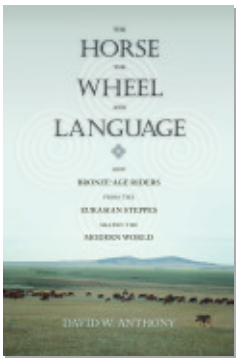
The Horse, the Wheel, and Language

David W. Anthony



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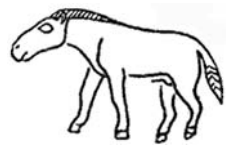
Chapter Eleven



The End of Old Europe and the Rise of the Steppe

By 4300–4200 BCE Old Europe was at its peak. The Varna cemetery in eastern Bulgaria had the most ostentatious funerals in the world, richer than anything of the same age in the Near East. Among the 281 graves at Varna, 61 (22%) contained more than three thousand golden objects together weighing 6 kg (13.2 lb). Two thousand of these were found in just four graves (1, 4, 36, and 43). Grave 43, an adult male, had golden beads, armrings, and rings totaling 1,516 grams (3.37 lb), including a copper axe-adze with a gold-sheathed handle.[1] Golden ornaments have also been found in tell settlements in the lower Danube valley, at Gumelnița, Vidra, and at Hotnitsa (a 310-gm cache of golden ornaments). A few men in these communities played prominent social roles as chiefs or clan leaders, symbolized by the public display of shining gold ornaments and cast copper weapons.

Thousands of settlements with broadly similar ceramics, houses, and female figurines were occupied between about 4500 and 4100 BCE in eastern Bulgaria (Varna), the upland plains of Balkan Thrace (KaranovoVI), the upper part of the Lower Danube valley in western Bulgaria and Romania (Krivodol-Sălcuța), and the broad riverine plains of the lower Danube valley (Gumelnița) (figure 11.1). Beautifully painted ceramic vessels, some almost 1 m tall and fired at temperatures of over 800°C, lined the walls of their two-storied houses. Conventions in ceramic design and ritual were shared over large regions. The crafts of metallurgy, ceramics, and even flint working became so refined that they must have required master craft specialists who were patronized and supported by chiefs. In spite of this, power was not obviously centralized in any one village. Perhaps, as John Chapman observed, it was a time when the restricted resources (gold, copper, *Spondylus* shell) were not critical, and the critical resources (land, timber, labor, marriage partners) were not seriously restricted. This could have prevented any one region or town from dominating others.[2]

Figure 11.1 Map of Old Europe at 4500–4000 BCE.

Towns in the high plains atop the Balkans and in the fertile lower Danube valley formed high tells. Settlements fixed in one place for so long imply fixed agricultural fields and a rigid system of land tenure around each tell. The settlement on level VI at Karanovo in the Balkans was the type site for the period. About fifty houses crowded together in orderly rows inside a protective wooden palisade wall atop a massive 12-m (40-ft) tell. Many tells were surrounded by substantial towns. At Bereket, not far from Karanovo, the central part of the tell was 250 m in diameter and had cultural deposits 17.5 m (57 ft) thick, but even 300–600 m away from this central eminence the occupation deposits were 1–3 m thick. Surveys at Podgoritsa in northeastern Bulgaria also found substantial off-tell settlement.[3]

Around 4200–4100 BCE the climate began to shift, an event called the Piora Oscillation in studies of Swiss alpine glaciers. Solar insolation decreased, glaciers advanced in the Alps (which gave this episode its name), and winters became much colder.[4] Variations in temperature in the northern hemisphere are recorded in the annual growth rings in oaks preserved in bogs in Germany and in annual ice layers in the GISP2 glacial ice core from Greenland. According to these sources, extremely cold years happened first in 4120 and 4040 BCE. They were harbingers of a 140-year-long, bitterly cold period lasting from 3960 to 3821 BCE, with temperatures colder than at any time in the previous two thousand years. Investigations led by Douglass Bailey in the lower Danube valley showed that floods occurred more frequently and erosion degraded the riverine floodplains where crops were grown. Agriculture in the lower Danube valley shifted to more cold-tolerant rye in some settlements.[5] Quickly these and perhaps other stresses accumulated to create an enormous crisis.

Between about 4200 and 3900 BCE more than six hundred tell settlements of the Gumelnița, Karanovo VI, and Varna cultures were burned and abandoned in the lower Danube valley and eastern Bulgaria. Some of their residents dispersed temporarily into smaller villages like the Gumelnița B1 hamlet of Jilava, southwest of Bucharest, with just five to six houses and a single-level cultural deposit. But Jilava was burned, apparently suddenly, leaving behind whole pots and many other artifacts.[6] People scattered and became much more mobile, depending for their food on herds of sheep and cattle rather than fixed fields of grain. The forests did not regenerate; in fact, pollen cores show that the countryside became even more open and deforested.[7] Relatively mild climatic conditions returned after 3760 BCE according to the German oaks, but by then the cultures of the lower Danube valley and the Balkans had changed dramatically. The cultures that appeared after about 3800 BCE did not regularly use female figurines in

domestic rituals, no longer wore copper spiral bracelets or *Spondylus*-shell ornaments, made relatively plain pottery in a limited number of shapes, did not live on tells, and depended more on stockbreeding. Metallurgy, mining, and ceramic technology declined sharply in both volume and technical skill, and ceramics and metal objects changed markedly in style. The copper mines in the Balkans abruptly ceased production; copper-using cultures in central Europe and the Carpathians switched to Transylvanian and Hungarian ores about 4000 BCE, at the beginning of the Bodrogkeresztur culture in Hungary (see ore sources in figure 11.1). Oddly this was when metallurgy really began in western Hungary and nearby in Austria and central Europe.[8] Metal objects now were made using new arsenical bronze alloys, and were of new types, including new weapons, daggers being the most important. "We are faced with the complete replacement of a culture," the foremost expert on Eneolithic metallurgy E. N. Chernykh said. It was "a catastrophe of colossal scope . . . a complete cultural caesura," according to the Bulgarian archaeologist H. Todorova.[9]

The end of Old Europe truncated a tradition that began with the Starcevo-Criş pioneers in 6200 BCE. Exactly what happened to Old Europe is the subject of a long, vigorous debate. Graves of the Suvorovo type, ascribed to immigrants from the steppes, appeared in the lower Danube valley just before the destruction of the tells. Settlements of the Cernavoda I type appeared just after. They regularly contain horse bones and ceramics exhibiting a mixture of steppe technology and indigenous Danubian shapes, and are ascribed to a mixed population of steppe immigrants and people from the tells. The number of abandoned sites and the rapid termination of many long-standing traditions in crafts, domestic rituals, decorative customs, body ornaments, housing styles, living arrangements, and economy suggest not a gradual evolution but an abrupt and probably violent end. At Hotnitsa on the Danube in north-central Bulgaria the burned houses of the final Eneolithic occupation contained human skeletons, interpreted as massacred inhabitants. The final Eneolithic destruction level at Yunatsite on the Balkan upland plain contained forty-six human skeletons. It looks like the tell towns of Old Europe fell to warfare, and, somehow, immigrants from the steppes were involved. But the primary causes of the crisis could have included climate change and related agricultural failures, or soil erosion and environmental degradation accumulated from centuries of intensive farming, or internecine warfare over declining timber and copper resources, or a combination of all these.[10]

The crisis did not immediately affect all of southeastern Europe. The most widespread settlement abandonments occurred in the lower Danube valley

(Gumelnița, northeastern Bulgaria, and the Bolgrad group), in eastern Bulgaria (Varna and related cultures), and in the mountain valleys of the Balkans (Karanovo VI), east of the Yantra River in Bulgaria and the Olt in Romania. This was where tell settlements, and the stable field systems they imply, were most common. In the Balkans, a well-cultivated, densely populated landscape occupied since the earliest Neolithic, no permanent settlements can be dated between 3800 and 3300 BCE. People probably still lived there, but herds of sheep grazed on the abandoned tells.

The traditions of Old Europe survived longer in western Bulgaria and western Romania (Krivodol-Sălcuța IV–Bubanj Hum Ib). Here the settlement system had always been somewhat more flexible and less rooted; the sites of western Bulgaria usually did not form high tells. Old European ceramic types, house types, and figurine types were abandoned gradually during Sălcuța IV, 4000–3500 BCE. Settlements that were occupied during the crisis, places like Telish-Redutite III and Galatin, moved to high, steep-sided promontories, but they retained mud-brick architecture, two-story houses, and cult and temple buildings.[11] Many caves in the region were newly occupied, and since herders often use upland caves for shelter, this might suggest an increase in upland-lowland seasonal migrations by herders. The Krivodol–Salcutsa–Bubanj Hum Ib people reoriented their external trade and exchange connections to the north and west, where their influence can be seen on the Lasinja-Balaton culture in western Hungary.

The Old European traditions of the Cucuteni-Tripolye culture also survived and, in fact, seemed curiously reinvigorated. After 4000 BCE, in its Tripolye B2 phase, the Tripolye culture expanded eastward toward the Dnieper valley, creating ever larger agricultural towns, although none was rebuilt in one place long enough to form a tell. Domestic cults still used female figurines, and potters still made brightly painted fine lidded pots and storage jars 1 m high. Painted fine ceramics were mass-produced in the largest towns (Varvarovka VIII), and flint tools were mass-produced at flint-mining villages like Polivanov Yar on the Dniester.[12] Cucuteni AB/Tripolye B2 settlements such as Veseli Kut (150 ha) contained hundreds of houses and apparently were preeminent places in a new settlement hierarchy. The Cucuteni-Tripolye culture forged new relationships with the copper-using cultures of eastern Hungary (Borogkeresztur) in the west and with the tribes of the steppes in the east.

The languages spoken by those steppe tribes, around 4000 BCE, probably included archaic Proto-Indo-European dialects of the kind partly preserved later in Anatolian. The steppe people who spoke in that way

probably already rode horses. Were the Suvorovo sites in the lower Danube valley created by Indo-European invaders on horseback? Did they play a role in the destruction of the tell settlements of the lower Danube valley, as Gimbutas suggested? Or did they just slip into an opening created by climate change and agricultural failures? In either case, why did the Cucuteni-Tripolye culture survive and even prosper? To address these questions we first have to examine the Cucuteni-Tripolye culture and its relations with steppe cultures.

Warfare and Alliance: The Cucuteni-Tripolye Culture and the Steppes

The crisis in the lower Danube valley corresponded to late Cucuteni A3/Tripolye B1, around 4300–4000 BCE. Tripolye B1 was marked by a steep increase in the construction of fortifications—ditches and earthen banks—to protect settlements (figure 11.2). Fortifications might have appeared just about when the climate began to deteriorate and the collapse of Old Europe occurred, but Cucuteni-Tripolye fortifications then *decreased* during the coldest years of the Piora Oscillation, during Tripolye B2, 4000–3700 BCE. If climate change destabilized Old Europe and caused the initial construction of Cucuteni-Tripolye fortifications, the first phase of change was sufficient by itself to tip the system into crisis. Probably there was more to it than just climate.

Only 10% of Tripolye B1 settlements were fortified even in the worst of times. But those that *were* fortified required substantial labor, implying a serious, chronic threat. Fortified Cucteni-Tripolye villages usually were built at the end of a steep-sided promontory, protected by a ditch dug across the promontory neck. The ditches were 2–5 m wide and 1.5–3 m deep, made by removing 500–1,500 m^3 of earth. They were relocated and deepened as settlements grew in size, as at Traian and Habaşeşti I. In a database of 2,017 Cucuteni/Tripolye settlements compiled by the Moldovan archaeologist V. Dergachev, half of *all* fortified Cucuteni/Tripolye sites are dated just to the Tripolye B1 period. About 60% of all the flint projectile points from all the Cucuteni/Tripolye culture also belonged just to the Tripolye B1 period. There was no corresponding increase in hunting during Tripolye B1 (no increase in wild animal bones in settlements), and so the high frequency of projectile points was not connected with hunting. Probably it was associated with increased warfare.

The number of Cucuteni-Tripolye settlements increased from about 35 settlements per century during Tripolye A to about 340 (!) during Tripolye

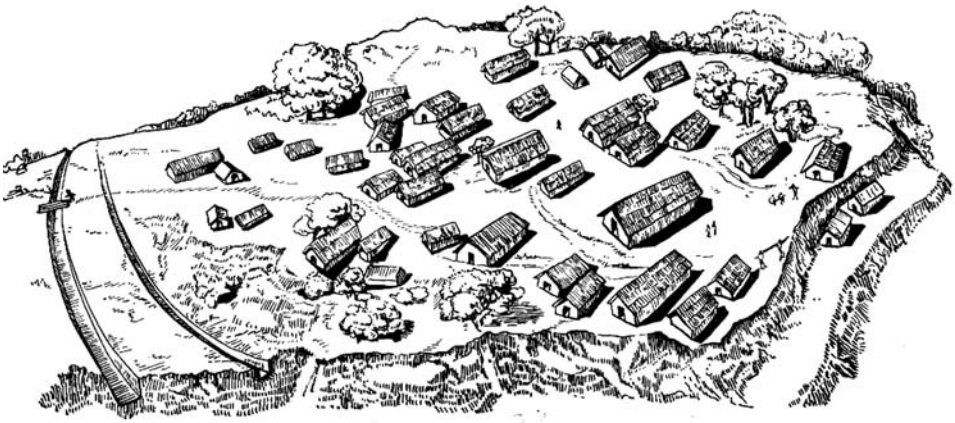


Figure 11.2 Habaşesti I, a fortified Tripolye B1 village. After Chernysh 1982.

B1, a tenfold rise in the number of settlements without a significant expansion of the area settled (figure 11.3b).[13] Part of this increase in settlement density during Tripolye B1 might be ascribed to refugees fleeing from the towns of the Gumelnița culture. At least one Tripolye B1 settlement in the Prut drainage, Drutsy 1, appears to have been attacked. More than one hundred flint points (made of local Carpathian flint) were found around the walls of the three excavated houses as if they had been peppered with arrows.[14] Compared to its past and its future, the Tripolye B1 period was a time of sharply increased conflict in the Eastern Carpathians.

Contact with Steppe Cultures during Tripolye B: Cucuteni C Ware

Simultaneously with the increase in fortifications and weapons, Tripolye B1 towns showed widespread evidence of contact with steppe cultures. A new pottery type, Cucuteni C ware,[15] shell-tempered and similar to steppe pottery, appeared in Tripolye B1 settlements of the South Bug valley (Sabatinovka I) and in Romania (Draguşeni and Fedeleşeni, where Cucuteni C ware amounted to 10% of the ceramics). Cucuteni C ware is usually thought to indicate contact with and influence from steppe pottery traditions (figure 11.4).[16] Cucuteni C ware might have been used in ordinary homes with standard Cucuteni-Tripolye fine wares as a new kind of coarse or kitchen pottery, but it did not replace traditional coarse kitchen wares tempered with grog (ground-up ceramic sherds). Some Cucuteni C pots look very much like steppe pottery, whereas others had shell-temper,

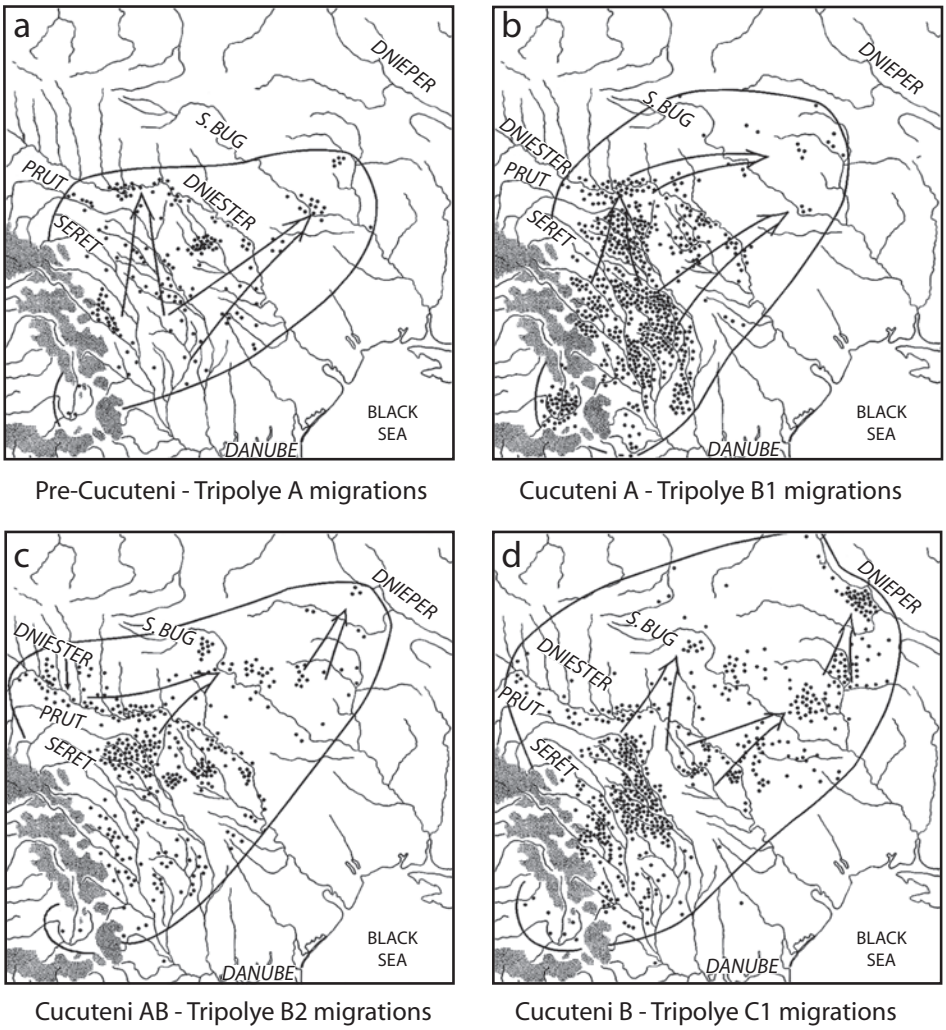


Figure 11.3. Tripolye B1-B2 migrations. After Dergachev 2002, figure 6.2.

gray-to-brown surface color and some typical steppe decorative techniques (like "caterpillar" impressions, made with a cord-wrapped, curved pressing tool) but were made in typical Cucuteni-Tripolye shapes with other decorative elements typical of Cucuteni-Tripolye wares.

The origin of Cucuteni C ware is disputed. There were good utilitarian reasons for Tripolye potters to adopt shell-tempering. Shell-temper in the clay can increase resistance to heat shock, and shell-tempered pots

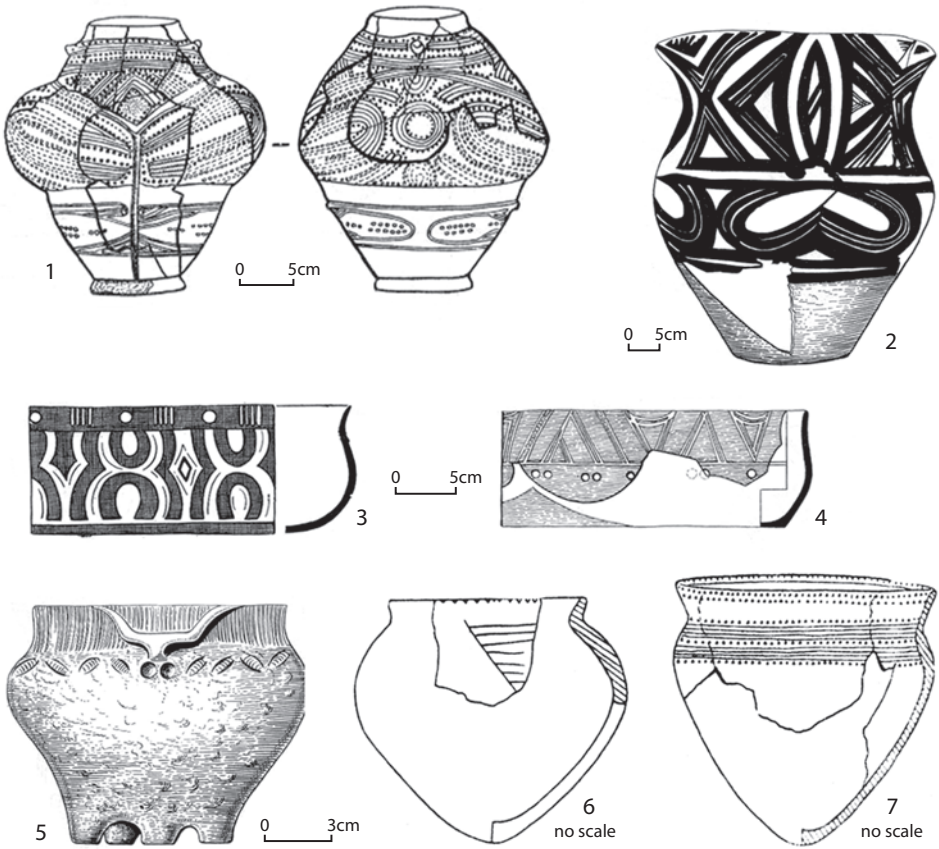


Figure 11.4 Cucuteni C (bottom row) and standard Cucuteni B wares (top two rows): (1) fine ware, Novye Ruseshti I_{1a} (Tripolye B1); (2) fine ware, Geleshti (Tripolye B2); (3–4) fine ware, Frumushika I (Tripolye B1); (5) Cucuteni C ware, Frumushika II (Tripolye B2); (6–7) Cucuteni C ware, Berezovskaya GES. After Danilenko and Shmagli 1972, Figure 7; Chernysh 1982, Figure LXV.

can harden at lower firing temperatures, which could save fuel.[17] Changes in the organization of pottery making could also have encouraged the spread of Cucuteni C wares. Ceramic production was beginning to be taken over by specialized ceramic-making towns during Tripolye B1 and B2, although local household production also continued in most places. Rows of reusable two-chambered kilns appeared at the edges of a few settlements, with 11 kilns at Ariuşd in southeastern Transylvania. If fine

painted wares were beginning to be produced in villages that specialized in making pottery and the coarse wares remained locally produced, the change in coarse wares could have reflected the changing organization of production.

On the other hand, these particular coarse wares obviously resembled the pottery of steppe tribes. Many Cucuteni C pots look like they were made by Sredni Stog potters. This suggests familiarity with steppe cultures and even the presence of steppe people in some Tripolye B villages, perhaps as hired herders or during seasonal trade fairs. Although it is unlikely that *all* Cucuteni C pottery was made by steppe potters—there is just too much of it—the appearance of Cucuteni C ware suggests intensified interactions with steppe communities.

Steppe Symbols of Power: Polished Stone Maces

Polished stone maces were another steppe artifact type that appeared in Tripolye B1 villages. A mace, unlike an axe, cannot really be used for anything except cracking heads. It was a new weapon type and symbol of power in Old Europe, but maces had appeared across the steppes centuries earlier in DDII, Khvalynsk, and Varfolomievka contexts. There were two kinds—zoomorphic and eared types—and both had steppe prototypes that were older (figure 11.5; also see figure 9.6). Mace heads carved and polished in the shape of horse heads were found in two Cucuteni A3/A4-Tripolye B1 settlements, Fitioneşti and Fedeleşeni, both of which also had significant amounts of Cucuteni C ware. The eared type appeared at the Cucuteni-Tripolye settlements of Obarşeni and Berezovskaya GES, also with Cucuteni C ware that at Berezovskaya looked like it was imported from steppe communities. Were steppe people present in these Tripolye B1 towns? It seems likely. The integration of steppe pottery and symbols of power into Cucuteni-Tripolye material culture suggests some kind of social integration, but the maintenance of differences in economy, house form, fine pottery, metallurgy, mortuary rituals, and domestic rituals indicates that it was limited to a narrow social sector.[18]

Other Signs of Contact

Most settlements of the Tripolye B period, even large ones, continued to dispose of their dead in unknown ways. But inhumation graves appeared in or at the edge of a few Tripolye B1 settlement sites. A grave in the settle-

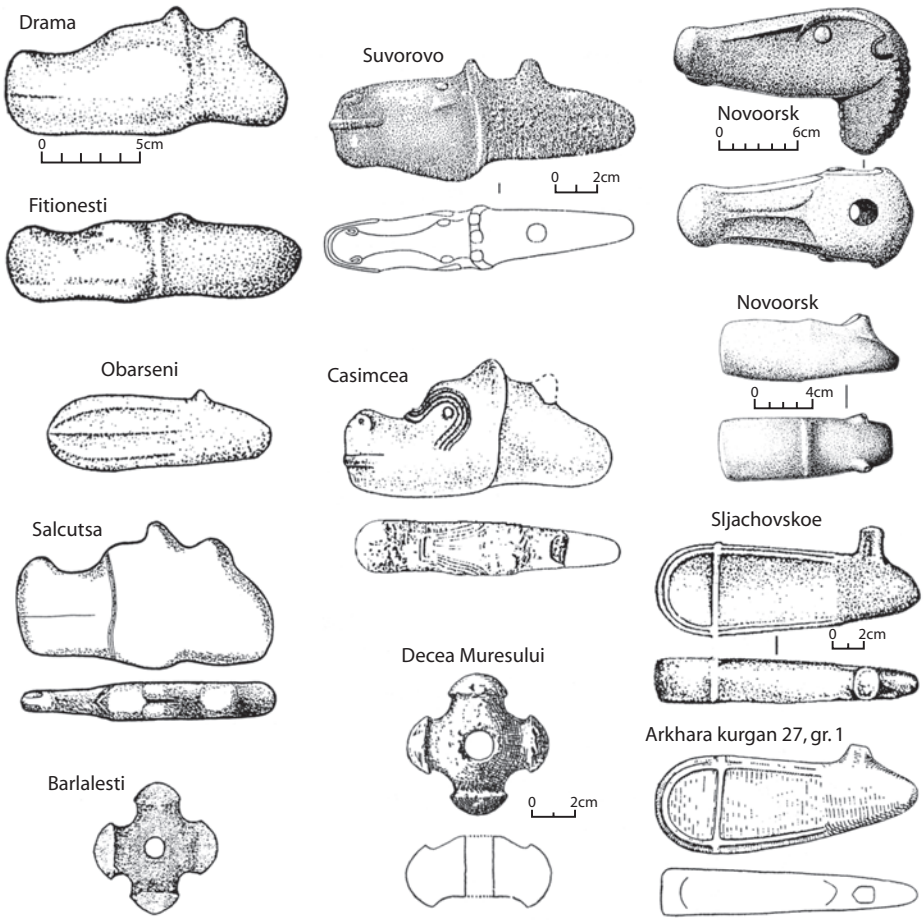


Figure 11.5 Eared and horse-head maces of Old Europe, the Suvorovo migrants, and the Pontic-Caspian steppes. Stone mace heads appeared first and were more common in the steppes. After Telegin et al. 2001; Dergachev 1999; Gheorgiu 1994; Kuzmina 2003.

ment of Nezvisko contained a man with a low skull and broad, thick-boned face like those of steppe people—a type of skull-and-face configuration called "Proto-Europoid" by Eastern European physical anthropologists. Tripolye, Varna, and Gumelnița people generally had taller heads, narrower faces, and more gracile facial bones, a configuration called "Mediterranean."[19]

Another indicator of movement across the steppe border was the little settlement near Mirnoe in the steppes north of the Danube delta. This is the only known classic-period Tripolye settlement in the coastal steppe lowlands. It had just a few pits and the remains of a light structure containing sherds of Tripolye B1 and Cucuteni C pots, a few bones of cattle and sheep, and more than a hundred grape seeds, identified as wild grapes. Mirnoe seems to have been a temporary Tripolye B1 camp in the steppes, perhaps for grape pickers.[20] Some people, though not many, were moving across the cultural-ecological frontier in both directions.

During Tripolye B2, around 4000–3700 BCE, there was a significant migration out of the Prut-Seret forest-steppe uplands, the most densely settled part of the Tripolye B1 landscape, eastward into the South Bug and Dnieper valleys (figure 11.3c). Settlement density in the Prut-Seret region declined by half.[21] Tripolye, the type site first explored in 1901, was an eastern frontier village of the Tripolye B2 period, situated on a high terrace overlooking the broad, fertile valley of the Dnieper River. The population consolidated into fewer, larger settlements (only about 180 settlements per century during Tripolye B2). The number of fortified settlements decreased sharply.

These signs of demographic expansion and reduced conflict appeared after the tell settlements of the Danube valley were burned and abandoned. It appears that any external threat from the steppes, if there was one, turned away from Cucuteni-Tripolye towns. Why?

Steppe Riders at the Frontiers of Old Europe

Frontiers can be envisioned as peaceful trade zones where valuables are exchanged for the mutual benefit of both sides, with economic need preventing overt hostilities, or as places where distrust is magnified by cultural misunderstandings, negative stereotypes, and the absence of bridging institutions. The frontier between agricultural Europe and the steppes has been seen as a border between two ways of life, farming and herding, that were implacably opposed. Plundering nomads like the Huns and Mongols are old archetypes of savagery. But this is a misleading stereotype, and one derived from a specialized form of militarized pastoral nomadism that did not exist before about 800 BCE. As we saw in the previous chapter, Bronze Age riders in the steppes used bows that were too long for effective mounted archery. Their arrows were of varied weights and sizes. And Bronze Age war bands were not organized like armies. The Hunnic invasion analogy is

anachronistic, yet that does not mean that mounted raiding never occurred in the Eneolithic.[22]

There is persuasive evidence that steppe people rode horses to hunt horses in Kazakhstan by about 3700–3500 BCE. Almost certainly they were not the first to ride. Given the symbolic linkage between horses, cattle, and sheep in Pontic-Caspian steppe funerals as early as the Khvalynsk period, horseback riding might have begun in a limited way before 4500 BCE. But western steppe people began to *act* like they were riding only about 4300–4000 BCE, when a pattern consistent with long-distance raiding began, seen most clearly in the Suvorovo-Novodanilovka horizon described at the end of this chapter. Once people began to ride, there was nothing to prevent them from riding into tribal conflicts—not the supposed shortcomings of rope and leather bits (an organic bit worked perfectly well, as our students showed in the organic-bit riding experiment, and as the American Indian "war bridle" demonstrated on the battlefield); not the size of Eneolithic steppe horses (most were about the size of Roman cavalry horses, big enough); and certainly not the use of the wrong "seat" (an argument that early riders sat on the rump of the horse, perhaps for millennia, before they discovered the more natural forward seat—based entirely on Near Eastern images of riders probably made by artists who were unfamiliar with horses).[23]

Although I *do* see evidence for mounted raiding in the Eneolithic, I do *not* believe that any Eneolithic army of pitiless nomads ever lined up on the horizon mounted on shaggy ponies, waiting for the command of their bloodthirsty general. Eneolithic warfare was tribal warfare, so there were no armies, just the young men of this clan fighting the young men of that clan. And early Indo-European warfare seems from the earliest myths and poetic traditions to have been conducted principally to gain glory—*imperishable fame*, a poetic phrase shared between Pre-Greek and Pre-Indo-Iranian. If we are going to indict steppe raiders in the destruction of Old Europe, we first have to accept that they did not fight like later cavalry. Eneolithic warfare probably was a strictly seasonal activity conducted by groups organized more like modern neighborhood gangs than modern armies. They would have been able to disrupt harvests and frighten a sedentary population, but they were not nomads. Steppe Eneolithic settlements like Dereivka cannot be interpreted as pastoral nomadic camps. After nomadic cavalry is removed from the picture, how do we understand social and political relations across the steppe/Old European frontier?

A mutualist interpretation of steppe/farming-zone relations is one alternative. Conflict is not denied, but it is downplayed, and mutually

beneficial trade and exchange are emphasized.[24] Mutualism might well explain the relationship between the Cucuteni-Tripolye and Sredni Stog cultures during the Tripolye B period. Among historically known pastoralists in close contact with farming populations there has been a tendency for wealthy herd owners to form alliances with farmers to acquire land as insurance against the loss of their more volatile wealth in herds. In modern economies, where land is a market commodity, the accumulation of property could lead the wealthiest herders to move permanently into towns. In a pre-state tribal world this was not possible because agricultural land was not for sale, but the strategy of securing durable alliances and assets in agricultural communities as insurance against future herd losses could still work. Steppe herders might have taken over the management of some Tripolye herds in exchange for metal goods, linen textiles, or grain; or steppe clans might have attended regular trading fairs at agricultural towns. Annual trading fairs between mounted hunters and river-valley corn farmers were a regular feature of life in the northern Plains of the U.S.[25] Alliances and trade agreements sealed by marriages could account for the increased steppe involvement in Tripolye communities during Tripolye B1, about 4400–4000 BCE. The institutions that normalized these cross-cultural relations probably included gift partnerships. In archaic Proto-Indo-European as partly preserved in Hittite, the verb root that in all other Indo-European languages meant "give" (**dō-*) meant "take" and another root (*pai*) meant "give." From this give-and-take equivalence and a series of other linguistic clues Emile Benveniste concluded that, during the archaic phase of Proto-Indo-European, "exchange appears as a round of gifts rather than a genuine commercial operation."[26]

On the other hand, mutualism cannot explain everything, and the end of the Varna-Karanovo VI–Gumelnița culture is one of those events it does not explain. Lawrence Keeley sparked a heated debate among archaeologists by insisting that warfare was common, deadly, and endemic among prehistoric tribal societies. Tribal frontiers might be creative places, as Frederik Barth realized, but they often witnessed pretty nasty behavior. Tribal borders commonly were venues for insults: the Sioux called the Bannock the "Filthy-Lodge People"; the Eskimo called the Ingalik "Nit-heads"; the Hopi called the Navaho "Bastards"; the Algonkian called the Mohawk "Maneaters"; the Shuar called the Huarani "Savages"; and the simple but eloquent "Enemies" is a very common meaning for names given by neighboring tribes. Because tribal frontiers displayed things people needed just beyond the limits of their own society, the temptation to take them by force was strong. It was doubly strong when those things had legs, like cattle.[27]

Cattle raiding was encouraged by Indo-European beliefs and rituals. The myth of Trito, the warrior, rationalized cattle theft as the recovery of cattle that the gods had *intended* for the people who sacrificed properly. Proto-Indo-European initiation rituals included a requirement that boys initiated into manhood *had* to go out and become like a band of dogs or wolves—to raid their enemies.[28] Proto-Indo-European also had a word for bride-price, **ŭedmo-*.[29] Cattle, sheep, and probably horses would have been used to pay bride-prices, since they generally are valued higher than other currencies for bride-price payments in pastoral societies without formal money.[30] Already in the preceding centuries domesticated animals had become the proper gifts for gods at funerals (e.g., at Khvalynsk). A relatively small elite already competed across very large regions, adopting the same symbols of status—maces with polished stone heads, boar's tusk plaques, copper rings and pendants, shell disc beads, and bird-bone tubes. When bride-prices escalated as one aspect of this competition, the result would be increased cattle raiding by unmarried men. Combined with the justification provided by the Trito myth and the institution of male-initiation-group raiding, rising bride-prices calculated in animals would have made cross-border raiding almost inevitable.

If they were on foot, Eneolithic steppe cattle raiders might have attacked one another or attacked neighboring Tripolye settlements. But, if they were mounted, they could pick a distant target that did not threaten valued gift partnerships. Raiding parties of a dozen riders could move fifty to seventy-five head of cattle or horses fairly quickly over hundreds of kilometers.[31] Thieving raids would have led to deaths, and then to more serious killing and revenge raids. A cycle of warfare evolving from thieving to revenge raids probably contributed to the collapse of the tell towns of the Danube valley.

What kinds of societies lived on the steppe side of the frontier? Is there good archaeological evidence that they were indeed deeply engaged with Old Europe and the Cucuteni-Tripolye culture in quite different ways?

The Sredni Stog Culture: Horses and Rituals from the East

The Sredni Stog culture is the best-defined Late Eneolithic archaeological culture in steppe Ukraine. Sredni Stog, or "middle stack," was the name of a small haystack-shaped island in the Dnieper at the southern end of the Dnieper Rapids, the central one of three. All were inundated by a dam, but before that happened, archaeologists found and excavated a site there in 1927. It contained a stratified sequence of settlements with Early

Eneolithic (DDII) pottery in level I and Late Eneolithic pottery in level II.[32] Sredni Stog II became the type site for this Late Eneolithic kind of pottery. Sredni Stog–style pottery was found stratified above older DDII settlements at several other sites, including Strilcha Skelya and Aleksandriya. Dimitri Telegin, who had earlier defined the Dnieper-Donets culture, in 1973 first pulled together and mapped all the sites with Sredni Stog material culture, about 150 in all (figure 11.6). He found Sredni Stog sites across the Ukrainian steppes from the Ingul valley, west of the Dnieper, on the west to the lower Don on the east.

The Sredni Stog culture became the archaeological foundation for the Indo-European steppe pastoralists of Marija Gimbutas. The horse bones from the Sredni Stog settlement of Dereivka, excavated by Telegin, played a central role in the ensuing debates between pro-Kurgan-culture and anti-Kurgan-culture archaeologists. I described in the last chapter how Gimbutas's interpretation of the horses of Dereivka was challenged by Levine. Simultaneously Yuri Rassamakin challenged Telegin's concept of the Sredni Stog culture.[33]

Rassamakin separated Telegin's Sredni Stog culture into at least three separate cultures, reordered and redated some of the resulting pieces, and refocused the central cause of social and political change away from the development of horse riding and agro-pastoralism in the steppes (Telegin's themes) to the integration of steppe societies into the cultural sphere of Old Europe, which was Rassamakin's new mutualist theme. But Rassamakin assigned well-dated sites like Dereivka and Khvalynsk to periods inconsistent with their radiocarbon dates.[34] Telegin's groupings seem to me to be better documented and explained, so I retain the Sredni Stog culture as a framework for ordering Eneolithic sites in Ukraine, while disagreeing with Telegin in some details.

This was the critical era when innovative early Proto-Indo-European dialects began to spread across the steppes. The principal causes of change in the steppes included both the internal maturation of new economic systems and new social networks (Telegin's theme) and the inauguration of new interactions with Old Europe (Rassamakin's theme).

The Origins and Development of the Sredni Stog Culture

We should not imagine that Sredni Stog, or any other archaeological culture, appeared or disappeared everywhere at the same time. Telegin defined four broad phases (Ia, Ib, IIa, IIb) in its evolution, but a phase might last longer in some regions than others. In his scheme, the settlements at

Figure 11.6 Steppe and Danubian sites at the time of the Suvorovo-Novodanilovka intrusion, about 4200–3900 BCE.

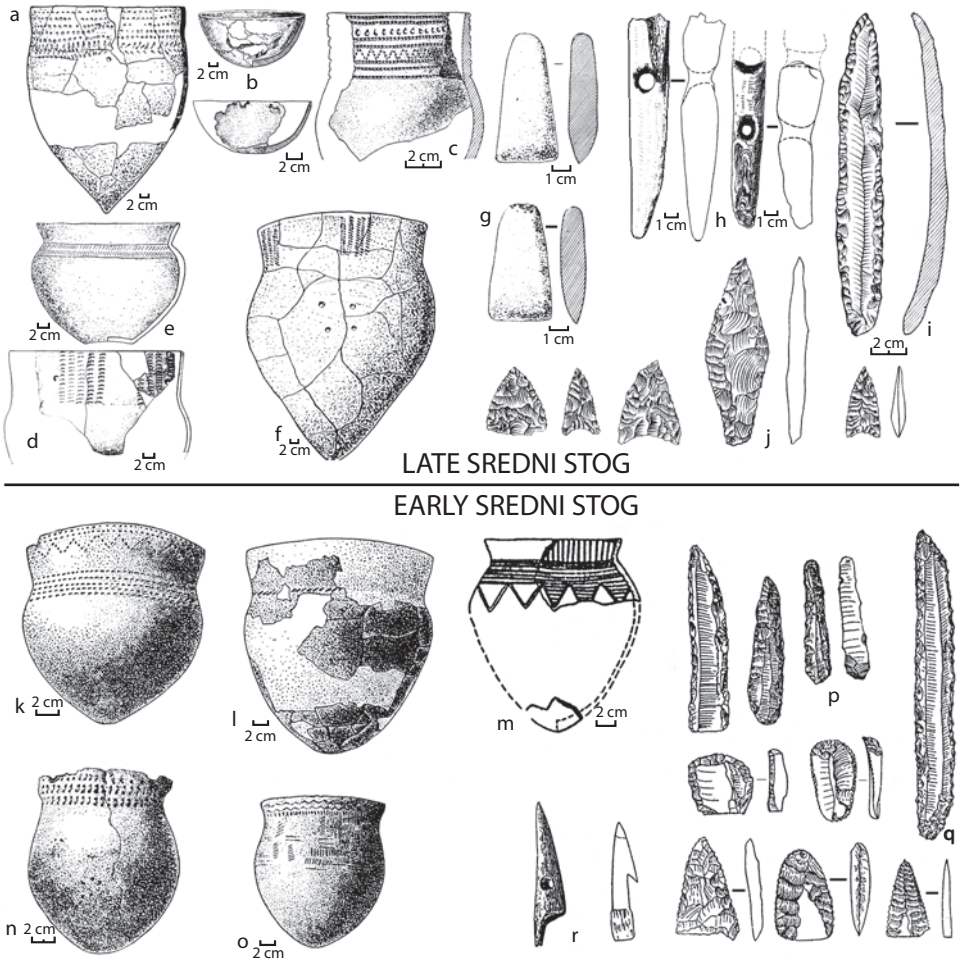


Figure 11.7 Sredni Stog pottery and tools, early and late. Perforated bone or antler artifacts like (h) were identified as cheekpieces for horse bits, but this identification is speculative. After Telegin 2002, figure 3.1.

Sredni Stog and Strilcha Skelya on the Dnieper represented an early phase (Ib), which Rassamakin called the Skelya culture. The pottery of this phase lacked cord-impressed decoration. The settlements at Dereivka (IIa) and Moliukhor Bugor (IIb) on the Dnieper represented the late phases, with braided cord impressions on the pottery (figure 11.7). Early Sredni Stog (phase I) was contemporary with the violent era of Tripolye B1 and the crisis in the Danube valley. Tripolye B1 painted pottery was found at

Table 11.2
Radiocarbon Dates for Late Eneolithic Cultures from the Lower Danube to the North Caucasus

Lab Number	*BP Date*	*Sample*	*Calibrated Date*
1. Sredni Stog culture			
Dereivka, Dnieper Valley			
Ki 2195	6240±100	settlement, shell	5270–5058 BCE
UCLA 1466a	5515±90	settlement, bone	4470–4240 BCE
Ki 2193	5400±100	settlement, shell	4360–4040 BCE
OxA 5030	5380±90	cemetery, grave 2	4350–4040 BCE
KI 6966	5370±70	settlement, bone	4340–4040 BCE
Ki 6960	5330±60	settlement, bone	4250–4040 BCE
KI 6964	5260±75	settlement, bone	4230–3990 BCE
Ki 2197	5230±95	settlement, bone	4230–3970 BCE
Ki 6965	5210±70	settlement, bone	4230–3960 BCE
UCLA 1671a	4900±100	settlement, bone	3900–3530 BCE
Ki 5488	4330±120	cult horse skull??	3300–2700 BCE
Ki 6962	2490±95	cult horse skull	790–520 BCE
OxA 7185	2295±60	cult horse tooth with bit wear	410–200 BCE
OxA 6577	1995±60	bone near cult horse	90 BCE–70CE
Aleksandriya, Donets Valley			
Ki-104	5470±300	?	4750–3900 BCE
2. North Caucasian Eneolithic			
Svobodnoe settlement			
Le-4531	5400±250	?	4500–3950 BCE
Le-4532	5475±100	?	4460–4160 BCE
3. Varna Culture, Bulgaria, lower Danube			
Durankulak tell settlement			
Bln-2122	5700±50	settlement, level 5	4600–4450 BCE
Bln-2111	5495±60	settlement, house 7	4450–4250 BCE
Bln-2121	5475±50	settlement, level 4	4360–4240 BCE
Pavelyanovo 1 tell settlement			
Bln-1141	5591±100	settlement	4540–4330 BCE

Table 11.2 (*continued*)

Lab Number	*BP Date*	*Sample*	*Calibrated Date*
4. Gumelnitsa culture, Romania, lower Danube			
Vulcanesti II, Bolgrad group			
MO-417	5110±150	settlement	4050–3700 BCE
Le-640	5300±60	settlement	4230–4000 BCE
Gumelnitsa, tell settlement			
GrN-3025	5715±70	settlement, charcoal	4680–4450 BCE
Bln-605	5675±80	settlement, charcoal	4620–4360 BCE
Bln-604	5580±100	settlement, charcoal	4540–4330 BCE
Bln-343	5485±120	settlement, charcoal	4460–4110 BCE
GrN-3028	5400±90	settlement, charred grain	4340–4050 BCE
5. Suvorovo Group, lower Danube			
Giurgiuleşti, cemetery, lower Prut/Danube			
Ki-7037	5398±69*	?	4340–4050 BCE

*This date was printed in Telegin et al. 2001 as 4398±69 BP, but I was told that this was a misprint and that the actual reported date was 5398+69 BP.

Strilcha Skelya. The stylistic changes that identified late Sredni Stog (phase II) probably began while the crisis in the Danube valley was going on, but then most of the late Sredni Stog period occurred after the collapse of Old Europe. Imported Tripolye B2 bowls were found in graves in the phase IIa cemeteries at Dereivka and Igren, and a Tripolye C1 vessel was found at the phase IIb Moliukhor Bugor settlement. The Dereivka settlement (phase IIa) is dated between 4200 and 3700 BCE by ten radiocarbon dates (table 11.2). The latest Sredni Stog period (IIb) is dated as late as 3600–3300 BCE by four radiocarbon dates at Petrovskaya Balka on the Dnieper. Early Sredni Stog probably began around 4400 BCE; late Sredni Stog probably lasted until 3400 BCE in some places on the Dnieper.

The origin of the Sredni Stog culture is poorly understood, but people from the east, perhaps from the Volga steppes, apparently played a role. Round-bottomed Sredni Stog shell-tempered pots were quite different from DDII pots of the Early Eneolithic, which were sand-tempered and

flat-based (see figure 9.5). Almost all early Sredni Stog vessels had round or pointed bases and flaring, everted rims. Flat-based pots appeared only in the late period. Simple open bowls, probably food bowls, were the other common shape, usually undecorated. Sredni Stog pots were decorated just on the upper third of the vessel with rows of comb-stamped impressions, incised triangles, and cord impressions. Rows of U-shaped "caterpillar" impressions made with a U-shaped, cord-wrapped tool were typical (figure 11.7d). One pot shape, with a rounded body and a short vertical neck decorated with vertically combed lines (figure 11.7m) was copied directly from a common Tripolye B1 type. The round-based pots and shell temper seem to reflect influence from the east, from the Azov-Caspian or Volga regions, where there was a long tradition of shell-tempered, round-bottomed, everted-rim, impressed pottery beginning in the Neolithic and continuing through Eneolithic Khvalynsk.

Sredni Stog funeral rituals also were new. The new Sredni Stog burial posture (on the back with the knees raised) and standard orientation (head to the east-northeast) copied that of the Khvalynsk culture on the Volga (figure 11.8). The communal collective grave pits of DDII were abandoned. Individual single graves took their place. Cemeteries also became much smaller. The DDII cemetery near Dereivka had contained 173 individuals, most of them in large communal grave pits. The Sredni Stog cemetery near Dereivka contained only 12 graves, all single burials. Sredni Stog communities probably were smaller and more mobile. Graves had no surface marker, as at Dereivka, or exhibited a new surface treatment: some were surrounded by a small circle of stones and covered by a low stone or earth mound—a very modest kurgan—as at Kvityana or Maiorka. These probably were the earliest kurgans in the steppes. Stone circles and mounds were features that isolated and emphasized individuals. The shift from a communal funeral ritual to an individual ritual probably was a symptom of broader changes toward more openly self-aggrandizing social values, which were also reflected in a series of rich graves of the Suvorovo-Novodanilovka type discussed separately below.

Sredni Stog skull types also exhibited new traits. The DDII population had been a single homogeneous type, with a very broad, thick-boned face of the Proto-Europoid configuration. Sredni Stog populations included people with a more gracile bone structure and medium-width faces that showed the strongest statistical similarity to the Khvalynsk population. Immigrants from the Volga seem to have arrived in the Dnieper-Azov steppes at the beginning of the shift from DDII to Sredni Stog, instigating

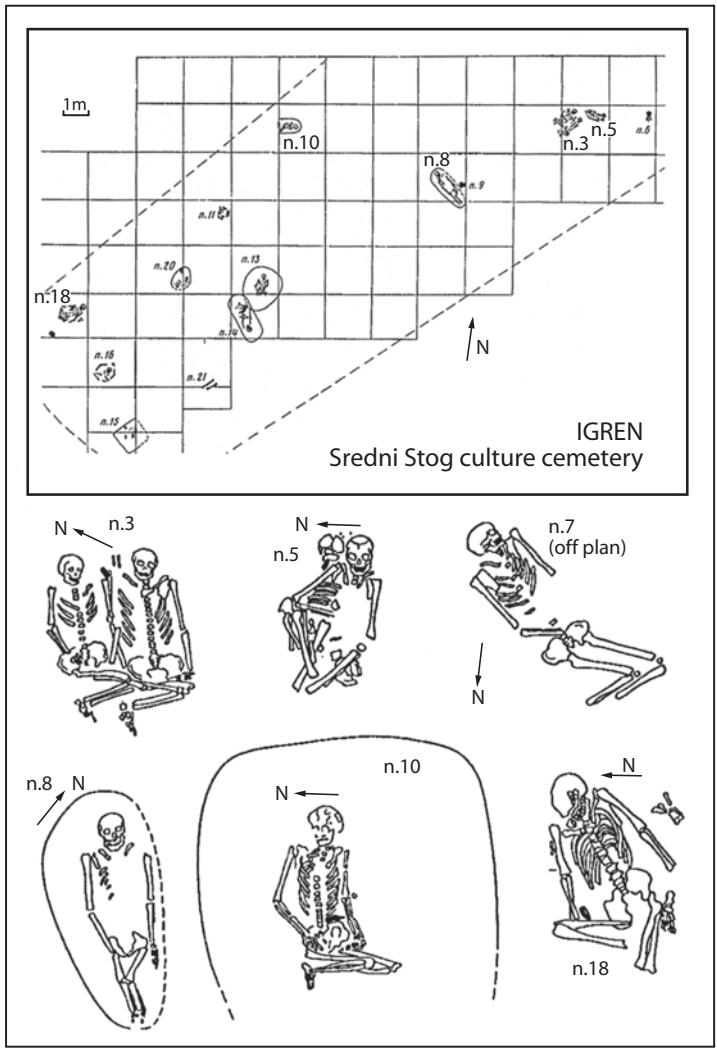


Figure 11.8 Sredni Stog graves, Igren cemetery, Dnieper Rapids. Graves were quite scattered. After Telegin et al. 2001.

changes in both funeral customs and pottery making. Perhaps they arrived on horseback.[35]

The places where people lived and put their cemeteries did not change markedly when Sredni Stog began. Sredni Stog settlements were stratified above DDII settlements at several sites near the Dnieper Rapids and on the Donets. Sredni Stog graves were located in or near DDII cemeter-

ies at Mariupol, Igren, and Dereivka. Stone tools also showed continuity; lamellar flint blades, triangular flint points, and large almond-shaped flint points were made in both periods. Long unifacial flint blades were occasionally found in hoards in DDII sites but were found in much larger hoards in Sredni Stog sites, where some single hoards (Goncharovka) contained more than a hundred flint blades up to 20 cm long. These blades were typical grave gifts in Sredni Stog graves. Similar long flint blades became popular trade items across eastern Europe, appearing also in Funnel Beaker (TRB) sites in Poland and in Bodrogkeresztur sites in Hungary.

The Sredni Stog Economy: Horses and Agro-Pastoralism

Sredni Stog settlements had, on average, more than twice as many horse bones as DDII settlements in the Dnieper valley, where most of the studied sites are located. This increase in the use of horses for food could have been connected with the colder climate of the period 4200–3800 BCE, since domesticated horses are easier to maintain than cattle and sheep in snowy conditions (chapter 10). The maintenance advantage would, of course, have been gained only with domesticated horses. Horses were by far the most important source of meat at the Sredni Stog settlement of Dereivka. The 2,408 horse bones counted by Bibikova represented at least fifty-one animals (MNI)—more than half the mammals butchered at the site—and 9,000 kg of meat.[36]

Domesticated cattle, sheep, and pigs accounted for between 12% and 84% of the bones (NISP) from the settlements of Sredni Stog II, Dereivka, Aleksandriya, and Moliukhor Bugor (table 11.1). If horses are counted as domesticated animals, the percentage of domesticated animals at these settlements rises to 30–93%. The percentage of horse bones ranged from 7–63% of all bones found (average 54% NISP but with much variation). The highest percentage (63% of the mammal bones NISP, 52% of the individual mammals MNI) was at Dereivka, which was also the site with the largest sample of animal bones.[37] Sheep or goats were by far the most common animals (61% of mammals) in the southernmost site, Sredni Stog, in the driest steppe environment; and hunted game was most important (70% of mammals) at Moliukhor Bugor, the northenmost site, in the most forested environment. In the north, where forest resources were richer, deer hunting remained important, and in the steppe river valleys, where gallery forests were confined to the valley bottoms, sheep herding necessarily supplied a larger proportion of the diet.

Table 11.1
Mammal Bones from Sredni Stog Culture

	% horse	*% cattle*	*% caprine*	*% pig*	*% dog*	*% wild*
	*(% of all bones, NISP/ % of individuals, MNI)**					
Sredni Stog II	7/12	21/12	61/47	2/6	3/11	7/22
Dereivka	63/52	16/8	2/7	3/4	1/2	17/45
Aleksandriya	29/24	37/20	7/12	—	—	27/44
Moliukhor BugorII	18/9	10/9	—	2/6	—	70/76

*NISP = number of identified species; MNI = minimum number of individuals.

Dereivka is the Sredni Stog settlement with the largest archaeological exposure, about 2000 m^2. It was located west of the Dnieper in the northern steppes. A scattered cemetery of twelve Sredni Stog graves was found half a kilometer upstream from the settlement.[38] Three shallow ovoid house pits, measuring about 12 m by 5 m, surrounded an open area used for ceramic manufacture, flint working, and other tasks (figure 11.9). A thick midden of river shellfish shells (*Unio* and *Paludinae*) enclosed one side. Only a part of the settlement was excavated, so we do not know how large it was. The mammal bones would have provided 1 kilo of meat per house, for the three houses, every day for more than eight years, indicating that Dereivka was occupied many times or for many years. On the other hand, the ephemeral nature of the Dereivka architectural remains and the small size of the nearby cemetery suggest that it was not a permanent settlement. Probably it was a favored living site that was revisited over many years by people who had large herds of horses (62% NISP) and cattle (16% NISP), hunted red deer (10% NISP), trapped or shot ducks (mallard and pintail), fished for wels catfish (*Silurus glanis*) and perch (*Lucioperca lucioperca*), and cultivated a little grain.

The ceramics from the Dereivka settlement have not been examined systematically for seed imprints, but Dereivka had flint blades with sickle gloss; three flat, ovoid grinding stones; and six polished schist mortars. Cultivated wheat, barley, and millet (*T. dicoccum, T. monococcum, H. vulgare, P. miliaceum*) have been identified in ceramic imprints at the phase IIb settlement of Moliukhor Bugor. Probably some grain cultivation occurred at Dereivka also, perhaps the first grain cultivation practiced east of the Dnieper.

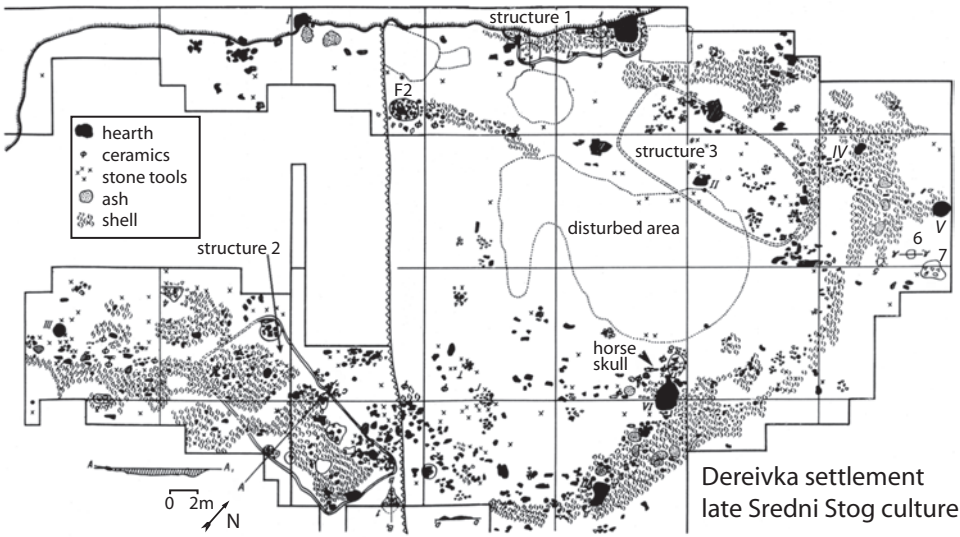


Figure 11.9 Dereivka settlement, Sredni Stog culture, 4200–3700 BCE. The location of the intrusive horse skull with bit wear is noted. The top edge is an eroded riverbank. After Telegin 1986.

Were the people of the Sredni Stog culture horse riders? Without bit wear or some other pathology associated with riding we cannot be certain. Objects from Dereivka tentatively identified as antler cheekpieces for bits (figure 11.7h) could have had other functions.[39] One way to approach this question is to ask if the steppe societies of the Late Eneolithic *behaved* like horseback riders. It looks to me like they did. Increased mobility (implied by smaller cemeteries), more long-distance trade, increased prestige and power for prominent individuals, status weapons appearing in graves, and heightened warfare against settled agricultural communities are all things we would expect to occur after horseback riding started, and we see them most clearly in cemeteries of the Suvorovo-Novodanilovka type.

Migrations into the Danube Valley: The Suvorovo-Novodanilovka Complex

About 4200 BCE herders who probably came from the Dnieper valley appeared on the northern edge of the Danube delta. The lake country north of the delta was then occupied by Old European farmers of the Bolgrad culture. They left quickly after the steppe people showed up. The immigrants

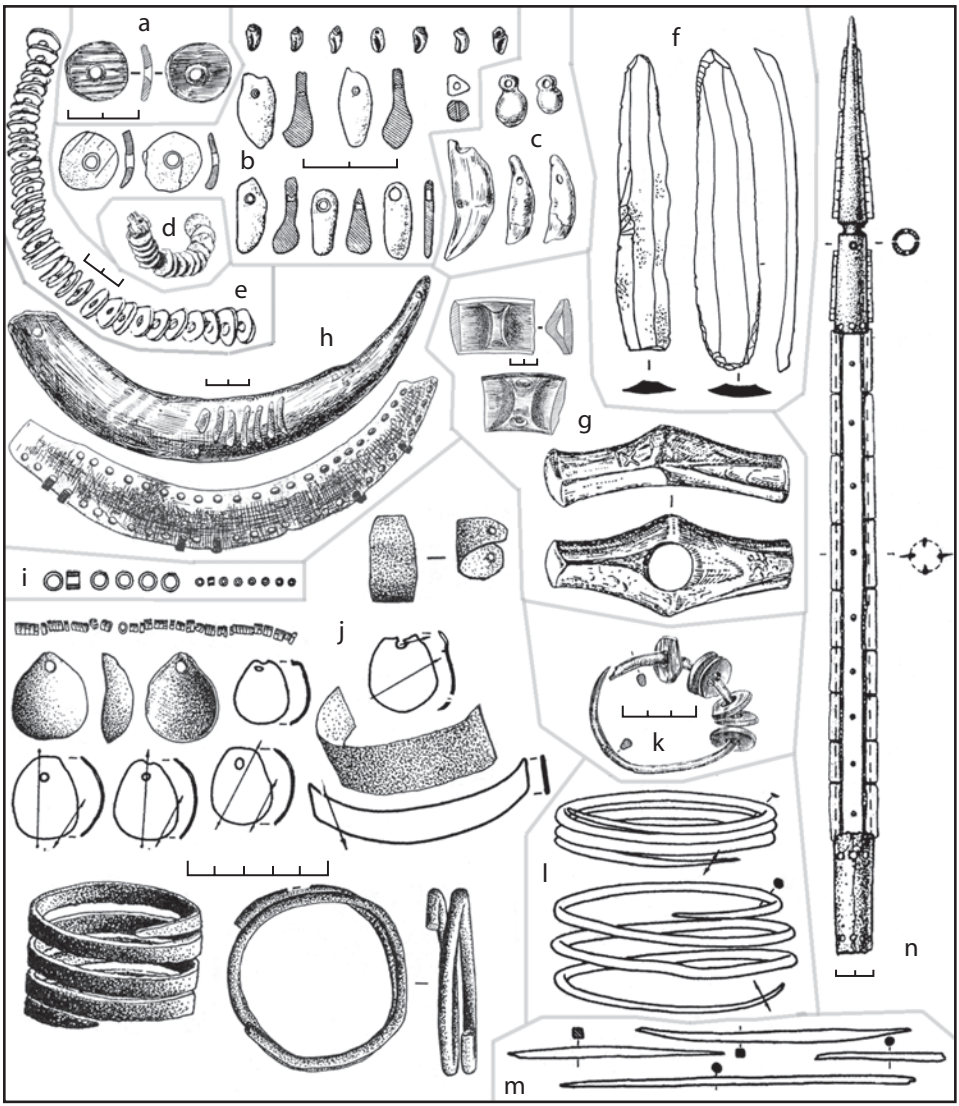


Figure 11.10 Suvorovo-Novodanilovka ornaments and weapons, about 4200–3900 BCE. (a, c) Vinogradni shell and canine tooth beads; (b) Suvorovo shell and deer tooth beads; (d) Decea Muresului shell beads; (e) Krivoy Rog shell beads; (f) Chapli lamellar flint blades; (g) Petro-Svistunovo, bone button and cast copper axe; (h) Petro-Svistunovo boar's tusk (*top*), Giurgiulesti copper-sheathed boar's tusk (*bottom*); (j) Chapli copper ornaments, including copper imitations of *Cardium* shells; (i) Utkonosovka bone beads; (k) Kainari copper "torque" with shell beads; (l) Petro-Svistunovo copper bracelet; (m) Suvorovo

built kurgan graves and carried maces with stone heads shaped like horse heads, objects that quickly appeared in a number of Old European towns. They acquired, either by trade or as loot, copper from the tell towns of the lower Danube valley, much of which they directed back into the steppes around the lower Dnieper. Their move into the lower Danube valley probably was the historical event that separated the Pre-Anatolian dialects, spoken by the migrants, from the archaic Proto-Indo-European language community back in the steppes.

The archaeology that documents this event emerged into the literature in small bits and pieces over the last fifty years, and it is still is not widely known. The steppe culture involved in the migration has been called variously the Skelya culture, the Suvorovo culture, the Utkonsonovka group, and the Novodanilovka culture. I will call it the Suvorovo-Novodanilovka complex (see figure 11.6). One cluster of graves, created by the migrants, is concentrated near the Danube delta. This was the Suvorovo group. Their relatives back home in the North Pontic steppes were the Novodanilovka group. Only graves are known for either group. About thirty-five to forty cemeteries are assigned to the complex, most containing fewer than ten graves and many, like Novodanilovka itself, represented by just a single rich burial. They first appeared during early Sredni Stog, around 4300–4200 BCE, and probably ceased before 3900 BCE.

In his earliest discussions Telegin interpreted the Novodanilovka graves (his term) as a wealthy elite element within the Sredni Stog culture. Later he changed his mind and made them a separate culture. I agree with his original position: the Suvorovo-Novodanilovka complex represents the chiefly elite within the Sredni Stog culture. Novodanilovka graves are distributed across the same territory as graves and settlements designated Sredni Stog, and many aspects of grave ritual and lithics are identical. The Suvorovo-Novodanilovka elite was involved in raiding and trading with the lower Danube valley during the Tripolye B1 period, just before the collapse of Old Europe.[40]

The people buried in these graves wore long belts and necklaces of shell disc beads, copper beads, and horse or deer tooth beads; copper rings; copper shell-shaped pendants; and copper spiral bracelets (figure 11.10). They bent thick pieces of copper wire into neckrings ("torques") decorated with shell beads, used copper awls, occasionally carried solid cast copper shaft-hole axes

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Figure 11.10 (*continued*) and Aleksandriya copper awls; (n) Giurgiuleşti composite spear-head, bone with flint microblade edges and tubular copper fittings. After Ryndina 1998, figure 76; and Telegin et al. 2001.

(cast in a two-part mold), and put copper and gold fittings around the dark wood of their spears and javelins. In 1998 N. Ryndina counted 362 objects of copper and 1 of gold from thirty Suvorovo-Novodanilovka graves. They also carried polished stone mace heads made in several shapes, including horse heads (see figure 11.5). They used large triangular flint points, probably for spears/javelins; small round-butted flint axes with the cutting edge ground sharp; and long lamellar flint blades, often made of gray flint quarried from outcrops on the Donets River.

Most Suvorovo-Novodanilovka graves contained no pottery, and so they are difficult to link to a ceramic type. Imported ceramics were found in several graves: a Tripolye B1 pot in the Kainari kurgan, between the Prut and Dniester; a late Gumelnița vessel in the Kopchak kurgan, not far from Kainari; another late Gumelnița vessel in grave 2 at Giurgiuleşti, on the lower Prut; and a long-traveled pot of North Caucasian Svobodnoe type in the Novodanilovka grave in the Dnieper-Azov steppes. These imported pots were all the same age, dated roughly 4400–4000 BCE, and so are useful chronologically, but they throw no light on the cultural affiliation of the individuals in the graves. Only a few potsherds actually seem to have been made by the people who built the graves. One of the principal graves (gr. 1) at Suvorovo had two small sherds of a pot made of gray, shell-tempered clay, decorated with a small-toothed stamp and incised diagonal lines (figure 11.11). An analogous pot was found in Utkonosovka, kurgan 3, grave 2, near Suvorovo. These sherds resembled Cucuteni C ceramics: round body, round base, everted rim, shell-tempered, with diagonal incised and comb-stamped surface decoration.[41]

The Suvorovo graves around the Danube delta always were marked by the erection of a mound or kurgan, probably to increase their visibility on a disputed frontier, but possibly also as a visual response to the tells of the lower Danube valley (figure 11.11). Suvorovo kurgans were among the first erected in the steppes. Back in the Dnieper-Azov steppes, most Novodanilovka graves also had a surface marker of some kind, but earthen kurgans were less common than small stone cairns piled above the grave (Chapli, Yama). Kurgans in the Danube steppes rarely were more than 10 m in diameter, and often were surrounded by a ring of small stones or a cromlech (retaining wall) of large stones. The grave pit was usually rectangular but sometimes oval. The Sredni Stog burial posture (on the back with knees raised) appeared in most (Csongrad, Chapli, Novodanilovka, Giurgiuleşti, Suvorovo grave 7) but not all graves. In some the body was laid out extended (Suvorovo grave 1) or contracted on the side (Utkonosovka). Animal sacrifices occurred in some graves (cattle at Giurgiuleşti,

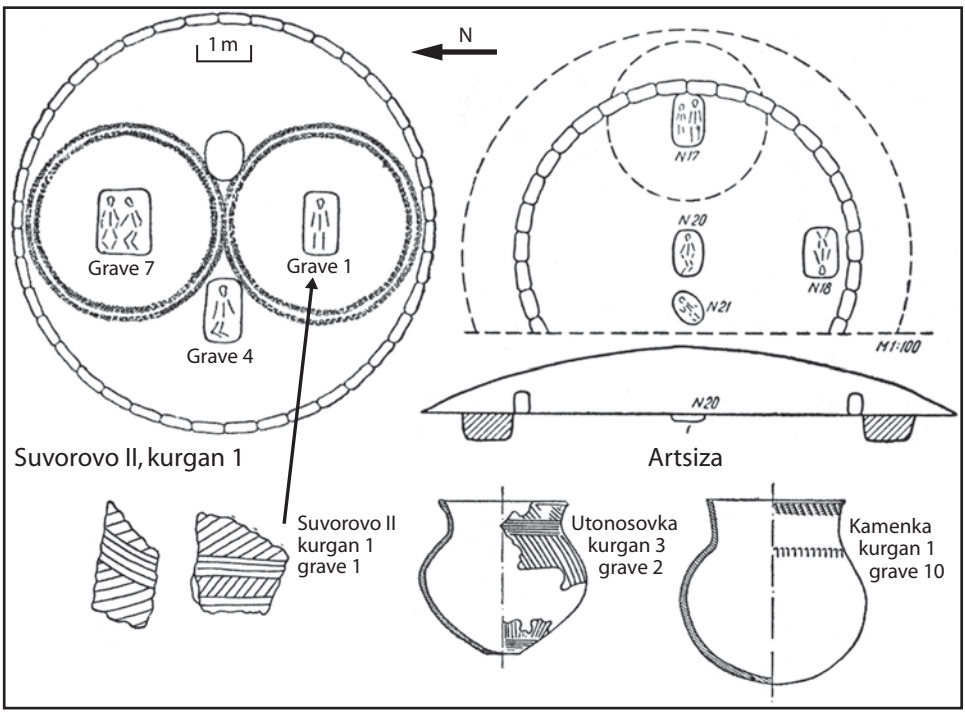

Figure 11.11 Suvorovo-type kurgan graves and pots. Most Suvorovo graves contained no pottery or contained pots made by other cultures, and so these few apparently self-made pots are important: *left*, Suvorovo cemetery II kurgan 1; *right*, Artsiza kurgan; *bottom*, sherds and pots from graves. After Alekseeva 1976, figure 1.

cattle and sheep at Chapli, and cattle at Krivoy Rog). The people buried in Novodanilovka graves in the Pontic steppes were wide-faced Proto-Europoid types, like the dominant element in Sredni Stog graves, whereas at least some of those buried in Suvorovo graves such as Giurgiuleşti had narrow faces and gracile skulls, suggesting intermarriage with local Old European people.[42]

The copper from Suvorovo-Novodanilovka graves helps to date them. Trace elements in the copper from Giurgiuleşti and Suvorovo in the lower Danube, and from Chapli and Novodanilovka in the Pontic steppes, are typical of the mines in the Bulgarian Balkans (Ai Bunar and/or Medni Rud) that abruptly ceased production when Old Europe collapsed. The eastern European copper trade shifted to chemically distinctive Hungarian and

Transylvanian ores during Tripolye B2, after 4000 BCE.[43] So Suvorovo-Novodanilovka is dated before 4000 BCE by its copper. On the other hand, Suvorovo kurgans replaced the settlements of the Bolgrad group north of the Danube delta, which were still occupied during early Tripolye B1, or after about 4400–4300 BCE. These two bookends (after the abandonment of Bolgrad, before the wider Old European collapse) restrict Suvorovo-Novodanilovka to a period between about 4300 and 4000 BCE.

Polished stone mace-heads shaped like horse heads were found in the main grave at Suvorovo and at Casimcea in the Danube delta region (figure 11.5). Similar mace-heads occurred at two Tripolye B1 settlements, at two late Karanovo VI settlements, and up the Danube valley at the settlement of Sălcuța IV—all of them in Old European towns contemporary with the Suvorovo intrusion. Similar horse-head mace-heads were found in the Volga-Ural steppes and in the Kalmyk steppes north of the Terek River at Terekli-Mekteb.[44] "Eared" stone mace heads appeared first in several cemeteries of the Khvalynsk culture (Khvalynsk, Krivoluchie) and then somewhat later at several eastern steppe sites contemporary with Suvorovo-Novodanilovka (Novorsk, Arkhara, and Sliachovsko) and in two Tripolye B1 towns. Cruciform mace heads appeared first in the grave of a DDII chief at Nikol'skoe on the Dnieper (see figure 9.6), and then reappeared centuries later with the Suvorovo migration into Transylvania at Decea Mureşului and Ocna Sibiului; one example also appeared at a Tripolye settlement on the Prut (Bârlăleşti).

Polished stone maces were typical steppe prestige objects going back to Khvalynsk, Varfolomievka, and DDII, beginning ca. 5000–4800 BCE. They were not typical prestige objects for earlier Tripolye or Gumelnița societies.[45] Maces shaped into horse-heads probably were made by people for whom the horse was a powerful symbol. Horse bones averaged only 3–6% of mammal bones in Tripolye B1 settlements and even less in Gumelnița, and so horses were not important in Old European diets. The horse-head maces signaled a new iconic status for the horse just when the Suvorovo people appeared. If horses were *not* being ridden into the Danube valley, it is difficult to explain their sudden symbolic importance in Old European settlements.[46]

The Causes and Targets of the Migrations

Winters began to get colder in the interior steppes after about 4200 BCE. The marshlands of the Danube delta are the largest in Europe west of the Volga. Marshes were the preferred winter refuge for nomadic pastoralists

in the Black Sea steppes during recorded history, because they offered good winter forage and cover for cattle. The Danube delta was richer in this resource than any other place on the Black Sea. The first Suvorovo herders who appeared on the northern edge of the Danube delta about 4200–4100 BCE might have brought some of their cattle south from the Dnieper steppes during a period of particularly cold winters.

Another attraction was the abundant copper that came from Old European towns. The archaeologist Susan Vehik argued that increased levels of conflict associated with climatic deterioration in the southwestern U.S. Plains around 1250 CE created an increased demand for gift-wealth (to attract and retain allies in tribal warfare) and therefore stimulated long-distance trade for prestige goods.[47] But the Suvorovo immigrants did not establish gift exchanges like those I have hypothesized for their relations with Cucuteni-Tripolye people. Instead, they seem to have chased the locals away.

The thirty settlements of the Bolgrad culture north of the Danube delta were abandoned and burned soon after the Suvorovo immigrants arrived. These small agricultural villages were composed of eight to ten semi-subterranean houses with fired clay hearths, benches, and large storage pots set in pits in the floor. Graphite-painted fine pottery and numerous female figurines show a mixture of Gumelnița (Aldeni II type) and Tripolye A traits.[48] They were occupied mainly during Tripolye A, then were abandoned and burned during early Tripolye B1, probably around 4200–4100 BCE. Most of the abandonments apparently were planned, since almost everything was picked up. But at Vulcaneşti II, radiocarbon dated 4200–4100 BCE (5300 ± 60 BP), abandonment was quick, with many whole pots left to burn. This might date the arrival of the Suvorovo migrants.[49]

A second and seemingly smaller migration stream branched off from the first and ran westward to the Transylvanian plateau and then down the copper-rich Mureş River valley into eastern Hungary. These migrants left cemeteries at Decea Mureşului in the Mureş valley and at Csongrad in the plains of eastern Hungary. At Decea Mureşului, near important copper deposits, there were fifteen to twenty graves, posed on the back with the knees probably originally raised but fallen to the left or right, colored with red ochre, with Unio shell beads, long flint blades (up to 22 cm long), copper awls, a copper rod "torque," and two four-knobbed mace heads made of black polished stone (see figure 11.10). The migrants arrived at the end of the Tiszapolgar and the beginning of the Bodrogkeresztur periods, about 4000–3900 BCE, but seemed not to disrupt the local cultural traditions. Hoards of large golden and copper ornaments of

Old European types were hidden at Hencida and Mojgrad in eastern Hungary, probably indicating unsettled conditions, but otherwise there was a lot of cultural continuity between Tiszapolgar and Bodrogkeresztur.[50] This was no massive folk migration but a series of long-distance movements by small groups, exactly the kind of movement expected among horseback riders.

The Suvorovo Graves

The Suvorovo kurgan (Suvorovo II k.1) was 13 m in diameter and covered four Eneolithic graves (see figure 11.11).[51] Stones a meter tall formed a cromlech around the base of the mound. Within the cromlech two smaller stone circles were built on a north-south axis, each surrounding a central grave (gr. 7 and 1). Grave 7 was the double grave of an adult male and female buried supine with raised legs, heads to the east. The floor of the grave was covered with red ochre, white chalk, and black fragments of charcoal. A magnificent polished stone mace shaped like the head of a horse lay on the pelvis of the male (see figure 11.5). Belts of shell disk beads draped the female's hips. The grave also contained two copper awls made of Balkan copper, three lamellar flint blades, and a flint end scraper. Grave 1, in the other stone circle, contained an adult male in an extended position and two sherds of a shell-tempered pot.

The Suvorovo cemetery at Giurgiulești, near the mouth of the Prut, contained five graves grouped around a hearth full of burned animal bones.[52] Above grave 4, that of the adult male, was another deposit of cattle skulls and bones. Graves 4 and 5 were those of an adult male and female; graves 1, 2, and 3, contained three children, apparently a family group. The graves were covered by a mound, but the excavators were uncertain if the mound was built for these graves or was made later. The pose in four of the five graves was on the back with raised knees (grave 2 contained disarticulated bones), and the grave floors were painted with red ochre. Two children (gr. 1 and 3) and the adult woman (gr. 5) together wore nineteen copper spiral bracelets and five boars-tusk pendants, one of which was covered in sheet copper (see figure 11.10:h). Grave 2 contained a late Gumelnița pot. The children and adult female also had great numbers (exact count not published) of copper beads, shell disc beads, beads of red deer teeth, two beads made of Aegean coral, flint blades, and a flint core. Six of eight metal objects analyzed by N. Ryndina were made from typical Varna-Gumelnița Balkan ores. One bracelet and one ring were made of an intentional arsenic-copper alloy (respectively, 1.9% and 1.2% arsenic) that had never occurred

in Varna or Gumelnița metals. The adult male buried in grave 4 had two gold rings and two composite projectile points, each more than 40 cm long, made with microlithic flint blades slotted along the edges of a bone point decorated with copper and gold tubular fittings (see figure 11.10:n). They probably were for two javelins, perhaps the preferred weapons of Suvorovo riders.

Kurgans also appeared south of the Danube River in the Dobruja at Casimcea, where an adult male was buried in an ochre-stained grave on his back with raised knees, accompanied by a polished stone horse-head mace (see figure 11.5), five triangular flint axes, fifteen triangular flint points, and three lamellar flint blades. Another Suvorovo grave was placed in an older Varna-culture cemetery at Devnya, near Varna. This single grave contained an adult male in an ochre-stained grave on his back with raised knees, accompanied by thirty-two golden rings, a copper axe, a copper decorative pin, a copper square-sectioned chisel 27 cm long, a bent copper wire 1.64 m long, thirty-six flint lamellar blades, and five triangular flint points.

A separate (about 80–90 km distant) but contemporary cluster of kurgans was located between the Prut and Dniester valleys near the Tripolye frontier (Kainari, Artsiza, and Kopchak). At Kainari, only a dozen kilometers from the Tripolye B1 settlement of Novi Ruşeşti, a kurgan was erected over a grave with a copper "torque" strung with *Unio* shell disc beads (see figure 11.10:k); long lamellar flint blades, red ochre, and a Tripolye B1 pot.

The Novodanilovka Group

Back in the steppes north of the Black Sea the elite were buried with copper spiral bracelets, rings, and bangles; copper beads of several types; copper shell-shaped pendants; and copper awls, all containing Balkan trace elements and made technologically just like the objects at Giurgiuleşti and Suvorovo.[53] Copper shell-shaped pendants, a very distinctive steppe ornament type, occurred in both Novodanilovka (Chapli) and Suvorovo (Giurgiuleşti) graves (see figure 11.10:j): The grave floors were strewn with red ochre or with a chunk of red ochre. The body was positioned on the back with raised knees and the head oriented toward the east or northeast. Surface markers were a small kurgan or stone cairn, often surrounded by a stone circle or cromlech. The following were among the richest:

Novodanilovka, a single stone-lined cist grave containing two adults at Novodanilovka in the dry hills between the Dnieper and the Sea of Azov with two copper spiral bracelets, more than a hundred

Unio shell beads, fifteen lamellar flint blades, and a pot imported from the North Caucasian Svobodnoe culture;

Krivoy Rog, in the Ingulets valley, west of the Dnieper, a kurgan covering two graves (1 and 2) with flint axes, flint lamellar blades, a copper spiral bracelet, two copper spiral rings, hundreds of copper beads, a gold tubular shaft fitting, *Unio* disc beads, and other objects;

Chapli (see figure 11.10) at the north end of the Dnieper Rapids, with five rich graves. The richest of these (1a and 3a) were children's graves with two copper spiral bracelets, thirteen shell-shaped copper pendants, more than three hundred copper beads, a copper foil headband, more than two hundred *Unio* shell beads, one lamellar flint blade, and one boars-tusk pendant like those at Giurgiuleşti; and

Petro-Svistunovo (see figure 11.10), a cemetery of twelve cromlechs at the south end of the Dnieper Rapids largely destroyed by erosion, with Grave 1 alone yielding two copper spiral bracelets, more than a hundred copper beads, three flint axes, and a flint lamellar blade, and the other graves yielding three more spiral bracelets, a massive cast copper axe comparable to some from Varna, and boars-tusk pendants like those at Chapli and Giurgiuleşti.

About eighty Sredni Stog cemeteries looked very similar in ritual and occurred in the same region but did not contain the prestige goods that appeared in the Novodanilovka graves, which probably were the graves of clan chiefs. The chiefs redistributed some of their imported Balkan wealth. For example, in the small Sredni Stog cemetery at Dereivka, grave 1 contained three small copper beads and grave 4 contained an imported Tripolye B1 bowl. The other graves contained no grave gifts at all.

Warfare, Climate Change, and Language Shift in the Lower Danube Valley

The colder climate of 4200–3800 BCE probably weakened the agricultural economies of Old Europe at the same time that steppe herders pushed into the marshes and plains around the mouth of the Danube. Climate change probably played a significant role in the ensuing crisis, because virtually all the cultures that occupied tell settlements in southeastern Europe abandoned them about 4000 BCE—in the lower Danube valley, the Balkans,

on the Aegean coast (the end of Sitagroi III), and even in Greece (the end of Late Neolithic II in Thessaly).[54]

But even if climatic cooling and crop failures must have been significant causes of these widespread tell abandonments, they were not the only cause. The massacres at Yunatsite and Hotnitsa testify to conflict. Polished stone mace heads were status weapons that glorified the cracking of heads. Many Suvorovo-Novodanilovka graves contained sets of lanceolate flint projectile points, flint axes, and, in the Giurgiuleşti chief's grave, two fearsome 40-cm javelin heads decorated with copper and gold. Persistent raiding and warfare would have made fixed settlements a strategic liability. Raids by Slavic tribes caused the abandonment of all the Greek-Byzantine cities in this same region over the course of less than a hundred years in the sixth century CE. Crop failures exacerbated by warfare would have encouraged a shift to a more mobile economy.[55] As that shift happened, the pastoral tribes of the steppes were transformed from scruffy immigrants or despised raiders to chiefs and patrons who were rich in the animal resources that the new economy required, and who knew how to manage larger herds in new ways, most important among these that herders were mounted on horseback.

The Suvorovo chiefs displayed many of the behaviors that fostered language shift among the Acholi in East Africa: they imported a new funeral cult with an associated new mortuary ideology; they sponsored funeral feasts, always events to build alliances and recruit allies; they displayed icons of power (stone maces); they seem to have glorified war (they were buried with status weapons); and it was probably their economic example that prompted the shift to pastoral economies in the Danube valley. Proto-Indo-European religion and social structure were both based on oath-bound promises that obligated patrons (or the gods) to provide protection and gifts of cattle and horses to their clients (or humans). The oath (**h₁óitos*) that secured these obligations could, in principle, be extended to clients from the Old European tells.

An archaic Proto-Indo-European language, probably ancestral to Anatolian, spread into southeastern Europe during this era of warfare, dislocation, migration, and economic change, around 4200–3900 BCE. In a similar situation, in a context of chronic warfare on the Pathan/Baluch border in western Pakistan, Frederik Barth described a steady stream of agricultural Pathans who had lost their land and then crossed over and joined the pastoral Baluch. Landless Pathan could not regain their status in other Pathan villages, where land was necessary for respectable status. Tells and their fixed field systems might have played a similar limiting role

in Old European status hierarchies. Becoming the client of a pastoral patron who offered protection and rewards in exchange for service was an alternative that held the promise of vertical social mobility for the children. The speakers of Proto-Indo-European talked about gifts and honors awarded for great deeds and loot/booty acquired unexpectedly, suggesting that achievement-based honor and wealth could be acquired.[56] Under conditions of chronic warfare, displaced tell dwellers may well have adopted an Indo-European patron and language as they adopted a pastoral economy.

After the Collapse

In the centuries after 4000 BCE, sites of the Cernavoda I type spread through the lower Danube valley (figure 11.12). Cernavoda I was a settlement on a promontory overlooking the lower Danube. Cernavoda I material culture probably represented the assimilation of migrants from the steppes with local people who had abandoned their tells. Cernavoda I ceramics appeared at Pevec and Hotnitsa-Vodopada in north-central Bulgaria, and at Renie II in the lower Prut region. These settlements were small, with five to ten pit-houses, and were fortified. Cernavoda I pottery also occurred in settlements of other cultural types, as at Telish IV in northwestern Bulgaria. Cernavoda I pottery included simplified versions of late Gumelnița shapes, usually dark-surfaced and undecorated but made in shell-tempered fabrics. The U-shaped "caterpillar" cord impressions (figure 11.12i), dark surfaces, and shell tempering were typical of Sredni Stog or Cucuteni C.[57]

Prominent among these new dark-surfaced, shell-tempered pottery assemblages were loop-handled drinking cups and tankards called "Scheibenhenkel," a new style of liquid containers and servers that appeared throughout the middle and lower Danube valley. Andrew Sherratt interpreted the Scheibenhenkel horizon as the first clear indicator of a new custom of drinking intoxicating beverages.[58] The replacement of highly decorated storage and serving vessels by plain drinking cups could indicate that new elite drinking rituals had replaced or nudged aside older household feasts.

The Cernavoda I economy was based primarily on the herding of sheep and goats. Many horse bones were found at Cernavoda I, and, for the first time, domesticated horses became a regular element in the animal herds of the middle and lower Danube valley.[59] Greenfield's zoological studies in the middle Danube showed that, also for the first time, animals were

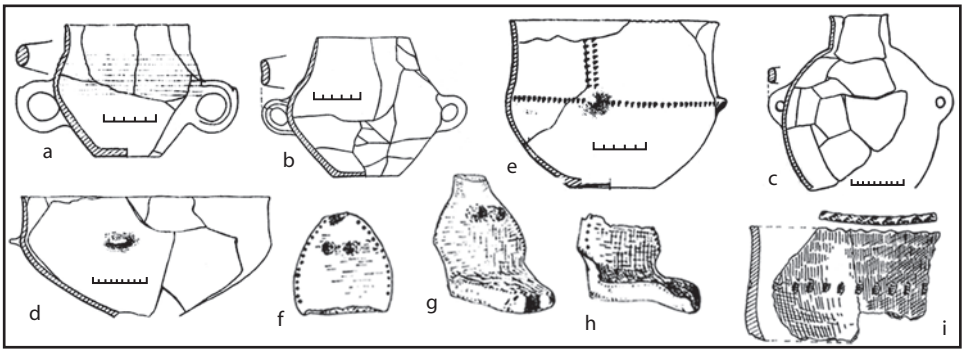

Figure 11.12 Black- or grey-surfaced ceramics from the Cernavoda I settlement, lower Danube valley, about 3900–3600 BCE, including two-handled tankards. After Morintz and Roman 1968.

butchered at different ages in upland and lowland sites. This suggested that herders moved animals seasonally between upland and lowland pastures, a form of herding called "transhumant pastoralism." The new pastoral economy might have been practiced in a new, more mobile way, perhaps aided by horseback riding.[60]

Kurgan graves were created only during the initial Suvorovo penetration. Afterward the immigrants' descendants stopped making kurgans. The flat-grave cemetery of Ostrovul Corbului probably dates to this settling-in period, with sixty-three graves, some displaying a posture on the back with raised knees, others contracted on the side, on the ruins of an abandoned tell. Cernavoda I flat graves also appeared at the Brailița cemetery, where the males had wide Proto-Europoid skulls and faces like the steppe Novodanilovka population, and the females had gracile Mediterranean faces, like the Old European Gumelnitsa population.

By about 3600 BCE the Cernavoda I culture developed into Cernavoda III. Cernavoda III was, in turn, connected with one of the largest and most influential cultural horizons of eastern Europe, the Baden-Boleraz horizon, centered in the middle Danube (Hungary) and dated about 3600–3200 BCE. Drinking cups of this culture featured very high strap handles and were made in burnished grey-black fabrics with channeled flutes decorating their shoulders. Somewhat similar drinking sets were made from eastern Austria and Moravia to the mouth of the Danube and south to the Aegean coast (Dikili Tash IIIA–Sitagroi IV). Horse bones appeared almost everywhere, with larger sheep interpreted as wool sheep. At lowland sites in the middle Danube region, 60–91% of the sheep-goat

lived to adult ages, suggesting management for secondary products, probably wool. Similarly 40–50% of the caprids were adults in two late TRB sites of this same era (Schalkenburg and Bronocice) in upland southern Poland. After 3600 BCE horses and wool sheep were increasingly common in eastern Europe.

Pre-Anatolian languages probably were introduced to the lower Danube valley and perhaps to the Balkans about 4200–4000 BCE by the Suvorovo migrants. We do not know when their descendants moved into Anatolia. Perhaps pre-Anatolian speakers founded Troy I in northwestern Anatolia around 3000 BCE. In prayers recited by the later Hittites, the sun god of heaven, *Sius* (cognate with Greek *Zeus*), was described as rising from the sea. This has always been taken as a fossilized ritual phrase retained from some earlier pre-Hittite homeland located west of a large sea.[61] The graves of Suvorovo were located west of the Black Sea. Did the Suvorovo people ride their horses down to the shore and pray to the rising sun?