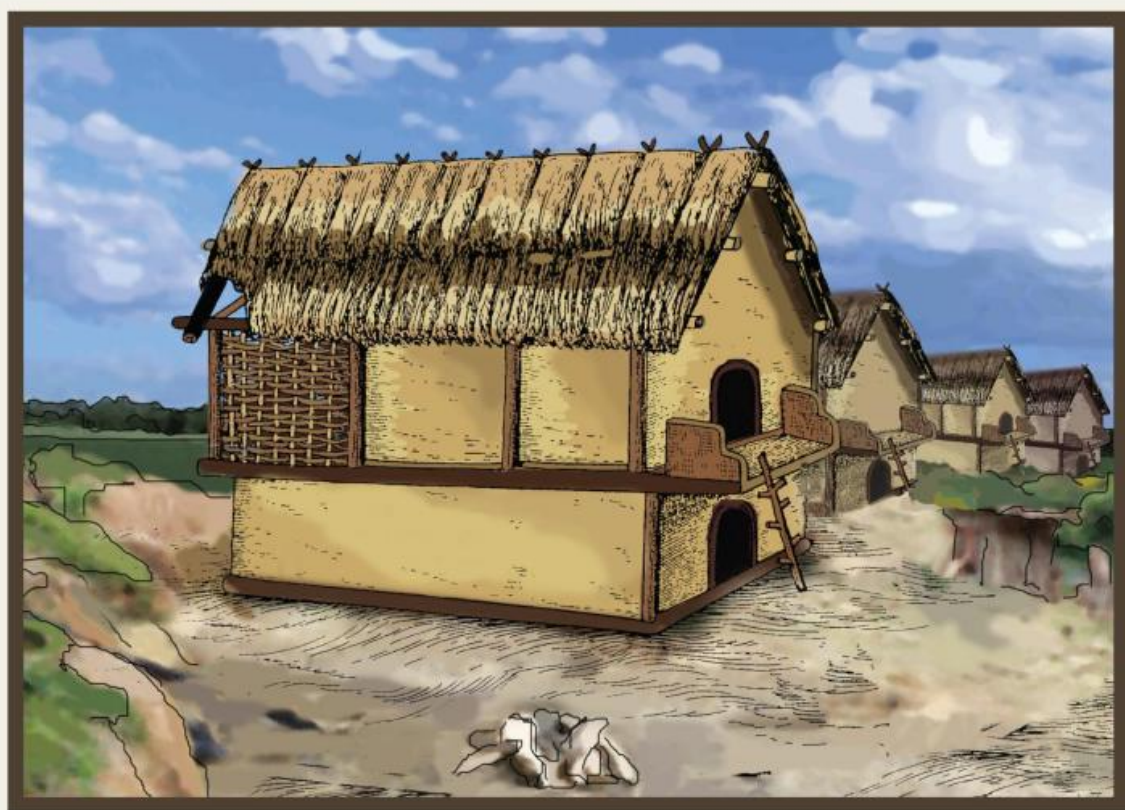


# THE TRIPOLYE CULTURE GIANT-SETTLEMENTS IN UKRAINE

FORMATION, DEVELOPMENT AND DECLINE



Edited by  
Francesco Menotti and  
Aleksy G. Korvin-Piotrovskiy

The Tripolye Culture  
Giant-Settlements in Ukraine  
Formation, Development and Decline

*edited by*

Francesco Menotti and Aleksey G. Korvin-Piotrovskiy

OXBOW BOOKS  
*Oxford and Oakville*

Published by  
Oxbow Books, Oxford, UK

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ISBN 978-1-84217-483-8

This book is available direct from:

Oxbow Books, Oxford, UK  
(Phone: 01865-241249; Fax: 01865-794449)

and

The David Brown Book Company  
PO Box 511, Oakville, CT 06779, USA  
(Phone: 860-945-9329; Fax: 860-945-9468)

or from our website

[www.oxbowbooks.com](http://www.oxbowbooks.com)

A CIP record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

The Tripolye culture giant-settlements in Ukraine : formation, development and decline / edited  
by Francesco Menotti and Aleksey G. Korvin-Piotrovskiy.

pages ; cm

Includes bibliographical references and index.

ISBN 978-1-84217-483-8

1. Cucuteni-Trypillia culture--Ukraine. 2. Neolithic period--Ukraine. 3. Ukraine--Antiquities.

I. Menotti, Francesco. II. Korvin-Piotrovskiy, A. O.

GN776.2.C83T75 2012

306.0939'52--dc23

2012022297

Front cover: *Reconstruction of Tripolian Houses by E. Chernych and V. Markevich*  
(design by Lizzie Holiday)

Back cover: *Full-size reconstruction of a Tripolian house by V. Kruts and V. Chabanyuk*  
(photographed by V. Chabanyuk); *1:10-scaled reconstruction of a Trypolian house by A.*  
*Korvin-Piotrovskiy and L. Shatilo (photograph by L. Shatilo); Decorated pot from the Peschane*  
*Settlement, House 3 (Photographed by V. Chabanyuk)*

*Printed in Great Britain by*  
Short Run Press, Exeter

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# Acknowledgements

The book originates from an international collaborative project between the Institute of Prehistory and Archaeological Science, Basel University (Switzerland), and the Institute of Archaeology of the National Academy of Science in Kiev (Ukraine), which was fully sponsored by the Swiss-Liechtenstein Foundation for Archaeological Research Abroad (SLSA). Therefore, our most sincere gratitude goes first of all to the SLSA for its invaluable support, without which the project and consequently the writing of this book would not have been possible!

We would also like to thank the Tripolye Museum and the local community of Legedzeno (Ukraine) for their support! A special thank you goes to the students of T. G. Shevchenko National University (Ukraine), the Kiev-Mohyla Academy (Ukraine) and the Uman National University for their invaluable work! We would like to express our appreciation to all the contributors for their collaborative effort in writing the chapters and to Viktoriya Barchenko and Andrey Slivka for translating them from the original language (Russian) into English. We are finally grateful to Anna Hurina for her most-appreciated help throughout the entire editing process of the volume!

# Introduction

*Francesco Menotti*

The crucial role the Ukrainian ‘branch’ of the Tripolye culture played in shaping the historical formation of Ukraine, and indeed that of Europe, is still not fully understood or appreciated. Although we are mostly aware of its finely-crafted and decorated pottery, along with the much-discussed house architecture and huge settlements (also known as ‘giant-settlements’), we often fail to connect the various dots in order to understand the different aspects of its development, from the very first eastward migrations, to the scission into two separate local groups (eastern and western Tripolye culture), the formation of the so-called giant-settlements, and finally to its inexorable decline after more than 2000 years of prosperous existence.

The challenging aim of this book, which has originated from a collaborative project between the Institute of Prehistory and Archaeological Science, Basel University (Switzerland), and the Institute of Archaeology of the National Academy of Sciences in Kiev (Ukraine), is that of attempting to join not only the scattered pieces of the large jigsaw puzzle of archaeological evidence, but also that of bringing together different research traditions, which, if not properly understood (and dealt with), might hinder the full potential of national and international synergetic collaborations. Different research traditions between Eastern and Western Europe are not the only shortcomings. In fact, even though English has become a sort of *lingua franca* for international publications within academia, the language barrier between the two ‘academic’ worlds is still very much present. Old-school scholars of the ex-Soviet Union countries are, in fact, still reluctant to publish in English, and continue to express their thoughts (and most importantly, publish) in the language they are more familiar with. At the same time, Western European researchers’ lack of knowledge of Eastern European languages (notably Russian and Ukrainian) prevents them from accessing valuable sources of information. The purpose of this volume is to surmount this obstacle and not only bridge the gap between internal (within Ukraine) research traditions (old- and new-school archaeologists), but also to make Western scholars aware of the crucial publications on the subject, which would otherwise be overlooked. In order to avoid misunderstanding and loss of precious information, all the chapters in the book were initially written in the various scholars’ mother tongues and then translated into English by professional translators. The various authors have been asked to cover all the possible fields of research into the Tripolye culture in Ukraine, and list all of the most relevant old and new references (which too have been translated into English) that are not readily available in the Western academic world.

The volume has been organised so as to give the reader a clear image of the Tripolye culture in Ukraine, with a special emphasis placed upon the development of the so-called ‘giant-settlements’ (see Fig. 1). In addition to a general introduction to the various aspects of the Tripolye culture, from its initial stage (end of the sixth millennium cal BC) to the decline (end of the fourth–beginning of the third millennium cal BC) (see Fig. 2), the first chapter places the main topic (the giant-settlement phenomenon) into a geographical and chronological context, highlighting the different facets of the culture that brought to the formation of the giant-settlements. The chapter then continues by discussing the typical facets such as migrations,



*Figure 1: Map of Ukraine with the location of the giant-settlement area (oval highlight) and three of the largest settlements: Talianki (2); Maidenetske (3) and Dobrovody (1) (Graphic: Ben Jennings – Base map created using STRM data and ArcWorld River and Lake Overlay).*

material culture (e.g. the typical pottery and clay figurines), and architecture (e.g. settlement layout, house typology and standardised internal structures) that characterised the different developmental stages of the phenomenon.

The overwhelming relative chronology of the Tripolye culture periodisation discussed throughout the volume (see in particular Chapters 4 and 6) clearly points out the urgency for developing an absolute (chronology) one. Rassamakin's chapter is an audacious and long-overdue attempt to establish an initial absolute Tripolye culture chronology, based upon the still low number of radiocarbon dates obtained from some of the well-researched Tripolye settlements. As well as highlighting the advantages of developing an absolute chronology that covers the entire Tripolye period, the author demonstrates the great difficulties of comparing it with the well-established relative chronology based on pottery typology. Although, as one would expect, the correlation between the two methods is extremely difficult, it is, however, fascinating to see that, in some cases, a plausible compromise can definitely be reached. Not only would an absolute chronology enable monitoring of the migrating processes identified by pottery typological analyses, but it would also shed light on the duration of the settlements, as well as their 'internal' chronological division – was a settlement, for instance, built in 'one go', or during continuous diachronically-ordered phases? (e.g. see the Talianki example – Chapter 2).

At the beginning of the fourth millennium cal BC the Tripolye settlements of the South Bug and Dnieper interfluvium became increasingly larger, gaining the appellation of 'giant-settlements'. Chapter 3 discusses the formation and development of these extremely large residential agglomerates, also taking into account their history of research and the implications that they initially had on Tripolye culture studies in Ukraine. Geographical settings, migration processes and social interaction that took place before and during the development of those large villages are all considered from a material culture (mostly agricultural tools) and pottery typology

perspectives, which, along with recent environmental studies, allows Kruts to shed light on the physical layout, social organisation and demographical structure of those settlements. The author is even able to advance plausible answers as to why such enormous residential areas developed and finally declined.

One of the most impressive material culture representations of the Tripolians is, without a doubt, pottery. Not only are the Tripolian ceramics aesthetically pleasing, but they have also served as a basis for the creation of one of the most impressive relative chronologies in European prehistory. In Chapter 4, Ryzhov provides the reader with a detailed chronological development of the pottery style, from the very beginning of the Tripolye cultural formation to its downfall, focusing in particular on the giant-settlement period (BII–CI stages). Diachenko (Chapter 5) takes the dynamic development of giant-settlements in the South Bug and Dnieper interfluvium to a further level of analysis, taking into account issues of demography (especially linked to migration processes) and settlement size. The author stresses the importance of determining structural interconnections between settlements of different categories, as well as identifying the character of the optimisation of settlement systems, arguing that the formation of settlement systems with both a binary and tertiary distribution type (in which two or three large settlements dominate) apparently facilitated a more effective use of land resources.

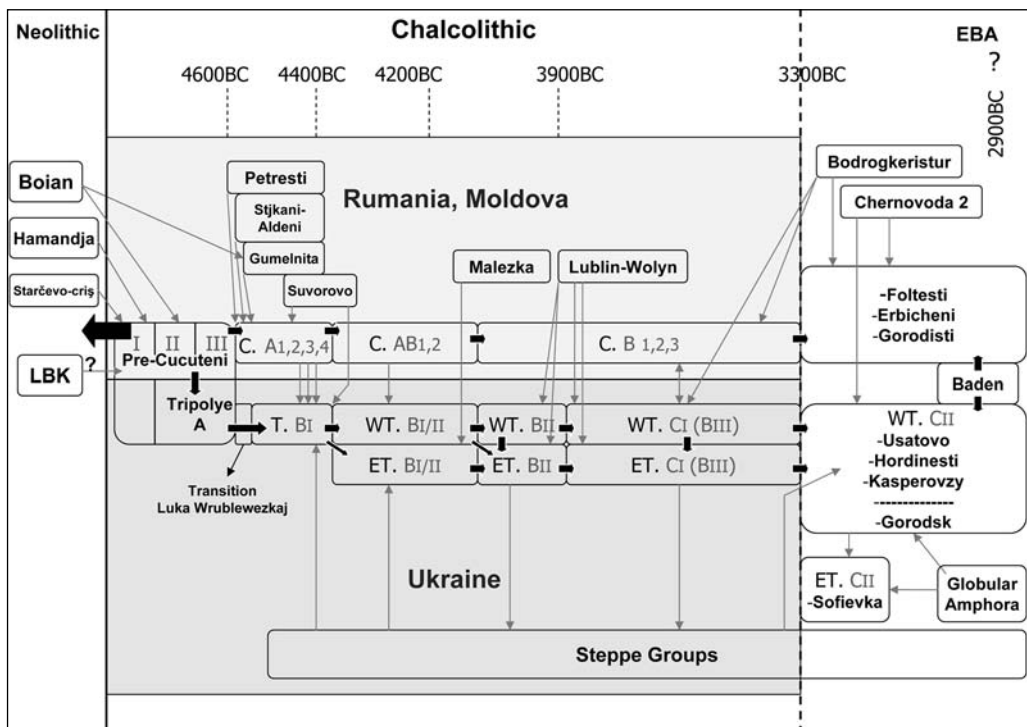


Figure 2: Chronological chart of the Tripolye culture in Ukraine, and the Precucuteni and Cucuteni culture in Rumania and Moldova. Key: C. = Cucuteni; T. = Tripolye; WT. = Western Tripolye; ET. = Eastern Tripolye.

As mentioned above, the majority of the Tripolye culture chronological periodisation is based on pottery typology, but how is this classification made, and, most importantly, how reliable is it? In Chapter 6, Ryzhov takes us through a remarkable journey where he shows how technology, form and ornamentation of pottery can be used to define cultural and chronological properties of archaeological sites. The author stresses the importance of distinguishing between technical and technological, morphological and functional, and stylistic indicators, noticing that the former are the most conservative, whereas the latter are the most dynamic. It is indeed through a thorough analysis of these factors that genetic ties between different archaeological groups are revealed.

Considering the almost total absence of metal artefacts (tools in particular), it is quite surprising that flint artefacts produced during the giant-settlement period (especially BII), and in fact throughout the entire Tripolye culture chronology, are not numerous either. The majority of excavated Tripolye settlements have in fact yielded scarce evidence of flint production (see for instance the largest Tripolye giant-settlement of Talianki). Yet, for agricultural and construction purposes, cutting tools made of flint are essential. Was the extreme scarcity of flint raw material available in the South Bug and Dnieper interfluvium the main reason for this lack of evidence? But even so, how was the large demand of cutting tools met amongst the settlements? A plausible answer may come from the Andreevka settlement where, unexpectedly, a fairly large amount of flints has been found. Chapter 7 takes into account the unusually-large amount of flint artefacts found in this settlement, trying to unveil this intriguing mystery. According to Pitchkur, petrographic analyses confirm that local sources of flint raw material were definitely exploited. At the same time, though, long-distance trade routes were certainly active in supplying the needed flint raw material. It is also possible that, because of the scarcity of this particular raw material, flint tools were regarded as a rare commodity and kept for a long time (possibly even shifted from one settlement to the other as migration took place).

After pottery, the second most appreciated and much-discussed topic of research within Tripolye culture studies is certainly house architecture. In Chapter 8, Chernovol gives the reader a detailed description of the typological classification of the Tripolye dwellings that belong to the Tomashovskaya local group<sup>1</sup> (the local group, which occupied the largest Tripolye culture giant-settlement ever built – Talianki). The various parts of the house interior (e.g. floor, oven, altar, podium, etc.) are described one by one, with reference to the different houses and settlements in which they were found. This gives us the possibility to compare them and attempt to identify particular architectural trends that are characteristic to specific settlements.

Although the thorough research on the Tripolye houses has greatly helped in identifying their various architectural components, the issue as to whether the Tripolye dwellings of the giant-settlements were one- or two-storey houses has produced divergent opinions amongst scholars in the past three decades. Another major controversial topic is whether the houses' clay-covered walls and floors were 'fired' at the construction stage in order to reinforce them ('baking' the clay makes it more resistant), or the traces of firing, which have been clearly identified in the archaeological remains, were the result of destructive conflagrations as part of the ceremonial ritual, before the settlement or house was abandoned. In Chapter 9, Korvin-Piotrovskiy *et al.* discuss different accounts of house construction experiments (using 'constructive' and destructive fire) carried out on scaled as well as full-sized models in the past eighty years but focussing in particular on the last decade. The various results are examined, and advantages and disadvantages of both approaches ('constructive' and destructive firing) are clearly pointed

out. Although the authors seem to favour the ‘constructive’ variant, they do admit that much more experimental work is needed in order to obtain plausible answers.

The final chapter takes into account the very last development of the Tripolye culture in Ukraine. Chronologically, the period comes straight after the giant-settlement phenomenon and just before the Tripolye culture’s disappearance. In his contribution, Kruts meticulously discusses the very last groups, which were still ethologically linked to the Tripolian culture, advancing a few hypotheses as to why a successful two thousand-year-long cultural tradition finally met its destiny, at the brink of the Bronze Age.

The volume is not meant to be an exhaustive account of the Tripolye culture in Ukraine; instead it offers the most up-to-date research within the giant-settlement studies, with a particular emphasis placed on chronology, migration processes, and house architecture. It shows that collaborative work not only helps overcome biased and speculative theoretical assumptions, but it can also bring together different (old-school and new as well as west and east) research traditions whose incongruences were often thought to be insurmountable.

## Note

- 1 Note that in this volume, the local group names which derive from single settlements are mentioned with declinations according to the Russian and Ukrainian grammar rules. For instance, the ‘Tomashovskaya local group’ derives from the ‘Tomashovka settlement’.

# Chapter 1

## Tripolye Culture in Ukraine

*Aleksey G. Korvin-Piotrovskiy*

### Introduction

More than ten Neolithic cultures and types of sites have been distinguished in the territory of Ukraine. Among them are the Linear Pottery Culture in the Western regions of Ukraine and in Volyn, the Criș Culture and the Painted Ceramic Culture in Trans-Carpathian, the Bug-Dniester and Dnieper-Donets Cultures, the Pit-Comb Ware Culture in the centre and in the north-east of Ukraine, and finally the Crimean Mountain Culture (Danilenko, 1969).

Each Neolithic culture had a particular set of tools, adornments and ceramics. Communities that lived on the territory of Ukraine also often differed in terms of anthropological characteristics. The sites of each culture typically occupy an integral and compact territory. Neolithic cultures and types of sites reflect the ancient ethnographic consistency of Ukraine's population.

From the point of view of content and character of material culture, and of main types of activities, the Neolithic cultures of Ukraine fall quite distinctly into two categories:

- 1) stock-breeding and grain-growing (agricultural) cultures;
- 2) hunting-fishing cultures (Danilenko, 1969). The line of separation between the southern agricultural cultures and the area of hunters and fishermen stretches through all of Europe and Asia, from north-west to south-east, from the northern part of France through the northern parts of Central Europe, Poland, Ukraine, and the Lower Don and Volga regions to Central Asia.

The Bug-Dniester and Linear Pottery Cultures, as well as the Neolithic sites of the Trans-Carpathian region (Criș and Alfold) belonged to the agricultural cultures occupying the forest-steppe of the Bug-Dniester River's right bank in western Ukraine. The characteristic attributes of the southern agricultural zone are the dominance of flat-bottom ceramics (and rarely round-bottom ceramics) decorated with spiral-meander line motifs, the appearance of painted vessels, the utilitarian use of polished stone axes, the development of a distinct burial ritual, and the existence of burials in which the corpses were contracted and positioned on their sides in a 'praying' position (usually accompanied by clay vessels). The people who occupied this agricultural zone were, according to anthropologists, communities of Mediterranean origin.

The hunting-fishing zone should apparently include the Pit-Comb Ware, Sursko-Dnieper and Dnieper-Donets Cultures, and the Crimean Culture, whose primary economy was based on hunting and fishing. Unlike the agricultural cultures, these fishing and hunting groups used almost exclusively pointed-bottom primitive vessels, usually decorated with stamped motifs such as



pits, combed decoration or prickmarks (Danilenko, 1974). As for flint items, flint axes (usually unpolished) played a significant role; microlithic products were also becoming widespread. The dominant burial ritual here consisted of burying the bodies in extended positions, lying on their backs. Human remains are never found accompanied with ceramics as burial offerings. The bearers of the hunting-fishing cultures were mainly late Cro-Magnon communities.

The non-synchronous nature of cultural development this region of Europe meant that Neolithic cultures partially overlapped chronologically with Copper Age cultures in more southerly territories. The Tripolye culture arose from a mixture of other cultures, e.g. Criș, Boian, Hamangia, and Ariujd, at the end of the sixth millennium cal BC, and became one of the most important phenomena in the agricultural world of south-eastern Europe. Tripolian sites are scattered over a vast territory from the south-eastern Carpathian foothill region to the Dnieper River, covering almost half of the contemporary territory of Ukraine, the entirety of Moldova, and parts of Romania (Bibikov, 1953; Chernysh, 1982). Chronologically, the existence of this culture stretches from the end of the sixth to the beginning of the third millennium cal BC.

## **History of research**

The first Tripolye culture sites were discovered in the western regions of Ukraine in the middle of the nineteenth century, but it was only after Vikentiy Khvoika performed excavations on a range of settlements at the end of the nineteenth and beginning of the twentieth centuries that their scientific importance was recognised. Khvoika was also the author of the first Tripolye culture archaeological periodisation (Khvoika, 1901, 1904, 1913). Later, after studies by Stern, Beliashevskiy, Spitsyn, Gamchenko, Boltenko, and others, the region over which Tripolye culture sites were disseminated was more accurately defined, and its correlation with the Aeneolithic cultures of the Balkan-Danube region was established.

In the 1930s and 1940s, thanks to the active work of prominent researcher Tatiana Passek and the development of new research methodologies – including the survey of vast areas – the archaeological data available were significantly enriched and the periodisation improved. Passek distinguished three periods in the development of the culture: an early, a middle (classical) and a later period. Each of them was, in turn, divided into sub-stages. This periodisation has remained relevant until now, although it is becoming increasingly specific as material accumulates (Passek, 1940, 1949, 1961). Recently, new researchers – Bibikov, Danilenko, Movsha, Tsvek, Zbenovich, Kruts, Ryzhov, and others – have added more valuable contributions to the Tripolian studies in Ukraine.

## **The Tripolye culture**

To date, over 1000 Tripolian settlements have been found on Ukrainian territory. Some of them have been researched only partially but others, including Bernashevka, Kolomyischina I and Chapaevka, for example, have been excavated and studied almost completely. The data obtained allow us to determine settlement layout and the characteristics of houses and to attempt socio-economic and demographic reconstructions (Kolesnikov, 1993a). The inflow of new material, however, triggers new problems. In particular, the reasons behind the emergence and

the socio-economic structure of major super-settlements that cover hundreds of hectares, and account for up to 3000 houses, remain unclear. Different approaches to reconstructing houses generate serious discussion. The relative and absolute chronology of the sites requires further specification (see Rassamakin and Ryzhov this volume). A range of burial sites from the later period of the culture's development have been examined, but burial sites of the early and middle stages remain almost unknown (only very few graves are located in dwellings).

The Aeneolithic (or Chalcolithic) in Ukraine is divided into three periods, which also encompass three different stages of the Tripolye culture influence on the territory (see Fig. 1.1).

### *The early Tripolye period*

The early period (at the turn of the sixth and fifth millennia to the last quarter of the fifth millennium cal BC) is associated with the appearance of the Aeneolithic agricultural populations, such as the early Tripolye Culture (stage A–BI) in Bessarabia and Podillya, the Belgrad-Aldeni Culture in the northern Black Sea region, the Polgar Culture in the Tran-Carpathian region, and the Lengyel Culture in Volyn and Galychyna. The first quarter of the fifth millennium cal BC was characterised by communities whose economy was based on stock raising (e.g. the



Figure 1.1: Map of Ukraine showing the geographical extension of the Tripolye-Cucuteni culture influence on the Ukrainian territory, during the three main periods of the Chalcolithic: early period [A]; middle period [B]; and late period [C].

Skela Culture sites in the northern Black Sea region, and Zaporozhye and Donetsk regions. It is during this period that relations between grain-growing and stock-raising tribes were established (Bibikov, 1953). In addition, an irregularity in the development of different cultural groups is seen in this particular period. For instance, the co-existence of a population with a sustainable economy with Neolithic groups whose economies were dominated by hunting and fishing – the Pit-Comb Ware Culture and the Kiev-Cherkassy Culture in the middle Dnieper region and in Polessya, and the Lizogubovskaya Culture in Siverskaya region (Danilenko, 1974).

Study of the sites of this culture across a large territory of Ukraine and Moldova has enabled researchers to answer a range of questions associated with the history of the expansion of cultural groups from the region in which they formed: the Prut-Dniester interfluvium. The agricultural character of the economy forced Tripolians to move into new areas periodically. This factor, as well as population growth, led to the necessity of their exploring new lands beyond the limits of their original territory.

Throughout the earlier period, from the end of the sixth to the last quarter of the fifth millennium cal BC, the Tripolian population occupied the Prut-Dniester and Dniester-Bug interfluviums (Passek, 1949). During that period, in the forest-steppe area between the spurs of the Romanian Carpathians (the Seret River basin) in the west and the South Bug in the east, around 150 settlements of the early stage of Tripolye culture are known. The most densely-populated region here was the middle Dniester area, where the majority of early Tripolian settlements occupied the edge of the first terrace above the river flood zone (2–7m above water level). The Bug region settlements were in somewhat different topographical conditions: they occupied the elevated parts of terraces, slopes along the creeks, and gullies 15–20m above water level. A settlement would occupy, on average, 1 or 2 hectares and could account for about ten houses built in one or more rows. The fully excavated settlement of Luka-Vrublevskaya, for instance, consisted of seven partially sunken houses (e.g. pit houses), arranged in a row along the Dniester's bank (Bibikov, 1953). In Aleksandrovka, 13 houses built entirely above ground ('ground-houses') were set in three parallel rows along the slope of the gully. The Bernashevka settlement, which was built on a low hill at the edge of the terrace above the flood zone on the left bank of Dniester, stands out for its distinct circular layout: six 'ground-houses' built of wattle and daub create a circle, while a seventh is located in the centre of that circle.

#### *EARLY SETTLEMENTS*

Dwellings of two types are found at early Tripolye sites: houses which are partly sunken to a greater or lesser depth and 'ground-houses' of wattle and daub construction. The partially sunken houses have been found at Luka-Vrublevskaya, Bernovo-Luka, whereas house remains (wattle and daub) were found at Bernashevka, Aleksandrovka, and Okopy. Both types have been found at Lenkovtsy, Sabatinovka I, and other settlements. When arriving at a new location, the people apparently first built a fairly flimsy house of either type and, when settled, they built more long-lasting wattle and daub houses. The partially sunken houses are typically oval in shape; sometimes they consist of two merged oval pits and resemble the number 8 in layout. They reach 3–6m in diameter, with depth varying from 1m (for shallow-sunken houses) to 2.5–3m (Bernovo-Luka). One of the buildings at Luka-Vrublevskaya was 43m in length, and 2–3m in width. These buildings were covered with a sloping roof supported by poles driven into the ground; postholes have been found, in particular, in dwellings at Luka-Vrublevskaya. 'Ground-houses' are comparatively small (30–50m<sup>2</sup>), but sometimes reach a size of 70–90m<sup>2</sup> and more.

A wattle and daub floor in the form of a solid deck paved with clay, lay directly on the ground or on a support made from wooden poles. The houses typically consist of one or two chambers that contain a domed oven or an open hearth with a dirt or slab floor (Zbenovich, 1989).

### TOOLS

The assemblage of working tools in early Tripolye culture is quite typical for Aeneolithic sites. It consists of flint, stone, bone, and antler tools. The great availability of flint and slate raw materials facilitated the wide dissemination of flint and slate tools among the sites of the Dniester region. The bulk of the tools are made of flint but also of deer or roe antler and, more rarely, of boar bones and elk antler. Functionally these are mostly the tips of various types of hoes, piercing tools and awls. Bone fishhooks and harpoons have also been found. Copper items (e.g. awls, fishhooks and beaded necklaces) are extremely scarce. Copper eye-axes were found in the Karbuskiy hoard. Raw material for making copper items was brought from the Balkan-Carpathian copper ore basin. As for technical metal-processing methods, the Tripolians were accustomed to cold and hot forging but, in general, their metal processing was quite archaic (Zbenovich, 1989). On the basis of this complex of tools, it is evident that various economic areas were actively functioning in the early Tripolye era. Palaeo-botanical studies have proven that agriculture had already appeared in the early stage of Tripolye, as a stable and long-established phenomenon that provided a sufficient availability of grain. At that time the population cultivated different types of wheat: einkorn, emmer wheat and spelt. They also cultivated hulled and naked barley, millet and beans. For harvesting, they used compound sickles with flint inserts stuck at an angle into a bent frame. The grinding stone was an important tool for ancient agriculturalists. Oval and rectangular grinding stones were usually made of sandstone and sometimes of granite.

### AGRICULTURAL ACTIVITY

The range of livestock fluctuated, reflecting regional differences. For instance, at Bernovo-Luka, cattle account for around half of all livestock, while pigs are dominant at Luka-Vrublevetskaya and Sonceni I. In all cases the number of bones from small livestock is small; consequently, early Tripolye stockbreeding was based on raising large livestock and pigs. The significant role of hunting in acquiring food also indicates the Tripolian people's desire to exploit local natural resources. This area of economic activity is closely associated with gathering and fishing. In the forests and thickets surrounding Tripolian settlements people picked cornel (Cornelian cherry, a type of dogwood: *Cornus mas*), wild pears, apples, and cherries. In river streams and primarily in the Dniester they fished for catfish and kutum (*Rutilus frisii kutum* – a sub-species of the Black Sea Roach); sometimes a catfish served at a Tripolian table would reach 2m in length.

### POTTERY

In terms of household production, pottery manufacture developed alongside the fashioning of tools. Vessels were made by hand using coils or flat slabs of clay. Production technology (temper, surface treatment) varied depending on the purpose of one or another group of pots. Baking was performed not only in open hearths, but also in special kilns. One such kiln, found at Luka-Vrublevetskaya, had a central pillar and a fuel chamber separated from the pottery chamber by a slab with apertures (backlashes).

Usually a variety of kitchen pots is found, either wide open-mouthed or kettle-shaped; jar-shaped pots with non-partitioned profiles are also present. To store food supplies, Tripolians used large round-body earthenware pots with cylindrical throats. So-called fruit vessels – shallow-profiled plates mounted over cylindrical underpans – account for a rather large group. Bowls, low round braziers with a straight rim as well as large conical basins, are also found.

Pottery is sometimes decorated with one or two rows of finger-pinched impressions (prickmarks and incisions) encircling the base of the throat. Sometimes the entire body of a pot is covered with rows of pinched impressions, while the rim and the bottom part are free of decoration or polished. Grooved decoration of different widths arranged in horizontal, vertical and oblique rows or concentric circles is characteristic. Usually these grooved patterns are combined with impressions from a comb stamp, with incised lines encircling the body of the vessel for producing angled, oval, or, more rarely, spiral compositions. A proportion of the pottery is decorated with specific sinuate motifs in the negative-positive manner inherent to Boian culture. The most interesting is a decorative-semantic element that projects the image of a dragon-snake, whose prolonged band-like body encircles the vessel and is crowned by a semi-round head with horn-like protuberances and with a pair of round eyes bearing marked pupils. Thorough surface treatment and exquisite decoration lends a particular vibrancy to the entire group of vessels. Pottery was also decorative, and used for cult ceremonies.

#### *CLAY FIGURINES*

The early Tripolye settlements are associated with a large number of clay anthropomorphic figurines that were used as cult objects. Quantitatively speaking, these are dominated by anthropomorphous statuettes depicting a female body with a pronounced steatopygia (big buttocks!) (Pogozheva, 1983). The spindle-shaped upper body is flattened, the shoulders are depicted with angled prominences and the breast is depicted with two rounded knobs. The small round head is flattened on top; the nose is marked by a pinched impression, and the eyes and mouth are rendered with round prickmarks or with a horizontal incision. The hip area, with its massive rounded buttocks, is followed by closed legs that appear as rounded protuberances of different lengths. The sexual attributes are sometimes highlighted by an incised triangle. A number of statuettes are decorated with incised spiral patterns, rhombus, squares, prickmarks and indentations, which are often filled with white paste. Usually the statuettes depict a sitting woman with stretched legs, her torso leaning backwards. Small clay chairs are also often found, with flat backs and figures sitting in them. In some cases these statuettes depict a standing woman. Male images are very rarely found. Zoomorphous plastic art (figurines of bulls, pigs, goats, dogs and birds) is represented in small quantity. Clay ceramics are decorated with zoomorphous moulded-on elements (the heads of birds and animals). Often the handles of clay dippers end in anthropomorphic and zoomorphic images. Small clay models of houses in the shape of open houses on legs (Luka-Vrublevetskaya, Lenkovtsy) and various altars (Okopy) are considered cult objects (Chernysh, 1959). Clay jewellery includes circular necklaces, while items for play are represented by small conical chips (Luka-Vrublevetskaya). Of particular note is a clay child's rattle, shaped like an egg and filled with little balls of clay (Bibikov, 1953).

***First migrations: the middle period***

The second period of the Aeneolithic era, the middle or developed one (from the last quarter of the fifth to the third quarter of the fourth millennium cal BC), is associated with the arrival and expansion of a new Tripolian population with painted ceramics and with the origin of two main branches of the culture's development – eastern and western. This period is a golden age for the Tripolian community; there is a rapid demographic growth, an articulation of the social structure, a flourishing and balanced agricultural and livestock-raising economic system and, eventually, the appearance of giant-settlements. It is in this period that the Tripolian population reaches the banks of Dnieper in the Kiev region, occupies the right bank area in the middle Dnieper region, and settles all over the Podillya territory and in the southern parts of Volyn and Bukovyna. The Polgar Culture continues its development in Zakarpattya. Meanwhile in Volyn and in Galychina the Lengyel Culture is replaced by the Funnel Beaker Culture (TRB).

A multitude of cultural developments, based on the livestock-raising lifestyle, appear in the steppe area of Ukraine. Among them is the Stogovskaya Culture, which replaced Skela Culture in the Zaporozhie region; later the Kvitianskaya Culture appears in the south of the middle Dnieper region and in Zaporozhie. The Nizhnemikhailovskaya Culture existed simultaneously with the Kvitianskaya Culture in the northern Black Sea region and the southern regions of the left bank Dnieper region. On the left bank portion of the middle Dnieper region was a widely disseminated population known from sites of Dereivka Culture, one of the peculiarities of which is pointed-bottom ceramics that, to some extent, illustrates the perpetuation of Neolithic traditions.

During the course of the middle (classical) period of Tripolye culture, the Tripolian population significantly expanded its territories by exploring the upper Dniester region and the Bug-Dnieper interfluvies. In the middle of the fourth millennium cal BC it expanded into the right tributaries of the Dnieper and onto its banks. The number of sites grew considerably, as a result of increases in population size and density. According to demographic reconstructions, in the Dniester region the population density reached 12 persons per square kilometre.

***GIANT-SETTLEMENTS***

Significant changes also occurred in the topographical location of the settlements. In the Prut and Dniester regions they are located on headlands and relatively inaccessible outcrops. Many of them are fortified by banks and ditches. The areas of the settlements grew as well: in the Dniester region up to 40–50ha and in the Bug-Dnieper interfluvie, at some settlements, up to 90–150ha. The giant-settlements that characterise the classical period elicit special interest; they were up to 450ha (but see Diachenko, this volume) in area and accounted for up to 2000 houses.

Military topographer Shyshkin was the first to pay attention to them: he thoroughly analysed aerial photographs in the Uman region and noted the presence of gigantic settlements in which the houses would have been arranged in several concentric circles. These settlements are Maidanetskoe (270ha), Dobrovody (250ha), and Talianki (450ha) (see Diachenko, this volume for a more correct measuring of the area of individual settlements). These data, which at first caused some bewilderment, proved to be completely accurate after detailed research. The results of continuous geomagnetic survey and of excavations that were conducted in response to that data, in combination with aerial surveys, proved that such giant-settlements did indeed exist. The number of inhabitants in such settlements, according to demographic calculations performed by different researchers, varied between 8000 and 25,000 people. A range of researchers interpret these giant-settlements as proto-cities of Aeneolithic Europe. There is no doubt that these sites

were indeed massive settlements. The problems associated with understanding their internal structure and micro-chronology, and with their social interpretation, however, do not allow scholars to state with certainty that they were truly proto-cities (Kruts *et al.*, 2001).

Moreover, neither quarters dedicated to crafts nor monumental cult complexes have yet been found in these large settlements. Although it can be assumed that the Tripolians did take a first step towards the establishment of proto-cities, they were never fully developed. One of the main reasons could have been the economic weakness of the Tripolian community and their poorly established trade relations with external groups.

The layout of settlements is often closely linked to landscape morphology, and in the majority of cases is circular, with houses arranged in one or several circles – the centre often remained empty. This is quite distinctly traced in the Dnieper region at least. A circular layout is recorded at the Veselyi Kut settlement, for example. Within the territory of the Garbuzin settlement the houses create two concentric circles, and at Vladimirovka they are arranged in as many as five. This layout is undoubtedly associated with a defensive function. Ditches and banks also possibly served that purpose; they were not preserved in all cases, but they are well represented at the Polivanov Yar 2 and 3 settlements (Popova, 2003). There are, however, other types of building arrangements. The structures of the Shkarovskoe settlement, for example, were designed in a nest-like manner; three houses in each group were located 30–40m apart. In Miropolye the structures were arranged in three circles and there was a structure in the centre of the circle.

The internal structure of Tripolian settlement has been quite thoroughly examined as a result of the continuous excavations of the Kolomyischina I settlement, which retains its importance as a reference in this area. Its external circle comprised 31 dwellings with eight more in the centre. Among those structures researchers have distinguished small houses (8–28m<sup>2</sup>) with one oven, medium-size houses (43–98m<sup>2</sup>) with two to four ovens, and large houses (106–136m<sup>2</sup>) mostly with four or five ovens. The general conclusion – that large houses belonged to large groups, most likely to be big families, while small houses belonged to small families that branched off – is fairly convincing. Based on these data, it is assumed that 30–40 houses for a smaller settlement represents a constant value, so, working from our calculations, the population of such a settlement would be approximately 300 people.

Dwellings of the middle Tripolye period were of two types: shallow, partially sunken and ‘ground- houses’, with the latter representing the main element of a settlement’s housing system. The design and shape of partially sunken dwellings repeat, in their general elements, those of early Tripolian settlements (Gusev, 1995). Structures of the settlements of the middle stage were built of wood and clay with the addition of chaff and sand. During excavations their remains resemble lumps of baked clay deposited in a rectangular area, named by archaeologists ‘house remains’ or *ploshchatka*.

#### HOUSE TYPOLOGY

Tripolians built both large houses (multi-family ones with several chambers) and small houses (single family ones). Early stage Tripolye traditions are preserved in construction materials (wood and clay) and in interior decoration but, with time, the houses became larger and more monumental, consisting of several residential units. In the Dniester region, Tripolians sometimes used stone in the construction of ‘ground-houses. The interior of the building is generally unified. The structure consists of an inner porch (with a utilitarian purpose) and residential area with an oven, areas for processing flint and making tools, special areas for grinding grain, a podium

that is always located along the longer part of the house opposite the oven, pithoi (large vessels used for storing supplies) and specially-assigned cult places, named altars. Altars were round or cruciform and decorated with paintings or incised lines that were sometimes filled with paint. They are located under the round window in the shorter wall opposite the entrance (Gusev, 1995) (see also Chernovol, this volume).

In the last 50 years, the question of the basic principles used in the building of Tripolian houses has been actively disputed. The existing materials have led one group of researchers to believe that the houses were made of wood and clay, had a single storey, and were essentially fired during the construction process. The other group of researchers believes that 'ground-houses' had two storeys (a lower utility level and upper residential areas), were made of raw clay, and were burned for ritual purposes only before being abandoned at the end (Zinkovskiy, 1975; Kolesnikov, 1993b).

#### *MATERIAL CULTURE: TECHNOLOGICAL DEVELOPMENTS*

The territories that Tripolian communities occupied expanded in the middle period. During this period, settler communities reach the Dnieper region, traditional areas of occupation become densely inhabited, the population grows, and large- and medium-size settlements become the main types. As the era of extensive exploration of new territories that are useful for breeding stock and agriculture is coming to an end, and the population is attempting to intensify traditional ways of production, distinctive local traits become increasingly apparent. However, stone-working, stone-quarrying, bone-carving, metal-processing and pottery production become more advanced. An abundance of flint tools is characteristic for the settlements of the middle and upper Dniester regions, which can be explained by the abundant deposits of raw material. The majority of tools are made from flint flakes; small fragments are used in rare cases. The following tools appeared to be the primary ones: scraping tools and knives used for processing animal skins, sickle inserts that were fixed in straight and curved casings, knives, thick drill and boring tools, piercing tools and saws. For weaponry there were arrowheads and darts.

Tools and half-finished items (made of different stones) for wood processing make up a considerable number of tools such as axes, chisels and mattocks made of granite and flint for agricultural purposes. Tools made of antler and bone also appear to have been made regularly. The most frequent are household tools. There are items for sewing clothes and footwear, such as awls and piercing tools made of split tubular animal bones or sharp bone fragments; there are also burnishers for processing animal skins as well as agricultural tools (e.g. tips for mattocks with drilled holes for shafts and antler casings for sickles). Items of personal adornment made of split boars' tusks are often found.

The number of copper finds has significantly increased. Among them are tools and items of jewellery that were not known earlier: flat wedge-shaped axes, adzes, axe-hammers, rings and seal rings. The continuation of early Tripolye traditions can be seen in the manufacture of some tools, while others were made using new approaches – there is the adoption of melting and founding techniques with the use of open casts, and the use of cold and figured hammering on special anvils. The ore sources remain the same: the Thracian mining region of Bulgaria, and possibly Transylvania.

Clay is used to make sinkers for fishing nets, weights for weaving looms, star-shaped pendants, cylinder-shaped beads, etc. The house models present a separate category of clay items. These give an idea of the interiors of the houses, and their construction and roofing principles. Incised



ornamentation and painting on the models indicate that real houses were decorated with various patterns. Wheel-less means of transportation played an important role in economics at the turn of the fifth and fourth millennia cal BC. Little sleigh models are frequently found, some of them bearing images of harnessed bulls.

Change also touched the anthropomorphic plastic arts (Pogozheva, 1983). The shape of the head gradually changes (the rod-shaped tip disappearing), and the sciatic part (hips) lose the great volume that was so characteristic of early Tripolye plastic arts. An increasing number of figurines start to appear, the surfaces of which are painted instead of incised with patterns. Figurines on a columnar base also become more advanced. People are now depicted with hair, often painted in colour. Also widespread are graceful figurines standing on one conical leg and with flat roundish heads. Sculptures with detailed facial features and hair are being modelled more thoroughly. The number of different types of male images is gradually increasing. These also are genetically tied with early Tripolye versions and have completed the same evolutionary path as the female variants. Their heads lack eyes or have only a left eye (rarely do they have both eyes) and they often have a sling over the shoulder. There are sitting figurines with stretched conical legs or with two legs bent at the knees and lowered downwards. There are a significant number of zoomorphic plastic art items, such as images of bulls, sheep and pigs. Many figurines are notable for the thoroughness of their modelling and their realistic execution.

Ceramics are still produced by hand using coils or flat slabs of clay, although new methods are being added: moulds are being used, as well as the turning tables – the forerunners to the potter's wheel. Firing is performed in two-level pottery kilns with air holes; the kilns located in 'ground-houses' that serve as workshops at the same time.

At the beginning of the middle stage the same groups of ceramics exist as in the settlements of the end of the early Tripolye stage. In addition, painted ceramics appear. The latter become the leading type at sites of certain communities in the Prut, Dniester and Bug regions, as well as in the Kanev Dnieper region. The question of the origin of painted ceramics remains under discussion. Some groups preferred painted pottery and it gradually ousted ceramics with incised decoration; other communities, however, did not accept it and retained the pottery-making traditions of the concluding phase of early Tripolye. The Tripolye culture of the middle stage starts to have two distinct traditions: the West Tripolye culture (Ryzhov, 2007) that is characterised by the dominance of painted ceramics, and the East Tripolye culture, with incised decoation (Tsvek, 1999). The western area covers the native lands of the Prut and Dniester regions and, partially, the Bug region; the eastern one occupies the area of the South Bug-Dnieper interfluvium and the middle Dnieper region.

The diversity of the ceramics is significant: there are bowls, pots, goblets, little amphorae, pear-shaped vessels, lids, craters, binocular-shaped vessels, and more. Multiple schemes for painting or applying incised ornamentation are used: cruciform, comet-shaped, meander-lined, scalloped, and spiral (see also Ryzhov, this volume). Various new grub-shaped decorations also appear.

### ***The last phase***

The final period of the Aeneolithic stage (the last quarter of the fourth and beginning of the third millennium cal BC) is, in fact, the period of transition from the Aeneolithic to the Bronze Age, or is already the first phase of the latter, which is characterised by both technological

achievements (casting becomes widespread, and arsenous ores and copper-silver alloys are being used) and by major lifestyle changes. This period is also characterised by climate change that significantly worsens the lives of farmers. As a result, Tripolian populations flexibly change the orientation of their economic activity from a balanced agriculture-stock-raising regime to an unbalanced one, depending on the region of occupation. Migration processes within the Tripolian territory are registered. Some groups go beyond the boundaries of their territory and mix with non-Tripolian populations, creating new cultural phenomena.

There thus appears in the northern Black Sea region a Tripolian population that is largely involved in raising stock, known to us as the Usatovskiy local variant (or Culture) (Degrachev, 1980). Previous steppe cultures disintegrated and with additional Tripolian Culture elements from one side, the Maykop-Novosvobod groups from the other and some influences from the Caucasus, we have the formation of the Zhivotilovsko-Volchanskaya-type settlements. The Repinskaya Culture population arrives in the Donetsk region from the east.

Cultural changes are also registered in the north and northwest. In Zakarpattia, Polgar Culture is replaced by Baden Culture (Degrachev, 1980). In Galychina, Volyn, and the northern regions of the left bank middle Dniester region, the Globular Amphora Culture appears; its population interacted actively with late Tripolye groups of the Gordinesti (Zhvanets), Gorodsk, and Sofievskiy local variants (Cultures), and it is possible that the population of the latter partially increased the population of the Globular Amphora Culture.

The final period of the Tripolian Aeneolithic population's existence is associated with major changes that are connected primarily with climate variability; a transition from the warmer and humid Atlantic period to the cooler sub-Boreal. Given conditions of increasing aridisation, agricultural potential significantly decreases, which leads to a crisis in the very foundation of Tripolian cultural existence. The shift of the boundary between steppe and forest-steppe leads to the more active migration of Ukraine's stock-raising Aeneolithic population into Tripolian territories. Tripolian groups partially leave the central regions – the Bug-Dniester interfluvium and the middle Dnieper region – and move towards the forest massifs of western Volyn, as well as towards the steppe area of the north-western Black Sea region. Under the new environmental conditions, the Tripolian population alters its economy from balanced agriculture to stock raising (with residual farming in the steppe, and with forest farming and a significant share of cattle-breeding in Podol and Volyn) (Dergachev, 1980). The unstable military and political situation also significantly impacted the culture's development: Tripolian settlements significantly decrease in size, declining to 5–10 ha. Topographically speaking they are located on naturally fortified plots, such as high bluffs and river cliffs, and become additionally surrounded by ramparts and ditches. At the Zhvanets-Schovb settlement site, researchers have detected multiple reconstructions of embankment and ditch structures: the old ones were filled up and new ones were built, and one embankment was even revetted with stones (Movsha, 1985). The Costesti settlements were also fortified with several ditches and ramparts, possibly not built simultaneously (Markevich, 1981). The highest part of the Kazarovichy settlement was surrounded by a double circular ditch, although it is probably premature to call this a stronghold. This fortified area possibly represented a shelter for the entire population under extreme circumstances (Kruts, 1977).

Research in the middle Dnieper region (Kruts, 1977) has determined that, at the beginning of the late period, smaller settlements (as Chapaevka, for example) with areas of around 5000m<sup>2</sup> were characterised by 11 sunken houses arranged in a circle, each of them with its own hearth and cult objects. Judging by the sizes of the dwellings (10–12m<sup>2</sup>), they were inhabited by small

families. Wattle and daub house building starts to fade in this period. People increasingly use houses with deep or shallow-sunken basements. 'Ground-houses' are also rather small, up to 30m<sup>2</sup>, and with a flimsy clay structure.

Along with more traditional stone and bone artefacts, metal weapons and tools start to play a bigger role in the later period, particularly in the southern regions. In this period, casting becomes more widespread, and arsenous ores and copper-silver alloys are also used. Actual casting moulds have also been found. The southern (Usatovskiy) centre of metal processing was particularly advanced: it used raw materials from the Caucasus, but judging from the types of tools, it was closely connected with the Aegean world. It is also assumed that there was a less powerful northern (Sofievskiy) metal-processing centre that used Balkan-Carpathian raw materials.

Unlike that of previous periods, the late period's mortuary practices are actually known. It is not, however, the same for the entire territory of the late Tripolye culture. In the north-western Black Sea region it involved barrow and flat grave practices in which single burials were dominant and the dead were laid on their left sides in a 'preying' position. That ritual was quite possibly adopted from the non-Tripolian steppe population. At the same time, in the well-known Chapaevka cemetery (Dnieper region) people were buried lying on their backs, just like in the Dnieper-Donetsk Neolithic culture. There is also a group of Tripolian burial grounds (Krasnyi Khutor, Sofievka, and others) with cremation burials (with and without urns) (Kruts, 1977; Kolesnikov, 1993a). These later developments of the Tripolian culture in Ukraine would eventually influence Bronze Age populations in south-east and central Europe.

## References

- Bibikov, S. (1953) The early Tripolye settlement of Luka-Vrublevetskaya in the Dniester region. *Moscow Institute of Archaeology Bulletin* 38: 411–58. Moscow-Leningrad (in Russian).
- Chernysh, K. (1959) *The Early Tripolye Settlement of Lenkivtsi in the Middle Dniester Region*. Kiev: Academy of Science of the Ukrainian SSR. Institute of Archaeology (in Ukrainian).
- Chernysh, E. (1982) The Aeneolithic Age of Right Bank Ukraine and of Moldova. In *The Aeneolithic Age of the USSR*: 165–320. Moscow: Nauka (in Russian).
- Danilenko, V. (1969) *The Neolithic in Ukraine*. Kiev: Naukova Dumka (in Russian).
- Danilenko, V. (1974) *The Aeneolithic in Ukraine*. Kiev: Naukova Dumka (in Russian).
- Dergachev, V. (1980) *Late Tripolye Sites: the Experience of Systematization*. Kishinev: Academy of Science of Moldovan SSR, Department of Ethnography and Art Studies (in Russian).
- Gusev, S. (1995) *Tripolian Culture of the Middle Bug Region at the Turn of the IV–III Millennia B.C.* Vinnitsa: Anteks-ULGT (in Ukrainian).
- Khvoika, V. (1901) The Stone Age of the Middle Dnieper Region. In countess Uvarova and S. Slitskiy (eds) *Works of the XI Archaeological Convention in Kiev in 1899*. Vol. 1: 736–812. Moscow: Moscow Archaeological Society Press (in Russian).
- Khvoika, V. (1904) Excavations in 1901 in the area of Tripolye culture. *Russian Archaeological Society Proceedings* 5: 1–20 (in Russian).
- Khvoika, V. (1913) *The Ancient Habitants of the Middle Dnieper Region And Their Culture in Prehistoric Times*. Kiev: Printing house of E.A. Sin'kevich (in Russian).
- Kolesnikov, A. (1993a) *Tripolian Society of the Middle Dnieper Region. An Attempt at Social Reconstruction in Archaeology*. Kiev: Naukova Dumka (in Russian).

- Kolesnikov, A. (1993b) Tripolian house-building. *Archaeology* 3: 63–74 (in Ukrainian).
- Kruts, V. (1977) *Late Tripolye Sites of the Middle Dnieper Region*. Kiev: Naukova Dumka (in Russian).
- Kruts, V., Korvin-Piotrovskiy, A. and Ryzhov, S. (2001) *Talianki, the Tripolye Giant-settlement. Research in the Year 2001*. Kiev: Korvin Press (in Russian).
- Markevich, V. (1981) *Late-Tripolye Tribes of Northern Moldavia*. Kishinev: Shtiintsa (in Russian).
- Movsha, T. (1985) The late stage of Tripolye culture. Copper Age. *Archaeology of the Ukrainian USSR*. V. I: 223–53. Kiev: Naukova Dumka (in Russian).
- Passek, T. (1940) The Tripolian settlement of Kolomyischina. In *Tripolye Culture*. 1: 9–37. Kiev: Ukrainian SSR Academy of Science. Institute of Archaeology (in Russian).
- Passek, T. (1949) Periodization of Tripolian settlements. *Materials and Studies in the Archaeology of the USSR* 10: 5–245 (in Russian).
- Passek, T. (1961) Early husbandry (Tripolian) tribes of the Dniester region. *Materials and Studies in the Archaeology of the USSR* 84: 4–226 (in Russian).
- Pogozheva, A. (1983) *Anthropomorphous Plastic Art of the Tripolye culture*. Novosibirsk: Nauka (in Russian).
- Popova, T. (2003) *The Multi-layered Settlement of Polivanov Yar*. Saint-Petersburg: Museum of Anthropology and Ethnography of the Russian Academy of Science (RAS) (in Russian).
- Ryzhov, S. (2007) The contemporary state of study of the cultural-historical community of Cucuteni-Tripolye on Ukraine's territory. In O. Olzhych (ed.) *Archaeology*: 437–77. Kiev: O. Teligy publishing (in Ukrainian).
- Tsvek, E. (1999) The structure of East Tripolye culture. *Archaeology* 3: 28–55 (in Ukrainian).
- Zbenovich, V. (1989) *The Early Stage of Tripolye culture on Ukraine's Territory*. Kiev: Naukova Dumka (in Russian).
- Zinkovskiy, K. (1975) Towards the problem of Tripolian house-building. *Archaeology* 15: 12–21 (in Ukrainian).

## Chapter 2

# Absolute Chronology of Ukrainian Tripolian Settlements

*Yuri Rassamakin*

### Introduction

In the second half of the 1990s, earlier developments in the radiocarbon chronology of Cucuteni-Tripolye were summarised, both within the culture itself and within the context of the radiocarbon chronology of the neighbouring agricultural cultures of the Carpathian-Balkan region, and of the steppe cultures. This was done with the use of earlier versions of computer software for calibrating conventional dates into calendar ones (Wechler, 1994; Mantu, 1995, 1998, 2000; Bojadžiev, 1998; Bem, 2000–2001).

Ukrainian researchers also noted the necessity of developing radiocarbon chronology for Cucuteni-Tripolye and proposed their version of dating for the various periods; this initial absolute chronology was based on the radiocarbon dates available at that time (Burdo and Videyko, 1998). The following dates were published:

- a) 19 dates for 13 settlements of the early period and of the first half of the middle Tripolye period (Burdo and Kovalyukh, 1998, 1999; Burdo, 2003, 2005: 80–2);
- b) 11 dates for five settlements of the second half of the middle Tripolye period, including the transitional phase between BI and BII (Burdo and Kovalyukh, 1999; Burdo, 2003; Videyko, 2003b, 2005);
- c) 14 dates for four settlements of the first half of late Tripolye (Videyko, 2003b: 12–20; Videyko, 2005: 53–5);
- d) 24 dates for nine settlements of the latest stage of Tripolye (CII) (Videyko, 1999), although eight dates for Sofievskiy-type burial grounds in the Kiev Dnieper region were published earlier (Kovalyukh *et al.*, 1995).

The dates confirmed the existence of the Early Tripolye (Tripolye A), but those of the latest stage of the Tripolye (Tripolye CII) turned out to be much younger than expected, in some cases reaching the first third of the third millennium cal BC. Younger dates than usually thought (especially within the BII and CI periods) are also supported by more recent radiocarbon dates.

At the same time, the first four dates for the giant-settlement of Talianki (CI period) were also published (Klochko and Kruts, 1999). These were followed by two dates from two Tripolian layers of the Verteba-Bilche-Zolote cave (Tkachuk, 2003), and several new dates for the steppe late-Tripolye complexes (in particular the Maiaki settlement and several Aeneolithic burial sites

with Tripolian vessels in barrows of the Bug-Dniester and Dniester-Danube regions) (Petrenko and Kovalyukh, 2003; Ivanova *et al.*, 2005; Videyko and Petrenko, 2003).

On the basis of the dates obtained exclusively in the Kiev radiocarbon laboratory and via their publication, an absolute chronology was developed for different periods of Tripolian culture and different zones of its distribution on Ukraine's territory (see the above-mentioned publications). However, it is not completely clear why, along with it, the so-called 'point dates' were used; point dates are similar to retail prices, where for instance 9.99 is perceived not as nearly 10, but rather as 9.

After the calibration of the collection of dates composed from 86 samples for Cucuteni-Tripolye, including new dates for early Tripolye, but without dates for the Tripolian CII period, Chernykh and Orlovskaya noted that the character of both the calibration chart and the charts for different periods, in particular for the A and CI periods, was rather unusual, and that this fact differentiates the dating of the culture from the Balkan-Carpathian cultures (Chernykh and Orlovskaya, 2003, 2004).

The results of the calibration of dates undoubtedly reveal clear contradictions concerning the uneven distribution of the various periods within the settled territory. It is also important to note that the quality of the obtained dates is crucial – that is, they should be correlated with archaeological sources and with the established archaeological periodisation of neighbouring cultures. In the case of Cucuteni-Tripolye there is unfortunately no possibility of using the stratigraphic succession of particular layers or horizons, as was possible in the case of, for example, the tells of the Balkan-Carpathian region and of Asia Minor, or in the case of the well-stratified barrows from the steppe region. The rare exception is the multi-layer settlement of Poduri-Dealul Ghindaru, where 13 dates have been determined for the subsequent layers of Precucuteni II–Precucuteni III–Cucuteni A1–Cucuteni A2 (Fig. 2.1, Tables 2.1 and 2.2). The chart reflects the succession of layers (Fig. 2.1) and, in correlating the stratigraphic position of the layers with the use of OxCal software, the dates can be differentiated even further. In this regard there is a very good example of the differentiation of close dates for a series of Pit-Grave culture graves, taking into account their stratigraphic succession, in barrow No. 24 near Vinogradnoe village on the Molochnaya River (Görsdorf *et al.*, 2004). It is also possible to mention two dates for two layers of the Bilcze Złote settlement, Verteba I and II, which were well in compliance with the stratigraphy of the site (Tkachuk, 2003) (Table 2.4). In other cases, however, there are only single dates that have been determined for a single layer or horizon for the few multi-layer settlements of Cucuteni-Tripolye (Polivanov Yar, Novye Rusesti, the Berezovskaya hydropower plant).

In general, there are only two possibilities for revising the dates within the 'horizontal plane' for Cucuteni-Tripolye sites. The first is the 'internal' option: comparing dates based on imports between different local groups, which differ from each other in terms of the features of ceramic sets and vessel decoration within the culture (see, for example, Tkachuk, 2008). The other option is 'external': using the chronological correlation with neighbouring cultures that was established on the basis of archaeological materials, primarily thanks to the presence of mutual imports. Here, along with the cultures of the Balkan-Carpathian region, the steppe cultures obtain a significant role; the number of radiocarbon dates for these cultures has been significantly increasing in the past several years.

Throughout the chapter the various dates (listed in Tables 2.1–2.5; and also Figs 2.1–2.16) will be discussed according to the different periods of the Tripolye culture, from the Precucuteni-Tripolye A to the Tripolye CII. The tables represent 202 dates in total: Precucuteni-Tripolye

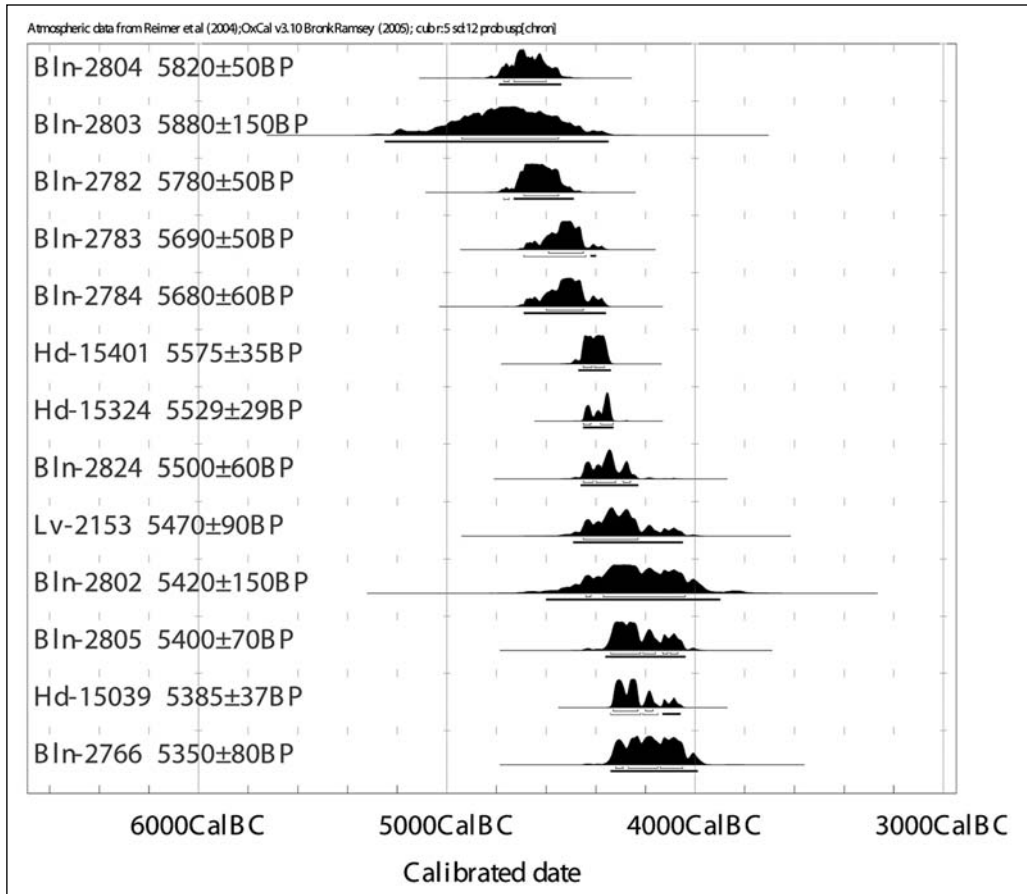


Figure 2.1: Calibration of radiocarbon dates of the multi-layered settlement of Poduri-Dealul Ghindaru (Precucuteni II – Precucuteni III – Cucuteni A1 – Cucuteni A2).

A – 26 dates; Cucuteni A-Tripolye BI – 46 dates; Cucuteni AB-Tripolye BI-II and BII – 28 dates; Cucuteni B-Tripolye BII-CI and CI – 45 dates; Tripolye CII – 57 dates. For Tripolye CII, the 11 dates for Usatovskiy-type burials from the Akkiembetskiy barrow were not considered (Szmyt and Chernyakov, 1999) since the materials from the barrow were not published and the archival information is also missing.

### Precucuteni-Tripolye A

There are two poorly compatible chronological groups. The first, which is younger and smaller in number, is represented by the seven dates for the sites of Precucuteni II and III in Romania and of Tripolye A (Rogozhany and Timkovo) in Ukraine. The dates were obtained mostly from

samples of charcoal in the Berlin laboratory (Fig. 2.2). The second group, which is older and larger, is formed of the new dates for the settlements on Ukraine's territory; the dates were derived from examination of animal bones at the Kiev laboratory (Fig. 2.3). Comparing the two charts (Figs 2.2 and 2.3), it is apparent that the absolute scale of both groups coincides only in three cases. This raises a series of questions. Burdo mentions that she uses only the new set of dates from the Kiev laboratory (Burdo, 2005), but what about the other dates? And how accurate is the new series of dates Burdo has developed (Fig. 2.3), despite their very gradual distribution across the phases of Tripolye A? At the same time, the dated layers of the Poduri-Dealul Ghindaru settlement and 'the old dates' of Precucuteni-Tripolye A (Figs 2.1 and 2.3) appear to be correct. One can certainly understand the doubts of Boyadziev when he attempted to synchronize the Cucuteni-Tripolye A sites with the Aeneolithic cultures on Bulgarian territory (Boyadziev, 2005). He also expresses concern about the reliability of the new dates obtained from animal bones (the influence of the so-called 'freshwater reservoir effect') (*ibid.*). Boyadziev therefore believes that the new dates for Tripolye A obtained from the bone samples cannot currently be correlated with the Aeneolithic cultures on Bulgarian territory. It is hard to say to what extent the 'freshwater reservoir effect' could affect all the samples, especially given that the bones of domestic animals are used for the verification of dates obtained from human bones. It is nonetheless difficult to disagree with Boyadziev's general conclusion that the previously obtained dates seem more accurate.

Concerning the most ancient Cucuteni-Tripolye site, the settlement of Bernashevka I (Precucuteni II) (Table 2.1), the author obtained two dates from the Kiev laboratory in 2010. The dates were based on animal bone samples from new excavations of the settlement led by Dmitry Chernovol that took place in 2009 (Table 2.1, Nos 3 and 4). The bones originated from the bottom of a pit, which was filled with early Tripolye materials that are similar to those found during much earlier excavations by V. Zbenovich. These dates differ significantly from those

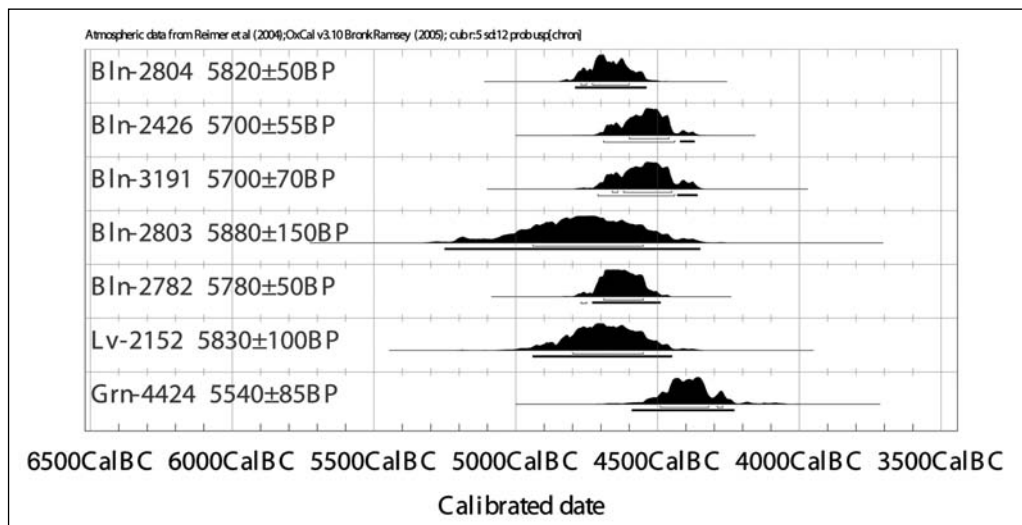


Figure 2.2: Calibration of radiocarbon dates of Precucuteni II–III – Tripolye A settlements.



previously obtained (Table 2.1, Nos 1 and 2, and Fig. 2.3), but they also cannot be considered accurate dates for the Precucuteni II and III sites. Only the date 5610 $\pm$ 90 BP (Ki-16545) can, to some degree, be accepted, although it already agrees more closely with the layers of Cucuteni A1 of the Poduri-Dealul Ghindaru settlement.

In addition, another date from the new excavations of the Bernashevka settlement was obtained at the Oxford laboratory on a sample of charcoal collected in the same place as the

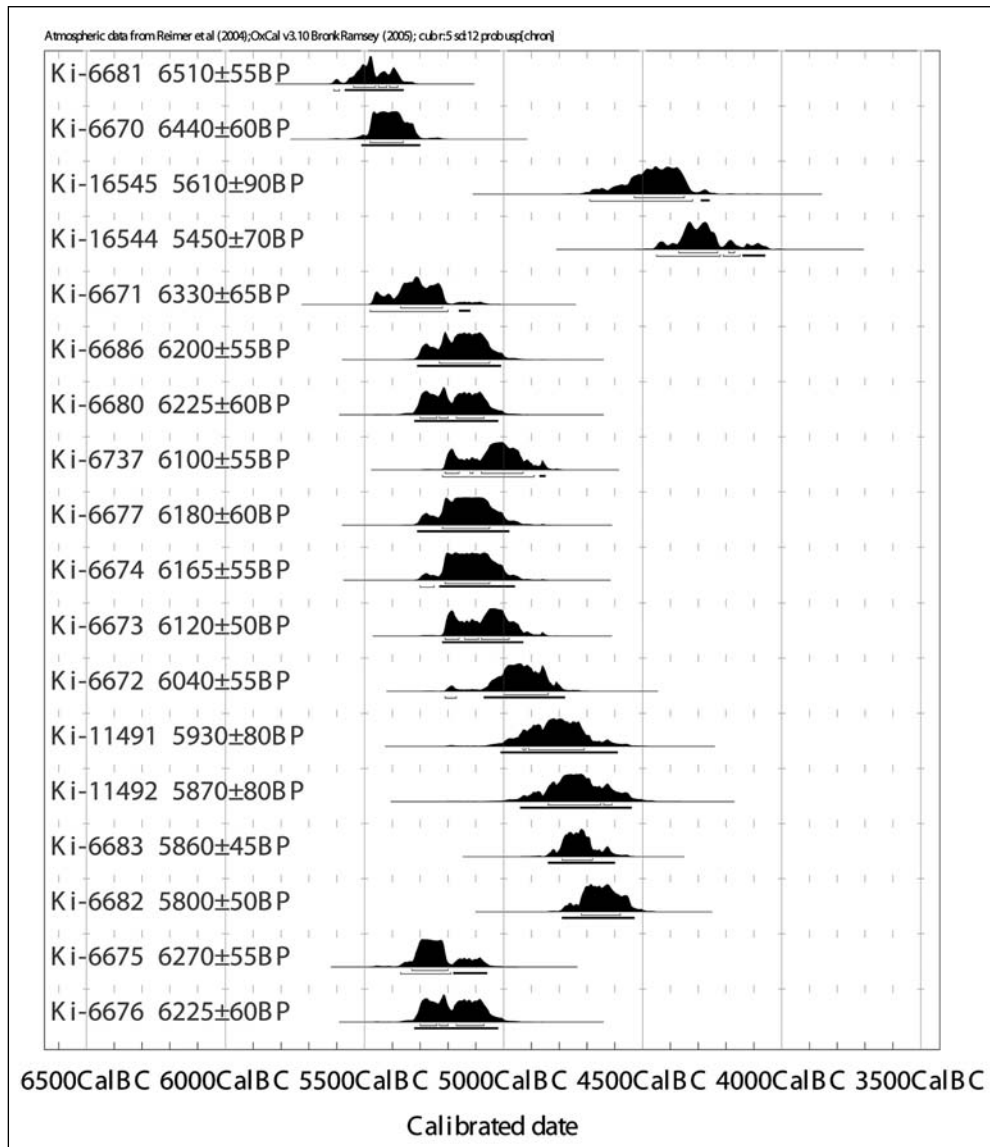


Figure 2.3: Calibration of radiocarbon dates of Tripolye A settlements (last dates of Kiev laboratory).

bone samples (Menotti pers. comm. 2010) (Table 2.1, No. 5). The date is fully coherent with the dates of Precucuteni II and III of the Poduri-Dealul Ghindaru settlement. Also, during the new excavations in Bernashevka, copper items were found (Chernovol pers. comm. 2010). This fact is extremely interesting, as it disagrees with the conclusion about the Tripolye A's synchronicity with the pre-metal period Balkan-Carpathian cultures (Chernykh and Orlovskaya, 2004). In this way, Boyadziev's doubts may be substantiated; however, the reservoir effect may not be the sole cause of the problem.

### **Cucuteni A1, 2, 3, 4–Tripolye BI**

The situation pertaining to the dating of this period is also associated with the issue of 'old and new dates'. The new dates from the Kiev laboratory, which are based on domestic animal bone samples (Table 2.2, Nos 41–46), when compared to the majority of earlier known dates for Romanian and Moldovan sites (Table 2.2) appear to be significantly older (Figs 2.4 and 2.5), except for two out of the nine dates from the Malnaș Băi settlement (Table 2.2, Nos 17 and 18). The majority of the 40 previously acquired dates were obtained in laboratories in Berlin and Heidelberg; single cases of analysis were conducted in laboratories in Groningen and Gdansk; only three dates came from the Kiev laboratory in the early stages of its operation, and two of them are clearly erroneous. The majority of the dates were obtained on the basis of charcoal samples; four dates are based on grain samples and eight on animal bones (Table 2.2 and Fig. 2.4).

It is necessary to point out that the dating of the period in question is important for determining the development of cultures in the period of the existence of the Karanovo VI–Gumelnița–Varna block of cultures and of the appearance in the steppe zone of early Aeneolithic elites burial sites, the outstanding reflection of which appears to be the barrows of Giurgiulesti and Krivoi Rog. In this regard, working from available new radiocarbon dates for these regions, the 'old' series of dates for Cucuteni A–Tripolye BI is more accurate. These dates, for example, are in compliance with the dates from the Varna barrow, even though according to some scholars they turned out to be earlier than expected (Higham *et al.*, 2008; Reingruber and Thissen, 2009). These dates can be compared to two of the latest dates from the new series for the Berezivska hydropower plant settlement (Table 2.2, Nos 45 and 46). The significant series of dates for the Gumelnița culture's Tell Pietrele in the Lower Danube region in Rumania (Reingruber and Thissen, 2009) correlates closely with the 'old' dates of Cucuteni A–Tripolye BI. On the other hand, the latter, just like the Varna and Pietrele dates, correlate with the series of dates for the early Aeneolithic burial sites of Giurgiulesti, Krivoi Rog (new dates), Cainari and Deseja Muresului (Rassamakin, *in press*), which are synchronous with them, concerning the material culture.

### **Cucuteni AB–Tripolye BI/II and BII**

The dates for this period are the most controversial, even considering possible territorial chronological differences. For the Bug-Dnieper region, the majority of dates are represented by those for the Shkarivka settlement's transitional period BI–BII (nine out of 13 dates), as developed by the Kiev laboratory in the early stage of its operation. They seem too 'young' for

this period; in addition, they are unrealistically stretched in time with respect to the existence of one Tripolian settlement, especially given that all the dates represent only three dwellings (Table 2.3 and Fig. 2.7) (see also Bem, 2000–2001: fig. 2). Of the remaining four dates, one for the settlement of Myropillja is clearly erroneous; the remaining three dates for Veselyi Kut and

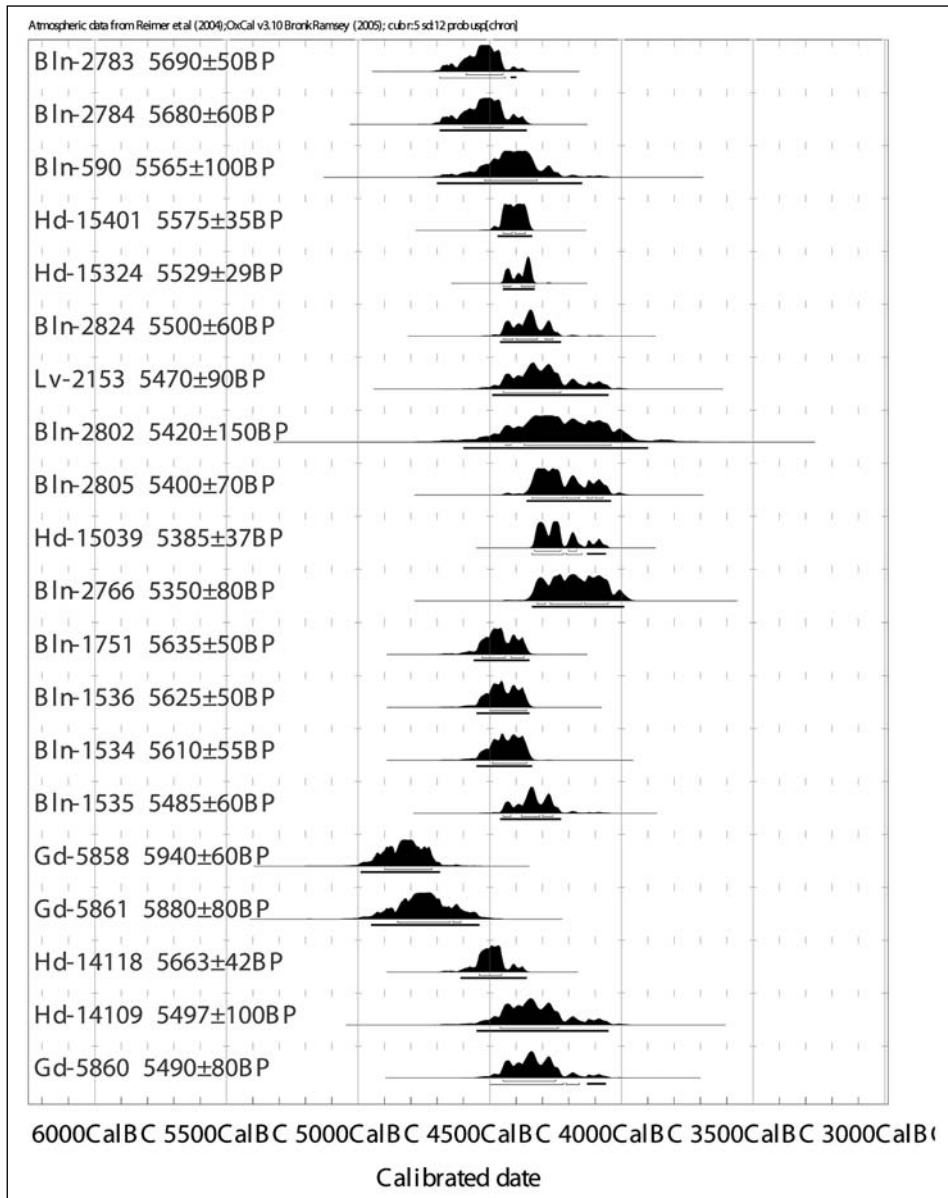


Figure 2.4: Calibration of radiocarbon dates of Cucuteni A – Tripolye BI settlements.

Klishchiv are insufficient for drawing conclusions, particularly because dates for Tripolye BII sites on this territory are missing, even though they correlate well with each other (Fig. 2.7).

Dates for Dniester-Prut region are not numerous either (seven dates). They are represented by three new dates from the Kiev laboratory, from the settlements on Ukrainian territory (Table 2.3, Nos 14–16) and by four dates from Romanian sites obtained at the Berlin and Heidelberg laboratories (Table 2.3, Nos 17–20), among which three are attributed to the Cucuteni-Dâmbul Morii settlement. The majority of the dates were obtained from animal bones. However, one of the dates from Cucuteni-Dâmbul Morii is clearly incorrect (Table 2.3, No. 20). It is also possible to observe that the dates are significantly older than those of the preceding period of BI (Fig. 2.6).

The middle Dnieper region is represented by eight new dates for two settlements (Table 2.3, Nos 21–28). The dates were obtained at the Kiev laboratory based on animal bone samples. Both settlements (Grebeni and Grygorivka-Khatyshche) represent not the transitional BI–BII stage, but the actual BII stage. One may agree with Videyko that the dates for the Grebeni settlement may reflect the beginning of Tripolye BII (Videyko, 2003a; 2003b), but the dates for Khatyshche seem more debatable. As probability diagram (Fig. 2.8) shows, there is a dramatic gap between the two settlements of the same period on the same territory, and not a gradual transition from earlier to later sites. The dates for Khatyshche settlement apparently already correspond to the beginning of CI period, but they are also separated from the new dates from the sites of the CI period in this territory (see below).

## **Cucuteni B –Tripolye BII–CI and CI**

In the Bug-Dnieper region, ten dates out of 11 have been provided from the giant-settlements. One date associated with Tripolian materials from the multi-layer settlement of Novo-Rozanivka has long been known, but taking into account a major error in calculations it would clearly be unreasonable to use it. Just two dates for the giant-settlement of Maidanetske are known (Table 2.4, Nos 15 and 16). They were obtained from two fragments of the same piece of charcoal in the Berlin and Kiev laboratories. The date from the Berlin laboratory can apparently be considered more accurate.

The first four dates from the giant-settlement of Talianki, from two dwellings (Nos 13 and 14) in the southwestern part of the settlement, were published relatively recently (Table 2.4, Nos 17–20). The author obtained four completely new dates from the Kiev laboratory based on animal bones after the 2008 excavations of dwellings Nos 40 and 41, which were located in the northwestern part of the settlement (Table 2.4, Nos 21–24). It is clear that one of them is erroneous (No. 22). Three further dates based on charcoal from houses 41, 42 and 43 have been obtained at the Oxford laboratory (Table 2.4, Nos 25–27) (Menotti pers. comm. 2010). These dates fully correspond with the Kiev dates. In general, the dating of giant-settlements of the Tripolye CI period in the Bug-Dnieper interfluvium (Fig. 2.10) looks accurate enough, but it is necessary to pay attention to one detail. The dates for Talianki settlement dwellings, particularly when taking into account the unpublished dates, seem more ancient than the dates for dwellings in the southeastern part. It is too early to tell whether this fact can be used to inform study of the structure and character of the settlement. Unfortunately, there are too few dates for the giant-settlements (e.g. Maidanetske) and more attention should be paid to radiocarbon dating during the examination of these sites.

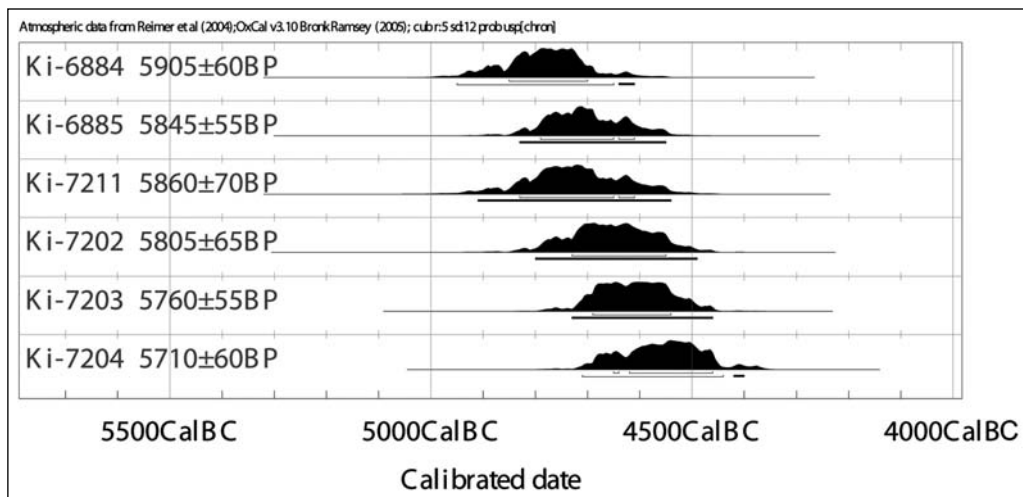


Figure 2.5: Calibration of radiocarbon dates of Tripolye BI settlements (last dates of Kiev laboratory).

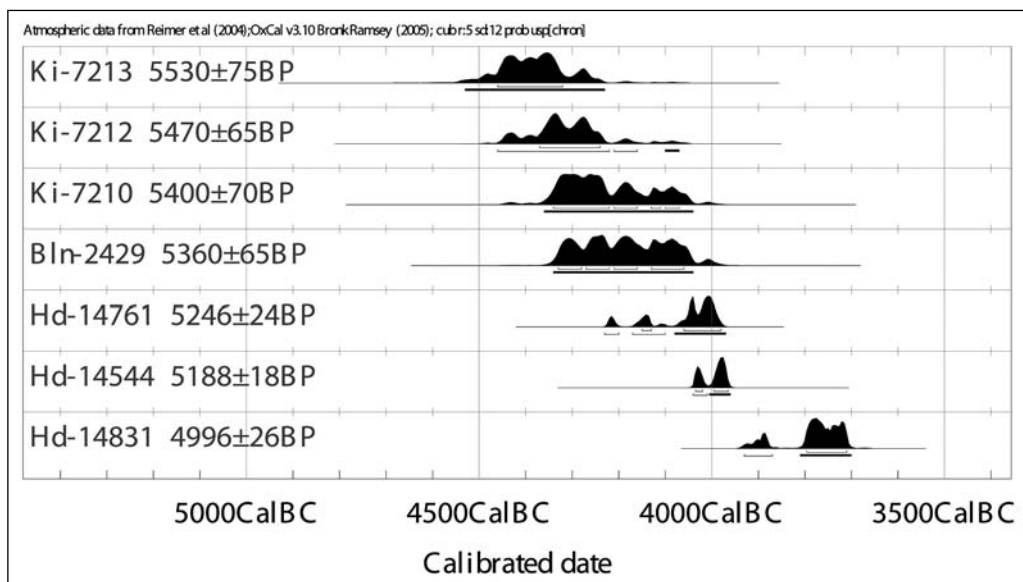


Figure 2.6: Calibration of radiocarbon dates of Cucuteni A-B settlements (Dniester-Prut region).

The dates for the Dniester-Prut region settlements from the Berlin, British Museum, Groningen and Heidelberg laboratories – based on samples of charcoal, grain, and animal bones (Table 2.4, Nos 1–12) – in general correlate well with the giant-settlement results and show a gradual distribution of dates (Fig. 2.9). Ten of those dates have been known for quite some time, but one of them, Ki-1204 from the Varvarovka VIII settlement (the only one of this series from

the Kiev laboratory – Table 2.4, No. 5), was clearly incorrect. Recently, only two dates (based on animal bone samples) for the multi-layer Verteba-Bilcze Złote cave settlement, obtained at Kiev (Table 2.4, Nos 11 and 12) have been added to this series. These dates, as mentioned above, correctly reflect the stratigraphy of the settlement and correspond to the earlier known dates for the region.

We should note the date for grave 4 in barrow 5 of Khadzider I near Yaroslavka village; the date was obtained at the Kiev laboratory based on a human bone sample (Table 2.4, No. 13). Grave 1 in the barrow was accompanied by a carinated Tripolian vessel with the remains of decoration of the Tripolye BII–CI or CI period (Petrenko and Kovalyukh, 2003; Videyko and Petrenko, 2003), but this burial site was not radiocarbon dated. In comparison with the dates for Tripolian settlements of this time, the date for grave 4 is the later one, but according to the correlation of the two graves in the barrow, it can be used for determining the *terminus post quem* for grave 1 with the Tripolian vessel. Videyko has published 14 new dates from four poorly distinguished and

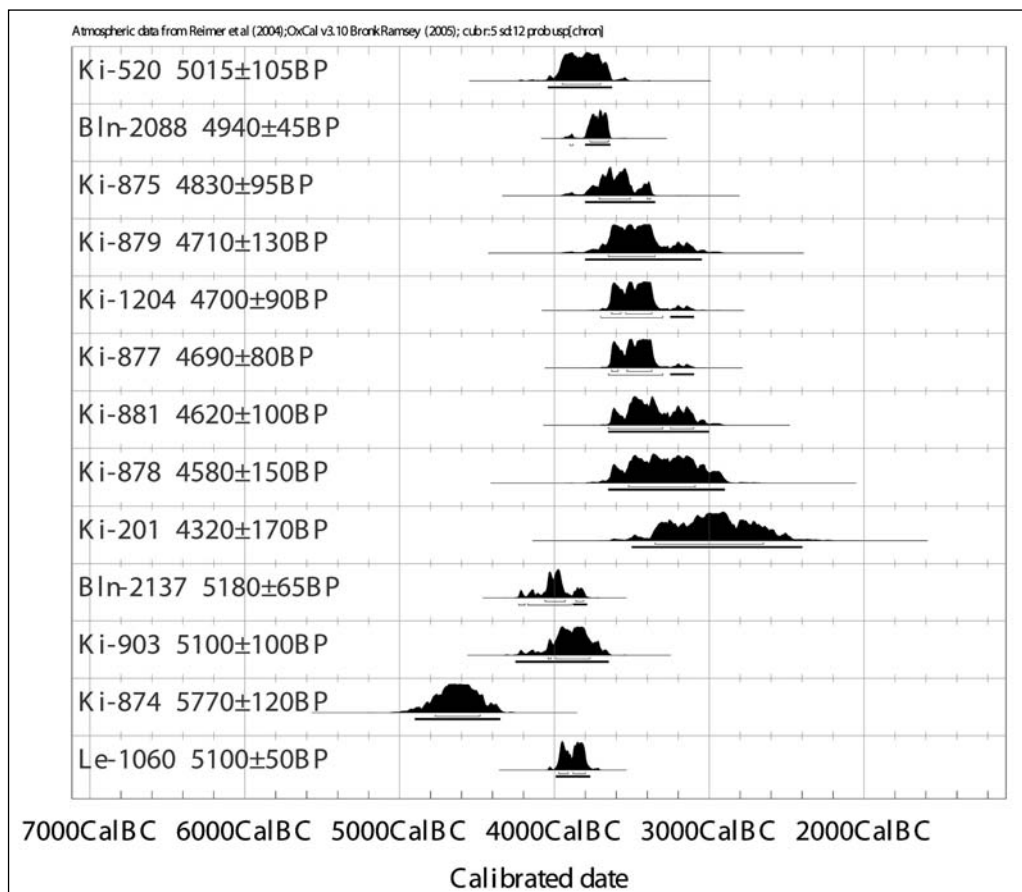


Figure 2.7: Calibration of radiocarbon dates of Tripolye BI, BI/II and BII settlements (Southern Bug-Dnieper region).

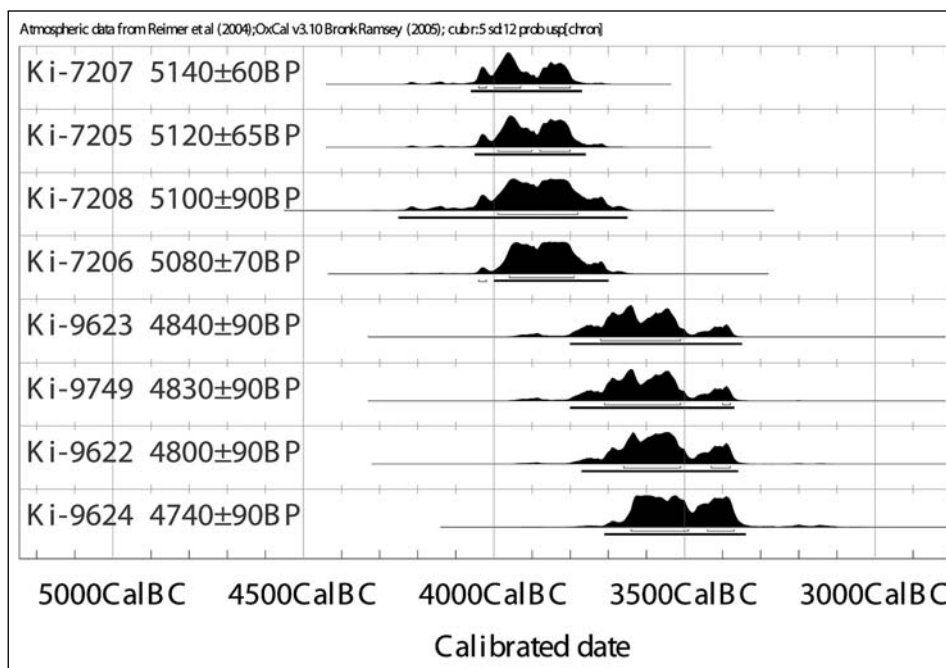


Figure 2.8: Calibration of radiocarbon dates of Tripolye BII settlements (Middle Dnieper region).

very much ruined settlements in the Middle Dnieper region (Table 2.4, Nos 32–45). Before his publication just a few dates for this region for the Chapaevka and Yevminka I settlements were known; they are more ancient compared to the new dates (Table 2.4, Nos 28–31 and Fig. 2.11). Videyko even attributes Chapaevka to the Tripolye BII period (Videyko, 2003b).

It is necessary to point out that the set of new dates for the Middle Dnieper region is significantly younger than not only the dates from the above-mentioned settlements but also from the Khatyshche settlement which, according to Videyko, determines the lower limit of the BII stage in this exact territory. The chart shows a quite clear differentiation for the sites starting from the BII stage: Grebeni-Khatyshche, Chapaevka, Yevminka-Rzhyshev (Figs 2.8 and 2.11). Any intermediate links that could support this given chronology are, so far, apparently absent. The noted new set of late dates for the Middle Dnieper region, however, already accords well with the new dates for the sites in particular regions during the Tripolye CII period.

## Horodiștea–Tripolye CII

The largest group of dates (57 dates) is from this period.

The steppe sites group stands out in terms of the number of dates; it is represented by the Maiaki settlement and by a series of graves with Tripolian ceramics of the CII period (Table 2.5, Nos 1–22). Maiaki represents 14 of those dates. Moreover, five new dates from the Poznan laboratory show a clear tendency towards making the settlement older, but also give a broad

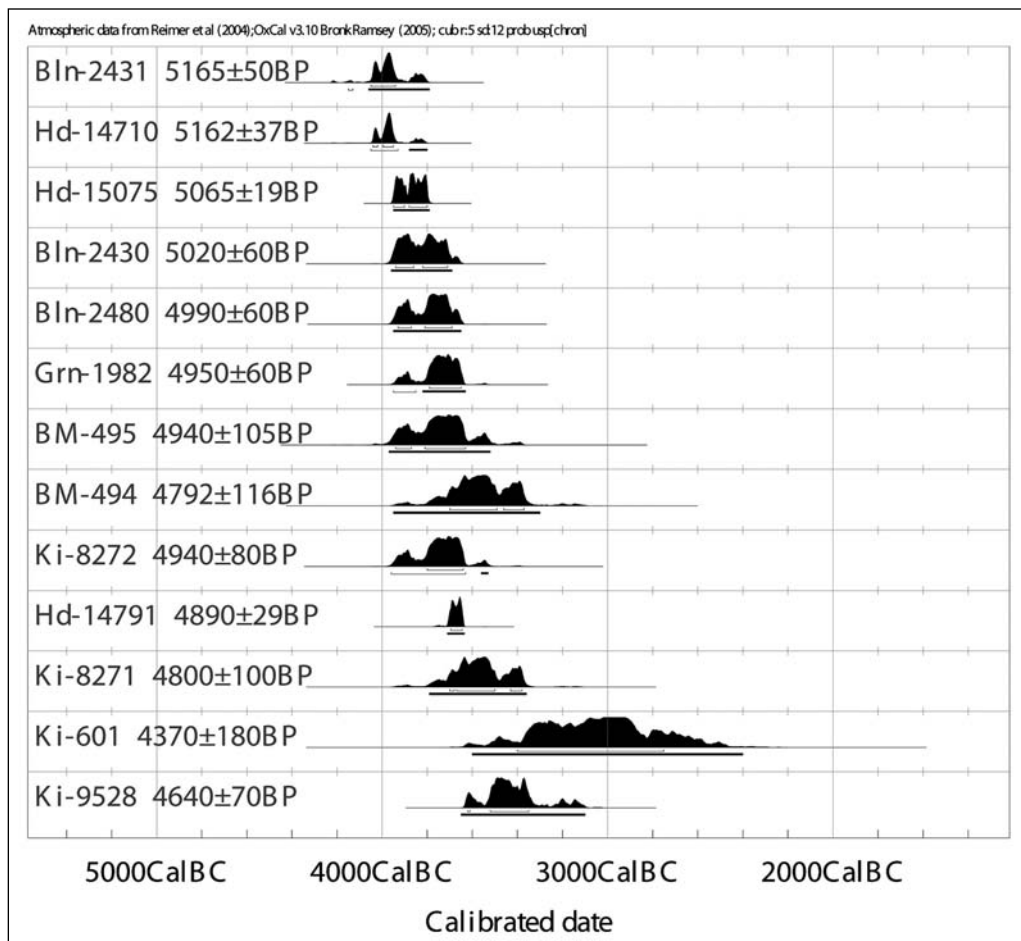


Figure 2.9: Calibration of radiocarbon dates of Cucuteni B settlements (Dniester-Prut region).

range of dates (Table 2.5, Nos 1–5 and Table 2.3). These dates are older than, or synchronous with, the dates described earlier for CI period settlements in the Middle Dnieper region. The chart of calibrated Maiaki settlement dates reflects well the transition from the more ancient dates to the previously known younger dates. That is why the question arises as to the timespan of the settlement's existence. The few new dates from the barrow burial sites that contain Tripolian ceramics of the CII period correspond with the early dates for the Maiaki settlement (Table 2.5, Nos 17–22 and Fig. 2.13). However, I consider two out of the three dates for the Katarzhyno I burial site to be incorrect (Table 2.5, Nos 17 and 18). One date (No. 17) clearly does not comply with the materials from the grave, even though the authors of the publication noted its accuracy, and the burial was attributed to the so-called 'post-Stogovskiy' Aeneolithic grave group (Petrenko and Kovalyukh, 2003). In another publication, however, the ceramics in the grave were attributed to the Usatovskiy-type. As a result, the date was viewed as being too early for Usatovskiy-type



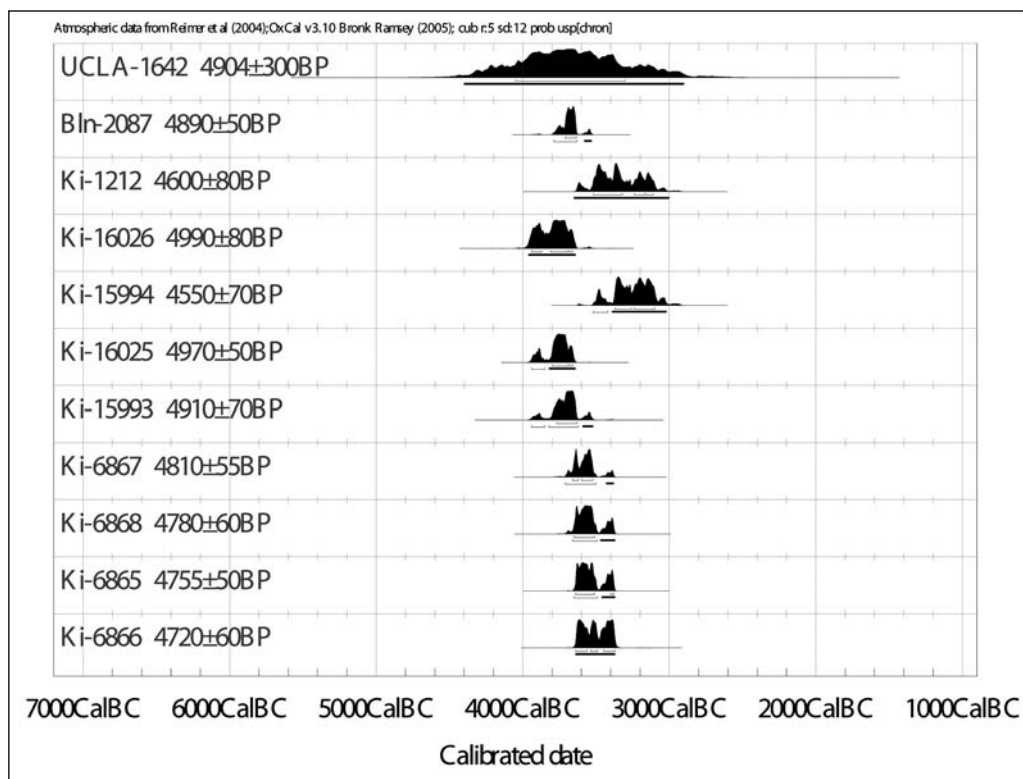


Figure 2.10: Calibration of radiocarbon dates of Tripolye BII–CI and CI settlements (Southern Bug-Dnieper region).

sites, while corresponding to the Tripolian BII period (Videyko and Petrenko, 2003). Two of the new dates (Ivanova *et al.*, 2005) for these graves put an end to this discussion; one (Table 2.5, No. 19) fully complies with the materials included in the burial and with the known radiocarbon dates from the Usatovskiy-type sites – particularly Maiaki.

The dates for the grave in the Oleksandrivka barrow (Table 2.5, Nos 20 and 21), in the opinion of the authors of its publication, are the most correct for the Usatovskiy series of dates and are attributed to the early Usatovskiy period (Petrenko and Kovalyukh, 2003). These dates correspond to the new and earliest dates from Maiaki, but it is worth noting that they overlap with the dates for the Tripolye CI settlements. Another subject of interest is the date from grave 8 in barrow 4 in Sărăteni in the Prut region (Table 2.5, No. 22). This burial was accompanied by two vessels that are typical of the Gordinesti local group of the Tripolian CII period (Levițki *et al.*, 1996: figs 39 and 40), and this allows us to date this local group precisely.

Dates from the settlements of the latest Tripolye period in the forest-steppe zone seem, at first glance, later than expected. That is related to the fact that the series of dates from the Tripolian settlements in the Dnieper and Bug-Dnieper regions of this period already corresponds with the dates from Pit-Grave culture burial sites of the early Bronze Age in the steppe region. Archaeological proof for the synchronization of the Pit-Grave culture with the latest Tripolian sites is, however,

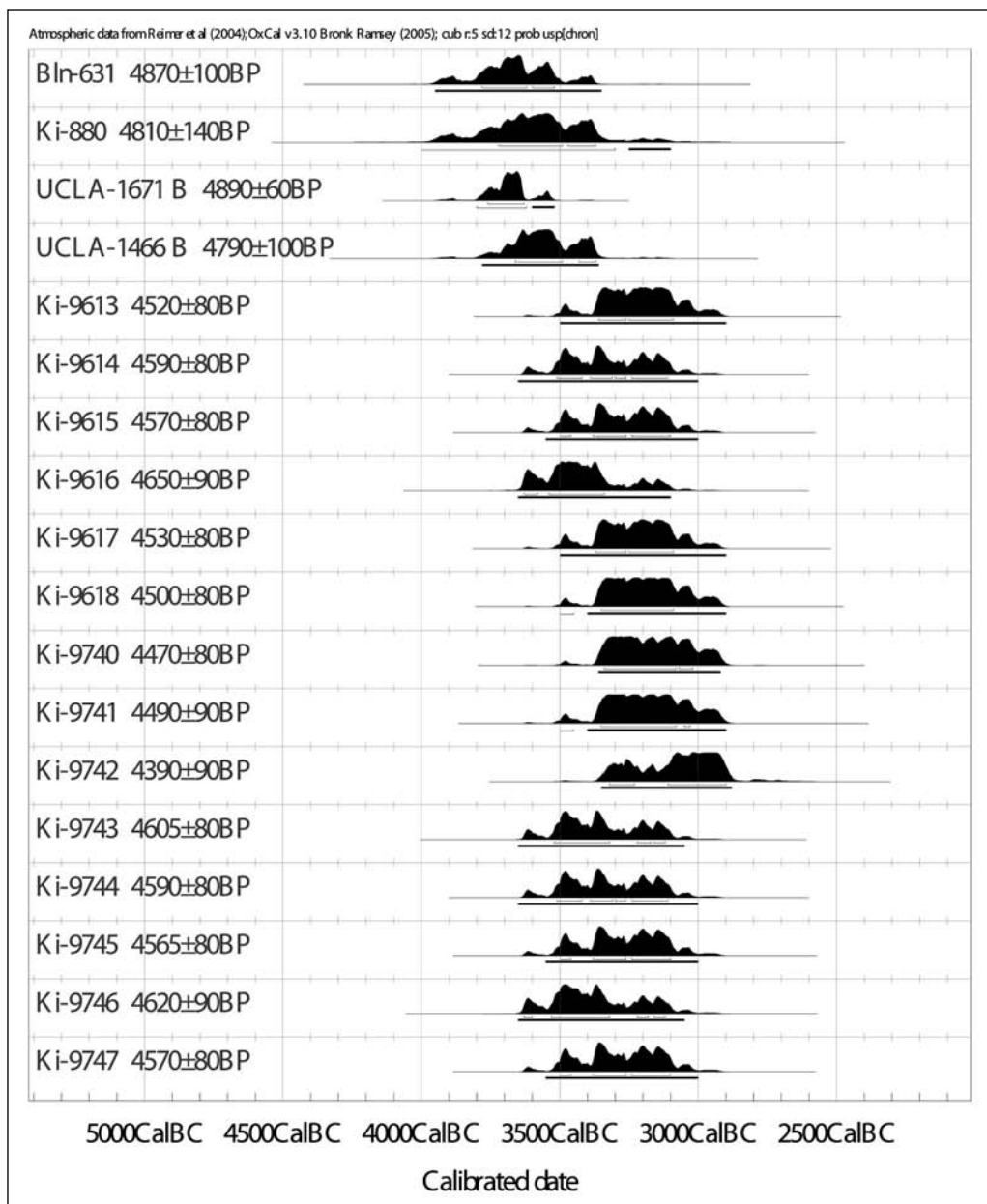


Figure 2.11: Calibration of radiocarbon dates of Tripolye CI settlements (Middle Dnieper region).

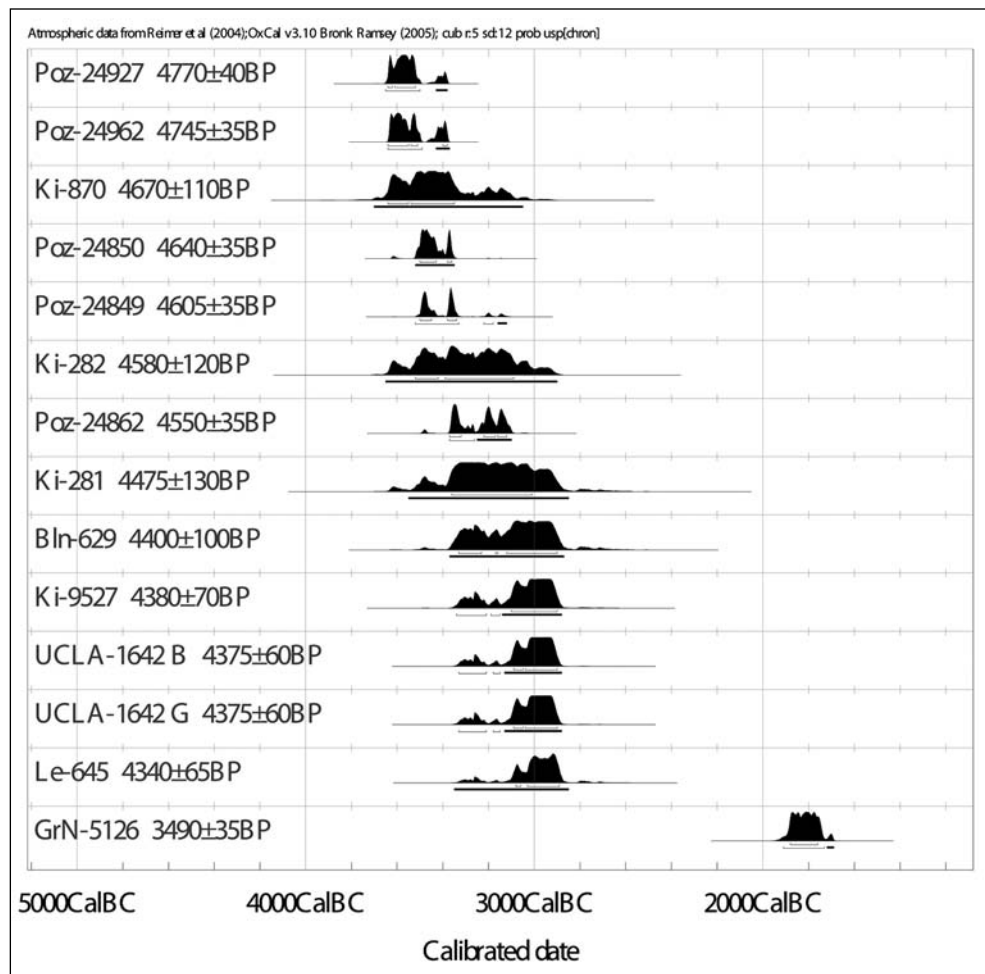


Figure 2.12: Calibration of radiocarbon dates of the Mayaki settlement.

missing. This could theoretically have to do with the existence of a buffer ‘dead’ zone between different cultural regions, to which radiocarbon dates of the Pit-Grave culture itself could indirectly testify: the dates are later for the northern forest-steppe zone of its distribution than those of the southern steppe zone (Bidzilya *et al.*, 2005; Rassamakin and Nikolova, 2008). These dates are also later than those from the peripheral latest Tripolian sites, in particular for the Sofievskiy-type in the Kiev Dnieper region, whose dates are distributed quite evenly (Table 2.5, Nos 50–57 and Fig. 2.16). Only the ancient dates from the remote settlements of Troianiv and Gorodsk stand out here (Table 2.5, Nos 45–49 and Fig. 2.16). The late dates from the Vilkhovets settlement in the Dnieper-Bug region, and from the Sandraky settlement in the South Bug region are however disputable (Table 2.5, No. 33–34 and 41–44). They differ dramatically from the recently obtained dates from the Sharyn settlement (Table 2.5, Nos 35–40), and this is fairly unusual (Fig. 2.15).

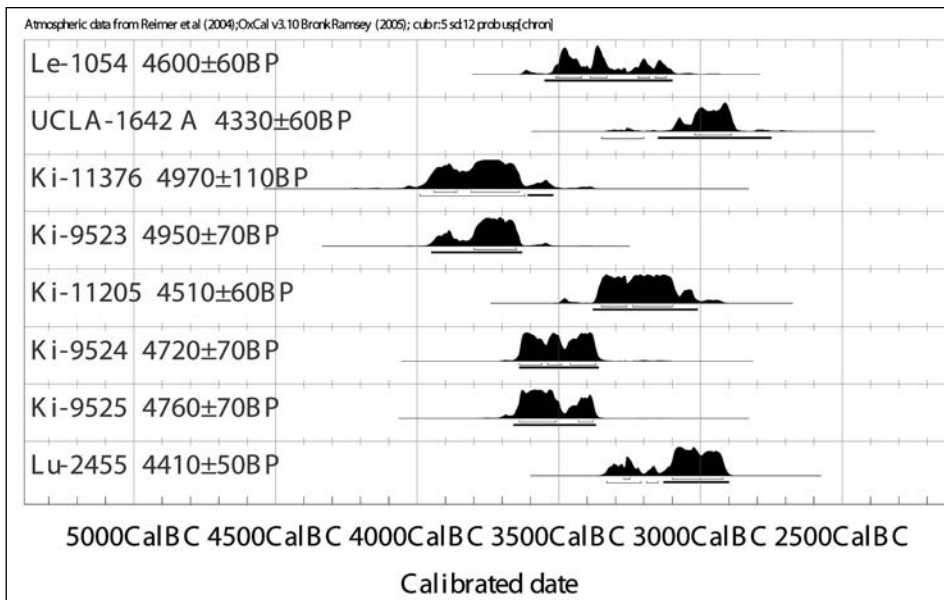


Figure 2.13: Calibration of radiocarbon dates of the Tripolye CII burials with ceramics.

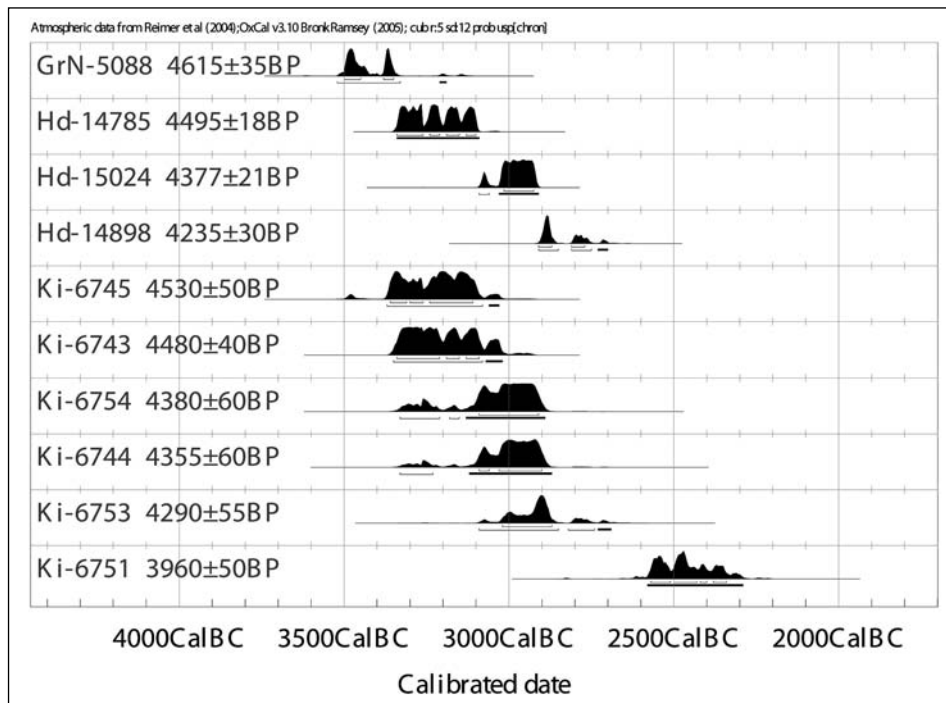


Figure 2.14: Calibration of radiocarbon dates of Horodiștea and Tripolye CII settlements (Dniester-Prut region).

Finally, the dates from the Dniester-Prut region settlements are not as numerous (Table 2.5, Nos 23–32). In general they could be acceptable with regard to the steppe sites with the exception, in my opinion, of the date from the Tswiklivtsi settlement, which seems to be too late (Table 2.5, No. 32). On the other hand, the dates from the Zhwanets (Shchovb) settlement (Table 2.5, No. 27–31) provide a too-wide time-amplitude for one settlement (Fig. 2.14), which recalls the situation with Maiaki. The early dates from Zhwanets (Shchovb), which are the most reliable, do correlate with the above-mentioned dates from the Sharyn settlement in the Bug region.

## Conclusion

In addition to providing a complete list of Cucuteni-Tripolye culture radiocarbon dates available in Ukraine, this chapter clearly shows that, with the growth of the radiocarbon dating database, disagreement about the interpretation of the dates, both within specific periods and the general absolute chronology of Cucuteni-Tripolye culture is only amplified.

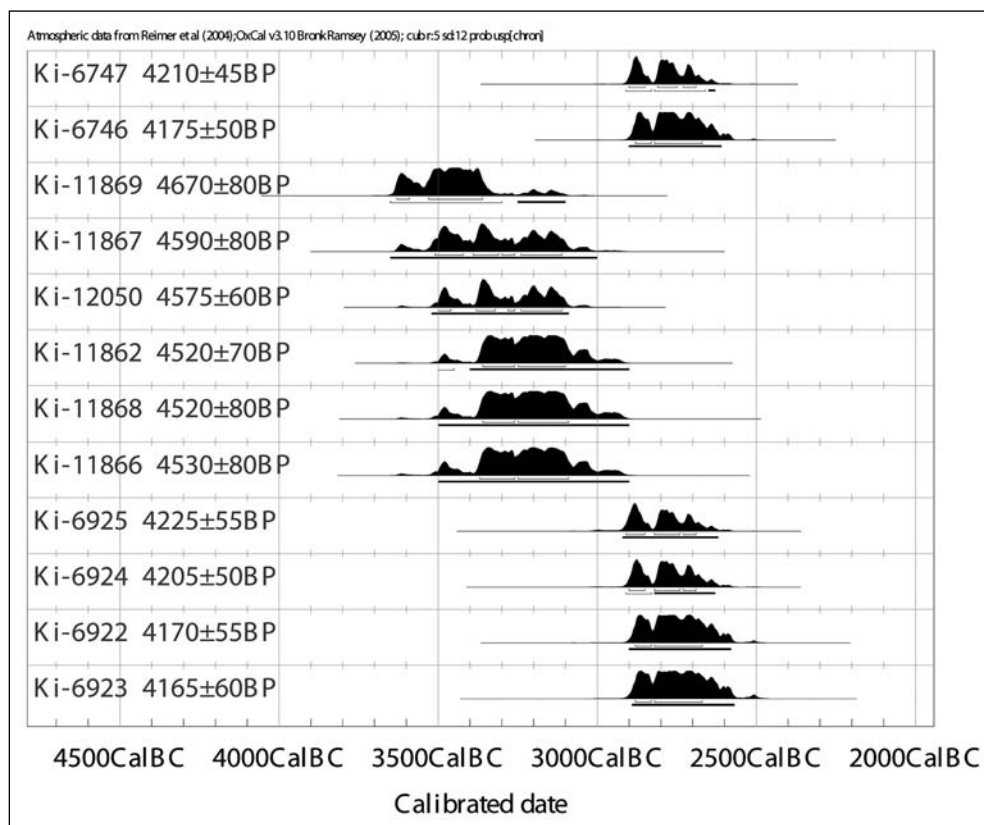


Figure 2.15: Calibration of radiocarbon dates of Tripolye CII settlements (Southern Bug and Southern Bug-Dnieper region).

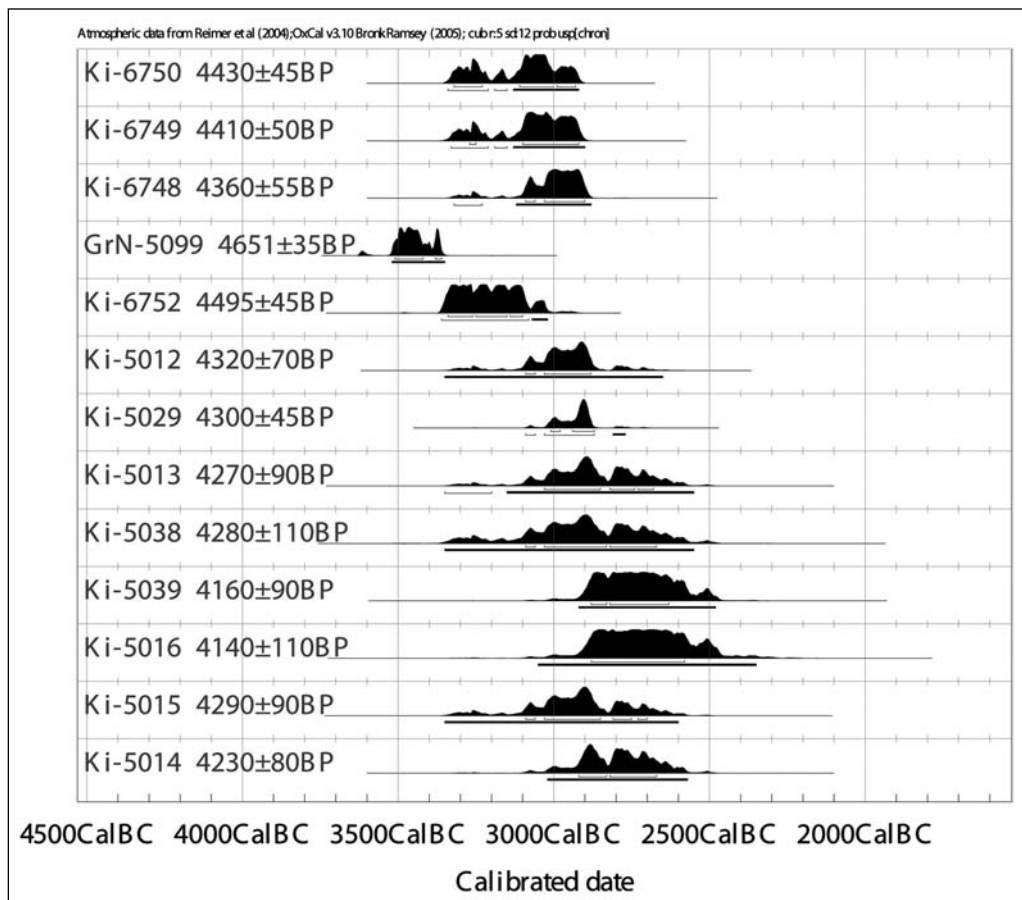


Figure 2.16: Calibration of radiocarbon dates of Tripolye CII settlements (Middle Dnieper region).

The new series of dates not only extends the whole period of the existence of the Tripolye culture, but raises the issue of synchronization between the settlements of different periods, which had been radiocarbon dated previously, especially those of the Cucuteni culture in modern Romania. Thus, a new series of radiocarbon dates should be obtained in order to resolve the issue.

It is quite impossible at this point to create a widely accepted absolute chronology for the Tripolye culture's development. It has, however, become clear that there cannot be an 'isolated' Tripolian (Ukrainian) absolute chronology (similar, for example, to that of the Tripolye A). The general Cucuteni-Tripolye absolute chronology should be created by taking into account the absolute chronology of the neighbouring synchronous cultures. In this way, the continuously growing database of radiocarbon dates for Aeneolithic steppe cultures would also become increasingly important, as the development of these cultures and their changes are strictly connected to the dynamics of Tripolian culture's evolution.

*Table 2.1: List of radiocarbon dates of Precucuteni II-III – Tripolye A*

NO.	SETTLEMENTS	LAB. ID	SAMPLE	BP	CAL BC (OXCAL 3.10)	FIRST PUBLISHED IN
<i>PRECUCUTENI II – TRIPOLYE A/II</i>						
1	Bernashevka I, Mogyliv-Podilskyi district, Vinnytsia region, Zhwan River, links tributary of Dniester, 1975–76, dwelling 5, depth 0.4–0.5m (A/II, 1) <sup>1</sup>	Ki-6681	frag. bone tool	6510±55	68.2% probability 5540 (45.2%) 5460 5450 (9.6%) 5420 5410 (13.4%) 5380 95.4% probability 5610 (2.8%) 5590 5570 (92.6%) 5360	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
2	As No. 1; dwelling 6, depth 0.3–0.6m (A/II, 1)	Ki-6670	animal bone	6440±60	68.2% probability 5480 (68.2%) 5360 95.4% probability 5510 (95.4%) 5300	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
3	Bernashevka, Mogyliv-Podilskyi district, Vinnytsia region, Zhwan River, links tributary of Dniester, 2009, site 1/2 (pit), sq. 3–1/3, depth 0.7–0.9m (A/II, 1)	Ki-16545	pig tooth (12 g)	5610±90	68.2% probability 4530 (68.2%) 4350 95.4% probability 4690 (94.4%) 4320 4290 (1.0%) 4260	
4	As No. 3	Ki-16544	animal bone (20 g)	5450±70	68.2% probability 4370 (66.4%) 4230 4190 (1.8%) 4170 95.4% probability 4450 (80.3%) 4220 4210 (7.8%) 4150 4140 (7.3%) 4060	
5	As No. 3	OxA-22516	charcoal	5772±30	95.4% probability 4702 (94.4%) 4526	
6	Rogozhany I, Volodymyr-Volynskyi district, Volyn region, Dniester, (A/II, 1)	BIn-2426	charcoal	5700±55	68.2% probability 4600 (68.2%) 4460 95.4% probability 4690 (92.9%) 4440 4420 (2.5%) 4370	Wechler, 1994: 18
7	Okopy, Borshchiv district, Ternopil region, Zbruch Riverleft tributary of Dniester, 1978–80, dwelling 3, depth 0.3–0.6m (A/II, 2)	Ki-6671	animal bone	6330±65	68.2% probability 5370 (68.2%) 5220 95.4% probability 5480 (94.3%) 5200 5160 (1.1%) 5120	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.

NO.	SETTLEMENTS	LAB. ID	SAMPLE	BP	CAL BC (OXCAL 3.10)	FIRST PUBLISHED IN
8	Babshyn, Kamianets-Podilskyi district, Khmelnytskyi region, left bank of Dniester, 1970 and 1978 (A/II, 2)	Ki-6686	animal bone	6200±55	68.2% probability 5230 (68.2%) 5050 95.4% probability 5310 (95.4%) 5010	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
9	Poduri-Dealul Ghindaru (Precucuteni II)	Bln-2804	charcoal	5820±50	68.2% probability 4770 (3.1%) 4750 4730 (65.1%) 4600 95.4% probability 4790 (95.4%) 4540	Monah, 1987: 78
<i>PRECUCUTENI III — TRIPOLYE A/III</i>						
10	Voronovytsia, Kelmentsy district, Chernivtsi region, right bank of Dniester, 1980, cultural layer, depth 0.45–0.6m (A/III, 1)	Ki-6677	animal bone	6180±60	68.2% probability 5220 (68.2%) 5050 95.4% probability 5310 (95.4%) 9800	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
11	Grebeniukiv Iar ravine, Maydanetske, Talne district, Cherkasy region, Talianka River, tributary of Girs'kyi Tikych River, 1982 and 1989, pit 4 (A/III, 1)	Ki-6674	animal bone	6165±55	68.2% probability 5210 (68.2%) 5050 95.4% probability 5300 (3.9%) 5250 5230 (91.5%) 4960	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
12	As No. 11	Ki-6673	animal bone	6120±50	68.2% probability 5210 (17.7%) 5160 5140 (7.3%) 5090 5080 (43.2%) 4980 95.4% probability 5220 (95.4%) 4930	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
13	As No. 11, dwelling 4 (A/III, 1)	Ki-6672	animal bone	6040±65	68.2% probability 5020 (68.2%) 4840 95.4% probability 5210 (6.7%) 5090 5080 (88.7%) 4780	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
14	Tymkove, Kodyma district, Odessa region, left bank of Dniester, 1981 (A/III, 1)	Bln-3191	?	5700±70	68.2% probability 4660 (2.9%) 4640 4620 (65.3%) 4450 95.4% probability 4710 (88.5%) 4440 4430 (6.9%) 4360	Patokova <i>et al.</i> 1989: 29



NO.	SETTLEMENTS	LAB. ID	SAMPLE	BP	CAL BC (OXCAL 3.10)	FIRST PUBLISHED IN
15	Sabatynivka II, Ulianivka district, Kirovograd region, right bank of Synytsia River, left tributary of Southern Bug, 1947–49, pit of dwelling with depth 0.25m (A/III, 1) <sup>2</sup>	Ki-6680	animal bone	6225±60	68.2% probability 5300 (20.4%) 5240 5230 (11.4%) 5200 5170 (36.4%) 5070 95.4% probability 5320 (95.4%) 5020	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
16	Sabatynivka II, Ulianivka district, Kirovograd region, right bank of Synytsia River, left tributary of Southern Bug, 1947–1949, pit of dwelling with depth 0,25m (A/III, 1)	Ki-6737	animal bone (?)	6100±55	68.2% probability 5210 (11.5%) 5160 5120 (1.1%) 5110 5080 (55.6%) 4930 95.4% probability 5220 (93.4%) 4890 4870 (2.0%) 4850	Telegin <i>et al.</i> 2001: 128
17	Oleksandrivka ravine, Kyrylivka, Kodyma district, Odessa region (A/III, 2)	Ki-11491	animal bone	5930±80	68.2% probability 4930 (0.9%) 4920 4910 (67.3%) 4710 95.4% probability 5010 (95.4%) 4590	Burdo, 2005: 80
18	As No. 17	Ki-11492	animal bone	5870±80	68.2% probability 4840 (62.6%) 4650 4640 (5.6%) 4610 95.4% probability 4940 (95.4%) 4540	Burdo, 2005: 80
19	Korman, Sokyriany district, Chernivtsi region, right bank of Dniester, 1978, excavation I (A/III, 3)	Ki-6675	animal bone	6270±55	68.2% probability 5330 (68.2%) 5200 95.4% probability 5370 (74.6%) 5190 5180 (20.8%) 5060	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
20	As No. 19	Ki-6676	animal bone	6225±60	68.2% probability 5300 (20.4%) 5240 5230 (11.4%) 5200 5170 (36.4%) 5070 95.4% probability 5320 (95.4%) 5020	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
21	Grenivka, Ulianivka district, Kirovograd region, left bank of Southern Bug, 1948 (A/III, 3)	Ki-6683	animal bone	5860±45	68.2% probability 4790 (68.2%) 4680 95.4% probability 4840 (95.4%) 4600	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.

NO.	SETTLEMENTS	LAB. ID	SAMPLE	BP	CAL BC (OXCAL 3.10)	FIRST PUBLISHED IN
22	As No. 21	Ki-6682	animal bone	5800±50	68.2% probability 4720 (68.2%) 4580 95.4% probability 4790 (95.4%) 4530	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
23	Poduri-Dealul Ghindaru (Precucuteni III)	Bln-2803	charcoal	5880±150	68.2% probability 4830 (3.2%) 4810 4800 (65.0%) 4690 95.4% probability 4900 (2.4%) 4860 4850 (93.0%) 4600	Monah, 1987: 78
24	Poduri-Dealul Ghindaru (Precucuteni III)	Bln-2782	charcoal	5780±50	68.2% probability 4690 (68.2%) 4550 95.4% probability 4770 (1.0%) 4750 4730 (94.4%) 4490	Monah, 1987: 78
25	Târpești 1, 1963 (Precucuteni III)	Grn-4424	charcoal	5540±85	68.2% probability 4490 (65.5%) 4320 4290 (2.7%) 4270 95.4% probability 4590 (95.4%) 4230	Vogel and Waterbolk, 1972: 70
26	Târgu Frumos (Precucuteni III)	Lv-2152	animal bone	5830±100	68.2% probability 4800 (68.2%) 4550 95.4% probability 4940 (95.4%) 4450	Mantu, 1998: 246, table 7

## Notes

- 1 The phases and sub-phases of Tripolye A, to which the dated settlements belong to, are indicated in brackets (see: Burdo, 1998, Table 1; Burdo, 2005, Table. 4)
- 2 In her earlier work N. Burdo refers Sabatynivka II to Tripolye A/III, 2 (Burdo, 1998: Table 1), and later to Tripolye A/III, 1 (Burdo, 2005: Table. 4).

*Table 2.2: List of radiocarbon dates of Cucuteni A – Tripolye BI*

NO.	SETTLEMENTS	LAB. ID	SAMPLES	BP	BC (OXCAL 3.10)	FIRST PUBLISHED IN
1	Poduri-Dealul Ghindaru (Cucuteni. A1)	Bln-2783	charcoal	5690±50	68.2% probability 4590 (68.2%) 4450 95.4% probability 4690 (93.4%) 4440 4420 (2.0%) 4400	Monah, 1987: 78
2	As No. 1	Bln-2784	charcoal	5680±60	68.2% probability 4600 (68.2%) 4450 95.4% probability 4690 (95.4%) 4360	Monah, 1987: 78
3	Ruseştii Noi I, Kotovsk district, Moldova, Botna River, dwelling pit 2, depth 1.2–1.5m, 1964 (Cucuteni A/1-2)	Bln-590	charcoal	5565±100	68.2% probability 4520 (68.2%) 4320 95.4% probability 4470 (95.4%) 4140	Quitta und Kohl, 1969: 249
4	Poduri-Dealul Ghindaru (Cucuteni A2)	Hd-15401	charcoal	5575±35	68.2% probability 4450 (30.5%) 4415 4405 (37.7%) 4365 95.4% probability 4210 (3.6%) 4160	Mantu, 1995: 228
5	As No. 4	Hd-15324	charcoal	5529±29	68.2% probability 4450 (21.2%) 4420 4380 (47.0%) 4330 95.4% probability 4450 (95.4%) 4330	Mantu, 1995: 228
6	As No. 4	Bln-2824	charcoal	5500±60	68.2% probability 4450 (13.4%) 4410 4400 (44.4%) 4320 4290 (10.4%) 4260 95.4% probability 4460 (95.4%) 4230	Mantu, 1995: 228
7	As No. 4	Lv-2153	animal bone	5470±90	68.2% probability 4450 (68.2%) 4230 95.4% probability 4490 (95.4%) 4050	Mantu, 1998: 246
8	As No. 4	Bln-2802	charcoal	5420±150	68.2% probability 4440 (1.3%) 4420 4370 (66.9%) 4040 95.4% probability 4600 (95.4%) 3900	Monah, 1987: 78

NO.	SETTLEMENTS	LAB. ID	SAMPLES	BP	BC (OXCAL 3.10)	FIRST PUBLISHED IN
9	As No. 4	Bln-2805	charcoal	5400±70	68.2% probability 4340 (51.3%) 4220 4210 (10.6%) 4160 4130 (2.0%) 4110 4100 (4.3%) 4070 95.4% probability 4360 (95.4%) 4040	Mantu, 1995: 228
10	As No. 4	Hd--15039	burnt corn	5385±37	68.2% probability 4330 (61.9%) 4230 4200 (6.3%) 4170 95.4% probability 4340 (69.1%) 4220 4210 (14.8%) 4150 4130 (11.6%) 4060	Mantu, 1995: 228
11	Poduri-Dealul Ghindaru (Cucuteni A2)	Bln-2766	charcoal	5350±80	68.2% probability 4370 (68.2%) 4240 95.4% probability 4460 (90.3%) 4220 4210 (3.6%) 4160 4130 (2.0%) 4110 4100 (4.3%) 4070	Monah, 1987: 78
12	Mărgineni (Cucuteni A2)	Bln-1751	charcoal	5635±50	68.2% probability 4530 (50.5%) 4440 4420 (17.7%) 4370 95.4% probability 4560 (95.4%) 4350	Mantu, 1995: 228
14	As No. 12	Bln-1536	charcoal	5625±50	68.2% probability 4500 (68.2%) 4360 95.4% probability 4550 (95.4%) 4350	Monah, 1978: 40
15	As No. 12	Bln-1534	grain	5610±55	68.2% probability 4490 (68.2%) 4360 95.4% probability 4550 (95.4%) 4340	Monah, 1978: 40
16	As No. 12	Bln-1535	grain	5485±60	68.2% probability 4450 (8.0%) 4420 4380 (38.8%) 4310 4300 (21.4%) 4260 95.4% probability 4460 (95.4%) 4230	Monah, 1978: 40

NO.	SETTLEMENTS	LAB. ID	SAMPLES	BP	BC (OXCAL 3.10)	FIRST PUBLISHED IN
17	Malnaş Băi (Cucuteni A2 or Cucuteni A2–A3)	Gd-5858	charcoal	5940±60	68.2% probability 4900 (68.2%) 4720 95.4% probability 4900 (95.4%) 4690	Bem, 2001: 70
18	As No. 17	Gd-5861	charcoal	5880±80	68.2% probability 4850 (63.6%) 4650 4640 (4.6%) 4610 95.4% probability 4950 (95.4%) 4540	Bem, 2001: 70
19	As No. 17	Hd-14118	charcoal	5663±42	68.2% probability 4540 (68.2%) 4455 95.4% probability 4610 (95.4%) 4360	Mantu, 1995: 228, 1998: 247
20	As No. 17	Hd-14109	charcoal	5497±100	68.2% probability 4460 (68.2%) 4240 95.4% probability 4550 (95.4%) 4050	Mantu, 1995: 228, 1998: 247
21	As No. 17	Gd-5860	charcoal	5490±80	68.2% probability 4450 (68.2%) 4250 95.4% probability 4500 (87.8%) 4220 4210 (3.9%) 4160 4130 (3.7%) 4060	Bem, 2001: 70
22	Malnaş Băi (Cucuteni A2 or Cucuteni A2-A3)	Gd-4682	charcoal	5420±150	68.2% probability 4440 (1.3%) 4420 4370 (66.9%) 4040 95.4% probability 4600 (95.4%) 3900	Bem, 2001: 70
23	As No. 22	Hd-15082	animal bone	5407±20	68.2% probability 4330 (51.8%) 4280 4270 (16.4%) 4255 95.4% probability 4330 (95.4%) 4235	Mantu, 1995: 228, 1998: 247
24	As No. 22	Hd-15278	animal bone	5349±40	68.2% probability 4320 (2.9%) 4300 4260 (17.0%) 4220 4210 (22.6%) 4160 4130 (25.8%) 4070 95.4% probability 4330 (9.7%) 4280 4270 (85.7%) 4050	Mantu, 1995: 228, 1998: 247

NO.	SETTLEMENTS	LAB. ID	SAMPLES	BP	BC (OXCAL 3.10)	FIRST PUBLISHED IN
25	As No. 22	Gd-4690	charcoal	4950±100	68.2% probability 3980 (12.6%) 3870 3810 (55.6%) 3640 95.4% probability 3970 (89.6%) 3620 3600 (5.8%) 3520	Bem, 2001: 70
26	Preutești-Haltă (Cucuteni A2 or Cucuteni A3)	Hd-14817	animal bone	5423±26	68.2% probability 4335 (19.7%) 4310 4300 (48.5%) 4260 95.4% probability 4340 (95.4%) 4240	Mantu, 1995: 228
27	Scănteia (Cucuteni A3)	Hd-14701	animal bone	5388±18	68.2% probability 4320 (34.5%) 4290 4265 (33.7%) 4235 95.4% probability 4330 (92.3%) 4230 4200 ( 3.1%) 4170	Mantu, 1995: 228
28	As No. 27	Hd-14792	animal bone	5370±26	68.2% probability 4330 (20.9%) 4290 4270 (32.8%) 4220 4200 (14.5%) 4170 95.4% probability 4330 (61.9%) 4220 4210 (20.3%) 4150 4130 (13.3%) 4060	Mantu, 1995: 228
29	Leca-Ungureni (Cucuteni A3)	Bln-795	corn	5345±100	68.2% probability 4320 (6.6%) 4290 4270 (61.6%) 4050 95.4% probability 4360 (95.4%) 3960	Dumitrescu, 1974: table 1
30	Hăbășești, Tg. Frumos district, Rumania, depth 0.2–0.6 m below surface, 1949–50 (Cucuteni A3)	GrN-1985	charcoal	5330±80	68.2% probability 4260 (68.2%) 4040 95.4% probability 4340 (95.4%) 3980	Vogel and Waterbolk, 1963: 185
31	Cuconești Vechi I (Cucuteni A3)	Bln-2428	charcoal	5390±60	68.2% probability 4340 (52.1%) 4220 4200 (11.1%) 4160 4130 (1.6%) 4120 4100 (3.4%) 4070 95.4% probability 4350 (95.4%) 4050	Wechler, 1994: 19

NO.	SETTLEMENTS	LAB. ID	SAMPLES	BP	BC (OXCAL 3.10)	FIRST PUBLISHED IN
32	Polyvaniv I & III, Komarove, Kelmentsi district, Chernivtsi region (Trypillja B1–Cucuteni A3)	CrN-5134	animal bone	5440±70	68.2% probability 4360 (64.5%) 4230 4200 (3.7%) 4170 95.4% probability 4450 (75.4%) 4220 4210 (9.9%) 4150 4140 (10.1%) 4050	Vogel and Waterbolk, 1972: 71
33	Putinești 3, Florești region, Moldova (Cucuteni A4)	Bln-2427	animal bone	5595±80	68.2% probability 4500 (68.2%) 4350 95.4% probability 4620 (93.8%) 4320 4290 (1.6%) 4260	Wechler, 1994: 18
34	As No 33	Lv-2156	charcoal	5520±70	68.2% probability 4460 (68.2%) 4320 95.4% probability 4510 (95.4%) 4230	Mantu, 1998: 248
35	As No. 33, 1974 (Cucuteni A4), pit 1, depth 1.45m	Ki-613	charcoal	5060±120	68.2% probability 3970 (68.2%) 3710 95.4% probability 4250 (95.4%) 3600	Talegin, 1985: 11, 1986: 93
36	Drăgușeni-Ostrov (Cucuteni A4)	Bln-1195	charcoal	5430±100	68.2% probability 4370 (46.3%) 4220 4210 (10.1%) 4160 4130 (11.8%) 4070 95.4% probability 4460 (95.4%) 4030	Mantu, 1995: 228
37	As No. 36	Bln-1060	charcoal	5355±100	68.2% probability 4330 (10.6%) 4280 4270 (57.6%) 4050 95.4% probability 4360 (95.4%) 3960	Dumitrescu, 1974: table 1
38	As No. 36	Bln-1194	charcoal	5205±100	68.2% probability 4230 (7.0%) 4190 4180 (59.2%) 3940 3860 (1.1%) 3840 3830 (0.8%) 3820 95.4% probability 4350 (95.4%) 3750	Mantu, 1995: 229

NO.	SETTLEMENTS	LAB. ID	SAMPLES	BP	BC (OXCAL 3.10)	FIRST PUBLISHED IN
39	Krasnostavka, Mankivka district, Cherkasy region, dwelling 1 (Tripolye BI)	Ki-882	?	5310±160	68.2% probability 4330 (7.8%) 4280 4270 (60.4%) 3980 95.4% probability 4500 (95.4%) 3750	Telegin, 1985: 11, 1986: 92
40	Krasnostavka, Mankivka district, Cherkasy region, dwelling 1 (Tripolye BI)	Ki-1204	?	4700±90	68.2% probability 3630 (16.6%) 3570 3540 (51.6%) 3370 95.4% probability 3700 (91.2%) 3300 3250 (4.2%) 3100	Telegin, 1985: 11, 1986: 92
41	Luka-Vrublivetska, Kamianets-Podilskyi district, Vinnytsia region, left bank of Dniester, 1945–50, excavation VII, pit of dwelling 5, depth 1–1.5m	Ki-6884	frag animal bone/horn tool	5905±60	68.2% probability 4850 (68.2%) 4700 95.4% probability 4950 (93.1%) 4650 4640 (2.3%) 4610	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
42	As No. 41	Ki-6885	As No. 41	5845±55	68.2% probability 4790 (60.5%) 4650 4640 (7.7%) 4610 95.4% probability 4830 (95.4%) 4550	Burdo and Kovaliukh, 1998: table 2; Burdo, 2003: table 3.
43	Plyskiv-Cherniavka, Pogrebyshe district, Vinnytsia region, Ros River, 1927–28	Ki-7211	animal bone	5860±70	68.2% probability 4830 (61.9%) 4650 4640 (6.3%) 4610 95.4% probability 4910 (95.4%) 4540	Burdo and Kovaliukh, 1999: 75; Burdo, 2003: table 4.
44	Sabatynivka I, Kirovograd region, Southern Bug, 1947–48	Ki-7202	animal bone	5805±65	68.2% probability 4730 (68.2%) 4550 95.4% probability 4800 (95.4%) 4490	Burdo and Kovaliukh, 1999: 75; Burdo, 2003: table 4
45	Berezivska GES, Berezivka, Gayvoron district, Kirovograd region, Southern Bug	Ki-7203	animal bone	5760±55	68.2% probability 4690 (68.2%) 4540 95.4% probability 4730 (95.4%) 4460	Burdo and Kovaliukh, 1999: 75; Burdo, 2003: table 4
46	As No.45	Ki-7204	animal bone	5710±60	68.2% probability 4650 (1.6%) 4640 4620 (7.7%) 4460 95.4% probability 4710 (93.9%) 4440 4420 (1.5%) 4400	Burdo and Kovaliukh, 1999: 75; Burdo, 2003: table 4



Table 2.3: List of radiocarbon dates of Cucuteni A-B – Tripolye BI-II and BII

NO.	SETTLEMENTS	PERIOD	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
<i>SOUTHERN BUG AND BUG- DNEPER REGION</i>							
1	Shkarivka, Bila Tserkva district, Kyiv region, Dwelling 6, 1972–73	BI/II	Ki-520	?	5015±105	68.2% probability 3950 (68.2%) 3700 95.4% probability 4040 (95.4%) 3630 68.2% probability 3770 (68.2%) 3650	Telegin, 1985: 11; 1986: 92
2	As No. 1, Dwelling 11/12		Bln-2088	charcoal	4940±45	95.4% probability 3900 (1.7%) 3880 3800 (93.7%) 3640	Telegin, 1985: 11; 1986: 92
3	As No. 2		Ki-875	charcoal	4830±95	68.2% probability 3710 (65.6%) 3510 3400 (2.6%) 3380 95.4% probability 3800 (95.4%) 3350	Telegin, 1985: 11; 1986: 92
4	As No. 1, Dwelling 11		Ki-879	?	4710±130	68.2% probability 3650 (68.2%) 3350 95.4% probability 3800 (95.4%) 3050	Telegin, 1985: 11; 1986: 92
5	As No. 1 (no dwelling no.)		Ki-1204	?	4700±90	68.2% probability 3630 (16.6%) 3570 3540 (51.6%) 3370 95.4% probability 3700 (91.2%) 3300 3250 (4.2%) 3100	Telegin <i>et al.</i> 2001: 127
6	As No. 1, Dwelling 12		Ki-877	?	4690±80	68.2% probability 3630 (11.7%) 3590 3530 (56.5%) 3370 95.4% probability 3650 (93.3%) 3300 3250 (2.1%) 3100	Telegin, 1985: 11; 1986: 92
7	As No. 1, Dwelling 6		Ki-881	?	4620±100	68.2% probability 3650 (52.5%) 3300 3250 (15.7%) 3100 95.4% probability 3650 (95.4%) 3000	Telegin, 1985: 11; 1986: 92
8	As No. 1, Dwelling 12		Ki-878	?	4580±150	68.2% probability 3520 (68.2%) 3090 95.4% probability 3650 (95.4%) 2900	Telegin, 1985: 11; 1986: 92

NO.	SETTLEMENTS	PERIOD	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
9	As No. 1, Dwelling 11		Ki-201	?	4320±170	68.2% probability 3350 (68.2%) 2650 95.4% probability 3500 (95.4%) 2400	Telegin, 1985: 11; 1986: 92
10	Veselyi Kut, Talne district, Cherkasy region, Dwelling 2, 1977	BI/II	Blн-2137	charcoal	5180±65	68.2% probability 4060 (58.4%) 3930 3860 (9.8%) 3810 95.4% probability 4230 (4.0%) 4190 4170 (76.0%) 3890 3880 (15.4%) 3790	Telegin, 1985: 11; 1986: 93
11	As No. 10, no dwelling no., 1976		Ki-903	charcoal	5100±100	68.2% probability 4040 (1.3%) 4020 3990 (66.9%) 3770 95.4% probability 4250 (95.4%) 3650	Telegin, 1985: 11; 1986: 93
12	Klishchiv, Tyrvivsk district, Vinnytsia region, Dwelling 7, under hearth kiln	BI/II	Le-1060	charcoal	5100±50	68.2% probability 3970 (24.8%) 3910 3880 (43.4%) 3800 95.4% probability 3990 (95.4%) 3770	Dolukhanov <i>et al.</i> 1976: 196
13	Myropillja, Korsun- Shevchenkovskiyi district, Cherkasy region, Dwelling 4	BII	Ki-874	?	5770±120	68.2% probability 4770 (68.2%) 4480 95.4% probability 4900 (95.4%) 4350	Telegin, 1985: 11; 1986: 93
<i>DNIESTER-PRUT</i>							
14	Solonceni II, Rezina district, Moldova, right bank of Dniester, 1950s	BI/II	Ki-7213	charcoal	5530±75	68.2% probability 4460 (68.2%) 4320 95.4% probability 4530 (95.4%) 4430	Burdo and Kovaliukh, 1999: 75; Burdo, 2003: table 4
15	Ozaryntsi, Mogyliv- Podilskiyi district, Vinnytsia region, Dniester, 1920s	BI/II	Ki-7212	animal horn	5470±65	68.2% probability 4370 (68.2%) 4240 95.4% probability 4460 (90.3%) 4220 4210 (3.6%) 4160 4130 (2.0%) 4110 4100 (4.3%) 4070	Burdo and Kovaliukh, 1999: 75; Burdo, 2003: table 4

NO.	SETTLEMENTS	PERIOD	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
16	Kadiivtsi-Bavka, Kadiivtsi, Kamianets-Podilskyi district, Khmelnytskyi region, Zhwanets River, 1920s	BI/II	Ki-7210	animal tooth	5400±70	68.2% probability 4340 (51.3%) 4220 4210 (10.6%) 4160 4100 (1.5%) 4070 95.4% probability 4460 (90.3%) 4220 68.2% probability 4330 (12.2%) 4280 4270 (17.2%) 4220 4210 (17.4%) 4160 95.4% probability 4340 (95.4%) 3040	Burdo and Kovaliukh, 1999: 75; Burdo, 2003: table 4
17	Brînzeni VIII, Edineț district, Moldova	Cuc. A-B1	Blm-2429	charcoal	5360±65	68.2% probability 4150 (5.0%) 4130 4060 (63.2%) 3980 95.4% probability 4230 (6.9%) 4200 4170 (14.6%) 4100 4080 (73.9%) 3970	Wechler, 1994: 16
18	Cucuteni – Dâmbul Morii	Cuc. A-B1	HD-14761	animal bone	5246±24	68.2% probability 4035 (16.0%) 4020 3995 (52.2%) 3965 95.4% probability 4040 (31.3%) 4010 4005 (64.1%) 3960	Mantu, 1995: 229
19	Cucuteni – Dâmbul Morii	Cuc. A-B1	HD-14544	animal bone	5188±18	68.2% probability 3795 (68.2%) 3710 95.4% probability 3930 (15.6%) 3870 3810 (79.8%) 3700	Mantu, 1995: 229
20	As No. 20	Cuc. A-B1	HD-14831	animal bone	4996±26		
<i>MIDDLE DNEPER</i>							
21	Grebeni (Vasylyshyn I), Kagarlyk district, Kyiv region	BII	Ki-7207	animal bone	5140±60	68.2% probability 4040 (5.8%) 4020 4000 (33.3%) 3930 3880 (29.2%) 3800 95.4% probability 4060 (95.4%) 3770	Videyko, 2003: 35; Kotova and Videiko, 2004: table 5

NO.	SETTLEMENTS	PERIOD	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
22	As. No. 21	BII	Ki-7205	animal bone	5120±65	68.2% probability 3990 (32.4%) 3900 3880 (35.8%) 3800 95.4% probability 4050 (95.4%) 3760	Videyko, 2003: 35; Kotova and Videiko, 2004: table 5
23	As No. 21	BII	Ki-7208	animal bone	5100±90	68.2% probability 3990 (68.2%) 3780 95.4% probability 4250 (95.4%) 3650	Videyko, 2003: 35; Kotova and Videiko, 2004: table 5
24	As No. 21	BII	Ki-7206	animal bone	5080±70	68.2% probability 3960 (68.2%) 3790 95.4% probability 4040 (1.1%) 4020 4000 (94.3%) 3700	Videyko, 2003: 35; Kotova and Videiko, 2004: table 5
25	Grygorivka (Khatyshche ravine), Kaniv district, Cherkasy region, site 3 (remains of dwelling 2), 1993	BII	Ki-9623	animal bone	4840±90	68.2% probability 3720 (68.2%) 3510 95.4% probability 3800 (95.4%) 3350	Videiko, 2003: 8-11, table 2; 2005: 52–3, table 2
26	As No. 25, site 2 (pit), 1993	BII	Ki-9749	animal bone	4830±90	68.2% probability 3710 (66.6%) 3510 3400 (1.6%) 3380 95.4% probability 3800 (95.4%) 3370	Videiko, 2003: 8-11, table 2; 2005: 52–3, table 2
27	As No. 25	BII	Ki-9622	burnt clay plaster with charcoal	4800±90	68.2% probability 3660 (57.1%) 3510 3430 (11.1%) 3380 95.4% probability 3770 (95.4%) 3360	Videiko, 2003: 8-11, table 2; 2005: 52–3, table 2
28	As No. 26	BII	Ki-9624	animal bone	4740±90	68.2% probability 3640 (49.3%) 3490 3440 (18.9%) 3370 95.4% probability 3710 (95.4%) 3340	Videiko, 2003: 8-11, table 2; 2005: 52–3, table 2

Table 2.4: List of radiocarbon dates of Cucuteni B – Tripolye BII-CI and CI

NO.	SETTLEMENTS/BURIALS	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
<i>DNIESTR – PRUT, SETTLEMENTS</i>						
1	Brînzei IV, Edineț district, Moldova	Bln-2430	charcoal	5020±60	68.2% probability 3940 (32.8%) 3860 3820 (35.4%) 3710 95.4% probability 3960 (95.4%) 3690	Wechler, 1994: 16
2	Valea-Lupului, Jași district, Romania, 1954, pit, depth 3m	GrN-1982	grain	4950±60	68.2% probability 3790 (68.2%) 3650 95.4% probability 3950 (13.4%) 3850 3820 (82.0%) 3630	Vogel and Waterbolk, 1963: 185-6
3	Lacul Soroka, Soroki district, Moldova	BM-495	?	4940±105	68.2% probability 3940 (12.5%) 3870 3810 (55.7%) 3630 95.4% probability 3970 (95.4%) 3520	Mallory, 1977: 351
4	Lacul Soroka, Soroki district, Moldova	BM-494	?	4792±116	68.2% probability 3700 (52.0%) 3490 3460 (16.2%) 3370 95.4% probability 3950 (95.4%) 3300	Mallory, 1977: 351
5	Varvarovka VIII, Florești district, Moldova, dwelling 6 (from depth 0.6m), 1974	Ki-601	charcoal	4370±180	68.2% probability 3400 (68.2%) 2750 95.4% probability 3600 (95.4%) 2400	Telegin, 1985: 12; 1986: 93
6	Varvarovka XV, Florești district, Moldova	Bln-2480	charcoal	4990±60	68.2% probability 3930 (18.3%) 3870 3810 (49.9%) 3690 95.4% probability 3950 (95.4%) 3650	Wechler, 1994: 20
7	Ziplești I (Tâplești I)?	Bln-2431	charcoal	5165±50	68.2% probability 4050 (68.2%) 3940 95.4% probability 4150 (1.2%) 4130 4060 (94.2%) 3790	Wechler, 1994: 20; Mantu, 1998: 251

NO.	SETTLEMENTS/BURIALS	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
8	Cucuteni-Cetățuia	Hd-15075	animal bone	5065±19	68.2% probability 3950 (23.9%) 3900 3880 (44.3%) 3800 95.4% probability 3950 (95.4%) 3790	Mantu, 1995: 229
9	Mihoveni-Cahla Morii	Hd-14710	animal bone	5162±37	68.2% probability 4040 (12.9%) 4020 3995 (55.3%) 3950 95.4% probability 4050 (84.4%) 3930 3880 (11.0%) 3800	Mantu, 1995: 229
10	As No. 9	Hd-14791	animal bone	4890±29	68.2% probability 3695 (68.2%) 3645 95.4% probability 3710 (95.4%) 2635	Mantu, 1995: 229
11	Bilcze Żłote, Verteba I	Ki-8272	animal bone	4940±80	68.2% probability 3800 (68.2%) 3640 95.4% probability 3960 (93.4%) 3630 3560 (2.0%) 3530	Tkachuk, 2003: 170
12	Bilcze Żłote, Verteba II (Tripolye CI/CII)	Ki-8271	animal bone	4800±100	68.2% probability 3700 (2.3%) 3680 3670 (54.1%) 3500 3430 (11.8%) 3380 95.4% probability 3790 (95.4%) 3360	Tkachuk, 2003:170
<i>DNIESTER-DONAU STEPPE AREA, BURIAL IN MOUND</i>						
13	‘Khadzhider I’, Iaroslavka, Sarata district, Odessa region, mound 5, burial 4, 1988	Ki-9528	human bone	4640±70	68.2% probability 3620 (2.0%) 3610 3520 (66.2%) 3350 95.4% probability 3650 (95.4%) 3100	Petrenko and Kovaliukh, 2003: 104, table 3; Videyko and Petrenko, 2003: 117–8, table 4
<i>SOUTHERN BUG – DNEPR SETTLEMENTS</i>						
14	Novo-Rozanivka II, Novyi Bug district, Mykolaiv region, left bank of Ingul River, 1967	UCLA-1642 F	?	4904±300	68.2% probability 4050 (68.2%) 3300 95.4% probability 4400 (95.4%) 2900	Mallory, 1977: 351

NO.	SETTLEMENTS/BURIALS	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
15	Maidanetske, Talne district, Cherkasy region, complex “Zh”, 1973 <sup>1</sup>	Bln-2087	charcoal	4890±50	68.2% probability 3710 (68.2%) 3635 95.4% probability 3790 (90.8%) 3630 3580 (4.6%) 3530	Telegin, 1985: 12; 1986: 94; Shmaglii and Videyko, 2003b: 125
16	As No. 15	Ki-1212	charcoal	4600±80	68.2% probability 3520 (47.7%) 3320 3240 (11.5%) 3170 3160 (9.1%) 3110 95.4% probability 3650 (95.4%) 3000	Telegin, 1985: 12; 1986: 94 Shmaglii and Videyko, 2003b: 125
17	As No. 15, 1986, dwellings 13/14	Ki-6867	animal bone	4810±55	68.2% probability 3660 (17.7%) 3620 3600 (50.5%) 3520 95.4% probability 3710 (88.8%) 3500 3430 (6.6%) 3380	Klochko and Kruts, 1999: 79
18	As No. 17	Ki-6868	animal bone	4780±60	68.2% probability 3650 (68.2%) 3510 95.4% probability 3660 (76.7%) 3490 3470 (18.7%) 3370	Klochko and Kruts, 1999: 79
19	As No. 17	Ki-6865	animal bone	4755±50	68.2% probability 3640 (64.0%) 3510 3400 (4.2%) 3380 95.4% probability 3650 (72.6%) 3490 3460 (22.8%) 3370	Klochko and Kruts, 1999: 79
20	Talianki, Talne district, Cherkasy region, 1986, dwellings 13/14	Ki-6866	animal bone	4720±60	68.2% probability 3640 (24.6%) 3560 3540 (15.7%) 3490 3450 (27.9%) 3370 95.4% probability 3640 (95.4%) 3370	Klochko and Kruts, 1999: 79
21	Talianki, Talne district, Cherkasy region, 2008, P-XVII, II-8, ancient level between dwellings 40 and 41	Ki-16026	animal bone	4990±80	68.2% probability 3940 (20.3%) 3870 3810 (44.3%) 3690 3680 (3.6%) 3660 95.4% probability 3960 (95.4%) 3640	Not published first publication

NO.	SETTLEMENTS/BURIALS	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
22	As No. 21, P-XVII, K-6, dwelling 40 (on clay plaster of dwelling)	Ki-15994	animal bone	4550±70	68.2% probability 3370 (26.5%) 3260 3240 (41.7%) 3100 95.4% probability 3520 (10.0%) 3420 3390 (85.4%) 3020	
23	As No. 21, P-XVII, И-10, dwelling 41 (ancient level near dwelling)	Ki-15993	animal bone	4910±70	68.2% probability 3770 (68.2%) 3630 95.4% probability 3940 (7.5%) 3850 3820 (80.9%) 3620 3590 (7.0%) 3520	
24	As No. 21, P-XVII, Б-10, dwelling 41 (under clay of dwelling)	Ki-16025	animal bone	4970±50	68.2% probability 3800 (62.9%) 3690 3680 (5.3%) 3660 95.4% probability 3940 (15.8%) 3850 3820 (79.6%) 3640 68.2% probability 3940 (53.4%) 3830 3820 (14.8%) 3790 95.4% probability 3960 (95.4%) 3760	
25	as No. 21, P-XVII, 3-4, dwelling 41	OxA-19840	charcoal	5048±33	68.2% probability 3940 (46.1%) 3870 3820 (22.1%) 3770 95.4% probability 3950 (90.7%) 3750 3740 (4.7%) 3710	
26	As No. 21, 2009, P-XVIII, E-4/ B-6, dwelling 42	OxA-22348	charcoal	5032±31	68.2% probability 3780 (68.2%) 3705 95.4% probability 3910 (4.3%) 3870 3800 (91.1%) 3660	
27	As No. 21, 2009, P-XIX, Д-7/ Ж-5, dwelling 43	OxA-22515	charcoal	4976±29		
<i>MIDDLE DNEPER SETTLEMENTS</i>						
28	Chapaevka (Cherkovshchina ravine), Kiev suburb, Vita River, right tributary of Dnieper, 1966, from different pits 1, 6, 12 and 16 (depth 0.4–1m)	Bln-631	charcoal	4870±100	68.2% probability 3780 (48.7%) 3620 3600 (19.5%) 3520 95.4% probability 3950 (95.4%) 3350	Quitta and Kohl, 1969: 247–8



NO.	SETTLEMENTS/BURIALS	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
29	Chapaevka, (Cherkovshchina ravine), Kiev suburb, Vita River, right tributary of Dnieper, 1972, dwelling 1, depth 0.6–1m	Ki-880	charcoal	4810±140	68.2% probability 3720 (51.0%) 3490 3470 (17.2%) 3370 95.4% probability 4000 (93.2%) 3300 3250 (2.2%) 3100	Telegin, 1985: 12; 1986: 94
30	Yevminka I, Kozelets' district, Chernigiv region, Desna River, left tributary of Dnieper	UCLA- 1671 B	?	4890±60	68.2% probability 3760 (68.2%) 3630 95.4% probability 3800 (85.0%) 3620 3600 (10.4%) 3520	Mallory, 1977: 351
31	As No. 30	UCLA- 1466 B	?	4790±100	68.2% probability 3660 (54.5%) 3490 3430 (13.7%) 3370 95.4% probability 3780 (95.4%) 3360	Mallory, 1977: 351
32	Grygorivka, Kaniv district, Cherkasy region, 'Ignatenkova Gora ravine', 1993, pit 15	Ki-9613	animal bone	4520±80	68.2% probability 3360 (26.0%) 3260 3250 (42.2%) 3090 95.4% probability 3500 (95.4%) 2900	Videyko, 2005: 53–4, table 3; 2003b: 12–14, table 3
33	As No. 32	Ki-9614	animal bone	4590±80	68.2% probability 3510 (21.0%) 3420 3390 (18.2%) 3310 3300 (1.4%) 3260 3240 (27.5%) 3110 95.4% probability 3650 (95.4%) 3000	Videyko, 2005: 53–4, table 3; 2003b: 12–14, table 3
34	As No. 32	Ki-9615	animal bone	4570±80	68.2% probability 3500 (8.0%) 3460 3380 (26.3%) 3260 3240 (33.9%) 3100 95.4% probability 3550 (95.4%) 3000	Videyko, 2005: 53–4, table 3; 2003b: 12–14, table 3
35	As No. 32, pit 16	Ki-9616	animal bone	4650±90	68.2% probability 3630 (10.4%) 3580 3540 (57.8%) 3340 95.4% probability 3650 (95.4%) 3100	Videyko, 2005: 53–4, table 3; 2003b: 12–14, table 3

NO.	SETTLEMENTS/BURIALS	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
36	As No. 32, pit 16	Ki-9617	animal bone	4530±80	68.2% probability 3370 (26.9%) 3260 3250 (41.3%) 3090 95.4% probability 3500 (95.4%) 2900	Videyko, 2005: 53–4, table 3; 2003b: 12–14, table 3
37	As No. 32, pit 16	Ki-9618	animal bone	4500±80	68.2% probability 3350 (68.2%) 3090 95.4% probability 3500 (1.0%) 3450 3400 (94.4%) 2900	Videyko, 2005: 53–4, table 3; 2003b: 12–14, table 3
38	Rzhyshchiv, Kagarlyk district, Kiev region, ‘Khomyne ravine’, pit 1	Ki-9740	animal bone	4470±80	68.2% probability 3340 (58.8%) 3080 3070 (9.4%) 3020 95.4% probability 3360 (95.4%) 2920	Videyko, 2005: 53–4, table 3; 2003b: 14–20, table 3
39	Rzhyshchiv, Kagarlyk district, Kiev region, ‘Khomyne ravine’, pit 1	Ki-9741	animal bone	4490±90	68.2% probability 3350 (64.1%) 3080 3050 (4.1%) 3030 95.4% probability 3500 (1.7%) 3450 3400 (93.7%) 2900	Videyko, 2005: 53–4, table 3; 2003b: 14–20, table 4
40	As No. 39	Ki-9942	animal bone	4390±90	68.2% probability 3320 (11.2%) 3230 3110 (57.0%) 2900 95.4% probability 3350 (95.4%) 2800	Videyko, 2005: 53–4, table 3; 2003b: 14–20, table 4
41	Rzhyshchiv, Kagarlyk district, Kiev region, ‘Ripnytsia ravine – I’, 2000	Ki-9743	animal bone	4605±80	68.2% probability 3520 (51.0%) 3320 3220 (9.1%) 3170 3160 (8.1%) 3120 95.4% probability 3650 (95.4%) 3050	Videyko, 2005: 54–5, table 5
42	As No. 41, from two small excavations, depth up to 0.5m	Ki-9744	animal bone	4590±80	68.2% probability 3510 (21.0%) 3420 3390 (18.2%) 3310 3300 (1.4%) 3260 3240 (27.5%) 3110 95.4% probability 3650 (95.4%) 3000	Videyko, 2005: 54–5, table 5

NO.	SETTLEMENTS/BURIALS	LAB. ID	SAMPLES	BP	BC (OXCAL v3.10)	FIRST PUBLISHED IN
43	Rzhyshev, Kagarlyk district, Kiev region, Ripnytsia-6 <sup>1</sup> , pit	Ki-9745	animal bone	4565±80	68.2% probability 3500 (5.9%) 3460 3380 (26.8%) 3260 3240 (35.5%) 3000 95.4% probability 3550 (95.4%) 3000	Videyko, 2005: 55, table 6
44	As No. 43	Ki-9746	animal bone	4620±90	68.2% probability 3630 (3.4%) 3600 3530 (52.3%) 3320 3220 (6.5%) 3180 3160 (6.1%) 3120 95.4% probability 3650 (95.4%) 3050	Videyko, 2005: 55, table 6
45	As No. 43	Ki-9747	animal bone	4570±80	68.2% probability 3500 (8.0%) 3460 3380 (26.3%) 3260 3240 (33.9%) 3100 95.4% probability 3550 (95.4%) 3000	Videyko, 2005: 55, table 6

## Note

1 D. Ya. Telegin has listed an incorrect sample from dwelling E (Telegin, 1985: 12; 1986: 94).

Table 2.5: List of radiocarbon dates of Tripolye CII

NO.	SITE	LAB. ID	SAMPLE	BP	CAL BC (OXCAL v.3.10)	FIRST PUBLISHED IN
<i>DNIESTER STEPPE REGION, SETTLEMENTS</i>						
1	Maiaki, Biliaivka district, Odessa region, left bank of the Dniester, settlement	Poz-24927	animal bone	4770±40	68.2% probability 3640 (9.2%) 3620 3610 (59.0%) 3520 95.4% probability 3950 (85.1%) 3500 3430 (10.3%) 3380	Ludwig <i>et al.</i> 2009: 25, table S6
2	As No. 1	Poz-24962	animal bone	4745±35	68.2% probability 3640 (49.7%) 3550 3540 (13.7%) 3510 3400 (4.7%) 3380 95.4% probability 3640 (76.2%) 3490 3430 (19.2%) 3370	Ludwig <i>et al.</i> 2009: 25, table S6
3	As No. 1	Ki-870	charcoal	4670±110	68.2% probability 3640 (17.2%) 3550 3540 (51.0%) 3350 95.4% probability 3700 (95.4%) 3050	Ludwig <i>et al.</i> 2009: 25, table S6
4	As No. 1	Poz-24850	animal bone	4640±35	68.2% probability 3500 (57.5%) 3430 3380 (10.7%) 3360 95.4% probability 3520 (95.4%) 3350	Ludwig <i>et al.</i> 2009: 25, table S6
5	As No. 1	Poz-24849	animal bone	4605±35	68.2% probability 3500 (36.8%) 3450 3380 (31.4%) 3340 95.4% probability 3520 (87.9%) 3350 3220 (4.1%) 3180 3160 (3.4%) 3120	Ludwig <i>et al.</i> 2009: 25, table S6
6	As No. 1, from layer in ditch, 1986	Ki (KING)-282	charcoal	4580±120	68.2% probability 3520 (16.1%) 3420 3390 (52.1%) 3090 95.4% probability 3650 (87.9%) 2900	Patokova <i>et al.</i> 1989: 115

NO.	SITE	LAB. ID	SAMPLE	BP	CAL BC (OXCAL V.3.10)	FIRST PUBLISHED IN
7	As No. 1, from layer in ditch, 1986	Ki (KING)-281	charcoal	4475±130	68.2% probability 3360 (68.2%) 3010 95.4% probability 3550 (95.4%) 2850	Patokova <i>et al.</i> 1989: 115
8	As No. 1	Poz-24862	animal bone	4550±35	68.2% probability 3370 (24.5%) 3320 3220 (23.2%) 3170 3160 (20.5%) 3120 95.4% probability 3370 (37.5%) 3260 3250 (57.9%) 3100	Ludwig <i>et al.</i> 2009: 25, table S6
9	As No. 1, ditch, depth 2.8m	Bln-629	charcoal	4400±100	68.2% probability 3330 (15.8%) 3230 3170 (1.4%) 3160 3120 (51.1%) 2900 95.4% probability 3370 (95.4%) 2870	Quita and Kohl, 1969: 248
10	As No. 1, ditch 4 (feature 1/1990)	Ki-9527	charcoal	4380±70	68.2% probability 3100 (68.2%) 2900 95.4% probability 3340 (16.5%) 3210 3190 (3.5%) 3150 3140 (75.4%) 2880	Petrenko and Kovalyukh, 2003: 106; Videyko and Petrenko, 2003: 119, table 6
11	As No. 1	UCLA-1642B	charcoal	4375±60	68.2% probability 3090 (13.7%) 3050 3040 (54.5%) 2900 95.4% probability 3330 (11.2%) 3210 3180 (1.3%) 3150 3130 (82.8%) 2880	Mallory, 1977: 351
12	Maiaki, Biliavka district, Odessa region, left bank of the Dniester, settlement	UCLA-1642G	charcoal	4375±60	68.2% probability 3090 (13.7%) 3050 3040 (54.5%) 2900 95.4% probability 3330 (11.2%) 3210 3180 (1.3%) 3150 3130 (82.8%) 2880	Mallory, 1977: 351
13	As No. 1, dwelling pit, depth 2.0–2.4m	Le-645	charcoal	4340±65	68.2% probability 3080 (3.8%) 3060 3030 (64.4%) 2890 95.4% probability 3350 (95.4%) 2850	Sementsov <i>et al.</i> 1969, 256; Dolukhanov <i>et al.</i> 1970: 131

NO.	SITE	LAB. ID	SAMPLE	BP	CAL BC (OXCAL v.3.10)	FIRST PUBLISHED IN
14	As No. 1 1964, ditch, depth 2.7m, depth 2.0–2.4m	GrN-5126	charcoal	3490±35	68.2% probability 1880 (68.2%) 1760 95.4% probability 1910 (93.0%) 1730 1720 (2.4%) 1690	Vogel and Waterbolck, 1972: 71-2
<i>DNIESTER-PRUT REGION, FLAT BURIALS</i>						
15	Danku 2, Hinceti district, Moldova, links bank of Prut River, flat cemetery, burial pit, depth 1.2m (pit filling of burial 2, depth 0.4–0.45m), 1968–1969	Le-1054	charcoal	4600±60	68.2% probability 3510 (30.9%) 3420 3390 (21.6%) 3330 3220 (8.1%) 3180 3160 (7.6%) 3120 95.4% probability 3550 (95.4%) 3100	Dolukhanov <i>et al.</i> 1976: 197; Dergachev and Manzura, 1991: 42
16	Usatove, Odessa region, settlement, flat cemetery 2, burial (?), 1962 (?)	UCLA-1642A	?	4330±60	68.2% probability 3020 (68.2%) 2890 95.4% probability 3350 (2.5%) 3200 3150 (92.9%) 2750	Mallory, 1977: 351
<i>BUG-DNIESTER-PRUT STEPPE REGION, BURIALS IN THE MOUNDS</i>						
17	Katarzhyno I, (Chervonoz-namianka), Ivanovka district, Odesa region, 1991, mound 1, burial 10, bonfire on the ancient surface near burial	Ki-9523	charcoal	4950±70	68.2% probability 3800 (68.2%) 3650 95.4% probability 3950 (95.4%) 3630	Petrenko and Kovaliukh, 2003: 103–4, table 2; Videyko and Petrenko, 2003: 115–6, table 2; Ivanova <i>et al.</i> 2005, 108–9
18	As No. 17, burial 10	Ki-11376	human bone	4970±110	68.2% probability 3940 (17.6%) 3860 3810 (50.6%) 2640 95.4% probability 3990 (90.0%) 3620 3610 (5.4%) 3620	Ivanova <i>et al.</i> 2005, 108–9
19	As No. 17, burial 10	Ki-11205	human bone	4510±60	68.2% probability 3350 (22.7%) 3260 3240 (45.5%) 3100 95.4% probability 3380 (95.4%) 3010	Ivanova <i>et al.</i> 2005, 108–9

NO.	SITE	LAB. ID	SAMPLE	BP	CAL BC (OXCAL v.3.10)	FIRST PUBLISHED IN
20	Oleksandrivka, Ovidiopol district, Odesa region, 1993, 'Oleksandrivka mound', burial 35	Ki-9524	wood	4720±70	68.2% probability 3640 (24.7%) 3560 3540 (15.0%) 3490 3460 (28.5%) 3370 95.4% probability 3640 (95.4%) 3360	Petrenko and Kovaliukh, 2003: 106, table 4; Videyko and Petrenko, 2003: 116-7, table 3.
21	As No. 20, burial 22	Ki-9525	wood	4760±70	68.2% probability 3640 (57.2%) 3510 3430 (11.0%) 3380 95.4% probability 3660 (95.4%) 3370	Petrenko and Kovaliukh, 2003: 106, table 4; Videyko and Petrenko, 2003: 116-7, table 3.
22	Sărăteni, Moldova, mound 4, burial 8	Lu-2455	?	4410±50	68.2% probability 3270 (0.7%) 3250 3100 (67.5%) 2920 95.4% probability 3330 (18.9%) 3210 3190 (3.3%) 3150 3130 (73.3%) 2900	Petrenko and Kovaliukh, 2003: 109, table 7
<i>DNIESTER —PRUT REGION, SETTLEMENTS</i>						
23	Horodnița-Horodiște	GrN-5088	?	4615±35	68.2% probability 3500 (43.5%) 3450 3380 (24.7%) 3350 95.4% probability 3520 (94.2%) 3330 3210 (1.2%) 3190	Vogel and Waterbolck, 1972: 71; Mallory, 1977: 351
24	Horodiștea I	Hd-14785	animal bone	4495±18	68.2% probability 3340 (26.9%) 3260 3240 (14.5%) 3210 3190 (15.5%) 3150 3130 (82.8%) 3100 95.4% probability 3340 (95.4%) 3090	Mantu, 1995: 252
25	Horodiștea II	Hd-15024	animal bone	4377±21	68.2% probability 3015 (68.2%) 2925 95.4% probability 3090 (6.9%) 3060 3030 (88.5%) 2910	Mantu, 1995: 252

NO.	SITE	LAB. ID	SAMPLE	BP	CAL BC (OXCAL V.3.10)	FIRST PUBLISHED IN
26	Horodișteea II	Hd-14898	animal bone	4235±30	68.2% probability 2910 (52.0%) 2870 2810 (16.2%) 2770 95.4% probability 2910 (60.1%) 2850 2810 (30.1%) 2750 2730 (5.2%) 2700	Mantu, 1995: 252
27	Zhwanets, Kamianets-Podilskyi district, Khmelnytskyi region, dug-out 1	Ki-6745	animal bone	4530±50	68.2% probability 3360 (16.1%) 3310 3300 (3.1%) 3260 3240 (49.0%) 3110 95.4% probability 3370 (93.4%) 3080 3060 (2.0%) 3030	Videyko, 1999: 40–1, table 2
28	Zhwanets, Kamianets-Podilskyi district, Khmelnytskyi region, surface of dwelling 2	Ki-6743	animal bone	4480±40	68.2% probability 3340 (46.2%) 3210 3190 (11.1%) 3150 3130 (11.9%) 3090 95.4% probability 3350 (87.1%) 3080 3070 (8.3%) 3020	Videyko, 1999: 40–1, table 2
29	Zhwanets, Kamianets-Podilskyi district, Khmelnytskyi region	Ki-6754	charcoal	4380±60	68.2% probability 3090 (68.2%) 2910 95.4% probability 3330 (12.7%) 3210 3180 (1.7%) 3150 3130 (81.0%) 3890	Videyko, 1999: 40–1, table 2
30	As No. 29, dug-out 6	Ki-6744	animal bone	4355±60	68.2% probability 3090 (5.1%) 3060 3030 (63.1%) 2900 95.4% probability 3330 (6.2%) 3230 3120 (89.2%) 2870	Videyko, 1999: 40–1, table 2
31	As No. 29, inside of the rampart	Ki-6753	charcoal	4290±55	68.2% probability 3020 (68.2%) 2870 95.4% probability 3090 (84.1%) 2850 2820 (9.0%) 2740 2730 (2.3%) 2690	Videyko, 1999: 40–1, table 2



NO.	SITE	LAB. ID	SAMPLE	BP	CAL BC (OXCAL v.3.10)	FIRST PUBLISHED IN
32	Tswiklivtsi, Kamianets-Podilskyi district, Khmelnytskyi region, Smotrych River, 1960, cremation grave in pit 8, depth 1–1.05m	Ki-6751	human burnt bones	3960±50	68.2% probability 2570 (25.3%) 2510 2500 (28.0%) 2430 2420 (5.3%) 2400 2380 (9.5%) 2340 95.4% probability 2580 (95.4%) 2290	Videyko, 1999: 43–8, table 4
<i>SOUTHERN BUG-DNIEPER FOREST-STEPPE REGION</i>						
33	Sandraky, Khmilnyk district, Vinnytsia region, 1949–1950, remains of dwelling	Ki-6747	animal bone	4210±45	68.2% probability 2900 (22.4%) 2850 2810 (35.2%) 2750 95.4% probability 2910 (30.6%) 2750 2820 (63.2%) 2660 2650 (1.6%) 2630	Videyko, 1999: 36–40, table 1
35	Sharyn, Uman district, Cherkasy region, Iatran River, 2003, site 4, dug-out 3	Ki-11862	animal bone	4520±70	68.2% probability 3360 (25.5%) 3260 3250 (42.7%) 3100 95.4% probability 3500 (2.7%) 3450 3400 (92.7%) 2900	Kushtan, pers. comm.
36	As No. 35, site 5, dwelling 2	Ki-12050	burnt animal bone	4575±60	68.2% probability 3500 (10.3%) 3460 3380 (21.9%) 3320 3280 (1.0%) 3260 3240 (35.0%) 3110 95.4% probability 3520 (95.4%) 3090	Kushtan, pers. comm.
37	As No. 36	Ki - 11866	clay of plaster (from external layer of plaster)	4530±80	68.2% probability 3370 (26.9%) 3260 3250 (41.3%) 3090 95.4% probability 3500 (95.4%) 2900	Kushtan, pers. comm.
38	As No. 36	Ki-11867	clay of plaster (from middle layer of plaster)	4590±80	68.2% probability 3510 (21.0%) 3420 3390 (18.2%) 3310 3300 (1.4%) 3260 3240 (27.5%) 3110 95.4% probability 3650 (95.4%) 3000	Kushtan, pers. comm.

NO.	SITE	LAB. ID	SAMPLE	BP	CAL BC (OXCAL v.3.10)	FIRST PUBLISHED IN
39	Sharyn, Uman district, Cherkasy region, Iatran River, 2003, site 5, dwelling 2	Ki-11868	clay of plaster (from middle layer of plaster)	4520±80	68.2% probability 3360 (26.0%) 3260 3250 (42.2%) 3090 95.4% probability 3500 (95.4%) 2900	Kushtan, pers. comm.
40	As No. 36	Ki-11869	clay of plaster (from lower layer of plaster)	4670±80	68.2% probability 3630 (8.4%) 3590 3530 (59.8%) 3360 95.4% probability 3650 (89.4%) 3300 3250 (6.0%) 3100	Kushtan, pers. comm.
41	Vilkhovets, Zvenygorodka district, Cherkasy region, 1993, sq. 'И-4', pit 1 under dwelling 1	Ki-6925	animal bone	4225±55	68.2% probability 2910 (27.0%) 2850 2820 (31.0%) 2740 2730 (10.2%) 2690 95.4% probability 2900 (94.4%) 2600	Videyko, 1999: 50–1, table 6
42	As No. 41	Ki-6924	animal bone	4205±50	68.2% probability 2900 (20.9%) 2850 2820 (34.6%) 2740 2730 (12.7%) 2690 95.4% probability 2910 (28.3%) 2830 2820 (67.1%) 2630	Videyko, 1999: 50–1, table 6
43	As No. 41	Ki-6922	animal bone	4170±55	68.2% probability 2880 (14.5%) 2830 2820 (53.7%) 2670 95.4% probability 2900 (95.4%) 2540	Videyko, 1999: 50–1, table 6
44	Vilkhovets, Zvenygorodka district, Cherkasy region, 1993, sq. 'И-4', pit 1 under dwelling 1	Ki-6923	animal bone	4165±60	68.2% probability 2880 (15.0%) 2830 2820 (53.2%) 2670 95.4% probability 2890 (95.4%) 2570	Videyko, 1999: 50–1, table 6
<i>MIDDLE DNIEPER REGION</i>						
45	Troianiv, Zhytomyr district, Zhytomyr region, Gnylopiat River, 1958, site 18, sq. LXXII-2, dug-out 28	Ki-6748	animal bone	4360±55	68.2% probability 3090 (5.0%) 3060 3030 (63.2%) 2900 95.4% probability 3320 (4.9%) 3230 3120 (90.5%) 2880	Videyko, 1999: 41–3, table 3

NO.	SITE	LAB. ID	SAMPLE	BP	CAL BC (OXCAL V.3.10)	FIRST PUBLISHED IN
46	As No. 45, 1956, sq. XXIII-19, remains of dwelling 1, depth 0.25–1.43m	Ki-6749	animal bone	4410±50	68.2% probability 3270 (0.7%) 3250 3100 (67.5%) 2920 95.4% probability 3330 (18.9%) 3210 3190 (3.3%) 3150 3130 (73.3%) 2900	Videyko, 1999: 41–3, table 3
47	As No. 45, 1957, site III, sq. LVI-B-7, dwelling 25, depth 0.6m	Ki-6750	animal bone	4430±45	68.2% probability 3320 (16.2%) 3230 3110 (38.9%) 3000 2990 (13.2%) 2930 95.4% probability 3340 (27.3%) 3210 3190 (5.3%) 3150 3130 (62.9%) 2920	Videyko, 1999: 41–3, table 3
48	Gorodsk, Korostyshiv district, Zhytomyr region, Teteriv River, 1936–1940	GrN-5099	?	4651±35	68.2% probability 3510 (58.4%) 3420 3380 (9.8%) 3360 95.4% probability 3520 (95.4%) 3350	Mallory, 1977: 351
49	As No.48	Ki-6752	shells	4495±45	68.2% probability 3340 (26.6%) 3260 3250 (28.1%) 3150 3140 (13.4%) 3100 95.4% probability 3360 (89.9%) 3100 3070 (5.5%) 3020	Videyko, 1999: 48–9, table 5
50	Sofiivka, Boryspil district, Kyiv region, links bank of Dnieper, depth 0.5–0.8m, cemetery, cremation burial 1	Ki-5012	burnt human bones	4320±70	68.2% probability 3090 (3.5%) 3060 3030 (64.7%) 2880 95.4% probability 3350 (95.4%) 2650	Kovalyukh <i>et al.</i> 1995: 138
51	As No. 50, depth 0.5–0.8m, from cemetery	Ki-5029	charcoal	4300±45	68.2% probability 3010 (13.7%) 2980 2940 (54.5%) 2870 95.4% probability 3090 (1.8%) 3060 3030 (92.2%) 2870 2810 (1.4%) 2770	Kovalyukh <i>et al.</i> 1995: 138

NO.	SITE	LAB. ID	SAMPLE	BP	CAL BC (OXCAL V.3.10)	FIRST PUBLISHED IN
52	Sofiivka, Boryspil district, Kyiv region, links bank of Dnieper, depth 0.5–0.8m, 1963, cemetery, sq. m. 11	Ki-5013	burnt human bones	4270±90	68.2% probability 3030 (45.4%) 2850 2820 (16.5%) 2740 2730 (6.3%) 2680 95.4% probability 3350 (1.6%) 3200 3150 (93.8%) 2550	Kovalyukh <i>et al.</i> 1995: 138
53	Krasnyi Khutir, Kyiv region, links bank of Dnieper, 1950–1951, depth 0.2–0.6m, cemetery, cremation burial 2	Ki-5038	burnt human bones	4280±110	68.2% probability 3090 (3.7%) 3060 3030 (41.4%) 2830 2820 (23.2%) 2670 95.4% probability 3350 (95.4%) 2550	Kovalyukh <i>et al.</i> 1995: 138
54	As No. 53, depth 0.2–0.6m, cemetery, cremation burial 98	Ki-5039	burnt human bones	4160±90	68.2% probability 2880 (13.7%) 2830 2820 (54.5%) 2630 95.4% probability 2920 (95.4%) 2480	Kovalyukh <i>et al.</i> 1995: 138
55	as No. 53. depth 0.2–0.6m, cemetery, cremation burial 6	Ki-5016	organic remains inside of vessel	4140±110	68.2% probability 2880 (68.2%) 2580 95.4% probability 3050 (95.4%) 2350	Kovalyukh <i>et al.</i> 1995: 138
56	Zavalivka, Makariv district, Kyiv region, links bank of Dnieper, 1962, depth 0.5–0.8m, cemetery, cremation burial 6	Ki-5015	burnt human bones	4290±90	68.2% probability 3090 (4.1%) 3060 3030 (49.8%) 2850 2810 (11.1%) 2750 2730 (3.2%) 2700 95.4% probability 3350 (95.4%) 2600	Kovalyukh <i>et al.</i> 1995: 138
57	As No. 56, depth 0.5–0.8m, cemetery, cremation burial 10	Ki-5014	burnt human bones	4230±80	68.2% probability 2920 (25.5%) 2830 2820 (42.7%) 2670 95.4% probability 3020 (95.4%) 2570	Kovalyukh <i>et al.</i> 1995: 138

## References

- Bem, C. (2000–2001) Noi propuneri pentru schiță cronologică a eneoliticului Românesc. *Pontica* XXXIII–XXXIV: 26–121.
- Bidzilya, V., Buniatian, K. and Nikolova, A. (2005) The Bronze Age barrow near Kochubeevka village in Uman region. In V. Otroshchenko (ed.) *In Honor of Sofia Stanislavovna Berezanska*: 118–31. Kiev: Shlyakh (in Ukrainian).
- Bojadžiev, J. (1998) Radiocarbon dating from southeastern Europe. In M. Stefanovich, H. Todorova and H. Hauptmann (eds) *James Harvey Gaul. In Memoriam*: 349–70. Sofia: The James Harvey Gaul Foundation.
- Boyadziev, Y. (2005) Synchronization of the stages of the Cucuteni culture with the Eneolithic cultures of the Territory of Bulgaria according to  $^{14}\text{C}$  dates. In G. Dumitroaia, J. Chapman, O. Weller, C. Preoteasa, R. Munteanum, D. Nicola, and D. Monah (eds) *Cucuteni. 120 Years of Researches*: 65–74. Piatra-Neamț: Editura ‘Constantin Matasă’.
- Burdo, N. B. (1998) Chronology and Periodization of Tripolie A. *Archaeology* 4: 78–88 (in Ukrainian).
- Burdo, N. (2003) New data for the absolute dating of the Neolithic and early Aeneolithic age on Ukraine’s territory. *Stratum Plus* 2: 431–46 (in Russian).
- Burdo, N. (2005) Tripolye and Precucuteni: problems of periodization and the absolute chronology. In G. Dumitroaia, J. Chapman, O. Weller, C. Preoteasa, R. Munteanum, D. Nicola, and D. Monah (eds) *Cucuteni. 120 Years of Researches*: 75–84. Piatra-Neamț: Editura ‘Constantin Matasă’.
- Burdo, N. and Kovalyukh, M. (1998) New information on the absolute dating of Tripolye A. In D. Kozak and N. Gavrilyuk (ed.) *Archaeological discoveries in Ukraine in 1997–1998*: 60–1. Kiev: Institute of Archaeology UNAS (in Ukrainian).
- Burdo, N. and Kovalyukh, M. (1999) New information on the absolute dating of Tripolye B. In D. Kozak and N. Gavrilyuk (ed.) *Archaeological discoveries in Ukraine in 1998–1999*: 75–6. Kiev: Institute of Archaeology UNAS (in Ukrainian).
- Burdo, N. and Videyko, M. (1998) The basis for Tripolye-Cucuteni chronology. *Archaeology* 2: 17–29 (in Ukrainian).
- Chernykh, E. and Orlovskaya, L. (2003) Problems of radiocarbon chronology of Aeneolithic cultures of southeastern Europe. *Dobrudzha* 21: 176–95 (in Russian).
- Chernykh, E. and Orlovskaya, L. (2004) Radiocarbon chronology of Aeneolithic cultures of southeastern Europe: results and study problems. *Russian Archaeology* 4: 24–37 (in Russian).
- Dergachev, V. A. and Manzura, I. V. (1991) *The Burial Complexes of the Late Tripolye*. Chișinău: Știința (in Russian).
- Dolukhanov, P. and Timofeev, V. (1972) Absolute chronology of the Neolithic Age of Eurasia (based on the data of the radiocarbon method). In B. Kolchin (ed.) *Problems of Absolute Dating in Archaeology*: 28–75. Moscow: Nauka (in Russian).
- Dolukhanov, P., Romanova, Y. and Semyontsov, A. (1970) Radiocarbon dates of the Institute of Archaeology II. *Radiocarbon* 12, 1: 130–55.
- Dolukhanov, P., Semyontsov, A., Svezhentsev, Y., Timofeev, V., Romanova, Y. and Malanova, N. (1976) Radiocarbon dates of the Institute of Archaeology III. *Radiocarbon* 18, 2: 190–201.
- Dumitrescu, V. (1974) Cronologia absoluta a eneoliticului Românesc în lumina datelor C 14. *APVLVM* XII: 23–39.
- Görsdorf, J., Rassamakin, Yu. and Häusler, A. (2004).  $^{14}\text{C}$ -Datings of Mound 24 of the Kurgan Group near Vinogradnoe Village, Ukraine. In T. Higham, C. Bronk and C. Owen (eds) *Radiocarbon*

- and Archaeology: Fourth International Symposium, St Catherine's College, Oxford (9–14th April 2002): 127–34. Oxford: Oxford University School of Archaeology, Monograph 62.
- Higham, T., Chapman, J., Slavchev, V., Gaydarska, B., Honch, N., Yordanov, Y. and Dimitrova, B. (2008) New AMS radiocarbon dates for the Varna Eneolithic cemetery, Bulgarian Black Sea coast. In: V. Slavchev (ed.) *Varnenskiyat halkoliten nekropol i problemite na praistoriyata na Yugoiztochna Evropa*. Studia in Memoriam Ivani Ivanov: 95–114. Varna: Acta Musei Varnaensis VI
- Ivanova, S., Petrenko, V. and Vetchinnikova, N. (2005) *Barrows of Ancient Stock-Breeders in the South Bug-Dniester Interfluve*. Odessa: KP OGT Publishing (in Russian).
- Klochko, V. and Kruts, V. (1999) Radiocarbon dates from the Yamnaya culture barrow at the Tripolye culture 'giant-settlement' near Talianki. *Baltic-Pontic Studies* 7: 72–9.
- Kohl, G. and Quitta, H. (1970) Berlin radiocarbon measurements IV. *Radiocarbon* 12, 2: 400–20.
- Kotova, N. and Videyko, M. (2004) The absolute chronology of Ukraine during the Aeneolithic. In B. Hänsel and E. Studeniková (eds) *Zwischen Karpaten und Ägäis: Gedenkschrift für Viera Němejcová-Pavúková*: 121–34. Rahden/Westf.: Leidorf.
- Kovalyukh, N., Videyko, M., and Skripkin, V. (1995) Chronology of Sofievka Type cemeteries: archaeological and isotopic One. *Baltic-Pontic Studies* 3: 135–40.
- Levițki, O., Manzura, I. and Demcenko, T. (1996) *Necropola tumulară de la Sărăteni*. București.
- Ludwig, A., Pruvost, M., Reismann, M., Benecke, N., Brockmann, G.A., Castaños, P., Cieslak, M., Lippold, S., Llorente, L., Malaspinas, A.-S., Slatkin, M. and Hofreiter, M. (2009) Coat color variation at the beginning of horse domestication. *Science* 324, 24 April: 485, www.Sciencemag.org, 1–29.
- Mallory, J. P. (1977) The chronology of the Early Kurgan Tradition (Part 2). *Journal of Indo-European Studies* 5: 339–368.
- Mantu, C.-M. (1995) Câteva considerații privind cronologia absolută a neo-eneoliticului din România. *SCIIVA* 46, 3–4: 213–35.
- Mantu, C.-M. (1998) *Cultura Cucuteni. Evoluție, cronologie, legături*. Pietra-Neamț: Muzeul de Istorie Piatra Neamț.
- Mantu, C.-M. (2000) Cucuteni-Tripolye Cultural complex: relations and synchronisms with other contemporaneous cultures from the Black Sea area. *Studia Antiqua et Archaeologica* VII: 11–27.
- Monah, D. (1978) Datarea prin C-14 a etapei Cucuteni A-2. *SCIIVA* 29, 1: 33–41.
- Monah, D. (1987) La datation par C-14 du complexe culturel Cucuteni-Tripolie. In *La civilization de Cucuteni en contexte Européen*. Iași: 67–79. Université 'Al. I. Cuza'.
- Patokova, E. F., Petrenko, V. G., Burdo, N. B. and Polishchuk L. Yu. (1989) *Monuments of the Tripolye Culture in the North-Western Black Sea Area*. Kiev: Naukova Dumka (in Russian).
- Petrenko, M. and Kovalyukh, N. (2003) New data on the radiocarbon chronology of the Aeneolithic Age in the north-western Black Sea region. In A. Korvin-Piotrovskiy (ed.) *Materials from the international conference 'Tripolye giant-settlements'*: 102–10. Kiev: Korvin Press (in Russian).
- Quitta, H. and Kohl, G. (1969) Neue Radiocarbon daten zum Neolithikum und zur frühen Bronzezeit Südosteuropas und der Sowjetunion. *Zeitschrift für Archäologie* 3: 223–55.
- Rassamakin, J. (in press) Die neue <sup>14</sup>C Daten zur absoluten Chronologie des Äneolithikums im Schwarzmeergebiet.
- Rassamakin, Y. and Nikolova, A. (2008) Carpathian imports and imitations in the context of the Eneolithic and Early Bronze Age of the Black Sea steppe area. In P. Biehl and Y. Rassamakin (eds) *Import and Imitation in Archaeology*: 51–87. Schriften des Zentrum für Archäologie und Kulturgeschichte des Schwarzmeerraumes 11. Langenweißbach/Beier and Beran.

- Reingruber, A. and Thissen, L. (2009) Depending on  $^{14}\text{C}$  data: chronological frameworks in the Neolithic and Chalcolithic of southeastern Europe. *Radiocarbon* 51: 751–70.
- Sementsov, A., Romanova, E. and Dolukhanov, P. (1969) Radiocarbon dates of LBIA (Leningrad Branch of Institute of Archaeology) laboratory. *Soviet Archaeology* 1: 251–61 (in Russian).
- Shmaglii, N. M. and Videyko, M. Yu. (2003) Maidanetske – Proto-City of the Tripolye culture. *Stratum Plus* 2: 44–136 (in Russian).
- Szmyt, M. and Chernyakov, I. T. (1999) Radiocarbon Chronology of ‘Akkiembetskiy Kurgan’. A Preliminary Report. *Baltic-Pontic Studies* 7: 196–202.
- Telegin, D. (1985) Radiocarbon and archeomagnetic dating of Tripolian culture. *Archaeology* 52: 10–21 (in Ukrainian).
- Telegin, D. (1986) *Dereivka. A Settlement and Cemetery of Copper Age Horse Keepers on the Middle Dnieper*. Oxford: British Archaeological Report S287.
- Telegin, D. Ya., Nechitailo, A. L., Potekhina, I. D. and Panchenko, Yu. V. (2001) *Sredniy Stog and Novodanilovka Eneolithic Cultures of the Azov – Black Sea Region*. Lugansk: Shlyakh (in Russian).
- Tkachuk, T. (2003) Large settlements of Tomashovskaya group in the light of radiocarbon dating. In Materials from the international conference ‘Tripolye giant-settlements’: 102–10. Kiev: Korvin Press (in Ukrainian).
- Tkachuk, T. (2008) Ceramic imports and imitation in Trypillia culture at the end of Period CI–CII (3900–3300 BC). In P. Biehl and Y. Rassamakin (eds) *Import and Imitation in Archaeology*: 35–50. Schriften des Zentrum für Archäologie und Kulturgeschichte des Schwarzeerraumes 11. Langenweißbach: Beier and Beran.
- Videyko, M. (1999) Radiocarbon dating chronology of the Late Tripolye culture. *Baltic-Pontic Studies* 7: 34–71.
- Videyko, M. (2003) Interrelations of Tripolian communities in the Dnieper region with forest-steppe cultures of Dnieper-Dniester region. In V. Shevchuk (ed.) *Scientific Proceedings on Ukrainian History* 14: 32–42. Pereyaslav-Khmelnytskyi (in Ukrainian).
- Videyko, M. (2003b) Radiocarbon chronology of settlements of BII and CI stages of Tripolye culture in the Middle Dnieper. *Baltic-Pontic Studies* 12: 7–21.
- Videyko, M. (2005) Absolute chronology of Tripolian culture settlements at the BII and CI stages in the Middle Dnieper region. In V. Otroshchenko (ed.) *In Honor of Sofia Stanislavovna Berezanska*: 52–65. Kiev: Shlyakh (in Ukrainian).
- Videyko, M. and Petrenko, V. (2003) Radiocarbon chronology of complexes of the northern Pontic region, a preliminary report. *Baltic-Pontic Studies* 12: 113–20.
- Vogel J. C. and Waterbolk H. T. (1963) Groningen radiocarbon dates IV. *Radiocarbon* 5: 163–202.
- Vogel J. C. and Waterbolk H. T. (1972) Groningen radiocarbon dates IV. *Radiocarbon* 14, 1: 6–110.
- Wechler von K.-P. (1994) Zur Chronologie der Tripolje-Cucuteni-Keltur aufgrund von C14-Datierungen. *Zeitschrift für Archäologie* 28: 7–21.

## Chapter 3

# Giant-settlements of Tripolye culture

*Vladimir Kruts*

### Introduction

The giant-settlements of the Tripolye culture in Ukraine were first discovered in the 1960s. Their existence was realised thanks to the discoveries of military topographer Shishkin, who, while decoding aerial photos, noticed that some photographs had lighter spots, which formed circles and ovals and were not associated with objects on the ground. On the assumption that they could have been objects below the ground surface, he contacted Stefanovich, a specialist at the Uman Museum of Local History and a leading expert on archaeological antiquities of the Uman region. At that point it was determined that these spots corresponded to Tripolian settlements. It turned out that the area of certain settlements reaches several dozen or even hundreds of hectares.

The majority of settlements that Shishkin found in the aerial photos were already known thanks to the work of archaeologists such as Kozlovskaya, Kurrinoi, Passek, and also to Uman local history specialists, such as Stefanovich, Khraban, and Didenko in the 1920s and 1930s. However, it was only after Shishkin's discovery that it was possible to see the real sizes of some of the settlements. Before that, only the settlement near Vladimirovka village on the Sinyukha River in the Novoarkhangel'sk district of Kirovograd region, which Passek examined in the 1930s–1940s, was considered a large (or giant) settlement. According to her, the settlement was around 70ha in area and accounted for over 150 house remains. Other known large settlements were considered to be two or more separate settlements. The largest ones turned out to be the settlements of Talianki (450ha),<sup>1</sup> Maidanetske (270ha), Veselyi Kut (150ha) in Talnoye region, Dobrovody (250ha) in the Uman region, Chicherkozovka (300ha) in the Zvenigorodka district of the Cherkassy region, and Nebelevka (250ha) in the Novoarkhangel'sk district of the Kirovograd region. Altogether, in the forest-steppe part of the South Bug-Dnieper interfluvium there are over ten settlements whose areas exceed 100ha.

Shishkin informed the Institutes of Archaeology of the USSR Academy of Sciences and of the Ukrainian SSR Academy of Sciences (UAS). In 1970, the Institute of Archaeology of the USSR Academy of Sciences sent a special team headed by Shtiglits to verify the remarkable discoveries. The team confirmed the existence of giant-settlements. In 1972, the 'Tripolian expedition' organised by the UAS' Institute of Archaeology and headed by Shmaglii began examining the settlement in Maidanetske. Using the geomagnetic survey method (Dudkin), it was confirmed that this settlement was also a giant-settlement. At the same time, Tsvek, a research worker from the Institute of Archaeology UAS supervised the study of the large



Tripolian settlements of the middle period (eastern area) working in particular on Veselyi Kut in the Talnoye region.

In 1981, Artemenko, the director of the Institute of Archaeology UAS and member of Ukraine's Academy of Sciences, initiated a special Tripolian expedition with the main goal of studying the giant-settlement phenomenon.

Four teams worked on the territory of Uman and Talnoye regions: one at Veselyi Kut (headed by Elena Tsvek), one at Dobrovody (headed by Tamara Movsha), one at Maidanetske (headed by Nikolay Shmagliy), and finally one at Talianki (headed by Vladimir Kruts).

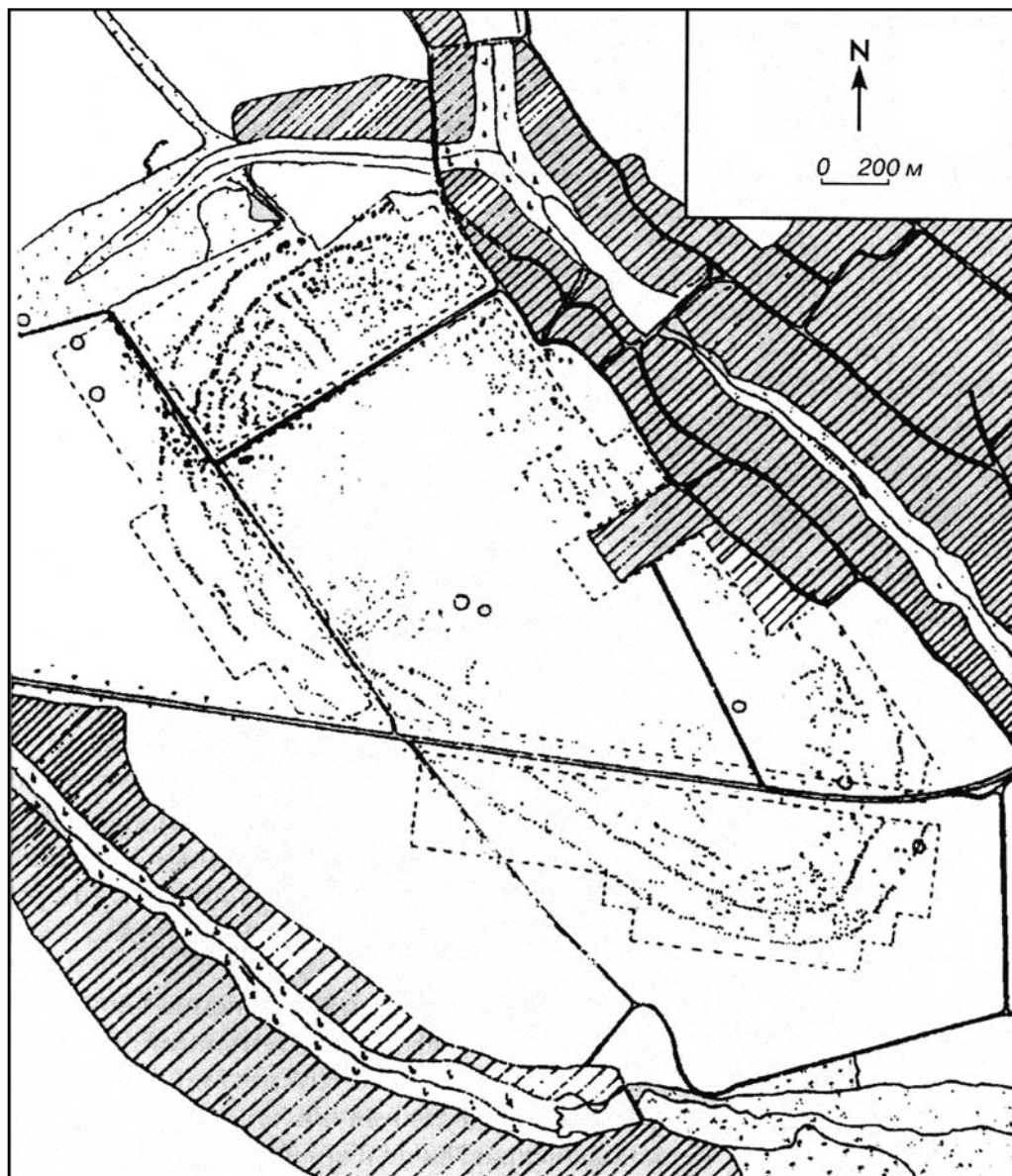
Throughout the 1980s and until 1993 the expedition conducted substantial studies on the sites of giant-settlements of Maidanetske, Talianki and Veselyi Kut, and excavated separate dwellings within smaller settlements: Moshurov-1, Peschane, Talnoe-2 and Onoprievka. Thanks to a geomagnetic survey conducted by Dudkin and Zagniy, Golub, and Khomenko, all specialists at the Institute of Geophysics UAS, detailed plans of the giant-settlements of Talianki, Peschane, Kolodistoe-2, and Glybochek were mapped (see Fig. 3.1). In the 1990s, in the absence of state financing, the studies conducted in Talianki and other smaller projects in Moshurov-3, Glybochek and Gordashovka-2, were financed by private sponsors. Large-scale research at the giant-settlements of Talianki, Dobrovody, and Kosenovka (still sponsored by private associations) started again at the beginning of the twenty-first century.

Large settlements are also found in other regions of the Tripolian territory, such as at Petreni in Moldova and Blyschanka in the Dniester region, but their area does not exceed 50 ha. Consequently, the real giant-settlement phenomenon is mainly limited to the Bug-Dnieper interfluvial region.

## **The region of the giant-settlements**

The Bug-Dnieper interfluvial region was inhabited by Tripolian tribes, who migrated from their original territories in the Prut and Dniester regions. They appeared here for the first time at the end of the early period of the culture's development and founded the first settlements of Maidanetske (Grebenyukov Yar area) and Pavlovka-Pervaya. Later, they passed through a range of development stages, from the early to the end of the middle period, which is indicated by sites such as Zarubintsy, Krasnostavka, Shkarovka, Veselyi Kut and Miropolye. Having explored the entire interfluvial region, the Tripolians expanded into the middle Dnieper region where they founded the Shcherbanivka and, later, the Kolomyischina II settlements. At the beginning of the late period (CI) their descendants built the settlements of the Kolomyischina II, Chapaevka and Lukashi types. At the end of the latest period they occupied the Sofievskiy type settlements. This developmental line was notable for the fact that for a long time it preserved the early Tripolye tradition of the incised-line ornamentation on pottery, which limited the development of painted decorations. This branch of the Tripolye culture was recently named 'eastern Tripolye culture' (according to Tsvek), and contrasted with the western part of the culture (western Tripolye culture), which proffered painted pottery. While early Tripolye settlements were rather small, at the beginning of the middle stage their size had already increased significantly.

Settlements of eastern Tripolye culture and those of the western one occupy different zones. The latter are located in a narrow 30–40km-wide stretch along the southern border of the forest-steppe zone, while the former are located slightly more to the north. It is believed that



*Figure 3.1: Plan of Talianki obtained with aerial photography and geomagnetic survey (after Kruts 1989: 122).*

the forest zone was good protection from steppe stockbreeders that were penetrating the area of Tripolian settlements. Apparently, however, the stockbreeders managed to penetrate this area anyway, forcing the Tripolians to create big settlements, which were rather inconvenient to live in but suitable for defence in case of attack. While settlements of other territories never

exceeded 50ha, here, already at the beginning of the middle period, there appeared settlements of a significantly larger size (e.g. Onoprievka: 60ha, Veselyi Kut: 150ha). This provides reason to think that eastern Tripolians left this stretch of forest along the border with the steppe on purpose, as a forest barrier. Further on, this same untouched stretch became a settling place for the tribes of the western Tripolye tradition.

### **Searching for new territories**

At the end of the middle period of the culture's development in the middle Dniester area, a difficult demographic situation arose. It forced a portion of the Tripolians of the western area to shift eastward in a search for new free territories (e.g. the southern border of forest-steppe). The newcomers that settled here immediately resorted to creating large settlements. The first, Vladimirovka and Mikhailovka in the Kirovograd region, were c. 70 and 100ha in area, respectively. Later, the giant-settlements of Sushkovka, Dobrovody: 250ha, Maidanetske: 270ha, Chicherkozovka: 300ha, and Talianki: 450ha (all belonging to the so-called Tomashovskaya local-chronological group), appear in this area.

None of these settlements are fully synchronous. In determining the settlements' chronology it is consequently possible to conclude that the Sushkovka-Dobrovody-Talianki-Maidanetske-Tomashovka chain describes places of resettlement of the same population group, which changed its settling location every 50 years. This occurred because the land around the settlement would become exhausted, woodland limited, and maybe even epidemiological conditions would arise. The abandonment of the settlement involved a special ritual, which consisted of setting it on fire. Before the burning, the house was 'killed' through the demolition of the stove (the 'heart' of the house). Then a certain portion of tableware (possibly with food), work tools of little value (grinding stones and so on) were left in the house, as a gift to the generations of departed relatives who had lived in it (a unique burial inventory). Thus, the house became a ritual structure. It is also assumed that the Tripolians treated their deceased in the same way. The dead were apparently incinerated, but the ashes were not buried, given that no burial grounds have ever been found for most of the Tripolye culture's existence, despite the high number of known settlements (almost 1000). The funerary remains were apparently scattered into the sacred river. Burial grounds appear only at the end of the culture's existence, when Tripolians started becoming influenced by other neighbouring ethnic groups while losing a certain portion of their traditional ideological conceptions. This also explains the pronounced differences in burial rituals between the population of the middle Dnieper region, who had burial grounds employing a cremation ritual (e.g. Sofievka, Krasnyi Khutor, Chernin, Zavalovka), and the population of the northwestern Black Sea region, where flat graves and barrow burials, buried with specific orientations, prevailed (e.g. Vykhvatintsy, Usatovo, Mayaki).

At the beginning of the latest stage (CII) another Tripolian population group arrived in the Bug-Dnieper interfluvium from the Dniester region, leaving there the sites of the Kosenovskaya local-chronological group. Having large settlements of over 100 ha in area, the Kosenovka site contains the typical characteristics of this group. The population of the Tomashovskaya local group was apparently partially assimilated and partially forced to leave by the newcomers. Some scholars believe that they moved to the steppe, while others argue that they went westwards (Movsha, 1990; Kruts, 1989).

## Settlement layout and social organisation

The socio-economic structure of the Tripolian community was established and stabilised in the forest-steppe zone, with farming playing a dominant position in the economic system (stockbreeding played a subordinate role). This economic orientation is noticed throughout the culture's entire existence. The environment provided Tripolians with vital resources, without which it would be practically impossible to survive: rich loess black soils for growing cereals, forest and steppe pastures for stockbreeding, forests for building material and fuel for the houses, and other household needs. The southern stretch of the forest-steppe zone of the Bug-Dnieper interfluvium complied with all these conditions in the best possible way.

Giant-settlements, just like other Tripolian settlements in the region, were located on cape-like areas of riverbanks. They were all built according to a standardised plan. It stipulated a ring created by a row of houses built parallel to each other along their longer walls and with their entrances facing the settlement's centre. At an early stage of cultural development the houses were possibly connected to each other by a wattle and daub wall or a palisade, forming a solid line of defence. In Talianki, Glybochek, and Yampol, according to the geomagnetic survey, there were two such encircling rows of buildings and it was initially believed that there were two rows of defence. Excavations at Talianki in 2001 demonstrated, however, that the houses of the internal circle faced not the centre of the settlement, but the external ring: that is, both rings of buildings created a street that encircled the whole settlement. While there was one such street in Talianki and Dobrovody, there were at least two in Maidanetske: the external street created by the first and the second lines of buildings and the internal street established between the third and the fourth lines of structures. It is assumed that all the houses of the first and the third line had their entrances looking towards the centre of the settlement and that the houses of the second and the fourth lines had their entrances looking outward. The area between the first and the second line and between the second and the third line was partially developed. Unlike the external street, the internal one is distinctly visible on the layout. This suggests that the external street was created last, in connection with new population inflow and an inability to fit all the newcomers into the territory that had been outlined earlier. While the area of the external street was partially built up, the internal street remained the main artery of the settlement until the end of its life. As a result, considering the presence of circular street development at the settlements, it is hardly worth discussing the system of Maidanetske's development in terms of 'residential walls' (Videyko, 1998), particularly because houses are not arranged closely with one another, but in groups of three or four, and the distance between the groups is about 10–20m. It is not impossible that these groups of structures belonged to separate social groups, most probably large families, within a community.

In Talianki and Dobrovody internal development consisted of radial streets leading towards a central square free of structures. The same square was probably planned for Maidanetske as well, but ended up being built as a result of unexpected population inflow.

If there were defensive structures for the settlements, they had to be created during the initial stage of construction. It was necessary in the beginning to build an external circle of such structures. As for the internal development of the settlement, it could probably have been completed later, although Shmaglii and Videyko have expressed the opinion that Maidanetske's development proceeded from the centre outward. The micro-chronology of Talianki and Maidanetske, which was constructed on the basis of analysis of forms and ornamentation of

ceramics, still does not provide a basis for definitive statements concerning the direction of development (Ryzhov, 1990; Shmagliy and Videiko, 1990, 2003). This is because the ceramics that have been found are attributed mainly to the final period of the settlement's existence, with no major changes in ceramic production through time. Archaeomagnetic dating does not help answer this question either. It only shows that all structures probably burned down simultaneously, as the population abandoned the settlement and moved to a new place.

The houses consisted of two-storey dwellings made of wood, wattle and daub, measuring between 4.5 and 6m wide, and 9–20m long. The first storey was used as a utility area and apparently as stables for keeping livestock in winter. The second storey was residential. In Maidanetske the houses had one- and two-room internal divisions. As for Talianki and Dobrovody, only one-room houses were found. The second storey had one large room with a stove, altar and podium for storing crockery and supplies. In front of it there was a sort of porch that occupied less than a third of a storey. All the houses examined in the giant-settlements (44 in Maidanetske, 44 in Talianki, and 4 in Dobrovody), regardless of their location in the settlement (either near the central square or on the periphery), are the same in terms of their interiors and the character of their inventories. No monumental structures (such as palaces or temples) were found anywhere within the village. It is believed that one small family consisting of 5–7 members lived in each house. The number of houses in settlements of 100–450ha in area varied from 600 to 2700 units. The density of construction was about six houses per hectare and the number of inhabitants varied from 3000 to 14,000.

As for the social organisation of Tripolye society, it is worth stating that it has not yet been sufficiently studied. It is believed that the smallest social unit was a small family of 5–7 people living in a single house. In addition, in giant-settlements there are distinct groups of three to four houses located somewhat apart, which apparently belonged to big families. The large family was also apparently the main productive unit. Big families joined up into small communities, and communities formed a tribe. Near the giant-settlements of Talianki and Maidanetske, small settlements of 7–15ha, with a population of *c.* 200–500 people, have also been found. The existence of such settlements was evidently an exception, and they were created with the goal of more efficient and complete use of the natural resources in the region. They could exist, however, only in proximity to and under the protection of a larger settlement. It is also possible that such small communities were also present within large settlements. If this is the case, and one such community had about 350 people, then the Talianki settlement represented a union of 40 such communities. It is not excluded that they occupied separate plots in a giant-settlement, and identifying them is a challenge for future research.

Over the years, the Bug-Dnieper interfluvial territory has become a genuine laboratory for studying the various aspects associated with Tripolye culture, in particular those concerned with paleoeconomics and palaeodemographics, everyday life and ideological beliefs. In particular, researchers determined agricultural zones and zones of developed territory around the settlements, and the density and size of population in the region. Significant progress has also been made towards determining social structure, the periodicity and methods of rotation of settlements within new territories, and the principles of house construction. The results are still rather approximate and will become more detailed and reliable with the acquisition of new data.

The identified agricultural zones and territories on which economic activity around the settlements was carried out (pastures for livestock, harvesting of wood for construction, heating

and other household purposes) testify the fact that when Tripolians changed their places of settlement, they chose places that were far enough apart so that the agricultural zones of the new and old settlements would not overlap.

During the time that Tripolians inhabited the Bug-Dnieper interfluvium, and particularly in the giant-settlement stage when population density was around five people per square kilometre – the top limit for an extensive agricultural or stockbreeding economy – people had a destructive impact on the territory's natural resources. Soils were exhausted around the numerous settlements and, more significantly in those conditions, forests disappeared fast. It has been calculated that forestation of the territory decreased from 50% to 9% during the giant-settlement period. There were no more virgin areas that could be settled by major communities. The Tripolye population of this region started to migrate westward, where it merged with related tribes. At the same time, the forest-steppe that Tripolians had turned into a steppe became favourable places for stockbreeding steppe tribes that started actively penetrating the territory. This is proven by the numerous burial barrows they created, including those where there had formerly been Tripolian settlements. Yet some insignificant share of the Tripolye population continued living here until the culture's latest period. The recently examined settlements near Moshurov, Gordashevka, and Rohi sustain this argument. To survive, the latest Tripolians were forced to settle in small communities, creating smaller settlements with just a few houses, particularly on the banks of small rivers and streams, and far from major water arteries.

## Why giant-settlements?

One of the prominent and still-unanswered questions is the reason for the appearance of the giant-settlements. It is known that it was most common for early cereal-growing communities to settle in small communities along rivers. Therefore, creating megapolises such as Talianki, Maidanetskoe, Dobrovody and others, was counterproductive from an economic point of view: arable lands and forests were exploited until they were at significant distances from settlements, making delivery of harvests and wood for heating, construction and other household purposes significantly more difficult. In addition, overcrowded villages may have triggered eruptions of epidemics. We are thus left to consider that the reasons for the origin of the giant-settlements lay beyond the economic sphere.

One explanation for their appearance has to do with the necessity of concentrating the population in case of external threat. There are two opinions about the source of that threat. One is that it came from the stockbreeding steppe tribes of the Srednestogovskaya and Nizhnemikhailovskaya cultures; and the other is that it came from related tribes, fighting for the redistribution of territories (Chernysh, 1977; V. Kruts, 1989; Zbenovich, 1990; Videyko, 1998). The first point of view is based on the following facts:

1. All the giant-settlements are located in the narrow stretch of land on the border of the steppe and forest-steppe. The earliest settlements belong to the eastern area of the Tripolye culture's BI/II stage (Onoprievka: 60ha, Veselyi Kut: 150ha).
2. When the population known from the Vladimirovka type sites arrived here from the west at the end of the BII stage, the territory was empty, but the newcomers immediately started establishing large settlements (Vladimirovka: 60ha, Mikhailovka: 100ha).

3. If the conflict related to territorial redistribution at the BI/II–CI stages was going on between related tribes, then giant-settlements should have originated on other Tripolian territories as well. Redistribution of the territories among the Tripolians started only at the end of the culture's existence (CII stage), which led to its decline. Before that there were only migrations to the north and east into unoccupied lands.

Concerning the second point of view, the west Tripolye tribes arriving in the Bug-Dnieper interfluvium faced resistance from east Tripolye tribes. With time, they completely ousted them to the Dnieper region and then stood in the path of any further migrations from the west. These particular circumstances required the concentration of the population in large settlements. As for the threat from the steppe, it is believed that the steppe stockbreeder tribes lacked an economic necessity for developing the forest-steppe zone occupied by Tripolians, since they had plenty of steppe territories. Furthermore, the human potential of the steppe inhabitants was significantly smaller than that of the Tripolians and could not create a significant threat, especially given the absence of cavalry (Videyko, 1998).

It is worth mentioning, however, that the east Tripolye tribes had, by the time of the west Tripolians' arrival, already left the region within the limits occupied by the newcomers. There is a major chronological gap between the Veselyi Kut type settlements (BI/II stage) and the Vladimirovka type sites (end of the BII stage). The population synchronous with the latter settled quite far along the lower reaches of the Ros River and in the Dnieper region, and was hardly a threat to the newcomers. As for the insignificant demographic potential of the steppe population and the absence of horse breeding among them, there remain questions for discussion.

It can thus be argued that the appearance of giant-settlements was more feasibly associated with the necessity of concentrating the population in the face of external threat.

As for the status of the giant-settlements, a city (proto-city) is defined by the following characteristics: a settlement comprising more than 5000 inhabitants, literacy, a written language and monumental architecture. A proto-city is, above all, the administrative, economic, cultural, and religious centre of a cultural group. Do the Tripolian giant-settlements comply with these characteristics? Concerning written language, evidence for its existence has not yet been proven. Monumental architecture of the sort that palaces and temples represent is also missing. All the examined structures in the settlements are of the same type, differing only in size. There are almost no small settlements around the giant-settlements that could stand for agricultural neighbourhoods – the population of a certain region was concentrated mainly in those huge settlements.

Production complexes at the settlements have not yet been found either; finding them would permit discussion of the development of craftsmanship serving a certain region. Of all the above-mentioned characteristics, only one – that the number of inhabitants exceeded 5000 people – is present. This does not allow for classifying the giant-settlements as proto-cities. They were large population centres, with agriculture as the main occupation of their inhabitants. The majority of researchers believe that there are, as yet, no grounds for talking about the urbanisation of Tripolye society (Masson, 1990; Saiko, 1990; Zbenovich, 1990). Only two specialists, Shmaglii(†) and Videyko, are in favour of the Tripolye society's urban development (Shmaglii and Videyko, 2003). Tripolye society was more or less homogeneous, and hardly anyone will dare to claim that in the Cherkassy region, where the giant-settlements are concentrated, Tripolians reached a level of urban development.

A number of issues associated with giant-settlements are still waiting to be resolved, and for those further studies are needed. The excavation of each object contributes a small particle of information to the treasury of knowledge.

## Note

- 1 Note that all settlement areas mentioned in this chapter were measured with the 'old' system; see Diachenko, this volume for a more correct measuring of the settlements' area

## References

- Chernysh, E. (1977). The formation of the local variants of the Tripolian culture. In: All-Soviet Conference 'The new achieves of Soviet Archaeologists'. 18–21. Moscow: AS USSR (In Russian).
- Kruts, V. (1989) On the history of the population of Tripolye culture in the South Bug-Dnieper interfluvium. In *Primeval Archaeology. Materials and Studies*. Collection of scientific works. IA UNAS: 117–32. Kiev: Naukova Dumka (in Russian).
- Masson, V. (1990) Tripolian society and its socio-economic characteristics. In *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses from the first field seminar: 8–10. Talianki (in Russian).
- Movsha, T. (1990) Topical problems of the history of the late-Tripolye population of Dniester-Dnieper interfluvium In *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses from the first field seminar: 169–74. Talianki (in Russian).
- Ryzhov, S. (1990) Micro-chronology of Tripolian settlement near Talianki village. In *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses of the first field seminar: 83–90. Talianki (in Russian).
- Saiko, E. (1990) Phased differentiation of the historically different types of settling: settlement and city-village. In *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses: 17–21. Talianki (in Russian).
- Videyko, M. (1998) Reasons for the origination and development of Tripolian proto-cities. *Archaeology* 4: 145–51 (in Ukrainian).
- Shmaglii, N. and Videyko, M. (1990) Micro-chronology of the Maidanetskie settlement. In *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses of the first field seminar: 91–4. Talianki (in Russian).
- Shmaglii, N. and Videyko, M. (2003) Maidanetskie – a Tripolian proto-city (2001–2002). *Stratum Plus. The Tripoliada Land* 2: 44–136 (in Russian).
- Zbenovich, V. (1990) On the problem of large Tripolian settlements. In *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses from the first field seminar: 10–2. Talianki (in Russian).



## Chapter 4

# Relative Chronology of the Giant-settlement Period BII–CI

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### Introduction

Chronologically, the Cucuteni-Tripolye culture originated at the border between the sixth and fifth millennia cal BC and existed for more than 2000 years, until the beginning of the third millennium cal BC. The formation of the Cucuteni-Tripolye's early sites occurred on the base of late Neolithic cultures, the populations of which were located on the territory of contemporary Romania, Bulgaria, the former Yugoslavia, Hungary, Slovakia, Moldova and western Ukraine. Each of the cultures, to a greater or lesser extent, contributed to the new ethno-cultural formation. If the Neolithic region of the Prut and Dniester basins was a distant and relatively weakly populated periphery of the early agricultural societies (e.g. Criș, Linear Pottery Culture, and the Bug-Dniester Culture) then, with the formation of the early Tripolye (Precucuteni) groups in this region and subsequently in the Bug area, the territory became intensively assimilated into the process of Aeneolithisation.

### General chronology

Researchers divide the development of the Cucuteni-Tripolye groups into three general periods: early, middle and late. Tatiana Passek, having proposed a classification of ceramics materials known at the time, marked out three consecutive steps in her scheme – A, B, C ( $\gamma$ ) (Passek, 1935). This schema was finally confirmed by the results of wide-ranging research into archaeological sites, especially of multi-layer ones. Two stages were marked out for the middle period in this scheme: BI and BII. There were also two stages for late Tripolye: CI ( $\gamma$ I) and CII ( $\gamma$ II) (Passek, 1949, 1961). Rumanian archaeologists, on the other hand, agreed with G. Schmidt's schema, which was based on stratigraphy of the various settlements and on morphological and stylistic analysis of ceramics. The Cucuteni phases A, AB and B were then established (Schmidt, 1932: 29). With time, its periodisation became more precise, and the phases, along with a number of observations, were supplemented with sub-phases (Dumitrescu V, 1945: 45; Mantu, 1998; Cucos, 1999). The periodisation currently looks like this: Cucuteni A<sub>1,2,3,4</sub>, Cucuteni AB<sub>1,2</sub>, Cucuteni B<sub>1,2,3</sub>. A. Nițu proposed the most detailed periodisation of Cucuteni culture. In it, ceramic complexes are divided into more fractional subdivisions according to the peculiarities of ornamentation (Nițu, 1980: 135, 222, 1984). In addition, Rumanian scholars marked out the

Precucuteni culture, which preceded the Cucuteni culture and partially corresponded to early Tripolye (Tripolye A), but they isolated the later sites of the Tripolye CII ( $\gamma$ II) stage into the Gorodistei-Foltesti cultural groups. Early Tripolye was divided into either two stages, AI and AII, or three phrases, A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub> (Bibikov, 1966: 93–9; Markevich, 1974: 35–41). Now Tripolye scholars avoid rigidly fixed frameworks and increasingly try to trace the process according to which types of sites changed. For example, Zbenovich defined six successive site types in early Tripolye (Zbenovich, 1989). Having compared materials from settlements of the middle and late stages of Passek's schema and Romanian archaeologists' data, Vinogradova came to the conclusion that, in the periodisation chart, an independent BI/II phase which corresponds to Cucuteni AB should be marked out (Vinogradova, 1983). For the later Tripolian communities of northern Moldova, Markevich defines a series of stages that are named after the benchmark sites, in particular the Varvarovskaya and Badrazhskaya stages (Markovich, 1981). Chernysh divides each of the periods of Tripolye culture's development into several stages: the early period (six stages), the middle period (seven stages), and the late period (11 stages) (Chernysh, 1982: 166–76). Movsha came to the conclusion that a more detailed account of periodisation stages is necessary, and suggested breaking the BII and CI stages down into two half-stages and introducing a supplementary new BIII stage with sub-stages. In it will go those settlements that are earlier related to the CI stage (Movsha, 1972: 16). Without a doubt, this schema (with proper modifications) best reflects the contemporary condition of research into Tripolian sites and more accurately defines the place of each settlement in the periodisation column, which makes their synchronicity more precise, and most importantly, it makes comparison with the periodisation of the Cucuteni culture easier. In addition, it takes into account the point of view of those researchers who consider that stage CI sites, according to most indications, differ from the complexes of late settlements of the CII stage and evince a similarity with BII settlements. CI settlements should therefore be seen as a subset of middle, and not late, Tripolye (Zbenovich, 1972; Degachev, 1980; Sorokin, 1989: 50). It is expedient to attribute to the CI stage only those 'transitional' (CI–CII) sites, in the materials of which there were already characteristics that will become dominant in the CII stage. The variations of the periodisation scheme mentioned above, even though they have a more fractional division into stages or phases, are still based on Passek's elaborations.

The wide use of the category 'type of site,' as proposed by Zakharuk, helps remove a range of discrepancies in the periodisation and synchronisation of sites from various territories. Sites with complexes of the same type occupy a fixed chronological position and represent a distinctly delineated region of dissemination. In addition, while avoiding a rigid consolidation of chronological rubrics, one should try to trace the process of a change of sites in their unbroken development. Types of sites, in their turn, unite in locational-chronological groups (variants). Certain locational-chronological groups, occupying a relatively wide territory and existing for a rather long period of time, as well as being characterised by different cultural traditions and having their own 'history' of development, comprise an archaeological culture. In this way, the 'type of settlement' stands as a universal scientific category that simultaneously reflects local, chronological and, evidently, only external cultural indicators. Comparing Passek's qualified scheme with the periodisation of Rumanian archaeologists gives us the following: Tripolye A – Precucuteni II, III; Tripolye BI – Cucuteni A<sub>1–4</sub>; Tripolye BI/II – Cucuteni AB<sub>1,2</sub>; Tripolye BII, CI (BIII) – Cucuteni B<sub>1,2,3</sub>; Tripolye CII ( $\gamma$ II) – Gorodiste-Foltesti (see also Fig. 1.1 in the introduction).

The settlements of the Cucuteni-Tripolye community during its flourishing and in its late developmental stage essentially occupied the forest-steppe zone from western and eastern Volyn northward to Muntenia and to the shores of the Black Sea in the south. The western border of this territory extended into Transylvania (Arusd), while the eastern border was in the middle Dnieper region, partially including the left bank of the Dnieper River.

### **Early phase of the Tripolian periodisation**

At the turn of the sixth and fifth millennia BC, meaningful historical changes were occurring in southeastern Europe. Some of the ‘old’ Neolithic cultures were coming to an end (the ‘later’ Linear Pottery culture, for example), leaving behind a series of relatively small cultural groups. Others cultural groups (e.g. the Vinča culture, the Boian culture, etc.) continued their development, having achieved a new level in the Aeneolithic period. It is seen here as a resettlement of significant population groups which, not least, promotes the formation of new archaeological cultures. During one of these migrations, the carriers of the Boian culture penetrated from the Danube region into southeastern Transylvania and pre-Carpathian Moldova. We should note that the Boian culture sprang up on the territory of Muntenia as a synthesis of two Neolithic cultures – the Dudești culture and the Linear Pottery culture, newly arrived from Moldova. One section of the Boian cultural group soon crossed the southern Carpathians and settled in southeastern Transylvania, and from there continued their advance into the foothills of Moldova. Here the newly arrived communities came into contact with the remains of the local communities of the late-phase Linear Pottery culture and created a new ethno-cultural formation – sites of the first phase of Precucuteni (Precucuteni I) culture, with as yet not quite established archaeological complexes (Dumitrescu, H. 1957: 63, Comșa, 1974: 30–6; Marinescu-Bîlcu, 1974: 20–37, 71, 127–8). In this way, the Boian culture played the leading role in the formation of early Precucuteni settlements.

However, communities of the neighbouring territories, to a greater or lesser extent, took part in the genesis of the multi-faceted culture of Precucuteni. In southeastern Europe it is possible to separate out certain regions in which Aeneolithic cultures either participated in the genesis of Precucuteni culture or found themselves in close mutual relations with its carriers. In the northwest Balkans the evolutionary development of the neo-Aeneolithic Vinča culture continued; at the beginning of phase C, on the basis of indirect data, it corresponded to and could have had contact with an early settlement of Precucuteni culture (Titov, 1971: 5–6; Marinescu-Bîlcu, 1974: 140). The supposition is that wattle and daub house construction and several types of anthropomorphic plastic art of the Precucuteni – early Tripolye cultural groups sprung up under the influence of the Vinča culture. In addition, indicators present on Precucuteni vessels, in particular channelled decoration, are associated with the Danubian cultures of the Vinča and Dudești. Channels and smoothed lines are also inherent in the ornamentation of the Boian culture’s crockery. In addition, Boian influences were reflected in the form of several types of Precucuteni and early Tripolye vessels (fruit vessels with lids) and in the sinuate ornamentation with paste filling (the ‘chessboard’ and ‘wolf’s tooth’ compositions, the meander-line schema). There is a similarity between some Precucuteni (early Tripolye) vessels, especially in terms of décor (pinched impressions in the ‘spicate’ pattern), and of anthropomorphic figures with ceramic products of the Criș culture. It is argued that the later Criș settlements survived until the

formation of Precucuteni culture (Zbenovich, 1989: 178). In Transylvania, on the basis of newly arrived communities of the Vinča culture, the Turdaş culture took shape. The transition to the Aeneolithic period in the region corresponds to the late Turdaş phase when the Petreşti culture started to form, with the painted polychrome pottery associated with it. The decorative elements on the pottery of certain Precucuteni settlements indicate contact with Turdaş culture.

Researchers associate the application of ochre in the painting of incised ornamentation after firing in Precucuteni-early Tripolye ceramics with influences coming from the Carpathian region (the Bükk culture, Sakalkhat, Zheliz and other cultures). At the beginning of the Aeneolithic period there existed related cultures on the territory of Bulgaria: Gradeshnica, Palianica and Savva, which Todorova unites with the Karanovo V-Marica culture, into the same area as the Thracian Aeneolithic (Todorova, 1979: 11–3, 26–8). Boian elements can be traced in these cultures' pottery; these elements appeared as the result of the advancement from Muntenia (according to Komshe) of a portion of the Boian social groups. With time, the integration of the social groups led to the emergence of the cultural-historic community of Karanovo VI-Gumelnița, groups of which the Cucuteni-Tripolye communities maintained ties with for a long time. In the south of Moldova, the northeast of Muntenia, the north of Dobruja, and the lower Danube region can be distinguished a group of settlements of the Bolgrad-Aldeni (Stoicani-Aldeni) culture, of which the Boian communities are the real genetic sub-base. These sites are the earliest manifestation of the Gumelnița culture. Researchers note general traits in the material culture of the partially synchronous early Tripolye (Precucuteni) and Bolgrad-Aldeni settlements. A definitive similarity, first of all in terms of pottery, is present in the complexes of many of the archaeological cultures of southeast Europe. This similarity is fully relevant to early Tripolye, the materials of which contain evident borrowings in the area of pottery: sinuate decoration (Boian, Savva, Bedastra), channelled ornament (Vinča, Boian), plastic art (Vinča, Boian, Hamangia) and house building (Vinča).

The starting process of the Precucuteni early-Tripolye community's formation ends with the appearance of sites of the same type with stable material culture complexes that already belong to the second phase (Precucuteni II–Tripolye A, by domestic tradition). These sites occupy a wider territory, including the basin of the Bistritsa River and the right bank of the Prut. In Moldova and Ukraine, the Stolniceni, Ketrish, Funduri, Floresti, Rogozhany and Bernashevka settlements belong to this phase (Markevich, 1973: 72, 77–80; Zbenovich, 1980: 124–45, 1989: 177). The Criș traditions weaken, by degrees, these settlements' ceramics, and the use of 'Boian' ornamentation lessens; on the other hand, a typical 'early Tripolye' spiral pattern is disseminated. The number of settlements in the community's eastern habitat (Tripolye A) becomes larger, which possibly triggered the second wave of early Tripolye migration from the Dniester region into the Bug region, where Sabatinovka II-Gaivoron type sites appeared, and into the Bug-Dnieper interfluvium (the Grebenyukov Yar settlement). Clearly, the early Tripolye population advanced from the middle Dniester region in a southeast direction into the interfluvium of the Dniester and the South Bug a little later (Aleksandrovka, Timkovo, etc.). Luka-Vrublevetska, Lenkovtsy, Bernovo-Luka, Grenovka and others – that is, settlements of a type that practically do not exist in Rumania – were the later early Tripolian settlements on Ukrainian territory. In the opinion of researchers (Dymitresky, Nițu and Burdo), indications of a transition to the next step of development – BI (Cucuteni A) – can be found in these materials.

At the end of the final phase of early Tripolye (Precucuteni III), west of the Dniester, on the basis of further internal evolution and thanks to definitive influence from neighbouring groups,

a new cultural historical formation is established – the Cucuteni culture. In the process of development, the component Precucuteni traits dissolve and disappear in the new culture rather quickly. Dumitresky thought that at the foundation of Cucuteni culture laid the Precucuteni culture, which was externally influenced by the lower Danubian culture of Gumelnița and the Transylvanian Petrești culture. The formation occurred in southeast Transylvania, southwest Moldova and northeast Muntenia, and the process was conditioned by the closeness of the communities and by the genetic relationship of these three cultures (Dumitrescu, V. 1963: 53, 67). Marinescu-Bîlcu (1981) underlines that the settlements from the end of Precucuteni III were discovered on the entire territory of the zone in question. Recognising Precucuteni III settlements as the basis of Cucuteni culture, she nonetheless points out the differences in the pottery complexes. She ties the appearance of vessels with bi-chrome painting (white lines on a dark grey background), often in combination with incised ornamentation, together with the Gumelnița component, while the presence of pottery with polychrome drawings (until firing) is an inheritance from Petrești cultural traditions. This researcher restricts the zone of development of Cucuteni A to the west-central portion of Moldova where, as the result of the melding of Precucuteni III communities with a portion of the communities of the Gumelnița culture, there cropped up sites of the beginning phase – Cucuteni A<sub>1</sub>. Then, under conditions of interaction with the Petrești culture's population, sites of the next phase, Cucuteni A<sub>2</sub>, are distributed over a wider territory (Marinescu-Bîlcu, 1981: 27–34). In the A<sub>3</sub> and A<sub>4</sub> phases Cucuteni settlements occupied all of Moldova and partially penetrated into the middle Dniester region. Romanian archaeologists mark out several large local groups from the Cucuteni array. Nițu calls attention to the presence of influences from the Stoicani-Aldeni groups in the formation of Cucuteni culture and suggests restricting the zone of emergence of Cucuteni A settlements to the southern part of Carpathian-region Moldova and the northern part of Muntenia (Nițu, 1980: 141). Sorokin also points to the presence in Cucuteni settlement materials of pottery bearing Bolgrad-Aldeni characteristics. He also establishes Cucuteni contacts with the stockbreeding steppe settlements of the northwest Black Sea region. These communities, in the opinion of researchers, pushed the carriers of Bolgrad-Aldeni traditions out of their root territories. In the final phase, these carriers possibly flowed into the early Tripolye array. Consequently, the formation of Cucuteni A-Tripolye BI in the Carpathian-Dniester region happened as the result of an external 'impulse' that sped up the Tripolian population's cultural interaction with carriers of Bolgrad-Aldeni traditions and the communities of the so-called Suvorovskaya group, with their provenance in the steppes (Sorokin, 1989: 45–54).

The transition from early to middle Tripolye did not occur as a simultaneous or narrowly local phenomenon exclusively in the western habitat. To varying degrees it encompassed the entire territory of the cultural-historical community and happened in different zones along relatively different paths. A different picture can therefore be observed to the east of the Dniester, where Cucuteni influences, apart from isolated 'imported' manifestations, barely affected the cultural groups of Bug region and the Bug-Dnieper interfluvium. The local population continued to develop early Tripolye cultural traditions (Dumitrescu, V. 1963: 51–76, 301–6; Danilenko, 1974: 18–20; Movsha, 1975: 69; Tsvetkov, 1975: 73–6, 1980: 163–85, 1985: 31–45; Chernysh, 1981: 27–32). At this stage, the dynamics of development in both (western and eastern) habitats had different intensities. If among the Cucuteni communities there were rapid, essential changes, then in the Tripolian sphere the evolutionary processes went on longer and in a more peaceful manner. Here too, however, the early Tripolian traditions were dying out little by little, yielding to new

cultural elements that were being worked out in their own spheres. We note that, increasingly, 'imported' decorated pottery is used. It happened slowly, but changes affected both the economy and ideology of eastern-habitat Tripolians. We see differences in the material culture of the communities in the layouts of settlements, in house construction, and in cult objects, but pottery provides the most striking indications of divergence. Painted (before firing) tableware was created in the Cucuteni habitat, while the Tripolian communities retained pottery decorated with incised ornamentation for daily use. Comparison of the basic indicators for the western and eastern habitats shows that there are essential differences in their material and spiritual cultures, a fact that allowed Tsvek to delineate an original, independent, eastern Tripolye culture (Tsvek, 1989a: 106–17, 1999: 28–39, 2006).

At the end of the middle period's BI stage (Cucuteni A) settlements appeared in the Dniester region that generated artefacts (primarily pottery) that are similar to materials from Cucuteni settlements, although original stylistic traits in terms of painting, differentiating it from Cucuteni pottery, were already noticeable. Later, moving east from the Dniester region, there were several waves of settlement by communities whose ceramics were dominated by painted pottery. The newly arrived population partially assimilated the local eastern Tripolian population and, to some extent, pushed it out from the Bug region into the middle Dnieper region. With time that newly arrived population itself emerged on the shore of the Dnieper, also assimilating the upper Dniester and the Prut region, and western and eastern Volyn. Advancing across eastern Tripolye culture territory, coming into contact with previously unknown communities of other ethnicities, moving away from their root grounds, and largely losing touch with the Cucuteni habitat, the newly arrived population obtained sufficiently characteristic economic and domestic traits over time, traits that essentially differed from those of eastern Tripolye and Cucuteni. This has to do with topography and patterns of settlement, architectural constructions, and ceramic complexes, and also to vectors of mutual influence, evolutionary dynamics, and the population's historical fate. This provides a foundation for defining western Tripolye culture as occupying a territory between northern Moldova and the Southern Bug region. Occupying significant territory, having survived for a relatively long time, and having turned up in other natural conditions surrounded by other ethnicities, the western and eastern Tripolye social groups established peculiarities that are expressive and characteristic of separate local-chronological groups (variants, types).

At the beginning of the middle period in the Prut and Dniester regions, that is, in the western Tripolye cultural habitat, dishes decorated with enhanced and channelled patterns remain in the ceramic complexes found in settlements. Under the influence of Cucuteni communities, however, painted crockery with polychrome and bichromatic ornamentation appears more frequently in the complexes. Painted ceramics become dominant rather quickly, and incised ornamentation gradually transforms and assumes specific traits, with a small proportion of vessels with channelled decoration. A number of settlement groups have been found in the middle, and partially the upper, Dniester regions, representing different phases (of the Gorodnica-Gorodiste, Nezvisko II, and Polivanov Yar I types) which later developed into settlements of the Kadievetskiy type (according to Movsha), analogies to which we find among the settlements of northern Moldova. In parallel, in the Bug region and the Bug-Dnieper region, a group of eastern Tripolian sites known for their Borisovski-type settlements developed in the BI stage (Chernysh, 1975: 2–110; Tsvek, 1989b: 238–40). Borisovski-type settlements find their sources in the earlier sites of the middle Dniester region, which continued the early Tripolian traditions. The communities of these settlements (Ozarintsy, Voyevodchintsy, Vila-Yaruzskaya and others),



despite forming the basis for Borisovka sites, are characterised in the Dniester and Bug regions by a later evolution that proceeded along different paths. A significant part of the Dniester region population resettled in the east, forming a third wave of migration (the first two occurred in early Tripolye), and occupied the Southern Bug basin. A part of the population stayed on its former territory and, without significant changes in its material culture, existed there until the BI/II stage, developing in parallel with related communities of the Bug region. In the final view, Borisovskiy-type sites had already taken shape in the middle Bug region. The process of establishing sites from the beginning of middle Tripolye in the Bug region is complicated by a new ‘western’ impulse, to which testifies the appearance of ‘imported’ painted vessels among the ceramics. From that time, the materials of the local communities’ settlements acquire their main and lasting feature – the fusion of ‘eastern’ traditions with infused ‘western’ ones. Chernysh ascribes settlements with such materials to the Sabatinovskiy local variant (Chernysh, 1977: 18–21). The spread of settlements in the Southern Bug and Dnieper interfluvium divided up the Borisovskiy array to some extent, and researchers believe that two large, genetically close, ethno-cultural groups existed within the framework of the eastern Tripolian habitat (Tsvek, 1985: 32). The Bug region settlement belongs to the first group, and the settlement of the Bug-Dnieper interfluvium belongs to the second. This division of the eastern habitat is conditioned by the fact that the Bug region population was constantly under the influence of the western Tripolye cultural groups, taking on traits of a syncretic character, even as the interfluvium communities maintained a relative ‘purity’ of early Tripolye traditions. It must, therefore, be admitted that the history of the Cucuteni-Tripolye community naturally depended, to a significant extent and besides other factors, on the eastward migration of western Tripolye communities.

Among eastern Tripolian sites, Tsvek marks out four local variants, the materials of which had distinct traits (Tsvek, 1989a: 106–8). The first (the Bug-Dnieper one) breaks down into chronological horizons that encompass stages BI, BI/II and the beginning of BII. The second variant (the northern Bug one, according to Zayets) unites Borisovka proper and the settlements close to it. Into the third, southern Bug, variant (the Sabatinovskiy variant according to Chernysh) go the settlements of Sabatinovka I, Berezovskaya hydroelectric station, and others. The fourth variant, the Dnieper variant (the Scherbanevskaya local group according to Movsha) is composed of settlements of the BI–II stage on the middle Dnieper – e.g. Veremie, Scherbanevka and Tripolye. The sites of the Bug-Dnieper variant represent the genetic substratum of these. The specifics of the formation of the local Tripolian culture variants consist in the conservation (as a consequence of remoteness from the root territory) of early Tripolye traditions (Chernysh, 1982: 153–219). According to Tsvek, the sites’ originality consists not simply in their developmental evolution, but in more complicated phenomena that are tied up with the economic, social and ideological traditions that promoted the preservation of the east Tripolye groups’ cultural unity (Tsvek, 1980: 185). East Tripolye cultural settlements that formed primarily on the basis of Borisovskiy type sites in the Bug region spread with sufficient speed into the Bug-Dnieper interfluvium and then appeared in the Ros River basin, continuing their existence in the middle Dnieper region.

Two large local-chronological groups (the Zaleshchitskaya and Solonchenskaya) within the framework of western Tripolye culture formed in the Prut-Dniester region, during stage BI/II. A site of the Polivanov Yar II type also formed, in the materials of which we observe a synthesis of specific traits characteristic of the group indicated above (Fig. 4.1). The more elaborate ornamentation almost disappears from the ceramics of these local formations, and painted

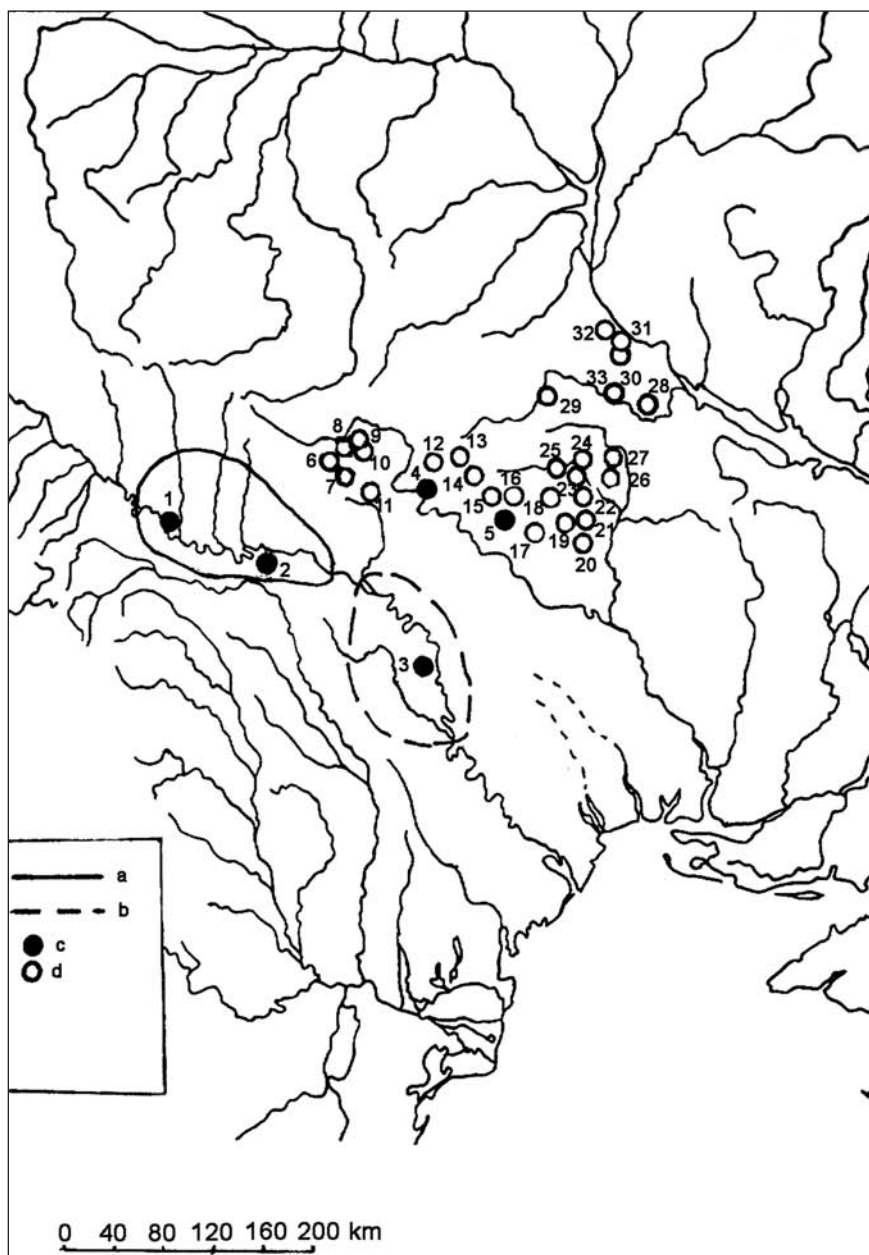


Figure 4.1: Map of BI/II stage sites. (a) area of Zaleschitskaya local group; (b) area of Solonchenskaya local group; (c) settlements of west Tripolye culture; (d) settlements of eastern Tripolye culture. Settlements: 1. Zaleschiki; 2. Polivanov Yar II; 3. Soloncheni II; 4. Klischev; 5. Kasanovo; 6. Belozerka; 7. Zaluzhnoe; 8. Gorodische I; 9. Nikolaevka; 10. Vishenka; 11. Zhmerinka I; 12. Tsvizhyn; 13. Bayrakovka; 14. Bobliv; 15. Ometensy; 16. Yurkovka; 17. Kislyak; 18. Shukaivoda; 19. Penizhkovo; 20. Bogachevka; 21. Leschinovka; 22. Botvinovka; 23. Kopyuvata; 24. Zyubrikha; 25. Kharkovka; 26. Veselyi Kut; 27. Olkhovets II; 28. Nikolaevka; 29. Shkarovka; 30. Shcherbanevka; 31. Veremie; 32. Tripolye; 33. Deshki.



pottery is decorated primarily with bichromatic and, more rarely, with monochromatic, drawing. Anthropomorphic plastic arts also acquire specific symbols (Vinogradova, 1983; Popova, 2003: 86–109). In the BI/II stage, small communities sporadically advanced from the west into the territory of the Bug River, which left Klischev-type sites in their path. The materials from Klischev testify that the settlement emerged as the result of the melding of the local eastern Tripolye population, which made up an insignificant portion, with the newly arrived western Tripolye communities from the settlement zone of the Zaleshchitskaya and Solonchenskaya local groups (Zayets and Ryzhov, 1992: 196–7). Judging from its ceramics, the Klischev settlement seems unique; in the Bug region other settlements of this aspect have either not been found yet or never existed. It is possible that this is a short-lived manifestation of the western Tripolian ‘splash’ into the region. The impulse in question, however, was sufficiently powerful and manifested itself not only in the assimilation of a portion of the ‘eastern’ communities, but also in the fact that Klischev became the transmission link for ‘western’ innovations into the eastern Tripolian environment (painted pottery in particular). This sort of ceramics had already become accepted and was not rejected, as had happened earlier, by eastern Tripolye cultural groups. It is even possible that it stimulated the appearance of local painted pottery. Klischev is a very important site, as in a later period a population that was genetically linked to its inhabitants influenced the formation of the Vladimirovskaya local-chronological group.

### **Eastwards migrations**

At approximately the end of the fifth millennium cal BC (the beginning of the BII stage), Rakovetskiy-type sites sprung up in the Dniester region, on the basis of Zaleshchitskaya and Solonchenskaya group sites. These occupied a relatively small territory and had unique ceramic complexes. Ceramic table crockery retains its incised ornamentation in these complexes (sometimes in combination with painting), but the painted ceramics are decorated with monochrome and, in rare cases, with bichromatic patterning. Later Mereshovka-Chetatsuya III-type sites are genetically tied with Rakovetskiy-type sites. Monochrome drawing dominates in the painting of the pottery of the Mereshovka-Chetatsuya III-type sites (Fig. 4.2). Some researchers consider these to be two separate settlement types, while others consider it expedient to include them into the Rakovetskiy local variant (group), within the framework of which can be distinguished early and later phases (the Rakovetskiy-type and the Mereshovka-Chetatsuya III type, respectively). The Dniester region is the root territory for Rakovetskiy variant sites, but in the early phase the Rakovetskiy communities had already started to advance in an eastward direction and emerge into the Bug region. In the late (Mereshovskaya) phase, the number of settlements grows sharply in the Dniester region (including the upper part) and the habitat for their dissemination grows wider, encompassing the middle Bug region, where the newly arrived Dniester communities assimilate the local east Tripolye population. With time, new local groups form here. There are Voroshilovskiy type and Nemirovskiy type-sites in particular (Gusev, 1995: 139–58, 233–54). Sites from the Mereshovskaya phase of the Rakovetskiy variant in the Dniester and Prut regions are already a sub-basis for early Petrenskaya local-chronological group settlements in the BII stage. The roots of the large neighbouring association, the Shipinetskaya group, should be sought in Nevisko III-type sites, which were related to Rakovetskiy variant sites. In the Bug region, first the Rakovetskaya community and then the Mereshovskaya

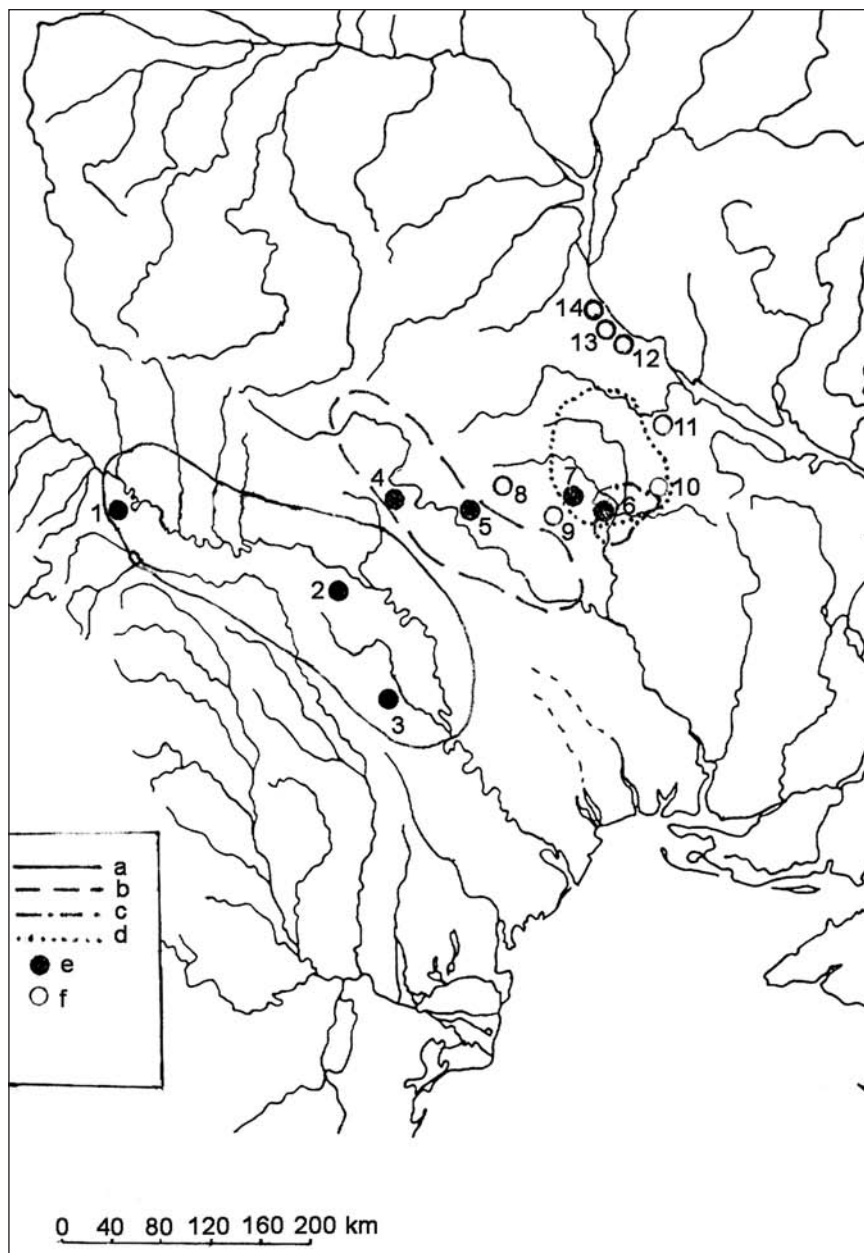


Figure 4.2: Map of BII stage sites. (a) area of Rakovetskaya local group; (b) area of Voroshilovskaya local group; (c) area of Vladimirovskaya local group; (d) area of Nebelevskaya local group; (e) settlements of west Tripolye culture; (f) settlements of east Tripolye group. Settlements: 1. Nezvisko III; 2. Mereshovka-Chetatsuya III; 3. Rakovets; 4. Voroshilovka; 5. Nemirov; 6. Vladimirovka; 7. Nebelevka; 8. Bochkurino; 9. Khristinovka; 10. Semenovka; 11. Miropolie; 12. Kolomyischina II; 13. Grebeni; 14. Khalepie.

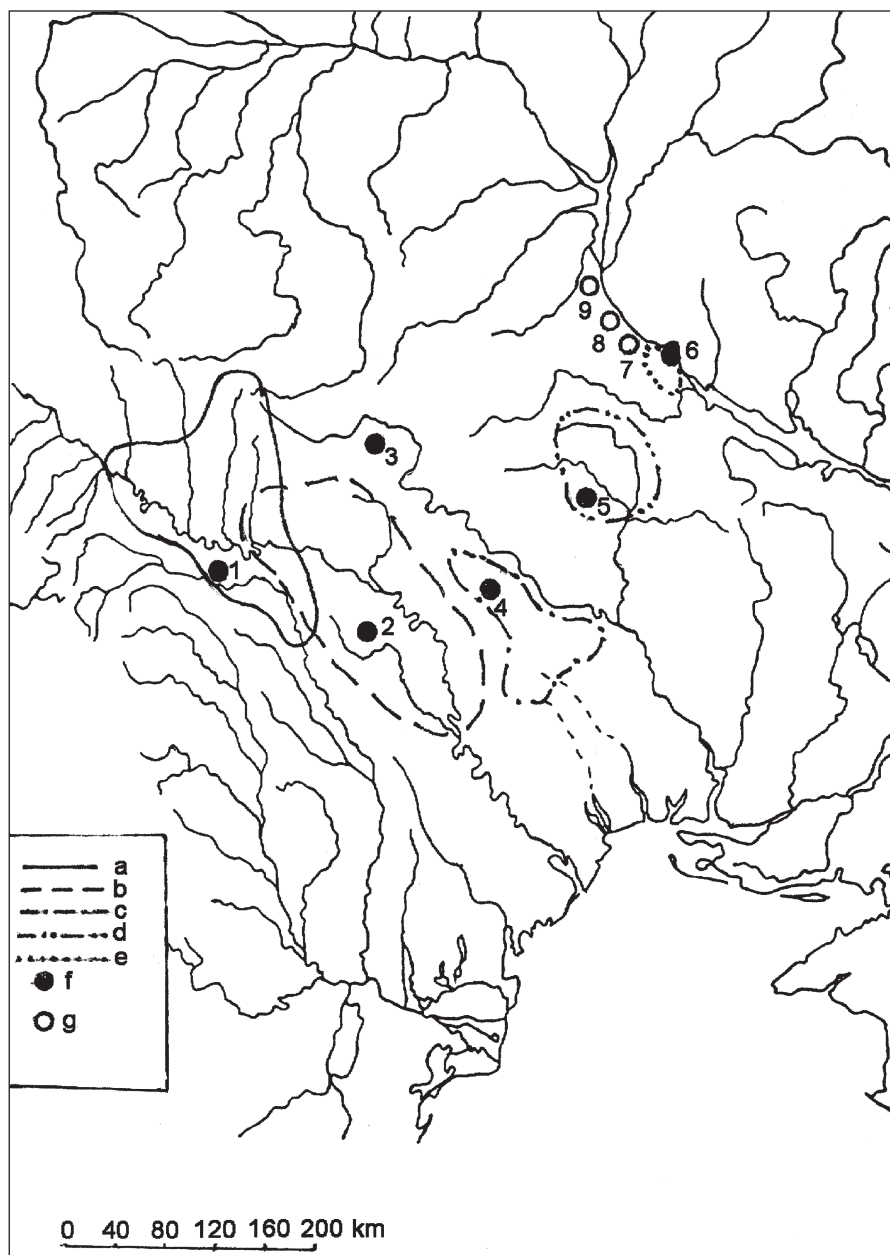


Figure 4.3. Map of CI stage sites. (a) area of Shipinetskaya local group; (b) area of Petreni local group; (c) area of Chechelnitskaya local group; (d) area of Tomashovskaya local group; (e) area of Kanev local group; (f) settlements of west Tripolye culture; (g) settlements of east Tripolye culture. Settlements: 1. Shipintsy; 2. Petreni; 3. Gorodische; 4. Chechelnyk; 5. Tomashovka; 6. Kanev; 7. Rzhyshev-Ripnitsa I; 8. Kolomyischina I; 9. Chapaevka.

community became components of the Voroshilovskiy-type settlements and advanced into the Bug-Dnieper interfluvium. They are the ones who, along with the post-Klischevskiy communities and the remainders of the east Tripolye groups, formed the settlements of the Vladimirovskaya local group and then, on its basis, the Nebelevskaya local group sites (Ryzhov, 1985: 47; Popova, 1989: 142–8). In this way the Rakovetskiy variant's population is tied to the largest wave of settlement of the west Tripolye groups, serving as a basis for the formation of new local groups in new territories. Vladimirovskaya group communities, occupying a zone that the east Tripolye communities had not settled, made contact with them, having partially assimilated the east Tripolye population. The 'mixed' ceramic complexes of the Arbuzin-type settlements, which are syncretic in character, indicate this. These settlements are located on the periphery of the Vladimirovskaya group's habitat, in the zone that earlier belonged to the east Tripolye cultural groups. As mentioned above, following the resettlement of the Rakovetskiy-type communities, there occurred rapidly yet another (fourth) wave of migration of the 'western' population into the Bug region and the Bug-Dnieper interfluvium.

### *A significant migration phase*

This migration differs somewhat from previous waves, not only in terms of cultural traditions, but also in having a different source region. In the first cases the middle Dniester region served as the source region, while in the later one the upper Dniester and the Prut region did so. According to Gusev, the resettlement of the upper Dniester population created sites such as those of the Tereshki- and Voroshilovka-types (Gusev, 1995: 238–9). The stable advance from the west of cultural innovations and the way they were stratified over the local 'eastern' substrate defined the specificity of the Bug region sites. These had a syncretic character, which comprises their main local peculiarity. Settlements are known in the Bug region whose materials show either 'western' or 'eastern' predominant components. Another situation characterised the Bug-Dnieper interfluvium, where west Tripolye communities underwent almost no mixing with the local east Tripolye population, but rather 'pushed' it back into the middle Dnieper region, where there formed a Kolomyischinskaya local group (early BII sites of the Kolomyischina II-type and later sites of the CI stage of the Kolomyischina I-type). The interfluvium of the Southern Bug and the Dnieper became a zone in which the west Tripolye cultural groups spread – these groups are known from the Nebelevskaya local chronological group sites (end of the BII stage). Evidently the population excess, which formed as a result of the arrival of related 'eastern' cultural groups from the interfluvium into the middle Dnieper region, compelled a portion of the local communities to search for new territory higher up the Dnieper (already in the CI stage) and create Chapaevskiy-type settlements there – settlements that were one of the components of the Kolomyischinskaya local group (Kruts, 1977: 12–77). Another component of this local group is the population of Rzhyshevskiy-type settlements, in the ceramic complexes of which a significant amount of painted crockery with monochrome ornamentation could be found. This indicates that a portion of the west Tripolye communities, that were related to the communities of the Nebelevskaya local group, penetrated into the region of the city of Kanev. There, in the environment of the east Tripolye cultural groups, a small enclave of west Tripolye settlements formed over time – the Kanevskaya local group (Ryzhov, 2002a: 193–5). Kolomyischina II- and Kolomyischina I-type sites form the foundation of the Kolomyischinskaya local group, as highlighted above.

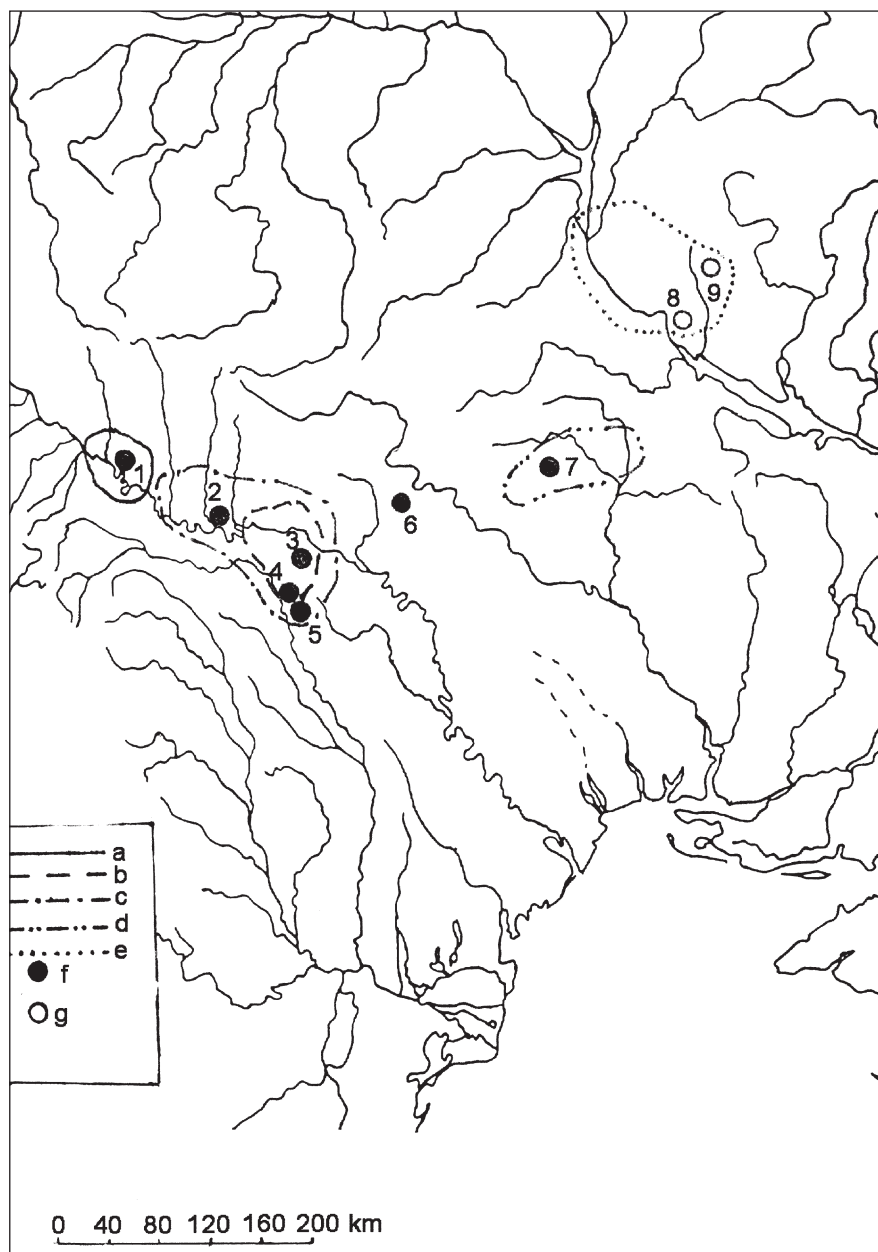


Figure 4.4: Map of the transitional CI/CII stage and of the Brinzeni (Zhvanetskaya) and Lukashevskaya groups at CII stage. (a) area of Koshilovetskaya local group; (b) area of Badrazhy local group; (c) area of Brinzeni (Zhvanetskaya) local group; (d) area of Kosenovskaya local group; (e) area of Lukashevskaya local group; (f) settlements of west Tripolye culture; (g) settlements of east Tripolye culture. Settlements: 1. Koshilovtsy-Oboz; 2. Zhvanets-Schovb; 3. Lomachetsy-Vyshneva; 4. Starye Badrazhy; 5. Brinzeni-Tsiganka; 6. Torkiv; 7. Krutikha-Zholob; 8. Krurha-Zholob; 9. Lukashi.

In the Bug-Dnieper region the Vladimirovskaya local group was developing, which is ascribed to the beginning of the BII stage. So too was the Nebelevskaya local group, the first phase of which fell into the middle of the BII stage, with the second phase in the second half of the BII stage. Vladimirovskaya group settlements occupy a relatively insignificant territory; they are not great in number (about 10–15) (Fig. 4.2). The settlements themselves are fairly large and planned primarily in accordance with concentric circles (ovals). Wattle and daub ground structures (one- and two-storeyed) evince a complicated construction and developed interiors. Shallow-pit houses were also discovered. Table pottery (the majority) and kitchen pottery stand out in the complexes. Kitchen pots are decorated with relief ornamentation. Rims are primarily covered with vertical scratches. The edges of the rims are ornamented with rows of notches, punctures, and impressions of various forms. More rarely we find ‘pearls,’ the impressions of a serrated stamp, and also pinched impressions. Horizontal rows of puncture marks, triangular impressions, small notches, and vertical or slanted strokes dominate on the shoulders of the pots. The pottery is also decorated with ornamentation resembling ribbons of thin, parallel incised lines, accompanied by depicted scallop shapes, zigzags, chevrons, and wavy arcs. The shoulders occasionally bare rows of impressions from a serrated stamp, fingernail, ‘caterpillar’ stamp or a rope, as well as shallow impressions from the shorter end of a tube-shaped bone.

Table ceramics break down into two quantitatively unequal groups. To the first belongs pottery decorated with incised ornamentation (nearly 10% of all table ceramics) and to the second belong ceramics bearing painting. In terms of the style of incised ornamentation, the crockery breaks down into two varieties: 1) an incised pattern only; 2) a combination of an incised pattern with monochrome, bichrome, or polychrome painting. Painted ceramics are decorated with monochrome ornamentation (black or red paint) and only 0.5% of all painted crockery is decorated with bichrome drawing, where the narrow white lines repeat, in terms of contour, the fundamental schema, or where the basic red drawing is outlined with black stripes. When making generalisations about data relating to the group’s ceramics, we should point out that the meander-line schema dominates crockery painting (35.7%) and is inherent to almost all types of vessels. Leaf-like, simplified-line, and metopic schemes are found on c. 11–12% of vessels. If the first two schemes are found on the majority of forms of crockery, then the last is more often seen on goblets, biconical vessels, and the rims of craters. In painting we find facial (9.1%) and scalloped (7.3%) shapes slightly less frequently. Wave-shaped and segmented patterns are found in small percentages, as are the *Tangentenkreisband* and ‘owl face’ compositions. Other patterns (tangent, voluted) do not rise above the 1–2% level. In bowl painting there are comet-shaped, figure-of-eight-shaped, cross-shaped, simplified-line, and scalloped patterns (Fig. 4.5). For the most part, painted statuettes with a realistic and schematic style are inherent to Vladimirovskaya sites (although there are some with incised patterns). We should notice the sharp rise in the number of realistic figures in Vladimirovskaya settlements. Various zoomorphic statuettes and clay models of ‘little thrones,’ small tables, houses, and conic ‘chips.’ Analysis of the materials shows that we can, in a preliminary fashion, separate early (Fedorovka, Andreevka) and late (Vladimirovka, Peregonovka) settlements among the Vladimirovskaya group sites.

Nebelevskaya local group sites continued their genetic line of development in the region. More than 40 such settlements are known. The territory over which they spread is defined in the north by the Ros River basin; in the east by the middle course of the Olyshanka River and by the upper course of the Gnily Tashlyk and Turia rivers; in the south by the basins of the



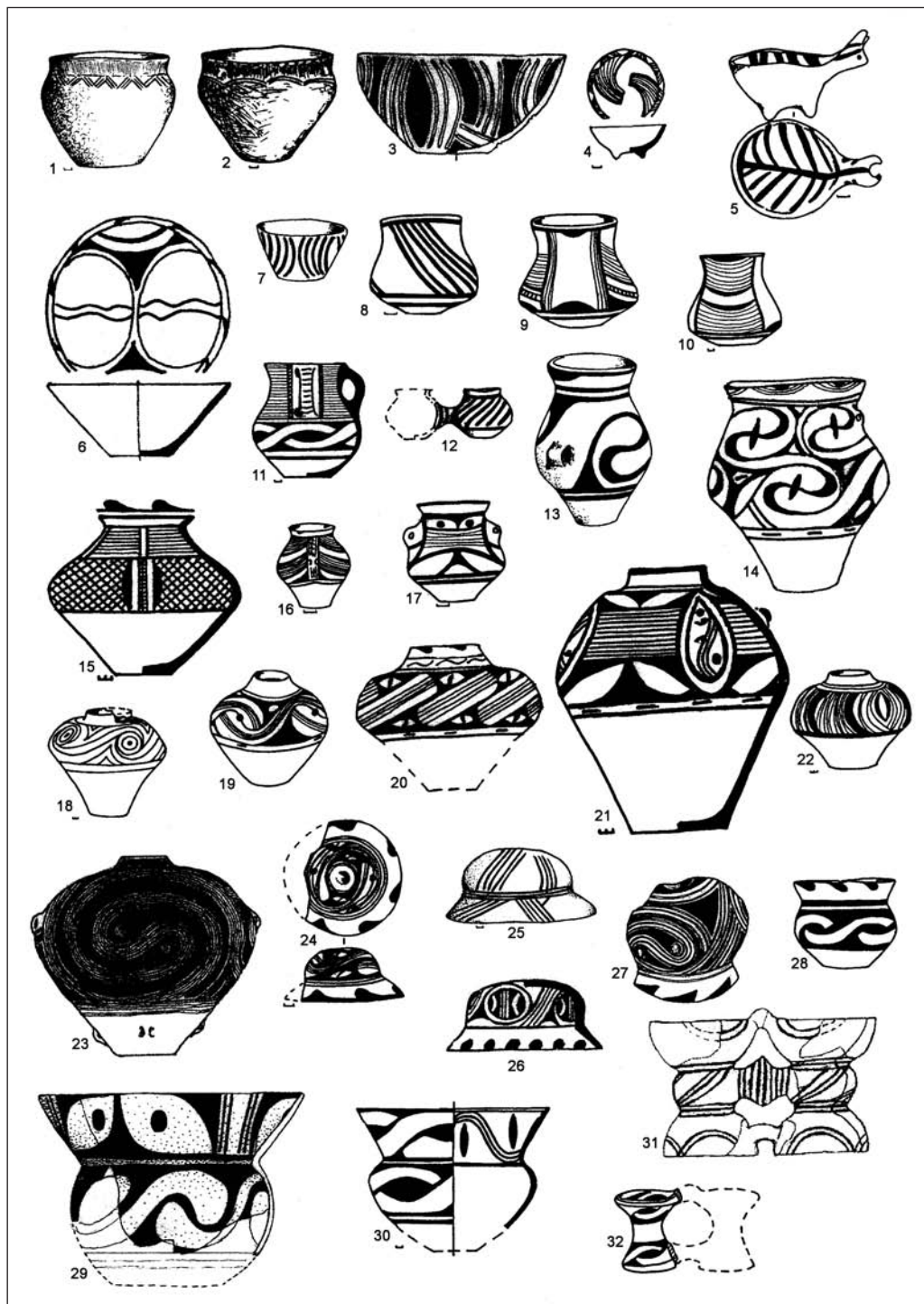


Figure 4.5: Ceramics of Vladimirovskaya local group settlements. Settlements: Vladimirovka (1, 2, 6–12, 14, 16–20, 22, 24, 25, 27, 28, 30, 32); Fedorovka (3, 15); Andreevka (5, 13, 23, 29); Peregonovka (21, 26).

Bolshaya Vys and Yatran rivers; and in the west by the Udich River, although the western border of the habitat has still not been fully clarified. If earlier group settlements occupied a zone that almost coincides with the territory over which early Vladimirovskaya sites spread, then in the late phase the Nebelevskaya population significantly widened its territory in the northern and northeastern directions, and the number of settlements almost tripled from the previous number. There appeared giant-settlements by comparison with Vladimirovskaya group sites; they reached 150–200 ha in size (Nebelevskaya, Glybochek). However, there was also something that was not observed in the Vladimirovskaya group: settlements with an area of only a few hectares. The settlements were planned primarily in several concentric circles of dwellings, with either an empty or a built-up central area. One- and two-storey wattle-and-daub ground structures were built comprising domed ovens, open hearths, small ‘troughs,’ clay decks, raised areas, and special workspaces. The remains of rectangular or circular clay altars, which were sometimes decorated with incised ornamentation and painted using a pointed implement, were also found. Cross-shaped altars, well known in the Vladimirovskaya group, have not been registered in Nebelevskaya houses. Small one-storey utility structures also occurred with simple architecture, humble interiors, and a distinctive small artefact assemblage. Utility pits were discovered in addition to the houses which were sometimes located within the floor areas of the houses. Scholars still hope that partially pit-dug houses will be discovered one day.

The ceramic complex from the Nebelevskaya group settlements is divided into kitchen and table crockery. Kitchen ceramics (6–7%, but in certain settlements up to 20%) are represented in terms of form by two types: bowls and pots. Ornamentation on the shoulders of pots most often consists of one or several horizontal rows, executed primarily using small incisions, impressions of various shapes, fingernail impressions, shallow rounded pricks, pinched impressions, and a serrated stamp. Scalloped forms, with thin recessed lines, various type of impressions, and with a stamp are often found in the ornamentation. The rims of pots are ornamented with vertical scratches and at the edges there are rows of incisions, fingernail impressions, and pinched impressions. More rarely there are rows of ‘pearls’ or ‘little caterpillars.’ That zoomorphic moulded-on elements appear on the Nebelevskaya group’s kitchen ceramics deserves attention. Ceramics decorated with incised ornamentation (around 1%) are ascribed to the table pottery group. In terms of form there are ten types of crockery: bowls, goblets, biconical and sphericonical vessels, amphorae, ‘binoculars’, etc. The meander-line schema is the most characteristic one amongst all types of painted crockery (besides bowls), followed by metopic, scalloped, and simplified-line patterns. The facial pattern accounts for a substantial percentage. There then follow the leaf-like pattern and the *Tangentenkreisband* composition in its classic variation. Almost half of all the vessels are decorated with double frieze ornamentation (Fig. 4.6). It should be pointed out in the context of the plastic arts that, in later group sites, the anthropomorphic figures lose their incised pattern, while painted ornamentation becomes rarer. There are more statuettes on columnar legs in addition to figurines on spindle-shaped legs. Anthropomorphic statuettes in a realistic style have not yet been found. There is little zoomorphic plastic art; figures of that sort have not been recorded. Clay models of closed-type houses survive and clay models of sleds have been found. Clay conic ‘chips’ and balls have also been discovered.

Analysis of the materials has allowed us to isolate two consequent phases of Nebelevskaya group development: the early and the late (Fig. 4.7a and b). The most noticeable changes from phase to phase occur in the sphere of ceramics. Late-phase kitchen pottery shows a growth in the number of pots with a sharply angled form, and a mix of sand, gravel and chamotte (grog) is



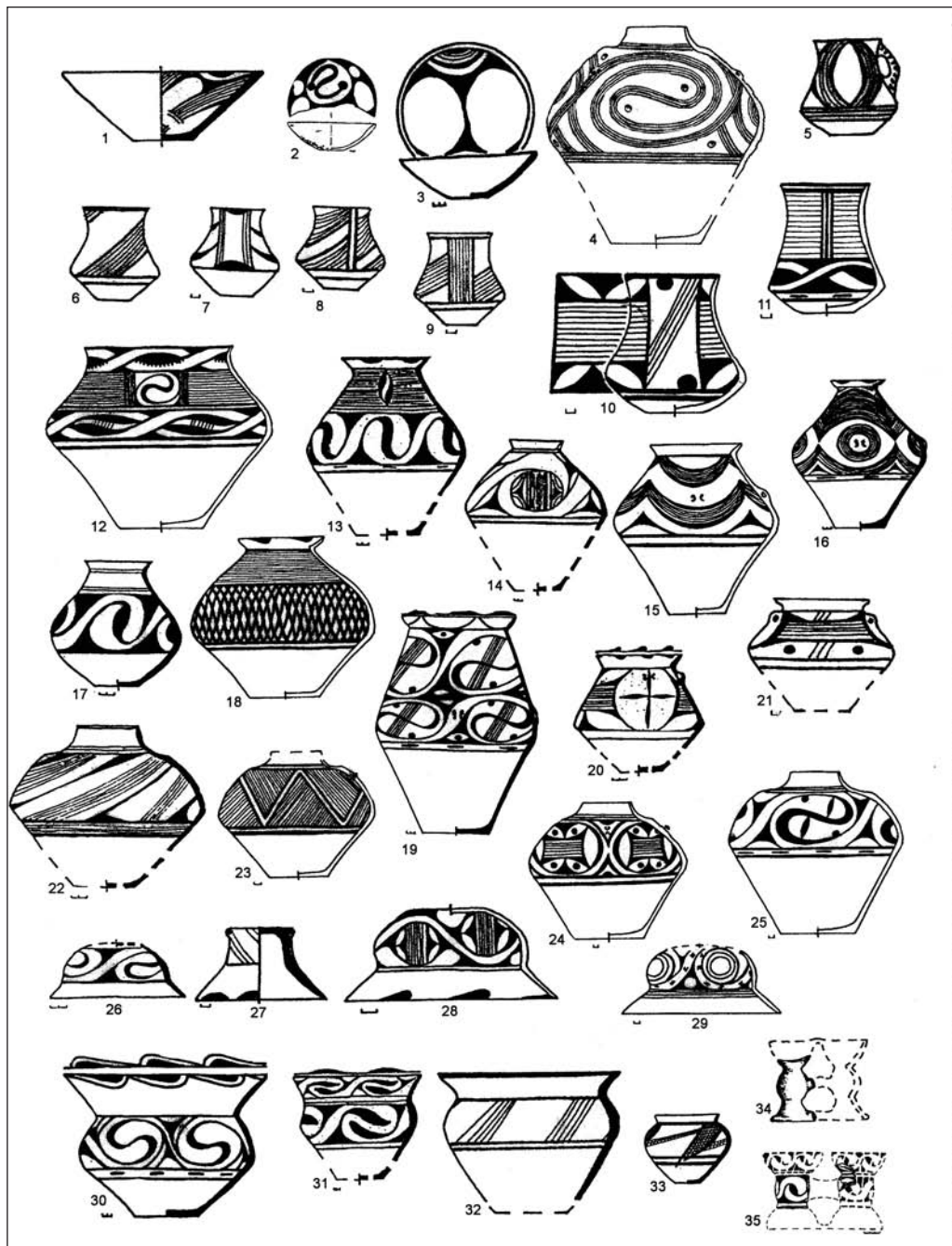


Figure 4.6: Ceramics of Nebelevskaya local group settlements. Settlements: Nebelevka (1, 7–10, 21, 27, 32); Valiava (2, 35); Glybochek (3, 30, 33, 34); Peschane (4–6, 11, 13–18, 20, 22–26, 28, 29, 31); Kolodistoe II [Lukovka] (12); Verbuvata (19).

more often used than broken shells as a temper for reducing the plasticity of the pottery mixture. The 'pearls' and 'chevrons' inherent to early-phase pots disappear, while the 'little caterpillar' and serrated stamp appear very rarely. Already in the first (early) phase, table pottery lacks incised ornamentation in combination with painting of the sort seen on Vladimirovskaya ceramics; in the second (late) phase, even the incised pattern vanishes. Table vessel forms transform, or the quantitative indicators for various sub-types and variants of crockery change. In the second phase, craters with high bell-shaped rims vanish. There are fewer bowls with bulging walls; however, the number of bowls with concave walls and of half-spherical bowls grows. Already bowls are no longer painted on both faces, while the comet-shaped ornamental schema becomes more diverse. The presence of the simplified-line pattern becomes more attenuated in goblet decoration, while the facial pattern has almost disappeared; the metopic and leaf patterns, however, increase in proportion. Biconical vessels undergo almost no changes, either quantitatively or in terms of form or ornamentation. The metopic, leaf, and scallop schema, and the 'owl face' composition, occur more in painting, while the voluted schema turns up less and less frequently. Ornamentation on second-phase vessels is primarily confined to one frieze, which may be wide or narrow. The meander-line schema is dominant in the pottery decoration of both phases. Bichrome painting in the form of thin white lines along the contours of a foundational black drawing continues at minimal levels while red paint completely disappears from the ornamentation. Pear-shaped vessels, craters, and amphorae take on more slender forms, while the rounded shoulders of the majority of types are positioned higher up the vessel than previously; funnel-shaped rims are encountered more rarely. There are more biconical vessels, goblets, and bowls. The number of table pots grows, and they become more diverse in form, even while the ornamentation hardly changes. Helmet shapes start to dominate among lids. The number of binocular-shaped vessels falls by almost a third; in the second phase they are more often without ornamentation. In general, painted crockery of the late phase evinces a characteristic growth in the proportions of metopic, leaf-shaped, and voluted ornamentation patterns and of the 'owl face' composition, while there are fewer scalloped compositions. Other patterns continue in use without significant changes in appearance. It is worth noting the appearance, in Nebelevskaya ceramic décor, of depictions of animals and of the 'tree of the world.' The presence of metopic and simplified-line patterns grows in ornamentation along with the meander-line patterns. The *Tangentenkreisband* composition gradually moves lower down on the vessel and the tangent pattern takes its place (Ryzhov, 1991: 15–7, 1993a: 101–14).

The Nebelevskaya group is largely indebted to influences from sites of the Nezvisko III and Mereshovka-Chetatsuya III types. The Vladimirovskaya local group is the foundation for the Nebelevskaya group; however, in the latter's ceramics, especially in the late phase, new decorative elements circulate, analogies for which we find in the pottery of the early stage of the Shipinetskaya local group of the Prut-Dniester region. Other stylistic borrowings also indicate that the Nebelevskaya population was tied to Petrenskaya local group communities of the middle Dniester region. During the period of the Nebelevskaya group's existence, and particularly in its late phase, west Tripolye communities (including Kanevskaya group settlements) evinced the widest territorial spread. The question remains open of whether to include into a separate Kanevskaya local group all the settlements along the lower course of the Ros River that are ascribed to the second Nebelevskaya group phase. Comparing materials from Nebelevskaya sites and those of the Ros River basin settlements indicates their similarity, although some differences can only be seen in the latter's ceramics. Later Kanev region settlements on west



Figure 4.7: Two Tripolian pots (a and b) of the early phase of the Nebelevskaya group, found at the settlement of Peschane. Both pots were found in House 3 (Photographs: V. Chabanyuk).

Tripolye culture's eastern periphery, having ended up amid other natural conditions and differing cultural surroundings, developed several different methods of economic life, house construction, flintworking, and pottery. But in terms of its way of painting pottery, this population nonetheless maintained Nebelevskaya traditions for a long period of time, even when Nebelevskaya group sites were being replaced by Tomashovskaya group sites on the root territory (see below). The peculiarity of Nebelevskaya ceramics is that the painting of vessels evinces ornamental patterns that, in terms of their arrangement and the details of their drawing, recall the ceramic decoration of the Chechelnitskaya local group. The prototypes for these ornamental patterns were already in evidence on isolated examples of Vladimirovskaya group crockery. In the Bug region, as the Voroshilovskiy-type sites start to disappear (and the Krinichek-type sites to appear), yet another local group starts to emerge. These sites, like the later Chechelnitskiy ones, are concentrated to the south of the Voroshilovskiy habitat and of the Nemirovskiy settlement (Kosakivsky, 1993: 97–108; Polischuk, 1989: 30–49). There exists not only territorial differences among the groups in question; they are also different in terms of their provenance. Voroshilovskiy sites appear as the result of the melding of local 'eastern' populations with newly arrived (and predominant) upper Dniester and west Tripolye cultural groups, while Chechelnitskaya group materials do not evince particular manifestations of 'eastern' elements. This group emerges on the basis of pre-Petrenskiy and early Petrenskiy Dniester-region sites (as the dominating component) and as the result of influences from the Vladimirovskaya and Nebelevskaya groups of the Bug-Dnieper interfluvium.

In the CI stage (the middle of the fourth millennium cal BC), Shipinetskaya and Petrenskaya group sites of west Tripolye culture continued their development; their formation is ascribed to the BII stage (Fig. 4.3). Comparison of the settlements' ceramics complexes makes it possible to trace the provenance of both groups and to clarify their chronological differences and local peculiarities (Ryzhov, 1999: 15–6, 2003a: 33–45, 2005: 193–208; Tkachuk, 1999: 11–6, 2002: 89–114, 2003: 57–63). The Shipinetskaya group settlements partially occupy the territory of the upper and middle Dniester regions (primarily on the right bank) and the left bank of the Prut, while Petrenskaya group sites are concentrated in the middle Dniester and partially in the Bug-Dniester interfluvium. About 20 Shipinetskaya group settlements of different dates and more than 50 Petrenskaya group sites are currently known. The biggest differences in the material cultures of the two groups are in the ceramics, especially in the ornamentation of pottery. Painted Shipinetskiy-type ceramics often have a background of wide, parallel stripes of white, dark-brown and red colours laid on the surface of the vessels. The painting has a unique execution in which a monochrome black pattern is placed on a natural or painted reddish background, and there is a long-preserved style whereby the natural background of the vessel bears a monochrome black or red pattern, sometimes outlined by white lines or spots. Monochrome red drawing on a whitish background (a rudiment of an earlier style) is also used; the voluted, tangent with volutes, metopic (often cross-like figures are arranged in the metopes), and scalloped patterns dominate the ornamentation. Unique zoomorphic depictions, and the absence of anthropomorphic ones, are also often registered. In terms of form there are bowls on legs, tall spherico-conical vessels with narrow shoulders, flat lids, round-bodied craters, tall goblets and amphorae, and uniquely binocular-shaped vessels, sometimes without holes that go all the way through. Some ornamental elements evince well-documented influences that indicate that the Shipinetskiy-type groups made contact with Cucuteni cultural communities (Tkachuk, 2007a: 140–52). Contacts with the Central European communities of the Polgar-Lengyel circle



put their stamp on Shipinetskiy-type ceramics. In their own turn, Shipinetskaya local groups influenced the synchronous population of the Bug region and, indirectly, the pottery painting style of Nebelevskaya and Tomashovskaya local group sites (Ryzhov, 2007: 127–39). If the early phase of the Petrenskaya group, however, like that of the Shipinetskaya, belongs to the end of the BII stage, then the sites of the early and late phases of the group's development already embrace the CI stage. At that time the Petrenskaya groups did not only retain their former territory in the middle Dniester region, but also extended it into the Dniester and South Bug interfluvium. The topography of the settlements did not fundamentally change, but they increased in size. The number of settlements also rose. Wattle and daub ground house building became more complex. Several sub-types of bowls become characteristic of the group's table ceramics: big, wide-throated binocular-shaped vessels, tall craters, and goblets with handles. In terms of decoration, styles dominate in which a black pattern is laid on a whitish background, sometimes with the addition of red lines (bichrome). But the ornamental bichrome style, in which drawing using black and red – or black and white – paints is laid on a reddish background, is substituted for by a style in which black drawing is supplemented by overlays that are executed in white paint. A bichrome style spread, in which, on a whitish background, a black pattern combines with wide red stripes or painted red ornamental elements of various forms (filling). However, monochromatic black drawing continues to dominate the decorative repertoire. S-shaped bows (meander-line pattern) are already being observed more rarely in painting, but there are more metopic compositions and more of the 'owl face' pattern. The *Tangentenkreisband* pattern becomes noticeably simpler. Zoomorphic and anthropomorphic depictions spread (Markevich, 1981: 14–26, 56–60; Chernysh, 1982: 214–9; Movsha, 1984: 10–23, 1985a: 213–7; Ryzhov, 1981: 27–8, 2004: 140–5; Shumova and Ryzhov, 2005: 88–106). Although the direct predecessors of both groups were sites of the Mereshovka- Chetatsuya III- and Nevisko- (BII stage) types, it is already possible to trace their deeper roots in the BI/II phase. It is clearly no accident that the area of the early Tripolye sites coincides with the settlement zone of the Solonchenskaya local groups, while the territory occupied by the early Shipinetskaya settlements almost coincides with the region in which the Zaleschitskaya group diffused. In addition, we find some prototypes of the forms and ornamental patterns of Petrenskaya and Shipinetskaya crockery in the ceramics of the Solonchenskaya and Zaleschitskaya groups. The Petrenskaya and Shipinetskaya groups developed in parallel, constantly interacting with one another. In the contact zone of both groups' syncretic settlements existed the materials of which to a greater or lesser extent contain specific indications of the pottery decoration styles of these groups: Konovka-Putsita, Khodorovtsy-Payuk, Velikaya Muksha-Khreshchate (Shmaglii *et al.*, 1985: 42–51). Petrenskaya group communities had a significant influence on the formation of the Chechelnitskaya local group of the Dniester and South Bug interfluvium. Syncretic settlements also develop, the ceramics of which are present in the Petrenskaya, Shipinetskaya, Chechelnitskaya and Tomashovskaya's decorative elements (Stena 1, 4 settlements). The Petrenskaya group population also played a role in the composition of earlier Bug region sites of the Nemirovskiy type (according to Gusev). Contacts between Petrenskaya and Tomashovskaya local groups have been documented.

The late phase of Tripolye saw the Shipinetskaya group communities on the maternal territory (the Prut-Dniester region) from one side become one of the Koshilevskaya local group's components and from the other side gradually transform into communities of settlements of the Bilche Zolotoye-Verteba type – that is, into sites that entered the upper Dniester zone of the

area of later Tripolye's (stage CII) Brynzenskaya local group (the Zhvanetskaya, after Movsha). Petrenskaya group communities of the middle Dniester region become the genetic foundation of Varvarovka XV and Stariye Badrazhi (Moldova) type-sites.

In the Bug region the CI stage is represented by sites of the Chechelnskaya group and by settlements of the Gorodischenskiy-type. Chechelnskaya group settlements are located in the Bug-Dniester interfluvium, in the basins of the Roguzka, Savranka and Kodyma Rivers. The settlements are not large and consist of houses built entirely above ground ('ground-houses') and constructed of wattle-and-daub. Table crockery bears monochromatic black or bichromatic (black and red paint) patterns. The basic forms are conical, cylindrical-conical, and half-spherical bowls; goblets with sharply defined shoulders; spherico-conical and pear-shaped vessels; helmet-shaped lids with tall margins; big, wide-throated biconical vessels; craters; napiform vessels; rotund pots and 'binoculars.' The meander-line, facial, metopic-tangential, and scalloped patterns are used in decoration. The *Tangentenkreisband* composition is rarely met with, but a simplified-line pattern in the form of rows of painted or hatched triangles, plaits made from wide stripes, zigzags, and ribbons of thin lines is used. Ornamentation consisting of wavy bows is often seen. The metopic-tangential patterns consisting of vertical and slanted ribbons made of thin lines arranged in mirror symmetry are the original, purely 'Chechelnskii' variant. Another typical type of drawing consists of wavy ribbons, in the bends of which are drawn concentric circles. This sort of design, executed in a wide frieze, is complemented by painted triangular segments, thin scalloping, and ribbons composed of small arrow-like triangles. The helmet-shaped lids bear a unique form of painting. Kitchen pots are decorated with scratches and incisions along the crown rim and by rows of shallow impressions, as well as by traced scalloping on the shoulders. Expressive zoomorphic elements were also moulded on. We see in the plastic arts a small number of anthropomorphic and zoomorphic figures, and the clay model of a house (Polischuk, 1986: 294, 1989: 30–49; Kosakivsky, 1993: 97–108, 1990: 200–4).

Gorodische 2-type settlements occupy both sides of the Southern Bug, but the majority are concentrated in the southwestern part of the middle Bug region. The layouts for the settlements and for construction of houses have not been clarified, and ceramics stand as the basic source for studying the sites. Table pottery is, as a rule, sharp in profile. The basic forms are conical bowls, goblets, squat amphorae, biconical and crater-shaped vessels, and pots. Smooth S-shaped bows, spirals, and wavy ribbons are rarely observed in monochrome black painting. More angular patterns dominate – tangential, metopic and scalloped. The face and voluted patterns and the *Tangentenkreisband* composition completely disappear. The basic pattern is often complemented by second-level details – rows of small triangles, a chain of 'cilia', 'little caterpillars', and 'little steps'. Sometimes there is a short ribbon of 'netting' in the compositions, which testifies to the population's contact with Tomashovskaya group settlements. The Torkiv, Nemirov-Mogilky, Pakhny, and other settlements come to replace the Gorodyshevskiy-type sites. The Bug-region cultural groups, as the result of repeated resettlements of the west Tripolye communities, finally lose their specificity and a 'middle Bug' group (according to Gusev) leaves the historical arena by the beginning of the CII stage.

#### *TOMASHOVSKAYA LOCAL GROUP*

At the beginning of the CI stage, a Tomashovskaya local group forms in the Bug-Dnieper interfluvium. At the basis of its formation lie the Nebelevskaya group sites (Fig. 4.3). These, however, were not the only component of the new formation, and the transition from one group

to the second happened quickly and in an uneven fashion. The point is that the communities of the Shipinetskaya local group of the upper Dniester and upper Prut regions were another, and no less important component. While the later (transformed) Nebelevskaya group population was a fundamental substrate of the Tomashovskaya group, the Shipinetskaya communities did not enter the South Bug and Dnieper interfluves. Rather, their influence happened indirectly and manifested itself in table crockery and the plastic arts. In materials from the group's early sites there are also influences from the Dniester region's Petrenskaya group communities. Tomashovskaya group settlements occupied a considerable territory, defined in the west by the upper course of the rivers Sinitsa, Udich, Kiblich and Soroka; from the north by the Gorny and Gniloy Tikich rivers; in the east by the Vilshanka, Shpola and Tikhiy Tashlyk rivers; and in the south by the upper reaches of the Yatran and Kamyanka rivers, and by the lower course of the Bolshaya Vys. Giant-settlements, reaching almost 400 ha in size, existed alongside the small ones (Shmagliy *et al.*, 1973: 23–31; Shmagliy, 1980: 198–203). Wattle-and-daub ground dwellings were primarily of two storeys, with gabled roofs. Small houses, evidently with a utilitarian purpose, are encountered. Semi-sunken layouts and pits of domestic character have also been discovered. The interiors of the dwellings were fairly standardised: there were rectangular and rounded altars, ovens, open hearths, special clay decks and troughs. The characteristic element of interior furnishing is the podium on one of the long walls. Often, large storage vessels – pithoi – were located on the podiums (see also Chapter 8). The ceramics of the group settlements are traditionally divided into storage ceramics (intrinsic only to the Tomashovskiy complex), kitchen ceramics and, which is most indicative, table ceramics decorated with monochrome black painting. In Tomashovskaya group settlements, the amount of kitchen crockery gets noticeably smaller (on average about 5%).

In terms of form, table crockery is represented by 11 types – bowls of various sub-types, goblets, biconical and sphero-conical vessels, amphorae, pear-shaped vessels, lids, pots, 'binoculars,' and others. For bowls of all sub-types, the comet-shaped and simplified-line patterns occupy a fundamental position. We observe '8-shaped', scalloped, and cross-shaped patterns far more rarely. For the remainder of vessels, the tangential pattern was the most used: almost 25% of all vessels are decorated with it. The simplified-linear pattern appears in the ornamentation a little less often and the meander-line decoration makes up about a tenth of it. There is a bit more of voluted patterns in the ornamentation. The facial, leaf-shaped, and metopic patterns are in the 8–9% range. The scallop pattern now occupies more than 5% of the ornamentation. The segment-shaped pattern and the *Tangentenkreisband* and 'owl's face' compositions accounted for about 1%. The two-frieze pattern is preserved in pottery ornamentation, but it is more often enclosed in a narrow band. A scant amount of pottery had bichromatic ornamentation, where the basic drawing was executed in black paint and then outlined by white lines or dots. One of the characteristic traits of 'Tomashovka-type' painting is the specific TK representation of animals in a so-called 'ribbon' manner and the large number of 'tree of the world' drawings (Fig. 4.8). 'Tomashovka-type' ornamentation is particularly important for the quantitative rise and stylistic widening (in terms of the semiotic aspect) of the signifying system (Tkachuk, 1990: 152–4). The characteristic indicator of the painting is its 'dynamism', that is, its capacity to change fast, uniting several ornamental schemes in one design, and to develop diverse methods for the compositional formation of decoration, which helps to add detail to examples from ceramic assemblages (Movsha, 1985b: 228–32, 1988: 84–110; Shmagliy and Videyko, 2003: 44–136).

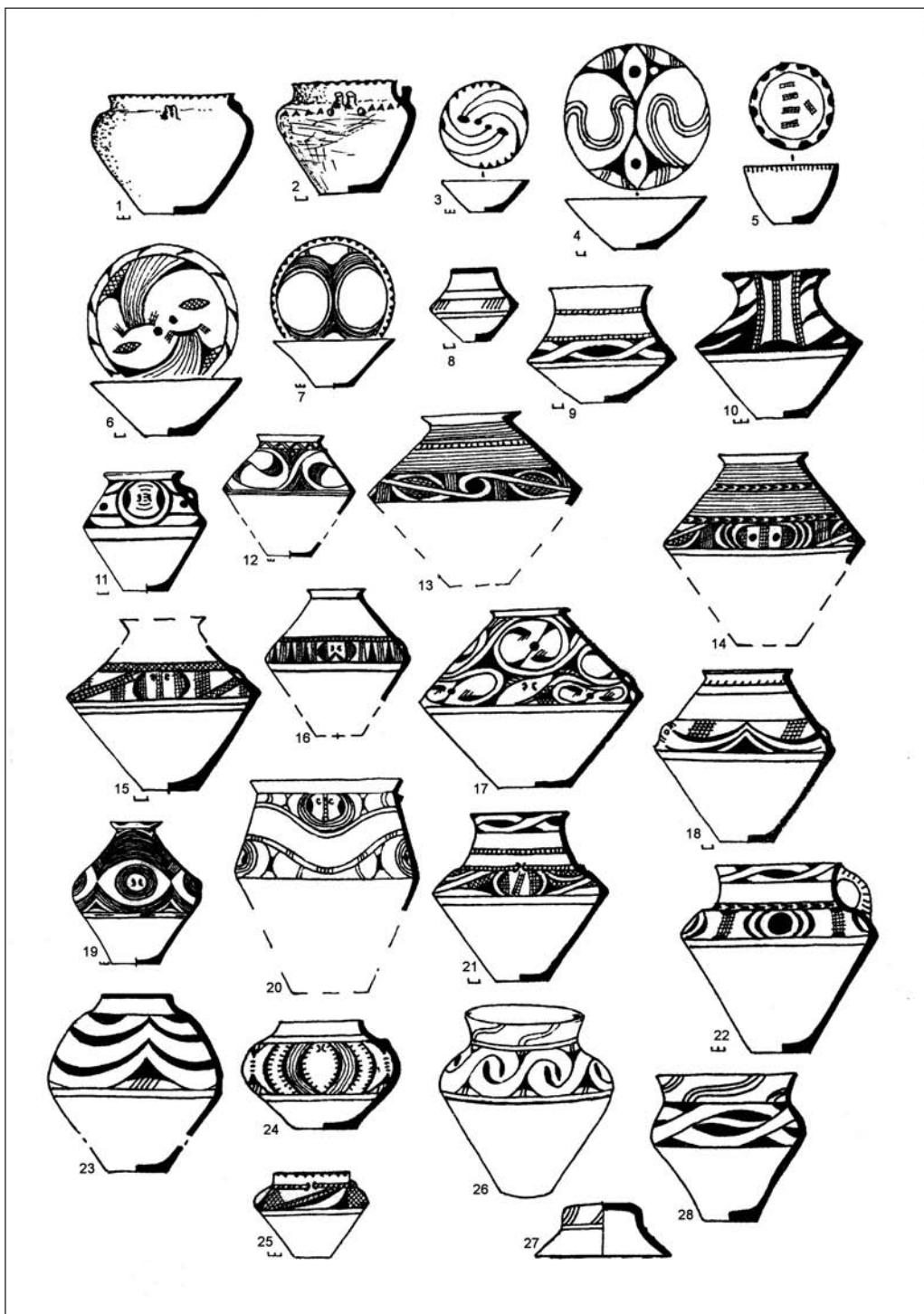


Figure 4.8: Ceramics of Tomashovskaya local group settlements. Settlements: Staraya Buda (1, 3–5, 25, 27); Talianki (2, 19); Sushkovka (6, 13, 24); Goncharikha (7, 16); Moshurov I (8–10); Vasilkov (11, 12); Tomashovka (14, 22, 26); Dobrovody (15); Maidanetskoe (17, 18, 20); Chichirkozovka (21, 23, 28).



Analysis of the ceramics has made it possible to isolate four phases in the development of Tomashovskaya group sites. These phases were defined on the basis of 1) the remarkable reconstruction of technical-technological methods for making pottery; 2) quantitative changes in the correlations between these or other sub-types and formal variants of the vessels; 3) the disappearance (or reduction) of some, and the appearance (or increase) of other new ornamental schemes or their variants (Kruts and Ryzhov, 1985: 45–56; Ryzhov, 1993b: 54–5, 2000: 459–73, 2008: 132–51). Stratigraphic findings and the microchronology of the settlements confirm the results of the research (Ryzhov, 1990: 83–90). The first-phase crockery characteristically preserves, in form and ornamentation, the ceramic traditions of the preceding Nebelevskaya group. There already appear, however, forms and ornamental schemes that are inherent specifically to Tomashovskaya group crockery. In the second phase, the ceramics are distinguished by the sharp-ribbed nature of the majority of types of table crockery. Some of the goblets, and biconical and sphero-conical vessels and amphorae, take on a stocky shape. Crater-shaped vessels retain their truncated-conical mouth, but the majority already have the typical concave-cylindrical mouth. Pear-shaped vessels already bear high, sharp-ribbed shoulders, and the edges of their rims are slanted inward. Leaf-shaped and tangential patterns play a larger role in painting. The percentage of voluted patterns rises, but a metopic, leaf-shaped, facial, or segmented scheme is rarely used. The *Tangentenkreisband* composition is used rarely in decoration; in addition it becomes more complex in term of second-level ornamental elements. The other schema remains without essential changes. In the phase in question an expressive ‘Tomashovka style’ of painting finally establishes itself. Standardisation of table pottery in terms of form and ornamentation is observed. Characteristic of the third-phase ceramics is an articulated sharp-ribbedness in the majority of types of pottery, and almost all vessels evince high shoulders more frequently (Fig. 4.9 a and b). Conical bowls, goblets, biconical vessels, and craters dominate. The number of other types in the complexes gets smaller. The role that metopic and tangential schemes play in ornamentation gradually increases. The number of volute patterns used in decoration grows sharply; the percentage of meander-line, facial, and scallop patterns, and of *Tangentenkreisband* and ‘owl’s head’ compositions, falls on the other hand. The number of vessels with two-frieze painting becomes smaller.

Ornamentation is often over-saturated with second-level details. Animal drawings and depictions of the ‘tree of the world’ start to blossom, while the single depictions become more diverse. In the fourth phase, pottery is distinguished by the sharp profile of practically all the types; in addition, the number of sub-types and formal variants decreases. The number of sphero-conical vessels in the complexes falls, and crater-shaped and pear-shaped vessels completely disappear. The simplified-line pattern starts to dominate in painting; it is, meanwhile, already used in almost all types of table pottery, at the expense of other patterns (metopic, leaf-shaped, scalloped, and voluted). The meander-line pattern is seen very rarely. Tangential compositions often divide down into metopic zones. The facial schema is drawn primarily in a simplified form. Other ornamentation patterns are used more rarely (such as the segmented, the *Tangentenkreisband*, and the ‘owl’s face’) or completely disappear from painting (the voluted). The majority of the patterns in question are located only within a narrow ornamental belt. We find in this phase the largest number of unornamented table vessels. As far as kitchen ceramics is concerned, there is a well-recorded tendency for them to decrease (according to phases). Kitchen pots take on a primarily sharp-ribbed form, often repeating the profiles of table pots. Ornament becomes poorer and often there is kitchen pottery that is completely without decoration.



Figure 4.9: Two Tripolian pots (a and b) of the third phase of the Tomashovskaya group, found at the giant-settlement of Talianki. a) was found in a rubbish pit near Houses 30–33; b) was found in House 42 (Photographs: V. Chabanyuk).

The territory of the group in comparison with that of the Nebelevskaya group communities diminishes, and the later Tomashovskaya group settlements are located only in the southwest sector of the region that the whole group occupied earlier. The plastic arts stand out among the finds from the settlements there. There is a great quantity of such material in comparison with other local groups. Anthropomorphic plastic arts are represented by female and (rarely) male statuettes. They include two types: standing (the majority) and sitting figures. In terms of style, researchers distinguish between schematic and realistic figures. Realistic statuettes are distinguished by the detailing of the faces and hair, the modelling of the figure itself, and by clothing and decorative elements. Schematic figures of cylindrical columnar form are the most widespread. In addition, there are various zoomorphic statuettes. The plastic arts also include clay models of houses, as a rule of open type. Models of sleds are typical clay products for the Tomashovskaya group.

The Tomashovka population maintained the closest ties with the Chechelnitskaya group communities. Basically, in every excavated Tomashovskaya group settlement ‘imports’ have been found of Chechelnitskaya pottery or local imitations of it. This could indicate a significant Chechelnitskaya group population inflow into the Tomashovskaya group’s area. Influences in the other direction have also been registered: at the very least, the Tomashovskaya group’s influences on Gorodyschenskiy-type sites are perceptible. Like the Nebelevskaya group communities, those of the Tomashovskaya group maintained constant contact with the east Tripolye population of the middle Dnieper region. There, in settlements of the Kolomyischina II-, Kolomyischina I-, Chapayevka-, and especially Rzhischev-types, and in the earliest Lukashovskaya group settlements, there are ‘imported’ painted vessels. If Tomashovskaya group sites remained under ‘Dniester’ influence in the beginning phases, then in the late phases the contacts move in the opposite direction: Tomashovskaya group ‘imports’ are registered at late Petreni and even Cucuteni sites, and in the South Bug basin, syncretic settlements arise where Tomashovskaya group population presence is registered. Some materials from late Tomashovskaya group settlements indicate contact with communities of Prut-Dniester sites of the Varvarovka XV type and possibly of later sites (Tkachuk, 2007b: 147–56). The Chechelnitskaya group communities become more active during this time too. Judging by different elements in the painting of ceramics, they made contact in the west with the Petreni population and with inhabitants of Varvarovka XV-type settlements; and in the east, probably through Tomashovskaya group’s ‘intermediaries,’ with the Dnieper region’s eastern Tripolye cultural groups. With the disappearance of the Tomashovskaya local group in the Bug-Dnieper interfluvium, one of west Tripolye culture’s branches terminates its existence.

#### *AFTER THE GIANT-SETTLEMENTS*

Kanev local group settlements, small in number and belonging to the CI stage, occupied a limited territory on the right bank of the Dnieper in the area of the city of Kanev. In size the settlements oscillated between 3ha and 20ha. They were most likely laid out in a circular plan and were built primarily with wattle-and-daub ground houses of simple construction. But there were also semi-sunken structures of various purposes, in particular workshops for processing flint (Pekari II). Ceramics, which include kitchen and table ceramics, occupy a central place among the finds. Kitchen pots of various sub-types and variants are decorated around the necks with scratches and shallow incisions along the edge, and also with rows of pricks, incisions, fingernail impressions, and bow-shaped impressions along the shoulders. Sometimes the

pots bear zoomorphic moulded-on elements. The table pottery (the majority) was prepared from a mixture of several types of clay, the basic component of which was red-baked clay without artificial admixtures (temper). The basic forms are goblets, bowls in various forms, sphero-conical and pear-shaped vessels, amphorae, craters and pots. They are decorated with a monochrome black pattern. Scallop, tangential, metopic, meander-line, and simplified-line schemes are generally used, and more rarely the *Tangentenkreisband* and 'owl face' compositions. Often the basic drawing is augmented by shallow strokes, painted triangles and circles, wavy lines, and depictions of the 'tree of the world' in a specific execution. Among table ceramics there is a special type of vessel (5%) modelled from 'brown' clay with the admixture of sand and fine chamotte. The surface of the vessels is well smoothed and often polished. The various forms consist of bowls, goblet-shaped and biconical vessels, craters, pear-shaped vessels, lids and pots. These objects are primarily unornamented, but from time to time they are decorated with incised thin lines, rows of pricks, and groups of strokes. Such ceramics were disseminated in east-Tripolye culture areas starting from the BI/BII stage and were later adopted by the neighbouring Kanev group population. 'Imported' east-Tripolye pottery with typical 'Kolomyischina'-style incised ornamentation, which indicates the close contacts between the two local groups, is also present in the ceramics complexes of the Kanev local group. Anthropomorphic and zoomorphic plastic arts with vivid traits expressing the cultural influence of the closest Bug-Dnieper population are well represented. Preserved Nebelevskaya stylistic traditions and borrowed Tomashovka-type decorative elements in the painting of Kanev-type table pottery are highly visible (Ryzhov, 2002a: 193–5, 2002b: 19–40). The Kanev group population, however, developed its own distinctive style of pottery ornamentation (Ovchinnikov, 2003: 272–80, 2007: 2–18). At the beginning of the CI stage, a portion of the Nebelevskaya communities from the lower Ros River region (perhaps under pressure from the Tomashovskaya group communities) begins moving forth in a northerly direction up to the bank of the Dnieper. The population of the eastern periphery of the Nebelevskaya group habitat, which remained in its place and was not drawn into the Tomashovskaya group formation process, continues to exist on its root territory, developing its own cultural traditions. There is, nevertheless, close contact with other already-formed, and in this case related, Tomashovskaya group communities. The 'imported' Tomashovskaya group ceramics in the Nebelevskaya group settlements confirm this contact. The relocated groups also maintain, in modified form, the morphological and stylistic traditions of their forerunners in ceramics and the plastic arts. Being located between the west Tripolye and east Tripolye cultural groups, the 'Kanev' group communities maintain contact with the inhabitants of settlements of the Kolomyischinskaya and Tomashovskaya groups.

At the end of the CI stage, the Kanev population participated in the formation of early Lukashevskaya local group (the eastern Tripolye heirs of the Kolomyischinskaya group) sites on the left bank of the Dnieper, in the area of the Trubezh River's mouth. There can be traced a west Tripolye ('Kanev') component in the Lukashevskaya group settlements of Krutikha-Zholob and Tsiibli, in the complexes of which painted pottery is present in significant amounts (Buzyan, 1994: 70–3). In this way, the Kanev group communities were the first and last west-Tripolye cultural population to advance so far into the east. Finding themselves torn from their west-Tripolian root territory and having ended up in the zone of east Tripolian influence, these communities dissolved with time into the new ethnic array, having lost their own cultural traditions.

***External contact of the Bug-Dnieper region cultural groups***

The Bug-Dnieper region groups maintained contact not only with the neighbouring Tripolye population, but also with the surrounding Aeneolithic world of southeast Europe. For earlier periods, Tsvek discovered in the eastern Tripolye settlements not only local imitations but also ‘imports’ from the Tisapolgar, Lengyel and Bodrogkeresztur cultures. The Tripolye communities’ ties with the population of the Malitskaya and Lyublin-Volyn cultures were well established. Painted Tripolian ceramics were also discovered at late-Neolithic Dnieper-area sites. It is worth pausing briefly on the Tripolye communities’ connections with the stockbreeding steppe population. Thanks to the conceptual works of Telegin, Zbenovich, Movsha, Chenysh and Danilenko, the ‘steppe’ theme has been widely enough elucidated in scholarly literature; we will therefore limit ourselves to some short observations. It has been noted that atypically formed vessels with crushed seashell temper and with comb-shaped ornamentation first appear in Cucuteni-Tripolye settlements of the end of the BI stage (Cucuteni A). Tripolye ceramics, which were found in significant amounts in ‘eastern’ sites of other ethnicities, belong to the end of the BII stage. Thus, Tripolye ceramics from the settlements of Novorozanovka and Pugach II and III and from the Igrenskiy site, and vessels from the barrows of Rotmistrovka and Serezliyevka villages and several other places, are identical in form and ornamentation to Nebelevskaya local group pottery of exactly that time, during which the group reaches the widest territorial dissemination. The mutual appearance of these ceramics with middle-Dniester crockery allows us (but only in terms of general traits) to synchronise the Nebelevskaya group with the sites of the Strilcha Skelya type (the Skelyanskaya culture, according to Rassamakin). Srednestogovskiy type ceramics of the Molyukhov Bugar kind date to a later period.

In the transition phase (CI–CII) into the later Tripolye period there existed in the Prut-Dniester region several local west Tripolye cultural formations. Badrazhy stage (according to Markevich) sites were basically concentrated on the territory of Moldova; only isolated settlements were located in the northern zone of contemporary Ukraine’s middle Dniester region. A pattern that covers almost the entire surfaces of the vessels, while bowls are decorated internally and externally, becomes characteristic of painted ceramics. The forms of the vessels become more rounded. Tangent, scalloped and metopic schemes are used in bichrome (black and red paint) and monochrome black ornamentation. Voluted ribbons, zigzags, vertically arranged ovals, chains of small rhombuses, and rows of triangles are present in the patterning. The ornamental belt increasingly separates into metopic zones. These ornamental schemes will dominate in the ceramics of the later Brinzeni (Zhvanetskaya) local group. Settlements of the other group – the Koshilovetskaya – occupy a small territory of the upper, and partially of the middle, Dniester region.

Painted ceramics with polychrome, bichrome, and monochrome drawing is a special trait of the group’s sites. Wide stripes, zigzags, rows of triangles, crosses, ribbons of thin lines, ‘mesh’ and a metopic zone become fundamental elements of decoration – ornamentation becomes geometricised (Zakharuk, 1971: 180–3). Elongated standing figures with flat torsos and legs that are one solid piece with the feet, are characteristic of the vivid ‘Koshilovetskaya’ anthropomorphic plastic arts. On some statuettes the painting transmits details of clothing, footwear and adornment (jewellery). In the Prut-Dniester region the remains of the little-studied Lomachentsy-Vysneva type-sites are diffused, and they were also in contact with communities of the synchronous local groups. Before the Brynzenskaya group was formed, a part of the communities of this type started to advance into the east and became a basic component of the



Kosenovskaya local group in the Bug-Dnieper interfluvium. Another section of the population stayed in its own territory and, along with Badrazhskaya group communities, became the base for the formation of the CII stage's Brinzeni local group.

Kosenovskaya local groups, whose root territory is located in the middle Dniester region, appear in the Bug-Dnieper interfluvium between the CI and CII stages (Fig. 4.4). Nearly 20 group settlements from different times are now known; they are concentrated in the area of the city of Uman and occupy a narrow zone that extends from the southwest into the northeast. Small settlements (15–25 ha) predominate, although smaller hamlets (Dubova: 1.5 ha) and very large ones (primarily early ones), like Kosenovka and Apolianka (60–100+ ha) are known. The layout of a number of settlements consists of concentric circles (Kosenovka), several rows (Korzhoval), and separate groups of dwellings (Dubova). As a rule, they were built with wattle and daub ground houses, although semi-sunken structures have also been discovered. Movsha saw the group's sites as an eastern variant of the Zhvanetskaya group or culture (Movsha, 1985a: 223, 1993: 32–56). The materials from the group's early settlements (phase one and/or two) are the most expressive. The small amount of kitchen pottery is characteristic of the ceramics complexes; the percentage of this pottery increases steadily from phase to phase. Normally, kitchen pots have a smooth profile and are decorated with horizontal rows of incisions and of impressions of various forms, and more rarely with the impressions of a stamp, rope or 'little caterpillars'. Table pottery (bowls, goblets, spherico-conical and pear-shaped vessels, pots and other items) is decorated with a black monochrome and bichromatic (black and red paint) pattern. The *Tangentenkreisband* pattern in its simplified form, and metopic and simplified-line schemes, dominate in terms of decoration. The scalloped pattern or the 'owl's face' compositions are found more rarely. Only in isolated cases do we find the facial wave-shaped and segment-shaped schemes. Often, three-frieze painting covers almost the entire surface of a vessel. The particularity of the decoration is in the abundance of second-level elements – the rows of triangles and rhombuses, of 'cilia,' and of wavy lines. Figures-of-eight shapes, scalloped, cross-shaped, and simplified-line schemes are used to decorate bowls, while comet-shaped patterns appear rarely. Bowls are often decorated on both faces (Fig. 4.10). Goblet-shaped vessels, the form and ornamentation of which are not characteristic for pottery with a Dniester provenance, are also present in the ceramic assemblage. We see similar vessels among Chechelnitskaya group ceramics. It is possible that the future Kosenovskiy communities moved through the territory of the Chechelnitskaya group communities, the remains of which survived the Tomashovskaya group population and could have been included in the composition of that of the Kosenovskaya group. Obviously, by the time of the arrival of the 'Dniester' communities, the Tomashovskaya group communities had ceased to exist, and the free territory fell to the new population this is indicated by the absence of any manifestation of the Tomashovskaya group in the materials of the Kosenovskaya group settlements. Anthropomorphic plastic art stands out among the examples of its expressiveness. Pyramidal and conic weights for weaver's looms, ornamented whorls, bone daggers and copper decorations are also present. Being the eastern branch of the Zhvanetskaya group, the Kosenovskaya communities quickly lose their 'western' traits in the late phase (stage CII). There is little painted pottery in the late settlements and the ceramics complexes take on a general late-Tripolye aspect, although they retain some inherited traits of the Brinzeni group. For the Kosenovskaya group there are contacts with sites of the Lukashevskaya group and, possibly, with the late Tripolye population of Eastern Volyn (Ryzhov, 2003b: 187–95). The final wave of migration from the west is connected with the Kosenovskaya group; after it there are few and isolated penetrations into the Bug-Dnieper interfluvium.

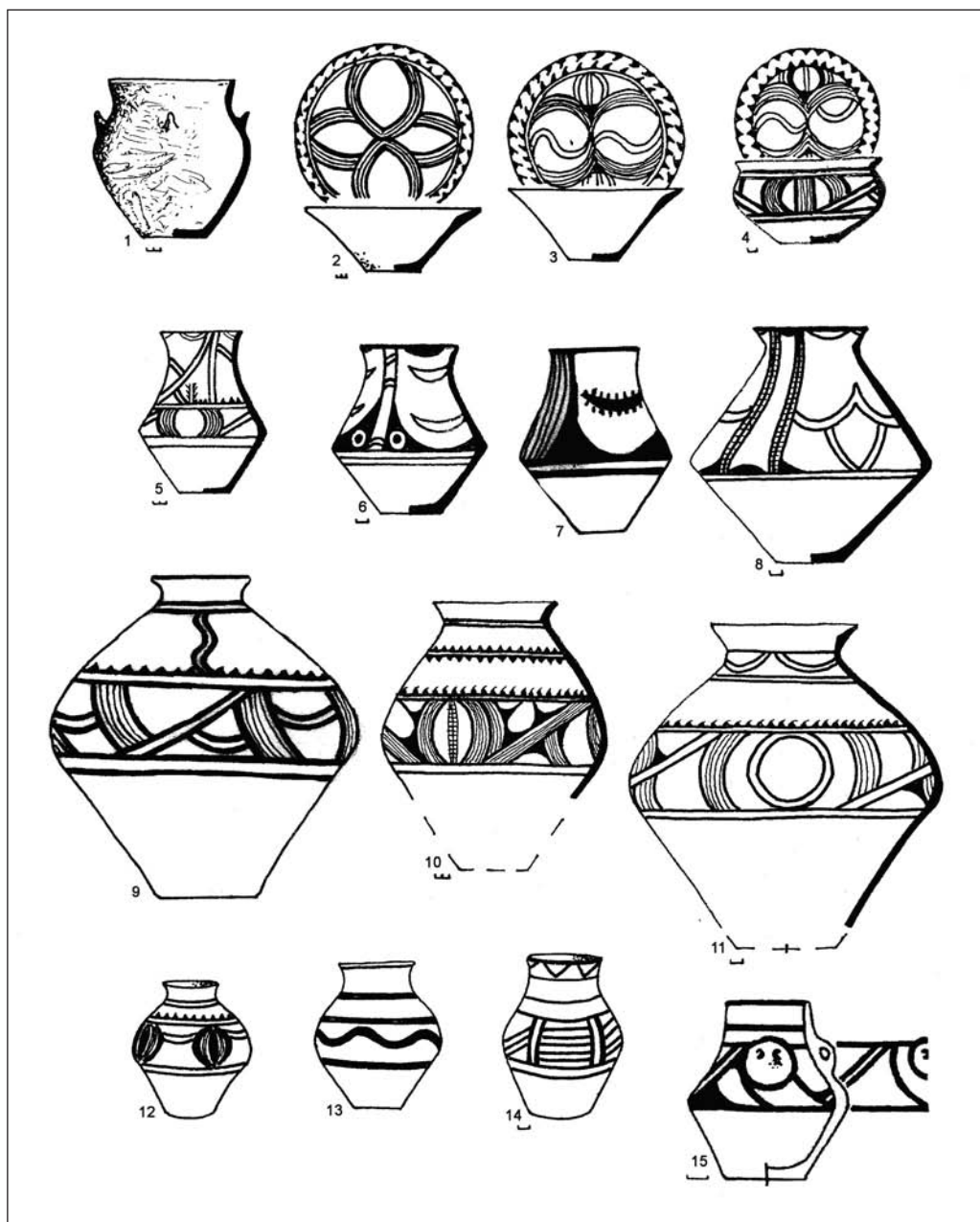


Figure 4.10: Ceramics of Kosenovskaya local group settlements. Settlements: Olkhovets (1, 8, 10, 11); Kosenovka (2–6, 9, 12–15); Bagva (7).

In the middle Dnieper region, Lukashevskaya local group sites are developing practically at the same time. They occupy the territory of the right and left banks of the Dnieper. The settlements have the semi-sunken dwellings, which are characteristic of the northern sites, while wattle-and-daub ground dwellings of simple construction are characteristic of the southern sites. At the same time in the Kolomyischinskaya group, mostly unornamented table crockery dominates the group's ceramic assemblages. In rare instances the vessels (bowls, goblets, sphero-conical vessels, and pots) are decorated with thin traced lines, rows of incisions, and 'herringbone' pattern. Painted ceramics account for only a small percentage. Kitchen pots are ornamented with rows of impressions, a stamp, the impression of a cord, and moulded-on relief elements. There are only several examples of anthropomorphic plastic art objects. The Lukashevskaya sites, descending from the Kolomyischinskaya ones, became the final link in the development of the relatively 'pure' genetic chain of the eastern Tripolye culture, which is traceable from the Precucuteni period (Kruts, 1971: 197–200, 1977: 78–108). The Sofievskaya group sites (end of the CII stage) that replaced them cannot be labelled as direct 'successors' of eastern Tripolye culture.

## The decline

The end of the long history of Cucuteni-Tripolye is connected with the end of the Usatovskaya, Kasperovskaya, Sofievskaya and Gorodsk local groups (the end of the CII/γII stage). During this period, a certain consolidation of the Tripolye cultural groups is observed, possibly conditioned by the appearance (Early Bronze Age) of the Globular Amphora Culture communities (in the northwest), and by the advance into the west of the Pit Grave Culture tribes (from the steppes of the southeast). At the beginning of the third millennium cal BC, Tripolye as an ethno-cultural phenomenon disappears from the historical arena. Its bearers dissolved amongst other ethnicities, leaving no noticeable traces in the archaeological assemblages of Bronze Age sites.

## References

- Bibikov, S. (1966) About the chronological division of Tripolye A and Gumelnița (Aldeni II) type sites in the southwest of the USSR. In B. Rybakov (ed.) *Reports and Briefs of USSR Archaeologists at the VII International Congress of Pre-historians and Proto-historians*: 93–9. Moscow: Nauka (in Russian).
- Buzyan, G. (1994) New late Tripolye sites in the Dnieper's left bank region. In materials of the conference *Ancient Communities of Grain-growers and Graziers of the Northern Black Sea Region in the V Millennium B.C – V Century A.D.*: 70–3. Tiraspol (in Russian).
- Chernysh, E. (1975) The place of Borisovski type settlements in the periodisation of Tripolye culture. *Brief Reports of the Institute of Archaeology of the USSR* 142: 3–10 (in Russian).
- Chernysh, E. (1977) Formation of local variants of Tripolye culture. In report thesis for a conference (ed.): *The Newest Discoveries of Soviet Archaeologists*: 18–21. Moscow (in Russian).
- Chernysh, E. (1981) Formation of the Tripolye-Cucuteni cultural community. *Studia Praehistorica* 5/6: 31–45 (in Russian).
- Chernysh, E. (1982) The Aeneolithic Age of Right Bank Ukraine and of Moldova. In B. Rybakov, V. Masson and N. Merpert (eds) *The Aeneolithic Age of the USSR*: 165–320. Moscow: Nauka (in Russian).



- Comşa, E. (1974) *Istoria comunităţilor culturii Boian*. Bucureşti.
- Cucoş, St. (1999) *Faza Cucuteni B în zona Subcarpatică a Moldavei*. Peatra-Neamţ.
- Danilenko, V. (1974) *The Aeneolithic in Ukraine*. Kiev: Naukova Dumka (in Russian).
- Dergachev, V. (1980) *Late Tripolye Sites*. Kishinev: Shtiintsa.
- Dumitrescu, H. (1957) Contribuţii la problema originii culturii Precucuteni. *Studii şi cercetări de istorie veche*: 8(1–4): 53–69.
- Dumitrescu, V. (1945) La station préhistorique de Traian (dep. de Neamţ, Moldovie). *Dacia*: 9–10: 11–114.
- Dumitrescu, V. (1963) Originea şi evoluţia culturii Cucuteni-Tripolie. *Studii şi cercetări de istorie veche (sc)*: 14(1): 51–74, 14(2): 285–305.
- Gusev, S. (1995) *Tripolye Culture of the Middle Bug Region at the Turn of IV–III Millennia B.C.* Vinnitsa: Anteks-ULGT.
- Kosakivskiy, V. (1990) About some particularities of Tripolian settlement Chechelnyk. In report theses of the first field seminar (ed.) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*: 200–4. Talianki (in Ukrainian).
- Kosakivskiy, V. (1993) The late Tripolian settlement Chuchelnik in the Bug region. In Vinnytsia oblasnyy local history museum (ed.) *Podil's'ka Antiquity*: 97–108 (in Ukrainian).
- Kruts, V. (1971) Lukashevskiy type sites. In: *Archaeology of the Ukrainian SSR* Vol. 1: 197–2000. Kiev: Naukova Dumka.
- Kruts, V. (1977) *Late Tripolye Sites of the Middle Dnieper Region*. Kiev: Naukova Dumka (in Ukrainian).
- Kruts, V. and Ryzhov, S. (1985) Phases of development of the Tomashovskaya-Sushkovskaya group. *Archaeology* 51: 45–56 (in Ukrainian).
- Mantu, C-M. (1998) *Cultura Cucuteni. Evoluţie, cronologie, legături*. Peatra-Neamţ: Muzeul de Istorie Piatra Neamţ.
- Marinescu-Bîlcu, S. (1974) *Cultura Precucuteni pe teritoriul României*. Bucureşti: Acad.
- Marinescu-Bîlcu, S. (1981) I ce zonă şi cum s-a putut face trecerea de la ultima fază A culturii Cucuteni. *Studii şi Comunicări* 21: 27–34.
- Markevich, V. (1973) Neolithic and Aeneolithic sites. In V. Markevich and P. Bynia (eds.) *Archaeological Map of Moldavian SSR* 2: 1–177. Kishinev: Academy of Science of Moldavian SSR. Historical Institute. Shtiintsa (in Russian).
- Markevich, V. (1974) Studies of the Moldovan Neolithic expedition in 1970–1971. In *Archaeological Studies in Moldavia*. 1972: 35–41. Kishinev: Shtiintsa (in Russian).
- Markevich, V. (1981) *Late Tripolye Tribes of Northern Moldavia*. Kishinev: Shtiintsa.
- Movsha, T. (1972) Periodisation and chronology of the middle and late period of Tripolye. *Archaeology* 5: 3–23 (in Ukrainian).
- Movsha, T. (1975) Two parallel lines in the development of the Tripolian ethno-cultural area. In the first report thesis (ed.) *The Newest Discoveries of Soviet Archaeologists*: 69–71. Kiev: Naukova Dumka (in Russian).
- Movsha, T. (1984) The Petreni regional group of Tripolye culture. *Archaeology* 45: 10–23 (in Ukrainian).
- Movsha, T. (1985) The middle stage of Tripolye culture. Copper Age. In *Archaeology of the Ukrainian SSR* Vol. I: 206–23. Kiev: Naukova Dumka (in Russian).
- Movsha, T. (1985a) The late stage of Tripolye culture. Copper Age. In *Archaeology of the Ukrainian SSR* Vol. I: 223–53. Kiev: Naukova Dumka (in Russian).
- Movsha, T. (1988) The Tomasovskaya local group of the Tripolye-Cucuteni community. *Studia Praehistorica* 9: 84–110 (in Russian).

- Movsha, T. (1993) The Tripolye-Cucuteni community – a phenomenon in the ancient history of Eastern Europe (on the question of distinguishing cultures). In T. Shevchenko Scientific Society Proceedings (ed.) *The Works of the History and Philosophy Section* 225: 32–56. Lviv: Research and publishing centre (in Ukrainian).
- Nițu, A. (1980) Criterii actuale pentru clasificarea complexelor ceramici și periodizarea etapelor culturii Cucuteniene. *Cercetări istorice (s.n.)* 11: 135–222.
- Nițu, A. (1984) *Formarea și clasificarea grupelor de stil AB și B ale ceramicii pictate Cucuteni-Tripolii*. Iași: Editura Academiei Republicii Socialiste Romania.
- Ovchinnikov, E. (2003) Tripolye culture in Kanev region. In I. Cherniakov (ed.) *Tripolian Civilization in the Heritage of Ukraine: conference dedicated to 110 anniversary of Tripolye culture discovery*: 272–80. Kiev: Prosvita (in Ukrainian).
- Ovchinnikov, E. (2007) *Tripolian Population of the Lower Ros River Region (BII–CI stages)*. Author's abstract of a candidate of history science dissertation. Kiev (in Ukrainian).
- Passek, T. (1935) La ceramique tripolienne. *Bulletin of the State Academy of Material Culture* 122: 3–165.
- Passek, T. (1949) Periodisation of Tripolian settlements. *Materials and Studies in the Archaeology of the USSR* 10: 5–245 (in Russian).
- Passek, T. (1961) Early husbandry (Tripolian) tribes of the Dniester region. *Materials and Studies in the Archaeology of the USSR* 84: 4–226 (in Russian).
- Polischuk L. (1986) The Cherkasov Sad II settlement. In *Archaeological Discoveries of 1984*: 294. Moscow: Nauka (in Russian).
- Polischuk, L. (1989) Sites of the developed Tripolye period. In E. Patokova, V. Petrenko, N. Burdo and L. Polishchuk (eds) *Sites of Tripolye Culture in the Northwestern Black Sea Region*: 30–49. Kiev: Naukova Dumka (in Russian).
- Popova, T. (1989) About the role of the Dniester region population in the formation of Tripolye culture of the Bug-Dnieper interfluvium. In *Primeval Archaeology. Materials and Studies*: 142–8. Kiev: Naukova Dumka (in Russian).
- Popova, T. (2003) *The Multi-Layered Settlement Polivanov Yar (on the Evolution of Tripolye Culture in the Middle Dniester Region)*. St Petersburg: Lemma (in Russian).
- Ryzhov, S. (1981) Concerning the periodisation of Tripolian settlements of the Petreni group. In the report thesis for the conference (ed.) *Topical Problems of Archaeological Studies in the Ukrainian SSR*: 27–8. Kiev: Naukova Dumka (in Russian).
- Ryzhov, S. (1985) Local-chronological division of the late Tripolye sites in the Bug-Dnieper interfluvium. In report theses (ed.) *3rd Vinnitsa Regional Historical and Regional Natural History Conference*: 47. Vinnitsa: VSPi (in Ukrainian).
- Ryzhov, S. (1990) Micro-chronology of Tripolian settlement near Talianki village. In report theses of the first field seminar (ed.) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*: 83–90. Talianki (in Russian).
- Ryzhov, S. (1991) Study of the Tripolian settlement near Peschane village in the Bug-Dnieper interfluvium. In report thesis (ed.) *3rd Vinnitsa Regional Historical and Regional Natural History Conference*: 15–7. Vinnitsa: VSPi (in Ukrainian).
- Ryzhov, S. (1993a) The Nebelevskaya group of Tripolye sites. *Archaeology* 3: 101–14 (in Ukrainian).
- Ryzhov, S. (1993b) Late Tripolye sites of the Bug-Dnieper interfluvium. In the report thesis (ed.) *Tripolye Culture of Ukraine (on the 100-year Anniversary of Discovery)* international conference: 54–5. Lviv: LvCSTEI (in Ukrainian).

- Ryzhov, S. (1996) The sites of the Shipinetskaya local group (BII–CI stages). In the conference proceedings (ed.) *The Past and the Present of Boykivschina*: 74–7. Lviv: Fira-Liuks (in Ukrainian).
- Ryzhov, S. (1999) On the local-chronological division of the sites of Tripolye culture in the Prut-Dniester region (stages BII–CI). In the report thesis for the conference (ed.) *Problems of History and Archaeology of Ukraine*: 15–6. Kharkov (in Russian).
- Ryzhov, S. (2000) Painted ceramics of the Tomashovskaya local-chronological group of Tripolye culture. *Stratum plus. The Birth of Europe*: 2: 459–73 (in Russian).
- Ryzhov, S. (2002a) Study of Tripolian settlement near the town of Rzhyshech. In Institute of Archaeology NANU (ed.) *Contemporary Problems in Archaeology*: 193–5. Kiev: Naukova Dumka (in Ukrainian).
- Ryzhov, S. (2002b) The Tripolian layer of Ripnitsa I settlement. In Institute of Archaeology NANU and Kolo-Ra society (eds) *Rzhyshech Achaeodrome. Archaeological Research and Experimental Studies of the 2000–2001 Period*: 19–40. Kiev: Academperiodica (in Ukrainian).
- Ryzhov, S. (2003a) Tripolian sites of the Prut-Dniester region (the end of BII stage–CI stage). In *Archaeology of Ternopil Region*: 33–45. Ternopil (in Ukrainian).
- Ryzhov, S. (2003b) Late Tripolye sites of the Bug-Dnieper interfluvium. *Stratum plus* 2 (2001–2002): 187–95 (in Russian).
- Ryzhov, S. (2004) Tripolye sites of the Petreni local group of Podillya region. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (eds) *Tripolye Giant-settlements*: 140–5. Kiev: Korvin Press (in Ukrainian).
- Ryzhov, S. (2005) The Tripolye BII–CI sites of the Prut-Dniester region. In Gh. Dumitroaia, J. Chapman, O. Weller, C. Preoteasa, R. Munteanu, D. Nicola and D. Monah (eds) *Cucuteni. 120 ans des recherches le temps du bilan*: 193–208. Piatra-Neamt: Constantin Matasa.
- Ryzhov, S. (2007) The influence of Shipinetskaya local group on formation of Nebelevskaya group sites in the Bug-Dniester interfluvium. In T. Shevchenko Scientific Society Proceedings (ed.) *The Works of the History and Philosophy Section* 253: 127–139. Lviv: Research and publishing centre (in Ukrainian).
- Ryzhov, S. (2008) The kitchen ceramics of the Tripolian settlement of Talianki. In A. Korvin-Piotrovskiy and F. Menotti (ed.) *Tripolye Culture in Ukraine: the giant-settlement of Talianki*: 140–151. Kiev: Korvin Press.
- Shmaglii, N. (1980) Large Tripolian settlements in the Dnieper-South Bug interfluvium. In *Primeval Archaeology. Research and Findings*: 198–203. Kiev: Naukova Dumka (in Russian).
- Shmaglii, N. and Videyko, M. (2003): Maidanetskoe – a Tripolian proto-city. (2001–2002). *Stratum Plus. The Tripoliada Land* 2: 44–136 (in Russian).
- Shmaglii, N., Dudkin, V. and Zinkovskiy, K. (1973) About the complex study of Tripolian settlements. *Archaeology* 10: 23–31 (in Ukrainian).
- Shmaglii, N., Ryzhov, S. and Dudkin, V. (1985) The Tripolian settlement of Konovka in the middle Dniester region. *Archaeology* 52: 42–51 (in Ukrainian).
- Schmidt, H. (1932) *Cucuteni in der oberen Moldau, Rumänien*. Berlin-Leipzig: W. de Gruyter.
- Shumova, V. and Ryzhov, S. (2005) Tripolye culture of Podillya in light of new data. In L. Zaliznyak (ed.) *Archaeology at Kiev-Mohyla Academy*: 88–106. Kiev: Stilos publishing house (in Ukrainian).
- Sorokin, V. (1989) Cultural-historical problems of tribes of the middle Tripolye period in the Dniester-Prut interfluvium. *Izvestia of the Moldovan SSR Academy of Science* 3: 45–54 (in Russian).

- Titov, V. (1971) Tripolye culture in the chronological system of Neolithic and Copper Age cultures of Southeastern and Central Europe. In the proceedings of VIII Congress International des sciences prehistoriques et protohistoriques, Belgrade, 1971 (ed.). *Les reports et les communications de la delegation des archeologues de l'URSS*: 1–13. Moscou.
- Tkachuk, T. (1990) Ornamentation of the vessels from Tripolian settlements of Talianki and Maidanetskie (the emblematic aspect). In report theses of the first field seminar (ed.) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*: 152–4. Talianki (in Russian).
- Tkachuk, T. (1999) Ceramic complex of Nazvisko III and its importance in the genesis of Tripolye culture on the territory of Halychyna, Bukovyna and Podillya. *Prycarpattia University Bulletin. History* 2: 11–6 (in Ukrainian).
- Tkachuk, T. (2002) Development phases and relative chronology of the Shipnitskaya group of archaeological sites. In T. Shevchenko Scientific Society Proceedings (ed.) *The Works of the Archaeological Committee*: CCXLV: 89–114. Lviv: Research and publishing centre (in Ukrainian).
- Tkachuk T. (2003) Materials for the study of topical problems of Tripolye culture of upper the Dniester and upper Prut region. In *Galych in Pre-History and in Medieval Times*: 57–63. Galych (in Ukrainian).
- Tkachuk T. (2007a) On the question of contacts of Tripolian settlements from the middle Prut region and the northern part of middle Dniester region with the local groups of Romanian Moldova. In T. Shevchenko Scientific Society Proceedings (ed.) *The Works of the History and Philosophy Section* 253: 140–52. Lviv: Research and publishing centre (in Ukrainian).
- Tkachuk, T. (2007b) Ceramic Imports and Imitations in Tripolye culture at the end of period CI–period CII (3900–3300 BC). In M. Videyko and S. Kot (eds) *Tripolye Culture. Research, Discoveries and a World Context*: 147–56. Kiev: VIPOL.
- Todorova, H. (1979) *The Aeneolithic Age in Bulgaria*. Sofia: Sofia-Press (in Russian).
- Tsvek, E. (1975) Study of Tripolian settlements in the South Bug-Dnieper interfluvium. In report thesis (ed.) *The Newest Discoveries of Soviet Archaeologists*: 73–6. Kiev: Naukova Dumka (in Russian).
- Tsvek, E. (1980) Tripolian settlements of the Bug-Dnieper interfluvium (on the question of the eastern area of Cucuteni-Tripolye culture) In *Primeval Archaeology. Research and Findings*: 163–85. Kiev: Naukova Dumka.
- Tsvek, E. (1985) Formation characteristics of the eastern region of the Tripolye-Cucuteni community. *Archaeology* 51: 31–45 (in Russian).
- Tsvek, E. (1989a) The Bug-Dnieper variant of east Tripolye culture (on the problem of distinguishing cultures and Tripolye local variants). In: *Primeval Archaeology. Research and Findings*: 106–17. Kiev: Naukova Dumka (in Russian).
- Tsvek, E. (1989b) Some aspects and problems of Borisovskiy type sites. In report thesis of the XX republican conference (ed.) *Problems of History and Archaeology of the Ancient Population of Ukrainian SSR*: 238–40. Kiev: Naukova Dumka (in Russian).
- Tsvek, E. (1999) The structure of east Tripolye culture. *Archaeology* 3: 28–9 (in Ukrainian).
- Tsvek, E. (2006) *Settlements of East Tripolye Culture (Brief essay)*. Kiev: KP OTI (in Ukrainian).
- Vinogradova, N. (1983) *Tribes of the Dniester-Prut Interfluvium in the Prime Period of Tripolye Culture*. Kishinev: Shtiintsa (in Russian).
- Zaets, I. and Ryzhov, S. (1992) *Tripolian Settlement Klischev in the South Bug Region*. Kiev: MSNIP 'Tellus' (in Russian).

- Zakharuk, Y. (1971) Sites of the Koshilovetskiy type. In *Archaeology of the Ukrainian SSR Vol. I*: Kiev: Naukova Dumka (in Ukrainian).
- Zbenovich, V. (1972) The chronology of late Tripolye. *Archaeology* 7: 3–25 (in Ukrainian).
- Zbenovich, V. (1980) *Bernashevka Settlement in Dniester Region*. Kiev: Naukova Dumka (in Russian).
- Zbenovich, V. (1989) The Early Stage of Tripolye Culture on Ukraine's Territory. Kiev: Naukova Dumka (in Russian).

## Chapter 5

# Settlement System of West Tripolye Culture in the Southern Bug and Dnieper Interfluve: Formation Problems

*Aleksandr Diachenko*

In recent decades, more and more specialists have been turning to the problems of the formation of major Aeneolithic settlements in southeast Europe. Significant sites of West Tripolye culture (WTC) in the Southern Bug-Dnieper interfluvium occupy a special place in this particular topic. It is precisely here, on the outskirts of the Carpathian-Danube region, that settlements ranging from 100 to 350 ha in area were established. It is, furthermore, worth mentioning that it is indeed in this region that East Tripolye cultural settlements (ETC) also grew the largest. The biggest of them, Veselyi Kut, was 117ha in area.

The acuteness of the long-running discussion related to comprehending the phenomenon of the giant-settlements (see Chapter 3) is, in our opinion, largely conditioned by the scale according to which various researchers have interpreted the given phenomenon. These significant sites are often studied in isolation, without consideration of the spatio-temporal system of coordinates in which they existed – of the system that covered entire groups of settlements of different categories. Work on problems associated with the formation of settlement systems that contained large localities is therefore particularly timely.

We will review here the settlement systems of the Vladimirovskaya, Nebelevskaya, Tomashovskaya (the Vladimirovskaya-Tomashovskaya WTC's line of development) and Kosenovskaya local groups, as well as the Kocherzhintsy-Shulgovka-type, located in the forest-steppe zone between the Southern Bug and Dnieper rivers (entire time span: BII–beginning of CII).

These sites represent the complete range of sizes of Tripolye settlements, from the smallest to the largest. The complexity of the study necessitates the following tasks: systematising sources on the micro and macro levels; analysing the dynamics of the development of the demographic situation, including migration; determining structural interconnections between settlements of different categories; and identifying the character of the optimisation of settlement systems. The acquired results must also be compared with already existing archaeological evidence and with data from related disciplines.

## Input data

### Space

Depending on one or another aspect of the study's cognitive tasks, Tripolye settlements can be systematised according to the following interconnected criteria: size, number of structures and building density. The choice of attributes for the systematisation of material depends on the extent of knowledge and the potential that exists for formalising it (Gening *et al.*, 1990: 68). Since the geomagnetic survey, that has allowed for determining at least an approximate number of structures, covered only an insignificant number of locations (one at Vladimirovskaya, three at Nebelevskaya, five at Tomashovskaya, two at Kosenovskaya), and since some lay-outs demonstrate only particular portions of settlements (Fedorovka, Peschane, Talnoe 2) and the cultural layers of some completely recorded sites have been destroyed (Talianki, Maidanetske and Kosenovka), the number of constructions is typically determined as the product of the relative building coefficient multiplied by the area of the settlement. Correspondingly, the direct size of the sites is the indicator that forms the basis for their primary sorting.

The settlements of the period under study are laid out in an oval or round pattern that has more than once been noted by researchers of different areas of Cucuteni-Tripolye expansion (Passek, 1949; Markevich, 1981; Chernysh, 1982). Comparing the sites' area indicators, as used during data compilation for all the currently known studies, with the length and width parameters of the sites mentioned shows that the sizes of round or elliptical settlements were calculated by using the formula for the area of a rectangle (the product of two sides) (Fig. 5.1, a). The area of an oval, however, is derived as a product of  $\pi$  ( $\approx 3.14$ ) and of its semi-axes (Fig. 5.1, b). An example of this equation is the description of the area of a circle ( $\pi r^2$ ). That defines the necessity for more correct estimations of the area indicator.

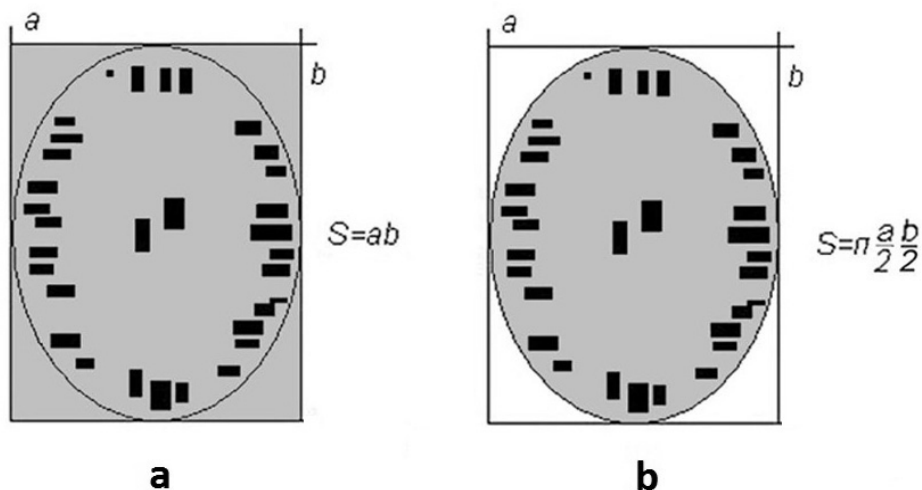


Figure 5.1: Determining the size of the settlements: (a) using the formula for the area of the rectangle; (b) using the formula for the area of the oval.

The sizes of sites with clearly defined lengths and widths were recalculated. Average width indicators were used for settlements shaped as irregular ovals. In cases where geomagnetic or visual plans were present, they were used to define the lengths of the axes.

A number of significant sites were destroyed, so information about their lengths and widths is absent; in those cases, approximate area indicators were considered (Polonistoe, Leshchevka, Popudnya and Talnoe 1). The sizes of these settlements, determined as products of conditionally calculated length and width, were brought in line with the same system by calculating the product of  $\pi$  and of both axes and dividing by four (the product of the axes is converted to the product of the semi-axes).

Since estimating population size in particular time frames necessitates considering only localities that are synchronised with them, we analysed only those settlements whose remains allowed for identifying their positions clearly within the frameworks of the development phases of the local groups.

In this manner, the sample includes significant sites of the Vladimirovskaya (6), Nebelevskaya (23), Tomashovskaya (23) and Kosenovskaya- and Kocherzhintsy-Shulgovka type (12). It is worth mentioning, however, that we have deliberately not considered a number of settlements in the Kanev region, the formation of which was based on settlements of the second phase of the Nebelevskaya group, given the problem with establishing the Kanev local group. According to Ukraine's Tripolye sites register (*Encyclopaedia of Tripolye Civilization*, v.1, 2004: 567–8, 576–8, 632–5, 664–88), the sites involved in the study account for around 30% of the probable general number of WTC settlements (including the Kanev group sites) in the region under study.

Since the Kosenovskaya group is not genetically tied to the Tomashovskaya group that preceded it, meaning that its representatives could have had different spatial organisation traditions, it is justifiable to systematise the Vladimirovskaya-Tomashovskaya line sites, the range of settlement sizes and the numbers of which are larger, and then compare the sizes of the Kosenovskaya group settlements with the intervals that have been determined.

When sorting data according to settlement size, it is customary to use a distribution polygon with length and width, clustering, or range parameters marked on the coordinate axes. The first method, in its most common form, allows for detecting the variability of forms – from a circle to an elongated oval, as seen on the plan. The second and third methods involve singling out groups of settlements based on area measurements. Considering the sampling sizes, it seems more rational to rank the area indicators (Fig. 5.2). That the sites belonged to different phases of development of local groups was not taken into account. As the groups were being categorised, the variation range decreased by the corresponding number of observations (Fig. 5.2, b–d).

As the result of data systematisation by area, the Vladimirovskaya-Tomashovskaya line's settlements were arranged in three groups: small (S): up to 30ha; medium (M): 35–80ha; and large (L): 100–350ha. Group Small is divided into three subgroups: S-1 (up to 10ha), S-2 (10–20ha), and S-3 (20–30ha). Group Medium is also subdivided: M-1 (35–40ha), M-2 (50–60ha), and M-3 (70–80ha). Group Large has two subgroups: L-1 (100–125ha) and L-2 (210–350ha) (Fig. 5.3). The sizes of the Kosenovskaya group sites also correspond to the indicated intervals, but settlements of the L-2 subgroup are not characteristic for this local group.

Since the relative chronology of many sites was deduced on the basis of excavated material, and since the larger settlements provide more such material than the smaller ones, we expect that more field study and clarification of the relative chronologies of the known settlements will



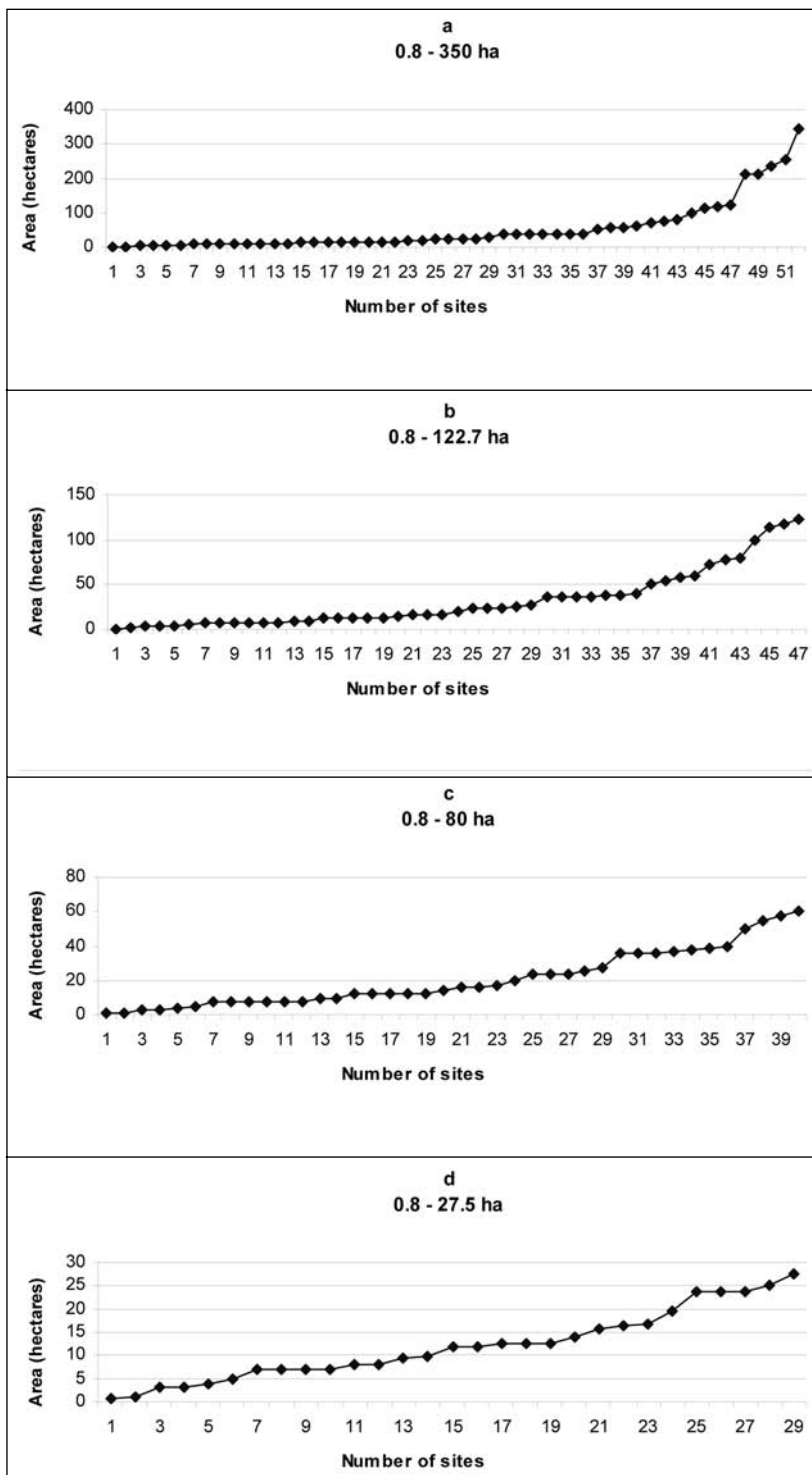
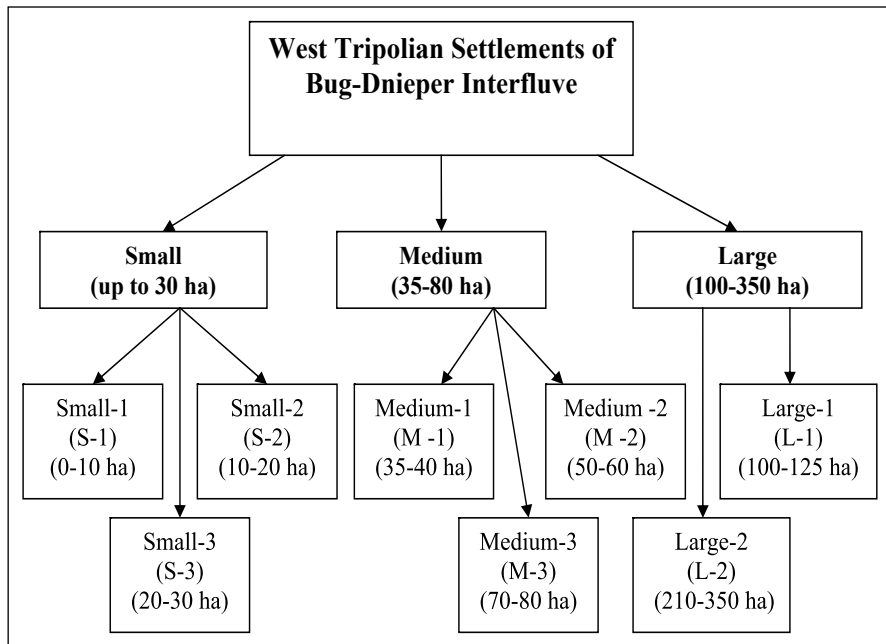


Figure 5.2: Ranging the values of area of settlement characteristics.



*Figure 5.3: Systematizing sites by size characteristics.*

allow for the quantitative filling-in of groups that unite small and medium-sized settlements (Groups S and M-1).

The average indicators for relative building density in the Vladimirovskaya-Tomashovskaya line's settlements and the Kosenovskaya local WTC group were calculated separately with respect to possible differences in demographic potential and traditions of spatial organisation (Table 5.1). Data from a decoded geomagnetic plan of the sites formed the basis for calculations. It is worth mentioning that there was no geomagnetic recording of small settlements in the Kosenovskaya group. A corresponding coefficient acquired for Vladimirovskaya-Tomashovskaya group settlements was therefore conditionally applied to them.

We reviewed the systematisation of sources on the macro level in a specific study (Diachenko, 2009b) and will briefly mention its main points. WTC spatial groups (SG) in the Bug-Dnieper interfluve were defined in a conditionally synchronous sample (within one phase of the local groups' development) based on the distance between the sites' centres. In a conditionally diachronic sample (comparing distances between site centres belonging to chronologically subsequent phases of development of local groups), the Vladimirovskaya-Tomashovskaya lines were united into two spatial variants (SV 1 and SV2). This approach is based on the effort minimisation principle (Zipf's principle), which has received additional grounding within the framework of spatial archaeology (Hodder, 1974; Clarke, 1977; Haggett, 1979; Kolesnikov, 2003). Defined within the framework of a theoretical landscape, expressed exclusively in numerical indicators, spatial variants have quite an obvious border on the region's real archaeological map – the Gniloy Tikich river, beyond which are located only a few sites of the Nebelevskaya group (Fig. 5.4: 1–48 and 49–63).

a)

GROUP	SUB-GROUP	SITE	RELATIVE BUILDING DENSITY (CONSTRUCTIONS PER 1HA)	MEDIUM BUILDING DENSITY (CONSTRUCTIONS PER 1HA)
<i>S</i> ( <i>SMALL</i> )	S-1	Moshurov 1	7	10.1
	S-2	Peschane	10.2	
		Talnoe 2	13.1	
	S-3	<i>No data</i>	?	
<i>M</i> ( <i>MEDIUM</i> )	M-1	Yampol	10.3	10.65
	M-2	Yatranovka 1	11	
	M-3	<i>No data</i>	?	
<i>L</i> ( <i>LARGE</i> )	L-1	Glubochek	9.2	10.15
		Fedorovka	11.1	
	L-2	Maidanetske	8.75	7.4
		Talianki	6	

b)

GROUP	SITE	RELATIVE BUILDING DENSITY (CONSTRUCTIONS PER 1HA)	MEDIUM BUILDING DENSITY (CONSTRUCTIONS PER 1HA)
<i>S</i> ( <i>SMALL</i> )	<i>No data</i>	By analogy with the settlements of Vladimirovsko-Tomashevskaya line	10.1
<i>M</i> ( <i>MEDIUM</i> )	Kosenovka	3.6	3.6
<i>L</i> ( <i>LARGE</i> )	Olkhovets 1	4.4	4.4

Table 5.1: Density of construction in the settlements. (a) Settlements of Vladimirovskaya-Tomashovskaya line of development; (b) Settlements of Kosenovskaya group.

### Space-time

In determining the intensity of contacts between inhabitants of the locations analysed we used the gravity model (Izard, 1966: 439–73, Wilson, 1967; Clarke, 1972, 1977; Hodder, 1972, 1977; Crumley, 1979: 145–50; Haggett, 1979: 466–7). Taking into consideration the results of studies performed with the use of this method and based on materials from the United States and Sweden (Abrams, 1943; Marches, 1953; Haggett, 1979: 466ff), the numerical value of the characteristics obtained was considered a probable indicator of marital migrations. In this context, there is an assumption about the existence of certain bordering indicators, above which marital

connections between inhabitants of different locations are not possible. Additional analysis of abnormally high figures of ‘intensity of population contacts’ indicated their correspondence with chronologically subsequent sites of the same phase of development of local groups (Fedorovka and Vladimirovka, Glubochek and Nemorozh, Talianki and Maidanetske), as pointed out by

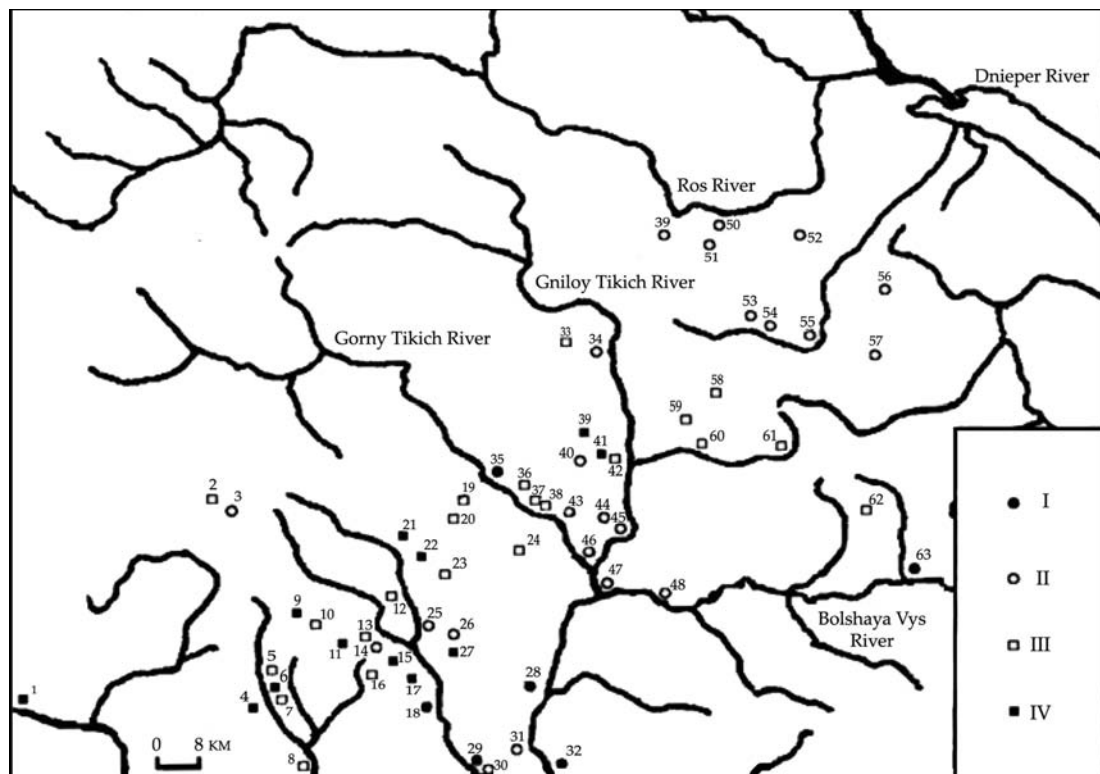


Figure 5.4: Map of the site locations: 1. Zavadovka; 2. Popudnya; 3. Khristinovka 1; 4. Yurkovka; 5. Tomashovka; 6. Cherpovody 1; 7. Cherpovody 2; 8. Gorodnitsa; 9. Kocherzhintsy-Shulgovka; 10. Kocherzhintsy-Pankovka; 11. Sharin; 12. Dobrovody; 13. Sushkovka; 14. Korzhova Slobodka; 15. Korzhova; 16. Yatranovka 1; 17. Olshana Slobodka; 18. Peregonovka; 19. Romanovka; 20. Moshurov 1; 21. Apolianka; 22. Kosenovka; 23. Talianki; 24. Maidanetske; 25. Ostrovets; 26. Nebelevka; 27. Dubova; 28. Vladimirovka; 29. Polonistoe; 30. Tsyurupy; 31. Leshchevka; 32. Fedorovka; 33. Staraya Buda; 34. Nemorozh; 35. Gordashevka 1; 36. Talnoe 1; 37. Talnoe 3; 38. Talnoe 2; 39. Olkhovets 1; 40. Rassokhovatka; 41. Bondarka 1; 42. Bondarka 2; 43. Glubochek; 44. Kolodistoe 1; 45. Kolodistoe 2; 46. Krivye Kolena; 47. Peschane; 48. Yampol; 49. Komarovka; 50. Peremozhintsy; 51. Kviti 2; 52. Valiava; 53. Nezamozhnik; 54. Olshana 1; 55. Khlystunovka; 56. Buda Orlovetskaya; 57. Ksaverovo; 58. Zelenaya Dibrova; 59. Novo-Ukrainka; 60. Chichirkozovka; 61. Vasilkov; 62. Lebedin; 63. Andreevka. Key: I – Vladimirovskaya group settlements; II – Nebelevskaya group settlements; III – Tomashovskaya group settlements; IV – Kosenovskaya group settlements and the settlements of Kocherzhnitsa-Shulgovka type.

Sergei Ryzhov (Ryzhov, 1999). Abnormally high figures obtained for small- and medium-sized or large settlements that were analysed in pairs led to the interpretation of such small settlements as branched-off settlements. These data helped somewhat to define Ryzhov's scheme for the relative chronology of the sites more exactly. One of the three alternative variants of the relative chronology of the Vladimirovskaya-Tomashovskaya line of WTC has been proven (Diachenko, 2008). Later, Vladimirovskaya group settlements were synchronised with earlier Nebelevskaya group settlements, and later Nebelevskaya group settlements were synchronised with early Tomashovskaya group ones. In addition, we defined additional stages within the development phases of the local groups: there were three stages for the Vladimirovskaya group, three for the second phase of the Nebelevskaya group, and two for the third phase of the Tomashovskaya group (Diachenko and Menotti: in press). We must note that the proposed system for the relative chronology of the settlements does not contradict Dergachev's method for the analysis of mega-complex sites (Dergachev, 1980: 19–23), which Ryzhov took as a basis, but only underlines the flexibility and heuristic potential of Ryzhov's scheme. The hypothesis concerning the immanently inherent gravity model of the possibility of acquiring both horologic and chronologic information was previously articulated by Kolesnikov (Crumley, 1979: 150; Kolesnikov, 2003: 128).

### ***Time***

One of the most actively disputed aspects of the problem of large Tripolye settlements is the question of the synchronism of the structures within their boundaries (Zbenovich, 1990: 10; Kruts, 1990: 43–4; Ryzhov, 1990: 87; Videyko, 2004b: 489–90; Gershkovich, 2003: 30ff).

Simulation of the construction process in Maidanetske, based on N. Shmaglii and M. Videyko's observations about site stratigraphy and planigraphy (Shmaglii and Videyko, 2001–2002: 121–2), has allowed for the proposal that there are two possible ways of explaining the chronology of building construction and for reviewing the possibility of the contemporary use of 100% or 78.4% of the buildings (Diachenko, 2008: 14–6). The second variant received confirmation via the modelling of average family make-up (Diachenko, 2010a: 10). Korvin-Piotrovskiy and Tkachuk obtained a similar parameter based on materials from the excavation of Bernashevka II, the Petrenskaya group settlement on the Dniester (Kolesnikov and Tkachuk, 1993). The temporal diversity of the structures in Talianki (Tomashovskaya group, first stage of the third phase) is indicated by the ceramic complex of building No 2 and, possibly, building No 3, which is similar to the ceramic complexes of the Tomashovskaya group's second phase (Ryzhov, 1990: 87). The contemporaneity of 100% of buildings is characteristic of exclusively small settlements that branched off from medium-sized or large settlements.

It is, in this way, possible to propose the following scheme for the distribution of sites in time. The period of functioning of large and probably medium-sized settlements exceeded the length of the local group's development phase. A small settlement's functioning cycle apparently corresponded to the development phase. Finally, branched-off settlements that appeared during stages of substantial growth of large settlements functioned during relatively short periods of time (Fig. 5.5) – presumably 30–35 years.

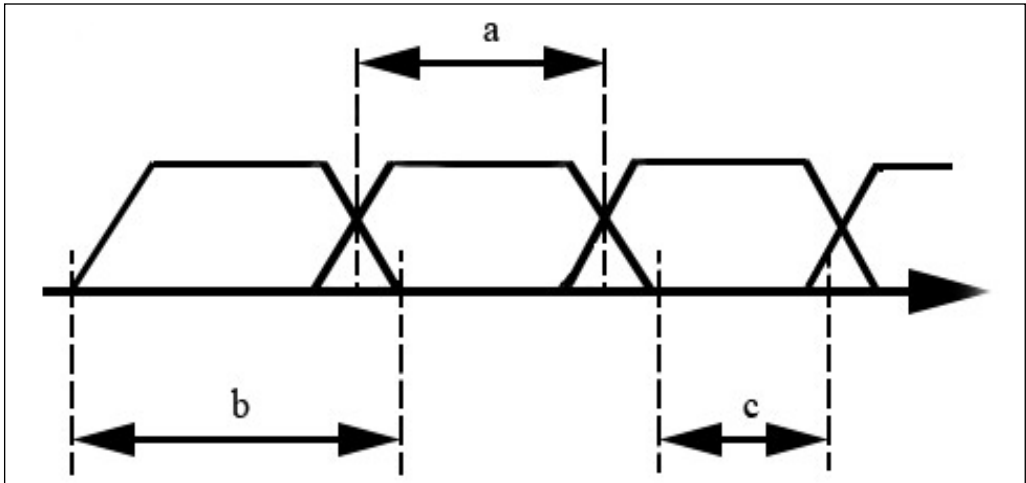


Figure 5.5: Length of the settlement occupation: (a) – the length of the period of development; (b) – the length of the period of functioning of the large settlements; (c) – the length of the period of functioning of branched-off settlements.

### ***Structure of the settlement spatial groups***

Let us look at the distribution of settlement groups, sorted on the basis of area, within the obtained spatio-temporal system of coordinates.

In all the SGs of WTC's Vladimirovskaya-Tomashovskaya group's SV-1, there was not more than one settlement belonging to the M-3, L-1, or L-2 (70–350 ha) subgroups in existence at the same time. Such settlements can be combined with the one medium-sized site (Glubocheh and Yampol – first stage of the Nebelevskaya group's second phase; Dobrovody and Yatranovka 1 – second phase; Maidanetske and Romanovka – second stage of the Tomashovskaya group's third phase) and with several small settlements. In two cases, there is a combination of settlements from the M-2 and M-1 subgroups (Vladimirovka and Peregonovka – second stage of the Vladimirovskaya group; Rassohovatka and Nemorozh – second stage of the Nebelevskaya group's second phase) and of small settlements.

The defining characteristic of the SG of the Vladimirovskaya-Tomashovskaya group's SV-2 is the absence of L-1 and L-2 Vladimirovskaya and Nebelevskaya group settlements. Unlike the SV-1 site, which were found in forest steppe environments with major open areas (Kremenetski, 1991: 110–3; Pashkevich, 2004: 118–20), Nebelevskaya and Vladimirovskaya group settlements of SV-2 gravitate towards mixed-forest landscapes (Kremenetski, 1991: 111; Romanchuk, 1998: 62). Only Valiava, an early Nebelevskaya group site, located slightly further south, reaches 80ha in area. SV-2's Tomashovskaya group settlements of the L-2 (Chichirkozovka) and L-1 (Vasilkov) subgroups in the Bolshaya Vys' river basin collocate with small settlements.

In this manner, it is possible to create the following chains of medium-sized and large settlements that belong to WTC's Vladimirovskaya-Tomashovskaya line.

- SV-1: Fedorovka (Vladimirovskaya group, stage 1) – Vladimirovka and Peregonovka (stage 2) – Nebelevka, Krivye Kolena (Nebelevskaya group, phase 1) – Glubochek, Yampol, Khristinovka 1 (Nebelevskaya group, phase 2, stage 1) – Rassohovatka, Nemorozh, Sushkovka (Nebelevskaya group, phase 2, stage 2 – Tomashovskaya group, phase 1), Dobrovody, Yatranovka 1 (Tomashovskaya group, phase 2) – Talianki (phase 3, stage 1) – Maidanetske, Romanovka (phase 3, stage 2) – Tomashovka, Rakhny Sobovye (phase 4).
- SV-2: Valiava (Nebelevskaya group, phase 1) – Olshana 1 (phase 2, stage 1) – Peremozhintsy (phase 2, stage 2) – Chichirkozovka (Tomashovskaya group, phase 2) – Vasilkov (phase 3).

It is characteristic of the first phase of the Kosenovskaya group to have a combination of L-1 (Apolianka) and M-2 (Kosenovka) settlements with small sites. In the second phase, the large settlement Olkhovets 1 (L-1 subgroup) collocates with small settlements. Kocherzhintsy-Shulgovka type settlements are represented only by small settlements.

## Demographic component

Based on the recording of ceramic imports and imitations, researchers (e.g. Tsvek, Movsha, Kruts, Popova, Ryzhov, Shmaglii and Videyko) have repeatedly mentioned the participation of West Tripolye tribes from the Dniester region and of the East Tripolye population in establishing the material culture of the West Tripolye tribes from the Bug-Dnieper interfluvium. The results of ceramics analysis allowed Ryzhov to detect five major migration waves towards the Bug-Dnieper interfluvium, not excluding the inflow of migrants to the region in between those waves (Ryzhov, 2007b: 445–53, 469). In this context, the problem of the dynamics of the fluctuations of the WTC population in the Southern Bug–Dnieper interfluvium is particularly interesting. One of this problem's key aspects is analysing population size fluctuation on the basis of medium- and large-sized settlements.

To avoid inaccuracies associated with the use of an actively disputed indicator for the average number of inhabitants in one house, the average number of structures in a settlement is used to analyse the dynamics of the demographic development. The latter is determined as a product of site area and of the relative housing coefficient. Let us analyse the tendencies related to changing the number of houses in SV-1 Vladimirovskaya-Tomashovskaya line settlements. The average number of buildings in medium- and large-sized settlements, shown on the graph (Fig. 5.6, a), was summed up for every stage of development of local WTC groups. A second graph (Fig. 5.6, b) reflects changes in the number of synchronic settlements in the M and L groups, sorted according to the area attribute.

Abnormally high growth in number of buildings, associated with a decrease in the number of settlements themselves, is recorded as an attribute of the Nebelevskaya group's first phase and of the second stage of the Tomashovskaya group's third phase. The sharp increase in the number of buildings in the Tomashovskaya group second phase settlements, as reflected on the graph, is possibly related to the absence from the sample of an as-yet unknown (to us) early medium-sized settlement belonging to the Tomashovskaya group. Each abrupt change in the number of houses is accompanied by a subsequent decrease of large settlements and a corresponding increase in the number of small settlements. We observe a decrease in the number of buildings

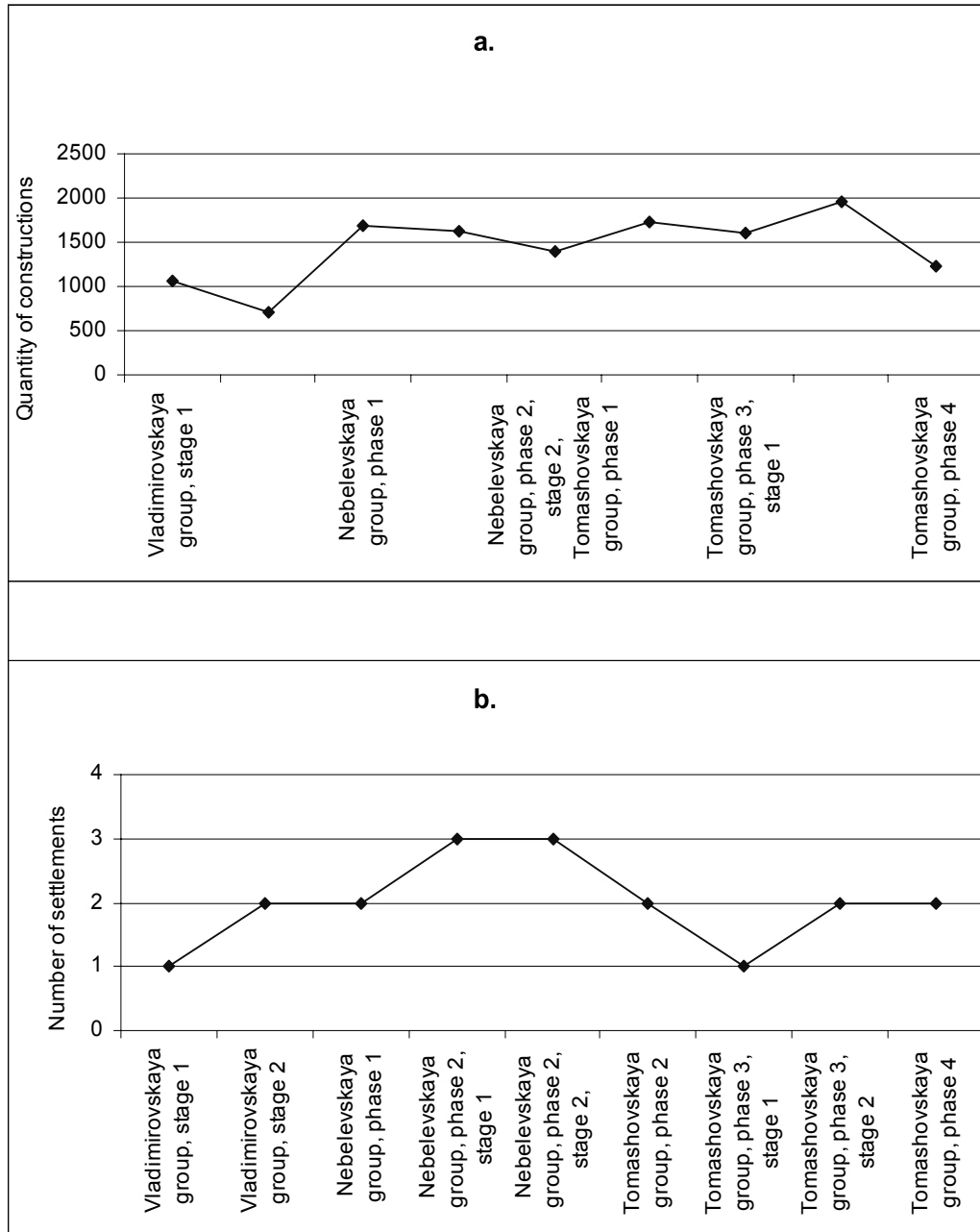


Figure 5.6: Tendencies of demographic development for the WTC Vladimirovskaya-Tomashovskaya line: (a) Quantity of constructions at the settlements of SV 1 of Vladimirovskaya-Tomashovskaya line of WTC; (b) Number of the analyzed settlements.



along with an increase in the number of settlements (Fig. 5.6) and expansion of reclaimed territory towards the north and northwest (Vladimirovka, Khristinovka 1, Rassohovatka and Nemorozh) (Fig. 5.4).

Similar tendencies are also evident in the case of the SV-2 settlements of the Vladimirovskaya-Tomashovskaya line (Valiava – Olshana 1, Chichirkozovka – Vasilkov). As for the Kosenovskaya group, it is possible to retrace a decrease in the number of buildings in medium-sized and large settlements, accompanied by a decrease in the number of settlements themselves (Apolianka, Kosenovka – Olkhovets 1).

The hypothesis that abnormally high growth in number of buildings and, correspondingly, abnormally high population growth is related to the inflow of migrants from other local formations of the Cucuteni-Tripolye community is supported by the ceramics complex of the sites. According to Ryzhov's observations, the period of the Vladimirovskaya group's existence, of the Nebelevskaya group's first phase, and of the Tomashovskaya group's first and third phases, was a period of active influence by people of WTC (for the Vladimirovskaya group) and by the population of the Dniester and Bug regions on the establishment of material culture among the tribes of WTC's Vladimirovskaya-Tomashovskaya line (Ryzhov, 1993: 110–2, 2000: 469–71, 2007a, 2007b: 136–7, 139). It is important to note that migrants from the Dniester-Bug region completely integrated into the populations of medium- and large-sized settlements, and did not leave distinct Dniester or Bug-like complexes.

The appearance of large Vladimirovskaya, Nebelevskaya, and Kosenovskaya group settlements signifies the beginning of the reclamation of territories on both the macro-regional level (Fedorovka, Apolianka, Kosenovka) and the micro-regional level (Valiava, Khristinovka 1, Rassohovatka). The migration theory for the formation of Tripolye settlements is also supported by the distinctly noticeable tendency for their numbers to increase in the forest-steppe zone, from west to east (as the Cucuteni-Tripolye community's area expanded). The largest settlements in the north of the Republic of Moldova (Markevich, 1981: 14–54) and in the Northwestern Black Sea region (after recalculating their areas and applying the oval area formula) reach 30–40ha. In the Bug region, the largest WTC settlements are 40–60ha in area (Kryshtopovka, Yaltushkov 1, Chechelnyk). The largest WTC sites, as noted earlier, are located in the Southern Bug–Dnieper interfluvium. Finally, WTC settlements located in mixed-forest landscapes do not exceed 80ha in size. The tendencies towards increased size are absolutely identical for ETC sites. The latter, however, do not reach the sizes of the West Tripolye settlements (Tsvek, 2006: 13–56).

In this manner, proceeding from Neustupný's typology, the WTC population's mobility can be attributed to the 'bd' type (colonisation – reclaiming territory that was unpopulated earlier) and the 'bb' type (internal colonisation – the population's migration over relatively short distances) (Neustupný, 1984: 113–4).

According to V. Kruts' calculations, during the entire existence of Cucuteni-Tripolye sites in the Prut-Dniester interfluvium, there was an artificially maintained 'reserve' of unused territory due to the outflow of the 'excess' population's to adjoining regions (Kruts 1993: 32). From the demographic point of view, this 'excess' could not have been the result of uncontrolled reproduction of the population resulting from very high rates of natural increase (Hassan, 1978: 67–9; Neustupný, 1984: 112–3). The outflow should rather be seen as a result of decreased resource potential in the settled territory. It would be quite logical to see this fact as a reason for migration which, in turn, served as a way to relieve the demographic pressure

on the region. Therefore, diminishing resource potential was apparently pre-conditioned by climate factors.

According to voluminous palaeo-climatic data collected by Anthony, the period 4200–4100 BC was characterised by rapid climate change. The first cold years, between 4120 and 4040 BC, ‘were the portent of an acutely cold period of 140 years in length, lasting from 3960 till 3821 BC, when temperatures were colder than ever before in the previous two thousand years.’ In the 4200–3900 BC interval, according to the research, over 600 tells of the Gumelnița, Karanovo VI, and Varna cultures were burnt down. The regeneration of forest in Germany ceased, leading to the expansion of open spaces. A mild climate re-established itself after 3760 BC (Anthony, 2007: 227; Biebaev, 2010: 222). There are identical climate data for the flat territory of Western Ukraine. The period characterised by a significant fall in temperature is known to be 5180±80 BP (4230 [7%] 4180–4170 [88.4%] 3790 BC) (Bezusko and Kotova, 1997: 142). On the regional level, these climate fluctuations are marked by eustatic fluctuations of the level of the Black Sea. The first regression phase of the mid-calamitic period, according to V. Karpov’s chart (Bruyako and Sapozhnikov, 2009: 306; Diachenko, 2010b: 43–5), corresponds with the aridisation of the climate noted earlier.

During the existence of Tomashovskaya group settlements, an ‘improvement’ of climate conditions occurred in the interval between the first and second phases of mid-calamitic regression (Diachenko, 2010b: 43–4). The functioning of two large settlements in two SVs of the Tomashovskaya group without distinct tendencies towards decreasing numbers could, on the one hand, have been caused by a favourable environmental influence on agriculture, and on the other hand, by two tribes competing for control over the territory.

Aridisation of the climate during the second phase of regression of the mid-calamitic period is associated with the outflow of the Tomashovskaya group’s population from the region and, after some chronological lacuna (Kruts, 1989: 130–1; Ryzhov, 2007b: 469; Diachenko, 2009a: 291–8), the appearance of the Kosenovskaya group population.

It is important to mention that the period of Cucuteni B–Tripolye BII and CI was characterised by a stabilisation of the military and political situation that was reflected in the almost complete absence of fortified localities in the Cucuteni–Tripolye community (Dergachev, 2007: 36–41). This allows us to view migration as having been driven by internal factors (overpopulation caused by climate conditions), and not external ones (military expansion).

We have, therefore, substantial grounds for associating the medium- and large-sized Vladimirovskaya, Nebelevskaya and Kosenovskaya local group settlements of WTC with the migration behaviour of the population. The formation of the settlements in question was the result of the arrival of a new population, with subsequent compact habitation (Fedorovka, Apolianka, Kosenovka), or of migrants flowing into the population that already existed in the region of the settlements (e.g. Nebelevka and Maidanetske). A slight decrease in number of the large Tomashovskaya group settlements, accompanied by the establishment of the small settlements (first phase–first stage of the third phase for SV-1, first–second phase for SV-2) can be associated with competition between the two tribes with nearby material culture complexes that were in control of the territory.

## From settlements' spatial groups to settlement systems

Unlike spatial groups defined by the formal characteristics of territorial proximity, settlement systems are characterised by the presence of hierarchical structural interconnections between particular localities. The problems of differentiating between the functioning of settlements and of the character of the optimisation of the settlement system deserve particular attention.

Work on these problems was performed by applying spatial analysis methods. One of the main methodological postulates on which those methods are based is the hypothesis that economic and socio-political functions of settlements are reflected in their sizes.

### *Distribution of localities according to the range-size rule*

To analyse the functional differentiation of the settlements, we processed their distribution data according to the range-size rule. According to observations of Auerbach, defined in the early twentieth century, the population of  $n$ -city comprises  $1/n$  of the largest of cities. This reverse dependency is called the range-size rule, or the Auerbach rule (Haggett, 1979: 410). It is expressed as an equation as follows:

$$P_n = P_0 n^{-1}$$

where  $P_n$  = population size of a city of a corresponding range,  $P_0$  = population size in the largest city,  $n$  = range of the given city in the sequence of the cities. In graphic expression, the 'classic' dependency between the sizes and ranges is observed as an interval drawn at a 45° angle to a horizontal line (Haggett, 1979: 410–1).

We should emphasise that the results obtained by using this method allow for determining not the exact functions of the settlements, but the differences in their assortment and volume. Calculations were performed separately for each of the localities' SGs. SGs containing only one site were not taken into account.

According to the Auerbach rule, there are three types of distribution of inhabited points recorded. The *primary distribution type* (with the largest settlement in the dominating position) is characteristic of SGs of Tomashovskaya group settlements with centres in Sushkovka, Dobrovody, Maidanetske, Tomashovka and Chichirkozovka, and also for SGs of Nebelevskaya group settlements with Nebelevka, Valiava and Glubochek as centres.

The *binary distribution type* (in which two large localities dominate) is attributed to SGs of settlements with centres in Vladimirovka and Peregonovka (Vladimirovskaya group), Rassohovatka and Nemorozh (Nebelevskaya group), Apolianska and Kosenovka (Kosenovskaya group), and Sharin and Cherpovody 1 (Kocherzhintsy-Shulgovka type). It is interesting that with the exception of the aforementioned SG of the Kosenovskaya group of settlements, the appearance of the SGs of this distribution type corresponds to the decrease in number of earlier large settlements. The only case of the tertiary type, SG of settlements with centres in Olshana 1, Buda Orlovetskaya, and Ksaverovo (the first stage of the second phase of the Nebelevskaya group) also correlates with the decline of the earlier settlement, Valiava.

In this manner, the formation of SGs of settlements with binary and tertiary (with three dominant settlements – not described here) distribution *types* should clearly be associated with a region's reclamation processes.

### *The nature of optimisation of settlement systems*

Analysis of structural connections between settlements of different ranges was possible with the application of central place theory (CPC). This theory, in its various modifications, is the most common model for geographic and archaeological studies, describing the particularities of communities' economic activity on the level of groups of localities (Smith, 1974: 168–73; Clarke, 1977: 17–28; Hodder, 1977; Crumley, 1976: 59–66, 1979: 151–7; Haggett, 1979: 415–23; Kolesnikov, 2003: 39–42; Minc, 2006: 82–91). Determining the character of optimisation of settlement systems offers the opportunity to reconstruct the most common characteristics of a population's economic and, therefore, social and political organisation.

We used the CPC symbolic expression of Beckmann. The researcher's works rest on a hypothesis about the existence of particular proportions between the size of a city and the size of its population, with a corresponding 'urbanisation coefficient.' The dependency between the number of inhabitants in a settlement, its size, and its rank in a system's spatial hierarchy with a constant  $K$  – value, is rendered as follows:

$$P_r = \frac{LCk^{r-1}}{(1-L)^r}$$

where  $P_r$  = number of inhabitants in a locality on the  $r$  hierarchy level,  $L$  = share of the serving population,  $C$  = number of inhabitants in the smallest serviced locality, and  $k$  = proportion index (Beckmann, 1958: 243–4).

The proportion index  $k$  is determined as the number of dependent places that are serviced from one central place (Beckmann, 1958: 244). Since the model exclusively describes hierarchal spatial systems,  $r$  – the indicator of range in the localities' hierarchy – cannot be equal to 1 (in this case,  $L$ -value will be equal to 1 and the dependency denominator will be equal to zero). The population of the central place, however, should satisfy not only the demand of its dependent places, but also its own internal demand, which, in compliance with the formula, allows for correlating the value of the  $K$ - indicator equal to 1 to the isolated state model of Von Thunen (for more details, see Haggett 1979: 438–44; Kolesnikov, 2003: 26–30). In this way, following Haggett, we can point at the compliance of proportion index  $k$  in Beckmann's symbol model with  $K$ -indexes in CPC by Kristaller and Lesh.

By disposing data about three or four parameters, it is possible to reconstruct yet another two or three unknown parameters, thus opening up the model's enormous heuristic potential. It is necessary to note that the symbolic expression of the model, unlike the initial Lesh CPC modification, does not have such strictly limited localisation of settlements in space.

In calculations, we used the number of structures in the 'servicing' and 'serviced' localities. The SGs of settlements with centres in Glubochek and Maidanetske were used for analysis.

The number of structures in the servicing and in the smallest of serviced places ( $P$ ,  $C$ ) belonged to the known values of variables in this connection. In considering Tripolye settlements that are unknown or that were not included in the sample, we used possible values of the variable describing the number of levels in the spatial hierarchy ( $r$ ), ranging from two to eight. The lower limit of this interval corresponds to the minimal number of levels in hierarchal spatial

systems and the upper limit to the total number of settlement subgroups identified for WTC sites in the region. The  $k$ -proportion coefficient value is a desired index.

Since the value of the variable corresponding to the proportion of buildings in the servicing place ( $L$ ) is unknown, possible numerical values for the ratio of the proportions of the populations of the 'servicing' to the 'served' locations were calculated (Table 5.2). The results obtained show the impossibility of the functioning of spatial systems that include the 7–8 hierarchy levels with 'servicing' localities where the population proportion is over 60%. Spatial structures containing 5–6 levels of hierarchy cannot function if the proportion of the 'servicing' population exceeds 70%, and so on (Table 5.2).

Beckmann's formula is as follows:

$$\frac{(1-L)^r}{L} = \frac{C_1 k^{r-1}}{P_r},$$

We obtain a set of polyvariant mathematical models, each providing for the presence or absence of a particular number of 'servicing' places in the selection. Comparing this data with the real archaeological map of the region, which also includes settlements that were not included in the selection, allows for verifying the acquired models.

SHARE OF THE POPULATION OF THE 'SERVICING' SETTLEMENTS	CORRELATION OF THE SHARE OF 'SERVICING' POPULATION AND 'SERVICED' SETTLEMENTS ON THE DIFFERENT LEVELS (r) OF SPATIAL HIERARCHY						
	r = 2	r = 3	r = 4	r = 5	r = 6	r = 7	r = 8
$L = 0.1$	8.1	7.29	6.56	5.9	5.31	4.78	4.3
$L = 0.2$	3.2	2.56	2.05	1.64	1.31	1.05	0.84
$L = 0.3$	1.63	1.14	0.8	0.56	0.39	0.27	0.19
$L = 0.4$	0.9	0.54	0.32	0.19	0.12	0.07	0.04
$L = 0.5$	0.5	0.25	0.13	0.06	0.03	0.02	0.01
$L = 0.6$	0.27	0.11	0.04	0.02	0.01	0	0
$L = 0.7$	0.13	0.04	0.02	0	0	0	0
$L = 0.8$	0.05	0.01	0	0	0	0	0
$L = 0.9$	0.01	0	0	0	0	0	0

Table 5.2: Possible variants of correlation between the shares of the 'servicing' and 'served' population.

The closest to the existing empirical results were the variants that describe the character of optimisation of the settlement systems with  $K$ -value, with  $K=2$ . The sample does not have one or two small settlements of the S-1 subgroup in the three-level settlement system that has Maidanetske as its centre. The four-level settlement system with Glubochek as its centre is completely represented in the selection.

We emphasise that the number of levels in the spatial hierarchy obtained by applying Beckmann's symbol model absolutely corresponds with the number of settlement groups within the SG, when sorted by the area attribute.

Taking into account the data that complement our idea about the number of settlements in the analysed settlement systems, the latter can be attributed to a dendral type of settlement. This type of settlement system is characterised by natural direct exchange with minimum volumes, weak distribution of labour and an ill-defined social-spatial hierarchy. Production and exchange are undeveloped and primarily concentrated in places inhabited by elites (Smith, 1974: 177–9; Minc, 2006: 86). This interpretation is not contradicted by the results obtained by applying the CPC's symbolic expression. There is an obvious mildly distinct administrative (social-spatial) population hierarchy; the optimal figures do not reach the level attributed to market (well-developed exchange) system optimisation. The gravitation of the central settlements towards southern or western peripheral territories, as undertaken by separate population groups, is quite indicative. This particularity of spatial organisation can be characteristic of a tree-like settlement disposition, in which all the settlements at different hierarchal stages depend on the centre. The centre, actually located on the periphery, performs its 'external affairs' functions among the population (Smith, 1974: 178–9). This particularity of the macrostructure of the settlements, however, is characteristic of better-developed economic systems, typically described with a  $K$ -value of  $K=3$ , or  $K=4$ . The optimisation of the transportation system is determined by the need to export raw materials or ready products (mainly agricultural ones) that the populations of dependent places produce to the central point. The optimisation of the market system is associated with providing the population with products that come from the outside via export–import centre for those products. Examples of such spatial systems with  $K$ -value equal to 3 are Aztec empire settlements and European Bosphorus settlements (Minc, 2006: 96–111; Kolesnikov, 2003: 125–6).

Referencing Barry and Johnson, Smith points out that the dominating transport expenses in structures with the optimisation type described as  $K$ -value equal to 2, leave agricultural zones non-serviceable by market centres. The researcher finds that the reasons for the establishment of such settlement zones in the Mid-west of the contemporary United States are the surplus of land, widely spread-out population, high transportation expenses, and, in general, spatial structures, described as  $K$ -value equal to 2, correlating with the agricultural and raw material appendages of better-developed economic systems (Smith, 1974: 175–6). Just like that region, the Bug-Dnieper interfluvium of the Tripolye period was characterised by an abundance of land and a sparsely scattered population. Weak transportation network development is analogous to high transport expenses. Meanwhile, one should not ignore the colossal difference in the development of agricultural productivity, which hardly allows us to identify the economics of WTC people in the analysed region with the agricultural appendage of the economy in any other local formation of the Cucuteni-Tripolye cultural-historical region (CHR). This allows us to identify, with a high level of probability, the spatial structures described with  $K$ -value as  $K=2$  with the settling of new regions (or with the remnants of these processes).

The reconstructed weak development of exchange relations and of transportation channels requires additional comment addressing the hypothesis about the necessity of imports for WTC's Bug-Dnieper interfluvium flint users (Videyko, 2004a: 270). Considering the newly explored flint mines in the Bolshaya Vys' river basin, which are comparable in quality to Volyn' flint (Zalizniak *et al.*, 2007; Zalizniak *et al.*, 2008), the actual raw material import volumes from Dniester and Volyn' remain questionable. We should note that Tsvek and Movchan (Tsvek and Movchan, 1997, 2005; Tsvek, 2005) have studied the Bolshaya Vys' river basin flint mine shafts and the workshops where the flint was processed. As Nikolova and Pashkevich have noted, the harvesting with sickles of glumiferous wheat cultivated by the Tripolye population was unproductive. Another specialised wooden tool, called the *shamky/shanky/shnaky*, was better suited for that task (Nikolova and Pashkevich, 2003: 94). The use of such tools surely did not require massive imports of raw flint or of ready-made products. The absence of such an institution as the market, in itself, does not necessarily mean the absence of external exchange operations, which are inherent to humankind at all stages of development (Polanyi, 2002: 72–81). Apparently, imported products made of flint, just like copper items (located at Bug-Dnieper interfluvium WTC and ETC sites, and mainly represented by jewellery) were, for the most part, prestige items rather than products with solely utilitarian functions. Such products most likely circulated as presents – a characteristic of the institution of the prestige economy (Sherratt, 1972: 508–10; Pavlenko, 1989: 82–4; Semenov, 1993: 57; Chapman, 2010: 85–6). In general, there are grounds for thinking that the economy of West Tripolye culture groups was based on three main principles (according to Polanyi): reciprocity (mutual aid), redistribution (of surplus), and home economics (production for the satisfaction of personal needs).

The consistent patterns defined in the character of optimisation of settlement systems allow us to discuss the extremely extensive character of the exploration of natural resources of the WTC groups in the Bug-Dnieper interfluvium. This hypothesis corresponds completely with Kruts' opinion about the necessity of a population's transition to a new place due to the development of the adjoining territory's resources (Kruts, 1989: 124–9). It is worth mentioning Saiko's important observation that the development of the region's Tripolye population was conditioned by almost unlimited possibilities for spatial expansion, and, in particular, by the possibility of removing demographic pressure (Saiko, 1990: 20).

Conclusions about the weakly expressed administrative function of large settlements are supported by the absence of monumental administrative buildings and cult constructions, public grain storages, tall monumental architecture, and a writing system; the population was characterised by weak property differentiation.

Proceeding from the three- and four-level spatial hierarchy of WTC settlements in the Bug-Dnieper interfluvium, and given the two-level spatial-political hierarchy, the social structure of the settlements can be considered to be a complex chiefdom, or a 'village variation of proto-politarch society,' according to Yuri Semenov (Earle, 1997: 3). Sometimes, the entire proto-politarchy can be as big as one village, but in this case the latter is inevitably divided into 'blocks.' The community role in this case is played not by the village as a whole, but by each of the blocks (Semenov, 1993: 61–2). The last hypothesis is consonant with Kruts' and Videyko's ideas about the compliance of small villages with the construction structures of larger settlements (Kruts, 1989: 128; Videyko, 2002: 76–7). If ongoing field studies do not prove the presence of dependent localities that include medium-sized settlements in SG with Fedorovka, Khristinovka 1, and Talianki as centres, then the localities in question are examples of the congruence of proto-politarchy and villages.

Note that the term ‘complex chiefdom’ was first used in Videyko’s works (at the beginning of the 1990s) to describe the social structure of the Tripolye population in the Bug-Dnieper interfluvium. Videyko’s Tripolye ‘complex chiefdom,’ however, according to its characteristics, rather corresponds to the concepts of the ‘stratified society’ or the ‘centralized archaic state’ (Kristiansen, 1997). Our understanding of the social-political organisation of the WTC population and its phased development level is most closely allied with Masson’s reconstructions (Masson, 1990: 8–9).

## Discussion and conclusions

The cold and dry climate period characteristic of Tripolye BI/II–BII and the transition from Tripolye CI to CII was the reason for the decreased resource potential of the occupied territory. One of the results of climate change was population expansion from the Prut-Dniester interfluvium to the neighbouring regions.

There are two forms of migration towards the Southern Bug-Dnieper interfluvium that can be traced. The newly arrived population either settled separately or integrated into the populations of the settlements that already existed in the region. The formation of medium (Valiava, Khristinovka 1, Kosenovka) or large-sized settlements (Fedorovka, Apolianka) is characteristic of the first form of migration. The second form is defined by an abnormally high increase in the number of buildings in large settlements (Nebelevka, Maidanetske). Later on, processes of decline took place in the Vladimirovskaya, Nebelevskaya and Kosenovskaya local group settlements and were accompanied by the appearance of the small to middle size settlements. The weak expression of the segmentation process among the largest settlements of the first–third development phase of the Tomashovskaya group requires additional analysis. The reason for this was possibly a competition between two tribes for territorial control.

The consistent patterns we have determined allow us to connect the establishment of the largest Cucuteni-Tripolye community settlements with the action of migration mechanisms; the tendency among the largest settlements of the community to increase in area from west to east testifies in favour of this pattern.

Conditioned by the decreasing numbers of medium- and large-sized settlements, the formation of settlement systems with a binary and tertiary distribution type apparently promoted the more effective use of land resources. The character of optimisation of settlement systems with primary distribution type, described with  $K$ -value as  $K=2$ , also correlates with the development of new territories.

A character of optimisation of settlement systems that exclusively reflects the extensive development of natural resources is noted for the entire period of WTC’s existence in this region (500–600 years). This allows us to join a number of other researchers (Kruts, 1989, 2003; Zbenovich, 1990; Masson, 1990; Saiko, 1990; Korvin-Piotrovskiy, 2003; Monah, 2003; Otroshchenko, 2003, 2009; Tolochko, 2005, 2007; Klein, 2009) who consider the interpretation of large Tripolye settlements as proto-cities or early cities with scepticism (this idea was supported by Shmaglii (†) and still continues to be endorsed by Videyko).

In this way, the Southern Bug-Dnieper interfluvium during the Tripolye period was noted for its abundance of free lands and sparsely scattered population settlements. WTC settlement systems in the region are characterised by direct natural exchange in minimal volumes, weak



transportation channels, and weakly developed administrative functions on the part of central localities. Formation of such settlement systems and of the large settlements that were a part of those systems was solely pre-conditioned by the colonisation of a peripheral region. The quite highly developed social organisation of the population, a type of organisation that could be compared to a complex chiefdom or proto-politarchy, does not contradict this.

## References

- Abrams, R. H. (1943) Residential propinquity as a factor in marriage selection: fifty year trends in Philadelphia. *American Sociological Review* 3: 288–94.
- Anthony, D. W. (2007) *The Horse, the Wheel and Language. How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World*. Princeton: Princeton University Press.
- Beckmann, M. J. (1958) City hierarchies and the distribution of city size. *Economic Development and Culture Change* 6(3): 243–8.
- Bezusko, L. and Kotova, N. (1997) The culture of non-shaded-ribbon ceramics in Ukraine, and its natural surroundings. In *Eastern Europe's Archaeology and Ethnology (Materials and Studies)*: 140–153. Odessa (in Russian).
- Bicbaev, V. (2010) The Copper Age cemetery in Giurgiulești. In D. Anthony (ed.) *The Lost World of Old Europe*: 212–24. Princeton and Oxford: Princeton University Press.
- Bruyako, I. and Sapozhnikov, I. (2009) Fluctuations of the sea level at the end of the Pleistocene and first half of the Holocene (approx. 40,000 to 4,000 years ago) and the archaeology of the north-western Black Sea region. *Stratum Plus. The Copper Age* 2: 299–314 (in Russian).
- Chapman, J. (2010) Houses, households, villages, and proto-cities in south-eastern Europe. In D. Anthony (ed.) *The Lost World of Old Europe*: 75–89. Princeton and Oxford: Princeton University Press.
- Chernysh, E. (1982) Eneolithic of the Right-Bank Ukraine and Moldavia. In B. Rybakov (ed.) *Aeneolith of USSR*: 156–320. Moscow: Nauka (in Russian).
- Clarke, D. L. (1972) Models and paradigms in contemporary archaeology. In D. L. Clarke (ed.) *Models in Archaeology*: 1–60. London: Methuen.
- Clarke, D. L. (1977) Spatial information in archaeology. In D. L. Clarke (ed.) *Spatial Archaeology*: 1–32. London-New York-San Francisco: Academic Press.
- Crumley, C. L. (1976) Toward a locational definition of state systems of settlement. *American Archaeologist, New Series* 78(1): 59–73.
- Crumley, C. L. (1979) Three locational models: an epistemological assessment for anthropology and archaeology. In M. B. Schiffer (ed.) *Advances in Archaeological Method and Theory* 2: 143–74. New York: Academic Press.
- Dergachev, V. (1980) *Late Tripolye Sites*. Kishinev: Shtiintsa (in Russian).
- Dergachev, V. (2007) *On Sceptres, Horses, and War. Essays in Defense of M. Gimbutas' Migration Concept*. St Petersburg: Nestor-Istoria (in Russian).
- Diachenko, A. (2008) Large settlements in the system of relative chronology of West Tripolye sites in the Bug-Dnieper interfluvium. In S. Sanzharov (ed.) *Materials and Studies in Archaeology of Eastern Ukraine* 8: 10–9 (in Russian).
- Diachenko, A. (2009a) Concerning the issue of relative chronology of West Tripolye Culture sites in the Tomashovskaya and Kosenovskaya local groups (primary-demographic aspect). In S. Bibikov and *Primeval Archaeology*: 291–8. St Petersburg: IHMC RAS (in Russian).
- Diachenko, A. (2009b) Spatial organization of West Tripolye society in the Southern Bug–Dnieper interfluvium. *Magisterium. Archaeological Studies* 36: 19–26 (in Ukrainian).

- Diachenko, A. (2010a) *Population of Tripolye in the Bug-Dnieper Interfluvium: spatiotemporal analysis*. Synopsis of a PhD thesis. Kiev: Institute of Archaeology UNAS (in Ukrainian).
- Diachenko, A. (2010b) Heuristic fluctuations of the Black Sea level and population development dynamics in the Cucuteni-Tripolye community. *Stratum Plus. Images of Distant Ancestors* 2, 37–48 (in Russian).
- Diachenko, A. and Menotti, F. (in preparation) The gravity model: monitoring the formation and development of the Tripolye culture giant-settlements in Ukraine
- Earle, T. (1997) The evolution of chiefdoms. In T. Earle (ed.) *Chiefdoms: Power, Economy and Ideology*: 1–15. Cambridge: Cambridge University Press.
- Encyclopedia of Tripolye Civilization* (2004) (vv. 1–2). Kiev: Ukrpoligraphmedia (in Russian).
- Gening, V., Bunyatyan, E., Pustovalov, S. and Rychkov, N. (1990) *Formalized-Statistical Methods in Archaeology (Analysis of Burial Sites)*. Kiev: Naukova Dumka (in Russian).
- Gershkovich, Y. (2003) The ‘abandoning the house’ ceremony: archaeological features and historical-ethnographic parallels. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (eds) *Materials from the international conference ‘Tripolye giant-settlements’*: 28–31. Kiev: Korvin press (in Russian).
- Haggett, P. (1979) *Geography: A Modern Synthesis*. Moscow: Progress.
- Hassan, F. A. (1978) Demographic archaeology. In M. B. Schiffer (ed.) *Advances in Archaeological Method and Theory* 1: 49–90. New York: Academic Press.
- Hodder, I. (1972) Locational models and study of Romano-British settlement. In D. L. Clarke (ed.) *Models in Archaeology*: 887–909. London: Methuen.
- Hodder, I. (1974) Regression analysis of some trade and marketing patterns. *World Archaeology* 6: 172–89.
- Hodder, I. (1977) Some new directions in the spatial analysis of archaeological data at the regional scale (macro). In D. L. Clarke (ed.) *Spatial Archaeology*: 223–351. London – New York – San Francisco: Academic Press.
- Isard, W. (1966). *Methods of Regional Analysis*. Moscow: Progress (in Russian).
- Klein, L. (2009) Ukrainian exploration of Tripolye: the encyclopaedia-reference book, or the monument? *Archaeology* 1: 109–16 (in Ukrainian).
- Kolesnikov, M. (2003) *Greek Colonization of the Mediterranean Region (An Attempt at Migration Mechanism Analysis)*. Kiev: Korvin Press (in Russian).
- Kolesnikov, O. and Tkachuk, T. (1993) Concerning the issue of micro-chronology of Tripolye settlements (based on the materials of the Bernashevskoe settlement of B/II–C/I stage). In *Podillya Antiquity*: 44–8. Vinnitsa (in Ukrainian).
- Korvin-Piotrovskiy, A. (2003) Theoretical issues of studying giant-settlements. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (ed.) *Materials from the international conference ‘Tripolye giant-settlements’*: 5–7. Kiev: Korvin Press (in Russian).
- Kremenetski, K. (1991) *Palaeo-ecology of the Primordial Tillers and Graziers of the Russian Plain*. Moscow: Geographic Institute. USSR Academy of Science (in Russian).
- Kristiansen, K. (1997) Chiefdoms, states, and systems of social evolution. In T. Earle (ed.) *Chiefdoms: Power, Economy and Ideology*: 16–43. Cambridge: Cambridge University Press.
- Kruts, V. (1989) On the history of Tripolye culture population in the Southern Bug and Dnieper interfluvium. In *Primeval Archaeology. Materials and Studies*: 117–32. Kiev: Naukova Dumka (in Russian).
- Kruts, V. (1990) The layout of the settlement near Talianki village and some aspects of Tripolye house-building. In V. Zbenovich *et al.* (eds) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses of the first field seminar: 3–7. Talianki – Veselyi Kut – Maidanetske (in Russian).
- Kruts, V. (1993) The issue of demographics in Tripolye culture. *Archaeology* 3: 30–6 (in Ukrainian).

- Kruts, V. (2003) On the issue of giant-settlements in the Trypol'ye culture of the Bug-Dnieper interfluvium. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (eds) *Materials from the international conference 'Tripolye giant-settlements'*: 71–3. Kiev: Korvin Press (in Ukrainian).
- Marches, J. R. (1953) The effect of residential propinquity on marriage selection. *The American Journal of Sociology* 58(6): 592–5.
- Markevich, V. (1981) *Late Tripolye Tribes of Northern Moldavia*. Kishinev: Shtiintsa (in Russian).
- Masson, V. (1990) Tripolye society and its socio-economic characteristics. In V. Zbenovich *et al.* (ed.) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses of the first field seminar: 8–10. Talianki – Veselyi Kut – Maidanetske (in Russian).
- Minc, L. D. (2006) Monitoring regional market systems in prehistory: models, methods, and metrics. *Journal of Anthropological Archaeology* 25: 82–116.
- Monah, D. (2003) A ghost in haunting Europe: the Neolithic proto-cities. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (eds) *Materials from the international conference 'Tripolye giant-settlements'*: 239–43. Kiev: Korvin Press.
- Neustupný, E. (1984) Mobilität der äneolitischen populationen. *Slovenska Archeologia* 29(1): 111–9.
- Nikolova, A. and Pashkevich, G. (2003) On the issue of arable farming development in Tripolye culture. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (eds) *Materials from the international conference 'Tripolye giant-settlements'*: 89–95. Kiev: Korvin Press (in Russian).
- Otroshchenko, V. (2003) The phenomena of the proto-cities: Talianki and Sintasha. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (eds) *Materials from the international conference 'Tripolye giant-settlements'*: 96–7. Kiev: Korvin Press (in Ukrainian).
- Otroshchenko, V. (2009) On the usefulness of civilization rhetoric. In *Early Agricultural Culture in the Bug-Dnieper Interfluvium: Aspects of Study*: 76–82. Uman: Zhovtyi (private entrepreneur) (in Ukrainian).
- Pashkevich, G. (2004) Natural conditions for the existence of Tripolye culture. In *Encyclopaedia of Tripolye Civilization*, v. 1: 117–22. Kiev: Ukrpoligraphmedia (in Ukrainian).
- Passek, T. (1949) Periodization of Tripolye settlements (III–II century B.C.). *Materials and studies on USSR archaeology* 10. Moscow – Leningrad: USSR Academy of Science (in Russian).
- Pavlenko, Y. (1989) *Early Class Societies. Genesis and Ways of Development*. Kiev: Naukova Dumka (in Russian).
- Polanyi, K. (2002) *The Great Transformation. The Political and Economic Origins of Our Time*. St Petersburg: Aleteya (in Russian).
- Romanchuk, S. (1998) *Historical Landscape Science (Theoretical and Methodological Principles and Methodology of Anthropogenic-Landscape Reconstructions of Ancient Natural Resource Exploitation)*. Kiev: Kiev University (in Ukrainian).
- Ryzhov, S. (1990) Micro-chronology of Tripolye settlement near Talianki village. In V. Zbenovich *et al.* (eds) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses of the first field seminar: 83–90. Talianki – Veselyi Kut – Maidanetske (in Russian).
- Ryzhov, S. (1993) The Nebelevskaya group of Tripolye sites. *Archaeology* 3: 101–14 (in Ukrainian).
- Ryzhov, S. (1999) *Ceramic of Tripolye Settlements from the Bug-Dnieper Interfluvium, as a Cultural Source*. Unpublished PhD Thesis. Kiev: Institute of Archaeology UNAS (in Ukrainian).
- Ryzhov, S. (2000) Painted ceramics by the Tomashovskaya local-chronological group of Tripolye culture. *Stratum Plus. The Birth of Europe* 2: 459–473 (in Russian).

- Ryzhov, S. (2007a) The influence of the Shipinetskaya local group on formation of Nebelevskaya group sites in the Bug-Dnieper interfluve. In *NSSA. Studies of Archaeological Committee* 253: 127–39. Lviv (in Ukrainian).
- Ryzhov, S. (2007b) The contemporary state of cultural and historical Cucuteni-Tripolye community studies on Ukraine's territory. In Y. Rassamakin and S. Ryzhov (eds) *O. Olzhych. Archaeology*: 437–77. Kiev: Oleny Telihiy press (in Ukrainian).
- Saiko, E. (1990) Stadial differentiation of historically varying types of settlement: settlement and city-village. In V. Zbenovich *et al.* (eds) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses of the first field seminar: 17–21. Talianki – Veselyi Kut – Maidanetske (in Russian).
- Semenov, Y. (1993) Transition from primeval to class society: ways of development and variations (part 1). *Ethnographic Review* 1: 52–70 (in Russian).
- Sherratt, A. G. (1972) Socio-economic and demographic models for the Neolithic and Bronze Age of Europe. In D. L. Clarke (ed.) *Models in Archaeology*: 477–542. London: Methuen.
- Shmaglii, N. and Videyko, M. (2001–2002) Maidanetske – Tripollian proto-city. *Stratum Plus. The Tripoliada Land* 2: 44–140 (in Ukrainian).
- Smith, C. A. (1974) Economics of marketing systems: models from economic geography. *Annual Review of Anthropology* 3: 167–201.
- Tolochko, P. (2005) Theoretical aspects of studying Ukraine's ancient history. *Archaeology* 2: 3–11 (in Ukrainian).
- Tolochko, P. (2007) *Archaeology and Ancient History (In Defence of Historical Marxism)*. Kiev: Academperiodics (in Russian).
- Tsvek, E. (2005) Centres of flints industry among the Tripolye tribes in the Bug and Dnieper region. In Institute of Archaeology (Ukraine's National Academy of Science) (ed.) *Archaeological Studies of the Tripolye Settlement Bodaki in 2005*: 80–96. Kiev – St Petersburg: Korvin Press (in Russian).
- Tsvek, E. (2006) *Settlements of East Tripolye Culture (short essay)*. Kiev: KP OTI.
- Tsvek, E. and Movchan, I. (1997) New Tripolye production complex for digging and processing flint. In T. Popova (ed.) *Development of Culture in the Stone Age*: 142–4. St Petersburg: MAE RAS (in Russian).
- Tsvek, E. and Movchan, I. (2005) Aeneolithic production complex for flint digging and processing on the Bolshya Vys' river. In Institute of Archaeology UNAS (ed.) *Collection of Scientific Studies 'In Honour of Sofia Berezanska'*: 66–76. Kiev: Shlyakh (in Russian).
- Videyko, M. (2002) *Tripolye Proto-cities: a History of Studies*. Kiev: Academperiodica (in Ukrainian).
- Videyko, M. (2004a) Digging and processing of flint. In *Encyclopaedia of Tripolye Civilization*, v. 1: 261–71. Kiev: Ukrpoligraphmedia (in Ukrainian).
- Videyko, M. (2004b) Arming and military art in Tripolye tribes. In *Encyclopaedia of Tripolye Civilization*, v. 1: 479–508. Kiev: Ukrpoligraphmedia (in Ukrainian).
- Wilson, A. G. (1967) A statistical theory of spatial distribution models. *Transportation Research* 1: 253–69.
- Zaliznyak, L., Belenko, M. and Ozerov, P. (2008) Vys' site and its place in Ukraine's late Paleolithic age. *Stone Age in Ukraine* 11: 59–74 (in Ukrainian).
- Zaliznyak, L., Stepanchuk, V., Vetrov, D., Tovkailo, M. and Ozerov, P. (2007) Gravette site Troyanovoe 4 near Novomirgorod. *Stone Age in Ukraine* 10: 102–25 (in Ukrainian).
- Zbenovich, V. (1990) Concerning the issue of large Tripolye settlements. In V. Zbenovich *et al.* (ed.) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses of the first field seminar: 10–2. Talianki – Veselyi Kut – Maidanetske (in Russian).

## Chapter 6

# Tripolian Pottery of the Giant-settlements: Characteristics and Typology

*Sergei N. Ryzhov*

### Introduction

As a source of information, ceramics hold a meaningful advantage among archaeological materials. The wide use and distribution of the ceramics allow for statistical analyses. This creates the possibility of obtaining quantitative characteristics for various properties of pottery during its classification, definition of developmental tendencies, and regularities that will be fundamental for theoretical studies (Henning, 1973, 1992). Ceramics have yet another important peculiarity – the preservation of pottery production traditions on the one hand, and their systematic renewal on the other, allow for the observation of variability (dynamism), which makes the scrutiny of numerous aspects of pottery development possible. The technology, form and ornamentation of pottery allow us to define the cultural and chronological properties of archaeological sites and reveal genetic ties between different archaeological cultures. This helps archaeologists identify specific cultures, and discern the ways in which changes in pottery style or type (function, form, decoration, etc.) are tied to local differences in the synchronous or diachronic development of specific sites.

The proposed classification is based on analysis of three fundamental classes of indicators: technical-technological, morphological and stylistic. The defining elements of ceramics are manifested in typology, which is established by comparing all the indicators. In this context, criteria for comparison are required. These criteria appear as general indicators for a certain range of vessels. The technical-technological indicators are the most conservative. Morphological and functional indicators depend on the specifics of the economy and of everyday life. Stylistic indicators are the most dynamic. Decoration is usually tightly connected with the form of a vessel, which in turn is defined by its technology of preparation and its designated purpose.

Thus, a classification created on the basis of analysis of stylistic indicators can give the fullest picture of the ceramics complexes of sites.

The ceramics of the west Tripolye settlements (stages BII, CI and CII) of the Bug-Dnieper interfluvium are divided into three categories: container vessels, kitchen pottery, and table pottery. Precise division into categories (ranks, groups, sub-groups) has been carried out on the basis of how decoration was applied. In the next stage of classification, as morphological indicators are introduced, types of vessels are distinguished. Within the type, taking into

account peculiarities of form, sub-types, variants and sub-variants are isolated. Furthermore, depending on form, ornamental schemes and variations of them are taken into consideration – that is, stylistic indicators are introduced into the classification.

## **Container vessels**

Vessels of this category were prepared from a multi-component pottery fabric into which several types of loamy and poor clays were introduced, with the admixture (temper) of remains from threshing cereal plants. The pottery was made using a technique whereby different parts of the vessel were made separately and joined together.. The wall of the vessel was covered on the outer and inner sides by a thin layer of clay without any temper. The surface was often additionally dyed with ochre. Low-temperature firing (on an open fire) lent the porous structure of the vessel the necessary durability and water-resistance (Shumova, 1985). In terms of form, storage vessels belong to the pear-shaped type. These were thick-walled vessels of large proportions and a flowing profile, with high, rounded shoulders and a horizontal, flat rim. The exterior of the vessels may or may not have been decorated. Incised technique ornamentation consisted of wide bands or ribbons that included several narrow parallel lines encircling the shoulders and the rim of the vessel. We also find a complicated metopic composition in which concentric circles alternate with vertical ribbons of thin lines (Figs 6.1 and 6.4 [1 and 2]). Storage pottery functioned as part of the interior elements of the house. The large sizes of the vessels, the character of their construction, the light firing, and their prescribed positions inside houses indicate that they were intended for storage of exclusively dry foods and, above all, grains. Pithoi storage vessels fulfilling the role of grain repositories were discovered in the dwellings of many settlements and are one of the specific indicators of the ceramics complexes of the Tomashovskaya local group sites (Shumova, 1988).




















































## **Kitchen pottery**

The pottery fabric of kitchen ceramics contains clays with a high content of concentrations of iron, kaolinised clays with the admixture of hydromicaceous material, clay marl and, more rarely, loess-like loam. The use of different clay types depended on the forms, drying and firing processes of the vessels. The choice of the clay depended on the form and dimensions of the vessels and their intended purpose. Iron compounds in clay secure high fusibility and plasticity, while clay marls, thanks to the presence of fluxing materials, create conditions for low-temperature firing. To improve the quality of the clay, people applied different tempers. The most widespread tempers were: coarse sand, granules of quartz, mica, broken seashells (limestone) and chamotte (grog). Sand in the clay lowers the porosity of ceramics, lending the vessel firmness during drying and firing. The temper of mica added plasticity to clay (Korobkova, 1983: 99). Broken seashell and limestone, with a high component of organic material, are soft plasticisers, improving the drying-out and firing of ceramics. This temper lowers the firing temperature, since carbonates are a fluxing material (Bulavin, 1938: 38–45). The important peculiarity of kitchen ceramics is the porosity of the crockery, which influences the durability, heat resistance, and water resistance of ceramics. The essential property of kitchen pottery is



<b>3</b>	biconical	<b>1</b>	<b>1</b>				
			<b>2</b>				
			<b>3</b>				
		<b>2</b>	<b>1</b>				
		<b>3</b>	<b>1</b>				
<b>4</b>	sphero-conical	<b>1</b>	<b>1</b>				
			<b>2</b>				
		<b>2</b>	<b>1</b>				
		<b>3</b>	<b>1</b>				
<b>4</b>		<b>4</b>	<b>1</b>				
			<b>2</b>				
<b>5</b>	crater-shaped	<b>1</b>	<b>1</b>				
		<b>2</b>	<b>1</b>				
		<b>3</b>	<b>1</b>				
<b>6</b>	amphoras	<b>1</b>	<b>1</b>				
		<b>2</b>	<b>1</b>				
		<b>3</b>	<b>1</b>				
		<b>4</b>	<b>1</b>				



7	craters	1	1			?	
			2				
		2	1				
			2				 
			3				  
							1 2
8	pear-shaped	1	1				
			2				
		2	1				 
			2				 
		3	1				 
			2				  
		4	1				
		5	1				
		9	1				
			2				 
		3	1				  
			2				 
			3				 
		4	1				 
10	pots	1	1	    			  
			2	 			    







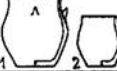













10	2	1				
		3	1			
		4	1			
		5	1			
		6	1			
		7	1			
		2				
	binocular-shaped	1	1			
			2			
			3			
		2	1		?	
			2			
			3			
			4			
		forms of miniature vessels				
		forms of unique vessels				

Figure 6.1: Typology of ceramics from the sites of BII–CII stages in Bug-Dnieper interfluvium.

its ability to withstand sharp, repeated temperature differentials (thermal shocks). A rise in heat resistance as a result of greater porosity is explained by the fact that the tensions that emerge on the surface of a hard body under the influence of heat are reduced on the borders of the particles of the pottery clay (Lukich, 1979: 13–59).

Tripolye pottery was prepared using the moulding or coiling technique. As the walls were smoothed with a multi-toothed instrument (a bone or wooden spatula), the surface of the vessels was covered with comb-marks and a final stratum of clay was evenly distributed over the surface (Korobkova, 1983: 221). Sometimes the surface was worked over with shallow, spreading finger impressions. The surface of some vessels was covered with a very thin layer of moist clay without temper and was well smoothed. Sometimes vessels were also dyed with ochre. The majority of kitchen pots were decorated with different types of relief ornamentation. Kitchen ceramics underwent a high-temperature, uniform firing performed in household ovens or in special kilns. The firing environment was both reductive and oxidising.

There are two distinct types of kitchen pottery: *bowls* and *pots*. In terms of form, bowls are divided into three sub-types with different variants. We have tall and short bowls of conical shape with straight, slightly concave or slightly bulging walls, and with a cusped edge to the rim. There are tall and short polyspherical bowls with convex walls and with a vertical or inward-slanted edge to the rim (sometimes with a bevel). Bowls with a soft S-shaped profile are also present. Bowls were most often plain (Figs 6.1 and 6.4 [3 and 4]). Only bowls from later sites in the region were decorated with one band of incisions or punctures around the edge of the rim.

Seven sub-types can be distinguished among kitchen pots. There are tall vessels with a flowing or angular profile, wide and tall shoulders, and with a curved or straight rim – the edge of which is everted, vertical, or is slightly in-turned. We can ascribe to this sub-type pots with a high bell-shaped rim that recall table craters in form, and also small ‘gutts’ pots with a perforated spout. Furthermore, there are also small pots with a soft S-shaped profile; squat vessels with rounded shoulders and short rims; biconical pots; jar-shaped vessels with barely differentiated shoulders and a necked rim; tall tulip-shaped pots with a narrow mouth and a smoothly bent rim; and globe-shaped pots with short rims (Fig. 6.1). Some pots even stand on four legs.

The majority of kitchen pots are ornamented with an incised pattern. The decoration differs according to the way it is applied, to a level of highly complex patterns in a multitude of decorative schemes on the same pot. Pots have two ornamental zones: an upper one along the rim and a lower one on the shoulders and decoration may occur in either one or both zones. Along the rim, the pots may have rows of rounded puncture-marks, fingernail impressions, incisions, ‘pearls’, rectangular impressions, pinches, finger impressions, ‘caterpillars’, rope impressions, and impressions of a multi-toothed stamp. In the majority of cases, vertical or slanting scratches cover the rims. Small ear-handles, moulded-on handles, and moulded-on zoomorphic decorations are also identified on the rims. On the pot shoulders there are ribbons of parallel-engraved lines in the shapes of zigzags, chevrons, scallops, wave-shaped stripes, and triangles. Often, the fields of these figures are filled with finger impressions and marks of a single-toothed or multi-toothed stamp. Sometimes there are herringbone patterns or patterns of ribbon segments that meet at an angle and that are made by the impressions of a stamp, by a ‘caterpillar’, or with small strokes. On the shoulders there may be one or several horizontal rows of: rounded punctures, pinches, or fingernail impressions; impressions of a multi-toothed stamp; rope impressions; ‘caterpillars’; finger impressions; impressions with the short end of a

schema	subvariation	painted bowls	
		inner surface	outer surface
simplified-line schema	1		
	2	     	    
	3		
	4		
	5		
	6		
	7		
comet-shaped	2		
	1		
	3		
	4		
figure-eight-shaped	3		
	1		
	2		
	4		

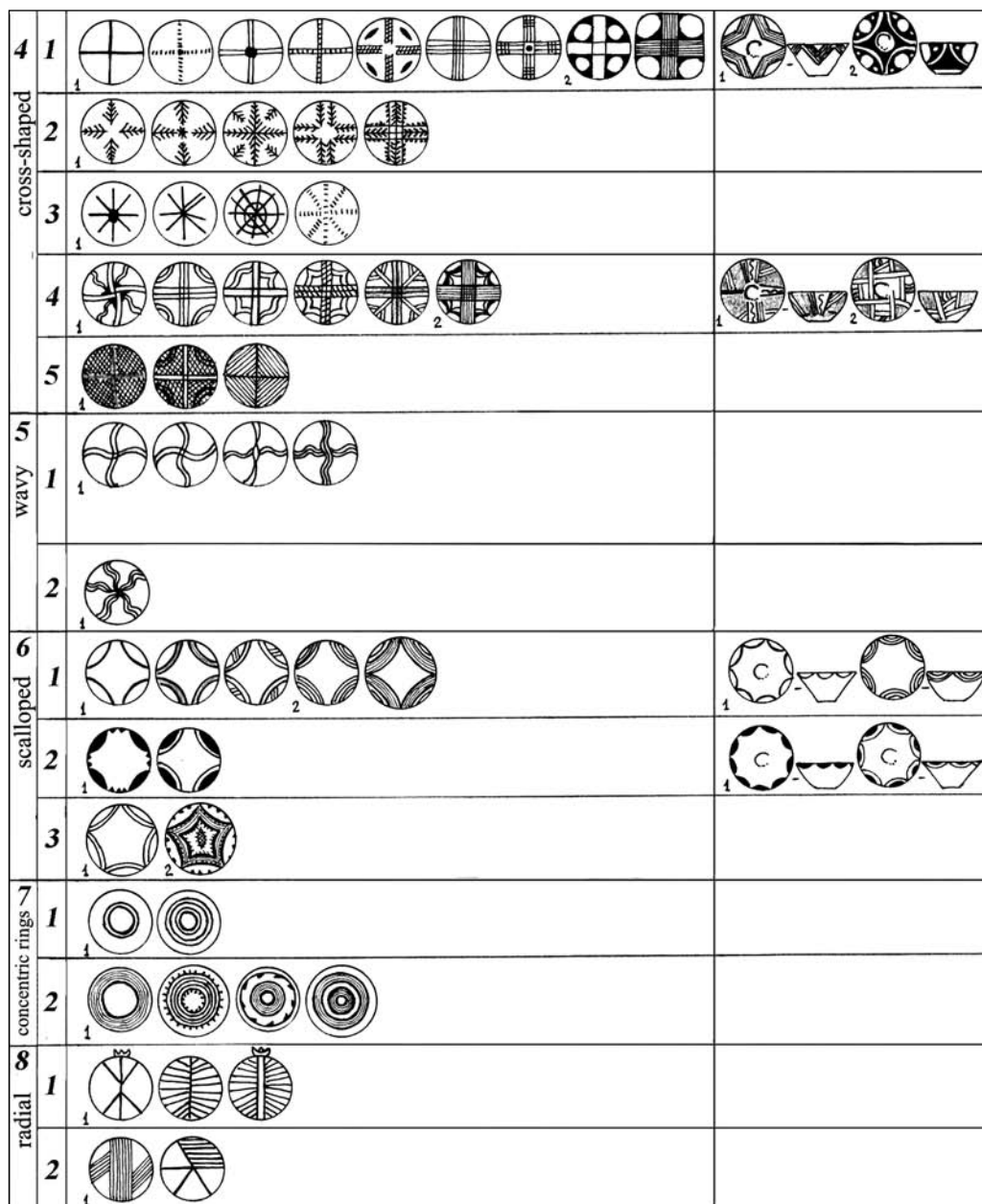




































Figure 6.2: Decorative schemes on bowl from the sites of BII–CII stages in Bug-Dnieper interfluvium.

schema	variation	container	kitchen pottery	table pottery		
			incised ornamentation	incised	incised + painted	painted ornamentation
simplified-line	1		    	    	    	    
			    			    
						    
			    			    
						    
metopic	2					    
						    
						    
						    
facade	3					
segment-shaped	4					

5	tangentenkreisband						1	
		1						
		2						
		3						
6	tangent						4	
		1						
		2						
		3						
6	tangent						4	
		1						
		2						
		3						
6	tangent						4	
		5						
7	"Owl face"						1	
		1						
8	Wavy						1	
		2						
		3						
9	Meander-line						1	
		2						
		3						





tubular bone; and impressions of other different forms (Figs 6.3 and 6.4 [5–18]). A horizontal ribbon rendered from groups of shallow strokes or of parallel drawn lines is also found. On the shoulders there are ear-shaped handles, pinch-formed handles, single or double columnar spike handles, conical or rounded applied elements, single finger impressions, and zoomorphic applied elements.

## **Table pottery**

Clays for preparing table pottery were selected by taking into account not only their moulding qualities (their plasticity), but also their behaviour during drying and firing. Various clays were utilised: carbonate clay with a small amount of hydromicaceous material; marly variants; plastic clays of kaolin type with the admixture of hydromicaceous materials and with a small amount of iron oxide; and clays with a relatively large component of iron compounds, which have a high fusibility. Multi-component moulding pastes were also prepared for modelling. A temper of sand in the pottery clay is a peculiarity of the table ceramics of the Bug-Dnieper interfluvial giant-settlements. Fine-grained sand secured the durability of the product during drying and firing. Quartz, which was always present in the paste, lent a similar property to the pottery – at the same time, the mineral perceptibly lessens the tendency of clay to shrink on firing. Often crushed particles of kaolin chamotte were added as a thinning material to boost the strength of the fabric, though at the same time it lowers thermal resistance (Sayko, 1982: 13). Burnt, crumbled clay was also used. This sort of admixture is more often seen in the fabric of large fat-walled vessels, the chief characteristic of which is not thermal durability. There are also table ceramics that are made from a finely dispersed paste. This fabric is characteristic of the pottery of the earlier sites in the region. Small vessels were pressed out from one piece of clay using the fingers, but the majority of ceramics were moulded using the coiling technique. It has been determined that some vessels there were formed from two parts – an upper (from the rim to the shoulder) and a lower (from the shoulders to the bottom). Where the two parts joined, the vessels acquired wide, carinated shoulders. The junctions of the clay coils were carefully smoothed out, and the dried vessels were scraped out with spatulas, inside and out. We should not exclude the possibility, however, that special moulds or slow-turning devices were used during production and additional processing of the body of the vessel though it must be pointed out that the use of such a device was merely a corrective method of the moulding technique.

Closed-form vessels were smoothed on the outside (bowls were smoothed internally or on both sides) and were covered with a thin slip of clean clay, which differed from the basic fabric not only in its composition, but also in the quality of its processing. The slip created a dense surface and promoted higher water-resistance which also reduced the need for lengthy high-temperature firing. The slip served as a good base for dyeing and painting. The surface of the slip was smoothed and covered with paint (the base) whose colour ranged from light yellow to brown-red. Burnished surfaces are also observed on the pottery (Ryzhov, 2001: 12–4).

In terms of the technique with which decoration was applied, table pottery is divided into two groups – incised and painted. Mineral paint of black (dark-brown) and, rarely, red or white colour was used in painting. Some vessels were slipped but not decorated with paint, whereas others had no slip and the surface of the vessel was only roughly smoothed. The methods of

creating colours have long interested archaeologists. It was considered that the three colours – white, red and black – corresponded to materials such as kaolin, red ochre and bog ores (containing iron ores). It is possible that bloodstone was included in the composition of red paint and manganese compounds, especially oxides, were used in black paint (Ellis, 1998), as indicated by chemical analysis (Pântea, 1983–1984; Cucoş, 1999). Minerals containing iron oxide (limonite, hematite) could also have been used in the preparation of red paint. White paint could be obtained either by using calcium carbonate (crushed shell, chalk) or a ‘white’ kaolin clay in which calcium silicate is present. Paints (pigments) were prepared using organic substances such as the yolks and whites of eggs, milk, animal fat (gelatine) and the juice of plants.

The firing of table pottery was even, with the pottery walls baked through their entire thickness. This indicates that firing took place in furnaces, exclusively in an oxidising regime. The colour of the undecorated fired pottery was either almost white (meaning there was a high concentration of kaolin in the matter) or red (indicating the presence of iron oxide in the clay). Data from the Moscow Laboratory of the State Scientific Research Institute of Restoration indicate that the surface of table vessels was then covered with a protective layer of wax, oils and resin. However, this coating was only applied to pottery that was not used for hot food. The highly developed technology for moulding vessels, the complicated forms, the firing in furnaces, the large number of ceramics in the settlements, the standardisation of the pottery, and the diverse specialised pottery instruments (spatulas, stone polishers and grinders, decorating tools) recorded from the settlement sites point to the high level of pottery production, evidently organised in the form of communal craftsmanship.

Table crockery occurs in a variety of forms (Figs 6.1 and 6.2).

### **Bowls**

The first type of table crockery includes bowls (Fig. 6.1), which are divided into different sub-types, themselves based on different forms. To the first group belong tall or short conical bowls with straight or slightly concave or convex walls, and a pointed or thickened and horizontally flattened (rarely with a bevel) border to the rim. Occasionally these bowls have a small handle on the rim and there are occasionally a pair of symmetrical grooves and/or applied zoomorphic elements on the rim. Some conical bowls have four legs.

The second sub-type consists of tall or short hemispherical bowls with protuberant walls, or a vertical or inward-leaning edge to the rim. Vessels also exist of this sub-type that have grooves, small handles, applied zoomorphic elements, and that stand on legs. The third sub-type consists of bowls with a sinuous or S-shaped profile (sometimes on legs). Sub-type 4 comprises biconical shouldered bowls with a horizontal rim (sometimes with zoomorphic applied bas-reliefs). There are also cylindro-conical bowls (sub-type 5) with clearly delineated shoulders and vertical rims. A similar form (sub-type 6) is internally partitioned. Shallow bowls with a single small flat handle make up their own sub-type (7). They are found either with a flat bottom or on legs. Oval-shaped bowls (sub-types 8–9) are also found. The last sub-type (10) is represented by bowl-strainers with a flat bottom (or on legs) and perforated walls. The most widespread are the conical, half-spherical and biconical bowls, and bowls with an S-shaped profile. Bowls of other sub-types are more rare.

### ***Goblets***

The second type of table pottery consists of goblets of three sub-types (Fig. 6.1). To the first sub-type belong small vessels with sharply carinated or rounded shoulders, a short neck and a folded back, vertical or slightly in-turned rim. The so-called ‘cork-goblets’, with low shoulders and cylindrical necks belong to this sub-type. These were really used as ‘corks’ for larger ceramic containers. The second sub-type comprises relatively large, thin-walled, tall or squat vessels with either sharp or rounded wide shoulders, concave-cylindrical necks and smoothly bent-back rims. A number of examples have single reticulate handles. The third sub-type is represented by twinned goblets, where identical vessels are united by a crosspiece at the shoulder level (see also ‘binocular’ vessels, below).

### ***Biconical vessels***

Biconical vessels are a very widespread type of table pottery (Fig. 6.1). Three sub-types can be identified. Into the first go tall or squat vessels with wide, sharp or slightly rounded shoulders (positioned high up or in the middle of the body of the vessel); straight walls on the upper body; a narrow throat; and a sharply everted and relatively high and straight or funnel-shaped rim. To the second sub-type belong large vessels with relatively narrow rounded shoulders, a wide throat, and a smoothly everted, high and straight or funnel-shaped rim, at the neck of which there are paired applied conical elements. The third sub-type consists of tall vessels with narrow, slightly rounded shoulders, an elongated upper body, narrow throat, and straight, smoothly everted rim.

### ***Sphero-conical vessels***

These vessels are close in form to the preceding type but can be differentiated from them by the slightly bulbous walls of the upper body (Fig. 6.1). There are four sub-types. The first consists of tall vessels with rounded shoulders set almost midway up the body, narrow or relatively wide throats, and tall, straight or funnel-shaped rim. The second sub-type consists of small, thin-walled vessels with wide bottoms and a globular appearance with low, rounded shoulders and a high throat with a straight or funnel-shaped rims. The third sub-type contains large vessels with rounded shoulders, wide necks and high rims. The fourth sub-type comprises tall or squat, sometimes almost globular, vessels with rounded shoulders set higher on the vessel than in sub-type 2, narrow throats and high, expanded, or almost vertical rims. Sometimes there are small ear-handles on the shoulders of the sphero-conical vessels, just as there are on those of the biconical vessels.

### ***Biconical, crater-shaped vessels***

This form combines the crater form with that of a biconical vessel (Fig. 6.1). As a rule, these are large vessels with a complicated profile. They are divided into three sub-types. The first includes vessels with wide shoulders, a truncated conical throat and a sharply everted rim. There are two variants – sharp-profiled vessels with sharp shoulders and smooth-profiled ones with more rounded shoulders. The second sub-type consists of crater-shaped vessels with high rounded or sharp shoulders, a high and wide concave-cylindrical throat, and a smoothly

everted rim. The vessels often have either small pinch-handles at the carination or one reticulate handle. The third sub-type consists of vessels with a napiform shape (turnip-shaped) – tall, with slightly bulbous walls on the lower part of the body; low, rounded shoulders, high and narrow truncated-conical throats and short, smoothly everted rims. The vessels had horn-shaped handles on their shoulders.

### ***Amphorae***

These are small vessels characterised by ear-shaped handles set just below the rim (Fig. 6.1). Amphorae occur in four sub-types. The first consists of tall, round-bodied vessels with weakly defined shoulders, relatively wide throats, and smoothly everted rims. The second consists of small amphorae with wide bottoms, low, wide, rounded shoulders, tall truncated-conical throats, and a tall, everted, straight or funnel-shaped rim. The third sub-type comprises squat amphorae of sphero-conical form with wide rounded (and rarely sharp) shoulders at mid-height of the vessel, wide or narrow throats and tall, smoothly everted or low and sharply everted rims. The fourth sub-type consists of rather large, tall, or squat amphorae of biconical form with high sharp shoulders, relatively narrow throats and rather low, sharply everted rims.

### ***Craters***

The true craters are large, thick-walled vessels that divide into two sub-types and corresponding variants (Fig. 6.1). The first sub-type encompasses tall or squat craters with a rounded body, wide throat, and a tall, wide (exceeding the diameter of the shoulders) straight or funnel-shaped rim or bell-mouth. As a variant of the sub-type there are vessels with high, rounded shoulders and a sharply everted rim or bell-mouth. Into the second sub-type go tall or short vessels with high rounded shoulders, wide throats and a short, smoothly everted rim, the diameter of which does not exceed the diameter of the shoulders. Craters with high, wide, sharp or slightly rounded shoulders, wide throats and a sharply everted low rim, appear as a variant of this sub-type. Sometimes these vessels have one reticulate handle.

### ***Pear-shaped vessels***

There are five sub-types of pear-shaped vessels (Fig. 6.1). The first comprises vessels with high or wide rounded shoulders, bulbous upper bodies and almost horizontal rims without necks. The second sub-type consists of high or squat vessels with high rounded shoulders, hemispherical upper bodies and a smooth transition to a high cylindrical throat with a vertical or everted edge to the rim. The third sub-type includes tall or squat vessels with wide, rounded or sharp shoulders and smooth or sharp (carinated) transition into a narrow throat with low vertical or somewhat inward-inclined rim. Into the fourth sub-type go vessels with a spherical body, narrow throat, and a low vertical or everted rim. The fifth sub-type comprises round-bodied vessels with relatively narrow rounded shoulders and a smooth transition into narrow and high cylindrical throats with vertical or inward-inclined edges to the rim. There are usually horn-shaped handles on the shoulders.

### ***Lids***

Lids are another type of table pottery and, again, we can isolate several sub-types (Fig. 6.1). The first consists of two conjoined, opposing, truncated cones. The second comprises so-called ‘mortar-shaped’ lids with flattened tops and truncated-conical bodies with everted rims. The third sub-type includes tall or short helmet-shaped lids with a smooth profile, a rounded or flattened top and short rim; sharp-profiled vessels with high and wide rims; and cylinder-conical forms with flat tops (sometimes with pinch-handles) and wide rims. The fourth sub-type includes tall lids of half-spherical form with a slightly flattened or protuberant crest with two handles.

### ***Pots***

The simple term ‘pot’ is used for a considerable variety of both kitchen and tablewares. A range of sub-types can be defined (Fig. 6.1 [1]). The first consists of smooth-profiled vessels with tall and rounded shoulders, wide throats and tall, everted or vertical rims. Into this sub-type also go sharp-profiled pots with sharp shoulders and short, steeply bent-back (often with a ledge in the neck) rims. As a variant of this sub-type there are pots on legs and ‘gutus’ pots with a little pouring spout. Vessels with a gently sinuous or S-shaped profile, rounded shoulder, wide throat, and a low, smoothly everted rim, are included in the second sub-type and pots of this subtype with legs also occur. The next subtype (3) consists of squat, wide-throated pots with relatively narrow shoulders and a smoothly everted, low rim. We can isolate pots with biconical forms and inward-inclining rims as further sub-types; tall jar-shaped vessels with weakly defined shoulders where the nearly vertical rim has a throat; and low spherical pots with low everted or vertical rims. Occasionally pots have, on their rims or on their shoulders, small ear- or pinch-handles, and applied horn-shaped elements.

### ***Binocular-shaped vessels***

The final type of table pottery consists of so-called binocular-shaped vessels (Fig. 6.1 [1]). These are conjoined paired vessels which can be divided into two sub-types according to the form of the central part of the body. Into the first sub-type go vessels with globular central portions; while the second includes those with cylindrical central portions. These can be further classified according to the number of positions of the joining crosspieces. The first variant comprises vessels with three crosspieces: immediately above the base, joining the central portions of the vessels, and between the upper cups (e.g. Fig. 6.5 [72]). Into the second variant go ‘binoculars’ with two crosspieces: one of which unites the central portions and the second the upper cups (though there is also a variant where the bases and cups are united). The third variant has crosspieces that unite the central parts and the bases. The binocular-shaped vessels of the sub-type 1 are always hollow, as are those of sub-type 2 with three crosspieces. The remaining forms may have either narrow vertical openings or small depressions, or they may be completely solid. In addition, vessels are known where upper cups with bases are fixed in cylindrical or conical bases.

### ***Miniature vessels***

Miniature vessels, defined as those with a height range of 2–5cm, are often found in the giant-settlements. They recall the table pottery types in terms of form – bowls, goblets and pots (Fig.

6.1 [1]). These small vessels have practically no capacity and could not have been used in everyday life: at least some seem to have been made for inclusion in the clay house models.

### ***Unique vessels***

The category of table ceramics includes a few types that are represented by only one or two examples which cannot be fitted into the classification described above. The forms concerned primarily appeared in the ceramics complexes of the giant-settlement sites in this region as the result of contact between the local population and neighbouring Tripolye communities or those of other ethnicities. These vessels were created in accordance with local pottery-making traditions. At the Staraya Buda settlement a large, thick-walled hemispherical bowl was found, on the walls of which were arranged small ear-handles in two horizontal rows in a chessboard pattern. A biconical vessel with shoulders formed by four symmetrically arranged bulges comes from the Vladimirovka settlement. Several unique vessels were found at the Talianki settlement including a rectangular vessel with short, almost vertical walls and a goblet with a cubiform lower part to its body, a narrow truncated-conical throat, and a sharply everted edge to its rim. A hollow-figured zoomorphic vessel was also discovered. In addition, a hollow, anthropomorphic vessel was found at the Andreyevka settlement. These vessels have a sacral character and are stylistically close to cultic plastic arts objects (Fig. 6.1 [1]).

### ***Decoration***

Table pottery includes ornamented and unornamented ware. Ceramic decoration can be divided into two groups. The first contains vessels decorated with incised ornamentation in the form of lines only, or of a combination of incised lines and painting (Fig. 6.3 and, for example, Fig. 6.5 [48 and 53]). Shallow, relatively broad lines are arranged in bands or ribbons consisting of 2–3 (more rarely 4–5) parallel lines. Ceramics with a combination of incised pattern and painting fall into three sub-groups: 1) vessels with polychrome patterns of black, red and white paint and relief decoration; 2) vessels with bichromatic designs in various combinations of paints – black and red, black and white, red and white; 3) pottery with incised decoration and monochrome painting with black, red, or white paint. The painting process had three variants: either the ribbons of incised lines alone were coloured, accentuating the basic ornamental scheme (positive); or the paint was applied to the vessel surface leaving the incised decoration unpainted (negative); or the pattern combined these two variants (positive and negative); the last being used in polychromatic design. Bichrome decoration results in both ‘negative’ and ‘combined’ (positive and negative) variants of painting. In the monochrome pattern the ‘negative’ drawing variant is seen more often and ‘positive’ decoration was used more rarely. In general, the ornamental designs were created using incised lines and painting was used for enhancement.

The basic ornamental schemes are ribbons of narrow lines arranged in S-shaped arcs (meander-line), scallops, or the simplified ‘*Tangentenkreisband*’ composition, metopes, and the simplified line patterns (zigzags, rows of triangles, horizontal lines, wavy arcs). For ceramics with incised decoration only, scalloped, meander-line and metopic compositions are characteristic, while for those with incised decoration and painting, the meander-line and simplified-line patterns are usual. Pottery with incised decoration is represented by a limited number of forms: pear-shaped vessels, helmet-shaped and biconical lids, and craters. Pots and binocular-shaped vessels are more rarely decorated in this manner.

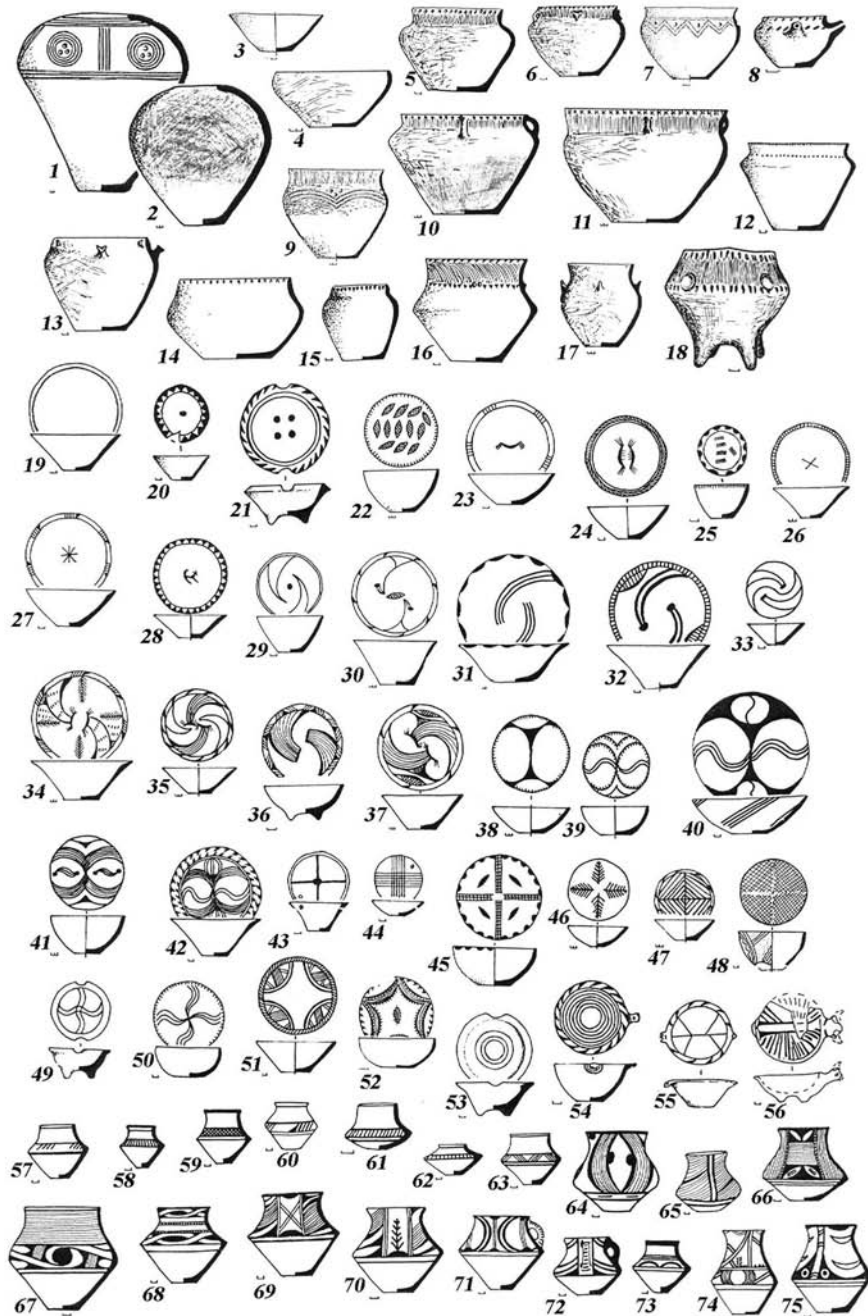


Figure 6.4: Ceramics from the sites of BII–CII stages in Bug–Dnieper interfluves (Container vessels: 1–2; kitchenware: 3–18; tableware: 19–75 [red paint depicted in gray colour]).

Settlements: Talianki: 1, 2, 4, 10, 11, 13, 14, 16, 21–3, 27, 29, 30, 45, 49, 62, 63, 71; Peschane: 3, 7, 9; Maidanetske: 5, 6, 15, 19, 26, 50, 52; Chichirkozovka: 8, 12, 24, 35, 38, 39, 41, 46, 51, 54, 57, 61, 68, 69; Olkhovets : 17; Vladimirovka: 18, 36, 44, 47, 56, 64–7; Dobrovody: 20, 32, 70; Staraya Buda: 25, 37, 53, 60, 72; Tomashovka: 28, 33, 34, 55, 58, 59, 73; Andreyevka: 31, 40; Kosenovka: 42, 74, 75; Glybochek: 43; Chertoryia: 48.

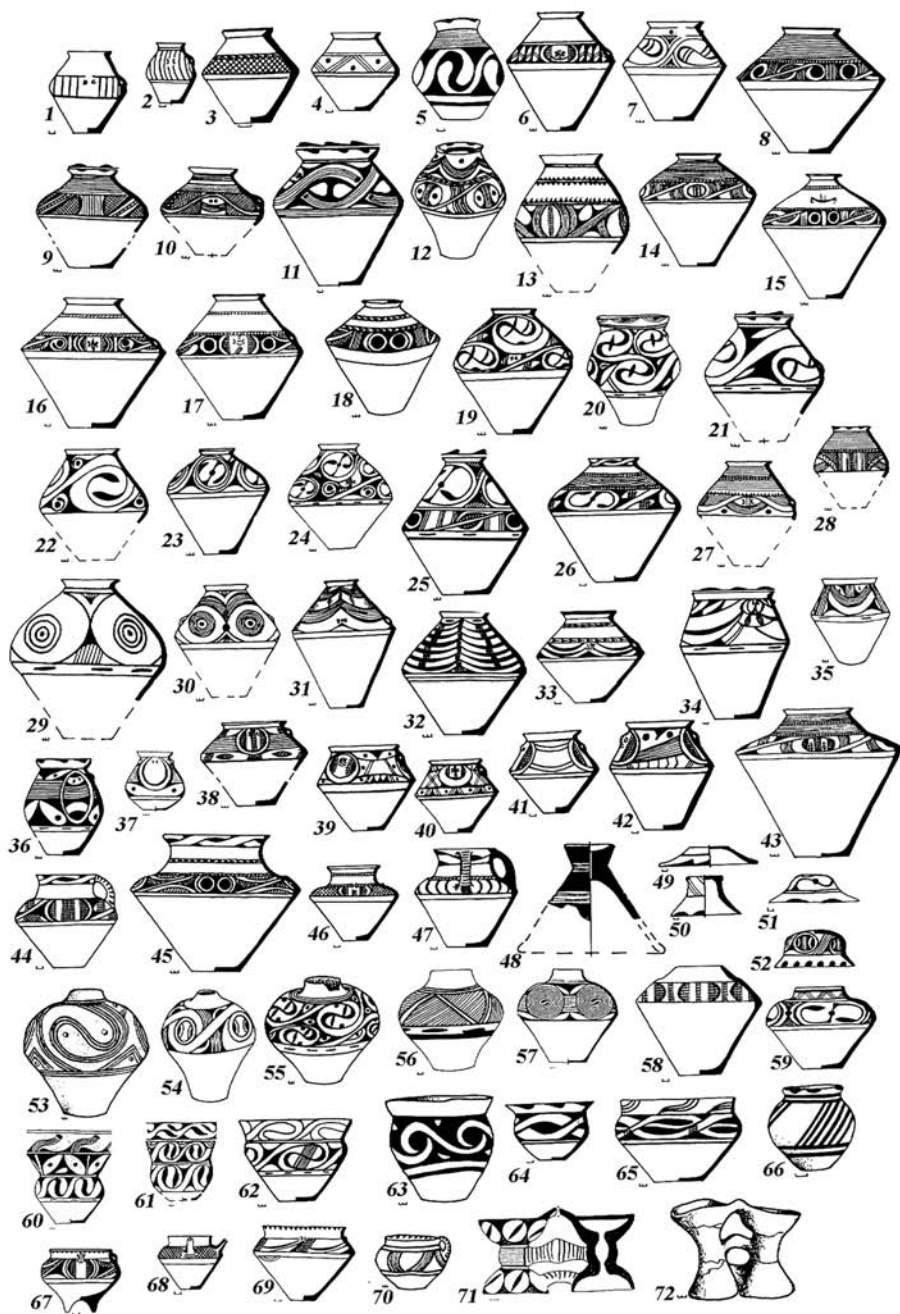


Figure 6.5: General ceramics from the sites of BII–CII stages in Bug–Dnieper interfluve. Settlements: Tomashovka: 1, 18, 41, 42; Vladimirovka: 2, 5, 9, 10, 20, 51, 53, 55, 56, 62, 63, 66; Talianki: 3, 4, 16, 19, 23, 25, 32, 33, 34, 38, 44–7, 58, 59, 68; Chichirkozovka: 6–8, 28; Andreyevka: 11, 48; Staraya Buda: 12, 14, 21, 31, 35, 43; Olkhovets: 13; Vasilkov: 15; Moshurov I: 17; Sushkovka: 22, 26, 27; Dobrovody: 24; Popudnia: 29, 30, 54; Fedorovka: 36; Peschane: 37, 57, 60, 61, 71; Maidanetske: 39, 40, 65, 67, 69; Nebelevka: 49, 50, 64; Peregonovka: 52; Kosenovka: 70; Kolodistoe: 72.



The overwhelming majority of table pottery is decorated with painted ornamentation only, divided into monochrome and bichrome types. There are two types of bichrome drawing: either black paint is combined with white in the compositions, or black is combined with red. In the black and white patterns, white paint is used in the form of thin lines or rows of dots as an additional element, repeating the scheme that is in black paint. Black and white painting is found in pottery from BII- and CI-stage sites. Bichrome drawing with the use of red paint breaks down into two sub-types. The first includes compositions in which thin red lines merely supplement the basic schema. The second consists of compositions in which wide stripes and various painted figures (triangles, rectangles and segments) in red paint is used in parallel with black paint as a principal element of the pattern. There is a chronological development here with sub-type 2 occurring only on CII-stage pottery. Vessels with bichrome decoration do not make up more than a small percentage of the entire number of painted ceramics. Most table pottery was decorated with monochrome patterns in white, red or black paint. The white and red pattern comparatively uncommon and occurs only sporadically.

Practically all table ceramics of the sites of the giant-settlement region have monochrome painting using black (or dark brown) paint. Analysis of pottery decoration begins with the separation of painting into two large and independent groups of decorative schemes, the application of which depended on vessel form – e.g. bowls (open forms) and other types of vessels (closed forms). We observe some resemblance to bowl ornamentation in the painting of lids, the decoration on crater rims, and the patterns of the upper cups of ‘binoculars’. The bowls of almost all sub-types and variants have decoration along their inner surface (the majority) or on the outer surface, but they could also be decorated on both sides.

### **Bowls**

We can isolate several decorative schemes in bowl painting.

The *simplified-line* scheme is the most common. Depending on the extent of the decoration and the zone in which the pattern has been applied, ornamentation divides into two parts. The first occupies the edge of the rim (outer, inner, on both sides) of the bowl. This takes the form of a narrow ring defined by one or two concentric circles, the space between which is filled with: a solid band; separate groups of strokes; small painted triangles; combinations of triangles and strokes; a ‘mesh’ or hatched pattern; or small painted half-ovals (Fig. 6.2 [2]). This rim decoration occurs either independently or in combination with other decorative schemes. The second part of the scheme consists of various representations inscribed in the centre of the bowl. These can be single or grouped and of several types: small painted circles; ovals with ‘mesh’ or painted sectors; a short line; arcs or segments (often with strokes); ‘steps’; a slanting cross or a multi-beam star; and zoomorphic or anthropomorphic figures. These same images were also applied to the outer surfaces of bowls (Figs 6.1 [2] and 6.4 [19–28]).

The second decorative scheme is the *comet-shaped* one, in which thin stripes or wide ribbons, dropping from the rim, curve around each other into the centre of the bottom of the bowl. Most often there are two arc- ‘comets’ and only in isolated cases are there three or four arcs. Secondary details often augment the basic pattern: rows of punctures, ‘mesh’ cut-outs, painted triangles, slanted crosses, ovals with ‘mesh’, ‘trees’ and painted circles. Sometimes various designs (scalloped, cross-shaped) are used in combination. The designs can be broken down into several variants on the basis of their complexity. The first variant contains patterns

in which arc- ‘comets’ consist of one, two or three parallel lines that often end in a painted circle. More rarely there are arcs executed using multiple thin strokes or ‘mesh’. Arcs composed of wide ribbons represent the second variation. Often the ribbons are filled with thin parallel lines framed by wide stripes. Occasionally, instead of lines we observe rows of strokes, ‘mesh’ cut-outs, zigzags, wavy lines, and slanted crosses. The third variation resembles the previous one, but the arcs oppose one another in a symmetrical layout. Painting of the fourth variation consists of two basic arcs to which adjoin another two arc-shaped ribbons. This pattern recalls the next painting schema. Sometimes an S-shaped wavy stripe divides the arcs (Figs 6.2 and 6.4 [29–37]).

A decorative scheme conditionally called the *figure-eight-shaped scheme* has a wide distribution. Several variations can be isolated, again on the basis of complexity of the design. The simplest consists either of two painted triangles whose tops merge in the centre of the bottom of the bowl, or of symmetrically positioned arc-shaped stripes. This composition creates two closed ‘negative’ (background) ovals, forming a figure-of-eight. Often, beneath the rim at the bases of the triangles were added strokes, painted circles, scallops, and ‘mesh’. The second variation contains patterns where the design was executed using wide ribbons of parallel thin lines. Ornamentation in which the tops of the triangles or the arcs do not meet, but go in one behind the other, makes up the third variation. In the fourth variation, the arcs end with wavy lines. Two ‘negative’ ovals either remain empty or are filled with painted circles, ovals with ‘mesh’, wide arcs, bucranes (e.g. bull’s head), S-shaped stripes, or wavy ribbons. From time to time the basic design was complemented by scallops or cross-shaped figures. In the bowl painting of late sites in the region we observe a sub-variant in which identical ovals are placed in a cross-shaped arrangement in the design (Figs 6.2 and 6.4 [38–42]).

The *cross-shaped* decorative scheme is represented by a diversity of variations. The simplest was executed with wide stripes, double lines, rows of strokes, ‘mesh’ segments, and ribbons of thin parallel lines. These elements, bisecting at a right-angle in the centre of the bowl, divided its field into four even quadrants. The cross-shaped design was also executed with depictions of the ‘tree of the world’. Another variation was formed by the application, at an angle, of two crosses of wide lines or rows of strokes producing an eight-sided ‘star’. In other variations the sectors are occupied by wavy stripes and scallops or are filled with thin parallel lines or with slanted ‘mesh’ (Figs 6.2 and 6.4 [43–48]).

The *wavy* decorative scheme is compositionally similar to the cross-shaped one. It consists of intersecting wavy arcs that recall swastikas. Four-rayed and five-rayed figures have been recorded (Figs 6.2 and 6.4 [49 and 50]).

The next decorative scheme is the *scalloped* one. It was accomplished with one or two stripes, ribbons of narrow lines, or painted half-ovals. These symmetrically arranged decorative elements created the figure of a ‘negative’ (background) rhombus with concave sides. A variation of this scheme has been recorded in which ribbons made of thin lines create a ‘negative’ pentagon in the field of the bowl (Figs 6.2 and 6.4 [51 and 52]).

The *concentric rings* decorative scheme is found in combinations of one or two rings. These were drawn using double stripes or wide ribbons made of thin lines (Figs 6.2 and 6.4 [53 and 54]).

The *radial* decorative scheme completes the ornamentation of bowls. This design was created using wide stripes or ribbons of thin lines. Stripes going through the centre divided the field of the bowl into two half-circles that were occupied by narrow stripes oriented towards the centre. Sometimes this design is combined with cross-shaped or figure-of-eight composition (Figs 6.2 and 6.4 [55 and 56]).

Painting on the outside of bowls repeats, in a simplified or somewhat transformed manner, the majority of the decorative schemes that have been isolated.

The most widespread patterns used on bowls were these: simplified-line (especially for poly-spherical bowls), comet-shaped, and figure-of-eight. We observe these designs on bowls from almost all sites in the region, while we more often find the remaining decorative schemes in the painting of either early, or only of late, settlements. The frequency of use of each individual design depends on the forms of the bowls. Half-spherical bowls were ornamented on the outside more often than conical ones. At the same time, they more often have bichrome black and red decoration, while the conical bowls have only black and white. In addition, hemispherical bowls have more cross-shaped and scalloped patterns and in more diverse styles of execution. We see the smallest range of patterns in the decoration of bowls that bear applied zoomorphic elements. The remaining sub-types of bowls were practically undecorated.

### ***Closed vessels***

Twelve ornamental schemes are inherent to the painting of vessels of 'closed' types. Whenever possible, these are named in the same manner as bowl-painting designs, that is, definitions of the geometrical figures that characterise the basic elements of the composition form the basis for the names. In addition to this, the terms traditionally used to describe Tripolian ornamentation are also utilised.

The *simplified-line* scheme is rather widely spread. It is, as a rule, arranged in a narrow ornamental belt and executed either in a solid frieze of identical figures or a row of separate groups of such figures, sometimes in a combination of several different elements. A wide horizontal stripe or several parallel thin lines are the simplest variations. There is a somewhat more complicated pattern of rows of vertical or slanted thin lines, short arcs or vertical wavy lines, groups of several stripes, ribbons of thin parallel lines, and segments of 'mesh'. The basic elements for the second variation are painted or contoured triangles (sometimes with 'mesh' filling) and, more rarely, half-segments. There are small triangles arranged in two horizontal rows in such a way that their summits merge together, forming a row of vertical 'negative' ovals. Often these ovals are filled with strokes, a solid 'mesh' or with ovals with 'mesh'. Triangles with stroke-formed ribbons bordering them, 'meshes' and 'steps' that form groups, and that are often united by narrow diagonal stripes, belong to this variation. Designs of the first and, especially, the second variation are often supplemented by volutes, 'mesh', rows of 'stairs' and painted circles. The third variant consists primarily of a wide frieze filled with a solid 'mesh', from time to time partitioned by vertical stripes or by ovals with painted segments. The next variation is formed by a zigzag of narrow stripes or a ribbon of thin lines, while the triangular fields between them are often in-filled with a hatch pattern or with 'mesh'. The last variant includes diagonal stripes arranged in a wide frieze or ribbons made of narrow lines that are bordered at an angle by short arc-shaped segments. The first or second variation of this decorative scheme was used most often for painting goblets, pear-shaped vessels and pots, while the remaining variations are found more rarely, and chiefly on biconical and sphero-conical vessels (Figs 6.3, 6.4 [57–63] and 6.5 [1–4, 6, 9, 46–50, 56, 66 and 68–71]).

The next scheme is the *metopic* scheme, where a wide ornamental frieze is divided into metopes by a vertical triglyph. The scheme is divided into variations, which depend on the drawing in the metopes themselves. The first includes the so-called 'classic' appearance pattern,

where the dividing vertical consists of only one or two wide stripes, of ribbons of thin lines, or of a segment of 'mesh'. The field of the triglyph is formed between these ribbons and can be empty occupied by painted horizontal ovals between which is drawn a vertical row of dots or strokes, 'steps', a thin diagonal line, a slanted cross, an oval with 'mesh' and depictions of animals or of the 'tree of the world'. In the metopes, parallel wide arcs, straight lines, wavy slanted ribbons of thin lines, and outlines rendered in wide stripes pass from the rim to the shoulders. Often, rows of strokes, segments of 'mesh' and lines of 'cilia' are inscribed between the arcs. The angles in the metopes are painted and supplemented with 'steps' of dotted lines. The second variation has scallops composed of wide stripes or of ribbons of thin lines in the metopes. In this variation the general pattern was supplemented by strokes, 'mesh' and also 'steps'.

The metopes of the third variation hold horizontal arc-shaped figures, the fields of which are often filled by vertical strokes, 'mesh' and 'steps'. This drawing was supplemented by an upper frieze of thin parallel lines. In general composition the fourth variation is similar, but the lower angles in the metopes are painted in such a way that 'negative' half-ovals remain, the fields of which are occupied by slanted ribbons of thin lines, contoured triangles, painted segments, and paired arcs. Often, in the lower angles, there are 'negative' circles with a point at the centre. The metopes of the fifth variation are formed by a wide vertical stripe; ribbon-diagonals made of thin lines surround the metopes; those diagonals are adjoined by narrow 'steps'. The metopic decorative scheme was also used, but in a rather different manner, in the painting of crater rims. Here, metopes are formed by a wide 'negative' stripe, by thin parallel lines, and by painted vertical ovals. The 'negative' field is empty or sometimes contains a painted triangle with extended apexes (sometimes with painted circles on the sides). This pattern recalls the 'façade' scheme (see below). The first and second variations were used the most in decoration. Goblets were primarily decorated with metopic designs while biconical vessels were only rarely decorated in this manner (Figs 6.3 and 6.4 [65, 69 and 72–75]).

The *facade* scheme also has its variations. The first resembles the metopic design, but in the metopes there are 'negative' horizontal stripes formed by painted triangles and, in a symmetrical arrangement, ovals with painted circles in the centre. A combination of horizontal ribbon and circles (ovals) characterises the second variation. The circles were drawn with broad lines, but the space in the centre was filled with segments of 'mesh', painted triangles, scallops, vertical ovals (sometimes including 'mesh' or painted segments), a cross with leaf-shaped rays, and volutes. The two side segments of the central circle were either painted or filled with 'mesh'. The horizontal ribbon between the circles could be either plain or filled with thin horizontal lines, groups of strokes, solid 'mesh', 'steps' or a slanted cross. Often, painted triangles with circles on the sides abutted this ribbon from above and below. Sometimes these elements were substituted for 'ripples', segments of 'mesh', 'steps' or groups of strokes. The design in its simplified form was without these elements. In the third variation the space between the circles was filled with scallops made of narrow stripes or of ribbons of thin lines. In the fourth variation, wide, inclined ribbon-diagonals are found between the circles. This variation approaches the 'tangent' scheme in terms of composition. The second and third variations are observed most often in pottery ornamentation. All amphorae and some pear-shaped vessels were so decorated. The first variation was used in the painting of goblets and of biconical and binocular-shape vessels (Figs 6.3 and 6.4 [66] and 6.5 [36–42, 57 and 60]).

The *segment-shaped* scheme, which is divided into two variations, resembles the two preceding schemes in its formative elements. The first variant includes compositions that, in

their execution, recall the ‘metopic’ scheme – ovals with ‘truncated’ upper and lower segments are arranged vertically in the narrow frieze. The ovals were drawn with single or double stripes, wide ribbons of narrow lines, or segments of ‘steps’. Short scallops, diagonal ribbons, segments of ‘mesh’, rows of strokes, painted or reticulate segments, and representations of animals or of the ‘tree of the world’ were inscribed into the fields of the ovals. The space between the ovals either remained empty or was occupied by vertical lines, a row of strokes, ‘steps’, a segment of ‘mesh’, or a depiction of an animal or the ‘tree of the world’. In those instances where painted triangles were symmetrically arranged between the ovals, the design, in its transformed appearance, recalls the ‘owl’s face’ scheme in the narrow frieze. The second variation consists of a horizontal belt divided into metopes by a vertical ribbon made of thin lines. The angles of the metopes were painted out, and painted circles, ovals with ‘reticulate’ segments, circles with a cross, and diamond-shaped figures were inscribed in the centre of the field. This pattern somewhat resembles one of the variations of the ‘tangent’ scheme. Goblets, mainly with a single reticulate handle, crater-shaped and pear-shaped vessels, and lids, were decorated with the segment-shaped scheme. More rarely we see this pattern on biconical and sphero-conical vessels (Figs 6.3 and 6.4 [64 and 71] and 6.5 [58]).

The next decorative scheme is the *Tangentenkreisband*. There are four variations to it. The first includes the ‘classical’ pattern, where the circles or ovals (single, concentric) were combined into a continuous ornamental belt formed by wide, inclined arc-tangents. The circles were generally filled with painted or ‘reticulate’ segments, scallops, ribbons of thin lines, segments of ‘steps’ or ‘mesh’ crosses, and depictions of animals. In the places where the tangents join the horizontal lines of the frieze there were inscribed painted triangles; in the ‘negative’ backgrounds between the tops of these triangles were strokes, painted half-ovals and circles, scallops, and pieces of ‘mesh’. The tangents themselves were drawn with one or two wide stripes, between which there was sometimes placed a ribbon of thin lines, rows of strokes, a dotted line, or ‘steps’. The second variant is characterised by a design formed of two wide stripes, while in the composition’s centre there is an oval of ribbons made of thin lines. Between the tangents and in the centres of the ovals there were inscribed slanted lines, scallops, rows of ‘cilia’ and symbols in the shape of the letter ‘M’. The third variation consists of a pattern in which circles and diagonal arcs are rendered by one or two lines, while the composition itself conveys only a ‘pure’ design, without secondary details. In the fourth variation the wide frieze in the centre of the composition contains concentric circles separated from the tangential arcs by a triglyph of vertical lines. This pattern unites the ‘metopic’ scheme and the *Tangentenkreisband* composition. The pattern recalls the ‘tangent’ scheme and is an example of a ‘transitional’ sub-variation. The *Tangentenkreisband* scheme did not find wide application. Primarily sphero-conical, crater-shaped, and pear-shaped vessels, lids and, occasionally, large-sized goblets were decorated with it (Figs 6.3 and 6.5 [12, 52 and 54]).

The *tangent* decorative scheme repeats the *Tangentenkreisband* design in terms of its composition. It is characterised by a diverse execution, which allows us to trace several variants. The first includes the drawing of semi-volutes with painted circles at the ends. Triangles are inscribed into the zones over and under the tangents; vertical ribbons made of thin lines, pieces of ‘mesh’ and slanted crosses fill the spaces between these triangles. The second variant is characterised by the placing between the tangents of one or two painted circles in a ‘negative’ rectangular or oval rosette that is formed by a combination of triangles, wide arcs, and vertical ribbons made of thin lines. The tangents are formed in same way as in the first

variant, but with more variety, with the addition of 'steps', rows 'mesh' and small strokes. In the centre of the composition of the third variant there is an oval with lateral 'mesh' segments. The centre of the oval was often filled with 'steps', scallops, diagonal lines, crosses, rows of strokes, and depictions of animals and of the 'tree of the world'. The fourth variant virtually repeats the preceding one, except that the tangents were additionally decorated by volutes and painted with circles in rosettes: that is, by those same elements that are observed in the first and second variations. We, therefore, have in the fourth variation a coinciding of all the constitutive elements that characterise the tangent decorative scheme. We can call the fifth variation 'tangential-metopic': in it, vertical ribbons of thin lines divide the ornamental belt into metopic zones through which pass arc-tangents. Sometimes the fields of the metopes are filled in with 'mesh'. The tangent pattern, arranged in the narrow belt, is often accompanied by an upper frieze of 'simplified-line', 'scalloped' or 'metopic' decorative schemes. The tangent scheme was applied in the painting of a significant number of types of pottery (Figs 6.3, 6.4 [67] and 6.5 [13–18, 43–45 and 67]).

The 'owl face' decorative scheme was arranged in a wide frieze where horizontally arranged ovals, in the centre of which are concentric circles, were formed by stripes or ribbons of thin lines. There are painted triangles where the ovals join. The pattern was often supplemented with secondary details – ripples, rows of dots, pieces of 'mesh', scallops, segments, and ribbons of thin lines. In one case, arcs made of small ellipses with 'mesh' occupied the fields of the ovals.

We observe in one of the variations of the 'segment-shaped' scheme a transformed 'owl face' composition, in changed form, and contained within the narrow frieze. As a rule, the biconical and sphero-conical vessels were ornamented with the 'owl face' pattern (Fig. 6.3 and 6.5 [29 and 30]).

The wavy decorative scheme was principally arranged in a narrow frieze, although we also see it in a wide ornamental belt. Between the lines of the frieze passes a horizontally wavy stripe that was supplemented in its curves by half-ovals and by a vertical ribbon made of thin lines, by concentric circles with painted segments and 'steps' in the centre, and by 'negative' circles with painted ovals in the centre of the field. The simplest form of this decorative scheme consists of an undulating ribbon of thin lines or of a wide, undulating stripe. In addition, between the curves of the main stripe there are ovals with 'mesh' and thin arcs adjoining it, and vertical rows of strokes, but most often the space was filled by a vertical row of small triangles. Sometimes ribbons of scallops are present in the pattern, which creates the impression of plexiform wavy stripes. This design has been recorded partitioned into metopes by vertical lines or 'steps'. One variation differs somewhat from the others by the mirror-symmetrical arrangement of its ornamentation. Double stripes or ribbons made of thin lines are divided by concentric circles, ovals with painted segments and vertical lines, 'steps' and 'mesh' in the centre. Triangles, scallops, ribbons of undulating lines, and painted circles adjoin the stripes. Only biconical and sphero-conical vessels were ornamented using the decorative scheme (Figs 6.3 and 6.5 [10, 27 and 28]).

The *meander-line* painting scheme has a wide distribution. This decorative scheme acquired certain specific traits on the settlement pottery of the region. The basic ornamental element is the horizontally (and more rarely vertically) arranged S-shaped arc, which fills the frieze of the painting. The S-shaped arcs themselves were drawn in one thickness or had bulges at the curves or in the central part. Often the arcs intersected with wide stripes or ribbons of thin lines. Ovals or small circles were also drawn on the arcs. The arcs ended with painted triangles, contoured

angles with hatching, scallops, 'mesh', 'steps' and painted circles. Sometimes these angles were formed by ribbons of thin lines, or by 'steps'. We can define three variations to the pattern. The first includes drawings in a wide or narrow frieze. The meander-line belt is rarely divided by thin vertical lines. The second variation consists of S-shaped arcs enclosed in two horizontal rows that are divided by a wide horizontal stripe, or the arcs cross smoothly from row to row. We can conditionally name the third variation the 'meander-line-reticulate', when the arc-loops go in one behind another. This type of ornamentation distantly recalls one of the variations of the 'leaf-shaped' decorative scheme. Meander-line drawing was often supplemented by an upper frieze of the 'simplified-line', 'voluted', 'metopic' and 'scallop' decorative schemes. The majority of types of table pottery were decorated with meander-line painting (Figs 6.3 and 6.5 [5, 7, 19–21, 53, 55, 60 and 62]).

The use of the *voluted* decorative scheme was restricted. It has multiple variations, and certain types are inherent only to pottery of the settlements of the region (the Bug-Dnieper interfluvium). The first variation is represented by a drawing of the 'classic' type, in which, in the wide frieze, there come from both above and below two spirals with painted, leaf-shaped endings. In the places where the volutes join to the frieze's horizontal stripes there were painted triangles or contoured angles drawn filled with strokes, 'mesh', spirals and circles. The second variation is specific in its rendering – the volutes are intersected obliquely by a line with painted angles at the ends and often with painted circles (segments) in the centre. The frieze was either unbroken or divided by vertical painted triangles with extended apexes. In the third variation the volutes were arranged into two horizontal rows. These rows were formed by connecting wide stripes and complicated figures consisting of solid painted triangles. Sometimes a horizontal line divided the rows. The fourth variation includes ornamentation where volutes were an independent element (*rapport*) formed by division of the frieze into separate ornamental zones by triangles with extended apexes or inclined lines. In the fifth variation the volutes-rapports are inserted into a wide two-rowed frieze. The last variation was complicated in terms of its composition: the volutes were placed in rosettes that were formed by combinations of wide stripes and painted triangles, making up two horizontal rows. They are formed into compositions that recall the 'tangential' and 'leaf-shaped' decorative schemes. The ornamentation was executed exclusively in a wide frieze. The pattern of practically all variations was supplemented by painted circles and triangles, rows of strokes, scallops, and by segments of 'mesh'. Sometimes the voluted design was combined in the upper frieze with the simplified-line scheme, but more often it also filled the role of the upper frieze for the 'tangential', 'meander-line' and 'metopic' decorative schemes. Only biconical, sphero-conical and pear-shaped vessels were decorated with the voluted design (Figs 6.3 and 6.5 [22–26, 59 and 61]).

Yet another, a well distributed, decorative scheme was the *leaf-shaped* scheme. There are three variants. To the first are ascribed ornaments that are enclosed in the narrow frieze and consist of a horizontal wavy stripe with painted circles in the centre, or of two half-spiral arcs directed one against the other, and with circles at the ends. The arcs meet with the lines of the frieze. The arcs join with the lines of the frieze, with painted triangles, or with contoured angles with strokes, 'mesh' and ovals. The drawing in this variation compositionally approaches the patterns of the 'meander-line', 'tangential' and 'voluted' decorative schemes. This variation is characteristic of the ornamentation of vessels in the earlier sites of the region. The second variant consists of a narrow or wide frieze filled with wavy stripes with a leaf-shaped bulge in

the centre of the arc. The bulge was sometimes not painted, but rather was filled with ‘mesh’ or ‘negative’ ovals. There are examples where there are rows of dots and thin lines inserted between the arc segments of ‘mesh’. The third variation includes drawings where wide arcs come from above and below, going past one another with their leaf-shaped endings. The variation occurs in both the thin and the wide frieze. This design was sometimes supplemented by simplified-line drawing, but it more often served on its own as an upper frieze, especially on vessel rims, combining with the ‘tangent’, ‘meander-line’ and ‘metopic’ schemes. Primarily goblets, craters, lids, and biconical, crater-shaped and pear-shaped vessels were decorated with the leaf-shaped pattern (Figs 6.3, 6.4, [61] and 6.5 [11 and 63–65]).

The final decorative scheme that has been recorded in painting is the *scalloped* scheme. Several variations of the design can be defined. The first and simplest is formed by horizontal rows of single or paired scallops, supplemented by painted semi-ovals and triangles, ‘mesh’ and ‘cilia’. This ornamentation was often contained in the narrow frieze. The second variation is the wide-frieze composition, which consists of two (but sometimes only one) rows of scallops-ribbons made of thin lines or of a multi-row belt made of wide stripes-scallops. Between the scallops are groups of strokes, ‘mesh’, ‘reticulate’, ovals, and depictions of the ‘tree of the world’. The third variant is a narrow frieze with a combination of scallops and circles. In the centre of the composition are concentric circles with ‘reticulate’ segments, to which scallops are attached. Ornamentation has been recorded where the frieze is divided by vertical lines into fields where ovals and scallops are inscribed. This variation approaches the ‘tangent’ scheme. The fourth variant consists of combinations of circles (ovals) formed by stripes or ribbons made of thin lines and of several rows of wide, slanted scallops. The space above the upper scallop is often occupied by a painted triangle with an extended apex, between which are inscribed ‘steps’, ‘mesh’, slanted crosses, and short scallops. This variant was always implemented in the wide frieze and stylistically resembles the ‘tangent’ scheme. The fifth variant is represented by a combination of scallops with the metopic (triglyph) and façade pattern. The scallop scheme, especially the first variant, often played the role of an upper frieze or of decoration on the rims of the vessels. Almost all types of table pottery were ornamented with this decorative scheme (Figs 6.3 and 6.5 [31–35]).

The fundamental ornamental belt was often supplemented by an upper frieze. These were scalloped, tangent compositions, but most often the simplified-line scheme was applied – a wide horizontal ribbon of thin lines that sometimes was divided by vertical stripes, wavy lines, slanted crosses, and ovals with painted segments. We observe more rarely in the upper frieze vertical ribbons of ‘steps’, rows of slanted lines, a dense ‘mesh’, a zigzag pattern, rows of triangles with ‘mesh’, wavy stripes, and other elements (Figs 6.3 and 6.5 [5, 8–10, 14, 15, 26–28, 43 and 59]). Separate representations that can be divided into groups are connected with the ornamental frieze. Various depictions of bucranes go into the first. To the second group we attribute drawings of horizontal segments, often with ‘cilia’ on the ends. Various depictions of the ‘tree of the world’ make up the third group. We also have combinations of one, two and three ‘trees’ in the form of a complete row. More rarely the ‘tree’ is accompanied by pieces of ‘mesh’ or of ‘steps’ by an oval with a ‘mesh’, and by a depiction of an animal. The vertical oval with a ‘mesh’ like the ‘steps’, the row of strokes, and the dotted line is a substitute in this context for the ‘tree of the world’ symbol. Single and paired depictions of animals that show several figures, rendered very schematically or, more or less, realistically (Fig. 6.3), make up the last group.



## General remarks

It is worth making several general observations about the ornamentation of pottery. On ceramics, irrespective of category, we have a pattern that is placed in a single ornamental belt. This relates first of all to incised ornamentation and to a lesser extent to painted decoration. Painted pottery was decorated primarily with compositions in a narrow frieze, and the wide belts that are often composed of two narrow friezes (upper and lower). Only in rare instances did table ceramics bear three-frieze painting, which covers almost the entire surface of the vessel. Kitchen pots were ornamented with a narrow frieze along the shoulders and rims. The decoration of pottery with a narrow or wide (one-frieze or two-frieze) ornamental belt was closely connected with the form of the vessel and the type of decoration. Ornamental schemes rendered in different techniques can be broken down into two large groups. To the first group a continuity in composition is inherent, where the fundamental, organising elements (the *rapport*) flow one into another. Into the second group go schemes that are vertically divided by intervals into separate, repeating blocks. Decorative schemes have been recorded where the principle with which the ornamentation was put together was precisely maintained (the ‘meander-line’, the ‘metopic’); there have also been designs where the same compositions were rendered in either a continuous or interrupted manner (‘tangent’). Pottery ornamentation was disposed symmetrically, especially from the point of view looking down, from which it is distinctly visible that the ornamental elements (blocks) are arranged in terms of multiples (2–4–6). This sequence was very rarely broken, and the composition consists of 3–5 blocks. It is worth mentioning that some decorative schemes have invariant traits, that is, the basis of the creation of the composition does not change given the presence in the decoration of certain or other stylistic elements (‘meander-line’ and ‘façade’). The majority of schemes are polyvariant, and new details or even combinations with other designs engender only variations of the basic motif. Some ornamental schemes are sufficiently widespread and dominate in quantitative terms (the ‘tangent’, the ‘metopic’ and the ‘simplified-line’). Others are represented by fewer examples or their diffusion is limited by an insignificant time period (‘façade’ and ‘voluted’). We see a connection between ornamentation and the technique with which it is applied. Thus the ‘simplified-lined’ scheme was used to decorate both kitchen and table vessels, while the ‘meander-line’ and ‘tangent’ compositions were applied using the incised technique and painting. Other schemes were applied for decorating only table ceramics. In the last instance, some schemes were used to decorate many types of pottery, others to decorate several closely related types, and yet others were used only for one type. Pottery ornamentation is distinguished by the accuracy and sophistication of the painting. Sometimes it is over-saturated with secondary details, which possibly indicates a shift in accent from a sacral burden in the direction of pure aesthetics.

## Conclusion

In creating a classification (in our case of ceramics), indicators should be strictly divided into simple elements, taking into account both internal (material, technology and metrical data) and external (location, time and archaeological context) characteristics (Kholyushin and Kholyushina, 1985: 33). The next stage in the processing of the material is to rank the indicators and compose

a hierarchical system for them. But in grouping the material it is necessary to sequentially input into the schemes qualitatively different, heterogeneous indicators (technological, morphological and stylistic). Given, however, the presence of several diverse indicators, we obtain a multi-step, sequential-branched classification that, in our case, completely correlates with the principles of formal logic.

## References

- Bulavin, I. (1938) *Heat Engineering in Fine Ceramics*. Moscow-Leningrad: Local Industry State Press (in Russian).
- Cucoş, Ş. (1999) Faza Cucuteni B zona subcarpatică a Moldovei. In: D. Monah and G. Dumitroaia (eds) *Bibliotheca Memoriae Antiquitatis* VI. Piatra-Neamţ.
- Ellis, L. (1996) Cultural boundaries and human behaviour: method, theory and late Neolithic ceramic production in the Carpathian-Pontic region. In: *Cucuteni. Bibliotheca Memoriae Antiquitatis* II: 75–87. Piatra-Neamţ.
- Henning, V. (1973) Programme of statistical processing of ceramics from the archaeological excavations. *Soviet Archaeology* 1: 114–36 (in Russian).
- Henning, V. (1992) *Ancient Ceramics (Methods and Programmes of Study in Archaeology)*. Kiev: Naukova Dumka (in Russian).
- Kholyushin, Y. and Kholyushina, V. (1985) Methodological aspects of studies of archaeological cultures of Stone Age. In: *Problems of Reconstructions in Archaeology*: 23–40. Novosibirsk: Nauka (in Russian).
- Korobkova, G. (1983) Early ceramic production. In S. Semenov and G. Korobkova *The Technology of the Earliest Productions*: 191–235. Leningrad: Nauka (in Russian).
- Lukich, G. (1979) *Design of Ceramic Artistic Items (Theoretic Basis of Form-creation)*. Moscow: Vysshaya Shkola (in Russian).
- Pânteă, C. (1983–1984) Noi date privind tehnica picturală în cultura Cucuteni. *Acta Moldaviae Meridionalis* V–VI: 413–28. Vaslui.
- Ryzhov, S. (2001) Pottery of Tripolye culture. In S. Ryzhov, N. Burdo, M. Videyko and B. Magomedov (eds) *Ancient Ceramics of Ukraine*: 12–14. Kiev: Academperiodika (in Ukrainian).
- Saiko, E. (1982) *Technique and Technology of the Ceramic Production of Central Asia in Historical Development*. Moscow: Nauka (in Russian).
- Shumova, V. (1985) On one of the ceramics categories of late-Tripolye artefacts of the South Bug–Dnieper interflaves. In *Report Thesis for the 3rd Vinnitsa Regional Historical and Regional Natural History Conference*: 45–6. Vinnitsa (in Ukrainian).
- Shumova, V. (1988) Production of tare ceramics by a late-Tripolye population of the South Bug – Dnieper interfluve. In *Ancient Production, Crafts and Trade*. Report thesis for the conference of the Institute of Archaeology of the USSR Academy of Science: 29–30. Moscow: Nauka (in Russian).

## Chapter 7

# The Flint Tools of Andreevka, the Tripolian Settlement on the Bolshaya Vys River

*Evgeniy Pichkur*

### Introduction

This chapter presents a study of the flint tools from the Tripolian settlement of Andreevka, located in the Novomirgorodskiy district of the Kirovograd region. The settlement is attributed to the Vladimirovskaya local-chronological group of sites of the Cucuteni-Tripolye cultural-historical community, and is one of the earliest sites. It dates to the BII stage (according to Passek's periodisation) (see also Fig. 2 in the introduction). It was partially examined by Gamchenko in the 1930s, and also in the late 1980s by specialists of the Institute of Archaeology, UNAS (e.g. by Tsvek and Ozerov in 1987; and by Kruts and Ryzhov in 1988).

New archaeological material in the form of scattered artefacts was collected from surrounding ploughed fields by Kornienko<sup>1</sup> between 2004 and 2009. The majority of the collected materials were stored at the Department of Archaeology and Museum Studies of the T. Shevchenko Kiev National University. Some of the artefacts were also sent to the Institute of Archaeology UNAS in Kiev.

Andreevka settlement flint items (Table 7.1) consist of production-related waste and work tools.

### Production waste

Production waste (32 items in total) makes up 17.7% of the total of the items and is represented by cores (and core-shaped fragments), flakes, blades and spalls (only one spall was found in Andreevka).

### *Cores*

*Cores* are represented by two items. One is a prism-shaped bifacial core of bi-longitudinal thinning that was, apparently, in its primary stage of utilisation, that was not worked out due to the low quality of the material. Its dimensions are  $5.4 \times 3.1 \times 3.45$ cm. The second, measuring  $5.0 \times 3.15 \times 2.45$ cm, is a prism-shaped single-platform core of longitudinal thinning, and it is in the last stage of utilisation. The collection also contains two core-shaped fragments.

CATEGORY	QUANTITY	GENERAL QUANTITY IN THE CATEGORY	%
PROCESSING WASTE			
NUCLEUSES		4	
Bifacial bi-longitudinal	1		
Single platform with longitudinal splitting	1		
Nucleus-shaped fragments	2		
FLAKES		18	
Primary	2		
Secondary	11		
Avivages	2		
PLATE-SHAPED ITEMS (including the fragments)		9	
Small plates	1		
Plates	7		
Ribbed plates	1		
SCALES		1	
TOTAL NUMBER OF WASTE ITEMS		32	17.7%
ITEMS WITH SECONDARY PROCESSING			
PLATES WITH RETOUCHING (including fragments)		38	
Small plates retouched	4		
Plates retouched	29		
Truncated plates	5		
FLAKES WITH RETOUCHING		23	
RETOUCHED FRAGMENTS		2	
SCRAPERS		30	
On flakes	18		
end	10		
side	6		
double	1		
ogival	1		
end scrapers made on small plates	1		
On plates	11		
end	7		
double	3		
atypical	1		
SCRAPING TOOLS		4	
Longitudinal	3		
Transverse	1		
STRICKLES		22	
On plates	12		
On flakes	10		
SICKLE INSERTS		19	
PERFORATORS		3	
INCISORS		3	
CHISEL-LIKE TOOLS		2	
AXES		1	
ARROW TIPS		2	
TOTAL NUMBER OF TOOLS		149	82.3%
TOTAL NUMBER OF ITEMS FOUND		181	100%

Table 7.1: Flint inventory of the Tripolian settlement of Andreevka.

## **Flakes**

There are 18 *flakes*. From among these it is possible to single out both core trimming flakes, primary flakes (two pieces) and rejuvenation flakes (two pieces) – left over from the correction and reshaping of a platform. There is also a series of secondary flakes or blanks (eleven pieces).

## **Blades**

*Blades* account for nine of the pieces (including fragments – six pieces). These are typical blanks with parallel faceting on the dorsal surface (seven pieces) and core-trimming blades (one crested and one semi-crested).

## **Tools**

Tools comprise 82.3% of the entire complex of flint items found at Andreevka (148 items); they are represented by flint tools with secondary working.

## **Retouched blades**

The most numerous items in the complex are *retouched blades* – 38 pieces (including 31 broken). The majority of these items can be classified as knife-shaped blades with regular or partial retouch on the dorsal surface (27 items). There are examples with retouch either on one edge (13 pieces) or on both edges (14 pieces). Among them are two made on primary blades with retouch on one dorsal edge (Fig. 7.1 [3]),  $5.2 \times 2.8 \times 0.9\text{cm}$  and  $4.7 \times 1.6 \times 0.8\text{cm}$  in size, respectively. There is also one example of a blade with continuous retouch on both dorsal edges; it is  $3.65 \times 1.8 \times 0.75\text{cm}$  in size. Another is a blade with semi-continuous retouch on two edges and one on a crested blade that is  $6.05 \times 2.2 \times 1.0\text{cm}$  in size, with retouch along the whole of one dorsal edge. Other examples are blades that show parallel rejuvenation on the dorsal surface.

One piece,  $9.3 \times 2.3 \times 0.6\text{cm}$  in size, has an area of continuous retouch on one dorsal edge involving the removal of small, rounded, ‘pearl’-like flakes on the distal end and signs of use-wear on the other dorsal edge (Fig. 7.1 [1]). There are three fragmentary flakes (1 medial and 2 proximal) with retouch on both dorsal edges. One piece represents the distal tip of a tool (Fig. 7.1 [5]) with regular retouch on both dorsal edges including notching on one. The tip is broken, but was apparently acutely angled. It measures  $3.25 \times 1.25 \times 0.6\text{cm}$ . Three other proximal fragments with similar retouch are probably parts of similar tools.

In addition, among the retouched blades it is possible to identify items with bifacial retouch (five pieces). One,  $5.5 \times 2.3 \times 0.8\text{cm}$  in size, for example, was a blade which extended across the opposite core platform and had alternating retouch on one dorsal edge and the opposite ventral edge. Another has regular semi-steep retouch on both dorsal edges with opposing irregular retouch; its surviving dimensions (the distal end is missing) are  $3.8 \times 1.7 \times 0.35\text{cm}$ . There is also the medial part of a tool,  $3.7 \times 3.0 \times 0.75\text{cm}$  in size, made on a wide blade with flat scale retouch on both dorsal edges and large, flat rejuvenating removals. Yet another is made on a blade (Fig. 7.1 [2]) with semi-steep regular scale retouch on one dorsal edge, with opposing

partial flat 'pearl' retouch; the distal end bears steep retouch and the proximal end is broken; the size of the item is  $7.8 \times 1.15 \times 0.55$ cm. A smaller fragment of a similar item represents the remaining specimen.

Also among the retouched blades is a distinct series of transversally truncated items (five pieces). These are characterised by transverse retouch on the distal part; two have partial retouch on the ventral surface. Their sizes vary from  $3.2 \times 2.3$  to  $2.0 \times 1.5$ cm. One tanged piece (Fig. 7.1 [4]). has bladelike proportions and its distal end is worked bifacially to produce the tange. it is  $3.0 \times 1.6 \times 0.52$ cm in size.

## Scrapers

The next largest category of tools found in the Andreevka complex is that of *scrapers* (30 pieces). They can be divided into two groups: scrapers on flakes and scrapers on blades. Scrapers made from flake blanks dominate – there are 18 such pieces. These are represented by end (ten pieces) and side-scrapers (six pieces). All are made on small round or oval flakes and differ only in the positioning of the retouch. For example, end scrapers made on flakes have a convex working edge shaped by semi-steep or steep retouch along the distal end (in addition, the sides are sometimes also retouched; retouch therefore covers three-quarters of the perimeter).

Thin scrapers are dominant among them; their sizes vary from  $3.7 \times 2.45 \times 1.0$ cm to  $1.7 \times 2.75 \times 0.6$ cm. Thick scrapers in this category are represented by one example: the scraper is made on a thick primary flake (Fig. 7.2 [1]), shaped with steep scale retouch along the distal end; it is  $3.3 \times 3.8 \times 1.3$ cm in size. There are also two scrapers that stand out, having straight working edges. One is made on a partially cortical flake; it has a completely straight working edge shaped by semi-steep regular scale retouch along the distal end; in addition, there is partial retouch on one long edge; the size of the item is  $3.4 \times 4.6 \times 0.9$ cm. The second is made on an elongated flake with an almost straight or slightly concave blade shaped with steep, regular 'pearl' retouch along the distal end; partial steep retouch has also been observed on one dorsal edge, and it is  $3.6 \times 2.6 \times 1.2$ cm in size.

Side scrapers on flakes differ from end scrapers only by the location of the retouch. They also have convex working edges shaped by semi-steep or steep regular retouch on one of the dorsal edges. Thin flakes are dominant and the objects vary in size from  $3.35 \times 2.5 \times 0.95$ cm to  $2.35 \times 2.0 \times 0.5$ cm. Thick scrapers are, again, represented by a single item: a scraper made on a thick primary flake (Fig. 7.2 [2]). It is shaped with steep scale retouch along one dorsal edge; the opposite edge is also modified by partial steep scale retouch; it measures  $4.25 \times 2.5 \times 1.75$ cm. One artefact ( $3.1 \times 2.6 \times 0.8$ cm) is made on a flake and, in addition to regular semi-steep 'pearl' retouch on one dorsal edge and partial shallow 'pearl' retouch on the opposite edge it also has some modification on the invasive retouch on the end.

The collection also contains one atypical scraper (Fig. 7.2 [3]). It is made on a flake and shaped with alternate retouch: there is regular semi-steep 'pearl' retouch on one dorsal edge and similar retouch on the opposite ventral edge; its dimensions are  $3.6 \times 2.45 \times 0.5$ cm. In addition, there is one ogival scraper made on a flake; its working edge is shaped by scale retouch applied on both ventral edges so that the distal end is almost a point (even though it is somewhat rounded), and the item itself resembles an arrow tip; its dimensions are  $3.35 \times 3.15 \times 0.9$ cm.

The number of scrapers (12, including fragments) on bladelike blanks is similar to those made on flakes. The majority are also end scrapers of classic form (Fig. 7.2 [8]) (seven items).

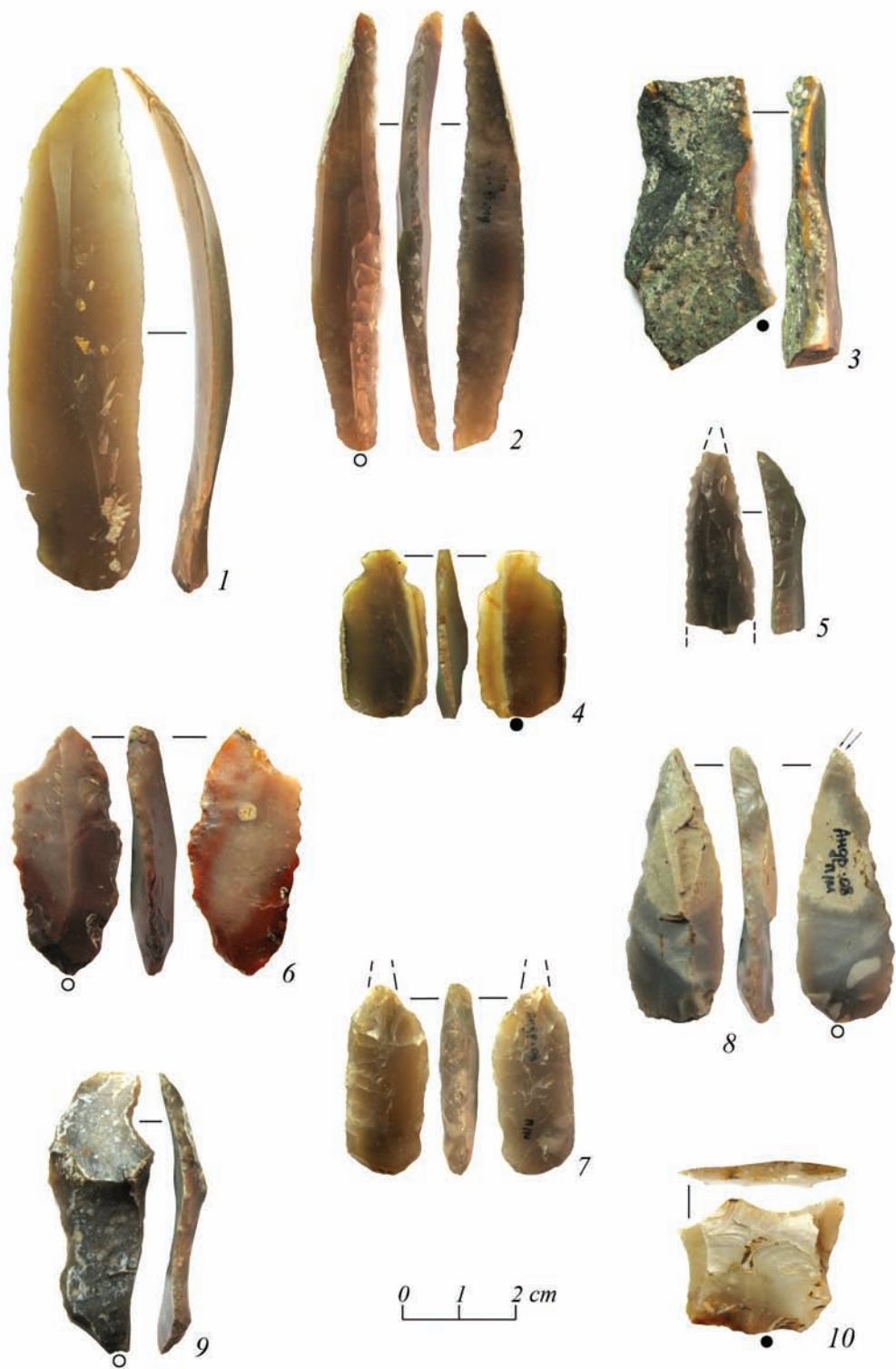


Figure 7.1: Andreevka settlement: various tools made of blades.

They are made on blades with convex working edges shaped with semi-steep or steep regular retouch along the distal end; the dorsal edges are also partially retouched. One item measures  $5.7 \times 3.35 \times 1.15$ cm (it is the largest in this category) and, in addition to shaping retouch on the dorsal surface it has partial semi-steep retouch on its end (Fig. 7.2 [7]). One scraper made from a ribbed blade is distinct in having a slanted working edge and a retouched proximal rather than distal end; its dimensions are  $3.9 \times 2.0 \times 1.2$ cm. In addition, one object is made from a narrow blade (Fig. 7.2 [5]): with a steeply retouched, straight scraping edge and all-over steep scalar retouch; its dimensions are  $2.15 \times 1.2 \times 0.5$ cm.

The collection also contains double scrapers made from blades (three items). They resemble end scrapers but have two working edges. The first, for example, measures  $4.4 \times 2.3 \times 0.9$ cm and has steep scale retouch along the distal end with a more angled working edge at the proximal end. It also has shallow regular scale retouch along one of dorsal edge and similar, but steeper, retouch on the opposite side. The scale retouch is continuous around the whole perimeter of the tool with a few large, parallel removals on the dorsal surface (Fig. 7.2 [6]). The second example, measuring  $3.6 \times 1.5 \times 0.6$ cm, is closely similar except that one dorsal edge has been scale flaked across the arris running along the middle of the back (Fig. 7.2 [4]). The third item is again similar, made on an asymmetrical blade. One working edge is burnt and broken, the other is faceted on the back and bevelled on the front with shallow retouch. It measures  $2.8 \times 2.25 \times 0.7$ cm.

One further atypical scraper (Fig. 7.2 [9]) is made on an irregularly shaped blakelike flake with a rounded and gently sloping retouched proximal edge. The elongated distal end has no retouch and gives the impression of an incomplete tool (dimensions:  $5.7 \times 3.4 \times 0.8$ cm).

### ***Scraping tools***

Typologically, *scraping tools* are similar to scrapers. In the Andreevka's assemblage they are represented by four items. Three are 'transverse', made from broad flakes, of which two have long working edges shaped with regular, shallow or semi-steep retouch along the distal end; both have one of their dorsal edges retouched (Fig. 7.2 [10]). One scraping tool, in addition to retouch on the dorsal edge of the distal end, also has partial shallow retouch on the ventral side. The maximum dimensions of the specimens are  $5.2 \times 3.2 \times 1.3$ cm and  $5.4 \times 3.4 \times 0.8$ cm, respectively. The third specimen (represented by a fragment) is made on a primary flake and has an obliquely-struck straight working edge formed by regular scale retouch; in addition, the proximal end was bevelled to remove the bulb of percussion; it measures  $4.2 \times 4.25 \times 0.9$ cm. Another specimen (Fig. 7.2 [11]) is made from a partially cortical flake with crust remains, but unlike the transverse specimens, its working edge is arranged parallel to the axis of the flake with straight shallow, regular scale retouch; dimensions:  $4.9 \times 3.7 \times 1.0$ cm.

### ***Flakes with retouch***

*Flakes with retouch* occupy a significant position in the Andreevka complex: there are 23 such specimens. The purpose of these items is not completely clear and so, like the retouched blades, they are attributed to a separate category. As the name makes clear, they are made from flakes and the majority have partial irregular (sometimes regular) retouch on the dorsal (13 pieces) or ventral surfaces (three pieces). In some cases (seven), they have retouch on both sides. Their



dimensions range from  $1.65 \times 1.45 \times 0.3\text{cm}$  to  $5.1 \times 4.05 \times 0.65\text{cm}$ . Some of these items may be fragments of other identifiable tools.

### ***Notched scrapers***

The next type in terms of quantity is *notched scraper* (22 pieces); tools with notched working edges. They can be divided into two groups: those made from blades and those made from flakes. Hollow scrapers made from bladelike flakes/fragments are most numerous (12 items). They have one or more indentations of different diameters (0.5–1.65cm), shaped with retouch on either the dorsal or the ventral surface. The arrangement of the indentations varies: they either appear on one or both sides of the object (lateral) or on one, usually distal, end (end tool). In addition to the notch itself, some have partial or regular retouch on either surface of the work piece. For example, one example made on a blade has a fully retouched edge (Fig. 7.1 [9]), on which there is also a notch 1.6cm in diameter; the other notch is created by steep ‘pearl’ retouch on the opposite side. The distal end is also retouched. The objects dimensions are  $5.0 \times 1.9 \times 0.5\text{cm}$ . Another example ( $2.7 \times 2.1 \times 0.6\text{cm}$ ) is made from a blade fragment. One of the edges is fully retouched, including a notch measuring 1.4cm in diameter. The opposite edge is also partially retouched. A further specimen (Fig. 7.1 [10]) is also made from a blade fragment and has two notches of 0.85cm and 1.65cm in diameter respectively; they are made using steep ‘pearl’ retouch along the distal end of the blank (dimensions:  $2.45 \times 3.0 \times 0.65\text{cm}$ ). Notched scrapers made from flakes (ten pieces) differ only in terms of the blanks used. The diameter of the notches varies from 0.4cm to 1.6cm.

### ***Sickle inserts***

*Sickle inserts* are represented by an impressive series (18 pieces including fragments) in the Andreevka complex. The particularity of sickles, which morphologically are not much different from retouched blades, is the presence of polish along their working edges. This is noticeable to the naked eye and is the result of using these tools for cutting cereal plants, grass, etc. Here they are represented by specimens made on blades and blade fragments; they have straight or slightly convex working edges shaped by regular retouch on one of the dorsal edges; that opposite to the blade is either completely retouched or left unprocessed. Some of the items in this category, in addition to the retouch on both dorsal edges, also have an edge opposite to the blade that is completely worked with shallow retouch on the ventral surface.

As an example, one sickles (Fig. 7.3 [2]) is made from a blade; its working blade is serrated, straight and shaped with large, shallow scalar retouch on the dorsal surface; the opposite edge is retouched in a similar manner and is bifacially worked with large flat removals on the ventral side. Polishing is traceable along the whole length of the working blade on both dorsal and ventral surfaces (dimensions are  $5.5 \times 2.0 \times 0.65\text{cm}$ ). Another specimen, on a proximal blade fragment ( $2.3 \times 1.3 \times 0.6\text{cm}$ ) is shaped using shallow, regular striated retouch on the dorsal surface; the opposite side is shaped with steep striated retouching, while the reverse side has large, shallow removals across the surface. Again, polishing is noticeable along the whole length of the working blade on both sides. Three more fragments appear to be the fragments of similar items. Such tools could be both independent tools (lamellar sickles) and inserts for compound sickles of the ‘Grebenevskiy’ type. In this case, these pieces would be inserted in sequence



Figure 7.2: Andreevka settlement: scrapers and scraping tools.

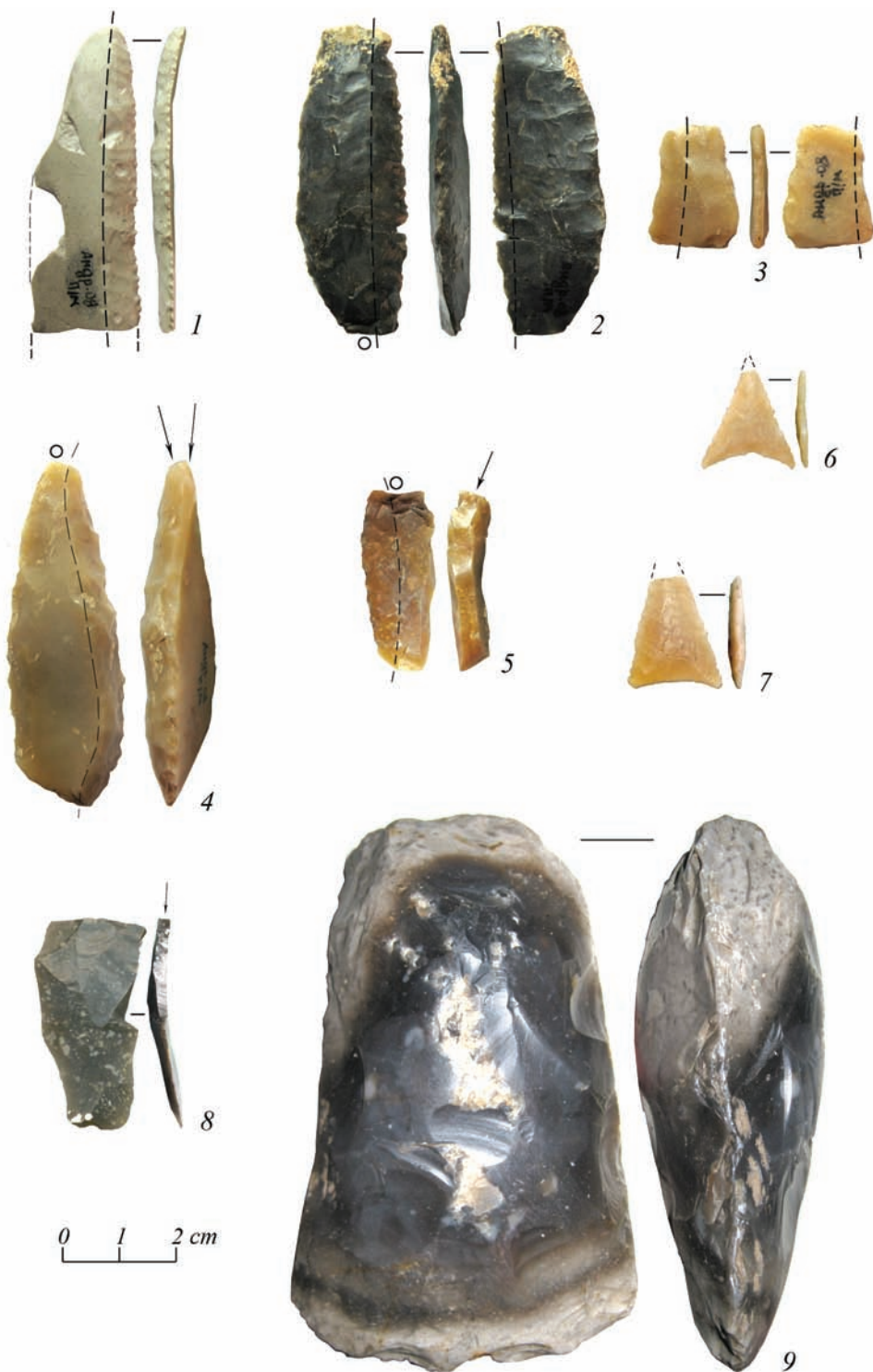


Figure 7.3: Andreevka settlement: various flint tools.

into a horn handle to create a segmented ‘single’ blade (unlike sickles of the ‘Caranovo’ type, in which every insert was put in at an angle to form a toothed blade – as a result the inserts show angular polishing).

Another sickle variant, is represented by tools with retouch along one or both edges of the dorsal surface but without any working of the ventral surface. One specimen (measuring  $4.3 \times 1.3 \times 0.4\text{cm}$ ) is made from a blade; the working edge is straight and shaped with semi-steep regular scalar retouch with similar working on the opposite edge. A further specimen ( $6.1 \times 2.1 \times 0.8\text{cm}$ ) is also made from a blade. Both the working and opposite edges are slightly convex, and both are serrated; the working edge is shaped with steep, large, regular scalar retouch while the opposite edge has more shallow retouch. The distal end is also worked with polished edges. A burin (Fig. 7.3 [4]) has been worked on the proximal end. Another example is a fragment of a similar tool. It is made from a blade, and the working edge is slightly convex and shaped with shallow, regular striated retouch; the polish is at the edges and several flake scars are noticeable on the ventral surface. On the side opposite to the working edge there is small burin (Fig. 7.3 [5]): the item’s dimensions are  $3.2 \times 1.3 \times 0.5\text{cm}$ . Another sickle (Fig. 7.3 [1]) also appears to be made from a fragment or the distal end of a blade. Its working edge is straight, serrated and shaped with shallow, regular striated retouch, while the opposite edge is not retouched. Polish can be seen on the edges (dimensions:  $5.4 \times 2.0 \times 0.35\text{cm}$ ). Eight more pieces of sickle inserts are fragments of similar tools (all of them without retouch on ventral surface).

There are two sickle insert pieces of particular note: in their morphological characteristics they are close to geometrical microliths. One is created from a blade fragment. Its working and opposite edges are angled and shaped with shallow ‘pearl’ retouch; the polish is at the edges, and there is use damage on both edges on the ventral surface. The proximal and distal ends are truncated from the ventral side, thus making the object resemble a trapezoid (Fig. 7.3 [3]). Its dimensions are  $2.2 \times 1.6 \times 0.35\text{cm}$ . The second specimen is apparently a fragment of a similar tool.

## ***Perforators***

*Perforators* are not numerous – there are only three of them. One (Fig. 7.1 [8]) is made on a sub-triangular blade and has semi-steep regular scalar retouch on both dorsal edges (one edge is retouched completely and the other partially so) producing a point. There are traces of wear on both sides of the ventral surface. The item’s dimensions are  $4.9 \times 1.75 \times 0.6\text{cm}$ . The second specimen (Fig. 7.1 [6]) is also made on a blade and shaped with semi-steep, regular scalar retouch on both dorsal edges (one of them is serrated); the distal end is distinctly notched on one edge. The proximal end is characterised by steep retouch on the dorsal side and more shallow, inverse retouch on the ventral side. The item measures  $4.4 \times 1.95 \times 0.7\text{cm}$ . The third and last specimen measures  $3.4 \times 1.45 \times 0.6\text{cm}$  (Fig. 7.1 [7]), and was made from a sickle fragment – this is recognisable from the partial polishing that is traceable on both sides of the item. It appears that this was a perforator with a distinct point which, unfortunately, was broken off at its base. The primary item (the sickle) was made from a blade, but after breaking it was reshaped into a perforator. Its surface is practically fully covered with flat and semi-steep striated retouch; the proximal end is worked on both sides.

### **Cutting tools**

*Cutting tools* are also not numerous— there are three pieces of this sort. As mentioned above, two of them are made on sickle inserts (Fig. 7.3 [4–5]). The third one (measuring  $3.7 \times 1.9 \times 0.4\text{cm}$ ) is shaped from the corner of a broken blade (Fig. 7.3 [8]).

### **Chisel-like tools**

Two *chisel-like tools* are also present in the complex. One of them ( $2.0 \times 1.3 \times 0.6\text{cm}$ ) is made on a blade fragment and one of the edges has steep regular scalar retouch on the dorsal surface. The distal and proximal ends have flake scars on the ventral surface and are also noticeably worn by hammering. The second item is similar but significantly flatter in section and slightly shorter ( $1.8 \times 1.6 \times 0.5\text{cm}$ ).

### **Chopping tools**

*Chopping tools* are represented by a single polished flint axe (Fig. 7.3 [9]). This is trapezoidal and slightly elongated (measuring  $9.9 \times 6.0 \times 3.5\text{cm}$ ), shaped by bifacial working with large removals and a partially pre-polished surface. The blade is wedge-shaped when viewed in profile. In plan, it is noticeably wider than the butt and lens shape; the butt is rectangular in plan, with rounded shoulders, while the profile is practically wedge-shaped. Traces of wear were recorded on both butt and blade.

### **Arrowheads**

Finally, there are tools in the Andreevka complex that can be attributed to the weapons category – e.g. typical *arrowheads* (two pieces). Both items are sub-triangular with an indented base. One is more elongated and has a less concave base (Fig. 7.3 [7]), while the other is shorter and with a distinctly hollow base (Fig. 7.3 [6]). The distal ends of both are broken. They are shaped with flat regular striated and sometimes scalar retouch along the whole perimeter. Their dimensions are  $1.75 \times 1.65 \times 0.2\text{cm}$  and  $2.0 \times 1.7 \times 0.3\text{cm}$ , respectively.

## **Discussion**

The Andreevka flint complex can be characterised as blade-dominated. The flint assemblages of the primary settlement consists of short and smaller blades with mainly parallel faceting on the dorsal surface. The blades seem to have been predominantly struck from prismatic single and bifacial cores using one or two platforms, the size and shape of which depended on the quality of the raw material. The flakes in this collection are either biproducts of blade production resulting from the poor quality of individual cores or are core trimming flakes.

The reduction strategy for blades consisted of the following three major steps: (1) preparing the striking platform, (2) preparing the crest, and (3) striking the blades, with continuous control over the working area. Shaping the cores and the preparation of platforms and crests was done with the help of a hard hammerstone, which is clearly indicated by the remains of the platform and distinct bulbs of percussion.



It appears that the core edge was not corrected before the blow – instead it was abraded. In addition, in the process of working, the core platforms were corrected and reshaped more than once. In fact, the assemblage included core trimming and rejuvenation flakes.

The tool blanks were removed with a soft hammer, either of stone, a horn tip, or of antler (the bone and horn chisels found in the settlement's workshop in Pekari II are attributed to similar tools) (Pichkur and Shidlovskiy, 2003). Neither retouching tools nor hammers have yet been found but, to date, all the flints have come from survey and it is probable that a fuller set of tools will be recovered on excavation. It is possible that some objects, especially arrowheads, were retouched using copper tools as it has been suggested that the precise pressure flaking of these items could only be achieved using a copper implement. It is worth noting that the author does not support the idea that blades in the Cucuteni-Tripolye industry were produced by pressure-flaking; a separate study has been dedicated to seeking alternative methods of blade production (Pichkur, 2008).

All Andreevka flint items are made of local raw material found in abundance in the Bolshaya Vys river basin, along with other minor riverbanks, gullies and geological outcrops. The dominant raw material is flint which is not of very good quality, resulting in rather opaque or cloudy to semi-transparent materials with various impurities. The colour ranges from light grey to black and from light to dark brown. The nodules are not large and, in terms of plasticity, this raw material is significantly inferior to the flint of the Turon seam ('Volyn flint'). The geological-lithological characteristics of the flint's crystalline formation (as well as of other types of flint raw material in Ukraine's territory) are thoroughly described in the specialist literature (Petrin, 2004). It is important to point out that the abundance of flint sources in the Bolshaya Vys river basin determined the continuing interest of various human groups in this territory. In Andreevka itself, for example, there are seven Stone Age sites (from the Palaeolithic to Mesolithic) some of which are located on the same promontory occupied by the Tripolian settlement (Tsvek and Ozerov, 1989).

Andreevka's flint assemblage, however, also includes tools made of fine quality flint (Fig. 7.1 [1– 2]). This flint is practically transparent, of a light brown colour, with a minimum number of impurities, has excellent flaking qualities, and a chalk cortex. This kind of flint was used to make a few retouched blades with parallel faceting. In terms of its characteristics, it is close to Volyn flint. It has always been believed that the Tripolian tribes of the Bug-Dnieper interfluvium (to which category Andreevka is attributed) were forced, due to a lack of sources of quality raw flint material, to use the material imported from Volyn territory. Recent work in the region (for instance at Pekari II, a settlement with a stone-processing workshop, near Kanev on the bank of the Dnieper (Ovchinnikov and Pichkur, 2003); at Rubanyi Most-Korobchino, a stone quarrying and processing complex located on the Bolshaya Vys river not far from Andreevka (Tsvek and Movchan, 1997); and at other complexes (Shydlovskiy *et al.*, 2004) such as Andreevka, has partially disproved this theory. In addition, archaeological studies<sup>2</sup> have identified flint raw material outcrops that do not differ morphologically from Volyn flint. Such flint is found near Korobchino village (Novomirgorodskiy district of Kirovograd region), in the area of the Bolshaya Vys river and near Apolianska village (Uman district of the Cherkassy region), and in the region of the Revukha River (both of those rivers belong to the Sinukha river basin, which is the left tributary of the South Bug river). The presence of items made of similar material among the finds from Andreevka, and at a wide range of sites in the Bug-Dnieper interfluvium, suggests the need to review the notion of 'Volyn imports' in particular, but also the issue of inter-tribal

exchange within the Cucuteni-Tripolian community in general. Considering the remoteness of the Volyn flint sources from the Bug-Dnieper interfluve, it is fair to assume that the Tripolians knew perfectly well of the existence of the flint raw material in their territory; and according to archaeological evidence, they did indeed use it.

## Notes

- 1 The author expresses his gratitude to Kornienko for the material granted for publication.
- 2 The author expresses his sincere gratitude to S. Ryzhov, Associate Professor of the Archaeology and Museum Studies faculty of the T. Shevchenko Kiev National University, for the data provided.

## References

- Ovchinnikov, E. and Pichkur, E. (2003) Study of the Tripolye settlement Pekari II. In N. Gavrilyuk *et al.* (eds) *Archaeological Studies in Ukraine years 2001–2002*: 207–210. Kiev (in Ukrainian).
- Petrin, V. (2004) Usage of mineral raw materials by the population of Tripolian culture. In *The Encyclopedia of Tripolian Civilization* Vol. V(I): 199–219. Kiev: Ukrpolygraphmedia (in Ukrainian).
- Pichkur, E. (2008) Producing long flint blades in Tripolye culture (to the question of knapping technology). In *Stone Age of Ukraine* 11: 197–204. Kiev: Shliakh (in Ukrainian).
- Pichkur, E. and Shidlovskiy, P. (2003) Complex of flint-processing by the population of Pekari II. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (eds) *Materials from the international conference 'Tripolye giant-settlements'*: 121–129. Kiev: Korvin Press (in Ukrainian).
- Tsvek, E. and Movchan, I. (1997) New Tripolian culture production complex of stone quarrying and processing. In *Development of Culture in Stone Age*: 142–144. St. Petersburg: Museum of Anthropology and Ethnography. Russian Academy of Science (in Russian).
- Tsvek, E. and Ozerov, P. (1989) *Report on the Survey of Archaeological Sites in Novomirgorodskiy rayon of Kirovograd region in 1987–1989*. Kiev: The academic archive of the Institute of Archaeology UNAS (in Russian).
- Shidlovskiy, P., Pichkur, E. and Chernovol, D. (2004) Archaeological studies near Apolianska village in Uman area. In *Archaeological Discoveries in Ukraine in 2002–2003*: 361–365. Kiev: Institute of Archaeology UNAS (in Ukrainian).

# Chapter 8

## Houses of the Tomashovskaya Local Group

*Dmitriy Chernovol*

### **Introduction**

The study of house construction in the Tomashovskaya local group settlements commenced at the beginning of the twentieth century. These dwellings were initially excavated by Vasiliy Domanitskiy in 1900 near the town of Talnoe, currently in the Cherkassy region (Spitsyn, 1904). In the following years Tomashovskaya group settlements were studied near Staraya Buda (Yakimovich), Popudnya (M. Himner), Sushkovka (V. Kozlovskaya), and Tomashovka (P. Kurinnoi). Based on the results of field studies, P. Kurennoi was the first to propose an analysis and typology of the constructions according to elements of their interiors (Kurinnoi, 1926: 83).

Following a long break, research recommenced at the beginning of the 1970s, after K. Shyshkin, a military topographer, discovered the existence of the Tripolye giant-settlements. As a result, major excavations, led by N. Shmaglii, V. Kruts and T. Movsha, started at Maidanetske, Talianki, Dobrovody and Chichirkozovka. Small settlements of the Cherkassy region, such as those of Talnoe-2, Moshurov 1 and Zelenaya Dibrova, were also studied. These excavations resulted in the study of more than 100 houses of the Tomashovskaya group, thus establishing the possibility of typological classifications.

During the study process it was determined that the constructions in question were the remains of two-storey (ground floor plus first floor) wooden and wattle-and-daub buildings, most of them residential. It was also presumed that the Tripolye habitations with the settlements were finally abandoned after setting them on fire ritually, as the inhabitants prepared to move on to a new area (Zinkovsky, 1983: 20–1; Kruts, 1990, 2003).

### **Identifying the house remains**

The remains of the Tripolye houses occur as collapsed layers of baked clay, consisting of a clay platform (the remains of floor decks or surfaces) and other building remains: external wall fragments and internal partitions that divided the houses into separate spaces.

One of the difficulties that researchers tend to face is determining different details of construction based on specific morphological indicators. This is somewhat problematic, because the preservation of elements of the structure of buildings and of their interior elements directly depends on the thermal regime during the burning, and also on a number of anthropogenic factors



that influenced the preservation of those building remains (Gershkovich, 2003; Kruts, 2003; Korvin-Piotrovskiy, 2006). However, a careful consideration of the remains allows scholars to distinguish between the various parts (floor decks, partitions, etc.).

The platform (clay floor) is a compact bed of baked clay with the addition of chaff (remains of cereal plant etc.). It normally ranges from 0.05m to 0.12m in thickness but, in some cases, is even thicker. The lower portions of the platform fragments usually bear impressions of cleaved half-beams and, in rare cases, of round timber. They are mostly perpendicular to the longer axis of the building. During the collapse, however, the various parts of the platform could be displaced and become unrecognisable. They sometimes lie with the wood impressions uppermost, and these may be oriented in different directions. In the majority of cases, the top of the platform is covered by a number of thin (0.01–0.03m) levelling clay layers, resulting from the various repairs of the first-storey floor (the one above the ground floor). These levelling layers consisted of different types of clay; some had chaff added and some did not. The surface of this thin clay layer was, in most cases, smoothed or grouted with fine-grained clay that sometimes bears the remains of paint, mostly in red.

The walls and partitions, in the majority of cases, occur as lengthwise or transverse ‘ridges’ that were created during the collapse of the building (Kruts *et al.*, 2008: 8–9) (Fig. 8.1a). The fragments of clay used for daubing the walls always have chaff additives. The clay layers are not thick, usually no more than 0.03–0.04m. Very well preserved walls have been found in only a few instances – in House 4 of the Dobrovody settlement (Kruts *et al.*, 2005: 57) (Fig. 8.1b), in House 43 (excavated in 2009) of the Talianki settlement and, partially, also in the annex to complex ‘I’ of the Maidanetske settlement (Shmagliiy and Videyko, 1984). However, the uneven collapse of the platform produced remains which are difficult to recognise. Very occasionally, immediately adjacent to a ridge-shaped heap of rubble, there are partially preserved vertical remains of walls in the form of a broken-off skirt-board with impressions of horizontal beams on one side. A characteristic of the walls is the presence of impressions of small wooden beams of 0.01–0.04m in thickness, or of thin twigs. These resemble negative images of wattle construction (Fig. 8.1c).

The ground floor could have been divided into separate spaces or rooms, but this has rarely been confirmed. For instance, in the Nebelevskaya local group of the Bug-Dniester interfluvium (Peschane settlement, House 2), which is associated with the Vladimirovskaya-Tomashovskaya line of development, separate spaces on the ground floor have been clearly identified (Chernovol and Ryzhov, 2006: 374). The majority of elements described below were housed on the first floor. Entry to the first floor must have been gained via a simple (wooden) ladder, presumably from the outside.

All the construction elements in the buildings are made of the same material – clay (and of course wood, of which only impressions are visible). Fragments of the interior can be found either on the floor deck (platform), or under it, on the ground floor of the house. All the interior details were rendered in the same technological manner.

The vitrifying of building remains in Talianki settlement is usually observed on the southern side, which was probably pre-conditioned by the direction of the wind at the moment that the settlement was burned down. The platform and some interior parts have been better preserved because of the baking of the clay. The surface and lateral sides of elements of the interior were smoothed. Sometimes there are traces of painting in white, yellow or red. There are occasional details, ornamented with drawn lines.



Figure 8.1: Collapsed walls in Tripolye houses: (a) collapsed walls shaped like ridges on the platform, House 40 (Talianki); (b) fallen wall in House 4 (Dobrovody).

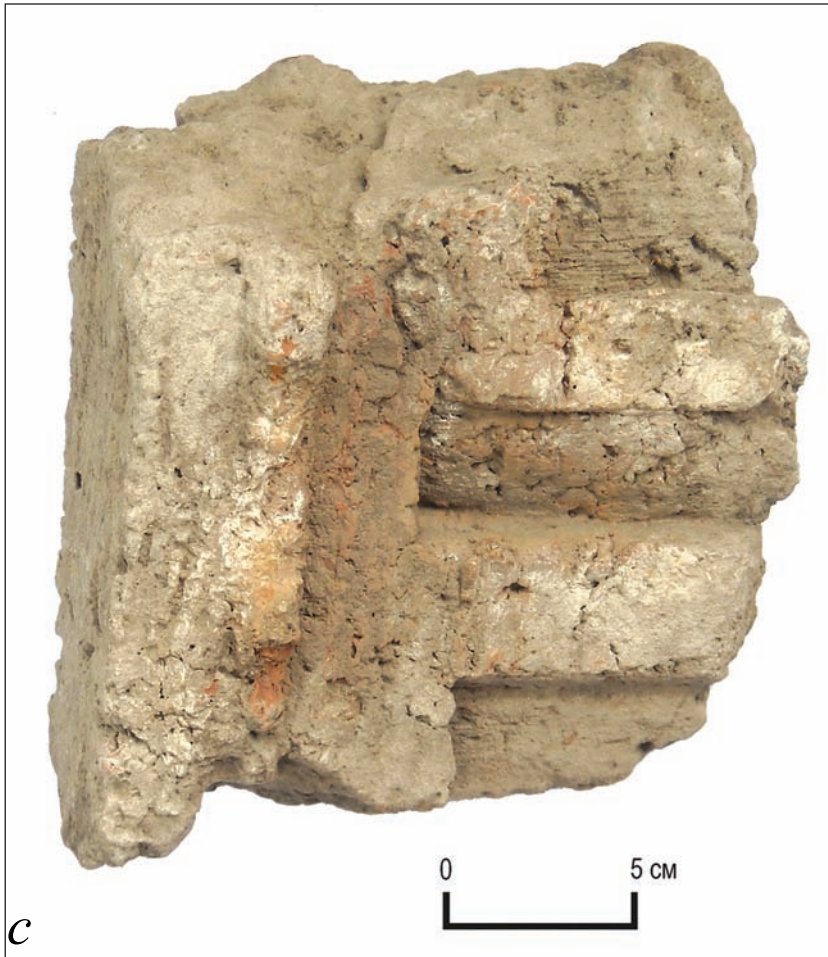


Figure 8.1: (c) impressions of wood from the heap of fallen walls in House 4 (Dobrovody).

Clay models can serve as a source for interpreting elements of the interior (Passek, 1938; Chernovol, 2008). The models imitate domed ovens, altars, workspaces and podiums (elevated surfaces) with dishes set on them. It is possible to identify the specifics of how these objects are arranged in the models. The entrance, or porch, and living spaces are separated by a partition and have a threshold at the entrance. Interior details are depicted only in the living space. To the right (from the entrance) is located a domed oven with a shelf or bench that stretches along it. To the left of the entrance, in some models, there is a trough and, always, a podium that runs along the long side of the room. Sometimes dishes are ‘set’ on the podium. Opposite the entrance, on the short side of the room, there is an altar.



## Oven

The main indicator of residential construction is the presence of an oven, often identified by the remains of its base. The base averages 4m<sup>2</sup> although, in the majority of cases, it is proportional to the size of the living space. The base is rectangular, and the longer side is parallel to the long axis of the building. In small houses the oven measures 1.5 × 2m and in medium and large houses it averages 2 × 2m and 2 × 2.52m, respectively. Exceptions exist, such as the oven found in House 25 of the Talianki settlement, which measured 3.5 × 4m (Kruts *et al.*, 1999: 3).

The base of the oven was made of several layers of clay, without chaff. This clay composition was probably determined by its thermal stability, which gave it a better heating capacity. The foundation layer beneath the oven base was laid on the floor deck. Sometimes the clay floor was much thinner in the area of the oven when compared to other parts of the building, reaching only a few centimetres in thickness (in House 4 in Dobrovody settlement, for example, the base of the oven was moulded together with the floor deck). The thickness of the oven base's foundation layer was usually 0.1–0.2m. It was then coated with a 0.04–0.05m thick levelling clay layer and thoroughly smoothed on the surface (Fig. 8.2b). In some cases, a new base was rebuilt over the previous, making it twice as thick (e.g. 0.4m). On site 2 of the Zelenaya Dibrova settlement, for example, the thickness of the foundation layer beneath the oven base was 0.3 m (Ovchinnikov, 1999: 130). Occasional one of the layers of the oven base would include a layer of broken ceramics. This was probably to enhance the oven's heating capacity. The same technique was noted in some of the ovens of the Petrenskoye settlements, e.g. Bernashevka II (Kolesnikov and Tkachuk, 1993: 50). Within the Tomashovskaya group sites, this type of construction was discovered in two cases: in House 25 of the Talianki settlement (Kruts *et al.*, 1999: 3) and in House 3 of the Dobrovody settlement (Movsha, 1983). The base of the oven in House 41 of the Talianki settlement was notably different. Its sidewalls were rounded on the top and tilted towards the centre. An empty space was identified between the base and the walls of the oven (Kruts *et al.*, 2008: 11) (Fig. 8.2a). It is believed that this was probably in order to store some embers left from burning wood, with the aim of maintaining a comfortable ambient temperature inside the building. There was no analogous design found in buildings of the western Tripolye line of development in the Bug-Dnieper interfluvium, but V. Markevich has found evidence of similar structural details in Brinzeni III and Costești IV in the Dniester region (Markevich, 1981: 86).

Occasionally only an empty space is found where the oven base had been located. V. Kruts argues that these lacunae appeared as the result of ritual demolition of ovens ('the hearts of habitations') before the house was abandoned (Kruts, 2003: 76). However, in the Talianki giant-settlement, similar lacunae were only found in some small houses (no more than 10m long in size). One should not exclude the possibility, therefore, that those buildings only existed for a short period of time and that the oven base was not properly constructed, as it was in buildings of a larger size (Chernovol, 2008: 170). It is also possible that the absence of oven bases is linked to the fact that the area was damaged but never repaired, because the settlement was being abandoned at that time. In House 30, for example, such a lacuna is found not only where the oven base was located, but also in the place where the altar stood.

In addition to the base, in some cases, fragments survive of the oven's dome. House 2 of Talianki contained remains of oven dome fragments (Kruts *et al.*, 1982: 8), though, as a result of its extensive disintegration, it was impossible to determine the exact shape and size of the dome. E. Krichivskiy has tried to reconstruct it as a structure made of vertically placed half-beams, wrapped with twigs and then coated with clay and added chaff (Krichivskiy, 1940:

492). A similar structure was found in House 31 of the Talianki settlement (Kruts *et al.*, 2001: 35) (Fig. 8.2c). The base for a dome of a somewhat different design was found on House 36 (Talianki). Along the short walls of the oven impressions were found of boards from the structure of the dome walls that were laid lengthwise (Kruts *et al.*, 2008: 77; Chernovol, 2008: 170) (Fig. 8.2d).

The bow-shaped structures (discovered within the heaps of clay of Houses 38 and 41 Talianki), which lay along the long side of the oven bases, could be interpreted as the lip of the oven mouth. These fragments (Fig. 8.2e) could serve as proof of the hypothesis of the existence of oven domes in Tripolye houses (Kruts *et al.*, 2008: 77; Chernovol, 2008: 170). It is also assumed that the oven domes were possibly made of clay with chaff added (Markevich, 1981: 77).

The models of dwellings also evince raised areas forming a bench or shelf alongside the oven. However, such construction elements of the oven were not discovered in all houses. In Talianki for instance they appeared in only 17 cases (Table 8.1). Within the building, they were located along the short side of the base of the oven, on the side opposite the house entrance. The oven-side benches were made of several layers of clay, with chaff added. In one case (House 2 of the Talianki settlement) it was composed of clay without any chaff (Kruts *et al.*, 1982: 8). The length of the surviving part is usually around 1m. Sometimes fragments of these oven-side benches extended along the entire short part of the oven. Their width varied between 0.4m and 0.8 m and their height from 0.05m to 0.2m. The short side of the shelf, facing the inside of the room, had a rounded profile. The side opposite to it was most probably attached to the long side of the building (Kruts *et al.*, 2008: 11) (Fig. 8.2f). Pieces of table and kitchenware ceramics are often found beside the ovens and on or around the benches. These interior elements were most probably used as stands for crockery.

### **Podiums**

Podiums were set along the long side of the living space, to the left of the entrance. Their width is 0.7–0.8m (sometimes up to 1 m) and their height varies between 0.1m and 0.2m. The podium begins 1–1.5m from the entrance and runs along the wall towards the shorter side of the building (Fig. 8.3). In a single case, in the ‘M’ complex of Maidanetske settlement, it skirted the entire living space, excluding the entrance, along the perimeter (Shmaglii and Videyko, 2003: 67–8). The length of the podium depends solely on the length of the living space. Podiums are composed of several layers of clay with chaff added and are coated with a millimetre-thick levelling layer of chaff-free clay. In the majority of cases a podium was painted red.

Because of the large numbers of ceramic fragments that are usually found next to the podium we can presume that it was used for storing crockery. In addition, in the majority of cases, the remains of pithoi (large vessels for storage, made of clay with the addition of chaff, but without additional baking) were found on the podiums (Shumova, 1985). In a single case, in House 2 of Talianki, there was a place for fixing the bottom of the pithos to the podium in the shape of a moulded ‘doughnut’-shaped roll that encircled the bottom of the pithos (Kruts *et al.*, 1982: 9). Pithoi were not supposed to be moved, therefore they were considered to be constructional elements of the house interior. The preservation of the podiums is not always the same; those in the southern parts of Talianki buildings are better preserved. In the absence of well-defined evidence, the podium can be located by analysing the concentration of ceramics within the building.



Figure 8.2: Remains of oven structures: (a) bottom of the oven in House 41 (Talianki); (b) foundation of the oven roof in House 4 (Dobrovody); (c) foundation of the oven roof in House 31 (Talianki); (d) foundation of the oven roof in House 36 (Talianki); (e) mouth of the oven in House 38 (Talianki). (Fig 8.2 (f) – See next page).





Figure 8.2: (f) bench beside oven in House 41 (Talianki).



Figure 8.3: Podium in House 40 (Talianki).

## Troughs

In clay models of the open type, troughs are located to the left of the entrance of the living area, and opposite the mouth of the oven. In Talianki, they were found in only nine cases, and in different parts of buildings. In three cases (Houses 16, 35 and 36) they were positioned in the living area. In five cases (Houses 4, 35, 39, 40 and 41) the troughs were in the entrance area of the building and in one case (House 16) on the ground floor. They are primarily made of clay with some chaff added; in one case (House 4) the trough is made of chaff-free clay. Normally, they were made in one piece, but they were not smoothed nor were they repaired, proving that they were designed for short-term use. It was probably easier to make new troughs than to mend existing ones.

One of the factors that probably made repairing troughs more complicated is the composition of the paste from which they were moulded. Since they were made of the same material as walls and floor decks, temperatures might not have been high enough when the house burned down to 'bake' all of the construction elements. As it fell, the upper floor deck would break a trough and blend it with other elements of the house. This makes it difficult to detect trough fragments.

Troughs from Houses 35 and 40 of the Talianki settlement were the best preserved. In House 35 the trough was  $0.6 \times 0.7$  m in size, and one of its walls was probably attached to the longer wall of the house. The opposite wall, 0.08 m in thickness, had a height of 0.15 m, while the base was 0.06 m thick (Fig. 8.4a) (Kruts *et al.*, 2008: 75). In House 40 a trough  $0.5 \times 0.7$  m in size was located near the entrance, and one of its sides was attached to the partition wall (Fig. 8.4b) (Kruts *et al.*, 2008: 8). In rare occasions round troughs have been found (e.g. House 16 of Talianki) (Kruts and Ryzhov, 1988: 4). Grinding stones were usually found opposite the oven, where, according to the house models, troughs were supposed to be. In Talianki, grinding stones were found opposite the oven in 23 cases. However, in six cases they were also found along the podium and in one case at the edge of an oven-side bench, closer to the building's central axis. One should take into account, though, that as floor decks fell, grinding stones could have shifted from their assigned places and fallen into other positions nearby. For this reason we should not exclude the possibility that a grinding stone found on the podium or near the oven could have originally stood opposite the oven. Out of the 41 excavated house of Talianki, 30 had grinding stones that were positioned opposite the oven (Table 8.2). Troughs found in front of the oven (and near a grinding stone) could have been containers where ground cereals were stored or processed.

On the one hand, the location of grinding stones near the altar can be associated with some sort of sacred activity. On the other, the location could be a function of the rational use of space in the room itself – household activity could have taken place in the clear area along the short wall of the room. One question remains open: whether or not the grinding stones located near the shorter wall had boards or troughs surrounding them. In House 12 of the Talianki settlement, board fragments were found between the altar and the shorter wall of the house. These could easily have been fragments of workplace surfaces (Kruts *et al.*, 1985: 17). It could be assumed that other dwellings also had specially-equipped workplaces along the shorter walls. There were also some houses in Talianki that had no grinding stones at all in the room.

A common position of troughs associated with grinding stones was close to the entrance (on the right hand side – inside), with one side of the trough attached to the wall. Grinding stones were found in this area in 11 cases; in nine cases they were located immediately outside the entrance of the building and in seven cases they were on the left hand side of the living space (inside) (Table 8.1). Troughs were seldom found on the ground floor; in the Talianki settlement, only in



one instance (in House 16) was a trough (with a grinding stone next to it) located originally on the ground floor. An unusual trough was found in House 4. It was made of chaff-free clay and had a rectangular shape, measuring  $0.6 \times 0.8\text{m}$  and  $0.5\text{m}$  in height, with a thin  $0.015\text{m}$  skirting board (Kruts *et al.*, 1983: 3). A complete cube-shaped pot was found at the bottom.

### Decks

Decks (clay surfaces) are the most numerous and variable interior details. The absence of these elements in the models could be associated with the fact that decks were built only in cases of necessity, not planned ahead. They were located in practically every part of a building. They were found in all 40 cases in the Talianki settlement (Chernovol, 2008: 171). Their sizes vary from a few square centimetres up to a couple of square metres.

The decks of the Tomashovskaya group can be divided into two types: decks with borders and those without. The border is a very important element, as it can help to shed light on the household processes for which the deck was used. The examples with borders resemble troughs to some degree, but the latter were made according to a different principle.

In the majority of cases decks had 2–4 layers of clay although, in some cases, there could have had more. P. Kurinnoi has identified decks with seven or more layers of coating (Kurinnoi, 1926: 84). The thickness of each layer varies from  $1\text{cm}$  to  $3\text{cm}$  although, in some cases, it could reach  $4\text{cm}$  or even  $6\text{cm}$ . The thicker layers were usually at the base of the deck. Each layer tended to be thoroughly smoothed on the top. On the bottom there were sometimes negative impressions of the previous layer. The surface of each layer was painted in white, pale yellow, and sometimes a red colour, or occasionally coated with a millimetre-thick layer of fine white clay. The bottom layers, applied directly on to the ground, sometimes carry negative impressions of the surface onto which they were laid. It is sometimes possible to trace how, depending on the extent of firing, the colour of the clay varies: from a brick colour on top to black, and thence to a colour that is undistinguishable from that of the soil.

Decks with borders could be round or rectangular. Unlike the deck itself, which was usually made of clay without added chaff, borders were always made of a composition that contained added chaff. This was apparently done for the sake of convenience, in case it was necessary to rebuild it. Sometimes the decks were enlarged, as happened in House 9 of the Talianki settlement. Here, as the sides of a  $1.4 \times 1.4\text{m}$  deck were demolished, the area of the deck was enlarged (to  $1.4 \times 1.8\text{m}$ ), and then the border was subsequently recreated (Kruts *et al.*, 1985: 5). A round deck ( $0.8\text{m}$  diameter) was also found in the same building. It was located opposite the mouth of the oven and to the left of the entrance. In this case, the deck was set in the position usually occupied by a trough. It is, therefore, not improbable that they had a similar function. Borders (usually  $1\text{--}2\text{cm}$  high) did not always circumscribe the whole deck. In House 2 (Talianki) for instance, the border extended only around the central part, which was  $1.5\text{m}^2$  in size. The edges of the deck extended over the limits of the border and were moulded to the building's clay floor (Kruts *et al.*, 1982: 7).

Decks without borders could also round or rectangular in shape. Round decks sometimes reached  $1.5\text{m}$  in diameter, as in House 23 of the Talianki settlement (Kruts and Ryzhov, 1993: 5). The peculiarity of decks without a border lay in the fact that their layers were thickest at the centre; at the periphery, the layers gradually became thinner. In rare cases, the edges of such decks were folded up, creating a thin border, the height of which did not exceed  $1\text{--}1.5\text{cm}$ .



*Figure 8.4: Troughs: (a) House 35 (Talianki); (b) House 40 (Talianki).*





Figure 8.5: Wall decoration: (a) House 4 (Dobrovody); (b) House 36 (Talianki).

A deck like this was discovered in House 21. Decks without borders were made of clay with insignificant additions of chaff, or with well-washed clay.

In 67% of cases, decks were located on the building's ground floor. Only in one case (House 31 – Talianki settlement) was the deck, in the right corner of the shorter wall, completely conjoined with the ground's thin layer of clay. Houses 21, 26 and 28 had two decks each. In Houses 14, 21 and 37, the decks were located near to pits on the ground floor.

In the internal living space of the first floor, decks were usually placed to the left of the entrance along the podium, and had definite borders. In some cases it seemed as if they had been incorporated into podiums: the podiums had characteristic gaps in the places where the decks had been located. Six decks were discovered inside first floor rooms of the Talianki buildings, and seven in the entrance areas (on the porches). Only on one occasion did a deck located on the porch have a border (House 39). Twenty decks were also discovered beyond the limits of the house structures: seven of them in front of the building, seven by the shorter wall outside the building, and six between two buildings.

The exact purpose of the decks is difficult to determine. Internal and external decks did not differ much in appearance. However, since the latter were exposed to the elements (no sign of roofing or other protection has ever been found), it is presumed that they were fired (before using them) to make them stronger. They could have also been the bases of fireplaces for domestic purposes (e.g. cooking). Decks were most likely multi-functional in purpose, and the way in which they were made is the only constituent that unites them.

### ***Pits***

Pits can also be categorised as interior elements of everyday household use. In Talianki they were found in Houses 2, 5, 14, 21, 29, 30, 37 and 40. They are mainly located by the shorter walls of the buildings (ground floor) with the exception of Houses 14 and 40, where they were next to the entrances. In Zelenaya Dibrova, the pit was created approximately in the centre of the building (Ovchinnikov, 2002: 131). This contained kitchenware, which allows us to interpret it as a cellar in which to store food supplies.

Pits within the ground floor of the building are usually identifiable by their form and content. Sometimes they contain ceramic kitchenware, showing that they were continuously cleaned and functioned until the buildings were burned down before abandonment. Pits were not found in every dwelling, which implies that they were not an obligatory detail of interiors, but rather were dug only when the need arose. There is also the possibility that they were sometimes filled in again well before the house was abandoned, thus making them more difficult to identify.

### ***Wall ornamentation***

Decorative patterns on the walls of living areas should be included among the elements that make up the interior furnishings of buildings. Unfortunately, only fragments of ornamented walls have been found – there has been no success in finding complete compositions. Fragments of red-painted wall plaster, on which are drawn parallel bow-shaped lines approximately 0.02m wide, have been identified in some houses, but only in those of the Tomashovskaya group: in House 4 of the Dobrovody settlement (Kruts *et al.*, 2005: 59) and Houses 36, 40 and 41 of the Talianki settlement (Kruts *et al.*, 2008: 9). The Dobrovody settlement building contained an

element on the wall that resembled a round plate, 0.015m thick, with two concentric parallel lines, 0.02m apart, at its edges (Fig. 8.5a). House 41 of the Talianki settlement had an ornamented wall fragment near its entrance. This bore the traces of zigzag decoration created by two parallel grooved lines on either side of triangles, which contained central dots made by finger impressions. The lines and finger impressions were both 0.015m wide. A wall fragment with similar ornamentation was also found near the entrance to House 36 (Kruts *et al.*, 2008: 77). The patterns occurred on a relief moulding: a detail that was earlier interpreted as an element of ornamentation for a podium or a trough set by the entrance to a living area (Kruts *et al.*, 2008; Chernovol, 2008) (Fig. 8.5b).

### **Altars**

Altars belong to the group of interior elements with a ritual designation. They were always located against the rear short wall of the living area, opposite the entrance to the first-floor room. In certain open-type models found at Tomashovskaya local group sites, altars have cruciform shapes. In the actual buildings of this group that have been studied so far, however, they are exclusively circular. Some scholars have argued that a few cruciform or square altars have indeed been found, but evidence of their existence has not, as yet, been fully substantiated.

Altars were made of clay without chaff, but with the addition of some red-clay chamotte. In most cases an altar consisted of a base 0.1–0.12m thick, coated with a 0.02–0.04m layer of levelling fine-clay. As a result, an altar rose 0.1–0.15m above the floor. Its diameter was usually 1.6–1.8m, and sometimes even 2m. The clay floor of the building often had a concave slot (a mounting place) on which to construct the altar.

Altars have been identified in almost every house of the Talianki settlement, except three (Houses 8, 31 and 36), which had lacunae (in the floor) in the same place and of the same size as the altar – just as in the cases of missing ovens (see above).

The altar surfaces were painted in red or yellow and sometimes bore decoration in the form of drawn lines. In House 2 in Talianki the altar had a shallow groove at the edge, while its central part bore a decoration consisting of 5–6 lines grouped in bands and forming a spiral composition over the item's entire surface (Kruts *et al.*, 1982: 6). Another ornamental pattern was found in House 33. The central part of the altar had a round centimetre-high raised area 0.4m in diameter; the surface around the raised area bore a pattern consisting of thin drawn lines grouped in ribbons, which also created a spiral composition (Kruts *et al.*, 2005: 10) (Fig. 8.6 [a]). A partially analogous decorative scheme was found on altars from this settlement's Houses 28 and 41.

Only in three cases was it possible to completely restore an altar's decorative scheme (Houses 37, 39 and 40). The circular altar in House 37 was 1.6m in diameter, its edge bearing a band consisting of 8–10 shallow lines set 5mm apart from each other. The centre of the altar bore four circular raised areas, each approximately 1cm high and 0.4m in diameter. These were filled with concentric circles, spaced 5mm apart (Chernovol, 2008: 174) (Fig. 8.6 [b]). The altar in House 39 was 1.6–1.8m in diameter. Its decoration, consisting of closed lines drawn and grouped into a band or ribbon, also contained four circles 0.4m in diameter, but laid directly onto the altar surface rather than being raised up. The ribbon contained 11 lines spaced 3–4mm apart. The circles contained two S-shaped ribbon motifs formed from 7–8 lines that were 3–4mm apart. these motifs were placed perpendicular to one another, creating a 'swastika' inside a circle (Chernovol, 2008: 175) (Fig. 8.6 [c]). To some extent the decoration of these two examples may help to explain the cruciform altar images on open-type Tomashovskaya group models



with the four circles on the altar surface reflecting the four blades of the cross. This can, in fact, be considered as a simplified image of a cross (Passek, 1949: 68).

A somewhat different ornamental scheme was identified in House 40. The altar in this building was 2m in diameter. At its centre was a circle 0.4m in diameter, composed of a circular band of 10–12 drawn lines spaced 3–4mm apart. The circle contained two parallel ribbons of a similar ‘wavy’ design to that seen on the altar from house 39 (Kruts *et al.*, 2008: 9). Around the central circle were a further six circles, uniformly placed, each measuring 0.4m in diameter. These circles were connected by a wavy line and there was also a thin wavy line in the centre of each of them (Fig. 8.6 [d]).

The domestic altars of the Tomashovskaya group bore uniquely individual decorative schemes but with common characteristics, one of them consisting of circles of 0.4m diameter. This might have been a particular stereotypical sacred image or geometrical shape but it may also reflect the measurement system accepted by the Tomashovskaya group population – for example, the use of one elbow (similar to the cubit – the measurement of the forearm – approximately 0.4 m) as a unit of measurement. Altars sized 1.6m and 2m measure 4 and 5 ‘elbows’, respectively. As for a typology of ornamentation, there are presently insufficient sources for creating one.

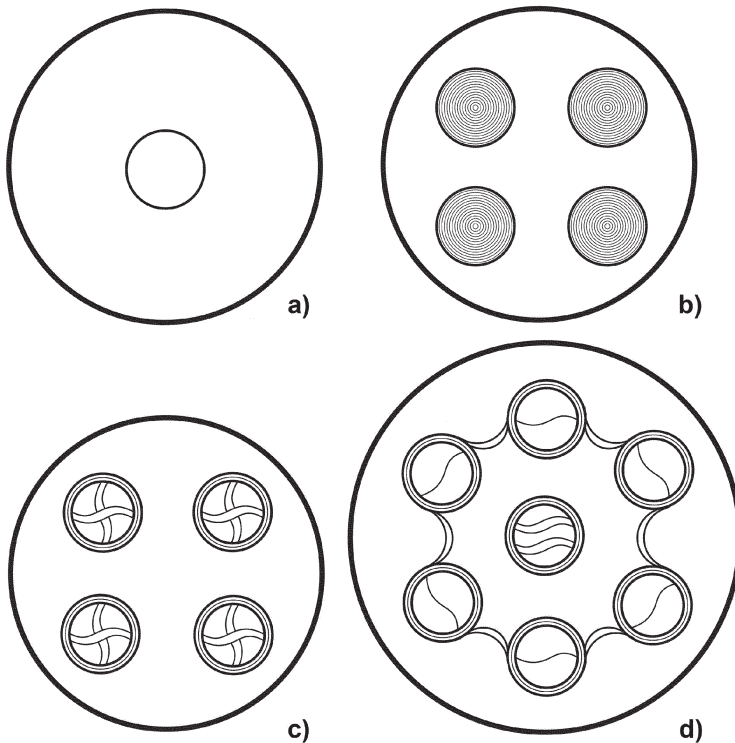


Figure 8.6: Reconstruction of altar decoration: (a) House 33 (Talianki); (b) House 37 (Talianki); (c) House 39 (Talianki); (d) House 40 (Talianki).

There were features of house interiors that were morphologically similar to altars but located in other parts of buildings. If these features were for profane use, the ornaments were eliminated. In Houses 14 and 26 of Talianki settlement, the centre of the room (first floor) was bore raised areas  $1 \times 1$  m in size, made of clay with the addition of chaff in House 14 and of clay without chaff in House 26. The surface was well smoothed and decorated with a ribbon made up of two parallel lines (Kruts *et al.*, 1986: 3). No additional clay layering that would testify to their long-term use was recorded. This could indicate that these features were built during the last phase of the houses' existence or that they were connected to the ceremony that marked the abandonment of the dwellings. The entrance area of House 6 (to the right hand side of the living area) had a deck with traces of drawn ornamentation analogous to that on the altars (Kruts *et al.*, 1983: 11). A similar surface was found in the Vladimirovka settlement (House 3) (Passek, 1949: 83).

### **Threshold**

Thresholds can also be categorised as interior details with sacral meanings. They were placed between the entrance porches and living areas. Thresholds were rectangular, 0.2–0.25 m wide and *c.* 1 m long. Their height varied from 0.05–0.06 m to 0.2 m. They were made of clay with



Figure 8.7: Knob with a T-shaped opening.

chaff added and their surfaces were coated with thin layers of levelling clay without vegetative additives, and painted red. Thresholds can conditionally be attributed to the group of elements with a sacral purpose, representing some unique 'border' between living space and the outside world.

In a single case a small 'dimple' – a hollow or indentation – for a pole was found which did not penetrate through the floor, but rather was designed as a slot. House 35 in the Talianki settlement had such a hollow in the living area near the threshold. A cylindrical object was found nearby, rounded on one side and made of clay with chaff added, and with an intersecting T-shaped opening. The upper part of this object was 9cm wide and 10cm long. The part of the object just below the hole is conical, measuring from 6cm to 5cm in diameter. The vertical part of the T-shaped opening at the bottom was 3.2cm in diameter and the opening perpendicular to it 2cm in diameter. The hole shows the impression of a sharpened peg (Fig. 8.7). Since this object was found next to the pole 'dimple' in the floor, it is assumed that it was a knob for a pole that was mounted in the floor to act as a rudimentary door hinge.

### ***Arrangement of crockery***

Lively arguments have arisen concerning the issue of the ritual arrangement of crockery before the buildings were set on fire. Was it arranged with respect to household needs, or was it set up in a particular way for ritual purposes? We detected that goblets, goblet-shaped vessels, miniature vessels, and small amphorae that can potentially be found in each of the areas of the buildings are actually mainly concentrated around the altar and near the building entrance (Table 8.3). Considering their location close to objects of sacral importance, it has been assumed that vessels of this type also had a particular sacral meaning. On the one hand, such tableware could have been used for sacrificial offerings during the use of the building but, on the other hand, it could have also been put there only at the moment of sacrifice, when the dwelling was being abandoned.

### **Division of the living space in the Tomashovskaya local group houses**

Following a thorough analysis of the Tomashovskaya local group's houses, we can conclude that the ground floor of a building and the entrance or porch area of the first floor are associated exclusively with profane household activity. Some scholars argue that the ground floor of the house could have been used for keeping livestock. Others maintain that the Tripolian people's domestic animals were kept in special enclosures within the settlement (Nikolova and Pashkevich, 2003: 93). Archaeological evidence has revealed that the ground floors of buildings situated on gentle slopes of the terrain were not levelled, but followed the natural gradient of the slope. The floor in Talianki's House 20 (14.5m long), for example, had a gradient of 6°. Buildings in other settlements from different periods of the culture's existence evinced even steeper gradients. The unevenness of the ground floors probably did not affect household activity. Ethnographic sources show that the Iroquois kept their food supplies hanging from the ceiling (Morgan, 1934: 80). It is therefore possible that the ground floor ceiling of Tripolye houses was used in an identical manner – as a place where food supplies were kept in special containers (sacks, baskets) hanging from the ceiling.



In some cases and, most probably, to expand the household activity of individual families, special dwellings were built within the settlement. In Talianki for instance, only one such structure was found and it was located near House 19 (along its longer wall). It was  $4 \times 5$  m in size, with the longer side running parallel with the longer side of House 19. The floor deck in this building was coated with clay without added chaff. There was also a deck  $2.1 \times 2$  m in size on the ground floor. The deck had a border 0.07 m high and 0.07–0.1 m wide. Six grinding stones were laid around it. We can suppose that this area was used to process food. The indirect indicator that shows that this structure was subsequently added to House 19, and was not planned ahead, is that the clay contained no chaff. Furthermore, there were no remains of grain threshing incorporated in the building materials, indication that the house was probably constructed in winter or spring. Similar house annexes were also found in other Tripolye culture local group sites – for instance in the South Bug region settlement of Klishchev (B I–II period) (Zaets and Ryzhov, 1992: 44–7); and in the Nezamozhnik homestead of the Nebelevskaya group settlement in the Bug-Dnieper area (Ovchinnikov, 2002: 126). The following features characterise these small dwellings: an absence of ovens and other interior details, except for small size ( $4 \times 4$ – $5$  m) single decks or troughs, and their location – always near larger residential buildings.

Sometimes ‘standard’ or large buildings without interiors are found. Such constructions were discovered in Moshurov 1, Chichirkozovka, and Maidanetske (Kruts *et al.*, 1981, 1984). A number of scholars consider such structures to be special dwellings (Shmaglii and Videyko, 2003: 88; Videyko *et al.*, 2005: 49). Analysis of their ceramics complexes (Moshurov 1, Chichirkozovka) conducted by S. Ryzhov, however, does not allow for the determination of any significant differences from the ceramics that come from other contemporary structures of the Tomashovskaya group. The absence of an interior could be the result of numerous factors. It is possible that some details were made of other materials (wood, for instance) that were simply destroyed by the conflagration, before the house was abandoned.

House annexes were also built against the short side of a house, e.g. in front of the entrance area. This happened when the buildings were too close to each other and there was simply not enough space to erect special additional structures on the side. A ‘standard’ side annex (on the longer side of the house – measuring  $5 \times 5.4$  m) was found in House 40 in the Talianki settlement. Similar structures were also identified in Houses 33 and 41. These three dwellings were close to each other in the third line of the settlement’s development.

In these structures numerous loomweights were found that indicate the existence of upright looms. In total, loomweights were found in 17 buildings of the Talianki settlement. In 11 houses they were concentrated on the ground floor. In one case, House 13, 30 loomweights were found in the central part of the ground floor (Kruts *et al.*, 1986). In six cases concentrations were found around the altar on the first floor. Despite the fact that loomweights have been found in both areas of the house (the ground and the first floor), it is assumed that the loom was located on the first floor, against the short side of the living area near the altar. Its position here was probably conditioned by the better lighting (coming from the entrance or the round window on the short wall).

Neither Talianki settlement structures, nor the other structures of the Tomashovskaya group, bore any traces of pottery making or the manufacturing of flint or bone items. There were possibly specialised assigned spaces for these objects outside of the settlements, such as, for example, the workshop in the mud hut of the Lomachintsy settlement in the Dniester region (Balakin, 1995). Supporting evidence for pottery complexes located outside the settlements comes from the late-Tripolye settlement of Zhvanets in the Dniester area (Movsha, 1971: 228).

The flint-processing workshop discovered in the mud hut in Pekari II settlement in the lower Ros' area was, however, located closer to the centre of the settlement (Ovchinnikov and Pichkur, 2003: 210). House 20 in Talianki also supports this theory (Kruts and Ryzhov 1993: 2). The structure, situated on the steep southern slope of the settlement, contained around 20 spherical cylinders of clay without any additives – most likely fragmented clay coils from pottery making. It is therefore assumed that a pottery complex was located somewhere nearby on the slope.

### **Typology of houses in the Tomashovskaya local group**

A thorough analysis of the archaeological evidence allows us to state that the vast majority of structures of the Tomashovskaya local group are of a single construction type with a standard set of details. The high level of standardisation is probably determined by the fact that the construction of the settlement was a collective activity. We should not exclude the existence of a number of taboos that banned deviation from accepted norms and rules. Considering all aspects of construction and interior element, it is possible to identify two types of buildings: residential houses and outhouses.

The vast majority of Tomashovskaya group structures are residential houses. The bulk of ceramic crockery was concentrated on the podium and along the shorter wall of the residential room, on and around the altar. Concentrations of ceramic crockery were found around the mouths of ovens and on oven-side benches. Large amounts of crockery were found along the sidewalls of the entrance space. This way of arranging interior elements and ceramics was conditioned by the rational use of space in the living and entrance areas (the porch). Determining the habitable area of a structure requires that we subtract the space occupied by sacred and profane objects from the total area of the house. The passage between the oven and the podium is considered habitable space. It is usually 1–1.5m wide, its length depending on the size of the oven. The space around the altar – approximately 2m from the shorter wall along the longer axis of the building – can also be so designated. The area of the useable space generally varies depending on the size of the structure itself. The differences in sizes that were detected were apparently indicators of demographic variations in the settlement (Diachenko and Chernovol, 2009).

Residential structures can be divided into three separate groups. The first includes those with the greatest number of recurrent elements, in which the first floor is divided into entrance (porch) and living area. In the living area, the oven is located to the right of the entrance while, on the left of the entrance, is a podium with ceramic crockery arranged on it. An altar is set opposite the entrance (Fig. 8.8 [a]). The second group includes structures with a household annexe – an outhouse – attached to the short side of the building (in front of the porch). Houses 33, 40 and 41 from the Talianki settlement are attributed to this group (Fig. 8.8 [b]). A further group of structures, possibly public buildings (Shmagliy, 2001: 68) or the houses of tribal authorities (Diachenko and Chernovol, 2009), has been identified within the Tripolye culture Tomashovskaya local group. Complex 'M' of the Maidanetske settlement has been attributed to this group. The structure was 7 × 24m in size, with a general area of 148m<sup>2</sup>. It was divided into two areas, one 7 × 9m and the other 7 × 15m. In terms of its interior elements and their arrangement within the building it did not differ from the other Tomashovskaya group structures. The difference was in its podium, which skirted the larger area of this structure along the entire perimeter (38m), and the absence of an altar. According to Shmagliy and Videyko (2003), the entrance to

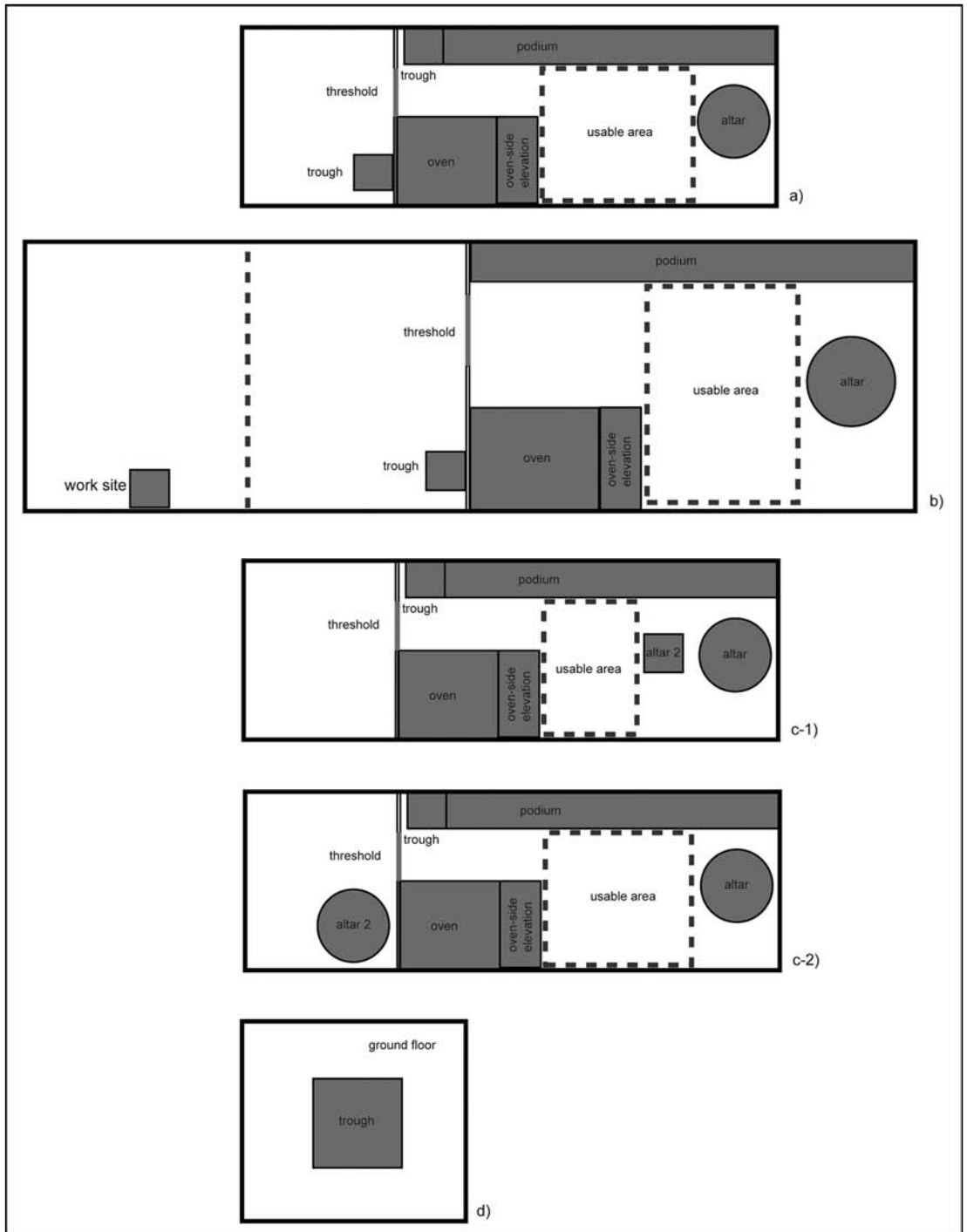


Figure 8.8: Layout of Tripolye houses: (a) residential area; (b) residential area with annex (outhouse) attached to the entrance area (porch) on the left hand side; (c) residential area with high concentration of objects of sacred significance: [c-1] two altars in the residential area; [c-2] with altars in the entrance area (porch) and residential space; (d) outhouse.

this building was located on the side of the larger chamber. This hypothesis is based upon the concept of 'living walls' (houses used as protective walls or fences for the settlement), according to which the entrance to a structure should be positioned towards the centre of the settlement. As mentioned previously, however, the entrance is not always so oriented but it mostly depends on which row of the settlement the house is located. In this case, the entrance to the building was most likely on the rear short side of the building, through the smaller chamber. Whether or not this building was indeed a public house of some sort is still the subject of animated debate. The third group includes structures containing high concentrations of objects of sacral character (Fig. 8.8 [c-1] and 8.8 [c-2]). In other respects, these buildings did not differ from other typical residential complexes. Structures with a high number of sacral objects in the interior are rare in the Tomashovskaya group, but they find analogies in other local groups. There is possibly a further, fourth, category represented by the outhouses or annexes, but so far only one such structure has been identified in Talianki. As noted earlier, outhouses are characterised by the absence of ovens and other interior elements, except for single decks and troughs. These structures are small ( $4 \times 4\text{--}5\text{m}$ ) and are found close large residential buildings (Fig. 8.8 [d]).

## **Final remarks**

Altars by the shorter wall of the living area and ovens to the right of the entrance are common features for the majority of Tripolye dwellings. There are, however, differences in the arrangement of the various elements of house interior, which depends on different traditions within the diverse Tripolye culture local groups. The houses of other local groups, for example, had no podium along the longer side of the main room. Troughs, which are often found in Tomashovskaya group structures, are rare in other groups. Even the location of the altar (a common feature of the Tripolye house) varies, and some discrepancies are particularly characteristic of the Tomashovskaya local group. The evolution of Tomashovskaya houses, however, does not go beyond the framework of the general traditions characteristic of Tripolye culture as a whole.

Table 8.1: Interior elements of the houses of the Tomashovskaya local group (Talianki giant-settlement).

HOUSE N°	ARCHIVAL MARKING	SIZE OF THE HOUSE (M)	SIZE OF THE AREAS OF THE FIRST FLOOR		INTERIOR OF THE GROUND FLOOR		INTERIOR OF THE FIRST FLOOR								
			ENTRANCE (PORCH) (M)	RESIDENTIAL (M)	DECKS/ TROUGHS	PITS	ENTRANCE (PORCH)		RESIDENTIAL AREA						
							DECKS	TROUGHS	DECKS	TROUGHS	THRESHOLD	PODIUM	OVEN	OVEN-SIDE ELEVATION	ALTAR
1	1981/11b	4.5 × 11	4.5 × 3	4.5 × 8	-	-	-	-	-	?	+	?	+	-	+
2	1982/21a	4.5 × 12.5	4.5 × 2.5	4.5 × 10	-	+	-	+	+	-	-	+	1.8 × 2.5	+	+ ornament.
3	1983/30a	4.6 × 14	4.6 × 3.8	4.6 × 10.2	-	-	-	-	+	-	+	-	2.2 × 2.6	-	+
4	---/---	4 × 10	4 × 0.5	4 × 9.5	-	-	-	+	+	-	+	-	Lacune 1.5 × 1.6	?	?
5	---/---	4.5 × 13	4.5 × 4.2	4.5 × 9.8	-	+	-	-	-	-	-	+	2 × 2.4	+	+ ornament.
6	---/---	4.5 × 11	4.5 × 3.5	4.5 × 7.5	+	-	+ ornament.	-	-	-	-	+	2.2 × 2.4	?	+
7	1984/38	4.5 × 12	4.5 × 3	4.5 × 9	-	-	-	-	+	-	-	-	1.8 × 2.5	+	+
8	---/---	5 × 15	5 × 5	5 × 10	+	-	+	-	-	-	-	-	+	+	Lacunae
9	1985/23e	4.5 × 13	4.5 × 3	4.5 × 10	+	-	+	-	+	-	-	-	+	-	+
10	---/---	4.5 × 10	?	?	+	-	+	-	-	-	-	+	?	?	+
11	---/---	4 × 14.5	4 × 5	4 × 9.5	-	-	-	-	-	-	-	-	+	-	+
12	---/---	4 × 8.4	4 × 2	4 × 6.4	-	-	-	-	-	-	-	-	+	-	+
13	1986/2	4.1 × 12.6	4.1 × 3.8	4.1 × 8.8	+	-	-	-	-	-	-	+	+	+	+
14	---/---	6.5 × 15	6.5 × 4	6.5 × 10.5	+	+	-	-	+	-	-	-	+	-	+
15	1987	4.5 × 12	?	?	+	-	+	-	-	-	-	+	1.4 × 1.8	+	+
16	1988/4a	5 × 12.2	5 × 3.8	5 × 8.4	/+	-	-	-	-	-	-	+	1.7 × 1.8	+	+
17	1989/17	4 × 8	?	?	+	-	-	-	?	-	-	-	+	-	+
18	---/---	5 × 11	?	?	+	-	+	-	-	-	-	-	+	-	+
19	1990/7	4 × 11.2	4 × 3	4 × 8.2	-	-	-	-	-	-	-	-	-	-	+
	Outhouse	4.5 × 5	-	-	+	-	-	-	-	-	-	-	-	-	-
20	1993/3	6.3 × 14.5	6.3 × 3	6.3 × 11.5	-	-	-	-	-	-	-	+	2 × 2	-	-
21	---/---	5 × 13	?	?	++ / -	+	-	-	-	-	-	+	+	+	+
22	---/---	4.5 × 11.5	4.5 × 3	4.5 × 8.5	-	-	-	-	-	-	-	+	1.8 × 1.8	-	+
23	---/---	4 × 11	?	?	+	-	-	-	-	-	-	+	+	-	+

Table 8.1. Continued...

HOUSE Nº	ARCHIVAL MARKING	SIZE OF THE HOUSE (M)	SIZE OF THE AREAS OF THE FIRST FLOOR		INTERIOR OF THE GROUND FLOOR		INTERIOR OF THE FIRST FLOOR								
			ENTRANCE (PORCH) (M)	RESIDENTIAL (M)	DECKS/ TROUGHs	PITS	ENTRANCE (PORCH)		RESIDENTIAL AREA						
							DECKs	TROUGHs	DECKs	TROUGHs	THRESHOLD	PODIUM	OVEN	OVEN-SIDE ELEVATION	ALTAR
24	1994/3	5 × 13.5	5 × 3.5	5 × 10	+	-	-	-	-	-	-	+	2.4 × 2.9	+	+
25	1999/97	6 × 17.5	6 × 4	6 × 13	+	-	-	-	-	-	-	+	3.5 × 4	?	+
26	---/---	4.5 × 12	4.5 × 3.5	4.5 × 8.5	++ / -	-	-	-	-	-	+	+	+	+	+
27	2000/43	4.4 × 8.7	4.4 × 2.6	4.4 × 6.1	+	-	+	-	-	-	-	+	2.1 × 2.2	-	+
28	2001/75	4.1 × 11.7	4.1 × 3.5	4.1 × 8.2	++ / -	-	-	-	-	-	+	+	2 × 2	-	+
29	---/---	4.5 × 11.8	4.5 × 3.5	4.5 × 8.3	+	++	-	-	-	-	+	+	2 × 2.4	-	+ ornament.
30	---/---	3.6 × 9.5	3.6 × 3	4 × 6.5	+	+	-	-	-	-	-	-	lacunae	-	+
31	---/---	4.1 × 9.6	4.1 × 2.8	4.1 × 6.8	++	-	-	-	-	-	-	-	lacunae	-	Lacunae
32	2003	4 × 7.5	?	?	+	-	-	-	-	-	-	-	lacunae	-	-
33	---/---	5.5 × 15	5.5 × 4.5	5.5 × 10.5	-	-	+	-	-	-	+	+	2.5 × 3	+	+ ornament.
34	2005	4.5 × 12	4.5 × 3.5	4.5 × 8.5	-	-	-	-	-	-	+	+	+	-	+
35	---/---	4.5 × 12	4.5 × 4	4.5 × 9.5	-	-	-	+	-	+	+	+	+	+	+
36	2006	4 × 13.5	4 × 4	4 × 8	-	-	-	-	-	+	+	+	2 × 2.4	-	lacunae
37	---/---	4 × 11.8	4 × 4	4 × 7.8	+	+	-	-	-	-	+	+	2 × 2.2	-	+ ornament.
38	2007	4.5 × 11.3	4.5 × 3	4.5 × 9.3	+	-	-	+	-	+	+	+	2 × 2.4	-	+
39	---/---	5 × 14.5	5 × 3.5	5 × 11	-	-	-	+	-	-	+	+	2 × 2.5	-	+ ornament.
40	2008	6 × 20.7	6 × 4.2	6 × 8.4	-	+	+ Outhouse 5 × 5.4m	+	-	-	+	+	2.5 × 2.9	-	+ ornament.
41	---/---	4.5 × 13	4.5 × 3.7	4.5 × 9.3	-		+	+	-	-	+	+	2 × 2.8	+	+ ornament.

№	ARCHIVAL MARKING	GROUND FLOOR	FIRST FLOOR					
			ENTRANCE AREA (PORCH)			RESIDENTIAL AREA		
			AT THE EDGE OF THE DWELLING	TO THE LEFT OF THE ENTRANCE	TO THE RIGHT OF THE ENTRANCE	OPPOSITE THE OVEN	ON THE PODIUM/ ON THE OVEN-SIDE ELEVATION	AROUND THE ALTAR
1	1981/11b		+					
2	1982/21a			+		+		
3	1983/30a					+		
4	---/---						/+	
5	---/---						+	
6	---/---				+	+		
7	1984/38			+		+		
8	---/---			+				
9	1985/23e					+		
10	---/---		+		+			+
11	---/---			+	+			
12	---/---					+	+	
13	1986/2		+	+		+	+	+
14	---/---	+		+				+
15	1987							
16	1988/4a				+	+	+	
17	1989/17					+		+
18	---/---							
19	1990/7				+			
	Outhouse	++++ ++						
20	1993/3							
21	---/---				+	+		+
22	---/---		+			+		+
23	---/---							
24	1994/3							
25	1999/97					+		+
26	---/---					+		
27	2000/43							+
28	2001/75		+		+	+		+
29	---/---		+			+		+
30	---/---					+		+
31	---/---					+		+
32	2003		+					
33	---/---		+	+				+
34	2005		+					
35	---/---					+	+	
36	2006				+	+	+	+
37	---/---				+	+		
38	2007		+		+	+		
39	---/---					+		
40	2008				+			
41	---/---				+			

Table 8.2. Location of the grinding stones in the buildings of the Talianki giant-settlement.

NO. OF BUILDING	NEAR THE ENTRANCE	NEAR THE ALTAR
1	11	7
2	2	28
3	2	9
4	1	4
5		
6		
7		10
8		5
9		7
10	1	13
11		
12		
13	+	+
14	+	+
15		
16		+
17	2	12
18		
19		6
20		
21		
22		
23		
24		+
25		
26	4	
27		
28		
29		5
30		
31		
32		6
33	8	?
34	5	11
35	4	4
36		
37	4	6
38		
39	1	3
40	?	?
41	?	?

*Table 8.3: Location of the goblets, goblet-shaped vessels and miniature vessels near the entrance, and near the altar in the Talianki giant-settlement dwellings.*



## References

- Balakin, S. (1995) Tripolye flint processing workshop in Lomachintsiy village on the Dniester. In Y. Kibalnik, I. Pislariy and S. Balakin (eds) *Household of the Ancient Population of Ukraine*: 189–196. Kiev (in Russian).
- Chernovol, D. and Ryzhov, S. (2006) Studies of the Tripolye settlement near Peshane village. In N. Gavrilyuk *et al.* (eds) *Archaeological Studies in Ukraine Years 2004–2005*: 373–6. Kiev (in Ukrainian).
- Chernovol, D., Diachenko, A., Kruts, V. and Ryzhov, S. (2007) Preservation research of Tripolye settlement Talnoe-2. In N. Gavrilyuk *et al.* (eds) *Archaeological Studies in Ukraine 2005–2007*: 413–5. Kiev (in Ukrainian).
- Chernovol, D. (2008) The interior of a Tripolye house (according to the materials of the Talianki settlement. In A. Korvin-Piotrovskiy and F. Menotti (eds) *Tripolye Culture in Ukraine: the giant-settlement of Talianki*: 177–91. Kiev: Korvin Press.
- Diachenko, A. and Chernovol, D. (2009) Family structure of population in west Tripolye culture. *Archaeology* 3: 3–12 (in Ukrainian).
- Gershkovich, Y. (2003) Ceremony of ‘abandoning habitation’: archaeological features and historical-ethnographic parallels. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (eds) *Materials from the international conference Tripolye giant-settlements*: 28–31. Kiev: Korvin Press (in Russian).
- Kozlovskaya, V. (1926) Tripolye culture locations near Suchkovka village in Gumanshchina. In V. Kozlovskaya and P. Kurinnoi (eds) *Tripolye Culture in Ukraine, issue 1*: 43–66. Kiev (in Ukrainian).
- Kolesnikov, O. and Tkachuk, T. (1993) The issue of micro-chronology of Tripolye settlements (based on materials of Bernashevskoe settlement B/II–Y/I). In V. Kosakivsky (ed.) *Podilska Antiquity*: 48–53. Vinnitsa (in Ukrainian).
- Korvin-Piotrovskiy, A. (2006) The issue of studying Tripolye house building. In A. Matsipura and N. Skakun (eds) *Technologies and Problems for Cultural Adaptation of the Population in Southeast Europe in the Aeneolithic Period*: 65–9. Vyshnivets (in Russian).
- Krichevskiy, E. (1940) Excavations in the Kolomyischina region and the issue of Tripolye sites. In M. Yachmenev (ed.) *Tripolye Culture V. I*: 479–592. Kiev: Ukrainian SSR Academy of Science. Institute of Archaeology (in Ukrainian).
- Kruts, V., Ryzhov, S., Zbenovich, V. and Shumova, V. (1981) *1981 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: Academic archive of Institute of Archaeology of Ukraine’s National Academy of Science (AA IA UNAS) 11b (in Russian).
- Kruts, V., Ryzhov, S., and Shumova, V. (1982) *1982 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: AA IA UNAS 21a (in Russian).
- Kruts, V., Ryzhov, S. and Shumova, V. (1983) *1983 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: AA IA UNAS 3a (in Russian).
- Kruts, V., Ryzhov, S., Shumova, V. and Saliy, N. (1984) *1984 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: AA IA UNAS 38 (in Russian).
- Kruts, V., Ryzhov, S. and Klochko, V. (1985) *1985 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: AA IA UNAS 23e (in Russian).
- Kruts, V., Ryzhov, S. and Klochko, V. (1986) *1986 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: AA IA UNAS 2 (in Russian).
- Kruts, V. and Ryzhov, S. (1988) *1988 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: AA IA UNAS 4a (in Russian).

- Kruts, V. and Ryzhov, S. (1989) *1989 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: AA IA UNAS 17 (in Russian).
- Kruts, V. and Ryzhov, S. (1990) *1990 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: AA IA UNAS 7 (in Russian).
- Kruts, V. (1990) The layout of the settlement near Talianki village and some aspects of Tripolye house building. In V. Zbenovich *et al.* (ed.) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*. Report theses from the first field seminar: 43–47. Talianki – Veselyi Kut – Maidanetske (in Russian).
- Kruts, V. and Ryzhov, S. (1993) *1991–1993 Report on the Work of the Talianki Team in the Tripolye Expedition..* Kiev: AA IA UNAS 3.
- Kruts, V. and Ryzhov, S. (1994) *1994 Report on the Work of the Talianki Team in the Tripolye Expedition*. Kiev: AA IA UNAS 3 (in Russian).
- Kruts, V., Ryzhov, S., Korvin-Piotrovskiy, A. and Chabanyuk, V. (1999) *Report on the Work of the Talianki Team in the Tripolye Expedition. in 1998–1999*. Kiev: AA IA UNAS 97 (in Russian).
- Kruts, V., Ryzhov, S., Korvin-Piotrovskiy, A. and Chabanyuk, V. (2000) *Report on the Work of the Talianki Team in the Tripolye Expedition. in 2000*. Kiev: AA IA UNAS 43 (in Russian).
- Kruts, V., Korvin-Piotrovskiy, A. and Ryzhov, S. (2001) *Talianki, the Tripolye Giant-settlement. Research in the Year 2001*. Kiev: Korvin Press (in Russian).
- Kruts, V. (2003) Tripolye sites – the result of the ritual incineration of houses. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (ed.) Materials from the international conference ‘*Tripolye giant-settlements*’: 74–6. Kiev: Korvin Press (in Russian).
- Kruts, V., Korvin-Piotrovskiy, A., Ryzhov, S., Buzian, G., Ovchinnikov, E., Chernovol, D. and Chabanyuk, V. (2005) *Studies of Tripolye Culture Giant-settlements 2002–2004*. Kiev: Korvin Press (in Russian).
- Kruts, V., Korvin-Piotrovskiy, A., Ryzhov, S. and Chernovol, D. (2008) 2005–2006. Researches in Talianki. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (ed.) *Tripolye Culture in Ukraine. Talianki, the Giant-settlement*: 71–108. Kiev: Korvin Press (in Russian).
- Kruts, V., Korvin-Piotrovskiy, A., Menotti, F., Ryzhov, S., Chernovol, D. and Chabanyuk, V. (2008) *Talianki, the Tripolye Giant-settlement. Studies in the Year 2008*. Kiev: Korvin Press.
- Kurinnai, P. (1926) Monumental sites of Tripolye culture In V. Kozlovskaya and P. Kurinnai (ed.) *Tripolye Culture in Ukraine Issue I*: 67–96. Kiev (in Ukrainian).
- Markevich, V. (1981) *Late Tripolye Tribes of Northern Moldavia*. Kishinev: Shtiintsa (in Russian).
- Movsha, T. (1971) Tripolye culture pottery centre of the Dniester. *Soviet Archaeology* 3: 228–234 (in Russian).
- Movsha, T. (1983) *The 1983 Report of the Dobrovody Team of the Tripolye Expedition*. Kiev: AA IA UNAS 30b (in Russian).
- Morgan, L. (1934) *Houses and House Life of American Aborigines*. Leningrad: Institute of Northern Nations CEC USSR Press (in Russian).
- Nikolova, A. and Pashkevich, G. (2003) The issue of level of development of husbandry in Tripolye culture. In A. Korvin-Piotrovskiy, V. Kruts and S. Ryzhov (ed.) Materials from the international conference ‘*Tripolye giant-settlements*’: 89–95. Kiev: Korvin Press (in Russian).
- Ovchinnikov, E. (2002) On the issue of Tripolye dwelling construction (on the basis of excavations of Nezamozhnyk and Zelena Dibrova settlements). In M. Banderivskiy *et al.* (eds) *T. Shevchenko Scientific Society Proceedings*: 116–137. Lviv (in Ukrainian).

- Ovchinnikov, E. and Pichkur, E. (2003) Study of the Tripolye settlement Pekari II. In N. Gavrilyuk *et al.* (eds) *Archaeological Studies in Ukraine years 2001–2002*: 207–10. Kiev (in Ukrainian).
- Passek, T. (1938) Tripollian models of houses. In *Journal of Ancient History* 4–5: 235–47 (in Russian).
- Passek, T. and Krichevskiy, E. (1947) Tripolye settlements of Kolomoishchina. *Short Reports of the Institute of Material Culture History* 21: 65–78. Moscow–Leningrad (in Russian).
- Passek, T. (1949) Periodization of Tripollian settlements: *Materials and Studies in the Archaeology of the USSR* 10: 5–245. Moscow-Leningrad: Nauka (in Russian).
- Spitsyn, A. (1904) Excavations of clay sites near Kolodistoe village of Kiev province. *Archaeological Committee Proceedings* 12: 87–118 (in Russian).
- Shmaglii, N. and Videyko, M. (1984) *Report of the Maidanetske Team of the Tripolye Expedition*. Kiev: AA IA UNAS, 38b (in Russian).
- Shmaglii, N. and Videyko, M. (2003) Maidanetske – a Tripollian proto-city. *Stratum Plus. The Tripoliada Land* 2: 44–140. Kishinev (in Russian).
- Shumova, V. (1985) On one of the ceramics categories of late-Tripolye artefacts of the South Bug-Dnieper interfluvies. In *Report Thesis for the 3rd Vinnitsa Regional Historical and Regional Natural History Conference*: 45–6. Vinnitsa (in Ukrainian).
- Videyko, M., Terpilovskiy, R. and Petrashenko, V. (2005) *Ukraine's Ancient Settlements*. Kiev: Institute of Archaeology UNAS, PKSPU, Kolo-Ra (in Ukrainian).
- Zaets, I. and Ryzhov, S. (1992) *Tripollian Settlement Klischev in the South Bug Region*. Kiev: MSNIP ‘Tellus’ (in Russian).
- Zinkovskiy, K. (1983) Towards a procedure for studying the problem of house building of Tripollian tribes. In L. Subbotin (ed.) *Materials on the Archaeology of the Northern Black Sea Region*: 16–22. Kiev (in Russian).

## Chapter 9

# Tripolian House Construction: Concepts and Experiments

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### Introduction

The house is a central icon within the Tripolye culture. Its image (graphic reconstructions, recreated houses of the original size, and structural models), often decorates books that describe the remarkable achievements of the Tripolye culture. Inhabitants of Tripolian villages built their dwellings using different methods that are still fairly poorly understood. Despite the large number of excavated sites (Fig. 9.1), about a dozen mostly unsuccessful house-building experiments, scaled models of houses moulded by the Tripolians, and ethnographic analogies, understanding the entire building process is fairly complex. It has become clear that, working directly on the basis of the archaeological remains of Tripolian houses, researchers cannot arrive at a full understanding of the basic principles that characterise Tripolian house building in general. As a result, more experimental work as well as thorough analyses of the site formation process is needed.

### House typology

What were the Tripolian houses like? Settlements consisted of either (in some cases both) wood and clay ‘ground-houses’ (used here to mean houses built entirely above ground level), or semi-sunken (deeply semi-sunken and shallowly semi-sunken) houses (similar to pit houses). The early Tripolian tribes built two types of dwellings: the semi-sunken type, very much resembling the mud huts that were quite common for the Neolithic Age, and the ground type, which were of rather complex design. The ground-dwellings were rectangular in floor plan. Often the buildings consisted of 1–3 rooms containing stoves built with thick clay walls incorporating some wattling. Each house had one small (nuclear) family living in it. Semi-mud and mud huts existed during all stages of Tripolye culture’s existence. It is possible that when they arrived in a new place people initially built light ground-houses (the remains of which have not been found) or deeply semi-sunken ones, and later switched to wattle and daub houses for more prolonged use (Passek, 1938). In some Dniester-area settlements there were shallow semi-sunken buildings that were later overlaid with wattle and daub ground-structures. In the

late stage, however, particularly at the end, the number of semi-sunken dwellings increased. In Chapaevka, in the Dnieper region, only semi-sunken houses were built. The same is true for settlements of the Sofievskiy-type in the Dnieper region, and for the majority of the Usatovskiy-type sites in the Black Sea region. In most cases, the co-existence of two types of dwellings in one settlement corresponds to different stages of its development: the semi-sunken belonging to the early stage, and the ground-houses to the subsequent stage.

The ground-houses were all built using wood and clay with the addition of sand and chaff. During excavation their remains resemble pieces of baked clay lying on rectangular plots. The earliest Tripolian settlements already give us evidence of these. There were both large houses (multi-family structures with several rooms) and small houses (for one family).

The archaeological remains – house remains – of Tripolian buildings are one of the main objects of archaeological field studies. There are different points of view as far as explaining the principles of construction is concerned. Completely opposite concepts originated back at the time of Tripolye culture's discovery, when the problem of explaining the functional purpose of the house remains and of reconstructing their original look and construction technology emerged.

### ***Different opinions***

Initially opinions were split: Vikentiy Khvoika and Ernest Stern considered them 'houses of the dead' (similar to mastabas tombs), while Nikolay Beliashevskiy, Vasilii Gorodtsov and Aleksander Spitsyn thought they were residential buildings (Kurennoi, 1926). Those points of view, however, were hypothetical assumptions lacking convincing physical evidence (Gamchenko, 1926). In the 1920s and 1930s, thanks to the transition to large-scale studies conducted across large areas, scientists came to a single conclusion: the house remains were indeed buildings of the Tripolian settlements (Passek, 1938).

In the 1930s and 1940s Tatiana Passek made an invaluable contribution to the study of Tripolian dwellings by describing them according to the example of the Kolomyishchina 1 settlement (stage CI), presenting the first substantiated concept of house building principles (according to Krichevskiy and Passek) (Fig. 9.2). The two scholars concluded that:

- The floor of the building was a layer of clay with chaff added, laid on previously prepared planking which was placed on the ground (following the longer axis of the house). The floor was subsequently baked using bonfires.
- Internal structures were placed on the floor: oven, altars, beds, benches, and so on. Either these elements were made and baked outside of the house and then placed in particular spots, or they were built along with the flooring.
- After the building of the floor with its structures was completed, the walls and partitions were built of wattle and coated with clay on both sides.
- The roof was dual-pitched (gabled) and thatched (Passek, 1940).

It is worth pointing out two basic elements of this concept, which was the only one that existed until the mid-1960s:

- 1) The technological use of fire in the process of house building;
- 2) The buildings only had one storey (the ground floor).





*Figure 9.1: Archaeological remains of Houses 40 and 41 of the Talianki giant-settlement (Photographs by L. Shatilo).*

The second concept, which supposed the existence of two-storey houses, was proposed by Vsevolod Markevich as the result of observations made during excavations of the Varvarovka-8 settlement (Markevich, 1964). Later, this idea found support among many researchers. In the 1970s and 1980s this hypothesis had already received the status of a substantiated concept, confirming that ‘houses with vertical development’ (Fig. 9.3) can be considered the main type of structures of the Tripolye culture settlements (Zinkovskiy, 1976). The essence of this concept is that the houses were of the wattle and daub type, and fire was *not* used as a technological factor in their construction. Rather, it was a destructive element used during demolition of the dwellings. The reconstruction of the dwelling has three variants:

- A. In the first variant, the ground floor is covered with a thin (2–5cm) layer of clay with chaff coating the ground. The oven and benches (usually one 1m<sup>2</sup> and 10cm high) are on the ground floor, where there is also some crockery. The walls have a wooden wattle frame coated with a layer of clay. The floor deck (of the first floor or attic, according to Markevich (1964), who proposed this variant reconstruction for Varvarovka 8 and 15, Brinzeni III, and Costesti 4) is made of cross-laid and split wooden blocks, and half beams coated with a layer of clay, sometimes with the addition of sand. The thickness of the layer varies depending on the evenness of the wooden deck; from 5–7cm to 20cm. Trap-doors leading to the first floor, or attic (e.g. Brinzeni III) were probably also present. The roof is considered to have been gabled and covered with thatch.
- B. The second variant is the so-called ‘platform’. The ground floor serves as a working room. This floor includes various decks, which were possibly associated with workplaces – concentrations of grinding stones, weights from upright weaving looms, and also storage pits. The walls are reconstructed either as wattle and daub, or composed of adobe blocks. The floor deck (of the first floor) is a ‘platform’ of cross-split beams laid one next to another and coated with a layer of clay up to 20cm thick. The first floor contains benches, altars, low clay-built shelves and an oven. The walls are made of wattle and

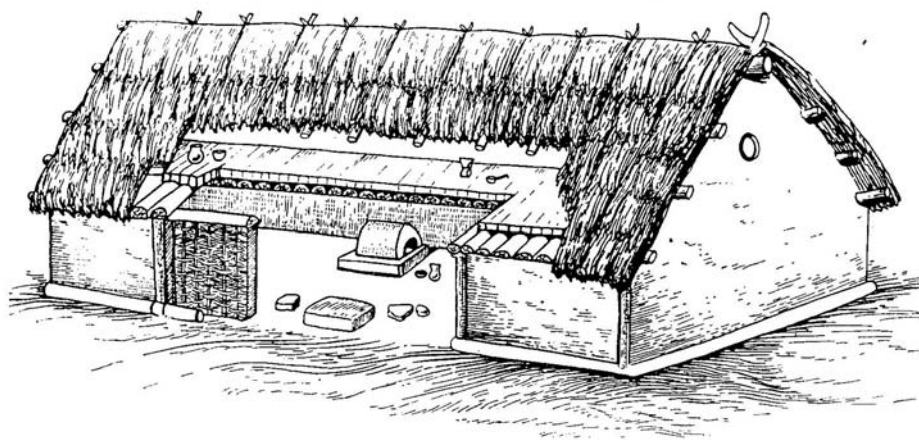


Figure 9.2: Graphical reconstruction of a Tripolian house (Drawing by T. Passek).

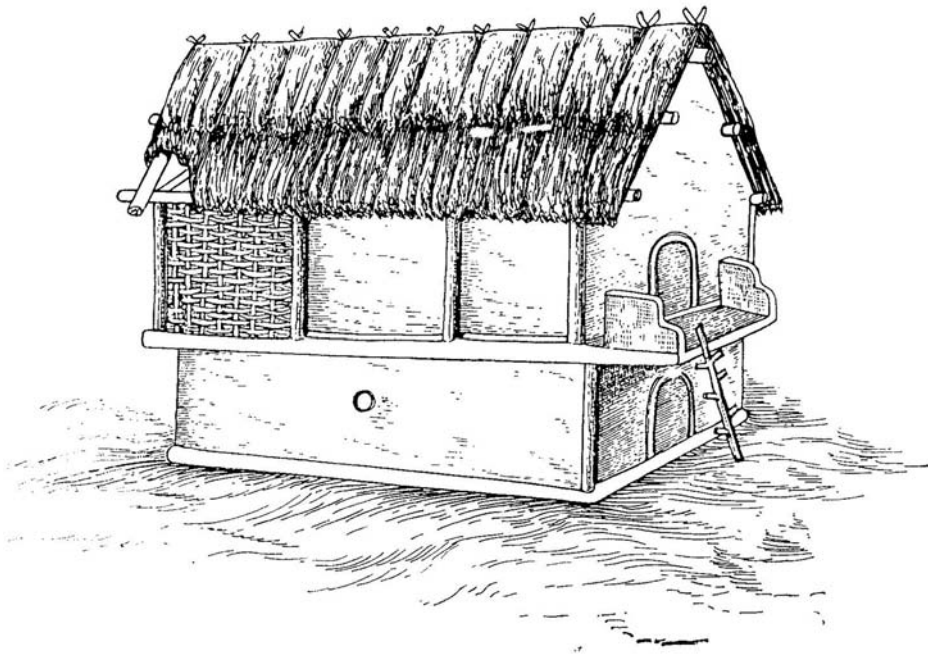


Figure 9.3: Graphical reconstruction of a Tripolian house (Drawing by E. Chernych and V. Markevich).

daub, and then the ceiling is built of clay and chaff, although it is much thinner than the usual floor deck. The roof is thatched, or made of a mix of clay and thatch. Such dwellings were reconstructed for Maidanetske and Talianki, as well as other settlements (Zinkovetskiy, 1976).

- C. The third variant for the reconstruction of Tripolian structures was proposed fairly recently by V. Kruts (2003), but only in relation to the giant-settlements. It serves as an alternative to the second variant. Its main characteristic is that the ground storey is built using the beam block-construction technique (as a log cabin). It is necessary to note that the main formative elements in such a house are the same as in model 'B' (except for the ground-floor walls) (Chabanyuk, 2008).

There is, therefore, a whole range of significant discrepancies between the first concept (formulated in the 1930s) and the second (formulated in the 1960s and 1970s). The most important question concerns the (constructive or destructive) role of fire. Researchers adhering to the 'destructive' concept propose two main arguments:

- Traces of fire on tools, bones, and ceramics;
- Intense baking of the wooden-clay deck, which could happen only during burning from both above and below.



There are some disputes about understanding the technology for starting fires. Konstantin Zinovskiy believes that the process required additional fuel, which filled the chambers almost to the ceiling: this guaranteed the gradual subsidence of the floor deck and the preservation of the rectangular shape of the house remains. According to Kruts, only the ground floor was filled with additional fuel, like a funeral pyre (Kruts, 2003).

The researchers could not imagine how, without an oxygen inflow, the coating could be evenly baked from underneath. Zinkovskiy, criticising the first concept (the 'constructive' fire), has advanced a range of consistent points:

1. A wooden deck would definitely burn away during the baking process;
2. As the result of the burning of the wooden frame, the clay floor would definitely crack and its surface would be uneven;
3. An uneven and cracked floor in the house could not be waterproof (Zinkovskiy, 1983).

Alexey Korvin-Piotrovskiy (Kolesnikov 1993) has formulated a number of arguments in support of one-storey houses with 'constructive' fire:

1. The proportion of tools with traces of fire is 15% and, in some cases, there are no objects with traces of fire at all. It is natural to assume that the floor in the house was baked before the tools came to lie on it, that is, at the construction stage.
2. The tools with traces of firing were linked to household activities, or to the 'ritual incineration' of the house, before abandonment.
3. A non-baked floor would require regular, almost yearly, renovations; baking the floor at the construction stage eliminates the necessity of frequent repairs, and there are only two or three coatings for the 50–75 year cycle of a house's existence.
4. The presence of crockery, tools and pits is found both under the 'platform', with impressions of blocks on the bottom and under the floors of the ground floor, that is, under the clay layer directly covering the ground.
5. There could be several explanations for the finding of objects and structural elements under the house floors: 1) the dwellings were built in places with rich cultural layers, and this did not create obstacles to construction; 2) cult ceremonies involving ritual burials under the floor (of people, of animals or parts of them, of vessels and other objects) took place just prior to the beginning of construction.
6. The building of the walls was performed on a foundation-less basis, and this could testify against multi-storey construction.
7. Calculation of the weight of the clay (a 'platform' 0.14m thick) in the case of a standard 70m<sup>2</sup> house) showed that the floor would weigh 15–75 tons, not including the weight of the oven, benches, and other objects. To that we should add the weight of the wooden deck, covered with this layer of clay. Taking into account only the weight of the structure, it becomes obvious that its foundation-less wattle walls could not bear it.
8. A 'platform' is a floor in a Tripolian building made in a specific manner; this tradition is not associated with the entirety of Tripolye culture, but rather is inherent only to certain ethnic groups (Kolesnikov, 1993).

Finally, structural models provide an immense amount of material that is useful for reviewing the appearance of Tripolian houses. There are closed models (with a roof), and open models (without the roof and showing the house's interior). Only a few closed models have survived.

These are, however, unique and informative, as they recreate the house as Tripolian people saw it. There is no reason not to trust this source since the ancient people could not have thought up non-existent home construction elements. Detailed examples of the construction elements in the models are reviewed below. It is worth noting, though, that all of the known models have one storey and are elevated on 'legs.' The only model with 'two storeys' is the model from Rossohovatka (Zinkovskiy, 1983). However, it can barely be interpreted that way – most likely it is a model of a one-storey house with a cellar.

## Experimental work

The different theoretical approaches to Tripolian house construction cannot be accepted without being proven experimentally. Olga Kulskaya and Natalya Dubitskaya conducted the first experiment of house construction, during an expedition dedicated to studying the Kolomoishchina 2 settlement in the 1930s. The main results of this experiment were as follows:

1. Using fire to bake the 'platform' produces uneven results.
2. The baking of the floor could have been accomplished using bonfires set on its surface: after the experiment the researchers found similarities between the 'experimental spots' and the excavated house remains.
3. The experiments in baking separate massive pieces, e.g. rollers and beams, showed that they were initially processed and burned and then used as a construction material. Notably, the coals had to surround them from all sides, including the bottom.
4. Tripolian people used construction material that they found directly in their settlements; that is, they used the loess-like clay loam lying right under their feet.
5. Tripolian builders used different construction materials and methods in the same dwelling (Kulskaya and Dubitskaya, 1940).

Experimental work on Tripolian house building has attempted to examine both the main theories (constructive and destructive fire). In the 1970s, Zinkovskiy baked a small model of a two-storey wattle and daub structure (the model of the wooden and clay deck). The house was weakly baked and did not crack; the wooden deck did not burn out and only its edges were charred (Zinkovskiy, 1976). At the same time, Kruts and Zagniy conducted a number of experiments in Chapaevka, near Kiev. In one case in their experiment (with a wooden deck coated in clay and resting above the ground on supports) they obtained something resembling house remains, while in other cases (with clay laid directly on the ground and on the wooden billets) the clay did not bake. Korvin-Piotrovskiy also attempted to bake a layer of clay lying on the ground and on wooden billets. During the experiment the wooden deck, which had been put on the ground, was completely coated with clay, including the edges of the blocks. After the baking process, it appeared that the layer of clay was evenly baked, on both the top and the bottom. The wooden blocks served as a thermal screen that did not allow the heat to leak into the ground, but rather reflected it and therefore secured the baking of the clay layer on the bottom (Kolesnikov, 1993).

In 2001, experiments were carried out to replicate the building and baking and the burning down of three 1:4 scale models. The first model was of a two-storey structure. The ground storey was a wooden blockhouse (log cabin), while the first floor was a light wooden structure

made of struts that were wattled and coated with clay. The roof was made of a wooden frame with sheaves of reed laid over it, while the floor deck and the ceiling were made of a layer of wood coated with clay on the top. The second model was of a single-storey structure with wattle and daub walls. The third model was a layer of clay smeared over the wooden layer placed on the ground.

Only the first model produced something resembling Tripolian house remains. The other two experiments failed.

### ***A full-size house***

The experiment in building and burning a Tripolian house of actual size took place in August 2003. This experiment, unfortunately, was subject to a very tight schedule (one month only). Neither clay nor wood had time to dry sufficiently, which to some extent affected the final results of the experiment.

The prototype for this structure was the first model from the experimental programme of 2001. That model was best suited for achieving the desired result – obtaining an accumulation of debris that resembles the archaeological house remains. The main idea behind this experiment was to prove Kruts' concept of the two-storey house construction (Fig. 9.4).

The two-storey structure idea comes from the fact that the lower layer of the Tripolian house remains appeared as a monolithic wattle and daub platform, which fell apart into separate blocks. Clay was originally laid over the solid layer of split wood and beams, whose impressions were still visible on them. The elevated floor was important because, even in the 1930s, Kulskaya and Dubitskaya had proven that a 5–10cm thick clay platform cannot be evenly baked by only setting fires on top of it – the fire must surround it on all sides (Kulskaya and Dubitskaya, 1940). Furthermore, the ground under the platform often contained various clay decks, broken vessels and other finds, which proves that the platform (the floor of the first floor) should have been elevated above the ground. This floor apparently contained an oven, an altar, and a podium for storing crockery and supplies. The residential area of the house was thus located on the first floor. Presumably the ground floor served as a utility space and could also be used for a stable in which to keep stock during the winter period.

The basis for building the ground floor walls in the shape of a blockhouse was that, in Talianki, the researchers studied pairs of houses (11 and 12; 24 and 26) the gaps between which were about 1m. It was impossible to place two sufficiently thick wattle and daub walls (Zinkovskiy thought of them this way) that would have been capable of bearing the weight of the first floor, and that had a minimal gap between them for drainage of rainwater. Also, if those walls were wattle and daub, then after the fire there would be deposits of baked clay from the interior revetment of the walls present under the platform, which was not noticed during the excavations. Finally, if the ground floor was used for the stabling of livestock, and pigs in particular, they would destroy the wattle and daub walls very quickly, a fact proven by ethnographic data. Consequently, only the blockhouse could meet all of these requirements for the ground floor of a Tripolian building.

The idea that the first floor walls served as a lightened frame and stave structure is supported by the discovery of a large chunk of wall that fell outside House 24 of Talianki. That part of the wall had traces of wattle, with the wood split into 3–4cm wide laths or slats. In addition, during the excavations in Dobrovody (Kruts *et al.*, 2005), researchers discovered an entire



*Figure 9.4: Full-size reconstruction of a Tripolian house by V. Kruts and V. Chabanyuk (Photograph by V. Chabanyuk).*

longer wall that fell outwards. It also had traces of exactly the same wattle and of 11 support staves arranged at a 1–1.1m distance from one another.

The surface of the ground floor was not coated, resulting in simple compressed dirt. Similar structures are also found in the Museum of Folk Architecture in Pirogovo, Kiev. It is interesting to notice that the smoke of the oven was drawn into the attic, and from there it passed outside through the thatch of the roof.

The idea that roofs were gabled was taken from the models of Tripolian houses of Rossohovatka, Kolomoishchina and Voroshilovka. That roofs were covered with reeds (instead of the remains of cereals plants) was determined by the fact that palaeobotanical data (Yanushevich, 1976), showed that the cereal crops cultivated by Tripolian people grew too low, and were not suitable to cover roofs. Reed stems, on the other hand, reach 1.5–2m in length, which makes them ideal for that use. Ethnographic data indicates that a reed roof lasts much longer than a straw one (up to 50 years).

The full-size experimental structure measured  $7 \times 4$ m. A 10-beam blockhouse approximately 2m in height comprised the ground floor walls. The logs were obtained from semi-dry trunks of broad-leaved trees. One shorter side of the building had a doorway ( $1.6 \times 1$ m) while another side

had a space for a rather small window ( $0.2 \times 0.5\text{m}$ ). Gaps between the blockhouse beams were filled with a mixture of clay and wheat chaff. In total,  $12\text{m}^3$  of wood was used for the blockhouse.

The wooden floor deck was 0.15m thick and was a single-layer deck of sawed beams laid across the building on the longitudinal beams of the top layer of the blockhouse. This wooden deck served as a ceiling for the ground floor and as a floor for the first floor. Furthermore, 18 support poles or staves were installed along the perimeter of the top layer of beams. They all were fixed with another layer of beams at the top; that layer also supported the overhead cover and the framework of the roof. The supporting poles were 2m high, which determined the height of the storey. Their diameter varied between 0.15 and 0.2m. The poles were fixed with special pins in drilled holes in the lower and upper layers of beams. The distance between the poles was on average 1.2m, which was later confirmed during excavations on site 4 of Dobrovody in 2004. The gaps between the supporting poles had narrower staves every 0.25m, with rods woven between them. In this way a wooden frame for the walls of the first floor was made. The total area of the first floor was divided, by a partition with a 0.9m wide doorway in the middle, into two parts: the porch ( $3.6 \times 1.9\text{m}$ ) and the living room ( $3.6 \times 5.8\text{m}$ ). The wooden frame of the partition was made using the same technique as was used for the main walls. The space above the living room was covered with a solid layer of boards and slabs; that layer was 5cm thick and lay across the structure (forming the ceiling).

The structure was covered with a gabled roof; its framework consisted of poles 5–7cm in diameter and *c.* 4m long arranged *c.* 1m apart. Every 0.6m the rails (of round timber 5cm thick) were fixed on the frame with mortise and tenon joints. Then the roof was coated with sheaves of reed.

Finally, the first floor wall frame was coated on both sides with clay combined with chaff and straw. The thickness of the walls was equal to the thickness of the supporting poles (0.2m), which stood proud of the wall surface in several places, as models of Tripolian houses show. The internal surface of the walls was plastered with a thin layer of clay mixed with chaff and manure. The surface of the floor deck was coated with a 5–7cm layer of clay and chaff mixture and the ceiling was coated with a 5cm layer of clay.

Just as at Tomashovskaya group sites, in the living room a podium was constructed to the left of the entrance, along the whole length of the longer wall. It was made of the same mixture as the walls and was 0.8m wide and 0.12–0.15m high. A dome (0.7m high) oven was built to the right of the entrance on an area of  $1 \times 1\text{m}$ . It was made of a clay and sand mixture that was 10cm thick. The dome had an open mouth. The altar, which was 1.1 m in diameter, was made of a clay and sand mixture and located 0.9m away from the shorter wall opposite to the entrance, along the central axis.

In addition, the walls were decorated with coloured clays: dark brown, red and white. The ornamental motifs were taken from the house models of Vladimirovka and Popudnya.

The house was built using the following material:  $20\text{m}^3$  of wood,  $3\text{m}^3$  of withe, 16 tons of clay, 1.5 tons of chaff and straw and 160 sheaves of reed. The experiment was not carried out by using replica Aeneolithic tools, but the building skills used (chopping, cutting, sawing, drilling and gouging out) were consistent with those that could have existed in the Tripolye era. The 6m structure was erected without the use of nails or other metal bracing. For four weeks a small group of five people busied themselves with bringing this project to life. One week passed between the completion of the structure and its burning. As was noted before, this time was insufficient for the clay on the walls and the floor to dry completely.



### ***Setting the house on fire***

The burning of the structure took place on 27 August 2003. The ground floor was filled with dry firewood and brushwood (approximately 3m<sup>3</sup>), while outside the walls were surrounded with straw and brushwood. The structure was set on fire at 8.20pm both inside and outside.

The flames promptly spread from the outside fires over to the roof, which burned down in less than 10 minutes. The fire then flamed up inside the blockhouse, and 25 minutes into the burning, the floor deck caught fire and the flames started bursting through the gaps between the blockhouse logs. A major draft formed along the axis of the openings, the door and window, spreading the fire around the building and intensely burning the shorter side of the building on the level of the first floor, by the window. The fire enveloped the whole building, including the attic. Cracks appeared near the supporting poles of the first floor. The fire expanded through them onto the wattled frame of the walls.

The house collapsed within 90 minutes. The burning first floor fell smoothly to the ground, slightly shifting towards the back and the right side wall. A part of the left wall, however, did not burn sufficiently through and for some time (20 minutes) remained hanging on the blockhouse remains. For the entire night, the remains of the wooden structures kept burning on the structure's ruins, while the baked clay glowed in some places indicating rather high temperatures. By 6am the burning had basically finished. A portion of the wooden details did not burn completely and, having carbonised, they remained on the fire site. These were parts of supporting poles and a fragment of the lower longitudinal logs (eastern side) of the blockhouse's foundation. The northern wall of the first floor (entrance part) did not burn completely and fell outside along with the pediment. That can be explained by the fact that the northerly wind fanned the intense burning of the southern part of the structure in particular. Visually, the pile of baked clay preserved the rectangular shape and, to some extent, resembled archaeological house remains. Baked clay from different structural details of the house acquired mostly a red-brown colour, which testified to the high temperatures achieved during the experiment.

### ***Studying the remains***

Study of the results of the experiment was conducted first in July 2005 and then in July 2006. On the fire site, over an area of 96m<sup>2</sup>, researchers pegged out a grid of 2 × 2m squares, oriented in accordance with the cardinal directions. The squares were cleared and sorted, and two trenches – crosswise and lengthwise – were dug out in order to obtain the sections.

An initial surface study showed that, during burning down of the structure, the clay of the floor deck, parts of the walls and the attic deck baked and acquired physical and technical characteristics similar to the archaeological analogues. In particular, three fragments of coating with traces of vitrification were found on the surface. It appeared, however, that not all the wooden structural elements burned away, and so they remained among the coating. After the surface study of the experimental house remains, smaller exploratory pits were dug out in squares 3B and 4B, displaying that the height of the clay deposits in them was 0.22m and 0.3m respectively. Under the major layer of the wall coating was the chaotically disposed layer of the floor deck and, under that, a 3–4cm layer of ashes.

The study of the remains generated the following results:

1. House remains that consisted of layers of baked clay of a red-brown colour and of various thickness (5–10cm), with traces of wood on the bottom, were recorded over almost the entire area of the fire.
2. The baked coating from the walls of the first floor and the attic created major deposits above the house floor. With archaeological house remains such deposits are typically smaller in volume, and wall fragments are almost absent from them.
3. As noted above, immediately after the fire, in some places, the remains of semi-burnt wooden structural elements were recorded among the baked clay deposits. After two years the amount of wood charcoal had decreased, as it had been washed out by rainwater. It is worth mentioning that the absence of wood charcoal on the archaeological house remains was the main difference between those and the experimental house remains.
4. In some places there was a layer of ashes under the house remains. In two years the thickness of the layer had decreased from 3–4cm to 1cm. Considering this tendency, it is possible to assume that, in a few decades, the ashes will be washed out completely from under the house remains.
5. If, in the first year of observation, many pieces of the wall coating had traces of ornament painted with coloured clays, in two years they had almost vanished. Small fragments of insufficiently baked coating turned into crumbs, a disintegration exacerbated by the action of grass roots and rainfall.
6. The crockery placed on ground floor (vessels 1 and 2) was crushed by the house remains, while the crockery on the first floor (vessels 3 and 4) broke and its fragments were recorded within a radius of 1–2m of the positions in which they were placed before the structure collapsed.
7. Two flat granite slabs (grinding stones) and animal bones bore traces of burning.
8. Among the deposits of coating that contained additional vegetative components (e.g. the floor, walls and partition), were the partially preserved shapes of structures made of clay with the addition of sand (the altar and the bottom of the oven). The edge of the podium was also recorded in certain places.

As a result of the experiment, the researchers achieved something resembling real Tripolian house remains.

The results would possibly be more impressive if the burning down of the structure had occurred at least a year after it was built, so that the wood and the clay composing it would have been sufficiently dry. Moreover, under real conditions when the entire Tripolian settlement would have been burnt down simultaneously, a massive draft would have been created, so that anything that could possibly burn would have done so. That is apparently why charcoal and ashes are almost never found at site excavations. After this level of burning, in fact, the floor deck would have been partially vitrified on the bottom even more than on the top. The same would have happened to the packed surface of the ground floor, the one Passek called the 'lower floor' (ground floor). All of this is quite apparent from the experiment, although perfect conditions are almost impossible to create artificially. Nevertheless, working from the results that were obtained, we are inclined to support the idea of the destructive function of fire and believe that the Tripolian house characteristic of the Bug-Dnieper region was a two-storey wood and wattle-and-daub structure (Chabanyuk, 2008).

However, during this experiment, many new questions arose, particularly concerning the height of the structure, the function of the ground floor, and the structure of the roof. The experiment in question was only part of a larger programme that continued in the following years. Its goal was not to prove one of the hypotheses, but to find the most probable model and to recreate the conditions that formed the Tripolian house archaeological remains.

### ***Scale model experiments***

Another experiment (this time with a scaled model) was conducted under the supervision of Korvin-Piotrovskiy. It was concerned with the process of building a one-storey structure with preliminary ('constructive') firing. The experiment was performed on the basis of observations of a considerable number of structures studied in the Talianki and Dobrovody settlements. Before conducting the study, the researchers created a detailed layout of the structure, using data exclusively from excavations (impressions of construction elements on clay, house models, and so on) and ethnographic analogies (Fig. 9.5).

Building the frame of the structure on the prepared plot began with laying a basic foundation. Five 7cm thick logs were laid on the ground: two longitudinal beams, each 2m long and three transverse beams, 0.8m long. They were fastened together using woodworking joints and formed a rectangle. Those beams served as sleeper beams for the structure and were the most substantial wooden element of the whole house. The vertical piles of the walls were inserted in them.

It is important to point out that, from archaeological remains, scholars have come to the conclusion that if these logs did not burn (during the final conflagration), they would in any case, by now, have disappeared without a trace. Secondly, some interesting information about similar



*Figure 9.5: 1:10-scaled reconstruction of a Tripolian house by A. Korvin-Piotrovskiy and L. Shatilo (Photograph by L. Shatilo).*



foundations is present in small models of Tripolian structures. Open models from Vladimirovka and Sushkovka have a projecting 'platform' (as it is called in the literature) around the perimeter – a similar detail is observed on the model from Rossohovatka. These elements could indicate not only the building technique, but also point to the use of logs in the structure's foundation. In addition, this 'platform' has vertical wall uprights of a significantly smaller diameter. The height of this element varies and can give the impression that the house is slightly elevated off the ground and so contribute to the layout that was observed during excavation of the Tomashovskaya-Sushkovskaya group's houses: some unevenness in the bedding of the platform and differences in height. In addition, it is worth paying attention to the fact that, in the majority of cases in the impressions on the bottoms of the Tripolian platforms, we do not observe those of house-wide wooden structural elements. Apparently, under the building's floor, wooden blocks and half beams were laid on wooden rods that provided a deck with the rigidity needed for a further coating with a layer of clay. Later, all the wooden structural elements decayed and the house platform settled down quite unevenly from its slightly raised position, the results of which we see when taking levels on the remains of Tripolian houses.

It was exactly following this concept, with the use of wooden rods, that a wooden deck consisting of boards 1cm thick and of various lengths was arranged across the longer axis of the experimental model. The sleeper beams were provided with conical holes into which were hammered 34 pre-sharpened vertical poles for the walls. The wall frame was based on a complete wall (a unique finding) studied from Dobrovody (Fig. 9.6). It consisted of a wooden frame that included supporting beams 15–20cm in diameter with gaps between them filled with a wattle fence (3–5cm wide wooden laths twining the 2–3cm thick rods) (Kruts *et al.*, 2005). We applied the same principle in building the model's frame.



Figure 9.6: House remains (including the wall) from Dobrovody (Photograph by A. Korvin-Piotrovskiy).

Both open and closed Tripolye house models made of clay have a round opening opposite the entrance on the back wall – a window. It is always circular. Excavation data from Talianki confirms this: at House 16, for example, researchers found fragments of a round window. In this experiment, we left an opening on the shorter back wall for the window. The doorways were also made in proportion to the size of the model. We also built a threshold, the presence of which is proven by excavations (thresholds were found in 50% of the buildings excavated in Talianki) and house models. After we created a frame for the structure, its walls were wickered with rods (up to 0.5cm in diameter) and coated with pre-mixed clay and chaff. In this way the walls were coated with a 2–3cm layer that completely encased the wooden structure. The same clay mix was laid on the wooden deck of the platform (4cm thick).

In the real conditions of the remains of Tripolian structures, the fragments of clay coating do not allow for an exact determination the structural elements to which they belong. Taking this into consideration, we decided for our model not to have an attic floor or a clay coating on the internal side of the roof. However, the issue of the construction of the roof frame is an interesting one. Scholars have always faced difficulties in interpreting the construction of the roof of the Tripolian house since roof remains very rarely survive. A range of models, well known in Western Europe, had gabled roofs. During the excavations in Kolomoishchina-II, researchers found a house model with a hipped roof, as well the remains of the poles that were used to support the ceiling of a large rectangular house. The models, in particular, gave an impression about the roofing of Tripolian houses (Passek, 1940). Archaeologists later found more models, but with another type of roof (Fig. 9.7). The Rossohovatka, Sushkovka, Andreevka, and Peschane models had a roundish or semi-cylindrical shape ('barrel' shaped in English architectural terms). No remains of such roofs were found in the excavations. In reconstructions of Tripolian house models this roof type was not taken into account. It was agreed to rebuild all the houses with a gabled roof, although such a roof was not represented in any of the Tripolian models known to us (only hipped or barrel roofs).

The shape of the roof, like the house itself, depends on climatic conditions and the presence of particular construction materials. In countries with snowy winters, houses had (and still have) a gabled or dual-pitched roof while, in warmer countries, people build rounded and flat roofs that protect against the heat. The existence of rounded roofs in regions with warmer climates is also supported by ethnographic data. It is worth mentioning that the Tripolye culture thrived during the Atlantic optimum: that is, warm conditions. The climatic conditions in the territories over which Tripolye culture expanded were similar to the contemporary climates of Moldova, Turkmenistan and the Caucasus (where such roofs were still being recorded in the middle of the twentieth century).

This presumption is also indirectly supported by the roofs on models of Tripolian structures. The model of Rossohovatka (its back side) for instance, shows that round details are moulded around the perimeter of the roof. They can be interpreted as representing the ends of horizontal beams that could be placed on the vertical poles of the walls and served as the basis for the roof. The structural model from Voroshilovka (where the roof, in cross-section, has a half-hexagonal shape) allows for reconstructing the roof using the same principle (Zaets and Gusev, 1992).

Reconstructing the material used to cover the roofs of Tripolian houses raises many questions since there are almost no sources relating to this issue. In the historiography of Tripolye culture it has been the tradition to rebuild the house to resemble the Ukrainian 'mazanka' (a wattle and

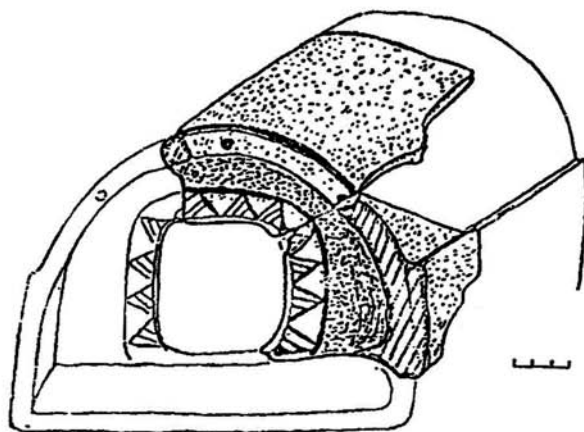


Figure 9.7: Clay model of a Tripolian house from Rossohovatka (above) and Sushkovka (below) (Photograph by L. Shatilo – Drawing by E. Iakubenko).

daub house), covered with straw in a picturesque manner. This variant not only lacks support but also is fairly improbable, since the stems of cereal crops cultivated at the time were too short for this. Blind imitations of the rural reality of the Ukrainian nineteenth century in the reconstruction of the Tripolian houses (with the reservation that natural conditions themselves determine lifestyle and house construction) is clearly inaccurate, since Tripolian society had completely different cultural traditions.

In any case, the covering of the frame could have been accomplished in a several different ways. The roof could have been rendered using a weaving technique: it could have been covered with woven mats (roofing of this type for these sorts of roofs has an analogue in ethnography; Morgan, 1934). The traditional Chechen dwelling, which has a frame analogous to the one we used for our experiment, comprises horizontal beams covered with thin logs laid perpendicular to them; those are further overlaid with another layer of thin logs lying parallel to the beams, which are then covered with sheaves of woven reed (Korvin-Piotrovskiy and Shatilo, 2008). Roofing of this type could further be coated with clay, inside as well as out. Markevich has proposed an interior clay coating for roofs in some Tripolian structures (Markevich, 1964). That would be logical considering that, in our experiment, we studied a model that being architecturally complete – with wall and a roof – had been subjected to firing. But since this experimental model was created at a scale size accounting for all the peculiarities of the roofing and then coating it with clay from the inside would have been too problematic. Therefore, we chose another variant: wet clay was mixed with chaff and straw. This mixture was laid on the roofing frame in a solid 2.5cm layer from both sides. We should stress the fact that the roof coating did not fall out during the drying and baking process.

After the platform (the main floor), the walls and the roof of this experimental dwelling were coated with the clay and chaff mixture, the drying process began. As it dried, the clay started to shrink, so cracks appeared around the wall surfaces. The cracks were sealed with new clay. Eventually, when the house dried completely and all the moisture evaporated from the clay, we noticed no more cracks. After this we started firing the house.

This stage was one of the most controversial, since no one knows for certain how far back in time people started to fire the internal part of a house. This is where the sphere of academic pre-suppositions begins and of the testing of their validity over the course of experiments. The firing lasted for nearly 15 hours, but the active high-temperature burning lasted for no more than 3 hours. The high temperature was reached with the help of red-hot coals and straw mats; dry wood also served as supporting fuel.

When the firing was completed, the model was taken apart. A part of the shorter wall and the longer wall, as well as a part of the floor of the main room, were cut out with the help of a handsaw. As a result we determined that the clay coating on the walls, roof and floor was not damaged anywhere. The wooden structures had not become charred, but rather become drier, and the house in general gave the impression of being quite a tough structure. We should note, however, that we did not reach the temperature that would have allowed us to obtain a platform coating analogous to the one that we found during excavations of Tripolian sites.

## ***Results***

Several things have been noted regarding the results obtained. Despite the fact that the coating of our experimental house did not completely correspond to the platforms or remains of the

archaeological excavations, only some fragments started to turn red (the colour similar to that observed in the excavations). This was probably due to insufficiently high temperature during the burning. In fact, the colour of baked clay is directly linked to the temperature to which the clay is exposed (Tretyakov, 1987). It begins to turn red when temperature reaches 700°C. Before reaching that temperature, clay passes through a so-called 'black' phase – turning black at a temperature of up to 500°C (Shevchenko and Ovchinnikov, 2005). In addition, the colour of clay is also affected by the duration of exposure. To obtain the same level of firing as observed on real archaeological sites, continuous high-temperature firing should last longer than in our experiment: at least three times longer. It is also necessary for the clay floor of the house to be more packed, and there should be a greater amount of chaff.

The experiment allowed us to draw the following conclusions. It is possible to fire wood-and-clay structures without destroying them. As a result of firing, wood-and-clay structures lose the elasticity attributed to clay – a brick-like material results, and much less renovation is thus required. In combination with the wooden frame, the structural material acquires the characteristics of concrete. These results will help us plan further steps in experimental modelling: increasing the time of firing, using the right proportions of material similar to those used by the Tripolian people, and developing both small- and full-size models. The experiment lets us claim that the hypothesis that Tripolian houses had one storey and that fire played a constructive role in their building remains relevant (Korvin-Piotrovskiy and Shatilo, 2008).

Despite all the various experiments and studies, scholars still disagree on the methods of construction of the Tripolian house. To create a methodological approach to the reconstruction of the main principles of Tripolian house building it is necessary to develop a general understanding of the conditions in which the remains such structures were formed, particularly those with which researchers deal directly. It is understood that while excavating an ancient dwelling we simultaneously obtain an image that, in compressed form, depicts various kinds of activities occurring over an extended period of time. Different types of finds, construction layers, stand-alone structures – all represent the activities of Tripolian people, despite their varied character or duration. As a result, it is important to identify the following taphonomic and chronological influences (phases) in the formation and distribution of objects associated with house remains:

1. The possibility that the area of the house was occupied before the house itself was constructed.
2. The presence of objects relating to activities of a ritual or cult nature associated with the subsequent building of the house.
3. Variation in the structures, details, elements and technological units of the various buildings.
4. The nature and 'use-life' of the house. This is the longest-term 'activity', and is reflected in different variables: renovation, reconstruction, additional structures added to the building (if there were any), and the material remains of everyday, household and cult activities that may have accumulated over 1–3 generations.
5. Objects reflecting actions of a ritual or cult nature associated with subsequent abandonment of the house and of the settlement in general (the ceremonies for 'making order', 'breaking the stove', burning the settlement, and so on).
6. The natural and anthropogenic influence on the remains of the structure from the moment it was abandoned until it was discovered.



Every aspect (except the first) affects, to one degree or another, the material evidence of the others. Division of the materials from the examination of house remains, according to these phases, can generate a more constructive approach to identifying the basic principles of Tripolian house building. Therefore, for example, the presence of archaeological material under the main residential unit of the house may indicate that it arrived there as the result of ‘actions’ of phase 1, as well as phases 2 and 3. The ‘actions’ of phase 5 – the ritual incineration of the settlement when abandoning it – have no association with the construction process, but can seriously alter the results of phase 3, construction, turning a wattle and daub house into a fired house, parts of which have collapsed and even fused together. With the same likelihood, however, Tripolians could also have set their houses on fire at the construction stage – the result would be similar. Under these conditions determining whether houses were baked during the construction stage or not is associated with the analysis of materials from phase 4. The presence of artefacts without traces of firing on the platforms, or on the fired floors daubed on the ground, testifies that they appeared in the house after its construction and firing and did not appear in the high temperature zone during the incineration ritual. It is by using the approach proposed here that scholars will be able to create detailed reconstructions of the remains of Tripolian houses and to verify existing theoretical approaches on house building processes.

## Final remark

The study of Tripolian house construction is thus a very relevant topic. The methods of house construction of the Tripolye culture are very original, with no analogies elsewhere. Studying these dwellings and their construction processes can contribute to the development of the world’s history of rural architecture.

## References

- Burdo, N. (2003) The sacral aspect of Tripolian proto-cities. In A. Korvin-Piotrovskiy, V. Kruts, and S. Ryzhov (eds) *Materials from the international conference ‘Tripolye giant-settlements’*: 18–21. Kiev: Korvin Press (in Russian).
- Burdo, N. (2007) Reconstruction of Tripolye culture structures. Methods and concepts. In M. Videyko and S. Kot (eds) *Tripolye Culture. Research, Discoveries and a World Context*: 29–48. Kiev: VIPOL (in Ukrainian).
- Chabanyuk, V. (2008) New experimental data on the Tripolye house construction techniques. In A. Korvin-Piotrovsky and F. Menotti (eds) *Tripolye Culture in Ukraine, the Giant-settlement of Talianki*: 218–26. Kiev: Korvin press.
- Gamchenko, S. (1926) Observations of the research results for Tripolye culture 1909–1913. In *Tripolye Culture in Ukraine*: 31–41. Kiev (in Ukrainian).
- Kolesnikov (Korvin-Piotrovskiy), A. (1993) Tripolian house building. *Archaeology* 3: 63–74 (in Ukrainian).
- Korvin-Piotrovskiy, A. and Shatilo, L. (2008) Experimental modelling on Tripolian houses of the Tomashovska local group. In A. Korvin-Piotrovskiy and F. Menotti (eds) *Tripolye Culture in Ukraine, the Giant-settlement of Talianki*: 199–210. Kiev: Korvin Press.

- Kozlovskaya, V. (1926) Tripolye culture locations near Suchkovka village in Gumanshchina. In V. Kozlovskaya and P. Kurinnoi (eds) *Tripolye Culture in Ukraine*. Vol. 1: 43–66. Kiev (in Ukrainian).
- Krichevskiy, E. (1940) Report on the excavation of house remains (ploshadky) 13, 23, 5, 14. In M. Yachmenev (ed.) *Tripolian Culture* (Vol. 1): 179–284. Kiev: Ukrainian SSR Academy of Science. Institute of Archaeology (in Ukrainian).
- Kruts, V. (1989) On the history of the population of Tripolye culture in the South Bug-Dnieper interfluvium. In *Primeval Archaeology. Materials and Studies*. Collection of scientific works. IA UNAS: 117–32. Kiev: Naukova Dumka (in Russian).
- Kruts, V. (2003) Tripolian sites – the result of the ritual incineration of houses. In A. Korvin-Piotrovskiy, V. Kruts, and S. Ryzhov (eds) *Materials from the international conference 'Tripolye giant-settlements': 74–6*. Kiev: Korvin Press (in Russian).
- Kruts, V., Korvin-Piotrovskiy, A., Ryzhov, S., Buzyan, G., Ovchinnikov, E., Chernovol, D. and Chabanyuk, V. (2005) *Studies of Tripolye Culture Giant-settlements 2002–2004*. Kiev: Korvin Press (in Russian).
- Kulska, O. and Dubitska, N. (1940) Building materials of Tripolye culture. In *Tripolye Culture*. Vol. 1: 325–34. Kiev (in Ukrainian).
- Kurinnoi, P. (1926) Monumental sites of Tripolye culture. In V. Kozlovskaya and P. Kurinnoi (eds) *Tripolye Culture in Ukraine*. Vol. 1: 67–96. Kiev (in Ukrainian).
- Markevich, V. (1964) Tripolye settlement Varvarovka VIII. In a collection of theses for the *First symposium on archaeology and local history of the south-western part of the USSR and the Romanian Socialist Republic*: 15–6. Kishinev (in Russian).
- Morgan, L. (1934) *Houses and House Life of American Aborigines*. Leningrad: Institute of Northern Nations CEC USSR Press (in Russian).
- Passek, T. (1938) Tripolian models of houses. *Journal of Ancient History* 4–5: 235–46 (in Russian).
- Passek, T. (1940) Reports on excavations of the houses (house remains) 1, 2, 4 and 11. In *Tripolye Culture*. Vol. 1: 43–177. Kiev (in Russian).
- Passek, T. (1949) Periodization of Tripolian settlements. *Materials and Studies in the Archaeology of the USSR* 10: 5–245 (in Russian).
- Shevchenko, N. and Ovchinnikov, E. (2005) Mineralogical and petrographic study of the materials from the 2002–2004 excavations at the Tripolye culture settlement near Talianki village. In A. Korvin-Piotrovsky (ed.) *The Study of Giant-Settlements of Tripolye Culture*: 94–105. Kiev: Korvin Press (in Russian).
- Tretyakov, Y. (1987) *Ceramics – Material of the Future*. Moscow: Znanie (in Russian).
- Yanushevich, Z. (1976) *Domestic Plants of the South-western Part of the USSR Based on Paleobotanical Studies*. Kishinev: Shtiintsa (in Russian).
- Zaets, I. and Gusev, S. (1992) Model of a Tripolian house from the South Bug region. *Archaeology* 1992(3): 130–2 (in Ukrainian).
- Zinkovskiy, K. (1975) Towards the problem of Tripolian house building. *Archaeology* 15: 13–21 (in Ukrainian).
- Zinkovskiy, K. (1976) On methods of studying the house building of Tripolian tribes. *Materials on the Archaeology of the Northern Black Sea Region* 8: 38–49 (in Russian).
- Zinkovskiy, K. (1983) Towards a procedure for studying the problem of house building of Tripolian tribes. In L. Subbotin (ed.) *Materials on the Archaeology of the Northern Black Sea Region*: 16–22. Kiev: Naukova dumka (in Russian).

## Chapter 10

# The Latest Stage of Development of the Tripolye Culture

*Vladimir Kruts*

### Introduction

The Tripolye culture reached its peak development in the CI stage. In this period, the settled area was divided between different groups and, where the contact between the various ethnicities was more intense, large settlements (e.g. giant-settlements) appeared (in particular on the borders with the steppe region). Some researchers are inclined to see those settlements as proto-cities, but others (including the author) are not. The Tripolians' economy had stagnant characteristics; there are no traces of a progressive shift towards improving the means of production. The extensive economy could exist only because of the continuous exploration of new territories until, finally, there came a period in which each separate group lacked the possibility of expanding its territories and was forced to exhaust the area completely. This meant redividing the territories and population migration within the settled area, which eventually led to the decline.

One of the reasons for the decline of the Tripolian community can thus be understood as follows: the culture did not move from an extensive method of management to an intensive one. It is possible, though, that attempts to do that did occur. This statement finds support from the consolidation of the Tripolian population in the most developed stage (CI) and at the beginning of the latest (CII) stage, showing that many regions were united by a commonality of features of material culture (Zakharuk, 1971; Dergachev and Kruts, 1975). This process, apparently, did not last long. At the beginning of the latest stage, especially in the peripheral regions, Tripolian people began merging with populations of other ethnicities that were at a similar (or lower) development level. In this way some of the old Tripolye culture traditions were lost, but other new were ones acquired. This primarily happened in the eastern peripheral regions where, due to remoteness from the original territory, the influence of other ethnic populations was more tangible (as the appearance of cemeteries testifies).

Lack of burials in the early stage (cremation was probably used and the remains were apparently not buried) was not reflected in the later stage. In fact, in the southeast of the Tripolian area, apparently under the influence of the steppe cultures of Srednestogovskaya and Nizhne-mikhailovskaya and the Pit Grave culture, flat graves appear as well as elaborate barrows (Vykhvatintsy, Usatovo, Mayaki and others) (Kruts and Ryzhov, 1997; Velikanova, 1975). Approximately at the same time, burial places started to appear in the northeast of the Dniester region too. Here cremation was the main funerary practice, but it is combined with



inhumation (e.g. the Sofievskiy-type) as used within other neighbouring groups. It is possible that this was influenced by the latter stage of Srednestogovskaya culture. These practices had slightly less influence in the upper Prut, upper Dniester, South Bug and Volyn regions, which were more distant from the steppe region.

The influence from other ethnicities affected not only ideology, but also material culture. In particular, the wattle and daub technique of house building disappeared slowly, the decorated crockery decreased, and ornamental motifs became simpler. Furthermore, kitchenware was made by adding shell temper into the clay, and decorated with rope impressions. Cultural traditions also changed in the northwestern Black Sea region. Husbandry on the distant pastures gained a more important role and a new type of plastic art – figurines depicting squatting men – started to appear. In general, in the latest developmental stage, the image of Tripolye culture changed so much that scholars had previously believed that the sites of the Usatovskiy- and Gorodsk-types belonged to other separate cultures (Brusov, 1952; Dumitrescu, 1963; Gimbutas, 1956; Vulpe, 1957). Similar points of view have also been expressed in recent times (Zbenovich, 1987), yet the majority of researchers are inclined to see them as belonging to the final stage of Tripolye culture.

By the 1950s, thanks to the efforts of a whole generation of archaeologists, primarily Tatiana Passek, Elena Lagodovskaya and Yuriy Zakharuk, six local late-Tripolye variants were distinguished: the Gorodsk-Volyn, Usatovskiy, South Bug, Upper-Dniester, Mid-Dniester and Sofievskiy. Furthermore, the Mid-Dniester sites were renamed as Vykhatynskiy-type sites (Movsha, 1971a, 1971b). The sites from the upper Dniester, upper Prut, and South Bug were united into one local group that Zakharuk named the Kashperovskaya group (Zakharuk, 1971). Finally, new variants of the entire range of local groups that occupied the area of expansion of the Tripolye culture in the latest stage (CII) were distinguished as follows:

1. Brinzenskaya (Zhvanetskaya)
2. Kashperovskaya (Gordinesti)
3. Gorodsk-Volyn (sites of the Troyanov and Gorodsk-type require separate review)
4. Vykhatynskaya
5. Usatovskaya
6. The Mid-Dnieper (Sofievskiy-type)

The various characteristics of these local groups are described below.

### **Sites of the Zhvanetskaya (Brinzenskaya) local group**

The first sites of this local group were discovered at the beginning of the twentieth century. Their independence in the system of Tripolye culture, however, was determined in the 1970s: first by Tamara Movsha (Movsha, 1971a) under the name ‘Zhvanetskaya’ and then by Valentin Dergachev under the name ‘Brinzenskaya’ (1978, 1980). The group is represented exclusively by settlements spread out over a quite vast region of the upper Prut and of the northern part of the middle Dniester region. There are currently about 30 known settlements of this type.

The settlements of the eastern branch of the Zhvanetskaya group – the sites of the Kosenovskiy-type – were quite large, sometimes more than 100ha (for instance Kosenovka, Apolianska, Olkhovets). The settlements are located on the promontories of high river terraces,

or on outcrops that occurred at river confluences at locations with good natural fortifications. In Brinzeni, Zhvanets and Costesti-IV there are even signs of defensive moats. The settlements were developed with ground wattle and daub structures: semi-sunken houses (similar to pit houses) are more rare. The 'ground houses' in Brinzeni, Costesi IV and Varatica Hill appeared as multi-layered decks of rectangular shape ( $4-8 \times 5-14\text{m}$  in sizes). After analysis of the site stratigraphy, Markevich concluded that the dwellings had a two-storey design (Markevich, 1973b, 1981).

In Brinzeni-Tsiganka and Zhvanets, cultural layers were recorded not only on outcrops, but also on a nearby plateau, which allowed Dergachev (1980) to assume the existence of settlements composed of two parts – a part that was protected by fortifications, and a suburb. Furthermore, close to the settlement of Zhvanets, archaeologists found a complex consisting of seven ceramics kilns, which testifies to a specialisation in ceramic production (Movsha, 1968, 1971a, 1975). The work tools were made of flint and other types of stone, bone, horn, clay and metal. For flint tools, the inhabitants used both local and imported materials. The set of tools included drills, piercing tools, awls, scrapers and combined knife-scrapers, knives and knife-shaped flakes, small saws and tools with inserts, triangular arrowtips and spears with straight and curved bases, as well as wedge-shaped axes. Other types of stone were used to make hammerstones, grinding tools, and eye-socket axes with regular or mushroom-shaped butts. Tools made of bone are represented by piercing tools, awls, chisels and burnishers. Those of horn are represented by piercing items, mattocks, battle-axes and picks. It was characteristic of this group to have bone daggers, which were found in Brinzeni-Tsiganka, Costesi IV, and in Kuban. The metal tools came from Brinzeni-Tsiganka (a punch and a flat wedge-shaped axe with a lug on one side of the butt) and Constesti IV (two tools that looked like an awl and a piercing tool).

Clay objects are represented by the numerous spindle-whorls of different shapes. Crockery is represented by kitchenware and tableware. Painted table ceramics make up 50–70% of the settlements' entire pottery assemblage. Decoration consists of wide ribbons, sometimes framed with acute-angled triangles. In addition there are painted triangles, acute-angled triangles, and solar symbols, as well as images of people, animals, birds and snakes. The metope-like arrangement of ornamentation is the most common type. Thirty to 50% of the crockery assemblage is kitchenware. It is made of clay paste with added shell temper. Plastic arts are represented only by anthropomorphic figurines. Style-wise they are attributed to the Vykhatinskiy-type with its characteristic symbol of a 'head' surrounded by circular piercings ('the nimbus') (Sergeev, 1969).

Although the Zhvanetskiy-type sites were established on the basis of earlier sites, like the Varvarovka-15 sites (Movsha 1985a; Dergachev, 1980; Markevich, 1981), the existence of an intermediate link between them is not excluded. It is assumed that the sites of the Starye Badrazhy type could be that link (Dergachev, 1980; Markevich, 1981). Movsha thought that the expansion of some part of the Zhvanetskaya group's communities to the Volyn province is shown by the appearance of sites such as Kolodiazhoe and Troyanov in that region (Movsha, 1985a). As for the synchronisation of the sites of the Zhvanetskaya (Brinzeni) group with others, they, according to Dergachev (1980), are synchronous with the early Vykhatinskiy and Usatovski sites, as well as with the Troyanov sites in the Volyn. Their synchronisation with the Funnel Beaker (*Trichterbecherkultur* – TRB) culture sites does not invoke objections, either. On the basis of ceramic import and imitation findings in Brinzeni, Tsiganka and Costesti IV, it is assumed that the Tripolian population had contact with descendants of the Polgar

culture (Markevich, 1981). The further destiny of the population that abandoned the sites of the Zhvanetskaya (Brinzeni) group is associated with the Gordinesti group sites, which apparently were left by their descendants. It is possible that a part of the Zhvanetskaya group's population from the eastern region (the Kosenovskaya group) migrated to the Volyn, where it participated in establishing Kolodiazhin and Troyanov type-sites.

### **Sites of the Kasperovskaya (Gordinesti) local group**

The territory of this group's sites covers (according to Dergachev) the upper and middle Prut region and the upper Dniester and upper Bug regions. There are currently about 40 settlements of this group. The settlements were typically fairly small (2–3 ha). They were located, like the others, on promontories overlooking rivers. Sometimes they were protected on the 'landward' side by moats (Gorodiste, Gordinesti), and had semi-sunken and 'ground-houses' made of logs combined with wattle and daub.

Work tools are often found at Kasperovskaya group settlements. They include items made from flint and other stones, and from horn, bone and clay. The presence of metal tools, although scarce, is proven by the find of an axe-adze in Gorodiste. Stone tools include numerous drills, piercing tools, scrapers, knife-scrapers, knives, inserts for sickles and arrow tips with straight and curved bases. There are also many wedge-shaped axes that are rectangular in section with a ground blade. A hoard of such wedge-shaped axes was found in Kislitskoe (Makarevich, 1964). The tools were mostly made of the local light or dark grey Dniester stone (a hard granitic rock), and more rarely of brownish good-quality transparent flint from the Volyn. Other types of stone were used for making drilled axe-hammers, retouching tools, grinding tools, and grinding stones.

Clay items were represented by spindle-whorls, weights, and ceramics; tableware, painted crockery and kitchenware decorated with applied and engraved ornamentation accounted for 70% of the assemblage. Morphologically, the tableware mostly repeats that from the Zhvanetskaya (Brinzeni) group. The uniqueness of this group's ceramics is in the prevalence of geometrical compositions of ribbons, which for the most part consisted of three or four (and sometimes up to 16) thin lines. The ribbons connect with each other at different angles without intersecting.

The kitchenware was made of clay with the addition of shell, sand or chamotte (grog). Narrow-mouthed vessels of elongated form equipped with handles on the rounded shoulders have also been found, with one or two 'bumps' on the top part of the handles ('horned' handles); as well as spherical thin-walled vessels with tall cylindrical throats and tall shoulders, with the throat and shoulders decorated with abundant rope impressions. Movsha (1970, 1971a) sees analogies to the latter at steppe Aeneolithic sites, particularly at sites of the Nizhnemikhailovskiy-type. Moreover, in Tsviklovtsy, a censer has been found with feet and decorated with rope impressions, which can be compared to censers from the lower and middle layers of Mikhailovka, and can testify to the Tripolian people's contact with the steppe population from the eastern regions (Movsha, 1970).

The origin of the Kasperovskaya (Gordinesti) group's sites is undoubtedly associated with the Zhvanetskaya (Brinzeni) group, who lived on the same territory in the previous period. According to Dergachev (1980), they are synchronous with later sites of the Vykhatinskaya and Usatovskaya groups and also with the TRB culture. The later fate of the population that

abandoned the Kasperovskaya group's sites, according to Zakharuk (1971), is associated with the arrival of the Spherical amphora culture from the northwest. Movsha (1972) believed that the Tripolian cultural groups of this area contributed to the establishment of the Carpathian-region culture of rope impression ceramics.

### Sites of the Gorodsk-Volyn local group

The beginning of Tripolian cultural studies in the Volyn began in the 1920s and 1930s. A step forward was the discovery and study of the settlement near Gorodsk village by Viktor Petrov in 1936. Materials from Gorodsk allowed that scholar to attribute the site to the late stage of Tripolye, just before the Bronze Age, and to synchronise it with known sites such as Usatovo (Petrov, 1940). In 1949, Zakharuk excavated the late Tripolye settlement near Novaya Chertoryia, materials from which allowed him to claim connection between late Tripolye and TRB culture, and in some cases even their synchronicity (Zakharuk, 1956). The question of attributing sites of the Gorodsk- and Usatovo-type to the Tripolye culture was discussed in various published studies of the early 1950s. For some researchers (Krichevskiy, 1940; Petrov, 1940; Passek, 1949; Lagodovskaya, 1953; Zakharuk, 1954), the appearance of new features in the culture testified only to the late character of the sites on the threshold of Tripolye's 'disappearance'; for other researchers these were the new cultures of the post-Tripolian (Early Bronze) era that branched off from the Volyn Megalithic (Brusov, 1952) and Corded Ware cultures (Sulimirski, 1960).

Excavations in Troyanov took place over the course of three field seasons (1956–1958). Thirty-five sites underwent examination. The results allowed Nikolay Shmagliy to discuss Troyanov's genetic connection with the sites of developed Tripolye and to exclude the possibility of the transformation of the old-Tripolye culture of the Volyn into an Early Bronze Age culture. Shmagliy also noted that a particular role in the establishment of the Gorodsk-Volyn group of sites was played by their historic ties with neighbouring tribes, particularly with the TRB culture. In the 1950s Tripolian ceramics were found on TRB sites in Grudek Nadbushny and Zimno, and the synchronicity of late Tripolye and the TRB culture was determined stratigraphically (Kowalczyk, 1958; Zakharuk, 1959). In the 1960s, research on Tripolian sites in western Volyn became more active. That resulted in vast collections of material as well as in stratigraphic evidence of Tripolye's connections with TRB. The peak of research into Tripolian sites in the Volyn occurred in the 1970s. At that time, long-term studies at settlements near Listvin, Horiv, Golyshev, Malye Dogostai and Yaroslavichi resulted in solid evidence that allowed discussion of the chronological correlation between late Tripolye and Lengyel, TRB, and Globular Amphora cultures (Peleshchishyn, 1973, 1976, 1978; Konoplya, 1978; Konoplya and Nikolchenko, 1979). In the 1980s, research into Tripolian culture sites continued only in the western part of the Volyn, resulting in the discovery of new settlements near Popovtsy, Podgortsy, and Slovita. These short-term settlements defined the northwestern border of Tripolian expansion (Fig. 10.1).

Over the entire history of the study of Tripolian culture in the Volyn, researchers have been primarily concerned with issues of origin, periodisation and chronological correlation, and also with the Tripolian people's connections with neighbouring populations. Zakharuk (1959, 1962), Shmagliy (1961, 1966), Zbenovich (1976), Movsha (1972, 1985b), Peleshchishyn (1971, 1985, 1989) and Dergachev (1980) dedicated exhaustive research to these problems. These authors distinguish three chronological groups among the Volyn territory sites. The earliest sites there

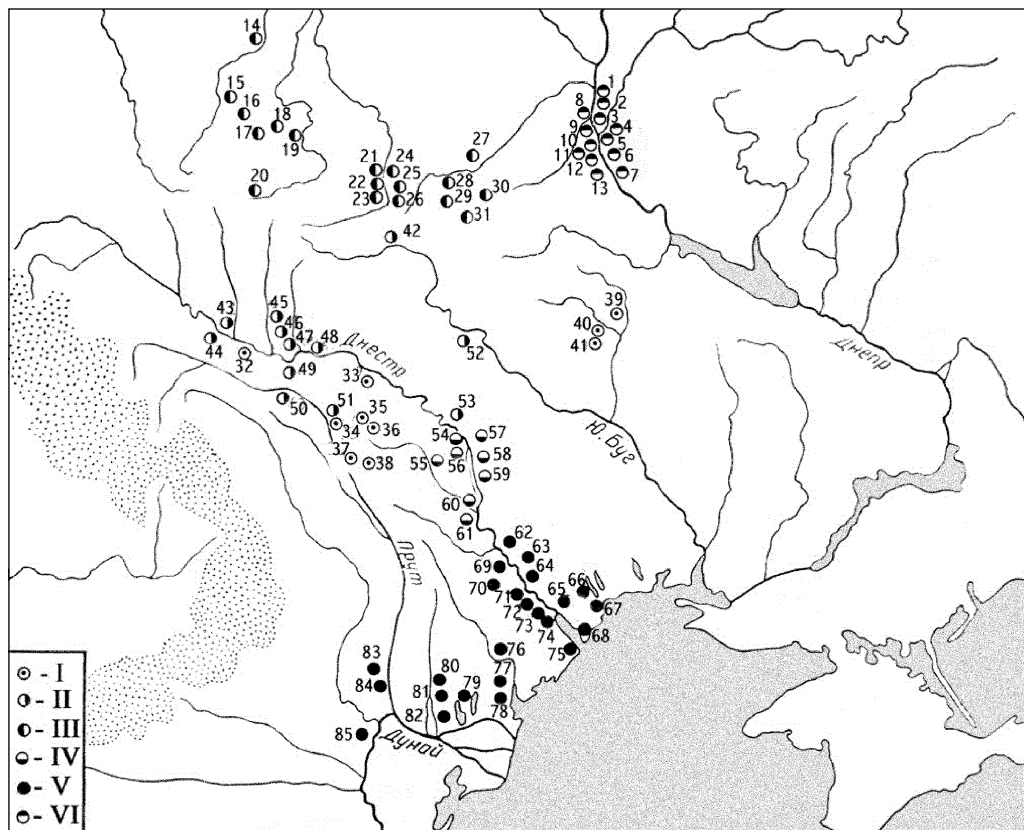


Figure 10.1: Distribution map of the latest sites of the Tripolye culture. Settlements: 1. Novoselki; 2. Chernin; 3. Zavalovka; 4. Zazim'ye; 5. Krasnyi Khutor; 6. Bortnichy; 7. Sofievka; 8. Kazarovichy; 9. Novye Petrovtsy; 10. Syrets; 11. Hodosovka; 12. Podgortsy; 13. Novye Bezzradichy; 14. Golyshev; 15. Yaroslavichi; 16. Novye Dorogostai; 17. Kostianets; 18. Listvin; 19. Horiv; 20. Lozy; 21. Novaya Chertoryia; 22. Korzhovka-Selisko; 23. Korzhovka-Bashtan; 24. Voitsehovka; 25. Kolodiazhin; 26. Makharintsy-Step; 27. Gorodsk; 28. Troyanov; 29. Rlyki; 30. Yagniatin; 31. Pavoloch; 32. Zhvanets; 33. Mereshovka; 34. Brinzeni-Tsiganka; 35. Ketrosheika; 36. Varatik-Holm; 37. Costesti; 38. Kuban; 39. Olkhovets; 40. Kosenovka; 41. Apolianka; 42. Sandraki; 43. Kasperovtsy; 44. Zveniachin; 45. Gusiatin-I; 46. Malyie Virmeny; 47. Tsviklovtsy; 48. Patrintsy; 49. Darabany; 50. Gorodiste; 51. Gordinesti; 52. Pechera; 53. Barsuki; 54. Slobodeia; 55. Soldanesti; 56. Solonceni-II; 57. Katerinovka; 58. Giderim; 59. Vykhvatintsy; 60. Golercani; 61. Branesti; 62. Krasnogorka; 63. Sukleia; 64. Slobodeia; 65. Mayaki; 66. Usatovo; 67. Slobodeia-Romanovka; 68. Nikolaevka; 69. Ternovka; 70. Parkany; 71. Paskaitsy; 72. Olanesti; 73. Tudorovo; 74. Palanka; 75. Shabalat; 76. Sarata; 77. Borisovka; 78. Nerushai; 79. Suvorovo; 80. Ogorodnoe; 81. Bolgrad; 82. Utkonosovka; 83. Foltesti; 84. Stoicani; 85. Breilica.

Key: I – Zhvanetskaya group sites (32–41); II – Kasperovskaya group sites (42–53); III – Gorodsk-Volyn group sites (14–31); IV – Vykhvatinskaya group sites (54–61); V – Usatovskaya group sites (62–85); VI – Sofievskaya group sites (1–13).

are the Kolodyazhin-type sites, which are synchronised with sites of the Zhvanets-type in the Dniester region and with sites of the Lukashi-type in the Dnieper area. After them follow the Troyanov-type sites in the eastern Volyn, and the Horiv-type sites in western Volyn, which are synchronous with Vykhatintsy sites in the Dniester region, Sandraki-I sites in the upper Bug area, and with Sofievkiy-type sites in the Dnieper region. The sites that complete the development of Tripolye culture are the Gorodsk-type sites in the eastern Volyn and the Listvin-type sites in the western Volyn, which are synchronous with the Tsviklovtsy- and Kashperovtsy-type sites along the Dniester, the Gordinesti-type sites along the Prut, the Sandraki-II-types sites along the South Bug, and with the Usatovo-type sites in the northwestern Black Sea region. In addition, sites of the Troyanov-Horiv- and Gorodsk-Listvin-types chronologically correspond to sites of the TRB and precede the Globular Amphora culture.

### *Troyanov-type sites*

The era of the appearance of the Troyanov type-sites in the eastern Volyn coincides with the period of the Tripolian people's settlement in western Volyn, so the Troyanov-type chronologically correlates with the Horiv-type of the western Volyn. About ten sites are currently known in eastern Volyn. Of them, Troyanov, Rayki, Pavoloch, Korzhovka-Selisko-2, Korzhovka-Bashtan, and Makharintsy-Step have been researched to a greater or a lesser extent. They are located in the basins of the Sluch' and Teterev rivers, and had 'ground' wattle and daub dwellings as well as semi-sunken huts.

Just as at the sites mentioned above, the ceramics at the Troyanov-type settlements are divided into two categories – tableware and kitchenware. The Korzhovka-Selisko-2 settlement is considered to be the earliest Troyanov-type site. That is supported by the high proportion of tableware (65%), of which only 20% was not decorated with painting. Next (in chronological order) were the Korzhovka-Bashtan, Makharintsy-Step, and apparently Yagniatin settlements. Tableware comprises only 50% of the ceramic assemblages of these settlements and there is an increasing amount of vessels without painted decoration. The latest sites were the Troyanov, Rayki, Pavoloch, and, apparently, Voitsekhovka sites. Their ceramic complexes underwent significant changes. The share of tableware falls to 10–12%. Korzhovka-Bashtan and Makharintsy-Step evidently correspond to the western Volyn site of Kostianets-Listvenshchina. The latest sites (Troyanov, Rayki and Pavoloch) correspond with western Volyn's Lozy and Malye Dogostai-1 settlements. Ceramics from these sites contain local characteristics that are particularly evident in the case of kitchen ceramics. Stamped ornamentation dominates in the decoration of western Volyn vessels, while the eastern Volyn crockery was more often decorated using the rope impression method.

The establishment of Troyan-type sites was apparently a local development, but under major influence from the Brinzeni (Zhvanets) circle; at the same time, the Prut-Dniester ceramic traditions turned out to be more faceted and distinct than the local ones (Dergachev, 1980). Kolodyazhin and Korzhovka-Selisko-2 sites have an insignificant chronological gap. Apparently, after the Kolodyazhin sites, the region hosted small local communities that were partially joined by foreign late-Brinzeni tribes. Comparison of materials from the Korzhovka-Selisko-2 and Horiv settlements allows us to assume that settlements of the late Tripolian groups of western Volyn passed through the eastern Volyn territories. Passing through three chronological stages in their development, the Troyanov-type groups gradually lose the

Prut-Dniester features of the 'Brinzeni image' and original local traditions start to prevail in their ceramics.

### ***Gorodsk-type sites***

The Gorodsk-type sites are associated with the final stage of the Tripolye culture. They are spread around the territory of eastern Volyn corresponding chronologically to the Listvin-type sites in western Volyn. There are currently only two settlements of the Gorodsk-type known for certain: Gorodsk and Novaya Chertoryia. The settlements included 'ground' and semi-sunken types of dwellings; the areas that the settlements covered were fairly large.

Archaeological assemblages from these settlements consist of working tools made of flint, stone, bone and horn, as well as ceramics and clay plastic figures. Among the flint tools there were various piercing tools, spearheads, arrowheads with straight and concave bases, and wedge-shaped axes (rectangular in section with widening blades). Hammer-axes, with drilled shaft-holes, saddle querns and grinding tools were made of other types of stone.

Kitchen ceramics in Gorodsk and Novaya Chertoryia account for 90% of the entire assemblage, and their appearance is slightly distinctive. Comparison of ceramics from Gorodsk and the western Volyn's Listvin-type sites demonstrates numerous common features, primarily in kitchenware. There is, first of all, the consistency of the ceramic paste, which included practically the same ingredients; the character of the treatment of the surfaces of vessels (slipped, painted and burnished); and the set of basic crockery shapes. The difference is in the ornamentation. On vessels from the Listvin-type settlements, it is more characteristic for them to have rope impressions on pots and amphorae, often combined with rows of pricks and triangular and round impressions sometimes arranged in a chessboard pattern. In general, the rope impression ornamentation of the western Volyn ceramics is noted for its diversity.

The origin of the sites of the Gorodsk and Listvin types was probably based on local development (sites of the Troyanov- and Horiv-types), under the influence of a population that is known from sites of the Gordinesti-type (Dergachev, 1980). If the Listvin-type sites can be chronologically divided into earlier (Listvin) and later (Golyshev) sites, then Gorodsk-type sites lack such division. We can therefore conclude that the Tripolian population started exploring the Volyn during the BII stage, and this is particularly evident at the sites of the Korzhovka-Pasichisko-type. The following stage is represented by the sites of the Kazennaya Gromada-type. Materials from this settlement testify that ties with the root Tripolian territory did not sever (especially for the population of the South Bug basin), and the find of a vessel with a narrow throat with elbow handles characteristic of the Lengyel culture, determines the synchronicity and the existence of cultural ties between the populations of these two cultures. The same sorts of ties are apparently also preserved in the CI stage (sites of the Pedyunki- and Vynanka-Grabovtsy-types).

The appearance of the Kolodyazhin-type sites in the transitional period between CI and CII stages should probably be attributed to the resettlement to eastern Volyn of some portion of the Kosenovskaya local group's population. For certain, apparently external, reasons this portion was forced to leave part of the territories in the Bug-Dnieper interfluvium.

With the beginning of the CII stage, there was an increasingly significant influence from the Prut-Dniester region, which at that time was inhabited by a population known initially from sites of the Brinzeni-type, and then from the sites of the Gordinesti-type. That influence

not only had the character of cultural contacts but it is possible that certain groups of people, from time to time, moved from the Prut-Dniester interfluvium to eastern Volyn. The occupation of western Volyn by Tripolians is associated with these migrations; this settling coincided with the arrival of the Funnel Beaker (TRB) culture population into the same territory. In this way, the territory of the western Volyn that was earlier occupied by the Lengyel cultural groups was divided between Tripolians and TRB people. Its western part was occupied by the TRB, while the eastern part was occupied by Tripolians. The synchronicity of TRB and late Tripolye and their common ties are proven by the mutual imports at the sites (Kowalczyk, 1958; Zakharuk, 1962; Peleshchishyn, 1985; Movsha, 1985b). The earlier existence of Lengyel sites is proven by stratigraphic studies carried out at the TRB site of Zimno, at the Tripolye sites of Golyshev, Kostyanets, and Listvin, and by Lengyel culture ceramics found at the sites of the late mid-Tripolye period in Gorodnitsa-Gorodishche and Kazennaya Gromada (Zakharuk, 1956, 1962; Peleshchishyn, 1989; Kruts and Ryzhov, 1997).

As for the destiny of Volyn's late-Tripolian population and of the people of the TRB in this region, they are probably connected with the arrival of communities of the Globular Amphora culture from the northwest that assimilated local inhabitants; the Aeneolithic cultures existing on this territory transformed into the early Corded Ware culture.

### **Vykhvatinskaya local group sites**

The sites of the Vykhvatinskaya local group remain barely examined. They were discovered at the end of the 1940s. There are currently three known burial places (one in Vykhvatintsy and two in Golerkany) and around 30 settlements. They are located along both banks of the Dniester, between Soroki (in the north) and Dubossary (in the south). The burial place in Vykhvatintsy is the most extensively examined site – 63 burials were discovered there. The best-known settlements were located on terraces above floodplains, while a smaller portion was located on headlands on the Dniester's high rocky banks. Traces of 'ground' houses and semi-sunken dwellings are extant. The layout of the settlements and the character of the 'ground' houses are unknown, whereas burial complexes are mainly arranged in cemeteries. The deceased were buried in oval or rectangular graves, the bottoms of which were sprinkled with ochre, kaolinic clay, or ashes and the grave-pits sealed with wood. The burial positions were marked with stone structures. Burials in barrows have not been found. The dead were buried in a crouched position, mostly on the left side (75%) and more rarely on the right side. Hands were positioned with the wrists in front of the face (80%), on the belly, or alongside the body. They mostly faced northeast (more than 75%) or, more rarely, towards the southeast, south, or southwest and were accompanied by vessels. Children's burials account for 63% of the total, and those under two years of age make up 20% of the total number of children. The ages of adults varied from 15 to 50 years old. Only one person was over 60 years old. The average life span, taking into account infant mortality, was 20.2 years. Velikanova, who studied the paleoanthropological data from the burial ground, notes the difference between male and female skulls which, in her opinion, could be evidence of the mixture of different ethnic groups (Velikanova, 1975). Dergachev (1980) believes that the Vykhvatinskiy burial ground consisted of two parts. In one, all the members of a specific community were buried (both children and adults) and the other part was for family necropolises. He identifies three such necropolises here, and one in Golerkany.



The material culture that characterises the Vykhvatinskaya group sites mostly derives from the burial grounds, and consists of work tools made of flint (as well as other types of stone), horn and bone. Ceramics, adornments and sculpted figures are also present. Tools made of flint are not numerous. There are wedge-shaped axes, sickles with characteristic ground-down blades, and knife-like blades. With male burial No. 9, archaeologists found an axe-hammer made of coarse-grained granite with a drilled hole which included the preserved remains of a shaft made of white willow (*Salix alba* L.). The artefact was found along with two copper wedges and a copper hoop (Dergachev, 1978). Items made of bone are represented by piercing tools, awls and burnishers, and also by a bone plate whose shape resembled that of an anthropomorphic image (the lower part is wedge-shaped while the top part is roundish with one aperture, probably for thread). Tools made of horn include hoes, picks, harpoons and awls. Among the clay items there are spindle-whorls, sometimes decorated with round prickmarks. Copper is represented by one awl.

The ceramics of the Vykhvatinskaya group sites can conditionally be divided into tableware (50–70%) and kitchenware (30–50%). Plastic arts at the Vykhvatinskiy burial ground are represented by 16 whole figurines, fragments of figurines and two rattles. The rattles, like the figurines, were found with the child burials. Both are round-bodied and skittle-shaped. The neck of one is complete with a head similar to those of realistic-looking figurines, while its body is covered with a painted ornament that looks like netting. Both rattles have thread apertures in the necks. Personal adornments are rare at the Vykhvatinskiy burial ground. They are mostly made of shells. There are also some ball-shaped beads carved out of stone.

On the basis of ceramic analysis at the Vykhvatinskiy burial ground, Dergachev (1980) distinguished four chronological horizons, each corresponding to one or two generations, and determined that the burial ground was in use for  $135 \pm 15$  years. The Vykhvatinskaya local group, in his opinion, can be divided into two periods: the earlier and the later. To the earlier period he attributes settlements such as those of Giderim, Branesti and Soloncheny II, the Golerkany-I cemetery, and two lower horizons of Vykhvatintsy. To the second (later) period can be attributed the settlements of Rashkov, Vykhvatintsy I, Slobodzeia-Voronkovo, Katerinovka, and the Michurin state farm (whose material culture corresponds to that of two upper horizons of the Vykhvatinskiy cemetery).

Movsha associates the origin of Vykhvatinskiy-type sites with the Zhvanetskaya group and believes that they participated in the formation of the Usatovskaya local group and are partially synchronous with the latter, as well as with Trojanov in the Volyn, Lukashi in the Dnieper region, and the Srednestogovskaya and Nizhnemikhailovskaya cultures in the Black Sea steppe region. In particular, she relates the appearance of megaliths in the Vykhvatinskiy burial ground with steppe cultures (Movsha, 1971a). Dergachev (1980) believes that the origin of the Vykhvatinskiy-type is related to Varvarovka-15 via another unidentified stage, and that they are synchronous with the sites of the Zhvanetskaya (Brinzeni) group, but significantly outlived the latter. Markevich (1981) adheres to this opinion. It is believed that part of the Vykhvatinskaya group's population left the middle Dniester territory at some primary stage, and moved down the river towards the Black Sea, establishing the Usatovskaya group sites here.

## Usatovskaya local group sites

The first Usatovskaya group sites became known thanks to the excavations (by Stempkovskiy) of approximately 400 barrows in the Tiraspol region, from 1896–1900. The connection between the painted ceramics found in those barrows and Tripolye culture was confirmed after the systematic excavations (by Boltenko) of the Usatovo-Bolshoi Kuyalnik settlement in the 1920s. Boltenko was the person who combined the materials of the Tiraspol barrows with the materials of the settlement into a single entity and named that group of sites the Usatovskaya culture.

Mikhail Boltenko, who distinguished them as a separate culture, was certain its strong connection with Tripolian culture (Boltenko, 1925). Passek, in her book examining Tripolian ceramics, attributed Usatovskiy-type sites to the later stage of Tripolye (γII) (Passek, 1935). Nonetheless, in the 1940s Lagodovskaya had already come to the conclusion of the existence of an independent Usatovskaya culture in the northwest of the Black Sea region that represents the continuation of Tripolye culture. After dividing the late Tripolye period into a range of local variations, Lagodovskaya (1953) also distinguished Usatovskiy-type sites as a late Tripolye variation, in the formation of which Tripolian people participated, as did neighbouring tribes of other ethnicities. Currently the majority of researchers view Usatovskiy-type sites as falling within the Tripolian system, although they sometimes express the possibility of going back to the definition ‘Usatovskaya culture,’ without denying its close connection to Tripolye (Zbenovich, 1987; Petrenko, 1989).

The sites of the Usatovskaya local group are spread over a quite large area that adjoins the northwestern Black Sea coast, between the Dniester and the Danube, and that partially occupies the Dniester’s left bank. They are represented by settlements and by flat and barrow-like burial grounds. Settlements are not numerous and are extant mostly along the lower stream of the Dniester and on the coast of the Kuyalnik estuary (Usatovo). On the left bank of the Danube, remains of one settlement near Orlovka village have been studied (Petrenko, 1989).

Usatovo-Bolshoi Kuyalnik and Mayaki are the best-known settlements. Usatovo settlement is located on the edge of the high bank (around 50m above sea level) of the Hadgibey estuary, which is 3.5km from the sea and occupied an area of 4.7–7ha. Over the entire period of the excavations conducted here, researchers examined an area of about 5700m<sup>2</sup>. They identified the remains of several ‘ground’ houses and pits dug into the ground and into the limestone; they also found trenches (the so-called ‘corridors’) in limestone. The dwellings are rectangular in layout and 35–40m<sup>2</sup> in area (length: 10–15m, width: 2.2–3.5m). The floors of the dwellings were paved with crushed stone or stone slabs. Walls, at least their bottom parts, appeared to be stone masonry fixed by clay mortar. The ‘corridors’ (five in total) found in the settlement, looked like trenches. The longest was 24m, 2.1m wide at the top, narrowing to 1.32m at the base. The whole trench was 1.2 m deep. The sizes of the other trenches varied from 4.3 × 1.6m to 5.6 × 2.6m, with a depth ranging from 1.2–1.3m. Researchers found concentrations of ash among the materials that filled the ‘corridors’; the walls and the bottoms were burnt in some places, which could testify to the presence of hearths. In three ‘corridors’, small pillars carved out of limestone were located in front of a hearth – each 50cm high and with stones placed on top. It is possible that those served as supports for an arch above the hearth (Petrenko, 1989). There are many opinions about the purpose of the ‘corridors’. Boltenko considered them to be semi-sunken dwellings (Boltenko, 1957). Lagodovskaya believed that they were cult structures (Lagodovskaya, 1948). Patoka thought that they were stone quarries from which they took the

stone for burial structures, while Petrenko argued that the stone quarried from them was for building houses (Patokova 1979; Petrenko, 1989).

The settlement in Mayaki was established under similar topographic conditions, occupying the edge of a terrace over the Dniester, 12m above the level of the contemporary river. The remains of residential structures in Mayaki have not been found; all the archaeological remains of the Tripolian period were found in pits and ditches. Nonetheless, Petrenko (1989) mentions that burnt clay was found in the filling of the ditches, including pieces with impressions of wood and reed, which probably come from collapsed wattle and daub structures that were characteristic for settlements of Tripolye culture in the forest-steppe zone. The ditches of the Mayaki settlement, internal and external, stretch for 70m along the coastal terrace. In cross-section they are funnel-shaped and are sunk 3.6m into the loess-like loam. Their width is *c.* 4–5m at the top and 0.6m at the base. The material with which these ditches were filled consists of numerous layers of soil of different hues containing ashes, charcoal, burnt clay coating, animal and fish bones, fragments of ceramics, rare working tools made of stone, bone, and horn, and plastic art clay elements. There were also fire-pits that in cross-section looked like lens-shaped deposits of ashes, and coals that were 0.2–0.4m thick (Zbenovich, 1974). Zbenovich believes that the ditches were defensive, protected the settlement on the inland side with the actual settlement located to their south and now completely destroyed by coastal landslides (Zbenovich, 1974). Petrenko, on the other hand, sees the ditches not as fortifications (in his opinion the settlement could not have been located to their south since ‘the geomorphology of the region does not give any proof of active landslide destruction’), but as quarries that were primarily used for digging loam for house construction. The ditches were subsequently adapted for housing and trash dumps. The purpose of these ditches was essentially similar to that of the ‘corridors’ in the Usatovo settlement, except that here the inhabitants dug out loam, and in Usatovo they dug out stone (Petrenko, 1989).

Burial sites of the Usatovskaya group are represented by flat graves and barrow-like burial grounds. The best known are the single grave and the two barrow cemeteries near the Usatovo settlement, the barrow cemetery and flat grave sites in Mayaki, and the flat grave cemeteries and a barrow burial site of Danku I, II (Zbenovich, 1974; Patokova, 1979; Patokova and Petrenko, 1989; Dergachev, 1978).

In the barrow cemeteries, mounds usually formed compact groups. The barrows are generally not large, ranging from 0.3–2.5m in height and from 15–35m in diameter. A characteristic of these barrows is the stone lining to the mounds and cromlechs. Rectangular and, more rarely, oval pits, overlaid with stone covers or wood, sometimes on the level of the ancient surface, were used for burial. Dug-out tombs occurred in groups, and there were 2–14 graves in a group, each apparently representing a family necropolis. Burial grounds of this kind are found in Danku: they were located 1.5km apart and each contained five burials arranged in an open oval of 12 × 16 and 10 × 12m in size (Dergachev, 1978).

Of particular importance in the Usatovskaya burial grounds is the positioning of the corpse. The most common position (around 60% of the total number) of the bodies is the flexed position, with bodies laid on the left side. More rarely, bodies were positioned on the right side (around 10%) or lying on their backs with legs drawn up (up to 20%). An extended body position is quite rare (up to 5%). The most common burial orientation was to the east. A northeast or southeast orientation was more rare, and a westward orientation quite uncommon (Petrenko, 1989). Sometimes partially burned skeletons have been found, testifying to the possibility that fire was

used during the burial ritual. An insignificant share of graves contained ochre. In addition to the usual graves, cenotaphs and ritual pits also sometimes occur in burial grounds. Ritual pits accompanied practically every tomb in the Danku cemeteries (Dergachev, 1978).

All the graves, both flat and barrow-like, contained sepulchral items. This mainly consisted of tableware – 1–7 vessels in one tomb. There were also adornments, work tools, weapons made of stone and metal, and anthropomorphic figurines. The flat graves were poorer (in terms of content) than the barrow-like ones.

The work tools and weapons from the Usatovskaya group are represented by items made from stone, bone, horn, and metal. Since sources of quality raw flint were absent from the territory over which the Usatovskaya group expanded, the raw material was imported from the Dniester region. Finds of cores of conical and prism shape, of hammerstones, and of retouched tools in the Usatovo and Mayaki settlements testify that the tools were made actually in the settlements. It is worth mentioning that the entire set of flint tools found within the Usatovskaya group sites is characteristic for Tripolye culture sites in other territories and from other chronological stages, except for the geometrically-shaped tools. The latter are unknown in the Tripolian area and among neighbouring cultures in territories further west, but they are fairly numerous among the Maykop and Kemi Oba cultures. This shows the existence of connections between the Usatovo and the Aeneolithic cultures from the eastern territories (Zbenovich, 1974). There are relatively few tools made of other types of stone; for instance, no grinding stones, which are so common amongst the Tripolye groups, were found. The absence of grinding stones is possibly associated with the economic characteristics of the population and the insignificant role that farming played. Instead, archaeologists found pestle-grinders and pounding tools of oval and rectangular shape made of crystalline sandstone; flat weights that were possibly for fishermen's nets; pestles for grinding dyes; and polishing tools (made of pebbles) for ceramics. Hammer-axes with drilled holes for shafts (Mayaki) have also occasionally been found.

The graves yielded a significant collection of items of personal adornment such as cylinder-shaped necklaces, beaded necklaces made of thin tubular bones of birds and animals, burnt pieces of antler, pendants made of animal teeth, and smaller-sized beads made of shells. Metal items (copper, arsenical bronze) are represented by working tools – double-edged square-section awls, trapezoidal axe-adzes with an arc-shaped working edge, rod-shaped chisels (sometimes with square-sectioned shafts for fixing them into the handles), and weapons (daggers) and jewellery. The daggers found in graves are divided into two groups. To the first belong large items (where the length of the blade is 12.6–20cm) with a well-defined rib, and 2–4 holes for fixing the haft. The second group includes all the rest: usually smaller and lens-shaped (without a rib) blades. It is agreed that items of the first group were imported from Anatolia, while the others were of local production (Zbenovich, 1966, 1974; Konkova, 1979). Jewellery included spiral rings 1–2cm in diameter and made of copper or silver rod 2–3mm in section and with 1–4 convolutions; and also smaller necklaces made of thin sheet copper rolled around a thread.

Plastic art items at Usatovskaya group sites are represented by anthropomorphic and zoomorphic clay images. The anthropomorphic figures are unique. The largest group consists of schematic sculptures that have cube-shaped pedestals from which rounded phallomorphic protuberances project outwards. The heads of some figurines have eyes, noses and ears defined with indentations and prickmarks, and some have breasts defined by knobs.

The absolute majority of well-preserved tableware of the Usatovskaya group comes from cemeteries; materials from the settlements are preserved in much poorer condition and

kitchenware accounts for approximately 90% of the pottery and is noted for the broad variety of shapes. Analysis of the material culture allows us to determine two periods for the Usatovskaya group's existence – the early and late periods. To the early period researchers attribute the barrow cemeteries near Usatovo, single barrow graves in the Tiraspol region, the flat burial ground near Raskaitsy village, and a single grave and isolated finds near Tudorovo, Olanesti and Palanka villages. Painted ceramics (10–35%) characterise these complexes. To the later period, researchers attribute sites that contain less than 10% (or even a complete absence) of painted ceramics. Settlements and cemeteries in Mayaki, Foltesti, Stoicani, Danku I and Danku II, and the flat burials in Usatovo, belong to this period (Dergachev, 1980; Petrenko, 1989).

As for the origin of the Usatovskiy-type sites, the majority of researchers agree that they derived from the Vykhvatinskiy-type sites, part of a population which, due to the relative overpopulation that occurred in the middle Dniester region, had to move to a vacant territory in the lower Dniester towards the Black Sea coast (Zbenovich, 1974). Here, under the influence of steppe tribes of the Nizhnemikhailovskaya and Early Pit Grave cultures, a special Usatovskiy local variant of Tripolye culture was created.

### **Sites of the Middle Dnieper local group**

The beginning of research into Middle Dnieper local group sites is associated with Vikentiy Khvoika who, at the end of the nineteenth century, was the first person to undertake the examination of Tripolian sites in Kirillovskaya Street in Kiev. Here he excavated 48 mud huts of quadrangular shape, part of them belonging to the later Tripolye cultural stage. He also discovered and partially examined more than ten settlements in the Rzhishchev-Tripolye region, and excavated three more mud huts on the left bank of the Dnieper near Bortnichy village in 1912.

Following Khvoika, two more settlements were discovered on the left bank part of the area. One of them, on the left bank of the Desna River near Yevminka village, was discovered by Stavrovskiy in 1908. The second, which was examined in 1913, was located far from the Dnieper, in the Trubezh and Nedra interfluvium, near Lukashi village. Unlike the settlements mentioned above, this one consisted of nine house layouts arranged in an oval pattern.

From the 1920s through to the 1940s, archaeological studies in the Dnieper region were concentrated mostly in the region of Tripolye village where, under Silvestr Magura's and Passek's supervision, large-scale survey and excavations occurred.

### ***Sofievskiy-type sites***

In the post-war years, the Great Kiev expedition conducted excavations in the Kiev region. Its greatest achievement was discovering and examining the Sofievskiy-type burial grounds. A cemetery of this kind was discovered for the first time by Ilya Samoilovskiy, near Sofievka village in Borispolskiy province in 1947 (Samoilovskiy, 1952); it was thoroughly examined by Zakharuk in 1948 and 1963. Researchers found 145 burials here accompanied by a great number of tools. In 1950, another two similar burial grounds underwent examination: Krasnokhutorskiy and Cherninskiy (Danilenko and Makarevich, 1956; Kanivets, 1956). They are also located on the left bank of the Dnieper, but slightly further north of Sofievka. Following these discoveries, the

question arose as to whether a new group of late Tripolye culture in the middle Dnieper region existed. In 1949, Amburger and Belanovskaya undertook smaller additional excavations at the settlement that Khvoika had previously examined near Bortnichy village. Another semi-sunken dwelling was found here, as well as a collection of ceramics similar to the type found in the cemeteries. In 1950, the Great Kiev expedition discovered another set of analogous settlements on both banks of the Dnieper in the Kiev Dnieper region (Shaposhnikova, 1953; Makhno, 1950, 1957). In the same year, Zakharuk conducted smaller excavations of the Syrets I settlement on the outskirts of Kiev and found two more analogous settlements (Syrets II and Syrets III) (Zakharuk, 1956). Having studied the materials from the burial grounds, Kirillovskaya Street's mud huts, Bortnichy, Syrets, and other similar settlements, Zakharuk distinguished a special group of late Tripolye sites that were genetically tied with the Kolomyischina 1-type sites, and called it 'Sofievskiy-type', after the eponymous site of Sofievka. While pointing out that Sofievskiy-type sites occupy territory on which earlier Tripolian settlements are not known to exist, Zakharuk conceded that local tribes played some role in their formation; due to a lack of knowledge about the preceding cultures on this territory, however, he had difficulty determining which of those cultures exercised their influence (Zakharuk, 1953, 1954). Between 1962 and 1966, in the Kiev Hydro Power Plant flood area, a Kiev expedition headed by Dmitriy Telegin discovered and examined a Sofievskiy-type cemetery near Zavalovka village. Telegin also found the settlements of Domantovo, Kazarovichi, Zazimye and Novoselki on the Dnieper (Kruts, 1968). In 1965 Vladimir Kruts conducted additional excavations in the settlements in Yevminki and Lukashi. These produced significant materials that allowed for distinguishing the Lukashevskiy-type sites that preceded the Sofievskiy-type. A major set of materials useful for characterising the latest stages of Tripolye culture in the middle Dnieper region was collected.

Sites of the Sofievskiy-type are located on both banks of the Dnieper: on the right bank between the mouths of the Stugna and Pripiat' rivers, and on the left from the estuary of the Stugna River estuary to that of the Oster River. On the Dnieper's right bank settlements were mostly located on the bluffs of the Dnieper's loessial terrace (defined by ravines), whereas on the left bank they were situated on uplands in the floodplains of the Dnieper and Desna rivers, as well as on the edges of elevated pinewood terraces relatively high above the flooded territories. The burial grounds occupy entire dunes on the edge of a pinewood terrace on the Dnieper's left bank. In general, the topography of Sofievskiy-type settlements does not differ much from the topography of Tripolian settlements of earlier periods that existed on this territory.

### ***The settlements***

Since none of the Sofievskiy-type settlements has been fully examined, it is difficult to estimate their layout. The circular arrangement of the defensive ditch in Kazarovichi and the dwellings found nearby, however, testify to the idea that the houses were arranged in a circle, the same as in all the Dnieper region's Tripolian settlements. Size and demography of the settlements are difficult to gauge. It is, however, possible to note that the settlements were mostly rather small – they did not exceed the sizes of the Lukashevskiy-type settlements.

The settlement of Kazarovichi is an exception. It consisted of two parts: a fortified 'stronghold' and an unfortified 'suburb'. Considering the characteristics of the landscape, the inhabitants surrounded the stronghold with the circular ditch, with a double ditch arrangement on the 'landward' side. The distance between the ditches here reached up to 4m. Two 3m wide entrances

were identified, one on the eastern side where the 'suburb' was located, and another through the double ditches on the western side, facing the fields. The stronghold's diameter was 60m. There are no traces of a rampart, but it is assumed that it existed. The width of the ditch was c. 2.5–3m, whereas the depth was 1.5–1.6m with a flat bottomed or simple V-shaped profile. In the material from the ditch deposits were found objects characteristic of Sofievskiy-type sites – ceramics, work tools, and a figurine. Graves and remains of structures from all the subsequent periods (the Bronze Age, the early Slavic and Ancient Rus periods) are cut through by the ditch(es). The appearance of fortified structures during the latest stage of Tripolye's existence in the middle Dnieper region is apparently evidence of escalated tension in this region.

Only semi-sunken dwellings have been found at the Sofievskiy-type settlements. It is possible to distinguish two types of such dwellings: 1) oval, sized from 3 × 4m to 3 × 10m with a hearth set at floor level (Kazarovichi, Pirogovo); 2) elongated-oval dwellings, sized 6 × 2m, consisting of two hollows separated by a partition (Bortnichy). In the material that filled these dwellings researchers have found ceramics of the Sofievskiy-type, tools made of horn and bone, fish and animal bones, fragments of burnt clay, and shells. In terms of construction, the Sofievskiy-type is close to the semi-sunken dwellings and pits of the Volyn group settlements, in particular those near the Troyanov village. Household pits are numerous on Sofievskiy-type sites. Usually round or oval in shape, they vary in diameter from 0.8 to 2m, with depths of up to 1m and with sloping walls. Their contents include fragments of Sofievskiy-type ceramics, work tools made of stone, bone and horn, halves of shells, pieces of clay burnt in the hearth, bits of fish and animal bone, tortoise shells, charcoal and ash. Household pits find analogies among the group of round and oval pits of settlements from the preceding period, not only in terms of construction, but also in terms of content.

The characteristic feature of Sofievskiy-type sites is the presence of cemeteries with cremation burials (Zakharuk, 1952; Danilenko and Makarevich, 1956; Kruts, 1968, 1977). The cremated bodies were either interred in urns or without them. Burial sites were concentrated in rather small areas (Krasnyi Khutor: 100m<sup>2</sup>, Sofievka I: 100m<sup>2</sup>, Chernin: 40m<sup>2</sup>, and Zavalovka: 30m<sup>2</sup>) and arranged in close proximity to one another. There are no recorded cases where burial pits were cut into or through by others, suggesting that they were probably originally marked in some way that has not survived. Depending on the area occupied by the cemetery and the extent to which it was preserved, the number of examined graves is as follows: 145 in Sofievka (42 in urns, 103 without); 195 in Krasnyi Khutor (101 in urns, 94 without), 94 in Chernin (29 in urns, 65 without); 16 in Zavalovka (without urns). It has been noted that graves in those cemeteries were arranged in groups, each of which was apparently the burial site for close relatives. The cemetery as a whole served as a necropolis for a tribal community.

There is a recorded tendency for the cremated remains (if not entirely burned) to be arranged in some semblance of anatomical order. The remains of extremities, for example, were placed on the bottom of the pit and the skull was placed at the top of the pile. Tools were either burnt along with the corpse (as shown by traces of fire on the tools), or they were placed in the tomb after cremation. Accompanying items usually lay among the bones or next to them. Burial sites contained utensils (often smaller-sized vessels), weapons (flint knives, sickles, hammerstones, scraping tools, arrowheads, wedge-shaped axes, stone hammer-axes, bone awls, small axes made of horn, copper daggers, tips of darts, adzes, flat axes, awls), jewellery (copper spiral and cylindrical necklaces, bracelets, and various bead necklaces made of turquoise, jet, chert and amber), and flint chips and pebbles. One grave (in Zavalovka) contained a figurine.

Danilenko and Makarevich note the following:

‘burials without the urn do not give the impression of being poorer than ones with urns. It is rather the opposite: their sets of items were larger and more significant. Almost all copper adornments were found in particular at burial sites without urns. Single traces of fabric on copper items and on calcined bones at urn-less burial sites lead to assume that the burned corpses were wrapped in cloth, whose value was hardly less than the value of tableware’ (Danilenko and Makarevich, 1956).

It is hard, in terms of value, to distinguish between urned and un-urned burials, since the ceramic items and fabrics were utilitarian and hardly of major value. A major indicator for the existence of differentiation for the population that left behind Sofievskiy-type burial grounds is certainly the copper items. In the early metal era, and in the absence of a nearby source of raw materials, these had to have been valued particularly highly and could probably have belonged only to the top members of families and communities. There are a relatively small number of such burials within the cemetery. If we do not take into account copper adornments that could have belonged to both men and women, but only working tools and weapons, then the number of graves that apparently belonged to the leaders of families or communities is four at Krasnyi Khutor and six at Sofievka I.

It is believed that the presence of graves containing luxury items such as metal weapons shows that family leaders were particularly distinguished during the existence of the Sofievskiy-type cemeteries. The presence of a great number of weapons in the graves supports the possibility of a patriarchal social structure (Danilenko and Makarevich, 1956). The various items from Sofievskiy-type burial grounds (especially those imported) will allow archaeologists to trace the directions of trade links, which are important for recreating the history of the late Tripolye tribes of the middle Dnieper region and of their neighbours.

Ceramics are of primary importance for answering questions associated with the evolution of the Tripolye culture in the Dnieper region. Clay vessels represent the largest group of materials from settlements and cemeteries. In the former case they appear as utensils, while in the latter they appear as containers for the ashes of the deceased or as funerary objects. At the majority of settlements, ceramics are represented by a major technological group – kitchenware. At the Bortnichy and Kazarovichy settlements, however, researchers have found that up to 18% of the ceramics come from three other technological groups that are characteristic of preceding periods: black gloss tableware, painted tableware, and scratch-decorated kitchenware. The composition of the clay fabrics shows that ceramics from the cemeteries differ significantly from those found at the settlements. The funerary ceramics have clay with added burnt material and ochre. The latter temper gave a red colour to the pottery and made it porous. A study of colour, fragility, and thin walls of the pottery shows that, in some cases, urns were made specifically for burial purposes. In fact, despite their large size, their fragility made them unfit for household purposes.

A relatively small number of figurines were found at the settlements. There are two distinct groups among the anthropomorphic kind. The first includes figurines that are stylistically similar to the sculpted items of preceding periods and that are made of the same clay composition as ceramics with a burnished surface (Bortnichy). The second group includes more stylised figurines that are made of clay with the addition of crushed shell (Syrets I). Clay items, in addition to kitchenware, tableware and figurines, include quite a large collection of spindle-whorls and weights.



Working tools made of flint are found at all Sofievskiy-type settlements. They are represented by knives made of long and short blades, sickles with characteristic polishing, and roughly circular scrapers made on flakes or, more rarely, on fragments of flint blades. At the settlements, just as at the burial grounds, items made of flint and other types of stone are made from imported raw materials. Judging by the quality of the stone, it was imported from Volyn. Other types of stone were brought in from the same region as well; for instance the peculiarly shaped hammer-axes, which Zakharuk (1952) has attributed to a special Sofievskiy type. This kind of tool is found nowhere else except for the Volyn (Trojanov) (Shmaglii, 1966).

Tools made of other types of stone are represented by granite grinding stones and spherical grinding tools. Tools made of bone (piercing tools) and horn (adzes, picks and war hammers) are quite numerous. Stone axes, flint arrowheads and beaded necklaces are either absent at the settlements, or represented in small numbers. If present, however, they are similar to those of the cemeteries, proving that the burial grounds were definitely linked to the settlements. War hammers were carefully finished and polished. The only metal item in a settlement was found at Syrets I, and is a copper beaded necklace, similar to adornments from Sofievskiy-type cemeteries.

It is interesting to notice that metal items are found in large numbers at the burial grounds, but they are almost always absent from the settlements. Based on chemical analysis of the metal, Yevgeniy Chernykh showed that the Sofievskiy type of metal differs from that of the Usatovskiy type. Raw material for the latter was imported from the Caucasus, whereas that of the former had a Balkan-Carpathian origin (Chernykh, 1970). Preserved connections with the Balkan-Carpathian raw material region and a relatively small number of items made from Caucasian metal show that exchange trade routes from the west (the Volyn, the Bug region – where related Tripolian communities lived) was more pronounced. Nataliya Ryndina has no doubts about the existence of metal-processing production among the people of the Sofievskiy-type sites. She identified two daggers from Krasnyi Khutor made using a two-sided founding technique and with a surface coated by a thin silver foil (Ryndina, 1971). The idea that such production existed was also supported by Passek and Zakharuk (Passek, 1949; Zakharuk, 1952). They based their argument on Khvoika's finding of a mould for the casting of a flat wedge-shaped axe on the Kirillovskie heights in Kiev (Khvoika, 1901). It is, however, hardly possible to speak with certainty about metal processing and production of copper items actually in the settlement, as no traces of smelting furnaces have ever been found (except for the above-mentioned mould). Furthermore, since the mould was found at a multi-layered site between dwellings, it cannot be attributed with certainty to a Sofievskiy-type site. In fact, such an elementary type of tool as a wedge-shaped axe can be found in all periods of Tripolye culture (Artemenko, 1967).

### ***Chronological issues***

Tableware and kitchenware of the Sofievskiy-type from the settlements and cemeteries reveals – less in terms of form and more in terms of ornament – a connection with ceramics of the Chapaevskiy- and Lukashevskiy-types. Pots and amphorae represent, fundamentally, the further development of the form of kitchen pots, and to a lesser degree, of table pots of sub-group 1 of Lukashevskiy-type settlements. The shapes of conical bowls with a bevelled edge to the rim and of hemispherical cups did not undergo any changes. The ornamentation of Sofievskiy-type ceramics mostly inherits the simplest elements and motives – e.g. various applied decorative

elements, indentations, round prickmarks, finger impressions, and rope impressions that create a horizontal row above a vessel's shoulders. The set of tools remains almost the same as well, which shows the invariance of household activities. As for the inter-relation of separate groups of ceramics, it is possible to claim that the Bortnichy complex is of an earlier age among the Sofievskiy-type settlements, apparently coming right after Yevminka I, II chronologically. In general, the group of Sofievskiy-type sites is not chronologically divided, and all the settlements and burial grounds that belong to it can be considered synchronous. Thorough analyses of the material culture show genetic connections between Sofievskiy- and Lukashevskiy-type sites. The later age of the former is proven by the manner with which Tripolye culture developed in this narrow portion of the Kiev Dnieper region. The Sofievskiy-type sites are consequently attributed to the concluding stage of late Tripolye culture in the middle Dnieper region. The territory over which Sofievskiy-type sites expanded later gets settled by Early Bronze Age groups. In the subsequent cultures that exist on this territory, Tripolian characteristics are almost untraceable.

### ***Cremation practice: origins and chronology***

The existence of cremation as a funerary practice amongst the Tripolian tribes of the middle Dnieper region has always been the object of discussion, as it is quite difficult to trace exactly how and when it appeared here. One of the main reasons is that little is known about funerary practices of the Tripolian people who preceded the CII stage. Even the Chapaevka cemetery cannot characterise the Tripolian people's tradition because, according to anthropological data (Kruts, 1990), the burials found in this cemetery belonged to the Neolithic population, which was part of the Tripolian community. Apparently Tripolians of this community were buried in a different manner, one that was traditional for them. Unfortunately, mortuary practices characteristic of the Tripolian culture of previous stages is still unknown as archaeological evidence is missing. Khvoika, in studying Tripolian settlements in the Dnieper region, registered finds of urns with burnt human bones accompanied by other vessels and tools. He believed that a cremation ritual was characteristic for Tripolians (Khvoika, 1906). Zakharuk also adhered to this opinion (Zakharuk, 1953). However, the results of Khvoika's study are not very clear, as he also mentions urns with animal bones and not only human remains.

Cremation, associated with the cult of fire and purification, is known from some of the Neolithic groups, when fire was used in collective burial vaults to clean out a place for other deceased people. Remains were not burned immediately after death but rather after a little while, when another burial was to take place in the same burial vault. At the same time though, the earlier corpses were not completely burned, as has been noted at the Lysogorskiy and Nikol'skiy cemeteries (Telegin, 1968). It is also possible that the cremated body remains were not buried. Ethnography testifies to numerous examples of similar corpse incineration rituals where ashes are scattered over sacred rivers (Tokarev, 1976). This is possibly how the emergence of Sofievskiy-type burial grounds can be explained. Burial practices represent the most conservative sphere of human consciousness, and the Tripolian and Sofievskiy communities could not instantly have invented cremation without any link to past or present ethnographic traditions. Therefore, since the cremation practice was unknown by the Sofievskiy groups' contemporary neighbours, the cremation origins should be sought particularly in the territory of the classical Tripolye period. The appearance of burial grounds featuring cremation and inhumation rituals in the latest Tripolye culture stage (during the Sofievskiy groups) could be evidence that the Tripolian ethnic group, after

having preserved a relative purity for a long period of its existence, accepting only an insignificant number of external communities, started to mix intensely with other ethnicities. This occurred during the decline of Tripolye culture, a decline associated with economic and historical reasons. In this way, Sofievskiy-type cemeteries could be the evidence of a heterogeneous population structure that was the result of the Tripolian cremation ritual (with ashes not buried in the ground) combining with another ethnicity's tradition of burying human remains.

### The Tripolye culture's final act

The origin of Sofievskiy-type sites is associated with the evolution of Lukashevskiy-type sites under the influence of Pivikha-type sites. This is indicated by a gradual growth in the number of smooth-walled ceramics with the addition of crushed shell at the Lukashevskiy-type sites. At the end of the Lukachevskiy stage, apparently under pressure from ancient Pit Grave culture groups that moved forward into the forest-steppe of the left bank region of the Dnieper and partially into the right bank area, the bearers of Pivikha-type culture increasingly often penetrate the area of the Lukashevskiy-type sites' expansion. This particular penetration might explain the gradual increase in the number of smooth-walled ceramics with shell temper that is so characteristic of the Pivikha-type sites and that began during the existence of the Yevminka settlements. This interpenetration apparently led both groups of the population to blend, and to the appearance of Sofievskiy-type sites.

The period of the development of the Sofievskiy-type sites coincided with the migrations of bearers of the ancient Pit Grave culture. It is also characterised by the appearance of other late Tripolye groups, particularly of the Usatovskiy-type. This is the period in which settlements of the CI stage disappeared in the area of the Dnieper-South Bug interfluvium and when their population was forced to withdraw to the western frontier of its habitat. Probably as a result of these migrations, Troyanov-type sites appeared in the Volyn. Migration processes (triggered by the threat of invasion of the steppe communities) also affected the Dnieper region (Zakharuk, 1971; Dergachev and Kruts, 1975; Dergachev, 1980).

The fate of the population that left the Sofievskiy-type sites is apparently also connected with the migrations of the Pit Grave culture communities – this time at the beginning of the late stage of their development. These migrations expanded far to the north, occupying almost all of the middle Dnieper region and destroying, or more likely pushing out, the inhabitants of the Sofievskiy-type sites to eastern Volyn, where they joined the Tripolian groups.

The development of Tripolian culture in the Dnieper region ends with the stage of the Sofievskiy-type sites and its features are almost untraceable in the material culture of the communities that later inhabit that region.

### References

- Artemenko, I. (1967) Tribes of the Upper and Mid-Dnieper region in the Bronze Age. *Brief Reports of the Moscow Institute of Archaeology* 148: 30 (in Russian).
- Boltenko, M. (1925) Excavations of the Usatovskiy-Boloshoy Kuyalnik field of cultural remains. *VOKK* 2–3: 48–64. Odessa (in Russian).

- Boltenko, M. (1957) Stratigraphy and chronology of Big Kuyalnik. *Archaeological Materials of the Northern Black Sea Region* 1: 24–33 (in Russian).
- Brusov, A. (1952) *Essays on the History of Tribes of the European Part of the USSR in the Neolithic*. Moscow: USSR Academy of Science Press (in Russian).
- Chernykh, Y. (1970) On the most ancient centres of metal-processing in the Southwest USSR. *Brief Reports of the Institute of Archaeology* 123: 25–6 (in Russian).
- Danilenko, V. and Makarevich M. (1956) Krasniy Khutor burial ground of the Copper Age with a corpse incineration ritual. *Archaeological Sites of USSR*. Vol. 6: 92–8 (in Ukrainian).
- Dergachev, V. (1978) Late Tripolye Danku burial grounds in Moldavia. *Archaeology* 28: 56–65 (in Ukrainian).
- Dergachev, V. (1980) *Late Tripolye Sites*. Kishinev: Shtiintsa (in Russian).
- Dergachev, V. and Kruts, V. (1975) On the question of consolidation of Tripolian tribes. *Paper for the 16th Republican Conference of the Institute of Archaeology of the Ukrainian SSR Academy of Science*: 74–5. Kiev (in Russian).
- Dumitrescu, V. (1963) Origineea și evoluția culturii Cucuteni-Tripolie II. *Studii și cerceteri de istorie veche (sc)* 14(2): 285–308.
- Gimbutas, M. (1956) *The Prehistory of Eastern Europe*. Cambridge (Mass.): Peabody Museum.
- Kanivets, V. (1956) The Copper Age burial ground near Chernin village in Kiev region. *Archaeological sites of USSR*. 6: 100–1 (in Ukrainian).
- Konkova, L. (1979) Metallographic study of metal items from the Usatovskiy type sites. In E. Patokova (ed.) *Usatovskiy Type Settlement and Burial Grounds*: 161–76. Kiev: Naukova Dumka (in Russian).
- Konoplia, V. (1978) Studies in the Mlinovskiy region. *Archaeological Discoveries* 1977: 333–4 (in Russian).
- Konoplia, V. and Nikolchenko, Y. (1979) Works of the Rovno team. *Archaeological Discoveries* 1978: 343–4 (in Russian).
- Kowalczyk, J. (1958) Prace badawczw 1957 r. osady kultury pucharow lejkowatych w Grodku Nadbuznym pow. Hrubieszow. *Wiadomosci Archeologiczne* 25(4): 314–21.
- Krichevskiy, E. (1940) Report on the excavation of house remains (ploshadky) No. 13, 23, 5, 14. In M. Yachmenev (ed.) *Tripolian Culture* Vol. 1: 179–284. Kiev: Ukrainian SSR Academy of Science. Institute of Archaeology (in Ukrainian).
- Kruts, S. (1990) Anthropological materials from the late-Tripolian burial ground near Chapaevka village. In V. Zbenovich *et al.* (eds) *Early Agricultural Giant-settlements of Tripolye Culture in Ukraine*: 103. Talianki – Veselyi Kut – Maidanetske: Materials of the first field seminar (in Russian).
- Kruts, V. (1968) New burial ground of the Sofievskiy type near Zavalovka in the Dnieper region. *Archaeology* 21 (in Ukrainian).
- Kruts V. (1977) *Late Tripolian sites of the Middle Dnieper region*. K: Naukova Dumka (in Russian).
- Kruts, V. and Ryzhov S. (1997) Upper-Dniester local group of Tripolian sites and new data on the ties between Tripolians and representatives of Polgar and Lengyel cultures. *Archaeology* 2: 23–32 (in Ukrainian).
- Khvoika, V. (1901) The stone age of the Middle Dnieper region. In *The Works of the 11th Archaeological Convention in Kiev in 1899*. Vol. 1.: 737–812. Moscow: Moscow Archaeological Society Press (in Russian).
- Khvoika, V. (1906) *The Burial Ritual With Incineration and Its Antiquity*. Kiev (in Russian).
- Lagodovskaya, O. (1948) Usatovskaya culture and its place in the archaeological past of Ukraine. *Academy of Science of Ukrainian SSR Bulletin* 6: 48–57 (in Ukrainian).

- Lagodovskaya, O. (1953) Usatovskiy type sites. *Archaeology* 5(8): 95–108 (in Ukrainian).
- Makarevich, M. (1964) The flint axes deposit. *Archaeology* 16: 208–212 (in Ukrainian).
- Makhno, E. (1950) *The Report on the Pirigovo and Dmitrovo Parties of Expedition 'Great Kiev'*. Scientific archive of the IA of NAS 1950/1e. (In Russian)
- Makhno, E. (1957) New Bronze Age sites in Kiev and Sumy regions. *Archaeology* 10 (in Ukrainian).
- Markevich, V. (1973a) The Moldavian expedition's studies in 1970–1971. *Archaeological Research in Moldavia 1970–1971*: 52–78. Kishinev: Shtiintsa (in Russian).
- Markevich, V. (1973b) Neolithic and Aeneolithic sites. In Historical Institute (ed.) *Archaeological Map of Moldavian SSR* Vol. 2. Kishinev: Academy of Science of Moldavian SSR (in Russian).
- Markevich, V. (1981) *Late Tripolye Tribes of Northern Moldavia*. Kishinev: Shtiintsa (in Russian).
- Movsha, T. (1968) Excavations of the Tripolian settlement in Zhvanets village. In *Archaeological Studies in Ukraine*. 1967(2): 95–97. Kiev (in Russian).
- Movsha, T. (1970) Late-Tripolye house – workshop in Tsviklivtsi village. *Archaeology* 23: 129–141 (in Ukrainian).
- Movsha, T. (1971a) Excavations of the Tripolian settlement in Zhvanets village. *Archaeological Studies in Ukraine*. 1968(3): 124–127. (in Russian).
- Movsha, T. (1971b) On the northern group of late Tripolye sites. *Soviet Archaeology* 1: 31–54 (in Russian).
- Movsha, T. (1972) Periodization and chronology of middle and late Tripolye. *Archaeology* 5: 3–24 (in Ukrainian).
- Movsha, T. (1975) Works in the mid-Dniester region. *Archaeological Discoveries for 1974*: 326–327. Moscow (in Russian).
- Movsha, T. (1985a) Interrelations of Tripolye-Cucuteni with the synchronous cultures of Central Europe. *Archaeology* 51: 22–31 (in Ukrainian).
- Movsha, T. (1985b) Late stage of Tripolian culture. *Archaeology of the Ukrainian SSR*. Vol. 1: 223–253 (in Russian).
- Passek, T. (1935) La ceramique Tripolienne. *State Academy of History of Material Culture Bulletin* 122. Moscow.
- Passek, T. (1949) Periodization of Tripolian settlements. *Materials and Studies in the Archaeology of the USSR* 10: 5–245 (in Russian).
- Patokova, E. (1979) *Usatovskiy Type Settlement and Burial Grounds*. Kiev: Naukova Dumka (in Russian).
- Patokova, E. and Petrenko V. (1989) Usatovskiy burial ground in Mayaki. In E. Patokova, V. Petrenko, N. Burdo and L. Polishchuk (eds) *Sites of Tripolian Culture in the Northwestern Black Sea Region*: 50–81. Kiev: Naukova Dumka (in Russian).
- Peleshchishyn, N. (1971) Pitted Ware culture. In: Berezhanskaya S., Zakharuk Y., Leskov O., Telegin D., Shovkoplias I. (eds) *Archaeology of the Ukrainian SSR* I: 231–240 (in Ukrainian).
- Peleshchishyn, N. (1973) Late Tripolian settlement in the riverhead of Horyn. *Archaeology* 11: 55–62 (in Ukrainian).
- Peleshchishyn, N. (1976) Excavations in Volyn. *Archaeological Discoveries* 1975: 375–376. Moscow (in Russian).
- Peleshchishyn, N. (1978) Excavations of late Tripolian settlements near Horiv village in Volyn. In *Proceedings of the 18th Conference Archaeological Studies on the Territory of the Ukrainian SSR in 1976–1977*: 43–44. Uzhgorod: Institute of Archaeology of Ukrainian SSR Academy of Science press (in Russian).

- Peleshchishyn, N. (1985) Funnelbeaker culture. *The Archaeology of Ukrainian SSR* Vol. 1: 273–280. (in Russian).
- Peleshchishyn, N. (1989) *Population of Western Volyn and its Ethno-cultural Ties (Middle V–Middle III Millennium bc)*. Synopsis of the PhD thesis. Institute of Archaeology UNAS F. 12, No. 687. Lviv (in Russian).
- Petrenko, V. (1989) Usatovskaya local group. In E. Patokova, V. Petrenko, N. Burdo and L. Polishchuk (eds) *Sites of Tripolian Culture in the Northwestern Black Sea Region*: 81–124. Kiev: Naukova Dumka (in Russian).
- Petrov, V. (1940) Settlement in Gorodsk. In *Tripolian Culture* 1: 339–382. Kiev: Ukrainian SSR Academy of Science. Institute of Archaeology (in Ukrainian).
- Ryndina, N. (1971) *Ancient Metal-Processing Production in Eastern Europe*. Moscow: Moscow State University Press (in Russian).
- Samoilovskiy, I. (1952) The cremation burial ground near Sofievka village In *Archaeological Sites* 5(4): 121–123 (in Ukrainian).
- Sergeev, G. (1969) Late Tripolye treasure of women's adornment from Cetrosica village. In the *Works of the State Historical and Local History Museum* 2: 84–87. Kishinev (in Russian).
- Shaposhnikova, O. (1953) Neolithic sites and Tripolian cultures in Kiev region. *Archaeology* 8: 138–147 (in Ukrainian).
- Shmagliy, M. (1961) Ceramics of the Gorodsk type settlements. *Archaeology* 13: 20–37 (in Ukrainian).
- Shmagliy, M. (1966) The Gorodsk-Volyn variation of late Tripolye culture. *Archaeology* 20: 15–37 (in Ukrainian).
- Shmagliy, M. (1971) Gorodsk type sites. *The Archaeology of the Ukrainian SSR* Vol. 1: 205–210. Kiev: Naukova Dumka (in Ukrainian).
- Sulimirski, T. (1960) Remarks concerning the distribution of some varieties of flint in Poland. *Swiatowit* 23.
- Telegin, D. (1968) *Dnieper-Donets Culture*. Kiev: Naukova Dumka (in Ukrainian).
- Tokarev, S. (1976) *Religion in the History of World's Nations*. Moscow: Politizdat (in Russian).
- Velikanova, M. (1975) *Paleoanthropology of the Prut-Dniester Interfluve*. Moscow: Nauka (in Russian).
- Vulpe, R. (1957) *Izvoare*. Bucuresti.
- Zakharuk, Y. (1952) Sofievskiy corpse-burning burial ground. In *Archaeological Sites* 5(4) (in Ukrainian).
- Zakharuk, Y. (1953) On the question of the burial ritual among the population of Tripolian culture in the mid-Dnieper region. *Scientific Notes of the Institute of Social Studies of the Ukrainian SSR Academy of Science* Vol. 1: 153–161 (in Ukrainian).
- Zakharuk, Y. (1954) Late-Tripolye culture of the mid-Dnieper region in light of new archaeological data. *Scientific Notes of the Institute of Social Studies of the Ukrainian SSR Academy of Science* Vol. 2. (in Ukrainian).
- Zakharuk, Y. (1956) Late-Tripolye settlement in the riverhead of the Sluch River. *Archaeological Sites* 6: 130–133 4 (in Ukrainian).
- Zakharuk, Y. (1957) The Funeral Beakers culture settlement at Volyn. *KSIMK* 67: 97–100 (in Russian).
- Zakharuk, Y. (1959) To the problem of correlation and ties between the Tripolian culture and Pitted Ware culture. *MDAPV* 2: 54–72 (In Ukrainian).
- Zakharuk, Y. (1962) The questions of chronology of Eneolithic and Early Bronze cultures at Prikarpatie and Volyn. *KSIA, USSR* 12: 48–52.

- Zakharuk, Y. (1971) Kasperovskiy type sites. In *Archaeology of the Ukrainian SSR* Vol. I: 183–186. (in Ukrainian).
- Zbenovich, V. (1966) On daggers of the Usatovskiy type. *Archaeology* 20: 38–46 (in Ukrainian).
- Zbenovich, V. (1974) *Late Tripolye Tribes of the Northern Black Sea Region*. Kiev: Naukova Dumka (in Russian).
- Zbenovich, V. (1976) Late Tripolye and its ties with cultures of the Cis-Carpathian and Lesser Poland regions. *Acta Archeologica Carpatika*. XVI.: 21–56 (in Russian).
- Zbenovich, V. (1987) Progress in development of ancient agricultural communities of the southwestern part of the USSR. *Proceedings of the Republican Conference Technological and Cultural Progress in the Early Agricultural Age*: 19–23. Ashgabat (in Russian).

# Epilogue

*Francesco Menotti*

As discussed throughout the volume, the formation, development and consequent decline of the Tripolye giant-settlements in the South Bug and Dnieper interfluvium, in the course of the fourth millennium cal BC, is an intertwined combination of migration processes triggered by socio-economic (and possibly demographic) factors within and between the various local groups of the two main Ukrainian Tripolye traditions (western and eastern). The initial scission from the pre-Cucuteni and the subsequent beginning of westwards migration marks the establishment of two distinct cultural traditions, which nonetheless would continue to share distinct cultural traits, in some cases still ‘generically’ linked to the place of their origin. The rich Tripolye culture pottery, with its distinct forms and patterns of decoration, has allowed the development of one of the most extraordinary relative chronologies in European prehistory, with a level of detail that not only consents to place the various Tripolye occupations in a smooth diachronic succession, but also to monitor the various local and inter-regional migrations. It has become evident, however, that although extremely detailed and precise, relative chronology alone would not be able to answer specific questions (for instance issues on the internal development of a single settlement, or the synchronicity of different residential agglomerates belonging to the same local group). Therefore, the urgency of developing an absolute chronology based on radiocarbon dates is all the more felt by a large number of the scholars who are researching the Tripolye culture. Of course, the establishment of such an absolute chronology and, above all, its correlation with the relative one, is certainly not an easy task, as Rassamakin clearly points out in his chapter. However, despite its formative stage, positive results have already begun to emerge (see for example the Talianki settlement’s internal chronology; see Rassamakin and Menotti 2011).

An area of research that will definitely benefit from the development of an absolute chronology is the study of the formative process, growth and decline of the giant-settlements. In fact, from the detailed chronological account of the giant-settlement period described by Ryzhov, one can see the limitations that such a relative chronology (although amazingly detailed) may encounter – for instance the monitoring of the founding and development of a single settlement, or its synchronicity with other genealogically similar settlements in the area. A similar shortcoming could also be seen to arise within Diachenko’s analysis of migration processes (see Chapter 5), where structural interconnections between settlements of different categories (e.g. binary or tertiary distribution types, whereby two or three large settlements dominate in the same area) may not be clearly identified without the support of absolute dating.

Despite this limitation, one cannot help but appreciate the invaluable contribution that relative chronology based on pottery typology has brought to the Tripolye culture research. It is only thanks to the painstaking work of scholars such as Passek, Movsha and, more recently, Ryzhov, who, studying the countless forms and patterns of decorations of the Tripolye ceramics, (see Chapter 6) proved that such a great achievement was possible.

Pottery is not the only Tripolye culture archaeological evidence that has fascinated and intrigued generations of archaeologists; house architecture too has been at the centre of



attention, and triggered incandescent debate amongst scholars for almost 100 years. The various architectural components of the house interior (e.g. floor, oven, altar, podium, etc.) have been the object of thorough research, especially in the past ten years, allowing archaeologists to be able to spot particular architectural trends that were characteristic of specific settlements or different local groups (see Chapter 8). However, two main issues on architecture and house construction techniques still diverge scholars' opinions today: a) whether the Tripolye dwellings of the giant-settlements were one- or two-storey houses; and, b) the use of fire (to 'bake' their clay-daubed walls and floors) at the construction level, even though it has always been believed that traces of firing, which are clearly visible in the archaeological remains, were caused by destructive conflagrations as part of the ceremonial ritual, before the settlement or house was abandoned. As plausible answers to both questions are difficult to find within archaeological remains, experimental archaeology may be a useful complementary help. Experiments on house building using both 'constructive' and destructive fire have been carried out for almost a century. Using full-sized or scale models, researchers have been able to reproduce the various phases of the firing process, and, in both cases ('constructive' and destructive fire), the results have been compared with the excavated archaeological materials. Although the mystery has not been solved by any means, recent work (see Chapter 9) suggests that fire might have also been used during construction to make the clay walls and floors more resistant.

Whether with their pottery, houses or with a myriad of other fascinating artefacts, the Tripolians' archaeological remains will never stop fascinating us. Each object, archaeological excavation and scientific analysis is an important insight into the captivating world of the Tripolye culture in Ukraine, its scission into two distinct traditions (western and eastern) and, most importantly, the establishment of enormous residential agglomerates known as the giant-settlements. Although a satisfactory understanding of their formation and development lies far ahead of us, archaeologists are fully aware that the main answers are to be found in the continuous migrations of the various Tripolian groups. But why were the Tripolian people constantly on the move? Was it exclusively an economic factor (the never-ending search for new agricultural land) associated with environmental change, or are socio-political instability, warfare and demographic pressure also to be included into the equation? Scholars still speculate on the issue, advancing the idea that a combination of all of the above might be the most plausible answer. What we know for sure is that the decline of the giant-settlements also marked the beginning of the end of the entire Tripolye culture tradition in Ukraine. After the downfall, the remaining groups mixed with other neighbouring populations, creating a few local groups. These communities were, in some instances, so different from the previous Tripolye groups that scholars were initially sceptical to link them to the Tripolye tradition (see Chapter 10). This was indeed the last act of a remarkable culture that dominated the Ukrainian territory for more than 2000 years. The eastward migrations of the Chalcolithic farmers came to an end, and they merged with new Bronze Age populations to begin a new trend of migrations – only in the opposite direction this time. It was the beginning of the third millennium cal BC.

## Reference

- Rassamakin, Y. and Menotti, F. (2011) Chronological development of the Tripolye culture giant-settlement of Talianki (Ukraine): 14C dating vs pottery typology. *Radiocarbon* 53 (4): 645–57.



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