At the beginning of time there were two brothers, twins, one named Man ("Manu, in Proto-Indo-European) and the other Twin ("Yemo). They traveled through the cosmos accompanied by a great cow. Eventually Man and Twin decided to create the world we now inhabit. To do this, Man had to sacrifice Twin (or, in some versions, the cow). From the parts of this sacrificed body, with the help of the sky gods (Sky Father, Storm God of War, Divine Twins), Man made the wind, the sun, the moon, the sea, earth, fire, and finally all the various kinds of people. Man became the first priest, the creator of the ritual of sacrifice that was the root of world order.

After the world was made, the sky-gods gave cattle to "Third man" ("Trito). But the cattle were treacherously stolen by a three-headed, six-eyed serpent ("Nq'bi, the Proto-Indo-European root for negation). Third man entreated the storm god to help get the cattle back. Together they went to the cave (or mountain) of the monster, killed it (or the storm god killed it alone), and freed the cattle. *Trito became the first warrior. He recovered the wealth of the people, and his gift of cattle to the priests insured that the sky gods received their share in the rising smoke of sacrificial fires. This insured that the cycle of giving between gods and humans continued.¹

These two myths were fundamental to the Proto-Indo-European system of religious belief. *Manu and *Yemo are reflected in creation myths preserved in many Indo-European branches, where *Yemo appears as Indic Yama, Avestan Yima, Norse Ymir, and perhaps Roman Remus (from *remus, the archaic Italic form of *yemo, meaning "twin"); and Man appears as Old Indic *Mama or Germanic Mannus, paired with his twin to create the world. The deeds of *Trito have been analyzed at length by Bruce Lincoln, who found the same basic story of the hero who recovered primordial lost cattle from a three-headed monster in Indic, Iranian, Hittite, Norse, Roman and Greek myths. The myth of Man and Twin established the importance of the sacrifice and the priest who regulated it. The myth of the "Third one" defined the role of the warrior, who obtained animals for the people and the gods. Many other themes are also reflected in these two stories: the Indo-European fascination with binary doublings combined with triplets, two's and three's, which reappeared again and again, even in the metric structure of Indo-European poetry; the theme of pairs who represented magical and legal power (Twin and Man, Varuna-Mitra, Odin-Tyr); and the partition of society and the cosmos between three great functions or roles: the priest (in both his magical and legal aspects), the warrior (the Third Man), and the herder/cultivator (the cow or cattle).²

For the speakers of Proto-Indo-European, domesticated cattle were basic symbols of the generosity of the gods and the productivity of the earth. Humans were created from a piece of the primordial cow. The ritual duties that defined "proper" behavior revolved around the value, both moral and economic, of cattle. Proto-Indo-European mythology was, at its core, the worldview of a male-centered, cattle-raising people—not necessarily cattle nomads but certainly people who held sons and cattle in the highest esteem. Why were cattle (and sons) so important?

**Domesticated Animals and Pontic-Caspian Ecology**

Until about 5200–5000 BCE most of the people who lived in the steppes north of the Black and Caspian Seas possessed no domesticated animals at all. They depended instead on gathering nuts and wild plants, fishing, and hunting wild animals; in other words, they were foragers. But the environment they were able to exploit profitably was only a small fraction of the total steppe environment. The archaeological remains of their camps are found almost entirely in river valleys. Riverine gallery forests provided shelter, shade, firewood, building materials, deer, aurochs (European wild cattle), and wild boar. Fish supplied an important part of the diet. Wider river valleys like the Dnieper or Don had substantial gallery forests, kilometers wide; smaller rivers had only scattered groves. The wide grassy plateaus between the river valleys, the great majority of the steppe environment, were forbidding places occupied only by wild equids and saiga antelope. The foragers were able to hunt the wild equids, including horses. The wild horses of the steppes were stout-legged, barrel-chested, stiff-maned animals that probably looked very much like modern Przewalski horses, the only truly wild horses left in the world.³ The most efficient hunting method would have been to ambush horse bands in a ravine, and the easiest opportunity would have been when they came into the river...
valleys to drink or to find shelter. In the steppe regions, where wild horses were most numerous, wild equid hunting was common. Often it supplied most of the foragers’ terrestrial meat diet.

The Pontic-Caspian steppes are at the western end of a continuous steppe belt which rolls east all the way to Mongolia. It is possible, if one is so inclined, to walk, 5,000 km from the Danube delta across the center of the Eurasian continent to Mongolia without ever leaving the steppes. But a person on foot in the Eurasian steppes feels very small. Every footfall raises the scent of crushed sage, and a puff of tiny white grasshoppers skips ahead of your boot. Although the flowers that grow among the escuce and feathergrass (Festuea and Stipa) make a wonderful boiled tea, the grass is inedible, and outside the forested river valleys there is not much else to eat. The summer temperature frequently rises to 110–120°F (43–49°C), although it is a dry heat and usually there is a breeze, so it is surprisingly tolerable. Winter, however, kills quickly. The howling, snowy winds drive temperatures below −35°F (−37°C). The bitter cold of steppe winters (think North Dakota) is the most serious limiting factor for humans and animals, more restricting even than water, since there are shallow lakes in most parts of the Eurasian steppes.

The dominant mammal of the interior steppes at the time our account begins was the wild horse, Equus caballus. In the moister, lushier western steppes of Ukraine, north of the Black Sea (the North Pontic steppes), there was another, smaller equid that ranged into the lower Danube valley and down to central Anatolia, Equus hydruntinus, the last one hunted to extinction between 4000 and 3000 BCE. In the drier, more arid steppes of the Caspian Depression was a third ass-like, long-eared equid, the onager, Equus hemionus, now endangered in the wild. Onagers then lived in Mesopotamia, Anatolia, Iran, and in the Caspian Depression. Pontic-Caspian foragers hunted all three.

The Caspian Depression was itself a sign of another important aspect of the Pontic-Caspian environment: its instability. The Black and Caspian Seas were not placid and unchanging. Between about 14,000 and 12,000 BCE the warming climate that ended the last Ice Age melted the northern glaciers and the permafrost, releasing their combined meltwater in a torrential surge that flowed south into the Caspian basin. The late Ice-Age Caspian ballooned into a vast interior sea designated the Khvalynian Sea. For two thousand years the northern shoreline stood near Saratov on the middle Volga and Orenburg on the Ural River, restricting east-west movement south of the Ural Mountains. The Khvalynian Sea separated the already noticeably different late-glacial forager cultures that prospered east and west of the Ural Mountains. Around 11,000—9,000 BCE the water finally rose high enough to overflow catastrophically through a southwestern outlet, the Manych Depression north of the North Caucasus Mountains, and a violent flood poured into the Black Sea, which was then well below the world ocean level. The Black Sea basin filled up until it overflowed, also through a southwestern outlet, the narrow Bosporus valley, and finally poured into the Aegean. By 8000 BCE the Black Sea, now about the size of California and seven thousand feet deep, was in equilibrium with the Aegean and the world ocean. The Caspian had fallen back into its own basin and remained isolated thereafter. The Black Sea became the Pontus Euxinos of the Greeks, from which we derive the term Pontic for the Black Sea region in general. The North Caspian Depression, once the bottom of the northern end of the Khvalynian Sea, was left an enormous flat plain of salty clays, incongruous beds of sea shells, and sands, dotted with brackish lakes and covered with dry steppes that graded into red sand deserts (the Ryn Peski) just north of the Caspian Sea. Herds of saiga antelopes, onagers, and horses were hunted across these saline plains by small bands of post-glacial Mesolithic and Neolithic hunters. But, by the time the sea receded, they had become very different culturally and probably linguistically on the eastern and western sides of the Ural-Caspian frontier. When domesticated cattle were accepted by societies west of the Urals, they were rejected by those east of the Urals, who remained foragers for thousands of years.

Domesticated cattle and sheep started a revolutionary change in how humans exploited the Pontic-Caspian steppe environment. Because cattle and sheep were cultured, like humans, they were part of everyday work and worry in a way never approached by wild animals. Humans identified with their cattle and sheep, wrote poetry about them, and used them as a currency in marriage gifts, debt payments, and the calculation of social status. And they were grass processors. They converted plains of grass, useless and even hostile to humans, into wool, felt, clothing, tents, milk, yogurt, cheese, meat, marrow, and bone—the foundation of both life and wealth. Cattle and sheep herds can grow rapidly with a little luck. Vulnerable to bad weather and theft, they can also decline rapidly. Herding was a volatile, boom-bust economy, and required a flexible, opportunistic social organization.

Because cattle and sheep are easily stolen, unlike grain crops, cattle-raising people tend to have problems with thieves, leading to conflict and warfare. Under these circumstances brothers tend to stay close together. In Africa, among Bantu-speaking tribes, the spread of cattle raising seems to have
led to the loss of matrilineal social organizations and the spread of male-centered patrilineal kinship systems. Stockbreeding also created entirely new kinds of political power and prestige by making possible elaborate public sacrifices and gifts of animals. The connection between animals, brothers, and power was the foundation on which new forms of male-centered ritual and politics developed among Indo-European-speaking societies. That is why the cow (and brothers) occupied such a central place in Indo-European myths relating to how the world began.

So where did the cattle come from? When did the people living in the Pontic-Caspian steppes begin to keep and care for herds of dappled cows?

**The First Farmer-Forager Frontier in the Pontic-Caspian Region**

The first cattle herders in the Pontic-Caspian region arrived about 5800–5700 BCE from the Danube valley, and they probably spoke languages unrelated to Proto-Indo-European. They were the leading edge of a broad movement of farming people that began around 6200 BCE when pioneers from Greece and Macedonia plunged north into the temperate forests of the Balkans and the Carpathian Basin (figure 8.1). Domesticated sheep and cattle had been imported from Anatolia to Greece by their ancestors centuries before, and now were herded northward into forested southeastern Europe. Genetic research has shown that the cattle did interbreed with the native European aurochs, the huge wild cattle of Europe, but only the male calves (traced on the Y chromosome) of aurochs were kept, perhaps because they could improve the herd’s size or resistance to disease without affecting milk yields. The cows, probably already kept for their milk, all were descended from mothers that had come from Anatolia (traced through mtDNA). Wild aurochs cows probably were relatively poor milk producers and might have been temperamentally difficult to milk, so Neolithic European farmers made sure that all their cows were born of long-domesticated mothers, but they did not mind a little crossbreeding with native wild bulls to obtain larger domestic bulls.

Comparative studies of chain migration among recent and historical pioneer farmers suggest that, in the beginning, the farming-and-herding groups that first moved into temperate southeastern Europe probably spoke similar dialects and recognized one another as cultural cousins. The thin native population of foragers was certainly seen as culturally and linguistically Other, regardless of how the two cultures interacted. After an initial rapid burst of exploration (sites at Anzabegovo, Karanovo
an ecologically rich and productive piedmont region east of the Carpathians. They herded their cattle and sheep down the eastern slopes into the upper valleys of the Seret and Prut rivers about 5800–5700 BCE. (Criş radiocarbon dates are unaffected by reservoir effects because they were not measured on human bone; see Table 8.1.) The other migration stream in the lower Danube valley moved into the same eastern Carpathian piedmont from the south. These two groups created a northern and a southern variant of the East Carpathian Criş culture, which survived from about 5800 to about 5300 BCE. Criş farms in the East Carpathian piedmont

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### Table 8.1
Radiocarbon Dates for the Late Mesolithic and Early Neolithic of the Pontic-Caspian Region.

<table>
<thead>
<tr>
<th>Lab Number</th>
<th>BP Date</th>
<th>Sample</th>
<th>Calibrated Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Criş Culture Farming Settlements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trestiana (Romania), phase III of the Criş culture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GrN-17003</td>
<td>6665±45</td>
<td>Charcoal</td>
<td>5640–5530 BCE</td>
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<tr>
<td>Carcea–Viaduct (Romania), phase IV of the Criş culture</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bln–1981</td>
<td>6540±60</td>
<td></td>
<td>5610–5390 BCE</td>
</tr>
<tr>
<td>Bln–1982</td>
<td>6530±60</td>
<td></td>
<td>5610–5380 BCE</td>
</tr>
<tr>
<td>Bln–1983</td>
<td>6395±60</td>
<td></td>
<td>5470–5310 BCE</td>
</tr>
<tr>
<td>2. Linear Pottery (LBK) Farming Settlements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tîrpești, Siret River, (Romania)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bln–800</td>
<td>6170±100</td>
<td></td>
<td>5260–4960 BCE</td>
</tr>
<tr>
<td>Bln–801</td>
<td>6245±100</td>
<td></td>
<td>5320–5060 BCE</td>
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<td>Soroki II, level 1 early Bug–Dniester, Dniester valley</td>
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<td>Bln–586</td>
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<td>Soroki II, level 2 pre-ceramic Bug–Dniester, Dniester valley</td>
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<tr>
<td>Bln–587</td>
<td>7420±80</td>
<td></td>
<td>6400–6210 BCE</td>
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<tr>
<td>Savran settlement, late Bug–Dniester, Dniester valley</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ki–6654</td>
<td>6985±60</td>
<td></td>
<td>5980–5790 BCE</td>
</tr>
<tr>
<td>Bazkov Ostrov settlement, with early ceramics, South Bug valley</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ki–6651</td>
<td>7235±60</td>
<td></td>
<td>6210–6010 BCE</td>
</tr>
<tr>
<td>Ki–6696</td>
<td>7215±55</td>
<td></td>
<td>6200–6000 BCE</td>
</tr>
<tr>
<td>Ki–6652</td>
<td>7160±55</td>
<td></td>
<td>6160–5920 BCE</td>
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<td>Sokolets II settlement, with early ceramics, South Bug valley</td>
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<td></td>
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<tr>
<td>Ki–6697</td>
<td>7470±60</td>
<td></td>
<td>6400–6250 BCE</td>
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<tr>
<td>Ki–6698</td>
<td>7405±55</td>
<td></td>
<td>6390–6210 BCE</td>
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<td>4. Early Neolithic Elshanka-type Settlements, Middle Volga Region</td>
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<td>Chekalino 4, Sok River, Samara oblast</td>
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<tr>
<td>Le-4781</td>
<td>8990±100</td>
<td>shell</td>
<td>8290–7960 BCE</td>
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Table 8.1 (continued)

<table>
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<th>Lab Number</th>
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<th>Sample</th>
<th>Calibrated Date</th>
</tr>
</thead>
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<td>GrN-7085</td>
<td>8680±120</td>
<td>shell</td>
<td>7940-7580 BCE</td>
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<tr>
<td>Le-4783</td>
<td>8050±120</td>
<td>shell</td>
<td>7300-6700 BCE</td>
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<tr>
<td>Le-4782</td>
<td>8000±120</td>
<td>shell</td>
<td>7080-6690 BCE</td>
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<tr>
<td>GrN-7086</td>
<td>7950±130</td>
<td>shell</td>
<td>7050-6680 BCE</td>
</tr>
<tr>
<td>Le-4784</td>
<td>7940±140</td>
<td>shell</td>
<td>7050-6680 BCE</td>
</tr>
<tr>
<td>Chekalino 6, Sok River, Samara oblast</td>
<td>7940±140</td>
<td>shell</td>
<td>7050-6650 BCE</td>
</tr>
<tr>
<td>Le-4883</td>
<td>8020±70</td>
<td>bone</td>
<td>7080-6770 BCE</td>
</tr>
<tr>
<td>Ivanovka, upper Samara River, Orenburg oblast</td>
<td>8020±90</td>
<td>bone</td>
<td>7080-6770 BCE</td>
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<tr>
<td>Le-2343</td>
<td>5400±200</td>
<td>charcoal</td>
<td>6570-6080 BCE</td>
</tr>
<tr>
<td>Matveev Kurgan II, same material culture, Azov steppes</td>
<td>5400±200</td>
<td>charcoal</td>
<td>6160-5920 BCE</td>
</tr>
<tr>
<td>GIN-6546</td>
<td>6980±200</td>
<td>charcoal</td>
<td>6030-5660 BCE</td>
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<td>Kair-Shak III, North Caspian steppes</td>
<td>6950±190</td>
<td>charcoal</td>
<td>6000-5660 BCE</td>
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<tr>
<td>GIN 5905</td>
<td>6720±80</td>
<td>?</td>
<td>5720-5550 BCE</td>
</tr>
<tr>
<td>Rakushechni Yar, lower Don shell midden, layers 14–15</td>
<td>6925±110</td>
<td>?</td>
<td>5970-5710 BCE</td>
</tr>
<tr>
<td>Ki-6479</td>
<td>6930±100</td>
<td>?</td>
<td>5970-5610 BCE</td>
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<td>Ki-6480</td>
<td>7040±100</td>
<td>?</td>
<td>6010-5800 BCE</td>
</tr>
<tr>
<td>Surski Island, Dnieper Rapids forager settlement</td>
<td>6980±65</td>
<td>?</td>
<td>5980-5780 BCE</td>
</tr>
<tr>
<td>Ki-6988</td>
<td>7125±60</td>
<td>?</td>
<td>6160-5910 BCE</td>
</tr>
<tr>
<td>Ki-6690</td>
<td>7195±55</td>
<td>?</td>
<td>6160-5990 BCE</td>
</tr>
<tr>
<td>Ki-6691</td>
<td>7245±60</td>
<td>?</td>
<td>6210-6020 BCE</td>
</tr>
</tbody>
</table>

5. Steppe Early Neolithic Settlements

Matveev Kurgan I, very primitive ceramics, Azov steppes
GrN-7199   7505±210  charcoal  6570-6080 BCE
Le-1217    7180±70   charcoal  6160-5920 BCE

Matveev Kurgan II, same material culture, Azov steppes
Le-882     5400±200  charcoal  4450-3980 BCE

Varfolomievka, Layer 3 (bottom ceramic layer), North Caspian steppes
GIN-6546   6980±200  charcoal  6030-5660 BCE

Kair–Shak III, North Caspian steppes
GIN-5905   6950±190  ?        6000-5660 BCE
GIN 5927   6720±80   ?        5720-5550 BCE

Rakushechni Yar, lower Don shell midden, layers 14–15
Ki-6479    6925±110  ?        5970-5710 BCE
Ki-6478    6930±100  ?        5970-5610 BCE
Ki-6480    7040±100  ?        6010-5800 BCE

Surski Island, Dnieper Rapids forager settlement
Ki-6688    6980±65   ?        5980-5780 BCE
Ki-6988    7125±60   ?        6160-5910 BCE
Ki-6690    7195±55   ?        6160-5990 BCE
Ki-6691    7245±60   ?        6210-6020 BCE

First Farmers and Herders

were the source of the first domesticated cattle in the North Pontic region. The Criș pioneers moved eastward through the forest-steppe zone in the piedmont northwest of the Black Sea, where rainfall agriculture was possible, avoiding the lowland steppes on the coast and the lower courses of the rivers that ran through them into the sea.

Archaeologists have identified at least thirty Criș settlement sites in the East Carpathian piedmont, a region of forests interspersed with natural meadows cut by deep, twisting river valleys (figure 8.3). Most Criș farming hamlets were built on the second terraces of rivers, overlooking the floodplain; some were located on steep-sided promontories above the floodplain (Suceava); and a few farms were located on the high forested ridges between the rivers (Sakarovka I). Houses were one room, built with timber posts and beams, plaster-on-wattle walls, and probably reed-thatched roofs. Larger homes, sometimes oval in outline, were built over dug-out floors and contained a kitchen with a domed clay oven; lighter, smaller structures were built on the surface with an open fire in the center. Most villages consisted of just a few families living in perhaps three to ten smoky thatched pit-dwellings, surrounded by agricultural fields, gardens, plum orchards, and pastures for the animals. No Criș cemeteries are known. We do not know what they did with their dead. We do know, however, that they still prized and wore white shell bracelets made from imported Spondylii, an Aegean species that was first made into bracelets by the original pioneers in Early Neolithic Greece."10

Cris families cultivated barley, millet, peas, and four varieties of wheat (emmer, einkorn, spelt, and bread wheats). Wheat and peas were not native to southeastern Europe; they were exotics, domesticated in the Near East, carried into Greece by sea-borne immigrant farmers, and propagated through Europe from Greece. Residues inside pots suggest that grains were often eaten in the form of a soup thickened with flour. Charred fragments of Neolithic bread from Germany and Switzerland suggest that wheat flour was also made into a batter that was fried or baked, or the grains were moistened and pressed into small whole-grain baked loaves. Criș harvesting sickles used a curved red deer antler inset with flint blades 5–10 cm long, angled so that their corners formed teeth. Their working corners show “sickle gloss” from cutting grain. The same type of sickle and flint blade is found in all the Early Neolithic farming settlements of the Danube-Balkans-Carpathians. Most of the meat in the East Carpathian Criș diet was from cattle and pigs, with red deer a close third, followed by sheep—a distribution of species reflecting their largely forested environment. Their small-breed cows and pigs were slightly different from the
First Farmers and Herders

local wild aurochs or wild boar but not markedly so. The sheep, however, were exotic newcomers, an invasive species like wheat and peas, brought into the steep Carpathian valleys by strange people whose voices made a new kind of sound.

Criş ceramic vessels were hand-made by the coiling method, and included plain pots for cooking and storage, and a variety of fine wares with polished reddish-brown surfaces—tureens, bowls, and cups on pedestals (figure 8.2). Decorative designs were incised with a stick on the clay surface before firing or were impressed with a fingernail. Very rarely they were painted in broad brown stripes. The shapes and designs made by Criş settlers in the East Carpathians were characteristic of periods III and IV of the Criş culture; older sites of stages I and II are found only in eastern Hungary, the Danube valley, and Transylvania.

Criş farmers never penetrated east of the Prut-Dniester watershed. In the Dniester valley they came face-to-face with a dense population of local foragers, known today as the Bug-Dniester culture, named after the two river valleys (Dniester and South Bug) where most of their sites are found. The Bug-Dniester culture was the filter through which farming and stock-breeding economies were introduced to Pontic-Caspian societies farther east (figure 8.3).

The Criş people were different from their Bug-Dniester neighbors in many ways: Criş flint tool kits featured large blades and few scrapers, whereas the foragers used microlithic blades and many scrapers; most Criş villages were on the better-drained soils of the second terrace, convenient for farming, and most foragers lived on the floodplain, convenient for fishing; whereas Criş woodworkers used polished stone axes, the foragers used chipped flint axes; Criş pottery was distinct both in the way it was made and its style of decoration; and Criş farmers raised and ate various exotic foods, including mutton, which has a distinctive taste. Four forged cylindrical copper beads were found at the Criş site of Selishte, dated 5800–5600 BCE (6830±100 BP). They show an early awareness of the metallic minerals in the mountains of Transylvania (copper, silver, gold) and the Balkans (copper), something the foragers of southeastern Europe had never noticed.

Some archaeologists have speculated that the East Carpathian Criş culture could have been an acculturated population of local foragers who had adopted a farming economy, rather than immigrant pioneers. This is unlikely given the numerous similarities between the material culture and economy of Criş sites in the Danube valley and the East Carpathians, and the sharp differences between the East Carpathian Criş culture and the
local foragers. But it really is of no consequence—no one seriously believes that the East Carpathian Criș people were genetically "pure" anyway. The important point is that the people who lived in Criș villages in the East Carpathians were culturally Criș in almost all the material signs of their identity, and given how they got there, almost certainly in nonmaterial signs like language as well. The Criș culture came, without any doubt, from the Danube valley.

The Language of the Criș Culture

If the Starčevo–Criș–Karanovo migrants were at all similar to pioneer farmers in North America, Brazil, southeast Asia, and other parts of the world, it is very likely that they retained the language spoken in their parent villages in northern Greece. Forager languages were more apt to decline in the face of agricultural immigration. Farmers had a higher birth rate; their settlements were larger, and were occupied permanently. They produced food surpluses that were easier to store over the winter. Owning and feeding "cultured" animals has always been seen as an utterly different ethos from hunting wild ones, as Ian Hodder emphasized. The material and ritual culture and economy of the immigrant farmers were imposed on the landscapes of Greece and southeastern Europe and persisted there, whereas the external signs of forager identity disappeared. The language of the foragers might have had substrate effects on that of the farmers, but it is difficult to imagine a plausible scenario under which it could have competed with the farmers' language.14

What languages were spoken by Starčevo, Criș, and Karanovo I pioneers? The parent language for all of them was spoken in the Thessalian plain of Greece, where the first Neolithic settlements were founded about 6700–6500 BCE probably by seafarers who island-hopped from western Anatolia in open boats. Katherine Perdè has convincingly demonstrated that the material culture and economy of the first farmers in Greece was transplanted from the Near East or Anatolia. An origin somewhere in western Anatolia is suggested by similarities in pottery, flint tools, ornaments, female figurines, pintadera stamps, lip labrets, and other traits. The migrants leapfrogged to the Thessalian plain, the richest agricultural land in Greece, almost certainly on the basis of information from scouts (probably Aegean fishermen) who told their relatives in Anatolia about the destination. The population of farmers in Thessaly grew rapidly. At least 120 Early Neolithic settlements stood on the Thessalian plain by 6200–6000 BCE, when pioneers began to move north into the temperate forests of southeastern Europe. The Neolithic villages of Thessaly provided the original breeds of domesticated sheep, cattle, wheat, and barley, as well as red-on-white pottery, female-centered domestic rituals, bracelets and beads made of Aegean Spondylus shell, flint tool types, and other traditions that were carried into the Balkans. The language of Neolithic Thessaly probably was a dialect of a language spoken in western Anatolia about 6500 BCE. Simplification and leveling should have occurred among the first colonist dialects in Thessaly, so the 120 villages occupied five hundred years later spoke a language that had passed through a bottleneck and probably was just beginning to separate again into strongly differentiated dialects.15

The tongue spoken by the first Criș farmers in the East Carpathian foothills about 5800–5600 BCE was removed from the parent tongue spoken by the first settlers in Thessaly by less than a thousand years—the same interval that separates Modern American English from Anglo-Saxon. That was long enough for several new Old European Neolithic languages to have emerged from the Thessalian parent, but they would have belonged to a single language family. That language family was not Indo-European. It came from the wrong place (Anatolia and Greece) at the wrong time (before 6500 BCE). Curiously a fragment of that lost language might be preserved in the Proto-Indo-European term for bull, *tawro-s, which many linguists think was borrowed from an Afro-Asiatic term. The Afro-Asiatic super-family generated both Egyptian and Semitic in the Near East, and one of its early languages might have been spoken in Anatolia by the earliest farmers. Perhaps the Criș people spoke a language of Afro-Asiatic type, and as they drove their cattle into the East Carpathian valleys they called them something like *taww-.16

Farmer Meets Forager: The Bug-Dniester Culture

The first indigenous North Pontic people to adopt Criș cattle breeding and perhaps also the Criș word for bull were the people of the Bug-Dniester culture, introduced a few pages ago. They occupied the frontier where the expansion of the Criș farmers came to a halt, apparently blocked by the Bug-Dniester culture itself. The initial contact between farmers and foragers must have been a fascinating event. The Criș immigrants brought herds of cultured animals that wandered up the hillsides among the deer. They introduced sheep, plum orchards, and hot wheat-cakes. Their families lived in the same place all year, year after year; they cut down the trees to make houses and orchards and gardens; and they spoke a foreign language.
The foragers' language might have been part of the broad language family from which Proto-Indo-European later emerged, although, since the ultimate fate of the Bug-Dniester culture was extinction and assimilation, their dialect probably died with their culture. 

The Bug-Dniester culture grew out of Mesolithic forager cultures that dwelt in the region since the end of the last Ice Age. Eleven Late Mesolithic technological-typological groups have been defined by differences in flint tool kits just in Ukraine; other Late Mesolithic flint tool-based groups have been identified in the Russian steppes east of the Don River, in the North Caspian Depression, and in coastal Romania. Mesolithic camps have been found in the lower Danube valley and the coastal steppes northwest of the Black Sea, not far from the Criș settlement area. In the Dobruja, the peninsula of rocky hills skirted by the Danube delta at its mouth, eighteen to twenty Mesolithic surface sites were found just in one small area northwest of Tulcea on the southern terraces of the Danube River. Late Mesolithic groups also occupied the northern side of the estuary. Mirnoe is the best-studied site here. The Late Mesolithic hunters at Mirnoe hunted wild aurochs (83% of bones), wild horse (14%), and the extinct Equus hydruntinus (1.1%). Farther up the coast, away from the Danube delta, the steppes were drier, and at Late Mesolithic Girzhevo, on the lower Dniester, 62% of the bones were of wild horses, with fewer aurochs and Equus hydruntinus. There is no archaeological trace of contact between these coastal steppe foragers and the Criș farmers who were advancing into the upland forest-steppe. 

The story is different in the forest-steppe. At least twenty-five Bug-Dniester sites have been excavated in the forest-steppe zone in the middle and upper parts of the South Bug and Dniester River valleys, in the transitional ecological zone where rainfall was sufficient for the growth of forests but there were still open meadows and some pockets of steppe. This environment was favored by the Criș immigrants. In it the native foragers had for generations hunted red deer, roe deer, and wild boar, and caught riverine fish (especially the huge river catfish, Siluris glanis). Early Bug-Dniester flint tools showed similarities both to coastal steppe groups (Grebenikov and Kukrekskaya types of tool kits) and northern forest groups (Donets types).

Pottery and the Beginning of the Neolithic

The Bug-Dniester culture was a Neolithic culture; Bug-Dniester people knew how to make fired clay pottery vessels. The first pottery in the Pontic-Caspian region, and the beginning of the Early Neolithic, is associated with the Elshanka culture in the Samara region in the middle Volga River valley. It is dated by radiocarbon (on shell) about 7000–6500 BCE, which makes it, surprisingly, the oldest pottery in all of Europe. The pots were made of a clay-rich mud collected from the bottoms of stagnant ponds. They were formed by the coiling method and were baked in open fires at 450–600°C (figure 8.4). From this northeasterly source ceramic technology diffused south and westward. It was adopted widely by most foraging and fishing bands across the Pontic-Caspian region about 6200–6000 BCE, before any clear contact with southern farmers. Early Neolithic pottery tempered with vegetal material and crushed shells appeared at SurSki Island in the Dnieper Rapids in levels dated about 6200–5800 BCE. In the lower Don River valley a crude vegetal-tempered pottery decorated with incised geometric motifs appeared at Rakushechni Yar and other sites such as Samsonovka in levels dated 6000–5600 BCE. 

Similar designs and vessel shapes, but made with a shell-tempered clay fabric, appeared on the lower Volga, at Kair Shak III dated about 5700–6500 BCE (6720±80 BP). Older pottery was made in the North Caspian at Kugat, where a different kind of pottery was stratified beneath Kair Shak-type pottery, possibly the same age as the pottery at SurSki Island. Primitive, experimental ceramic fragments appeared about 6200 BCE also at Marveev Kurgan in the steppe north of the Sea of Azov. The oldest pottery south of the middle Volga appeared at the Dnieper Rapids (SurSki), on the lower Don (Rakushechni Yar), and on the lower Volga (Kair Shak III, Kugat) at about the same time, around 6200–6000 BCE (figure 8.4).

The earliest pottery in the South Bug valley was excavated by Danilenko at Bas'kov Ostrov and Sokolets II, dated by five radiocarbon dates about 6200–6000 BCE, about the same age as SurSki on the Dnieper. In the Dniester River valley, just west of the South Bug, at Soroki II, archaeologists excavated two stratified Late Mesolithic occupations (levels 2 and 3) dated by radiocarbon to about 6500–6200 BCE. They contained no pottery. Pottery making was adopted by the early Bug-Dniester culture about 6200 BCE, probably the same general time it appeared in the Dnieper valley and the Caspian Depression.

Farmer-Forager Exchanges in the Dniester Valley

After about 5800–5700 BCE, when Criș farmers moved into the East Carpathian foothills from the west, the Dniester valley became a frontier between two very different ways of life. At Soroki II the uppermost
occupation level (1) was left by Bug-Dniester people who clearly had made contact with the incoming Criš farmers, dated by good radiocarbon dates at about 5700-5500 BCE. Some of the ceramic vessels in level 1 were obvious copies of Criš vessels—round-bodied, narrow-mouthed jars on a ring base and bowls with carinated sides. But they were made locally, using clay tempered with sand and plant fibers. The rest of the pottery in level 1 looked more like indigenous bag-shaped South Bug ceramics (figure 8.5). Continuity in the flint tools between level 1 and the older levels 2 and 3 suggests that it was the same basic culture, and all three levels are traditionally assigned to the Bug-Dniester culture.

The Bug-Dniester people who lived at Soroki II in the level 1 camp copied more than just Criš pottery. Botanists found seed impressions in the clay vessels of three kinds of wheat. Level 1 also yielded a few bones from small domesticated cattle and pigs. This was the beginning of a significant shift—the adoption of an imported food-production economy by the native foragers. It is perhaps noteworthy that the exotic ceramic types copied by Soroki II potters were small Criš pedestaled jars and bowls, probably used to serve drink and food rather than to store or cook it. Perhaps Criš foods were served to visiting foragers in jars and bowls like these inside Criš houses, inspiring some Bug-Dniester families to re-create both the new foods and the vessels in which they were served. But the original decorative motifs on Bug-Dniester pottery, the shapes of the largest pots, the vegetal and occasional shell temper in the clay, and the low-temperature firing indicate that early Bug-Dniester potters knew their own techniques, clays, and tempering formulas. The largest pots they made (for cooking? storage?) were shaped like narrow-mouthed baskets, unlike any shape made by Criš potters.

Three kinds of wheat impressions appeared in the clay of early Bug-Dniester pots at two sites in the Dnieper valley: Soroki II/level 1 and Soroki III. Both sites had impressions of emmer, einkorn, and spelt. Was the grain actually grown locally? Both sites had a variety of wheats, with impressions of chaff and spikelets, parts removed during threshing. The presence of threshing debris suggests that at least some grain was grown and threshed locally. The foragers of the Dnieper valley seem to have cultivated at least small plots of grain very soon after their initial contact with Criš farmers. What about the cattle?

In three Early Bug-Dniester Neolithic sites in the Dnieper valley occupied about 5800-5500 BCE, domesticated cattle and swine averaged 24% of the 329 bones recovered from garbage pits, if each bone is counted for the NISP; or 20% of the animals, if the bones are converted into a
minimum number of individuals, or MNI. Red deer and roe deer remained more important than domesticated animals in the meat diet. Middle Bug-Dniester sites (Samchin phase), dated about 5600–5400 BCE, contained more domesticated pigs and cattle: at Soroki I/level 1a, a Middle-phase site, cattle and swine made up 49% of the 213 bones recovered (32% MNI). By the Late (Savran) phase, about 5400–5000 BCE, domesticated pigs and cattle totaled 55% of the animal bones (36% MNI) in two sites. 23 In contrast, the Bug-Dniester settlement sites in the South Bug valley, farther away from the source of the domesticated animals, never showed more than 10% domesticated animal bones. But even in the South Bug valley a few domesticated cattle and pigs appeared at Bas'kov Ostrov and Mit'kov Ostrov very soon after the Criş farmers entered the Eastern Carpathian foothills. The “availability” phase, in Zvelebil’s three-phase description of farmer-forager interactions, was very brief. 24 Why? What was so attractive about Criş foods and even the pottery vessels in which they were served?

There are three possibilities: intermarriage, population pressure, and status competition. Intermarriage is an often-repeated but not very convincing explanation for incremental changes in material culture. In this case, imported Criş-culture wives would be the vehicle through which Criş-culture pottery styles and foods should have appeared in Bug-Dniester settlements. But Warren DeBoer has shown that wives who marry into a foreign tribe among tribal societies often feel so exposed and insecure that they become hyper-correct imitators of their new cultural mores rather than a source of innovation. And the technology of Bug-Dniester ceramics, the method of manufacture, was local. Technological styles are often better indicators of ethnic origin than decorative styles. So, although there may have been intermarriage, it is not a persuasive explanation for the innovations in pottery or economy on the Dniester frontier. 25

Was it population pressure? Were the pre-Neolithic Bug-Dniester foragers running out of good hunting and fishing grounds, and looking for ways to increase the amount of food that could be harvested within their hunting territories? Probably not. The forest-steppe was an ideal hunting territory, with maximal amounts of the forest-edge environment preferred by deer. The abundant tree pollen in Criş-period soils indicates that the Criş pioneers had little impact on the forest around them, so their arrival did not greatly reduce deer populations. A major component of the Bug-Dniester diet was riverine fish, some of which supplied as much meat as a small adult pig, and there is no evidence that fish stocks were falling. Cattle and pigs might have been acquired by cautious foragers as a hedge against a bad year, but the immediate motive probably was not hunger.

The third possibility is that the foragers were impressed by the abundance of food available for feasting and seasonal festivals among Criş farmers. Perhaps some Bug-Dniester locals were invited to such festivals by the Criş farmers in an attempt to encourage peaceful coexistence. Socially ambitious foragers might have begun to cultivate gardens and raise cattle to sponsor feasts among their own people, even making serving bowls and cups like those used in Criş villages—a political explanation,
and one that also explains why Criș pots were copied. Unfortunately neither culture had cemeteries, and so we cannot examine graves to look for evidence of a growing social hierarchy. Status objects seem to have been few, with the possible exception of food itself. Probably both economic insurance and social status played roles in the slow but steady adoption of food production in the Dniester valley.

The importance of herding and cultivation in the Bug-Dniester diet grew very gradually. In Criș settlements domesticated animals contributed 70–80% of the bones in kitchen middens. In Bug-Dniester settlements domesticated animals exceeded hunted wild game only in the latest phase, and only in the Dniester valley, immediately adjacent to Criș settlements. Bug-Dniester people never ate mutton—not one single sheep bone has been found in a Bug-Dniester site. Early Bug-Dniester bakers did not use Criș-style saddle querns to grind their grain; instead, they initially used small, rhomboidal stone mortars of a local style, switching to Criș-style saddle querns only in the middle Bug-Dniester phase. They preferred their own chipped flint axe types to the smaller polished stone Criș axes. Their pottery was quite distinctive. And their historical trajectory led directly back to the local Mesolithic populations, unlike the Criș culture.

Even after 5500–5200 BCE, when a new farming culture, the Linear Pottery culture, moved into the East Carpathian piedmont from southern Poland and replaced the Criș culture, the Dniester valley frontier survived. No Linear Pottery sites are known east of the Dniester valley. 26 The Dniester was a cultural frontier, not a natural one. It persisted despite the passage of people and trade goods across it, and through significant cultural changes on each side. Persistent cultural frontiers, particularly at the edges of ancient migration streams, usually are ethnic and linguistic frontiers. The Bug-Dniester people may well have spoken a language belonging to the language family that produced Pre-Proto-Indo-European, while their Criș neighbors spoke a language distantly related to those of Neolithic Greece and Anatolia.

BEYOND THE FRONTIER: PONTIC-CASPIAN FORAGERS

The North Pontic societies east of the Dniester frontier continued to live as they always had, by hunting, gathering wild plants, and fishing until about 5200 BCE. Domesticated cattle and hot wheatcakes might have seemed irresistibly attractive to the foragers who were in direct contact with the farmers who presented and legitimized them, but, away from that active frontier, North Pontic forager-fishers were in no rush to become animal tenders. Domesticated animals can only be raised by people who are committed morally and ethically to watching their families go hungry rather than letting them eat the breeding stock. Seed grain and breeding stock must be saved, not eaten, or there will be no crop and no calves the next year. Foragers generally value immediate sharing and generosity over miserly saving for the future, so the shift to keeping breeding stock was a moral as well as an economic one. It probably offended the old morals. It is not surprising that it was resisted, or that when it did begin it was surrounded by new rituals and a new kind of leadership, or that the new leaders threw big feasts and shared food when the deferred investment paid off. These new rituals and leadership roles were the foundation of Indo-European religion and society. 27

The most heavily populated part of the Pontic-Caspian steppes was the place where the shift to cattle keeping happened next after the Bug-Dniester region. This was around the Dnieper Rapids. The Dnieper Rapids started at modern Dnepropetrovsk, where the Dnieper River began to cut down to the coastal lowlands through a shelf of granite bedrock, dropping 50 m in elevation over 66 km. The Rapids contained ten major cascades, and in early historical accounts each one had its own name, guardian spirits, and folklore. Fish migrating upstream, like the sudak (Lucioperca), could be taken in vast quantities at the Rapids, and the swift water between the cascades was home to wels (Silurus glanis), a type of catfish that grows to 16 feet. The bones of both types of fish are found in Mesolithic and Neolithic camps near the Rapids. At the southern end of the Rapids there was a ford near Kichkas where the wide Dnieper could be crossed relatively easily on foot, a strategic place in a world without bridges.

The Rapids and many of the archaeological sites associated with them were inundated by dams and reservoirs built between 1927 and 1958. Among the many sites discovered in connection with reservoir construction was Igren 8 on the east bank of the Dnieper. Here the deepest level F contained Late Mesolithic Kukrekskaya flint tools; levels E and E1 above contained Surskii Early Neolithic pottery (radiocarbon dated 6200–5800 BCE); and stratum D1 above that contained Middle Neolithic Dnieper-Donets I pottery tempered with plant fibers and decorated with incised chevrons and small comb stamps (probably about 5800–5200 BCE but not directly dated by radiocarbon). The animal bones in the Dnieper-Donets I garbage were from red deer and fish. The shift to cattle keeping had not yet begun. Dnieper-Donets I was contemporary with the Bug-Dniester culture. 28
Campsites of foragers who made Dnieper-Donets I (DDI) pottery have been excavated on the southern borders of the Pripet Marshes in the northwest and in the middle Donets valley in the east, or over much of the forest-steppe and northern steppe zone of Ukraine. At Girli (figure 8.6) on the upper Teterev River near Zhitomir, west of Kiev, a DDI settlement contained eight hearths arranged in a northeast-southwest line of four pairs, each pair about 2–3 m apart, perhaps representing a shelter some 14 m long for four families. Around the hearths were thirty-six hundred flint tools including microlithic blades, and sherds of point-based pots decorated with comb-stamped and pricked impressions. The food economy depended on hunting and gathering. Girli was located on a trail between the Dnieper and South Bug rivers, and the pottery was similar in shape and decoration to some Bug-Dniester ceramics of the middle or Samchin phase. But DDI sites did not contain domesticated animals or plants, or even polished stone axes like those of the Criş and late Bug-Dniester cultures; DDI axes were still chipped from large pieces of flint.

Across most of Ukraine and European Russia post-glacial foragers did not create cemeteries. The Bug-Dniester culture was typical: they buried their dead by ones and twos, often using an old campsite, perhaps the one where the death occurred. Graveside rituals took place but not in places set aside just for them. Cemeteries were different: they were formal plots of ground reserved just for funerals, funeral monuments, and public remembrance of the dead. Cemeteries were visible statements connecting a piece of land with the ancestors. During reservoir construction around the Dnieper Rapids archaeologists found eight Mesolithic and forager Neolithic cemeteries, among them Vasilievka I (twenty-four graves), Vasilievka II (thirty-two graves), Vasilievka III (forty-five graves), Vasilievka V (thirty-seven graves), Marievka (fifteen graves), and Volos'ke (nineteen graves). No comparable cluster of forager cemeteries exists anywhere else in the Pontic-Caspian region.

Several different forager populations seem to have competed with one another around the Dnieper Rapids at the end of the Ice Age. Already by about 8000 BCE, as soon as the glaciers melted, at least three skull-and-face types, a narrow-faced gracile type (Volos'ke), a broad-faced medium-weight type (Vasilievka I), and a broad-faced robust type (Vasilievka III) occupied different cemeteries and were buried in different poses (contracted and extended). Two of the nineteen individuals buried at Volos'ke and two (perhaps three) of the forty-five at Vasilievka III were wounded by weapons tipped with Kukrejskaya-type microlithic blades. The Vasilievka III skeletal type and burial posture ultimately spread over the whole Rapids during the Late Mesolithic, 7000–6200 BCE. Two cemeteries that were assumed to be Early Neolithic (Vasilievka II and Marievka) because of the style of the grave now are dated by radiocarbon to 6500–6000 BCE, or the Late Mesolithic.

Only one of the Dnieper Rapids cemeteries, Vasilievka V, is dated to the Middle Neolithic DDI period by radiocarbon dates (5700–5300 BCE). At Vasilievka V thirty-seven skeletons were buried in supine positions (on their backs) with their hands near the pelvis, with their heads to the northeast. Some were buried singly in individual pits, and others apparently were layered in reused graves. Sixteen graves in the center of the cemetery seem to represent two or three superimposed layers of burials, the first hint of a collective burial ritual that would be elaborated greatly in the following centuries. Eighteen graves out of thirty-seven were sprinkled with red ochre,
again a hint of things to come. The grave gifts at Vasilievka V, however, were very simple, limited to microlithic flint blades and flint scrapers. These were the last people on the Dnieper Rapids who clung to the old morality and rejected cattle keeping.30

Foragers on the Lower Volga and Lower Don

Different styles of pottery were made among the Early Neolithic foragers who lived even farther east, a longer distance away from the forager/farmer frontier on the Dniester. Forager camps on the lower Volga River dated between 6000 and 5300 BCE contained flat-based open bowls made of clay tempered with crushed shell and vegetal material, and were decorated by stabbing rows of impressions with a triangular-ended stick or drawing incised diamond and lozenge shapes. These decorative techniques were different from the comb-stamps used to decorate DDI pottery in the Dnieper valley. Flint tool kits on the Volga contained many geometric microliths, 60–70% of the tools, like the flint tools of the earlier Late Mesolithic foragers. Important Early Neolithic sites included Varfolomievka level 3 (radiocarbon dated about 5900–5700 BCE) and Kair-Shak III (also dated about 5900–5700 BCE) in the lower Volga region; and the lower levels at Rakushechni Yar, a dune on the lower Don (dated 6000–5600 BCE).31 At Kair Shak III, located in an environment that was then semi-desert, the economy was based almost entirely on hunting onagers (Equus hemionus). The animal bones at Varfolomievka, located in a small river valley in the dry steppe, have not been reported separately by level, so it is impossible to say what the level 3 Early Neolithic economy was, but half of all the animal bones at Varfolomievka were of horses (Equus caballus), with some bones of aurochs (Bos primigenius). Fish scales (unidentified) were found on the floors of the dwellings. At Rakushechni Yar, then surrounded by broad lower-Don valley gallery forests, hunters pursued red deer, wild horses, and wild pigs. As I noted in several endnotes in this chapter, some archaeologists have claimed that the herding of cattle and sheep began earlier in the lower Don-Azov steppes, but this is unlikely. Before 5200 BCE the forager-farmer frontier remained confined to the Dniester valley.32

The Gods Give Cattle

The Criș colonization of the Eastern Carpathians about 5800 BCE created a robust and persistent cultural frontier in the forest-steppe zone at the Dniester valley. Although the Bug-Dniester culture quickly acquired at least some domesticated cereals, pigs, and cattle, it retained an economy based primarily on hunting and gathering, and remained culturally and economically distinct in most ways. Beyond it, both in the forest-steppe zone and the steppe river valleys to the east, no other indigenous societies seem to have adopted cereal cultivation or domesticated animals until after about 5200 BCE.

In the Dniester valley, native North Pontic cultures had direct, face-to-face contact with farmers who spoke a different language, had a different religion, and introduced an array of invasive new plants and animals as if they were something wonderful. The foragers on the frontier itself rapidly accepted some cultivated plants and animals but rejected others, particularly sheep. Hunting and fishing continued to supply most of the diet. They did not display obvious signs of a shift to new rituals or social structures. Cattle keeping and wheat cultivation seem to have been pursued part-time, and were employed as an insurance policy against bad years and perhaps as a way of keeping up with the neighbors, not as a replacement of the foraging economy and morality. For centuries even this halfway shift to partial food production was limited to the Dniester valley, which became a narrow and well-defined frontier. But after 5200 BCE a new threshold in population density and social organization seems to have been crossed among European Neolithic farmers. Villages in the East Carpathian piedmont adopted new customs from the larger towns in the lower Danube valley, and a new, more complex culture appeared, the Cucuteni-Tripolye culture. Cucuteni-Tripolye villages spread eastward. The Dniester frontier was breached, and large western farming communities pushed into the Dniester and South Bug valleys. The Bug-Dniester culture, the original frontier society, disappeared into the wave of Cucuteni-Tripolye immigrants.

But away to the east, around the Dnieper Rapids, the bones of domesticated cattle, pigs, and, remarkably, even sheep began to appear regularly in garbage dumps. The Dnieper Rapids was a strategic territory, and the clans that controlled it already had more elaborate rituals than clans elsewhere in the steppes. When they accepted cattle keeping it had rapid economic and social consequences across the steppe zone.
be fired behind the rider with penetrating power. This maneuver, later known as the “Parthian shot,” was immortalized as the iconic image of the steppe archer. Cast bronze socketed arrowheads of standard weights and sizes also appeared in the Early Iron Age. A socketed arrowhead did not require a split-shaft mount, so arrows with socketed arrowheads did not split despite the power of the bow; they also did not need a separate foreshaft, and so arrows could be simpler and more streamlined. Reusable moulds were invented so that smiths could produce hundreds of socketed arrowheads of standard weight and size. Archers now had a much wider field of fire—to the rear, the front, and the left—and could carry dozens of standardized arrows. An army of mounted archers could now fill the sky with arrows that struck with killing power.  

But organizing an army of mounted archers was not a simple matter. The technical advances in bows, arrows, and casting were meaningless without a matching change in mentality, in the identity of the fighter, from a heroic single warrior to a nameless soldier. An ideological model of fighting appropriate for a state had to be grafted onto the mentality of tribal horseback riders. Pre-Iron-Age warfare in the Eurasian steppes, from what we can glean from sources like the Iliad and the Rig Veda, probably emphasized personal glory and heroism. Tribal warfare generally was conducted by forces that never drilled as a unit, often could choose to ignore their leaders, and valued personal bravery above following orders. In contrast, the tactics and ideology of state warfare depended on large disciplined units of anonymous soldiers who obeyed a general. These tactics, and the soldier mentality that went with them, were not applied to riders before 1000 BCE, partly because the short bows and standardized arrows that would make mounted archery truly threatening had not yet been invented. As mounted archers gained in firepower, someone on the edge of the civilized world began to organize them into armies. That seems to have occurred about 1000–900 BCE. Cavalry soon swept chariotry from the battlefield, and a new era in warfare began. But it would be grossly inappropriate to apply that later model of mounted warfare to the Eneolithic.  

Riding began in the region identified as the Proto-Indo-European homeland. To understand how riding affected the spread of Indo-European languages we have to pick up the thread of the archaeological narrative that ended in chapter 9.
 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.

Around 4200-4100 BCE the climate began to shift, an event called the Piota 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. 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. 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 Gumelnita, 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 Gumelnita 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. 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. 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 Bodrogkerezsztur 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. 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.

The end of Old Europe truncated a tradition that began with the Starčevo-Criş pioneers in 6200 BCE. Exactly what happened to Old Europe is the subject of a long, vigorous debate. Graves of the Suworovo 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.

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–Sâlcuța 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 Sâlcuța 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. 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–Sâlcuta–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 Polianov Yar on the Dniester. 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 (Borogkerezsztur) 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 STEPPE**

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 Cucuteni-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 m³ of earth. They were relocated and deepened as settlements grew in size, as at Traian and Habăștești 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 B1, a tenfold rise in the number of settlements without a significant expansion of the area settled (figure 11.3b). Part of this increase in settlement density during Tripolye B1 might be ascribed to refugees fleeing from the towns of the Gumelnita 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. 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, shell-tempered and similar to steppe pottery, appeared in Tripolye B1 settlements of the South Bug valley (Sabatinovka I) and in Romania (Dragușeni and Fedeleșeni, 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). 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 shreds). Some Cucuteni C pots look very much like steppe pottery, whereas others had shell-temper,
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 can harden at lower firing temperatures, which could save fuel. 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, Fitionesti and Fedeleșeni, both of which also had significant amounts of Cucuteni C ware. The eared type appeared at the Cucuteni-Tripolye settlements of Obârșeni 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 settlement 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 Gumelnita people generally had taller heads, narrower faces, and more gracile facial bones, a configuration called “Mediterranean.”19
Another indicator of movement across the steppes border was the little settlement near Mirnoe in the steppe 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. 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. 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.

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-Novodianovka 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).

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. 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. 

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" (dē-) meant "take" and another root (pau) 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.

On the other hand, mutualism cannot explain everything, and the end of the Varna-Karanovo VI–Gumelnita 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.

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. Proto-Indo-European also had a word for bride-price, * demás*. 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. 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. 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. Sredni Stog II became the type site for this Late Eneolithic kind of pottery. Sredni Stog-styled 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.

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. 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 11.7 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 Telegen 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 Molukhor 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

<table>
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<th>Lab Number</th>
<th>BP Date</th>
<th>Sample</th>
<th>Calibrated Date</th>
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<td>Ki-104</td>
<td>5470±300</td>
<td>?</td>
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</table>

| **2. North Caucasian Eneolithic**                       |                                |                       |
| Svobodnoe settlement                                   |                                |                       |
| Le-4531                                               | 5400±250                        | 4500–3950 BCE         |
| Le-4532                                               | 547±100                         | 4460–4160 BCE         |

| **3. Varna Culture, Bulgaria, lower Danube**            |                                |                       |
| Durankulak tell settlement                             |                                |                       |
| Bln-2122                                              | 5700±50                         | 4600–4450 BCE         |
| Bln-2111                                              | 5495±60                         | 4450–4250 BCE         |
| Bln-2121                                              | 5475±50                         | 4360–4240 BCE         |
| Pavelyanovo 1 tell settlement                          |                                |                       |
| Bln-1141                                              | 5591±100                        | 4540–4330 BCE         |
Suvorovo Group, lower Danube

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 Molukhor 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 burial 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...
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 Bodrogkereszttur 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 percent of the mammal bones NISP, 28% 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 northernmost 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

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

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

Dereivka is the Sredni Stog settlement with the largest archaeological exposure, about 2000 m². 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. 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. 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.

Migration 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 not widely known. The steppe culture involved in the migration has been called variously the Skelya culture, the Suvorovo culture, the Utkonosovka 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. All 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) Giurgiulești 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 Gumelnita vessel in the Kopchak kurgan, not far from Kainari; another late Gumelnita vessel in grave 2 at Giurgiulesti, 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 were rarely 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, Giurgiulestit, 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

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.
Transylvanian ores during Tripolye B2, after 4000 BCE. 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 Sâlcuţa 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 Mureșului and Ocna Sibiului; one example also appeared at a Tripolye settlement on the Prut (Bărălăești)

Polished stone maces were typical steppe prestige objects going back to Khvalynsk, Varfoliceni, and DDII, beginning ca. 5000–4800 BCE. They were not typical prestige objects for earlier Tripolye or Gumelnita 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 Gumelnita, 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 Dniester 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 BCE created an increased demand for gift-wealth (to attract and retain allies in tribal warfare) and therefore stimulated long-distance trade for prestige goods. 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 Gumelnita (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 Vulcanesti 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 Mureș River valley into eastern Hungary. These migrants left cemeteries at Decea Mureșului in the Mureș valley and at Csongrad in the plains of eastern Hungary. At Decea Mureșului, 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 Bodrogkereszttur 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. 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). 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. 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 one ring were made of an intentional arsenic-copper alloy (respectively, 1.9% and 1.2% arsenic) that had never occurred in Varna or Gumelnita 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 Cașimcea, 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, Artiszia, and Kopchak). At Kainari, only a dozen kilometers from the Tripolye B1 settlement of Novi Rusuți, 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 Giurgiulești and Suvorovo. Copper shell-shaped pendants, a very distinctive steppe ornament type, occurred in both Novodanilovka (Chapli) and Suvorovo (Giurgiulești) 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 Suvodanilovka culture;

*Krivoy Reg*, 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 Giurgiulești; and

*Petro-Svishtov** (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 Giurgiulești.

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 Trypols’ke 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).

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 Giurgiulești 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. 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 herdsmen 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 (*bê-jêto*) 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. 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 Gumelnita 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. 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. 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. Greenfield's zoological studies in the middle Danube showed that, also for the first time, animals were 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.

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 Brașița 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 Gumelnita 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, Sin (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. 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?

Chapter Twelve

As we turn toward the end of the Neolithic, we see a clear shift away from agricultural enclaves of Old Europe. The dedication of copper objects in North Pontic graves declined by almost 80%. Beginning in about 3800 BCE and until about 3300 BCE the varied tribes and regional cultures of the Pontic-Caspian steppes seem to have turned their attention away from the Danube valley and toward their other borders, where significant social and economic changes were now occurring.

On the southeast, in the North Caucasus Mountains, spectacularly ostentatious chiefs suddenly appeared among what had been very ordinary small-scale farmers. They displayed gold-covered clothing, gold and silver staffs, and great quantities of bronze weapons obtained from what must have seemed beyond the rim of the earth—in fact, from the newly formed cities of Middle Uruk Mesopotamia, through Anatolian men. The first contact between southern urban civilizations and the people of the steppe margins occurred in about 3700–3500 BCE. It caused a social and political transformation that was expressed archaeologically as the Maikop culture of the North Caucasus piedmont. Maikop was the filter through which southern innovations—including possibly wagons—first entered the steppes. Sheep bred to grow long wool might have passed from north to south in return, a little considered possibility. The Maikop chiefs used a tomb type that looked like an elaborated copy of the Suvorovo-Novodanilovka kurgan graves of the steppes, and some of them seem to have moved north into the steppes. A few Maikop traders might have lived inside steppe settlements on the lower Don River. But, oddly, very little southern wealth was shared with the steppe clans. The gold, turquoise, and carnelian stayed in the North Caucasus. Maikop people might have driven the first wagons into the Eurasian steppes, and they certainly introduced new metal alloys that made a more sophisticated