesean	10.04%	14.98%	1:1.49
Sinopean	6.32%	8.73%	1:1.38
Thasian	6.02%	8.70%	1:1.44

Table 5.12. Percentages and ratios of diagnostic and undiagnostic fragments of selected transport amphora types.

5.3.3.2 Architectural ceramics

The almost complete absence of roof tiles in the survey area is noteworthy, since this is contrary to the evidence from sites in the Mediterranean and many of the farmhouses in the Chersonesean home *chora* (e.g. Bintliff, Howard & Snodgrass 2007, 39; Nikolaenko 2003; Saprykin 2003). At Farmhouse 151 on the Herakleian Peninsula, the fragments of roof tiles amounted to 5% of the total assemblage but roof tiles seem generally to have been removed from sites when they went out of use (Carter et al. 2000, 725 see also Pettegrew 2001). The lack of roof tiles might also be explained by the use of thatched roofs for dugout structures, which were especially common in the northwestern Black Sea area in the Archaic and Classical periods and are known from Chersonesos, Kerkinitis and in the DSP study zone (Section 5.1.1).[65] Certainly, the near absence of roof tiles is in clear contrast to the farmhouse at Vetrenaja Bay, where they were abundant (Ščeglov 1967, 253 fig. 14). Even though a few roof tiles were found in one room of the building complex U6 at Panskoe I, buildings at that site though apparently quite monumental in layout were seemingly not tiled and the tiles found were even re-used from another building suggesting that roof tiles were a scarce commodity in this area in the Early Hellenistic period (Kac et al. 2002, 101). Only three fragments of Corinthian type pan tiles were found during the test excavation at Skalistoe 5 (**Cats. 733-734**). Two were of Chersonesean and one of Sinopean productions suggesting a use of mixed tiles as at Panskoe I U6.

5.3.3.3 Tablewares

385 fragments of tableware have been dated to the Early Hellenistic period. The identification of different shapes was a continuous problem in the recording of the tableware as well as their decorations. When decorated fragments were found, only very little of the slip, gloss or decoration had normally been preserved. The use of gloss or slip to discriminate between open and closed vessels could therefore in most cases not be strictly followed. Ascriptions were based mainly on the estimated size of the vessels as well as on the shape and curvature of the fragments. Sometimes shoulder fragments of jugs or the lower parts of cups could be identified with a higher degree of certainty. Table 5.13 shows the proportional distribution of fragments according to major shape groups. Jugs constitute the majority of the identifiable shapes, which is also the case in the assemblage of local/regional tableware from Panskoe I U6. The production of the characteristic jugs with banded decoration at Chersonesos is well known since a 3rd century BC workshop producing them has been excavated (Borisova 1958). The assemblage from building complex U6 at Panskoe I and a cistern in Chersonesos provide the best datable contexts for the Chersonesean jugs, which give us a date in the late 4th and first three quarters of the 3rd centuries BC (Zolotarev 2005). Fragments belonging to the group of closed vessels were identified by the presence of clearly visible interior throwing marks and in a few cases the preservation of an exterior slip. Many fragments in the group of closed vessels are likely to belong to jugs as well.

[65] For Chersonesos, see Zolotarev 1998 and more generally Tsetskhladze 2004.

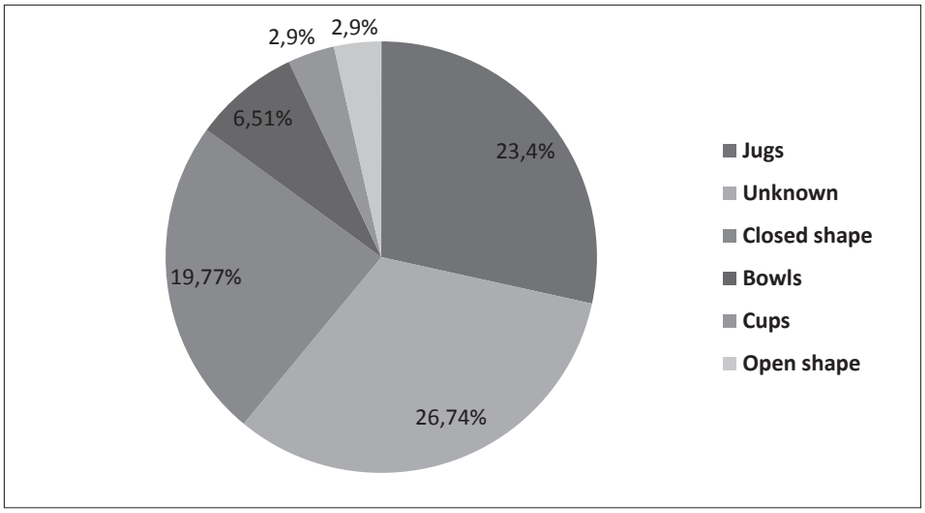

Table 5.13. Distribution of tablewares according to shape groups.

The relatively low number of tableware (6%) is perhaps surprising since tableware is generally frequent on Hellenistic sites in Greece sometimes amounting to half of all the finds (Bintliff, Howard & Snodgrass 2007, 40-41).

However, the percentage of tableware from DSP is only slightly lower than the percentage of fineware from a rural settlement identified in the Methana survey where the percentage of fineware amounts to less than 10% (Foxhall 2004, 261-262, fig. 12). A generally low number of tableware has also been noted for farmhouses in the Chersonesean home *chora*, although the percentage at Farmhouse 151 amounts to 26% of the total ceramic finds, an amount comparable to the tablewares from Panskoe I and Skalistoe 5 sites in the DSP survey area (see Section 5.3.4.2) (Carter et al. 2000, 714, 725).

5.3.3.4 Utility wares

Only 120 fragments of utility ware of this period were identified. A combination of the thickness, inclination and estimated diameter of the vessel became a guiding rule in the ascription of body fragments to the '*utility ware*' group. If fragments of this combination did not seem likely to belong to an amphora, they were catalogued as utility ware. Special attention was paid to fragments with clear soot deposits or burn marks as well as those with a ledge for a lid (i.e. cookingware). However, only very few examples (nine) could be identified. Most of these come from field DSP07-01 close to the settlement of Panskoe I and probably ploughed out of that site. From the diagnostic fragments, it is clear that the utility wares closely resemble the common types from Panskoe I U6. The only recognisable types among the diagnostic fragments are the *louterion*/mortar, the *pithos* and the cooking pot. The very few identified fragments of Sinopean *pithoi* are remarkable because this was the preferred storage vessel in the home *chora* of Chersonesos, where among other places, it has been identified at the farmhouses on land plots 6, 9, and 132 (Nikolaenko 2003; Nikolaenko 2001, 57, fig. 2.58). Closer to the survey area, they are present in large quantities at the farmhouse at Vetrenaja Bay as well as in lesser numbers at Panskoe I U6, while an unspecified number was recorded at Masliny (Ščeglov 1967; Kac et al. 2002, 103-104; Latyševa 1978, 60).

5.3.3.5 Handmade pottery

Like the utility ware, the handmade pottery found during the survey greatly resembles the handmade pottery from Panskoe I U6, but with the important exception of one type, possibly a bowl. 2,058 fragments of handmade pottery can be dated to the Late Classical and Early Hellenistic periods, but only 100 (4.9%) diagnostic fragments have been recorded. This high ratio of undiagnostic fragments is probably due to the high breakage rate of the handmade pottery as well as a lack of handles on handmade pottery. Out of the 100 diagnostic fragments datable to the Late Classical and Early Hellenistic periods, 69 fragments belong to a type of pot with bulbous body, narrow neck and out-turned rim defined as 'Type 1' by V.F. Stolba for the handmade pottery at Panskoe I (Stolba 2002, 183-184). Among the handmade pottery from Panskoe I U6, this type accounts for 67% of all the handmade pottery. Not much of the handmade pottery from

Chersonesos has been published,[66] but two recent studies give some idea as to the repertoire of the handmade pottery there. L.A. Kavalevskaja and I. Ju. Suchanova have published the handmade pottery from Farmhouse 338 in the south-eastern part of the Herakleian Peninsula, and S.N. Senatorov published some 6th-4th century BC assemblages from the city itself (Kovalevskaja-Suchanova 2005; Senatorov 2003). At Farmhouse 338, handmade pottery constitutes one of the largest ceramic groups, and fragments of approximately 70 vessels, most likely datable to the Hellenistic period, have been identified. There the pot with bulbous body, narrow neck and out-turned rim is also the most common type and can be compared to the DSP material. A similar type is also common at Chersonesos, where assemblages datable to both the Late Archaic period and the 4th century BC contained fragments of this characteristic shape. Handmade tableware shapes such as cups and bowls are difficult to recognize when dealing with fragments only, especially because their surfaces were often not treated in any way, i.e. polished or burnished, but resemble the surfaces of the larger pots. This phenomenon has been observed at both Panskoe I and Chersonesos (Stolba 2002, 186; Senatorov 2003, 19). However, it was possible to identify 12 fragments of bowls among the diagnostic material. A few fragments (**Cats. 198-199** and **215**) belong to the most common type of bowl in Panskoe I U6 with in-turned rim (Stolba 2002, 186 'Type 9'). However, rim fragments of another type with a projecting lip, which find no parallels at U6 or Chersonesos, have been identified (e.g. **Cats. 374**, **688**, **696** and **792**). They might belong to a type of bowl known from eastern Crimea during the 3rd-2nd century BC (Maslenikov 1995, fig. 20.2). Only three pieces have been identified as belonging to cups and one larger fragment comes from a decorated jug of the so-called Kizil Koba pottery (**Cat. 9**). The best example of a handmade cup with part of the handle preserved (**Cat. 643**) was found close to Panskoe I and resembles a cup from Chersonesos found in a context datable to the second half of the 5th – first half of the 4th century BC (Senatorov 2003, fig. 4.18). The Kizil Koba jug fragment was also found in the 'halo' of Panskoe I. It is decorated with incised and impressed geometric patterns similar to a published example from U6 (Stolba 2002, Cat. D104).

5.3.3.5.1 Dating the handmade pottery

One of the most controversial issues in dealing with the handmade pottery is the question, whether a more precise chronology is possible. Comparisons with Late Archaic and Classical handmade pottery from Chersonesos have already made clear the difficulties involved in attempts at more precise dates. The general conformity in the typology of the handmade pottery of this period is corroborated by evidence from the recent excavations near General'skoe West on the shore of the Asov Sea in eastern Crimea (Abramov & Maslenikov 2005). Here a sealed layer containing some amphora and handmade fragments was found. The amphorae were predominantly imported from Chios, possibly from Thasos and Mende and could all be dated within the 5th century BC. As pointed out by the excavators, some of the handmade pottery found in the layer is typologically similar to 4th and 3rd century BC handmade pottery from the steppe region (Abramov & Maslenikov 2005, 15). In fact, it is also similar to 'Type 1' from Panskoe I U6.[67]

Indigenous sites have been identified on the Herakleian Peninsula dating to the 6th and 5th century BC, i.e. contemporary with the early "Ionian" settlement there.[68] An attempt to date the handmade pottery more exactly is therefore crucial to the question, whether an indigenous population was present on the Tarchankut Peninsula before the arrival of the Greek settlers. As much of the handmade pottery is very similar and undergoes few typological changes at least from the Archaic through the Early Hellenistic periods, it is difficult to obtain a narrow date for the handmade pottery of the DSP survey. However, almost all the DSP handmade pottery has been dated to the Early Hellenistic period due to its clear resemblance to the handmade pottery from Panskoe I U6. The dating of undiagnostic wall fragments is even more difficult. From the beginning of the project, it was unclear how to differentiate between wall fragments of the Bronze Age and fragments of the Early Hellenistic period. The main problem was caused by the fact that Hellenistic material was often found on sites that contained Bronze Age pottery (Section 5.3.2.1).

---

66 See the comments by Kavalevskaja-Suchanova 2005, 219.

67 Stolba 2002, 183-184. Similar handmade pottery is also known from a 5th century BC pit near Patraeus, see Lomtadze 1994, fig.3.2-4.

68 See Stolba 2008, 140 for a brief overview of the indigenous presence at Chersonesos. For a catalogue of indigenous sites on the Herakleian peninsula, see Kravčenko 2005.

5.3.3.5.2 Handmade fabrics

In view of the problems concerning the date of the handmade pottery, it would obviously be worthwhile to use different fabrics as dating criteria, as has already been advocated for and employed on other survey projects (e.g. MacDonald 1995; Attema & van Oortmerssen 1997-1998.). This task is severely hampered by a lack of existing detailed publications on handmade fabrics and the scarcity of closely datable contexts in the region. Apart from a detailed petrological thin-section analysis of the handmade pottery from Panskoe I U6, we only have cursory descriptions at our disposal. The analysis of the U6 assemblage demonstrated at least six different fabric compositions (Stolba 2002, 180-183 and the appendix by G. M.Kovnurko (2002)). The main tempers consist of different kinds of sands, quartz and several different magmatic minerals, small inclusions of crushed pottery, limestone and occasionally mica. Sand is one of the most commonly added or naturally occurring inclusions of which four different compositions could be recognised. Only one of the compositions (sand composition 3) appears to be associated with the local shell-sand deposits containing small amounts of quartz, feldspars and limestone. The remaining three types of sands containing magmatic and volcanic minerals appear foreign to the region.

The characterisation of the DSP handmade pottery relied exclusively on a visual examination, which excluded the possibility of differentiating between the different sand compositions. However, the following inclusions were identified: limestone, quartz, feldspar, shells, mica, smaller grit as well as occasional inclusions of grog. The fragments of handmade pottery were sorted into three main fabric groups; a sandwich fabric, a red fabric and a coarse fabric, which may correspond to different firing techniques (Table 5.14). All these groups are also found at Panskoe I U6, but as is the case with the Panskoe pottery, a high degree of heterogeneity is characteristic of the DSP handmade pottery and overlaps do occur. No discernable correlations between fabric and shapes are recognizable.

Fabric	Description
Sandwich fabric	*This fabric is characterised by having a light-red (10R7/8), red (5YR 5/6), reddish-brown (5YR 6/3) or pale-brown (2.5Y 6/2) surface and a grey or black core caused by a lack of oxidisation during firing. In a few cases the surfaces may be greyish or black. The surfaces of the fragments are often powdery to the feel. The fabric is remarkably pure and rather dense. A small amount of quartz is found in approximately one third of the fragments within this group. Mica is rare*
Red fabric	*The colour range within this group is large ranging from red (2.5YR 5/8) over yellow (10YR 7/6) to pale-brown (10YR 8/4). Common to the group is the generally well oxidized firing. Mica occurs slightly more often in this group*
Coarse fabric	*This is numerically the smallest group. Almost all fragments within it have a greyish core. The colour of the surfaces is similar to fragments of the sandwich and red fabrics. The fabric is more porous than the previous groups and generally contains more limestone particles and more importantly many small crushed shells. Quartz minerals occur in roughly half of the fragments*

Table 5.14. Handmade fabrics.

The rather inconclusive situation of the handmade fabrics from the DSP does not provide much scope for a narrower dating, which is hardly surprising for surface finds. However, two observations regarding the DSP handmade pottery's relation to the previously mentioned handmade pottery from Chersonesos and eastern Crimea should be mentioned. With the exception of a few fragments, all the handmade pottery from Farmhouse 338 dated to the Hellenistic period has a reddish or brownish surface. Contrary to this, the late 6th-5th century BC assemblages of handmade pottery from Chersonesos and General'skoe West are described as having black or greyish surfaces. This might indicate a general change in firing techniques sometime in the early 4th century BC, however, this observation must remain hypothetical.

5.3.3.6 The question of the pre-Chersonesean phase

The almost complete absence of 5th century BC material has already been noted (Section 5.3.3). Since the area is believed to have been under the control of Olbia from the late 5th to around the middle of the 4th century BC (Chapters 4.2.1, 4.3.2.1, and 7.3), it is worthwhile to elaborate on the sporadic occurrence of early pottery in the DSP area. Greek pottery

from Western Crimea is generally scarce before the beginning of the 5th century BC, and especially the northwestern part seems completely devoid of Greek pottery before the 4th century BC (e.g. Vnukov 2001, 152-154). The nearby Greek Černomorskoe Settlement was not founded earlier than the early 4th century BC (Chapter 4.3.1.1; Ščeglov 1978, 20), whereas there is some pottery belonging to the late 5th and first half of the 4th century BC at both the necropolis and building complex U7 at Panskoe I.[69] Banded "Ionian" pottery of the 6th and especially the 5th century BC is fairly well represented in Chersonesos and Kerkinitis, but no comparable examples of this early banded ware was collected in the survey (Zolotarev 1993; Kutajsov 2004, 79 fig. 59-60). Only one fragment (**Cat. 789**) appears similar, but this piece comes from the Early Hellenistic assemblage at Skalistoe 5 (Chapter 4.2.2). Since figure-decorated fineware is completely absent and glazed pottery uncommon among the collected pottery, it is difficult to compare the occurrence of these two groups in the 6th and 5th centuries BC at Chersonesos and Kerkinitis to the finds from the rural hinterland of Panskoe. In fact, figure-decorated fineware pottery is rarely found in rural contexts (Foxhall 2004).

Two rim fragments of transport amphorai (**Cats. 96** and **704**) belong to the Late Archaic period. The profile of the rims is a variant of Zeest's 'Samian' type, which is reported to amount to as much as 30% of the amphora finds from the chora of Olbia (Cook & Dupont 1998, 178-182, fig. 23.12b). A handle fragment (**Cat. 117**) could conceivably belong to an Archaic Samian amphora, a type also known at Kerkinitis (Kutajsov 2004, 70). Among the diagnostic fragments are a few amphorai which can probably be dated in the first half of the 4th century BC. Five belong to Herakleian amphorai (**Cats. 140**, **192** and **782-784**) and four are of Thasian fabric (**Cats. 23-24** and **785-786**).

Two amphora fragments can be dated to the 5th century BC (**Cats. 223** and **787**). One fragment of a Chian amphora with bulging neck (**Cat. 787**) from field DSP08-04 can be securely placed in the second quarter of the 5th century BC. Chian amphorai with bulging necks, similar to the DSP fragment are not uncommon in the northwestern Black Sea area and are among other places found at Chersonesos, Kerkinitis, and Olbia (Kerkinitis: Kutajsov 2004 69-70, fig. 37; Chersonesos: Zolotarev 1993, 14-15, pl. XV, nos. 1-7; Olbia: Lejpunskaja 1981, 1986, 463-465; Lawall et al. 2010, 364-365). Another rim fragment (**Cat. 223**) resembles the early 5th century BC rims on Thasian amphorai, but is clearly not of Thasian fabric. A wall fragment with a thin horizontal band (**Cat. 703**) might also belong to a 5th century BC amphora. A single fragment of the lower part of a black-glazed cup, presumably a skyphos, with concentric circles on the underside possibly of Attic manufacture (**Cat. 247**) could also belong in the 5th century BC. However, considering the poor quality of the drawing of the concentric circles and the somewhat matt appearance of the glaze it seems more likely that the fragment should be dated in the 4th century BC. The Chian amphora and the black-glazed cup fragments were found less than 100 m apart at site DSP08-F04-03. Considering that 5th century BC pottery is found on the site, a neck fragment of a jug with grooved neck (**Cat. 249**) is interesting because of the possibility of a 5th century BC date for this fragment as well. This type of jug was popular in the Greyware production of the northwestern Black Sea area in the late 5th century BC. However, **Cat. 249** is of a red fabric, and the type of grooves bear more resemblance to a Greyware jug from Belozerskoe dated to the late 4th century BC (Bylkova 2005, fig. 6.3). It is clear that these 5th century BC finds constitute a very small group compared to the mass of material of the Late Classical and Early Hellenistic period. We may also note a conspicuous absence of certain ceramic types typical of the 5th century BC. Thus, apart from the few examples already cited, there is a pronounced lack of the most common 5th century BC types known from the surrounding area. The Chian bulging neck amphorai are very common in Kerkinitis, Chersonesos and Olbia (Kerkinitis: Kutajsov 2004 69-70, fig. 37; Chersonesos: Zolotarev 1993, 14-15, pl. XV, nos. 1-7; Olbia: Lejpunskaja 1981, 1986, 463-465; Lawall et al. 2010, 364-365). So too are Samian amphorai, red and grey Lesbian amphorai and the late 5th century BC type of Mendean amphora (Kutajsov 2004, 70; Lawal et al. 2010). Also noteworthy is the absence of Greyware pottery, which is abundantly present in the period from the late 5th and first half of the 4th century BC at building complex U7 at Panskoe I. Greyware is ubiquitous at the settlements in the Olbian chora of this period, and it is generally believed that the Greyware found at Panskoe I was imported from Olbia.[70] The lack of Greyware in the rural hinterland therefore also appears significant. In addition, we may note that no pottery of the 5th century BC or earlier Taurian Kizil Koba pottery was found. This further strengthens the supposition that the DSP survey ceramic assemblage within the Greek period is basically confined to the Late Classical and Early Hellenistic periods.

---

[69] For finds from the necropolis see Rogov 1989; Monachov & Rogov 1990a, 1990b; Rogov & Tunkina 1998; Rogov 2011. Building complex U7 still remains largely unpublished, but see Stolba 1991.

[70] Cf. E.g. Hannestad, Stolba & Blinkenberg 2002, 131. See, however, the reservations put forward by Bujskich concerning the Olbian origin of the Greyware (2006, 46).

5.3.3.7 Reuse of Late Classical-Hellenistic pottery

A small group of pottery fragments (16 in all) found during the survey had already in Antiquity been re-used for various purposes. A limited number of fragments, three in total, were used as weights, presumably loom- or net-weights (Table 5.15); one larger neck fragment of an amphora (**Cat. 226**) shows several cuts on the exterior surface and possibly served as a cutting board;[71] finally a larger group of fragments of transport amphorai, mostly consisting of handles and a few toes, were employed as a kind of polishing tool. Concerning the latter, one or both of the ends of the amphora handles and the undersides of the toes have a faceted and smoothed area with multidirectional striations, which shows that these pieces must have been re-used for an extended period of time. Similar pottery fragments with polished surfaces in addition to polishing tools of bone and stone have been found at the site of Zavetnoe 5 near Akra in eastern Crimea while they are also reported from the chora of Theodosia.[72] It is difficult to associate these tools with any specific task. They cannot readily be connected to agricultural activities, and most of the tools were found in connection with identified sites both in the Pediment and on the Hillsides (Table 5.16) and might therefore be associated with household activities where they could have been used as pestles. Alternatively they could have been used as polishing tools in pottery manufacture.[73]

Weights	**Associated site**
Cat. 788	DSP07-F01-02
Cat. 158	DSP08-F02-01
Cat. 497	DSP08-H11-02
Polishing tools	Associated site
Cat. 644, **647** and **652**	Panskoe II
Cat. 464 and **466**	DSP07-H11-01
Cat. 141	DSP08-F01-01
Cat. 143, **149** and **158-159**	DSP08-F02-01
Cat. 781	near DSP08-F02-01
6226/01/1	Skalistoe 2
Cat. 226 (cutting board), **231**	DSP08-F04-03
Cat. 527	DSP08-H11-06
6111/01/1	Off-site

Table 5.15. Reuse of pottery, Late Classical and Hellenistic periods.

5.3.4 A note on site assemblages | S. Handberg & K. Winther-Jacobsen

5.3.4.1 The Bronze Age site assemblages

All the Bronze Age pottery is handmade, and the extremely low degree of specialisation of fabric and shape makes it difficult to comment on the composition of the site assemblages (Table 5.15). At Skalistoe 2, four sherds out of a total of 191 sherds came from closed vessels and one sherd was identified as a cooking vessel. The rest was identified as coming from pots. 37 lithics, mostly chipped stones, were collected at the site, but flint was common at later sites too and the Bronze Age site overlaps a Late Classical-Early Hellenistic site. At DSP08-F06-01, 11 sherds came from bowls, and one each from a cooking vessel, a frying pan and an open shape. The remaining 1,057 sherds were identified as coming from pots. 108 lithics, mostly chipped stones, were collected at the site. Although only part of Skalistoe 2 could be surveyed,

[71] The cuts could have been caused by ploughing, but the fact that the cuts are placed closely together and that similar cuts have not been observed on other fragments from the same place, makes this seem unlikely.

[72] I am grateful to Sergej Solovyov for sharing information with me about the finds from Zavetnoe 5, see Solov'ev & Šepko 2006, 58 fig. 184. For the finds from the chora of Theodosia, see Gavrilov 2006, 257-258.

[73] See Handberg 2011, for more on the argument that these tools could have been used in pottery manufacturing.

the estimated sizes of the scatters of the two sites were not dissimilar, but the densities of sherds were. The sherds were not weighed so it is not possible to determine the possible significance of post-depositional processes. The different densities may also reflect length of occupation, but both sites were active during the Middle and the Late Bronze Age. Another process affecting the size of the samples is the actual collection. In the case of Skalistoe 2, the team leader realized that the team seemed to be collecting the standard sample (ST) less meticulously, because they knew they were doing a total sample (TS) afterwards. The TS to ST pottery sample ratios suggest that this was indeed the case: At Skalistoe 2 the TS to ST ratio was 1:2.4 at DSP08-F06-01 it was 1:4.3. At Skalistoe 2, 27 out of 37 lithics were collected in the ST sample, whereas at DSP08-F06-01 only 16 out of 108 lithics came from the ST sample. Many tiny chips of flint were collected at DSP08-F06-01, which suffered from a low visibility and required the more intense sampling method. At Skalistoe 2, 45% of the site area was total sampled, at Skalistoe 2 it was 36%, which is not dissimilar enough to result in such a large difference in the lithics ratios. It is possible that the tiny flints reflect a site activity difference between the two sites, perhaps a small workshop, even if no nodes were recorded.

Sites	Survey pottery			Excavation pottery	Total number sherds	ST to TS pottery ratio	ST to TS lithics ratio	Site size
	ST	TS	GS					
DSP08-F04-03	526	179	0	0	705	1:0.3	1:1	4,810m²
DSP08-F04-07	207	320	0	0	527	1:1.5	1:3.7	1 ha
DSP07-F01-01	215	255	0	0	470	1:1.2	-	
DSP07-F08-01	121	220	1	0	341	1:1.8	1:0.9	2.25 ha
DSP08-F04-02	109	207	0	0	316	1:1.9	1:1	2,460 m²
DSP08-F02-01	63	72	0	0	135	1:1.14	1:1	2.9 ha
DSP07-F06-all sites	59	61	7	0	120	1:1.03	2:0	-
Skalistoe 5	0	0	136	540	676	-	-	
DSP08-H11-02	86	0	32	138	256	-	-	2.6 ha
DSP07-H01-01	0	0	15	141	156	-	-	
DSP07-H10-01	0	0	27*	106	133*	-	-	

Table 5.16. Quantities of sherds collected at selected sites by different collection strategies, and site sizes. * including finds from site DSP07-H18-01.

5.3.4.2 The Late Classical-Early Hellenistic site assemblages

10 of the sites identified by the DSP have produced relatively substantial quantities of Late Classical and Early Hellenistic pottery (Table 5.16). However, different collection strategies were applied including standard, total and grab samples (GS) as well as excavation resulting in quantities not immediately comparable. In order to include as many sites as possible working with standard samples would be preferable; however, the standard samples collected on the slopes are too small to be statistically significant. On the Pediment, total samples are generally larger than standard samples and for comparison of surface finds, the total samples should also be the most reliable (Table 5.17).

	Type of sample	TR	HW	TW	IN	UT	LI
DSP08-F04-07	TS	35.2	34.5	0.7	27.2	0.0	2.4
DSP07-F01-01	TS	22.4	24.4	28.3	19.3	4.7	0.8
DSP07-F08-01	TS	6.0	77.0	12.0	1.0	0.0	3.5
DSP08-F04-02	TS	14.6	70.4	0.5	13.6	0.5	0.5
DSP08-F04-03	TS	28.2	28.8	0.5	38.0	0.0	0.0
Skalistoe 5	Excavation	26.0	3.0	44.0	25.0	0.0	2.0
DSP08-H11-02	Excavation	47.0	43.0	10.0	0.0	0.0	0.0
DSP07-H01-01	Excavation	18.0	69.0	10.0	3.0	0.0	0.0
DSP07-H10-01	Excavation	35.0	58.0	5.0	0.0	0.0	2.0

Table 5.17. TS and excavated samples proportions in percent of find classes at selected sites.

Transport amphorai, handmade pottery, tablewares, and undetermined wares are represented at all the selected sites, whereas utility wares are absent from three out of four sites on the Pediment. The most differentiated distribution within a single class of finds is tablewares ranging from 0.5% to 28.3% in the surface assemblages on the Pediment and Lowland Ridge (ratio 1:56.6), although distribution within the undetermined wheelmade class is also rather extreme (ratio 1:38). Among the selected sites, lithics are only absent from DSP08-F04-03, DSP07-H01-01, DSP07-H10-01 and DSP08-H11-02, but common at a probably contemporary site located only 200 m away (DSP07-F02-01). Most of the lithics collected in the DSP area are imported flints either in the form of fragmented tools or chips, but 40 ground stone tools have been identified all except for two found on the Pediment and Lowland Ridge. The find spots of 30 of the ground stones are clearly associated with sites. Although the majority of lithics cannot be dated stylistically (Section 5.4), the fairly consistent appearance of flint at Late Classical-Early Hellenistic sites in the DSP area is evidence to the continued use of chipped stone tools in the historical period. Also at the contemporary sites Kavkaz and Energik in southwestern Crimea, flints were encountered (Zubar' & Kravčenko 2003, 190). These sites are indigenous sites belonging to the Kizil Koba culture, and topographically, they are located at the perimeter of the Chersonesean home chora.

On the Pediment, only the excavated sites provide architectural evidence: Panskoe I and Skalistoe 5 both represent a well-known type of fortified settlements. Of course the post-depositional processes and collection strategies applied to the investigation of the sites are not similar. The excavated finds from the trial trench at Skalistoe 5 represent a depositionally restricted assemblage as well as post depositional processes and it is mainly suitable for comparison with other excavated assemblages. The surface assemblage at DSP07-F01-01 is part of the 'halo' of Panskoe I representing secondary rubbish disposal and/or possibly manuring on the in-field and post-depositional processes (Bintliff, Howard & Snodgrass 2007, 23-26) and as such, Panskoe I provides a point of reference for the surface assemblages. The remaining surface site assemblages from the Pediment were collected on the actual sites representing the full range of depositional and post-depositional processes.

Although there is some resemblance between the compositions of the two assemblages from known fortified settlements, the dissimilar collection strategies suggest that this is likely to be a random pattern. However, the two assemblages include very high proportions of tablewares, 28.3% and 44% respectively. This is in clear contrast to the remaining selected surface sites, where tablewares range between 0.5% and 12%. In terms of range, the tablewares are less surprising: mostly Chersonesean jugs predominate, but cups, including kantharoi, bowls and fish-plates are also present at both sites, and at DSP07-F01-01 the base of a probable lekythos was found. The low amount of tablewares on the minor sites in the Pediment zone might suggest that the sites represent smaller agricultural establishments, possibly with smaller sheds or shelters.[74] This predominance of tablewares at Skalistoe is not a phenomenon entirely explained by collection strategies. The three Late Classical-Early Hellenistic excavated sites on the slopes have produced very different assemblages with DSP07-H01-01 and DSP07-H10-01 being dominated by handmade wares and DSP08-H11-02 producing 43% handmade wares

[74] For the possibility that the *klision* known from ancient texts might refer to such smaller rural establishments see Osborne 1985, 21.

and 47% transport amphorai. The assemblages from DSP07-H01-01 and DSP07-H10-01 consist of an amalgamation of the finds from two different trenches each including household pits and stone structures, whereas DSP08-H11-02 is a pit house. Consequently, DSP07-H01-01 and DSP07-H10-01 consist of depositional and post-depositional finds, while the DSP08-H11-02 assemblage is mainly post-depositional.

Two of the selected sites on the Pediment produced predominantly handmade wares: DSP07-F08-01 and DSP08-F04-02 ranging between 70.4% and 82.2%. Another group defined by the 25-35% proportions of handmade wares consists of DSP07-F01-01, DSP08-F04-03 and DSP08-F04-07 including also DSP08-F02-01. The fact that three of the sites appearing in different groups are located in DSP08-F04 and consequently share their post-depositional history supports the behavioural meaningfulness of the pattern. Unfortunately, there are not other similarities to confirm the pattern.

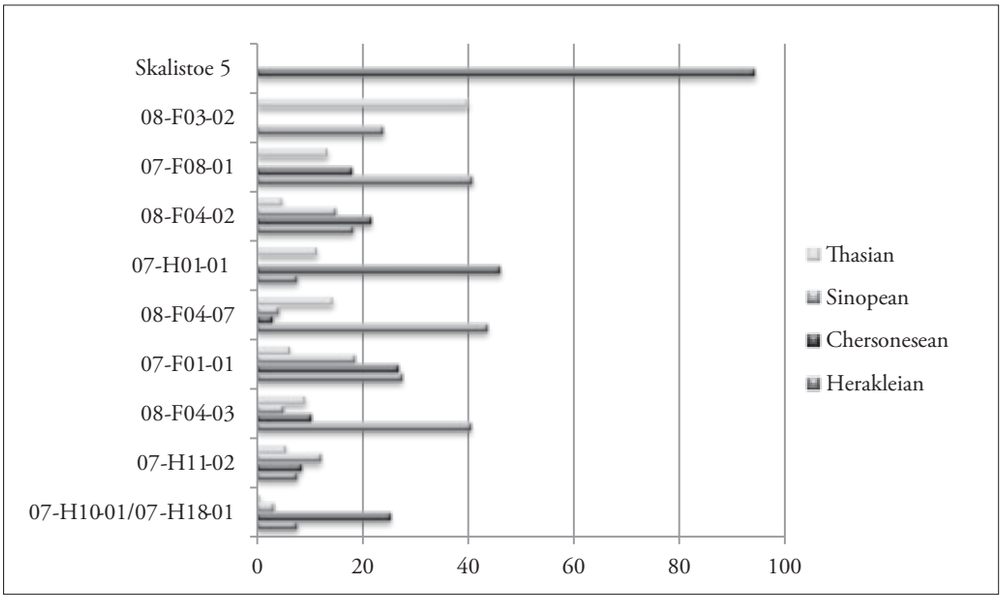

Table 5.18. Distribution of the four dominant transport amphora types at selected sites.

The preponderance of Herakleian, Chersonesean, Sinopean and Thasian productions within the transport amphorai has already been mentioned (Table 5.10). Comparing the distribution of the four amphora types at selected sites, it is clear that Herakleian amphorai are dominant on three of the sites (DSP08-F04-03, DSP08-F04-07, DSP07-F08-01). We may also note that Chersonesean amphorai are not nearly as predominant, as might have been expected, since there are roughly twenty times as many Chersonesean as Herakleian amphorai at Panskoe I U6. Surprisingly, the share of Chersonesean and Herakleian amphora in the assemblage from the 'halo' of Panskoe I U6 DSP07-F01-01 is almost the same. Another interesting picture emerges, if we compare the representation of Chersonesean amphora on the hill sites DSP07-H10-01/H18-01, DSP07-H01-01 and the fortified settlement at Skalistoe 5 to the overall distribution of amphora. The Chersonesean amphorai are much better represented on the hill sites and at Skalistoe 5 than on other sites in the Pediment, which might indicate a chronological difference between the hill sites and Skalistoe 5 and other sites in the Pediment, which is not otherwise traceable (see also the discussion in Section 5.3.3.1.1*)*. Finally, the share of Sinopean and Thasian amphorai is relatively constant on all the sites except for Skalistoe 2, which is mostly likely a result of the very low number of amphorai (0.43%) from this site.

The above-mentioned, close proximity between DSP07-F02-01 and DSP08-F04-03, only 200 m currently across a lagoon, and the highly specialised distribution of pottery at DSP07-H02-01 with 55% transport amphorai suggest that these two sites may belong to the same settlement. Although the short chronological span does suggest contemporaneity, the chronology is too coarse to be certain. In terms of range of finds, only 12 Chian amphora fragments were collected in the entire area, two of these at DSP07-F02-01 and another one on the margin of DSP08-F04-03; however, the latter fragment is part of the evidence for a possible pre-Chersonesean phase at DSP08-F04-03 (Section 5.3.3.6). All the Chian amphora fragments were collected on the S side of the lake, five out of 12 from DSP08-F02.

The TS of DSP07-F02-01 and DSP08-F04-03 both have high percentages of undetermined wheelmade wares, 23% and 38% respectively, and it seems prudent to speculate a little on the identity of this class. Undetermined wheelmade wares consist of wheelmade body sherds of unrecognisable shape, unknown fabrics, and consequently, uncertain date. It seems most likely that many of these sherds came from utility types of the historical period of which no diagnostic fragments were found. Given the overall proportions of the periods in the DSP area, many of these sherds should be Late Classical-Early Hellenistic, and another large group probably dates to the Early Modern period. The percentage of undetermined wheelmade wares at the selected surface sites ranges from 1% at DSP07-F08-01 to 42% at DSP07-F06-01 to 03. DSP07-F06-01 to 03 are all located near the old road from Vodopojnoe and Mežvodnoe. A cluster of Early Modern finds on the opposite side of the road (DSP07-F05-01) is suggested to be the result of rubbish dumped along the road. It appears likely that some of the very high proportions of undetermined wheelmade wares collected at DSP07-F06-01-03 reflect the same discard behaviour. The two Late Classical-Early Hellenistic sites DSP08-F04-06-07 both have high percentages of undetermined wheelmade wares, and these two sites are located near the abandoned village of Kipčak Učkuju, a similar case can be made for DSP08-F02-01 located next to a farm built sometime between 1899 and 1955. At DSP08-F04-03, a few finds have been dated to the Medieval to Modern period and it seems likely that the high proportion of undetermined wheelmade wares includes sherds of this period.

5.3.5 Medieval to Modern pottery | K. Winther-Jacobsen

5.3.5.1 Introduction

Publications of Medieval to Modern pottery are still uncommon, and when they appear, they tend to deal only with glazed wares (e.g. Zographou-Korre 1995; 2000). Hayes' (1992) publication of the pottery from Saraçhane in Istanbul is a rare exception, but although this has provided useful parallels, there is an obvious difference between the pottery found in the capital city of an empire as opposed to tiny backwater settlements. Additionally, Vroom (2003) has published two studies of Medieval to Modern pottery from the Aegean. At 'Kalos Limen', 8th-10th centuries and later Medieval phases have been reported, but very few finds have been published (Nalivkina 1957; Ščeglov 1978, 36-37; Guldager Bilde et al. 2008, 134). Krasil'nikov (1976; 1979) has published articles on pottery of the Saltovo-Majak culture of the 8th-10th centuries, and Jakobson (1979) has published a book on Medieval pottery from Southern Crimea. Also in Southern Crimea, the University of Texas, Austin project at Chersonesos has excavated several Medieval contexts of the Early (6th-7th centuries) and Late (11th-13th centuries) Byzantine periods. Preliminary publications of some of the pottery are posted on the internet (Arthur 2000; Andreeva 2003; Rabinowitz 2005). Generally, the state of publication has not changed since Arthur (2000, 48) commented on the quality of illustrations and descriptions of pottery and the availability of the literature. *Historical and Archaeological Investigations in Azov and the Lower Don in 2005* (in Russian) provides much needed new references for pottery of the Medieval period (e.g. Dmimrienko & Maslovski 2006).

A total of 160 sherds are tentatively dated to the Byzantine and/or Medieval period compared to 502 sherds of the Early Modern period. 35 of the Byzantine and/or Medieval finds were diagnostic compared to 98 diagnostic Early Modern sherds resulting in a similar ratio of diagnostic to undiagnostic around 1:4. Generally, the sherds dated to the Byzantine and/or Medieval period were poorly preserved, and no close parallels have been found for any of them. The date is based on the fabrics (different from the fabrics known from the other periods e.g. **Cat. 809**) and the appearance of high handles on amphorai (e.g. **Cat. 821**) and deep mechanical corrugation (e.g. **Cat. 823**). No tablewares have been recorded in the DSP area to support the existence of a Byzantine or Medieval phase in the hinterland of Panskoe.

Generally, the glazed wares from the DSP area suggest that the majority of the Medieval to Modern pottery should be dated to the 18th-20th century. The style of pottery is consistent with what is termed Late Turkish in the Mediterranean area and bears witness to the close relations to the ceramic traditions of the Ottoman Empire. Well-known monochrome or bichrome green (both pale and dark) and yellow glazes dominate, as well as brown glazes. Only two fragments of polychrome painted glazed wares were collected. The most conspicuous artefact of this period is a mid-19th century stemmed, green-glazed candlestick found off-site in DSP08-F05 in an area with only near-site level densities. As is the case in the Aegean, pottery from this late period has not been treated stratigraphically in Crimea (Vroom 2003, 73). There is rich ethnographic material from the 18th century at the Khans palace at Bakčisaraj, but the exhibition includes little utility ware as is the case with the local and regional museums of the Tarchankut at Černomorskoe and Evpatorija.

The old topographical maps of the area probably provide us with the most precise chronological indicator for finds of such recent date. DSP08-F03-01 is marked as a hamlet on the 1897 map, but no longer existed on the 1955 map providing us with a 1955 *terminus ante quem*. This assemblage consists of a high proportion of cookingwares, a category which

has not been identified at any other Early Modern sites in the cultivated zone. One of the two polychrome fragments (**Cat. 188**) and the single fragment with circular combing (**Cat. 171**) also came from this site. DSP07-F04-02 is a very interesting cluster because of the absence of glazed fragments and high number of animal bones. The site is located in a slightly elevated area on the southern edge of the field. The elevation may indicate the presence of a buried structure, and the 1897 map shows a kurgan in this area. No other elevations were observed in the area. The finds may be associated with Džajlav located approximately 400 m to the S on the 1817 map and already a ruin by 1837. Despite the absence of more easily datable sherds, the style and fabrics of pottery are consistent with the pottery collected at Kurama Kostel'. A few Hellenistic amphora body sherds may have come from the kurgan. None of the remaining ceramic clusters in the cultivated zone (DSP07-F05-01, DSP08-F05-01) are indicated on any of the maps. Consequently, if they are indeed sites, they were either abandoned before 1897 or too short-lived to be indicated on the maps. Kurama Kostel', which was only grab sampled, is marked on both the 1897 and the 1955 map, but has since been abandoned and demolished. The absence of clay cooking pots at Kurama may be explained by the transfer to metal cooking pots, while the site was occupied.

Finds were only collected at two Early Modern sites on the slopes: two sherds were collected around a possible stone foundation on the eastern edge of Hill 8 (DSP08-H08-02 and 11 sherds at a small settlement on the Plateau (DSP08-H07-03). Due to the few finds, the settlements cannot be securely dated, but all the diagnostic Medieval to Modern sherds collected on the slopes appear to belong in the 18th-20th century. Of course, the small clusters in the cultivated zone may represent similar settlements; however, they may also reflect different behaviours such as garbage dumping. DSP07-F05-01 is located S of the road to Mežvodnoe approximately 600 m from the western edge of the village of Vodopojnoe, which existed already in 1817. Among the artefacts collected were several fragments of glass, faience and porcelain, a metal spoon and an iron knife blade indicating a fairly recent date. None of the maps indicate any structures in the area, and the abraded state of the finds suggests a dump site. The cluster is located perpendicular to the road, and it is tempting to interpret it as the ploughed-in remains of refuse discarded by the roadside. The Early Modern element at DSP08-F05-01 appears to be too insignificant to suggest the existence of a site. It may belong to the halo of a site in the adjacent field, but no such site is marked on any of the maps. Another possible Early Modern halo or off-site scatter was recorded at the Hellenistic site DSP08-F04-06. This site coincides with the eastern edge of the village Kipčak Učkuju, which is first indicated on the 1817 map and marked as a ruin on the 1967 map.

5.3.5.2 Utility wares, tablewares and transport amphorai

The Early Modern utility and tablewares form a very homogeneous group. The majority is made of a fine sandy fabric with some tiny to small lime inclusions and possibly tiny feldspar and quartz, although sometimes slightly more and slightly larger particles occur as well as longish voids. Occasionally large red particles, possibly grog, are present. The wares are very hard fired and of high quality, fired to a light or yellowish red. The study of this group revealed two characteristics. The surface of the unglazed vessels is often of a slightly different colour than the core. This is probably the result of working intensively with a very wet surface which brings out the fine clay silicate. Sometimes the interior surface feels almost soapy (e.g. **Cat. 637**). Under oxidized firing conditions, this produces a slightly different colour on the surface, a self-slip. Some sherds have an exterior matt, dark-red to brown to slightly purplish "self-slip", which tends to come off in stripes, creating a pattern of striation.

A few sherds have been identified as transport amphorai of the Byzantine to Medieval period based on the quality, morphology and decoration, although no specific parallels have been found due to the poor state of preservation. Three body sherds of large well-made vessels have corrugated or ribbed bodies (**Cats. 810**, **812**, and **823**, see Section 5.3.5.2.2). Additionally, some handle fragments appear to come from transport amphorai of fabric types not belonging to the Late Classical-Hellenistic period (e.g. **Cats. 284**, **809**, **819**, and **821**). It is not the individual types of inclusions, which set these fragments apart from the remaining material, but the fabric mixture and manufacture.

5.3.5.2.1 Morphology

Out of 19 base fragments, only three are ring-bases the remaining 16 are flat. All the ring-bases are glazed on the inside (**Cats. 619** and **630**), but only one on the outside as well (**Cat. 286**). Glaze is only preserved on three of the flat base fragments (**Cats. 113** and **185**) and only one on the inside as well (**Cat. 114**); however on one of the fragments with exterior glaze, it stopped well above the base (**Cat. 113**). Since most fragments are small, such a style of glazing would not be observable on the preserved sherds very often. The flat bases often flare a little towards the bottom (e.g. **Cats. 104**, **113-114**, **403**, **569** and **794**), which is typical of early 19th century pottery e.g. from Didymoteichon (Bakirtzis 1980,

pl. IV). Diameters of the flat bases appear to fall into two groups: 7 cm and 10-13 cm, although many of the fragments were too small for the diameter to be estimated reliably. The flat bases come from vessels with almost cylindrical or slightly out-tapering lower bodies, the smaller ones probably from jugs and the larger ones probably from jars. Zographou-Korre (2000, 280 no. A138) dated glazed jars of this type to the 19th century. The jugs (**Cats. 106**, **109**, **618**, **626-628**) probably belong to the spouted type so common among Ottoman pottery both glazed and unglazed (Bakirtzis 1980, fig. 10 right; Hayes 1992, 342-342, pl. 46.f-j, fig. 106; Zographou-Korre 2000, 348 no. B94a). At Saraçhane the type dates back to the mid 16th to mid 17th century; however, there was very little Late Turkish material at this site (Hayes 1992, 334-339) and Zographou-Korre (2000, 348) dated the glazed type to the 19th century AD. At Saraçhane the spouted jugs appear in contexts with wide mouthed basins (Hayes 1992, 342-343, pl. 46.a-d) which have also been collected in the DSP area (**Cats. 105**, **108** and **631**). Interior wheel marks are usually prominent on the body fragments.

5.3.5.2.2 Decoration

As mentioned above, monochrome or bichrome green and yellow glazes dominate, but there are also some brown-glazed pieces. The green and brown glazes come in several shades from pale (e.g. **Cats. 175** and **820**) to bright (e.g. **Cats. 171** and **179**), but the yellow glaze is very homogeneous (e.g. **Cat. 114**). Only two fragments of polychrome painted glazed wares were collected (**Cats. 188** and **811**), both from open shapes probably dishes only glazed on the inside. **Cat. 188** from DSP08-F03-01 is decorated with concentric dark-orange lines on a cream-coloured background. **Cat. 811** is decorated with blue petals framed with a cream-coloured line on a rose-coloured background. It was collected off-site in DSP08-F04 SW of Kipčak, a Tatarian village abandoned before 1955 except for a single house. One interior and exterior green glazed body sherd is decorated with a moulding with impressed strokes (**Cat. 813**).

Additionally, a few sherds with mechanical deep combing (**Cats. 812** and **823**), crisp horizontal combing with 2-5 grooves per set (e.g. **Cats. 402**, **638-639**), a few grooves (e.g. **Cat. 621**) and rare soft ribbing (e.g. **Cats. 637** and **810**) mainly on the shoulder or neck are seen. Combing and corrugation are two common styles of decoration in the Mediterranean both known particularly from storage vessels and transport amphorai of the Late Roman and Early Byzantine periods (Robinson 1959, 6; see Chapter 5.3.3.2). Many of these common types of amphorai also occur in Crimea (Jakobson 1979, figs. 1-3, 12-13), and the two decorative styles continued during the Medieval period (Jakobson 1979, figs. 33-34, 43, 68-69). Jars and jugs with corrugated or combed shoulder and/or neck are associated with the Saltovo-Majak culture dated to the 8th to 10th century (Krasil'nikov 1976, fig. 3; Ščeglov 1970, fig. 2; Andreeva 2003, fig. 1A). Similar decoration with narrow bands of crisp combing is common on unglazed jugs and amphorai from Turkish layers at Thebes, Didymoteicho and Saraçhane (Hayes 1992, fig. 106; Zographou-Korre 2000, 348 no. B94a; Vroom 2003, 179-180, fig. 6.46 no. W 38.Ex2). Only two sherds are decorated with combing, which does not follow the shape of the vessel: **Cat. 171** comes from a bichrome green- and yellow-glazed vessel decorated with horizontal combing just under the rim and circular patterns below. One shoulder fragment of a utility vessel collected off-site (**Cat. 818**) is decorated with what appears to be a horizontal set of combing and a wavy set below.

5.3.5.2.3 Cookingwares

Two types of cooking vessels have been collected: a pot with a high collar rim (**Cats. 167-169**, **175**, **178**, **180-181**, **184**, and **572**) and a possible casserole or pot with everted rim with a ledge for a lid (**Cats. 170**, **174**, **176**, **182** and **186**). The cookingwares are made of very pale brown clay (10YR 8/3) covered with a matt dark-red to black slip (5YR 6/4). The sandy fabric is coarse and gritty compared to that of the utility wares. It is tempered with sparse, rounded tiny quartz and what appears to be small clay pellets. The majority of the diagnostic vessels were collected at DSP08-F03-01, which suggests 1955 as a *terminus ante quem*. The collar-rimmed type of cooking pot has a long history in the Mediterranean. It survived during the Medieval period (e.g. Vroom 2005, 104-105, fig. 18.4) and its common appearance in a glazed variant at DSP08-F03-01 gives further evidence to the longevity of this shape.

5.3.5.3 Other

Two diagnostic fragments of pipes for smoking (**Cats. 634**, **799**) and three body sherds (**Cat. 162**, 1581/01/01 and 8019/01/1) were collected, one associated with Kurama Kostel'. **Cat. 799** belongs to the Eastern Mediterranean *chibouk* type used with a long tube and a mouth piece (Hayes 1992, 391-395). This type of pipe was made at many production centres from the 17th into the 20th century. The fabric and shape of **Cat. 799** is reminiscent of a pipe photographed by Vroom (2005, 172-175, fig. 15.1) and another one from Saraçhane of the late 17th century (Hayes 1992, 343, 393 type III, pl. 50.e top). The fragmented pipe (**Cat. 634**) from Kurama Kostel' is morphologically very plain and undecorated.

A completely flat sherd with a carefully- and prefiring-made hole at the centre (**Cat. 115**) may be a lid. The near contemporary date of the remaining sherds in this homogeneous assemblage (DSP07-F05-01) indicates a much later date than suggested by the parallels (see Section 5.3.5.1). A much larger lid of a somewhat similar type has come from a 14th century context at Azak/Azov (Dmimrienko & Maslovski 2006, fig. 10.8). However, the sherd may also have come from a vessel similar to a Byzantine casserole with central hole in the bottom from Saraçhane (Hayes 1992, pl. 12 no. E).

The mid-19th century candlestick similar to one found at Saraçhane (Hayes 1992, 337, fig. 143, no. 6) came from DSP08-F05-01, a possible Hellenistic site with a minor Early Modern element.

5.4 LITHICS | M.E. VAN KRUINING & M.J.L.TH. NIEKUS

During the Džarylgač Survey Project nearly 100 pieces of flint, mostly artifacts, and approximately 70 worked or modified stones were collected. This amounts to ca. 1.5% of the total number of finds. Nearly all flint artifacts and stones were found during the surveys, either as single finds or as small scatters. Only a few lithic artifacts were found during the excavation of one of the trial trenches at DSP07-H08-01, a Bronze Age site. In this section several aspects of the finds will be discussed including the characteristics of the raw material and the age of the collected artifacts. It was decided to refrain from an in-depth discussion of the finds for a number of reasons. First of all, the basic technological and typological descriptions that were compiled during the survey are sketchy, incomplete and at times inconsistent. Since it was not possible to take the finds abroad for more detailed study we have not been able to check the classifications that were provided obviously introducing a source of error. Second, expertise on Stone Age artifacts from the study area is limited and publications in English are scarce, hampering an interpretation of the finds. Third, nearly all artifacts are surface finds and their interpretative potential is limited.[75] In the following paragraphs we will focus mainly on the flint artifacts.

5.4.1 Raw material

Most of the flint is brown, greyish brown to (dark) grey in colour, sometimes with grey specs or small fossils (Bryozoa?). The texture is fine to medium grained but transparent flint with a glassy texture is also present. The majority of artifacts appear to be quite fresh but several pieces display white patina, possibly the result of contact with plant roots (Stapert 1976) or soil formation processes. Concretions of lime and iron stains, the latter probably due to ploughing, have also been recorded. Unfortunately, little information is available on primary sources of flint and other lithic raw materials in Crimea except for the south and southwest, regions that are well known for their Palaeolithic sites. The bedrock in the research area consists of limestone (see Chapter 3) while more inland siliceous rocks are present. The cortical surfaces that are present on quite a few artifacts are weathered and abraded which suggests that the nodules were collected from secondary raw material sources such as gravel-bearing fluviatile deposits or glacial deposits.

5.4.2 Flint artifacts

For 63 flint artifacts a more detailed classification is presented in Table 5.19. By comparing the database with photographs that are available for a number of finds it became clear that quite a few classifications are erroneous. For example, several artifacts that are classified as flakes are in fact blades, one of the scrapers is a surface retouched arrowhead, a retouched blade is a backed point and so on. Part of these problems could be resolved by combining categories such as flakes and blades, by reclassifying artifacts and by introducing "new" types, for example "bifacial tools" and "gun-flints". Nevertheless, some inconsistencies remain because photographs have not been taken of all finds or they do not provide enough detail for a more accurate classification. The relatively high number of retouched tools (N=41 or 65%) is most likely due to these classification problems in combination with collector bias, i.e. retouched tools and larger artifacts such as cores are more easily recognised and picked up in the field than small chips, simple flakes and other waste products of flint working.

[75] See for discussion Lewarch & O'Brien 1981 and Smit 2010.

	H08-01	F03-01	F03-02	F04-02	F04-03	F04-04	F04-07	F06-01	Slope	Single find	**Total**
Debitage											
Flakes/blades		1	1				1	1	1	6	**11**
Cores							1	1		9	**11**
Retouched tools											
Scraper			1					4	1	5	**11**
Knife	1							3	1		**5**
Bifacial tool								2			**2**
Retouched blade				1							**1**
Borer/reamer								4			**4**
Arrowhead						1		2	1		**4**
Microlith/point					1			2			**3**
Flaked tool										1	**1**
Tool fragment, indet								4	1	3	**8**
Gun-flints										2	**2**
Total	**1**	**1**	**2**	**1**	**1**	**1**	**2**	**23**	**5**	**26**	**63**
Dating of site	**BA/LC-EH**	**LC/EH**	**BA/LC-EH**	**LC/EH**	**LC/EH**	**Unknown**	**LC/EH**	**BA/LC-EH?**			

Table 5.19. Classification of 63 flint artifacts from the Džarylgač Survey Project, arranged by surface site (indicated by "F"), the trial trench (site H08-01), slope and single finds. The age of the site, based on characteristics of the pottery, is indicated as well.

5.4.3 Dating

Without thorough knowledge of the prehistory of the Crimea, it is nearly impossible to date the finds, especially when dealing with flakes and other undiagnostic debris such as at sites DSP08-F03-02/Skalistoe 2 (but see the paragraph on the stone finds below) and DSP08-F04-03. These sites cannot be dated more precisely than "Stone Age" or "Bronze Age". For most of the single finds, it is equally impossible to date more precisely.

The presence of (possibly retouched) regular flint blades at sites DSP08-F03-01 and DSP08-F04-02 may indicate a Late Upper Palaeolithic or Mesolithic age. The same is true for a possible backed point of Gravette-type (length ca. 2.5 cm) at site DSP08-F04-03. Among the single finds there are also blades (6388/01, 8275/01 & 8703/01) and a single platform core (Fig. 5.2) with a length of ca. 7 cm for the production of blades (1579/02). At least one of the single finds (9050/01) is not prehistoric but far more recent. This trapezoid flint object, measuring ca. 2.7 x 2.6 cm, is a so-called gun-flint (type C) which were used in flintlock pistols or muskets from the 16th or early 17th century onwards (Fig. 5.3). The DSP-find is made from a dark grey to black flint and originates from Brandon in the UK, one of the largest production centres for gun-flints (Clarke 1935). The gun-flint must be dated to the second half of the 19th century, more specifically the period of the Crimean-war (1853-1856). During this war Brandon supplied millions of gun-flints to the Turkish Army every year. The heavily damaged edges of the flint testify to it actually being used. A flint artefact with a similar shape and damaged edges but somewhat smaller (8759/01) might also be a gun-flint. It is not made from Brandon flint but most probably from locally available raw material. Whether it is a gun-flint or a prehistoric scraper – these types resemble each other – is unclear.

At site DSP08-F04-04, a fragment of a bifacially worked flint arrowhead was found. The fragment – a large part of the tip is missing – has a maximum length and width of 2.4 and 2.3 cm respectively and is 0.4 cm thick. The arrowhead should be dated in the Neolithic or Bronze Age. A similar type of artifact (9202/10) was also found at site DSP08-F06-01. The maximum length, width and thickness of this broken artifact are 2.2, 1.9 and 0.5 cm. At this site, dated in the

Bronze Age, a few other bifacially worked tools (9208/1 and -/2) were found as well, but whether these are fragments of arrowheads or daggers is not clear. Both fragments are relatively thick (0.7 and 0.8 cm) compared to the arrowheads. The other artifacts mainly consist of simple flakes, cores, angular debris and several retouched pieces/scrapers. The absence of a blade technology and the *ad hoc* character of the assemblage seems to fit well with a dating in the Bronze Age.

In the trial trench at feature 7 at the Bronze Age site DSP07-H08-01 an asymmetrically shaped artifact made from brown-greyish flint was found with the following measurements: 5.0 cm (length), 2.3 cm (width) and 0.7 cm (thickness). The artefact is bifacially worked and can be described as a "knife" (Fig. 5.4).

5.4.4 Stone tools

According to the database, the following types of stone tools were recovered: 32 whetstones, five possible whetstones, nine grinding stones, six possible grinding stones, six axes, one possible axe and one stone tool without further specification. Fragments of perforated battle-axes have been found at some of the sites listed in Table 5.19, including DSP08-F06-01 and DSP07-H08-01 (Fig. 5.5). These battle-axes with cylindrical perforations most likely date to the Bronze Age (or perhaps a little bit earlier), which is in agreement with the classification of the pottery. The few undiagnostic flint artifacts from site DSP08-F03-02/Skalistoe 2 may date to the Bronze Age as well in view of a battle-axe fragment found at the same location. The whetstones and grinding stones are likely to be later prehistoric (Neolithic and/or Bronze Age) as well.

5.4.5 Conclusion

During the Džarylač Survey Project a modest amount of flint artifacts and stone tools was found. Artifacts dating to the Middle Palaeolithic, which are known from other parts of the Crimea, have not been found. The oldest artifacts (a core, a point and a number of blades) date to the Late Upper Palaeolithic and/or the Mesolithic but whether these single finds are part of hunter-gatherer campsites could not be established. More than one-third of the flint artifacts can be dated to the Bronze Age in view of their association with pottery and the presence of for example arrowheads and other bifacially worked tools, knives and perforated battle-axes. The *ad-hoc* character of the flakes and cores and the grinding stones also fit well in a Bronze Age settlement context. A Brandon gun-flint, a relic of the Crimean-war, is the most recent artefact.

5.5 Osteological data | M.E. van Kruining

This section considers the osteological finds from three trial trenches, DSP07-H01-01, DSP07-H10-01, and Skalistoe 5 (see Appendix 1). Bones found during the field surveys are not discussed here, since not all were collected. The preservation is generally poor, and it is difficult, if not impossible, to determine whether they are part of an archaeological context, or were left behind in more recent times.

From the three trenches among other finds, animal remains have been recovered that were preserved well enough to be studied. The animal remains have been found at different stratigraphic levels in the trenches, but these have not been connected with distinct periods and therefore, the bones from each site were treated as one sample. The archaeozoological remains can provide information on the diet of the inhabitants of the area from the Bronze Age until the Late Classical-Early Hellenistic period.

Only a small part of the excavated bones was preserved well enough to be identified to the skeletal element and the species or group of species. Other aspects were in some cases visible, such as marks on the bones caused by gnawing, weathering, preparation of food or disease. First the results for the individual sites shall be presented, then an overall picture will be drawn.

5.5.1 DSP07-H01-01

On site H01-01, two trenches were excavated and labelled Feature 5 and Feature 18. Both features are dated to the Late-Classical and Early Hellenistic Periods. Some of the finds from Feature 5 can also be dated to the Bronze Age. From both trenches, in total 87 fragments of bone were excavated. Of these only 23 fragments or 26%, could be classified. The majority of the bones were too fragmented and/or too worn to warrant identification. Among the indentified bones, three species could be recognized: cattle, sheep/goat and horse. The difference between the bones of sheep and goat is small

and in this case not obvious (Schmid 1972). They are therefore grouped in one combined category. Remains of sheep/goat are the most numerous, but there is not a big difference in number compared to cattle and horse (Table 5.20). Most of the bones (eight; 35%) originate from the lower part of the leg, such as metacarpi/metatarsi and phalanges. The horse bones present were only those from the lower part of the leg. Another category with 21.7% (five in number) are teeth.

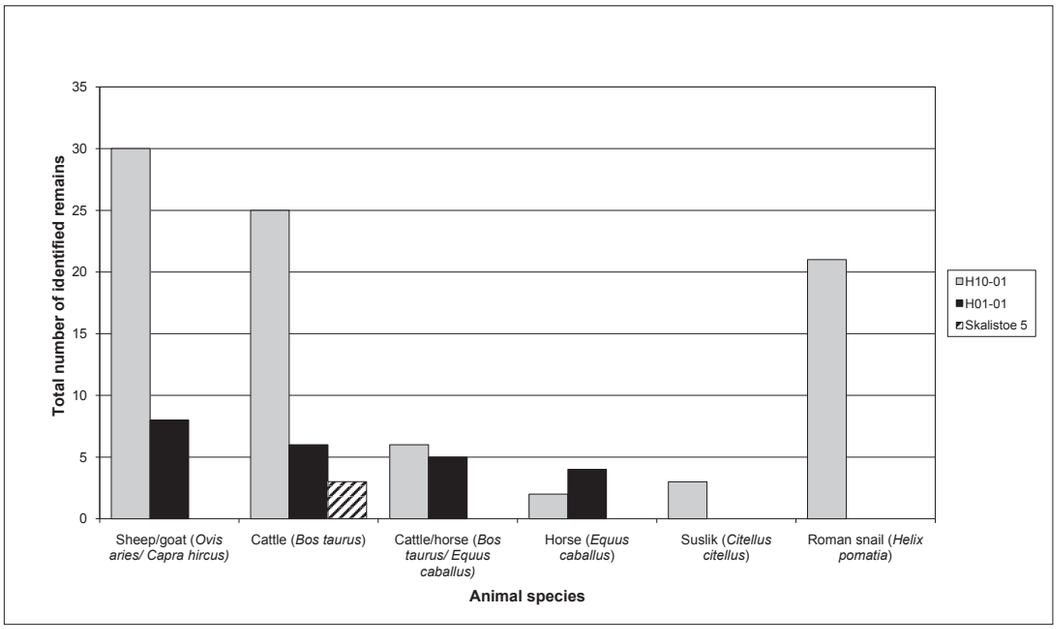

Table 5.20. Distribution of identified animal remains.

A lot of bones show marks of weathering or gnawing. Therefore, it is likely that the bones laid on the surface for quite some time, instead of being buried immediately. The gnaw marks are an indirect indication of the presence of dogs (or other canines) on the site. On two bones cut marks are present. One of them is a phalanx I (foot bone) from a horse. This might be caused by removal of the skin from the bone. Although horses are normally not kept for their meat, this one probably might (at least partly) have been eaten.

5.5.2 Skalistoe 5

Only three identifiable bone fragments were excavated on the Late Classical-Early Hellenistic site of Skalistoe 5. All three are fragmented and heavily worn cattle bones.

5.5.3 DSP07-H10-01

The preservation at the Late Classical-Early Hellenistic site H10-01 was better than at the H01-01 site and therefore 68% of the animal remains could be identified (88 of in total 129 bones) to species and skeletal element. The other bones were too fragmented and/or too weathered to be identified.

Among the 88 identified animal remains, five animal species are present: cattle, sheep/goat, horse, suslik (Eurasian ground squirrel, *Citellus citellus*) and Roman snail (*Helix pomatia*). In some cases it was not possible to classify a bone as either horse or cattle. These bones are therefore taken as one category. Like the H01-01 site, the sheep/goat remains are the most numerous together with those of cattle (Table 5.21).

Horses, however, are poorly represented (4.5%). Among the mammal remains, teeth again form a large category, namely 33.8% (22 teeth) of the identified remains. These are also the only remains found from horse. The other skeletal elements are evenly distributed among both sheep/goat and cattle. These include 26 fragments (46.4%) from the vertebral column and the chest (vertebrae and costae). Other skeletal elements present are mainly those from the lower part of the leg (10.8%).

Almost all bones are worn to very worn. Other phenomena such as cut marks and burning were observed on a few bones and teeth. Cut marks are present on four sheep/goat bones (costae, astragalus and humerus), two on bones of cattle (costae), one on a bone which is either cattle or horse (vertebra) and five on bones that are unidentifiable to a certain animal species. These marks are indications of butchering. Next to that, three burned teeth of sheep/goat are present.

Apart from remains of cattle, sheep/goat and horse, Roman snails and bones from suslik were found. The snails are edible and are a common find in archaeological contexts in for instance Hellenistic southern Greece (Prummel 1996; Reinders & Prummel 2003). This is not the case with suslik. The suslik is a burrowing rodent which is commonly found in the area. The suslik bones found during the excavation are hardly worn compared to the other bone material. They do not exhibit any cut mark or traces of burning. Although susliks are edible, it looks like all bones originate from one animal that died in recent times and does not belong to the archaeological record. In the excavated feature also a foxhole was found. This even stresses the probable recent origin of the suslik bones.

5.5.4 Discussion and conclusion

The animal remains from the three excavated sites are badly preserved and therefore difficult to identify. At the Skalistoe 5 site only three cattle bones were found. This collection is considered to be too small to be compared to the other two sites. From the bones that could be analysed, only a narrow animal spectrum came to light. Apart from suslik that was probably not eaten and Roman snails that were not systematically collected during the excavations, the remains of three species were found. Sheep/goat and cattle are the most numerous and horse is only present with a few remains. This is most clear on the H10-01 site. On this site horse bones are far less numerous than those of sheep/goat and cattle. The function of horse might have been different on this site or in this period. Gnaw marks on bones are an indirect indication of a fourth mammal present on the sites: dog. All the bones were excavated on sites associated with animal husbandry. Pigs probably were not a part of the food economy. This is also pointed out by Marčenko & Vinogradov (1989) who state that the major part of animals in Greek colonies is acquired from local tribes. Therefore, in both Greek and Scythian archaeological contexts, predominance is visible of sheep/goat and pigs are completely absent.

On a small number of bones cut marks were found, including one on a horse bone, which may be a sign of butchering. Other bones are (partly) burned, which may be an indication of food preparation. The mammal remains found mainly consist of teeth, bones from the lower part of the leg and parts of the torso. The bones that were preserved well enough to be analysed do, however, more or less exclude fragments of the long bones like the upper part of legs. Those are, especially when fragmented, difficult to determine and were therefore left out of the analysis. The skeletal distribution as stated above is for that reason probably not entirely representative. Despite the small amount of identified animal remains, they do give a glimpse of the food economy people depended on in the Bronze Age and Late Classical-Early Hellenistic period.

	Sheep/goat (*Ovis aries/ Capra hircus*)	Cattle (*Bos taurus*)	Cattle/horse (*Bos taurus/ Equus caballus*)	Horse (*Equus caballus*)	Suslik (*Citellus citellus*)	Roman snail (*Helix pomatia*)
H10-01	30	25	6	2	3	21
H01-01	8	6	5	4		
Skalistoe 5		3				

Table 5.21. Overview over identifiable faunal remains.

The findings of the DSP are in strong contrast to those from Panskoe I (Kasparov 2002), where horse constituted the vast majority of the bones (58.3%). At this site, horse meat certainly was eaten (Kasparov 2002, 332). However, pig was not attested either, whereas the earth-hare (jerboa, *Allactaga jaculus* Pall.) constituted a fair part of the bones, and was probably hunted for meat (13.6%).