A New Approach to Language and Archaeology: The Usatovo Culture and the Separation of Pre-Germanic

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Regional variants of Tripolye C2 in western Ukraine and Moldova might have played an important role in the origins of the northwestern Indo-European language branches. In particular, the Tripolye C2 Usatovo culture might have played a significant role as the intermediary between Proto-Indo-European and the Germanic branch. The influence of the Usatovo culture extended up the Dniester, and upper-Dniester Tripolye C2 cultures extended this chain of social interaction into southeastern Poland during the final centuries of the Trichterbecker or TRB culture, prior to the appearance of the Corded Ware horizon there. The Proto-Indo-European dialects that would ultimately form the root of Pre-Germanic might have spread up the Dniester from the Usatovo culture through a nested series of patrons and clients, eventually being spoken in some of the late TRB communities between the upper Dniester and the Vistula. These late TRB communities later evolved into early Corded Ware communities, and it was the Corded Ware horizon that provided the medium through which the Pre-Germanic dialects spread over a wider region.

Any attempt to connect the archaeological evidence from prehistoric Europe with the linguistic evidence from the early Indo-European languages must explain how the connection is to be made. The need for each interpreter to explain his/her own approach shows that the underlying problem—how to connect archaeology and language—has not been solved, or at least no solution has been widely accepted. Nevertheless, many observers among both linguists and archaeologists agree that just from a geographic point of view the Corded Ware horizon of the North European Plain, 3100-2400 calBC, probably was related in some way to the origins of at least some of the north-western Indo-European branches: Celtic, Germanic, Slavic, and Baltic (Mallory and Adams 2006:452). But archaeologists have demonstrated that the Corded Ware horizon had mostly local origins in the pre-Corded Ware

cultures of Germany and Poland, and few linguists now believe that the Proto-Indo-European homeland could have been located there. Convincing archaeological evidence for a migration from any of the stronger Proto-Indo-European homelands into the North European Plain at the beginning of the Corded Ware period has not been found. The northwestern group therefore constitutes one of the hardest knots in the tangle of problems that continues to separate archaeological from linguistic evidence.

This essay advances the hypothesis that the late Tripolye cultures of the forested uplands northwest of the Black Sea in what is today western Ukraine and Moldova, regional variants of Tripolye C2 as defined by archaeologists, played an important role in the origins of the northwestern Indo-European language branches. In particular, the Tripolye C2 Usatovo culture might have played a significant role as the intermediary between Proto-Indo-European and the Germanic branch. Usatovo was strongly influenced by the steppe Yamnaya horizon before and during its first appearance and early development in the steppes around the Dniester estuary. The influence of the Usatovo culture extended up the Dniester, and upper-Dniester Tripolye C2 cultures extended this chain of social interaction into southeastern Poland during the final centuries of the Trichterbecker or TRB culture, prior to the appearance of the Corded Ware horizon there. Fortified Tripolye C2 centers such as Brynzeni III and Zhvanets on the upper Dniester were in close contact with Usatovo in the steppes (Brynzeni III-type pottery is the basis of the Usatovo painted-ceramic repertoire) and with late TRB fortified towns in southeastern Poland, notably Gródek Nadbuźny and Zimne (Bronicki, Kadrow and Zakościelna 2003; Kośko 1999; Movsha 1985). The Proto-Indo-European dialects that would ultimately form the root of Pre-Germanic might have spread up the Dniester from the Usatovo culture through a nested series of patrons and clients, eventually being spoken in some of the late TRB communities between the upper Dniester and the Vistula. These late TRB communities later evolved into early Corded Ware communities, and it was the Corded Ware horizon that provided the medium through which the Pre-Germanic dialects spread over a wider region.

Material culture is not correlated one-to-one with language in the modern world, has not been so correlated in

historical or ethnographic societies, and is not correlated in this hypothesis. Languages expand or contract not with changes in cooking pots, but with shifts in the sources of power and prestige (Kulick 1992; Wardhaugh 1987; Fabian 1986). The spread of a language should be tracked archaeologically, if it can be tracked at all, through the geographic expansion of a novel prestige system, a new fashion in displaying and attracting social power, particularly one that accompanies a novel way of accumulating wealth and/or food. Among tribal societies prestige, wealth, and food usually were directly connected. The introduction of cultivated plant foods and domesticated animals by pioneering farmers has almost always carried their language with their introduced economy (Bellwood and Renfrew 2002) not just because of demographic advantages, but because a prestige system based on the seasonal feasts enjoyed by all human societies (Dietler and Hayden 2001) was tightly connected with a novel and more productive way of accumulating food. Military conquest, another vector of language expansion, carries the language of the conquerors only when it provides the defeated access to the new prestige system at a relatively low social cost—in other words, when there is both little negative shame or humiliation for a person's family if that person cooperates with the conqueror, and widespread positive public recognition or reward for most who cooperate, including the opportunity for their children to advance to higher social positions (Anthony 2007; Mallory 1992; Atkinson 1994,1989; Barth 1972). Rome provided those opportunities at a low social cost, particularly in the Roman army, and as a consequence many conquered peoples adopted Latin. The Norman lords in England did not, and their language was not widely adopted.

Imperial conquest and colonization by farmers were not the only vectors of language expansion in the ancient world. Among prehistoric tribal societies that lacked empires and standing armies, yet lived in a landscape already occupied by a variety of farming and herding cultures, we must be able to identify other causes of language expansion. I would suggest that even in the cases of imperial conquest and agricultural colonization the underlying social process that attracts speakers to an expanding language is the expansion of a novel prestige system associated with a new economy. It seems to me that this kind of model is already held even if unarticulated by

many observers, and that it is one underlying attraction of the Corded Ware horizon as a possible material indicator of a significant episode of language expansion across northern Europe: the Corded Ware horizon represented the rapid spread between about 3100-2700 calBC of a new, more pastoral and mobile economy connected with a new prestige system represented by new varieties of weapons and a new culture of competitive elite drinking parties (Sherratt 1997). Language shift follows prestige, wealth, and social power, and the Corded Ware horizon seems to have introduced fundamentally new sources of prestige and new kinds of pastoral wealth. Regardless of the specific connection with north-western Indo-European, we might expect *some* language shift to have followed those Corded Ware chiefs whose behavior and language was seen as epitomizing the new standard.

The Pre-Germanic phase

Linguists do not use the prefixes *pre-* and *proto-* in a consistent way, so I should be clear about what I mean by Pre-Germanic. *Proto*-Germanic was the language that was *immediately ancestral* to the known daughter languages in the Germanic branch. The sound changes that defined Proto-Germanic, summarized under Grimm's Law and Verner's Law, probably were still spreading and becoming established in Scandanavia and northern Germany at the time of Julius Caesar. But Proto-Germanic occupied just the *later portion* of an undocumented period of linguistic change that must have occurred between it and Proto-Indo-European. The intermediate language stage was *Pre-Germanic*. Pre-Germanic represents not a language but an *evolutionary period* defined by Proto-Germanic at one end and Proto-Indo-European at the other. The earliest phase of Pre-Germanic was a western dialect of Proto-Indo-European, and therefore, ironically, we can say more about it; the latest phase was an evolved set of dialects that were transformed by Grimm's Law and are almost unknown.

Pre-Germanic probably was spoken near Pre-Baltic and Pre-Slavic, given the network of borrowings between them; and also exhibited borrowings with Pre-Celtic and Pre-Italic. These branches constitute a north-western sub-group within Indo-European (Mallory and Adams 2006: 78-80). They absorbed elements from non-Indo-European substrate

languages spoken earlier in northern Europe. Schrijver (2001) summarized the evidence for at least three different extinct non-Indo-European languages or language families with different phonological systems that were in contact with the north-western Indo-European languages: 1. Krahe's 'language of Old European hydronomy', preserved principally in river names, now thought by many linguists to be non-Indo-European (alternatively, if Indo-European, these names could be remnants of Pre-Germanic itself); 2. the 'language of bird names', preserved in the names of several kinds of birds, including the blackbird, lark, and heron, and also in some other terms borrowed into early Germanic, Celtic, and Latin, including the terms for 'ore' and 'lightning'; and 3. the 'language of geminates', Kuiper's A2 substrate, which survives only in a few odd sounds quite atypical for Indo-European, borrowed principally into Germanic, but also into a few Celtic words, including doubled final consonants and the word-initial *kn-*, as in 'knob' (see also Krahe 1954; Huld 1990; Polome 1990; Venneman 1994; Kuiper 1995). The now-extinct languages that produced these sounds competed with and influenced Pre-Germanic dialects for millennia, so Pre-Germanic did not evolve in isolation, and it cannot be assumed that Pre-Germanic replaced competing languages rapidly.

The expansion of Pre-Germanic occurred with the expansion in prestige and power of chiefs who spoke it. My subject in this essay is just the initial separation of Pre-Germanic from Proto-Indo-European at the beginning of this long and complicated history. Of course at this initial stage it was only Pre-Germanic in hindsight. At the time, it was just a western Proto-Indo-European dialect that became established in northern Europe.

The time and place of the homeland

It is impossible to discuss the archaeological evidence related to the detachment of Pre-Germanic if the time and place of the Proto-Indo-European homeland is not established first. My views on this subject are defended at length in a recent book (Anthony 2007) and have been discussed elsewhere (Anthony 1991, 1995). I generally agree with Mallory (1989) and Mallory and Adams (2006); and in terms of location and general time-frame, with Gimbutas (1977, 1991). The homeland was in the Pontic-Caspian steppes between

about 4500-2500 calBC. I will briefly defend this argument, which in my view is now so strong that it can be accepted as the most probable.

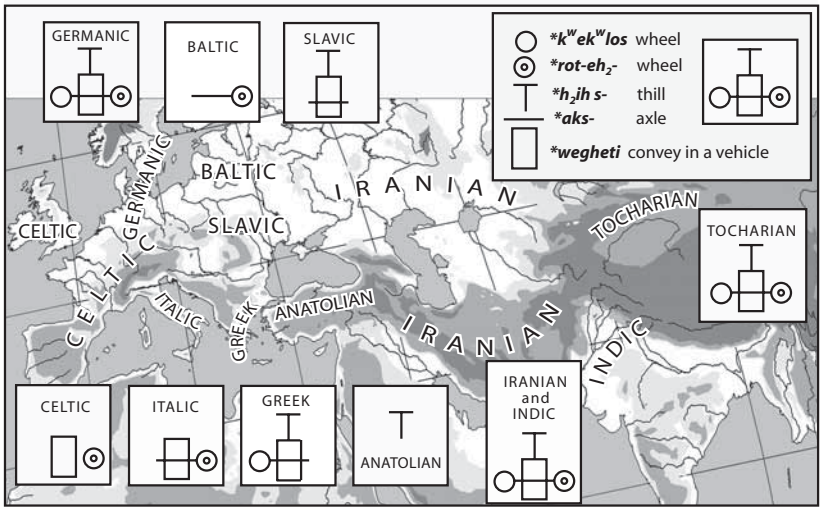


Fig. 1. The geographic distribution of the shared cognates for wheeled vehicles in the Indo-European languages. After Anthony 2007.

On the question of time, the vocabulary for wheeled vehicles in Proto-Indo-European (Figure 1) indicates that it was spoken after wheeled vehicles were invented, or certainly after about 4000 calBC, and probably after about 3500 calBC (Bakker, Kruk, Lanting and Milisauskas1999). The appearance of separate and distinct Anatolian, Greek, and Old Indic daughters in inscriptions between 1900-1400 calBC indicates that Proto-Indo-European had broken up into its major daughter branches by about 2500 calBC (Mallory and Adams 2006; Anthony 2007). By that date the phonetics and grammar of the classic reconstructed parent had evolved into an intermediate, evolved set of distinct late Indo-European languages and dialects that were no longer sharing innovations. Proto-Indo-European probably was spoken for five to ten centuries between 4500-2500 calBC.

The principal alternate hypothesis, an Anatolian homeland dated about 6500 calBC, is contradicted by the wheeled-vehicle vocabulary. The Anatolian homeland is

premised on a first radiation of Proto-Indo-European with the first farmers from Anatolia to Greece about 6700-6500 calBC and from Greece into temperate Europe about 6200-6000 calBC. But the presence of a vocabulary for wheeled vehicles in Proto-Indo-European suggests that Proto-Indo-European was spoken much later than this. Renfrew (2001) pulled the first-farmer dispersal hypothesis toward the wheeled vehicle vocabulary by suggesting that Proto-Indo-European remained a single language for 3500-3000 years, from 6500-3000 calBC. Early Proto-Indo-European, in this hypothesis, could have existed in 6500 calBC and late Proto-Indo-European could have been the medium through which the new wheeled-vehicle vocabulary spread from the Rhine to the Volga between 3500-3000 calBC.

This is unlikely. It requires that Proto-Indo-European persisted as a unified dialect chain for 3000-3500 years between the initial pioneer Neolithic colonization of Greece and the invention of the wheel-and-axle principle. In the first millennium after 6500 calBC Greek Neolithic villages generated a dozen regional archaeological cultures spread across several distinct climate zones that interacted with a variety of indigenous European foragers speaking unrelated languages; and this was followed by 2000-2500 years during which those Early Neolithic cultures evolved into hundreds of very different later Neolithic and Eneolithic cultures—in this hypothesis, without developing distinct languages. What is worse, this frozen state during the 3500 years of the Neolithic and Eneolithic would have to have been followed by a much more rapid rate of language change during the Bronze and Iron Ages in order to account for the hundreds of Indo-European daughter languages, divided into twelve branches (or perhaps more), that had come into existence 3500 years after wheels were introduced, or by about 500 CE.

The rapid real rate of diversification evident in the Indo-European languages in the 3500 years after the wagon was invented finds a real-world parallel in the spread of the Bantu languages. Proto-Bantu was spoken by cattle-herders who introduced a new pastoral economy and cattle-based prestige system across eastern and southern Africa about 2500-2000 years ago (Phillipson 2002). In just two millennia it evolved into more than 500 modern Bantu languages assigned to 19 branches interspersed with enclave languages still belonging

to non-Bantu language families. Similarly, the languages of the pioneer farmers who carried the first farming-and-herding economies into prehistoric temperate Europe would have evolved into a dense bush of daughter languages by 3500-3000 calBC. Even if the language of the original immigrant Greek Neolithic farmers in 6500 calBC began as a simplified, fairly homogenous dialect stripped of variation through the social processes typically associated with long-distance colonization (Anthony 2007), its daughters 3000 years later when wheels were invented would have included hundreds of languages, already divisible (if only a linguist had been there to classify them) into perhaps dozens of branches, interspersed with pre-Neolithic language families of profoundly different types—such as Schrijver's language of bird-names. Proto-Indo-European simply cannot have been spoken in Neolithic Greece and remained frozen in its Greek-Neolithic proto-form for 3000 years until wagons were invented.

Yet there can be no doubt that the wagon and wheel vocabulary existed in Proto-Indo-European before it broke up into its daughter branches. The wagon vocabulary contains at least five classic reconstructions based on cognates spread across the Indo-European-speaking world, including ancient Old Indic and Mycenaean Greek (but possibly excluding Anatolian). Wheeled vehicles appeared in four quite different media—written signs for 'wagon', two-dimensional images, three-dimensional models, and archaeological wagons in graves and bogs—after 4000 calBC. Certainly most of this evidence, arguably all of it, is dated after 3500 calBC (Bakker, Kruk, Lanting and Milisauskas1999). Proto-Indo-European still existed at this date. Therefore Proto-Indo-European did not spread with the farming economy. Its first dispersal occurred much later, certainly after 4000 calBC, probably after 3500 calBC, in a Europe occupied by many different kinds of farming and herding societies, not by a scattered population of foragers.

This is not a minor difference of opinion over chronology. It means that the key to understanding the spread of early Proto-Indo-European should be found principally in the methods of socio-linguistics, including social anthropology, comparative religion, and the economics of political power—not principally in agronomy, genetics, and demographics. The social modeling of the process of Indo-

European language expansion remains underdeveloped (Mallory and Adams 2006: 458-59), perhaps because we have tried to rely on the more easily quantifiable methods of genetics and demographics rather than the qualitative methods of sociolinguistics, where the answers probably lie.

Fig. 2. The Proto-Indo-European homeland. After Anthony 2007.

If Proto-Indo-European did not disperse with the first farming economies, how and from where did it disperse? The location of the homeland is determined best by borrowings

between Proto-Indo-European and its neighbors (Figure 2). Proto-Uralic borrowed Proto-Indo-European roots for the words *water*, *give* or *sell*, *price*, *bring* or *lead* (possibly meaning *marry*), *plait*, *drill*, *fear*, *wash*, and *sinew*; and the two language families exhibit a similar, possibly shared inherited vocabulary for pronouns (see several papers in Carpelan, Parpola and Koskikallio 2001). These borrowings indicate that the two language families shared a border or perhaps even a distant common ancestor, which pulls the Proto-Indo-European homeland toward a broad region centered on the Ural Mountains. The presence of a farming and herding vocabulary in Proto-Indo-European and the end date of 2500 calBC together eliminate a homeland east or northwest of the Urals, where foraging economies persisted in northern Kazakhstan, western Siberia, and the western-Ural Russian forest zone until after 2500 calBC. The combination of Proto-Uralic/Proto-Indo-European borrowings, time restriction to a period before 2500 calBC, and the farming vocabulary in Proto-Indo-European together make a homeland southwest of the Urals most likely. Indirect borrowings between Proto-Indo-European and a language ancestral to Proto-Kartvelian, possibly through a third intermediary language, also pull the homeland toward the southwest, toward the Caucasus Mountains, although this relationship is weaker than the Uralic one (Nichols 1997: Appendix). A homeland between the Urals and the Caucasus, in the Pontic-Caspian steppes of Russia and Ukraine between 4500-2500 calBC, satisfies all these requirements.

Sequence of branch separations

The sequence of separations among the Indo-European daughters (Figure 3) provides the final and most demanding test for any proposed homeland. All linguistic studies of sequences, whether by cladistics or more traditional means, agree that Pre-Anatolian separated first (Blažek 2007; Ringe, Warnow, and Taylor 2002; Gray and Atkinson 2003). Both cladistic (Ringe, Warnow and Taylor 2002) and traditional (Starostin as presented in Blažek 2007) methods agree that Pre-Tocharian separated next, though it also showed some traits that might be considered later, particularly in its similarities to some aspects of Germanic. The next branching event separated Pre-Celtic and probably Pre-Italic from the still-evolving core. Germanic has some archaic traits that suggest an initial separation at about the same time as Pre-

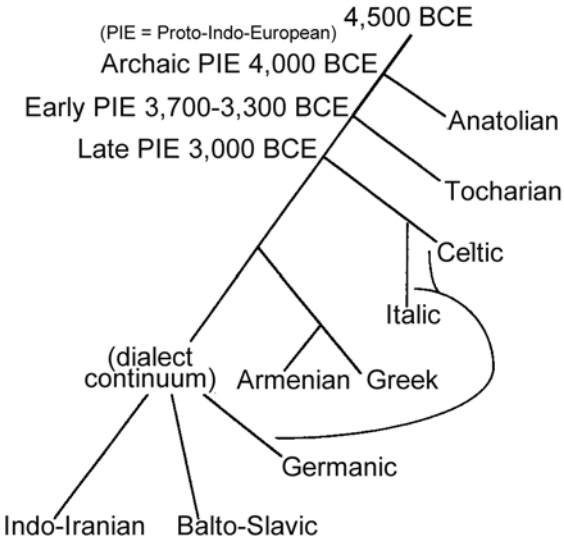


Fig. 3. The Ringe-Warnow-Taylor 2002 cladistic sequence for the Indo-European daughter branches with dates suggested in this paper. After Anthony 2007.

Celtic and Pre-Italic, but later it was strongly affected by borrowing from Pre-Baltic and Pre-Slavic, so the initial separation of its root in the sequence is uncertain. After these separations occurred, perhaps after around 2500 calBC, classic Proto-Indo-European, as it is reconstructed on the basis of comparisons of *all* of the daughter languages, could no longer be said to exist. It had by then evolved into a bush of related tongues, some already separate languages, the others connected through an increasingly diverse dialect chain. A group of late Pre-Greek dialects remained in the general region of the homeland late enough to share many traits with evolving Pre-Indo-Iranian in the east, but separated before the innovations that defined common Indo-Iranian appeared. After the separation of Pre-Greek, the innovations that defined Indo-Iranian (the *satem* shift, the *ruki* rule) appeared probably between the upper Don and Tobol river valleys (the Sintashta-Potapovka-Filipovka chain of related archaeological cultures), about 2100-1800 calBC. They were shared between Indo-Iranian and several language groups in southeastern Europe (Pre-Armenian, Pre-Albanian, partly in Pre-Phrygian) and in the forests of northeastern Europe (Pre-Baltic and Pre-

Slavic). Indo-Iranian is dated *at the latest* to about 2000-1700 calBC, because Old Indic had separated and its speakers had moved into the Mitanni domain in northern Syria by 1500 calBC, where Old Indic terms were recorded in inscriptions dated 1500-1350 calBC. Putting the branching sequence together with the Mitanni dates, we can say that the separations of Anatolian, Tocharian, Italic, Celtic, German, and Greek occurred before 1700-2000 calBC.

Any proposed Indo-European homeland must show *archaeological* evidence for a series of out-migrations dated between 4500-2500 calBC *in the order and the direction* indicated by this independently derived *linguistic* sequence of branch separations. If the Pontic-Caspian steppe homeland meets this final requirement it is very likely to have been the actual Proto-Indo-European homeland. Failure to meet this requirement is one of the principal weaknesses of the hypothesized Anatolian and Caucasian homelands (Mallory 1998:177-79). Once this general sequence of archaeological events is established we can discuss individual branches such as Germanic in detail.

The event that detached Pre-Anatolian from the Pontic-Caspian steppe homeland could have been the migration that carried Suvorovo-type kurgan graves into the lower Danube Valley from the Dnieper-Azov steppes about 4200-4000 calBC. This happened before the invention of wheeled vehicles, and might explain the weakness and possible absence of the Proto-Indo-European wagon vocabulary in Anatolian (Darden 2001), as well as the archaic nature of Anatolian itself. The Suvorovo migration coincided with the introduction of kurgan graves and polished stone horse-head maces into the lower Danube Valley (Dergachev 1999, 2003), the enrichment of steppe Novodanilovka-type (or Skelya, following Rassamakin) communities in the Dnieper-Azov steppes with unprecedented quantities of Balkan copper (Telegin, Nechitailo, Potekhina, and Panchenko 2001; Rassamakin 1999), the collapse and abandonment of more than 600 Old European tell settlements in the lower Danube Valley, and the spread of Cernavoda I-type material culture in the region of the abandoned tells (Manzura 1999). Cernavoda I-type sites, which appear to contain a mixture of introduced steppe traits (horse bones, shell-tempered pottery, a mobile settlement pattern) and local indigenous traits, might represent a phase of the Pre-

Anatolian language community (Figure 4). I will not attempt to describe the linkages between Cernavoda I and later southeastern European cultures that might have moved into western Anatolia, possibly about the time of Troy I. The point here is only to identify a plausible archaeological event that could have detached a dialect group from the Pontic-Caspian steppe homeland in the right order in the sequence and in a plausible geographic direction.

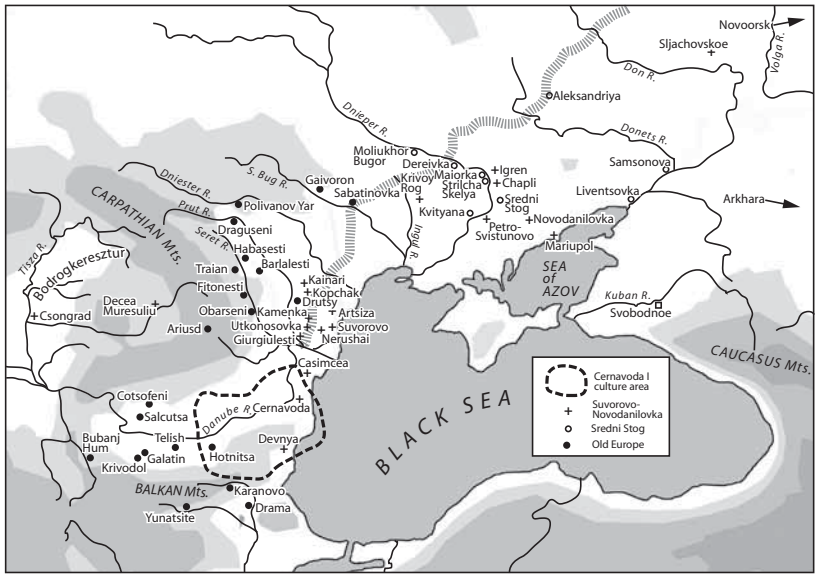


Fig. 4. The North Pontic steppes and the Danubian cultures of Old Europe at about 4200-4000 calBC, when steppe migrants appeared north of the Danube delta around Suvorovo and destabilized tell settlements in the lower Danube valley, perhaps detaching Pre-Anatolian. After Anthony 2007.

The second separation was Tocharian. To meet the requirements for Tocharian, we need archaeological evidence for a migration that moved from the Pontic-Caspian steppes eastward toward what is today northwestern China, the Tien Shan, or the Altai Mountains, and it must have occurred after the Suvorovo migration. The Afanasievo culture (Mallory and Mair 2000) meets these requirements. It appeared as an intrusive unit in the western Altai Mountains beginning about 3700-3500 calBC. By all of its material indicators the Afanasievo culture seems to have been derived from an eastern variant of the pre-Yamnaya Repin culture in the Don-

Volga-Ural steppes (Figure 5). A cycle of cross-Eurasian movements continued at least episodically between the Volga-Ural steppes and the Altai Mountains through the early Yamnaya period, until perhaps 2800 calBC, indicated by the Yamnaya-Afanasievo kurgan cemetery at Karagash, southeast of Karaganda in central Kazakhstan (Evdokimov and Loman 1989). While these cross-Eurasian movements were occurring, 3700-3000 calBC, the Botai culture appeared in northern Kazakhstan, apparently a culture of native north-Kazakh hunters and gatherers who suddenly adopted horseback riding and began to hunt wild horses from horseback in the Ishim-Tobol steppes (Anthony and Brown 2000; Olsen 2003). They might have been inspired to ride through contact with Yamnaya-Afanasievo migrants. Mallory and Mair (2000) have discussed at length the complicated case for a connection between Afanasievo and Tocharian. Again my point here is not to discuss or defend that connection, although I find it persuasive, but simply to identify an archaeological migration that meets the sequencing requirements and moved in a plausible geographic direction.

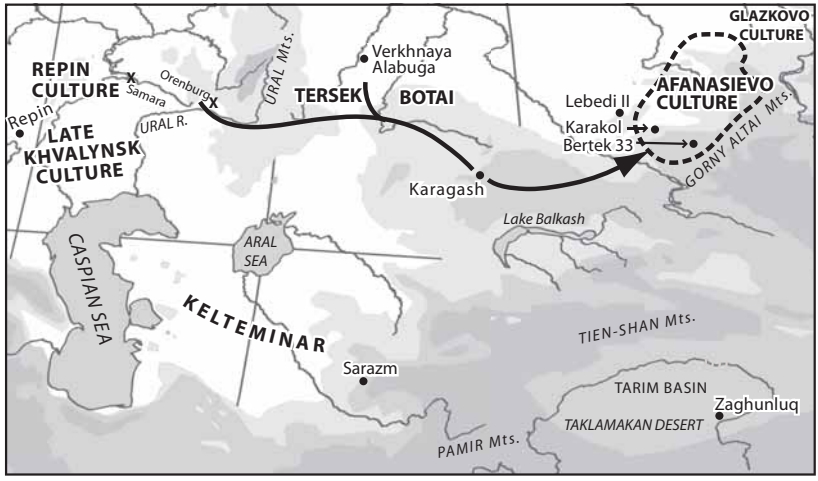


Fig. 5. The migration from the Volga-Ural steppes that established the Afanasievo culture in the western Altai Mts, probably the event that separated Pre-Tocharian. After Anthony 2007.

The third separation is complicated, and brings us to Germanic. In the Ringe-Warnow-Taylor sequence, the separations of Pre-Celtic (certainly), Pre-Italic (probably), and

Pre-Germanic (mixed signals) might have happened at about the same time, give or take a few centuries. Placing the Pre-Germanic separation this early might explain the similarities between Germanic and Tocharian—both developed from peripheral Proto-Indo-European dialects, one eastern and one western, that retained shared early traits that were being replaced in the core during the classic Proto-Indo-European (Yamnaya) period.

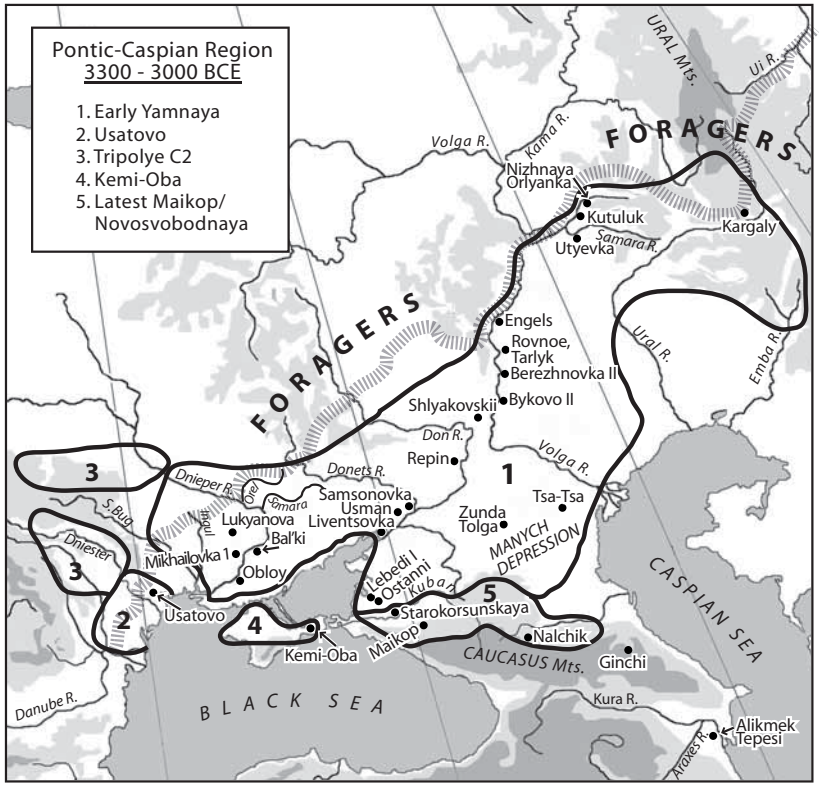


Fig. 6. The Pontic-Caspian steppes at about 3300-3000 calBC, when the Early Yamnaya horizon first spread across the region and the Usatovo culture appeared in the Dniester-Danube steppes. After Anthony 2007.

The Pre-Germanic migration should have moved from the Pontic-Caspian steppes toward the northern European plain and the Pre-Italic and Pre-Celtic migrations should have moved toward central or southern Europe, at a date after the initial Afanasievo migration. Again, the Pontic-Caspian homeland

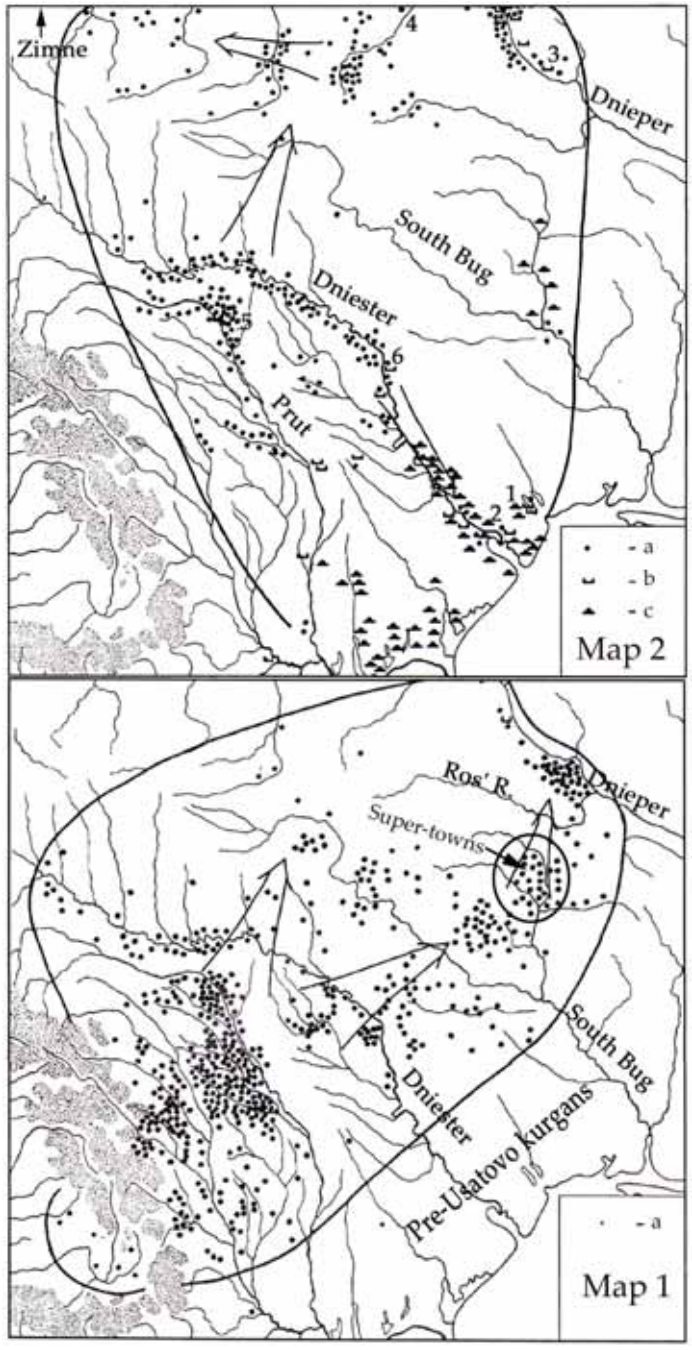
meets even this rather convoluted set of conditions. The Yamnaya horizon appeared in the Pontic-Caspian steppes about 3300-3200 calBC (Figure 6). Its cultural roots were in the Repin and late Khvalynsk cultures in the lower Don-lower Volga steppes in the Late Eneolithic. The Yamnaya horizon meets the expectations for the classic Proto-Indo-European language community in many ways: chronologically (the right time), geographically (the right place), and materially (wagons, horses, animal sacrifices, tribal pastoralism). It generated a migration stream that flowed from the Pontic-Caspian steppes into the lower Danube Valley and eastern Hungary about 3100-2800 calBC (Dumitrescu 1980; Ecsedy 1994, 1979; Panayotov 1989; Nikolova 1994). This was a sustained movement that left thousands of kurgans concentrated in at least six regional groups in Bulgaria (Plachidol, Troyanovo, Tarnava), Romania (Rast), northern Serbia (Jabuka), and eastern Hungary (Kétegyháza). The migrants occupied a series of social islands in the lower and middle Danube valley that later developed in isolation from the steppe homeland, a situation that could have fostered the development of a variety of later Indo-European dialects, including Pre-Italic and Pre-Celtic. But migrations into the Danube Valley cannot have planted Pre-Germanic in northern Europe.

The end of the Cucuteni-Tripolye culture and the roots of the western branches

Pre-Germanic can be connected with a specific archaeological culture during the period 3300-2800 calBC only because the possibilities are already constrained by three critical parameters. These are: 1. the late Proto-Indo-European dialects expanded geographically; 2. they expanded into eastern and central Europe from a homeland in the Pontic-Caspian steppes; and 3. the initial separation of Pre-Germanic from late Proto-Indo-European probably happened at about this time, after the separation of Tocharian about 3700-3500 calBC and before the final disintegration of Proto-Indo-European about 2500 calBC.

These constraints oblige us to turn our attention to the region just to the west of the early Yamnaya territory, or west of the South Bug River valley, beginning about 3300 calBC. The people whose dialects would separate to become the root

speech communities for the northwestern Indo-European language branches probably moved initially toward the northwest. If these migrations happened after 3300 calBC they moved through or into Late Tripolye territory during the final, staggering C2 phase of the Tripolye culture. At the beginning of the C2 phase, about 3300 calBC, large regions near the steppe border that had been densely occupied during phase C1 were abandoned, including most of the South Bug valley. The middle South Bug Valley had, during Triploye C1, hosted the largest concentrations of human population in the world, with huge agricultural towns such as Tal'yanki and Maidanets'ke occupying more than 350 ha. and containing more than 1500 structures, many two-storied. These places were entirely abandoned by the end of the Tripolye C1/Tripolye C2 transition, about 3400-3200 calBC, as were most of the farming towns in the middle South Bug valley. The Tripolye C2 culture survived in the regions to the north (middle Dnieper valley) and south (Dniester-Prut valleys). The Tripolye C2 towns in these regions had no more than 30-40 structures. The houses themselves were smaller and less substantial. Painted fine ceramics declined in frequency, while clinging to old motifs and styles. Domestic rituals that used clay female figurines became less frequent, the female traits became stylized and abstract, and then the rituals disappeared entirely. Two major episodes of change can be seen. The first was at the transition from Triploye C1 to C2, about 3400-3200 calBC, simultaneously with the rapid spread of the earliest Yamnaya horizon across the Pontic-Caspian steppes from a core in the Don-Volga region westward to the border of the Tripolye C2 farming territory. The second and final sweep of change erased the last remnants of Tripolye customs, by then almost confined to a few aspects of ceramic crafts, about 2500-2300 calBC, at the end of the late Yamnaya horizon.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Dnieper
South Bug
Dniester
6
Prut
1
2
- a
- b
- c
Map 2
Ros' R.
Dnieper
Super-towns
South Bug
Dniester
Pre-Usatovo kurgans
- a
Map 1

Fig. 7. Map 1: the northwestern Pontic region about 3500 calBC. *1 a*: Cucuteni-Tripolye settlements of the Tripolye C1 phase. Arrows represent presumed population flows based on similarities in fine ceramics. *Map 2*: the northwestern Pontic region about 3000 calBC. *2 a*: Cucuteni-Tripolye settlements of the Tripolye C2 phase. *2 b*: Flat-grave cemeteries. *2 c*: kurgan cemeteries. 1. Usatovo 2. Mayaki 3. Sofievka 4. Gorodsk 5. Brynzeni III 6. Vikhvatintsyi. After Dergachev 2003, 2007.

The first crisis, at the Triploye C1/C2 transition about 3300 calBC, began with the abandonment of large regions that had contained hundreds of Triploye C1 towns and villages (Figure 7). The vacated regions included the Ros' River valley and the region north of it, south of Kiev near the steppe border, where a thousand years of Tripolye occupation ended with the last Tripolye settlements of the C1 phase (Neprina-Mitrofanova 1970); most of the middle and lower South Bug valley, also near the steppe border, another region with a thousand years of Tripolye occupation and a surveyed site density of 1 settlement/4km^2 prior to 3300 calBC (Shishkin 1973), including the enormous super-towns of Triploye C1 (Videiko 1990); and the southern Siret and Prut valleys in southeastern Romania (between Iasi and Bîrlad), also near the steppe border. Large cultivated landscapes were abandoned in these regions. No permanent settlements replaced the abandoned towns and villages of Tripolye C1. We don't know what happened to the departed farming population. Manzura (2005) and Kohl (2007:52-54) suggested that they might have migrated into the steppes and become pastoralists, but Tripolye farmers had not done this during the previous 2000 years. If they did so around 3300 calBC they not only switched from settled farming to mobile pastoralism, they also adopted Yamnaya kurgan funeral customs and Yamnaya stone tools, plain ceramics, and decorative motifs, and became, in almost all material respects, culturally Yamnaya. A Yamnaya kurgan was erected on the ruins of the Tripolye C1 super-town at Maidanetsk'e in the South Bug valley, but this seems to have happened centuries after its abandonment. Other kurgans in the South Bug valley (Serezlievka) contained Triploye C2 figurines and pots, so kurgan-building people occupied the middle South Bug valley during Tripolye C2, but their population was sparse, and their occasional use of Tripolye

pottery has led to arguments over their origins.[1]

With the disappearance of agricultural towns from most of the South Bug valley, the late Tripolye culture resolved into two geographic groups north and south of the South Bug, both labeled with the number 3 on Figure 6, and mapped in more detail on Figure 7. The northern Tripolye C2 group was located on the middle Dnieper and its tributaries around Kiev, where the forest-steppe graded into the closed northern forest. Cross-border assimilation with steppe cultures had begun on the middle Dnieper during Tripolye C1, as at Chapaevka, with a decline in painted fine wares and the adoption of inhumation cemetery funerals. This process continued during Tripolye C2. At towns like Gorodsk, west of the Dnieper, and cemeteries like Sofievka, east of the Dnieper, the ceramics, stone tools, and funeral rituals of the Tripolye C2 period included aspects of late Sredni Stog, Yamnaya, late Tripolye, and various southern Polish customs (late Baden, late TRB, Globular Amphorae). The hybrid that emerged from all of this slowly became its own distinct culture, the Middle Dnieper culture of the Middle Bronze Age (Telegin 2005; Kadrow 2003; see also a summary in Szmyt 1999). Middle Dnieper material culture appeared first about 2600-2500 calBC. It was the first herding culture to expand

[1]Some kurgan graves in the steppes contained imported Tripolye C2 pottery and a few, like Serezlievka, also contained Tripolye-like schematic rod-headed figurines. The Serezlievka-type graves in the South Bug valley probably were contemporary with Yamnaya graves in the Dnieper-Azov steppes that contained imported Tripolye C2 pots, designated the Zhivotilovka-Volchansk group (Rassamakin (1999, 2002). Volchansk is dated by radiocarbon about 2900-2800 calBC. Rassamakin (2002) and Manzura (2005) interpreted these graves as a migration of Tripolye people deep into the steppes. Rassamakin set the beginning date of the Tripolye C2 period back to 3500 calBC but this was about 200 years older than Videiko's beginning date (Videiko 1999; Videiko and Petrenko 2003), and 600 years older than the radiocarbon date for the type site of Volchansk. I see the abrupt changes that ushered in the Tripolye C2 phase as partly caused by warfare and raiding from Yamnaya pastoralists. Yamnaya herders rarely placed any pottery in graves, and when they did they often used "foreign" vessels, perhaps as symbols of the travels, alliances, and exotic knowledge of the dead man (Helms 1991). Cotsofeni pots were placed in Yamnaya graves in the Danube valley. In the Ukrainian steppes Yamnaya graves contained not just Tripolye C2 pots, but also late Maikop (Nechitailo 1991) and Globular Amphorae pots (Szmyt 1999). It is far simpler to propose that the Serezlievka and Zhivotilovka-Volchansk graves were made by Yamnaya people who had traveled, traded, and acquired Tripolye objects as gifts or acquisitions.

northward into the Russian and Belarusian forest zone, a movement continued by the related Fatyanovo culture. That expansion, beginning about 2500 calBC, probably detached the Pre-Baltic language community. Pre-Slavic might have developed among the Middle Dnieper people who stayed behind, in the region around Kiev.

The southern Tripolye C2 group, centered in the Dniester-Prut uplands, was closely integrated with a steppe culture, the Usatovo culture, dated about 3300-2700 calBC. Usatovo might have been the origin of the Pre-Germanic language community.

The process of language shift

We will not understand the early expansion of the Proto-Indo-European dialects by trying to equate language simply with artifact types. As I noted earlier, material culture often has little relationship to language. I have proposed an exception to that rule in the case of robust frontiers, marked by multiple categories of material culture, or what Emberling (1997) called 'redundancy', if they persisted for hundreds or even thousands of years (Anthony 2001 for the initial idea, modified in Anthony 2007). The Tripolye/steppe frontier was an example: it was marked by sharp contrasts in many different categories of material culture and persisted for 2000 years, 5200-3200 calBC, before it disintegrated during Triploye C2. Although robust, persistent archaeological frontiers were not very common among non-state societies, where they did occur (Iroquois/Algonquin on the Hudson, Post-Roman Wales/England, Post-Roman Tyrolean Romansh/German, for the latter see Cole and Wolf 1974) they were almost always language frontiers. This is one predictable, regular correlation between material culture and language. But robust, persistent frontiers were exceptional, not normal, kinds of borders in tribal Europe. In most pre-state and non-state contexts language was not correlated with material culture in a regular or predictable way.

The essence of language expansion was not material, but psychological. The initial expansion of the Indo-European languages resulted from widespread cultural shifts in group self-perception. Language replacement always is accompanied by revised perceptions of the self, a restructuring of the cultural classifications within which the self is defined and

reproduced. Negative evaluations associated with the dying language lead to a descending series of reclassifications by succeeding generations, until no one wants to speak like grandpa any more. Language shift and the stigmatization of old identities go hand in hand (Kulick 1992; Gal 1978).

The pre-Indo-European languages of Europe were abandoned because they were linked to membership in social groups that became stigmatized. How that process of stigmatization happened is an important question, and the possibilities are much more varied than just invasion and conquest. Increased out-marriage, for example, can lead to language shift. The Gaelic spoken by Scottish 'fisher' folk was abandoned after World War II when increased mobility and new economic opportunities led to out-marriage between Gaelic 'fishers' and the surrounding English-speaking population, and the formerly tightly closed and egalitarian 'fisher' community became intensely aware both of its low ranking in a larger world and of alternative economic opportunities. Gaelic rapidly disappeared, although only a few people moved very far (Dorian 1981). Similarly, the general situation in Europe after 3300 calBC was one of increased mobility, new pastoral economies, explicitly status-ranked political systems, and inter-regional connectivity—exactly the kind of context that might have led to the stigmatization of the tightly closed identities associated with localized groups of village farmers.

The other side of understanding language shift is to ask why the identities associated with Indo-European languages were emulated and admired. It cannot have been because of some essential quality or inner potential in Indo-European languages or people. Usually language shift flows in the direction of prestige and power. What in this particular era attached prestige and power to the identities associated with Proto-Indo-European speech—Yamnaya identities, principally? Five factors probably were important in enhancing their status:

1. Pontic-Caspian steppe societies were more familiar with horse-breeding and riding than anyone outside the steppes, they had many more horses, and they could have grown rich by exporting steppe horses, probably as gifts rather than commodities in the modern sense (Anthony, Brown and George 2006). Measurements show that steppe horses were larger than the native marsh and mountain ponies of central

and western Europe. Larger horses appeared in late TRB, Baden, Cernavoda III, and Cham sites in central Europe and the Danube valley about 3300-3000 calBC, probably imported from the steppes (Benecke 1997, 1994:73-74; Bökönyi 1974). Horses began to appear in Maikop-Novosvobodnaya sites in the North Caucasus and in most sites of the Kura-Araxes culture in Transcaucasia at the same time, 3500-3000 calBC, and larger horses appeared among them (Bökönyi 1991). In northern Kazakhstan the Botai culture, dated 3700-3000 calBC, was a culture of horse-riding hunters who hunted wild horses (Olsen 2003). At least four horses from two Botai sites had bit wear on their premolar teeth, indicating that they were bitted and ridden (Anthony and Brown 2000). The reliability of bit wear as a tool to identify bitted horses has been criticized by Levine (1999:10-12), but Anthony, Brown, and George (2006) rejected each of her criticisms and presented George's new evidence from fossil Pleistocene horses confirming the statistical reliability of wear facets of 3mm or more in distinguishing mature bitted from mature never-bitted horse premolars. Layers of stabling waste filled with horse dung were identified in garbage dumps at two sites of the Botai culture (French and Kousoulakou 2003; Olsen 2003), and it is possible that horse dung was used to seal Botai house roofs (Olsen, personal communication). The collection and disposal of horse dung is possible and necessary only with controlled animals. Taken together with the evidence from bit wear and from butchering practices, the Botai-culture soils data strongly suggests that some Botai horses were corralled and ridden (Olsen 2003). Horse-riding almost certainly was adopted by the Botai foragers from the Khvalynsk-Repin herders of the neighboring Volga-Ural steppes, who had been keeping domesticated sheep, cattle, and probably horses in the steppes to the west at least a thousand years before the Botai culture appeared.

Steppe horse-breeders might also have had the most manageable male bloodline. While the female bloodline of domesticated horses shows great genetic diversity in MtDNA, the opposite is true for the male bloodline on the Y chromosome (Lindgren *et al.* 2004). The genetic lineage of the original domesticated male founder was preserved even in places with native wild populations, possibly because he was more docile and manageable than most wild stallions. If they

had the largest, strongest, *and* most manageable horses, and they had more than anyone else, steppe chiefs at the center of the widest networks of horse-giving and trade could have grown rich by trading horses. The annual demand for steppe horses in Late Eneolithic/Early Bronze Age Europe could easily have totaled thousands of animals during the initial expansion of horseback riding beyond the steppes.

2. Horseback riding in this early era gave two functional advantages to riders. First, they could manage herds larger than those tended by pedestrian herders. Each herder became more productive on horseback. When wagons appeared in the steppes about 3300-3200 calBC, this more productive system of herding on horseback expanded for the first time out of the protected river valleys where population had always been concentrated before. Herders on horseback assisted by ox-drawn wagons could take their herds into the previously useless interior steppes on the plateaus between the river valleys because wagons carried food, water, and shelter into environments lacking those necessities. The inter-valley plateaus were the great majority of the land mass in the Eurasian steppes. Freed from dependence on the river valleys, herders spread their herds over much larger pastures, managed larger herds, and extracted wealth from the interior steppes. The first cemeteries in these inter-valley environments were made by Yamnaya people (Shilov 1985: Table 1). They left absolutely no traces of permanent settlement anywhere east of the Don valley. They probably lived in wagons. Their second advantage was in war. Riders could advance to and retreat from raids faster than pedestrian warriors. Riders could arrive unexpectedly, dismount and attack people in their fields or capture cattle, and get away quickly. The decline in settled cultivation across Europe after 3300 calBC occurred in a social setting of increased levels of warfare almost everywhere. Riding probably added to the general increase in insecurity, making riding more necessary, and expanding the market for horses (intensifying #1).

3. Proto-Indo-European institutions included a belief in the sanctity of verbal contracts bound by oaths (*$*wegh^{w}$-*), and in the obligation of patrons (or gods) to protect clients (or humans) in return for loyalty and service. In Proto-Indo-European religion generally the chasm between gods and humans was bridged by the sanctity of oath-bound contracts

and reciprocal obligations, so these were undoubtedly important tools regulating the daily behavior of the powerful toward the weak. The presence of the critical vocabulary in Tocharian suggests that this way of legitimizing inequality was an old part of steppe social institutions, probably going back to the initial appearance of differences in wealth when domesticated animals were first accepted in the steppes (Anthony 2007). Patron-client systems like this could incorporate outsiders as clients who enjoyed rights and protection (Mallory and Adams 1997 entries on *Guest* and *Friend*; Polomé 1991; O'Flaherty 1981:92; Benveniste 1973: 273-288).

4. With the evolution of the Yamnaya horizon, steppe societies must have developed a political infrastructure to manage migratory behavior. The great change in living patterns and increase in mobility that occurred in the Pontic-Caspian steppes at the opening of the Yamnaya period, about 3300 calBC, cannot have happened without social effects. One of those might have been the creation of mutual obligations of 'hospitality' between guest-hosts (**ghos-ti-*). This institution redefined who belonged under the social umbrella, and extended protection to new groups. It would have been very useful as a new way to incorporate outsiders as people with clearly defined rights and protections, as it was used from *The Odyssey* to medieval Europe (Kristiansen and Larsson 2005: 238). The apparent absence of this root in Anatolian and Tocharian suggests that this might have been a new development connected with the migratory behavior of the early Yamnaya horizon.

5. Finally, steppe societies had created an elaborate political theatre around their funerals during the Eneolithic, as can be seen in the numerous animal sacrifices and elaborate funeral costumes of Khvalynsk, Mariupol-Nikol'skoe, and Novodanilovka funerals, in the richer Yamnaya graves, and perhaps on more cheerful public occasions as well. About 15% of Yamnaya graves contained the bones of sacrificed animals (Shilov 1985: Table 2). Proto-Indo-European contained a vocabulary related to gift-giving and gift-taking that is interpreted as referring to potlatch-like feasts meant to build prestige and display wealth, a linguistic corollary of the archaeological evidence for funeral feasts and prestige displays in the Pontic-Caspian homeland. The public performance of

praise poetry, animal sacrifices, and the distribution of meat and mead were central parts of the show (Benveniste 1973: 61-63; Mallory and Adams 1997:224-225; Markey 1990). Calvert Watkins found a special kind of song he called the 'praise of the gift' in Vedic, Greek, Celtic and Germanic, and therefore almost certainly in late Proto-Indo-European (Watkins 1995:73-84). Praise poems proclaimed the generosity of a patron and enumerated his gifts. These performances were both acclamations of identity and recruiting events. Feasts and feast-hosting are the most common paths to prestige among tribal societies around the world (Dietler and Hayden 2001). They function to publicly identify friends and allies, and to recruit new allies.

A more productive herding system, wealth from horse-gifting, military power based partly on riding, impressive public rituals accompanied by feasts and poetry, and a fluid patron-client system of alliances probably brought prestige and power to the identities associated with Proto-Indo-European dialects after 3300 calBC. The guest-host institution extended the protections of oath-bound obligations to new social groups. An Indo-European-speaking patron could accept and integrate outsiders as clients without shaming them or assigning them permanently to submissive roles, as long as they conducted the sacrifices properly. Praise poetry at public feasts encouraged patrons to be generous, and validated the language of the songs as a vehicle for communicating with the gods who regulated everything. All of these factors taken together suggest that the spread of Proto-Indo-European probably was more like a franchising operation than an invasion. Although the initial penetration of a new region (or 'market' in the franchising metaphor) would have required an actual migration of a group from the steppes and probably included military confrontations with the local people, the goal of the invaders was not to conquer and destroy but to acquire clients and prestige. After the political system began to reproduce new patron-client agreements (franchises) its connection to the original steppe immigrants became genetically remote, while the myths, rituals, and language that maintained the system were reproduced down the generations. Mallory (1998) referred to this process using the wry metaphor of the *Kulturkugel*, a bullet of language and culture that acquired a new cultural skin after penetrating a target culture. The

patron-client franchising metaphor might explain how the *Kulturkugel* worked. It also suggests that the spread of steppe genes might have had only a small correlation with the spread of the Indo-European languages.

Steppe overlords and Tripolye clients: the Usatovo culture

The Usatovo culture appeared about 3300 calBC in the steppes around the mouth of the Dniester River, a strategic corridor that reached northwest into southern Poland. The rainfall-farming zone in the middle Dniester valley had been densely occupied by Cucuteni-Tripolye communities for two millennia, but they never made settlements in the steppes around the Dniester estuary. Kurgans had overlooked the Dniester estuary in the steppes beginning with the Suvorovo migration into the lower Danube Valley about 4200-4000 calBC. Occasional steppe graves with and without mounds and usually without grave gifts are dated between 4000-3300 calBC in the northwestern Pontic steppes, and are assigned to various groups including Mikhailovka I, centered in the lower Dnieper Valley, and variants of the Cernavoda I-III cultures, centered in the lower Danube (Manzura 2005; Rassamakin 2002). Usatovo introduced a culture that was quite different. Usatovo represented the rapid evolution of a new level of economic and political integration between lowland steppe and upland farming communities. The steppe element used Tripolye material culture, but had greater prestige, wealth, and military power. The Tripolye farmers who lived on the steppe border adopted the steppe custom of inhumation burial in a cemetery, but they didn't erect kurgans or display metal weapons in their graves. This integrated culture appeared just after the abandonment of the Tripolye C1 agricultural towns in the South Bug valley on the north and the Cucuteni B2 towns in the Iasi-Bîrlad region to the south. The chaos caused by the dissolution of hundreds of Cucuteni-Tripolye farming communities probably convinced the Tripolye townspeople of the middle Dniester valley to accept the status of clients. Explicit patronage defined the Usatovo culture.[2]

[2]Three comprehensive overviews of the Usatovo culture are contained in Zbenovich, V.G., 1974, Posdnetriplos'kie Plemena Severnogo Prichernomor'ya. Kiev: Dumka, still a very useful review; Dergachev, V.A., 1980, Pamyatniki Pozdnego Tripol'ya, Kishinev: Shtiintsa, which has more statistical charts and comparisons of traits; and Patokova, E.F., V.G. Petrenko,

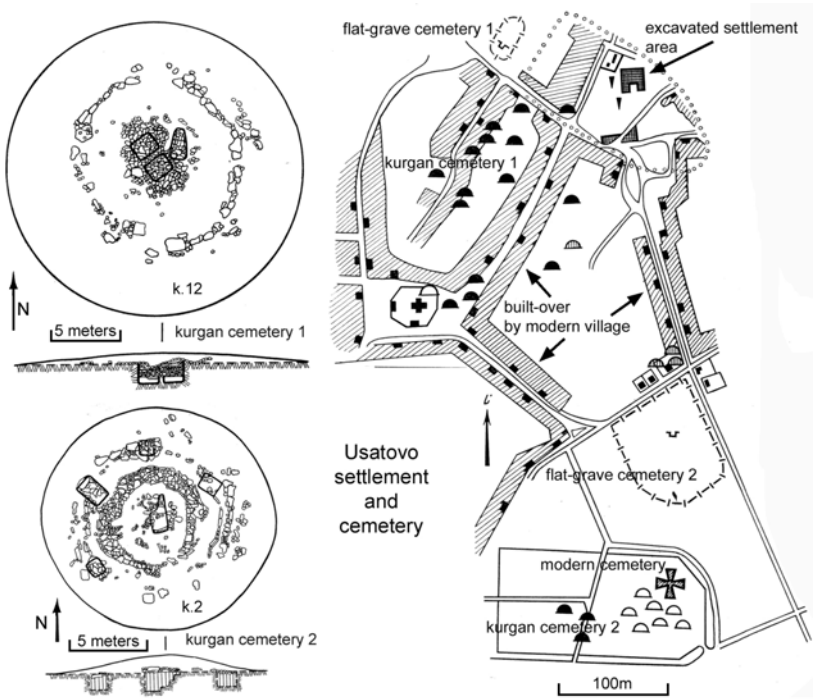

Fig. 8. Right: the remains of the Usatovo settlement and cemeteries within the modern village of Usatovo, after Patokova 1976. *Left, top*: Kurgan 12, cemetery I. *Left, bottom*: Kurgan 2, kurgan cemetery II. After Zbenovich 1974.

The settlement at Usatovo occupied about 4-5ha on the brow of a grassy ridge overlooking a bay northeast of modern Odessa (Figure 8). Usatovo herders kept sheep and goat (58%), cattle (28%) and horses (14%). Horse images were incised on two stone funeral stelae at Usatovo (kurgan cemetery I: k.11 and 3) and on a pot from an Usatovo grave at Tudorovo. Horses were important symbolically probably because riding was important in herding and raiding, and possibly because horses were important trade commodities. Four cemeteries crowned the hillcrest behind the settlement, two kurgan cemeteries and two flat-grave cemeteries.

N.B. Burdo, and L.Y. Polishchuk, 1989, Pamyatniki Tripol'skoi Kul'tury v Severo-Zapadnom Prichernomor'ye, Kiev: Dumka. A history of excavations at Usatovo is in Patokova, E.F., 1976, "Usatovo: iz istorii issledovaniya," Materiali i Issledovaniya po Arkheologii Severnogo Prichernomoriya (Kiev) 8:49-60.

Kurgan cemetery I was quite near the Usatovo settlement. It originally contained about 20 kurgans. Fifteen were excavated between 1921 and 1973. They were complex constructions. Each kurgan had an earth core inside a stone circular cromlech made of large stones. All of the cromlechs were covered by earth when the kurgans were enlarged. The central grave was a deep shaft (up to 2m deep) dug in the center of the cromlech circle, and in most kurgans it was accompanied by several (1-3) other graves also located inside the cromlech circle, in shallow pits covered by stone lids. At least five kurgans in cemetery I (3,9,11,13,14) were guarded by standing stone stelae on the southwestern sector of the mound. Yamnaya and even Afanasievo kurgans also had stone stelae, broken pots, or animal sacrifices on the southwestern sector. One Usatovo stela (k.13) was shaped at its top into a head, making an anthropomorphic shape, like many contemporary Yamnaya stelae in the South Bug-Dnieper steppes (Telegin and Mallory 1994). Kurgan 3 (31m diameter) had two stelae standing side-by-side. The larger one (1.1m tall) was inscribed with the images of a man, a deer, and three horses; the smaller one had just one horse. Kurgan 11 (40m diameter, the largest at Usatovo) covered a cromlech circle and inner mound 26m in diameter surfaced with 8,500 stones. On its southwest border were three stelae, one 2.7m tall (!) with inscribed images of dogs and horses. The central grave was robbed.

Only adult men were buried in the central graves of kurgan cemetery I, in a contracted position on the left side oriented east/northeast. Only the central graves and the peripheral graves on the southwestern sector contained red ochre. Seven of the 15 central graves (k.1,3,4,6,9,12, and 14) contained arsenical bronze daggers with 2-4 rivet holes for the handle. Only the central graves in kurgan cemetery I contained daggers. Bronze daggers emerged as new symbols of status here and in the graves of the Yamnaya horizon, but Yamnaya daggers had long tangs for the handle, like North Caucasian daggers and unlike the Usatovo and Sofievka daggers with rivet holes for the handle. Two of the central dagger graves (k.1,3) at Usatovo contained riveted daggers cast in bivalve molds with a midrib on the blade, a distinctive blade-making technique that appeared also in Anatolia at Troy II and contemporary sites in Greece and Crete (David

Stronach's Type 4 daggers). The Usatovo mid-rib daggers, like the stone stelae, probably were older than the Aegean ones. The central graves in kurgan cemetery I also contained fine painted Tripolye pots, one imported late Maikop-Novosvobodnaya vessel (kurgan 12), arsenical bronze awls, flat axes, two Novosvobodnaya-style chisels, adzes, silver rings and spiral twists, flint microlithic blades, and flint hollow-based arrowheads. Bronze weapons and tools appeared only in the central graves, a clear expression of a status and prestige hierarchy.

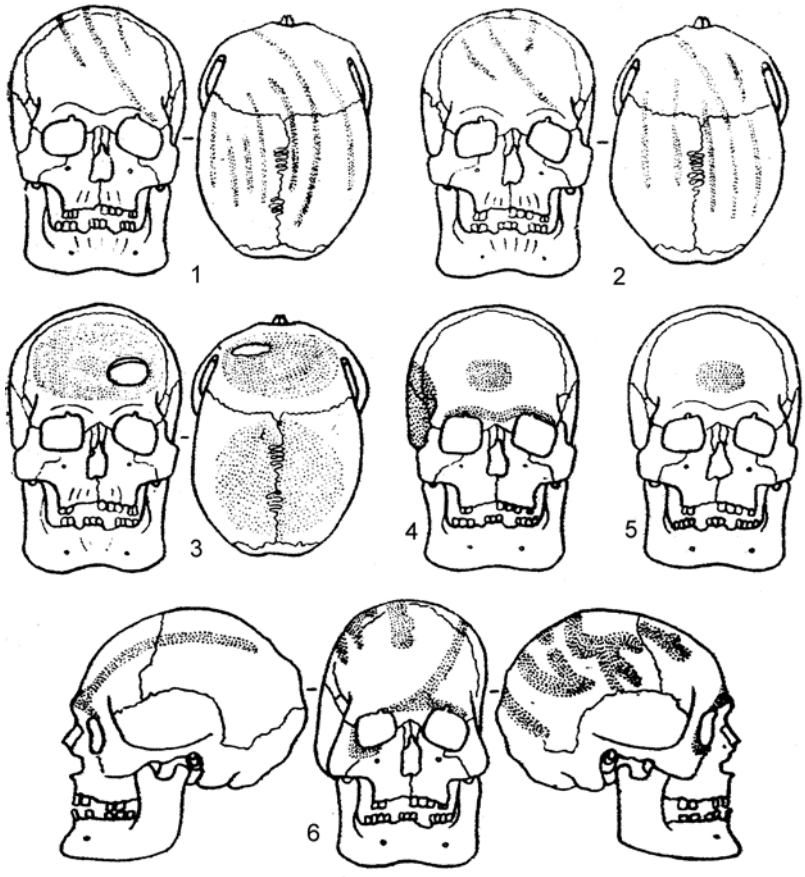

Fig. 9. Painted skulls from graves at Usatovo (1-5) and Mayaki (6). After Zin'kovskii and Petrenko 1987.

Kurgan cemetery II was about 400m from kurgan cemetery I. It originally contained probably 10 kurgans, most of them smaller than those in kurgan cemetery I; three were excavated. They yielded no daggers, no weapons, only small metal objects (awls, rings), and only a few fine painted Tripolye ceramic vessels, but of the same types as in kurgan cemetery I and the settlement. A white glass bead recovered from kurgan cemetery II, k.2, gr.1 is the oldest known glass in the Black Sea region and perhaps in the ancient world. The Usatovo bead and two others from Triploye C2 Sofievka on the middle Dnieper are probably at least 400 years older than the earliest known glass in the Mediterranean (5^{th}-dynasty Egypt, about 2450 calBC). But the Tripolye culture had no glazed ceramics or faience, so this vitreous technology was exotic. Almost certainly the Usatovo and Sofievka glass beads were made somewhere in the eastern Mediterranean and were imported (Ostroverkhov 1985). Six males in kurgan cemetery II had designs painted on their skulls with red ochre (Figure 9). Three had been killed by hammer blows to the head. Hammer wounds did not appear in kurgan cemetery I. Kurgan cemetery II was used for a distinct social group or status, perhaps warriors. But similar red designs were painted on the head of one male in kurgan cemetery I, in a peripheral grave under kurgan 12, grave 2, in the southwestern sector; and similar designs were painted on skulls in some Yamnaya graves at the Popilnaya kurgan cemetery on the South Bug (Zin'kovskii and Petrenko 1987).

The flat graves at Usatovo were shallow pits covered by large flat stones, usually containing a body in a contracted position on the left side, oriented east or northeast. Two cemeteries contained just flat graves, without mounds. Flat-grave cemetery I had 36 graves; cemetery II had 30 graves. While just seven of the 51 kurgan graves (14%) contained children (and two of these were buried with adults), 12 of the 36 flat graves (33%) in cemetery I contained only children. Some children's graves had ceramic female figurines. Female figurines also appeared in the Usatovo settlement, but never in the kurgan cemeteries. Most of the adults in the flat graves were males, with a few old females. They had from 1-5 pottery vessels in each grave, but no metal, and only 4% of the pottery was fine Tripolye ware. Fine Tripolye ware constituted 30% of the ceramics in kurgan cemeteries I and II. Flint tools and

projectile points occurred in the flat graves, and 15 skulls were painted in the same red ochre designs as those in the kurgan graves, but none had hammer wounds.

Kurgan cemetery I was reserved for leaders who displayed arsenical bronze riveted daggers and axes and wore silver rings but suffered no hammer wounds, perhaps patrons. Kurgan cemetery II honored old men, old women, young men, and children who did not have bronze daggers or metal weapons of any kind, but sometimes died of hammer-wounds to the head, perhaps those who died in battle and their close kin. The flat cemeteries contained many children, a few women, and old men who had plain pots. All were connected to each other, and to external Yamnaya groups, by linear red designs painted on some skulls. The social organization of Usatovo has been interpreted as a male-centered military aristocracy, but it could also be read as remarkably like the tripartite social system suggested by Dumezil for the speakers of Proto-Indo-European, with priest-patrons (kurgan cemetery I), warriors and their families (kurgan cemetery II), and ordinary producers (flat graves). Clearly segregated funeral rituals (kurgan or flat grave) for rich and poor social groups appeared also at Mayaki, another Usatovo settlement on the Dniester.

The flat-grave cemeteries, containing the lowest-ranking people, were identical in ritual and form to upland Tripolye C2 flat-grave cemeteries at Holerkani, Ryşeşti, Danku and Vikhvatintsyi, located at the steppe border on the edge of the rainfall agriculture zone. Excavation of perhaps ⅓ of the cemetery at Vikhvatintsyi on the Dniester yielded 61 graves of people with a gracile Mediterranean skull-and-face configuration. They contained female figurines, like the flat graves at Usatovo, but had no metal weapons and only one copper object, a simple awl. Inhumation graves of any kind were an innovation in Tripolye communities, which had not customarily buried their dead over the previous 2000 years. These new Tripolye C2 cemeteries contained no prestige objects, little wealth, and had no kurgans, stone cromlechs, or stelae. Prestige, power, and weapons were concentrated in the steppes and were symbolized by kurgan graves, an old steppe grave form.

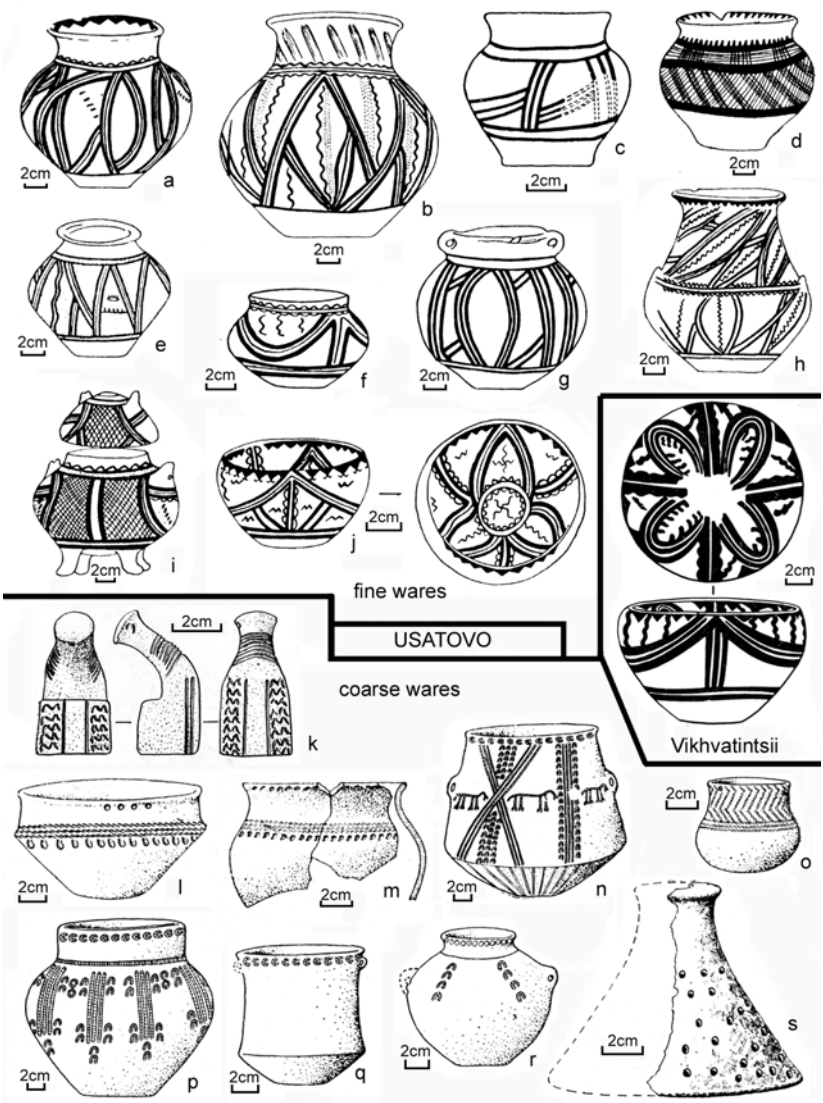

Fig. 10. Usatovo-culture ceramics. (a) Usatovo kurgan cemetery I; (b) Tudorovo flat grave; (c) Sarata kurgan; (d) Shabablat kurgan; (e) Usatovo kurgan cemetery I; (f) Parkany kurgan 182; (g) Usatovo kurgan cemetery II; (h) Usatovo kurgan cemetery I; (i) Parkany kurgan 91; (j) Usatovo kurgan cemetery II; (k) abstract figurine from Usatovo flat grave cemetery II; (l) Usatovo kurgan cemetery II; (m) Mayaki settlement; (n) Tudorovo kurgan; (o) Usatovo flat grave cemetery II; (p)

Usatovo kurgan cemetery I; (q) Usatovo kurgan cemetery I; (r) Usatovo kurgan cemetery I; (s) Mayaki settlement, probably a cheese strainer. Also shown: a painted fine bowl from the Triploye C2 cemetery at Vikhvatintsii. After Zbenovich 1968.

The dagger chiefs of Usatovo, the men buried in the central graves in kurgan cemetery I, probably dominated a hierarchy of steppe chiefs. Their political relationship with the Tripolye villages in the Prut and Dniester forest-steppe was unequal, but they might have been economically interdependent. Conical ceramic spindle whorls were abundant in upland Tripolye C2 fortified towns and villages, but were very rare in Usatovo sites (Dergachev 1980:106). Sheep and goats were the most important stock animals in Usatovo settlements (58-76% of bones at the Usatovo and Mayaki settlements respectively), and sheep predominated over goats, suggesting a wool butchering pattern. The complementary distribution of sheep bones and spindle whorls is compatible with an integrated economy in which Usatovo wool was processed into textiles in upland Tripolye villages. The political status gradient between the steppes and the upland agricultural towns would have provided an incentive for the upland Tripolye producers to adopt the language of the Usatovo chiefs.

The origins of the Usatovo culture

Usatovo is classified in all eastern European accounts as a Tripolye C2 culture, but this label is misleading. Tripolye C2 pottery was a defining feature of Usatovo graves and settlements. Fine Tripolye C2 pots with an orange clay fabric, fired at almost 900° C, and made in the style of the Brynzeni III Tripolye town on the upper Dniester, constituted 18% of the ceramics in the Usatovo settlement but 30% of the ceramics in the kurgan graves (Figure 10). About 80% of the pottery at Usatovo and other settlements was shell-tempered gray or brown ware, undecorated or decorated with cord impressions, and fired at 700°C. This shell-tempered ware was technologically not very different from Yamnaya pottery. Most vessel forms were Tripolye, but some decorative motifs resembled those on Yamnaya Mikhailovka II-style pottery, and some pots (Figure 10:o) looked like Yamnaya imports. A few of these shell-tempered gray pots at Usatovo were coated with a thick orange slip to make them *look* like fine Tripolye pots

(Zbenovich 1968:54)—a form of 'cheating' that indicates that the orange wares were particularly desired. Fine Tripolye-style pots represented more than just 'culture' at Usatovo—they also were part of the prestige displays of the political elite. Cultural identity at Usatovo was not passively contained in its pottery.

The Usatovo culture was different in important ways from any other Tripolye C2 variant. All of the approximately 50 known Usatovo sites appeared exclusively in the steppes, at first around the mouth of the Dniester and later in the Prut and Danube estuaries. With the exception of a small Tripolye B1 wild-grape-picking camp at Mir'noe (Burdo and Stanko 1981), no Tripolye settlement had been established in the steppes through 2000 years of agricultural cultivation in the forest-steppe uplands. Average rainfall around Odessa is less than 350mm/year, which is borderline even for drought-tolerant cereal crops, so agriculture was not reliable in the lower Dniester valley. Wheat (mostly emmer and bread wheats), barley, millet (frequent), oats (frequent), and peas were consumed at Usatovo, but cultivation near the settlement was neither as predictable nor as productive as it was 200km upstream. Usatovo was located in a steppe environment that was unfamiliar to Tripolye farmers and had never before been exploited by them. But in about 3300-3200 calBC the steppe was just beginning to be exploited in a new, more mobile and more productive way far to the east, in the steppes east of the Don River, where the most mobile, eastern kind of Yamnaya pastoralism was practiced by tribes that probably literally lived in wagons. The western Yamnaya pastoral economy was less mobile, with herding groups tethered to a few permanent fortified settlements west of the Don (Liventsovka, Samsonovka) and in the Dnieper Valley (Mikhailovka II-III). Usatovo depended on a pastoral economy more settled even than that of Mikhailovka II, but it was more similar to the economy and settlement architecture of Yamnaya Mikhailovka II than it was to the Tripolye C2 town of Brynzeni III in the upper Dniester valley.

Usatovo funeral rituals were derived from the same Eneolithic steppe traditions as Yamnaya kurgan rituals. Many details of Usatovo graves (ritual attention to the southwestern sector, red-ochre-painted lines on the skulls, stone cromlechs, roofed grave pits, stone stelae) and the general form of the

monument were shared with Yamnaya graves nearby in the South Bug steppes. Tripolye funeral customs through the previous 2000 years had not included burial of the body or a prominent monument to the dead. In funeral rituals, settlement types, and economy Usatovo was dissimilar from any other Tripolye variant and similar to Yamnaya.

The people who founded the Usatovo settlement probably were descended from an earlier generation of steppe herders who had lived in the Dniester and South Bug steppes, not from Tripolye farmers who had lived in the uplands. The majority of the pre-Usatovo graves in the Dniester-South Bug steppes were under kurgans, some with cromlechs around the mound and most with an opening on the southwest, like the later Usatovo kurgans. Kurgan 2, grave 1 at Olaneshti on the South Bug, identified as a Mikhailovka I grave, had a stone stela over the grave pit, a primitive predecessor of the Usatovo stelae. Most of the pre-Usatovo kurgans had no cromlechs or stelae, as at Khadzhider, but had an opening in the surrounding ditch on the southwest (Kovapenko and Fomenko 1986; Videiko and Petrenko 2003). Petrenko sees the origins of the Usatovo culture in steppe graves of the Khadzhider type, and he is probably correct (Videiko and Petrenko 2003). The pottery was a dark, shell-tempered ware with cord impressions or rows of U-shaped caterpillar" impressions, traits found in the pottery of Cernavoda I-III, Mikhailovka I, late Sredni Stog, and Tripolye C1, all contemporary around the mid-fourth millennium calBC in regions neighboring the Dniester-South Bug steppes (Manzura, Savva, and Bogatoya 1995; Videiko 1999).

The pre-Usatovo kurgan graves of the Dniester-South Bug steppes were not accompanied by archaeologically visible settlements. Their economy probably was a more pastoral version of the economy documented at the settlement of Mikhailovka, level I (or Nizhnemikhailovka) on the lower Dnieper, occupied 3700-3400 calBC, where 65% of the animal bones were sheep-goat, 19% cattle, and 9% horses; and a little grain was cultivated (emmer wheat, barley, millet, and one imprint of a bitter vetch seed, *Vicia ervilia*, a crop grown today for animal fodder). Mikhailovka I-type pottery appeared in the pre-Usatovo graves of the northwestern Pontic steppes. Large sheep probably kept for wool appeared in the Danube valley during the Cernavoda III-Boleraz period, about 3600-3200 BCE

(Bökönyi 1987). In the Dniester-South Bug steppes the pre-Usatovo herders probably also raised sheep for wool.

If the giant Triploye C1 towns of the South Bug uplands, ca. 3700-3300 calBC, are interpreted as defensive population concentrations, which seems to be the best explanation for them (Videiko 1990), what was the external threat? Why was the entire middle South Bug valley emptied of permanent farming towns after 3300 calBC? The pre-Usatovo herding societies of the northwestern Pontic steppes might well have raided the Tripolye C1 farming towns of the South Bug valley. In contrast, Tripolye towns in the Dniester-Prut uplands were not abandoned at the end of Triploye C1. Their survival might have depended on a different, more integrated relationship with steppe societies, a relationship of clientage that became more pronounced and archaeologically visible when steppe patrons were enriched by two radical innovations in transportation that happened simultaneously about 3300-3200 calBC, one affecting travel on the seas and the other affecting travel on seas of grass. These two innovations met at the shoreline of the Black Sea.

The first and most important innovation was the introduction of wheeled vehicles, which made steppe economies much more productive, opened the interior steppes to efficient exploitation, and in the east created a new way of life based on living in wagons. The Yamnaya horizon was the archaeological expression of that land-based revolution, which expanded the potential scale of pastoral economies and therefore created a surplus that could be used as wealth. The second innovation was the invention of the multi-oared longboat in the Aegean, which perhaps opened the Cyclades Islands to efficient exploitation around 3300-3200 calBC (Broodbank 2000: 256) and might have been responsible for the increase in long-distance trade that brought Mediterranean glass to Usatovo and Usatovo-type riveted and mid-ribbed daggers to Anatolia and the Aegean. The rich Late Maikop chiefs in the North Caucasus exchanged at least a few objects with the chiefs at Usatovo, perhaps by sea, probably though intermediaries of the Kemi-Oba culture on the Crimean peninsula. Cernavoda ceramics from the lower Danube Valley were discarded in the Usatovo settlement (but never were placed in the kurgan graves), so Usatovo was in contact with the Danube, again possibly by sea (Zbenovich

1974:103, 141). This marine trade created a second new source of wealth.

Enriched by both occasional marine trade (probably a sporadic enterprise at this early stage) and the increased productivity of steppe horse-breeding and sheep-herding, the expanding chiefdoms of the northwestern Pontic steppes reached out for new clients. Upland Tripolye economies might already have been integrated with steppe sheep-herders through the production of wool textiles. But the chiefs buried in the central graves at Usatovo remained separate from and politically superior to the Tripolye villagers buried in flat-graves in the uplands. Usatovo probably began when steppe herders attached themselves as patrons to upland Tripolye clients, a political structure that was repeated in many later Indo-European societies, during a period of crisis in the Tripolye culture just after many Tripolye towns and farming regions were abandoned both to the north and the south.

Triploye C2 relations with northern Europe

Usatovo began in the Dniester steppes rather than in some other part of the coastal steppes because the Dniester River was a strategic corridor for trade and clientage. When Greek explorers entered the Black Sea and began to set up trading colonies, among their first was Tyras at the mouth of the Dniester. The Dniester connected both the steppe economy and the Black Sea marine trade with Poland and the interior of northern Europe. Grain, timber, slaves, furs, and amber were the commodities that the Greeks wanted from the north; horses might have been traded by Usatovo chiefs from the south.

The painted Tripolye pots in Usatovo graves and settlements were most similar to those of the Tripolye C2 settlements at Brynzeny III on the Prut and Vikhvatintsyi on the Dniester. Vikhvatintsyi was 175km up the Dniester from Usatovo near the steppe border, and Brynzeny III was about 350km distant, hidden in the forested valleys of the East Carpathian piedmont. A fine painted pot of Brynzeny type was buried in the central grave of kurgan cemetery I, kurgan 12 at Usatovo, with an imported Maikop pot and a riveted bronze dagger. At this time Brynzeny III still had 37 two-story *ploshchadka* houses of the traditional Tripolye type, clay ovens, loom weights for large vertical looms, and female figurines.

Tripolye clients of the Usatovo chiefs could have been the agents through whom the Usatovo language spread northward into central Europe. After a few generations of clientage the people of the upper Dniester would have wanted to acquire their own clients. Nested hierarchies in which clients are themselves patrons of other clients are characteristic of the growth of patron-client systems. The archaeological evidence for some kind of northward spread of people or political relationships consists of pottery exchanges between Tripolye sites of the Dniester-Prut uplands and late TRB (Trichterbecker or Funnel-Beaker culture) sites in southeastern Poland. Substantial quantities of fine painted Tripolye C2 pottery of the Brynzeny III type occurred in southern Polish settlements of the late TRB culture dated 3000-2800 calBC (Bronicki, Kadrow and Zakościelna 2003) importantly at Gródek Nadbuźny and Zimne (Kośko 1999), and late TRB pots were imported into the Tripolye C2 sites of Zhvanets and Brynzeny III (Movsha 1985). Zhvanets was a production center for fine Tripolye pottery, with seven large two-chambered kilns, a possible source of local economic and political prestige. Conflict accompanied or alternated with exchange, since both the Polish sites and the Tripolye C2 sites closest to southeastern Poland were heavily fortified. The Tripolye C2 settlement of Kosteshti IV had a stone wall 6m wide and a fortification ditch 5m wide, while Zhvanets had three lines of fortification walls faced with stone, and both were located on high promontories. Triploye C2 community leaders whose parents had already adopted the Usatovo language could have attempted to dominate the late TRB communities of southern Poland in the same kind of patron-client relationship that the Usatovo chiefs had imposed on them.

Archaeology and the north-western Indo-European branches

This explanation incorporates and is compatible with the linguistic evidence as described in the first part of this paper, the evidence from reconstructed Proto-Indo-European socio-political and ritual institutions, and at least a superficial reading of the archaeological data. The western Proto-Indo-European dialect that would ultimately form the root of Pre-Germanic first became established in the northwestern Pontic steppes at Usatovo, and spread up the Dniester from the Usatovo culture

through a nested series of patrons and clients into the late TRB communities of southeastern Poland. These late TRB communities later evolved into early Corded Ware communities.

The Corded Ware horizon spread across most of northern Europe after 3000 BCE, with the initial rapid spread happening mainly between 3000 and 2700 BCE—*after* the Yamnaya horizon appeared across the Pontic-Caspian steppes, Yamnaya clans migrated into the Danube valley, and Usatovo patrons acquired Tripolye clients in the Dniester-Prut uplands. The Corded Ware communities of northern Europe seem to have been affected by these events. The defining traits of the Corded Ware horizon were, first, the widespread adoption of a pastoral, mobile economy that resulted in a significant reduction in the number and size of nucleated settlement sites in northern Europe (much like Yamnaya in the steppes); second, the almost-universal adoption of funeral rituals involving single graves under mounds (like Yamnaya); third, the diffusion of stone hammer-axes probably derived from Late Neolithic northern European weapons, but now appearing widely in graves, an unusual context for the earlier types; and fourth, the adoption of an elite drinking culture linked to particular kinds of cord-decorated cups and beakers, many of which had local stylistic prototypes but still constituted a striking and distinctive new fashion. The material culture of the Corded Ware horizon was mostly native to northern Europe, but the underlying behaviors were very similar to those of the Yamnaya horizon—the adoption of a more mobile herding economy based on the possession of ox-drawn wagons and horses, and a corresponding rise in the ritual prestige and value of livestock. In these ways the Corded Ware horizon emulated the earlier innovations of the Yamnaya horizon.

Some Corded Ware groups in southeastern Poland might have evolved from Indo-European-speaking late TRB societies through connections with Usatovo. This does not necessarily imply that Corded Ware communities outside southern Poland immediately became Indo-European-speakers, but the network of competitive feasting and warfare implied by the material remains of the Corded Ware horizon would have been a medium conducive to language spread. Expansion beyond a few islands of authority might have waited until the Indo-European-speaking chiefs successfully responded to some

external stress—climatic or political. Then these chiefdoms could have become the foundation for the development of a new ethnic identity, as happened among the Acholi chiefdoms in northern Uganda and southern Sudan (Atkinson 1994) or the Pashtun chiefdoms in Swat (Barth 1959). Pre-Germanic was not necessarily the only Indo-European dialect spoken among the eastern tribes of the Corded Ware horizon, but it was the one that survived. This essay is only about its initial appearance, not its spread or survival.

The north-western Indo-European branches grew out of a shared western dialect of Proto-Indo-European that left up to 64 unique vocabulary words embedded in the daughters that diverged from it: Celtic, Italic, Germanic, Baltic, and Slavic (Mallory and Adams 2006: 78). In the scenario described here, that distinctive western dialect was spoken in the North Pontic steppes around 3300 calBC, while its eastern sister was spoken in the Don-Ural steppes (Anatolian and Tocharian already having detached). An early Yamnaya or perhaps even pre-Yamnaya dialect of the north-western Pontic steppes became the language spoken at Usatovo (Pre-Germanic, in hindsight); a Yamnaya dialect of the northern Dnieper steppes above the rapids became the basis for the language that eventually dominated the middle Dnieper region (Balto-Slavic, again a term that makes sense only in terms of much later events); and a Yamnaya dialect of the southern Dnieper steppes below the rapids was carried into the middle and lower Danube valley by the migrations of 3100-2800 calBC, where the immigrants eventually competed with each other, differentiated, and developed many local tongues, two of which can be called Pre-Celtic and Pre-Italic.

One of the odd and interesting details of this sequence of archaeological events is that the Yamnaya migrations into the Danube valley were contemporary with (according to radiocarbon dates) and passed through the Dniester-Prut steppe territory of the late Usatovo chiefs, but no Yamnaya kurgan graves were built there until after the Usatovo period—all Yamnaya graves in the Dniester-Prut steppes that occur in the same kurgan with an Usatovo grave are stratified above, later than, the Usatovo grave. The Yamnaya migrants on their way to Plachidol, Tarnava, and Rast seem to have just passed through the Usatovo territory. Perhaps the mutual obligations of 'hospitality' between guest-hosts indicated by

the shared north-western Indo-European term **ghos-ti-* was an institution that developed partly to manage situations like this—temporary access to territory under accepted rules during a migration.

Language change reflects changing social needs and conditions. Archaeology can show with some precision how and when social and economic conditions changed. It should be possible to combine these two very different sources of information more profitably. Archaeology has a set of methods for identifying and defining status symbols and subsistence and exchange systems. Language shift usually flows in the direction of status and power, particularly when a new economic structure and source of wealth is introduced with the high-prestige language. Language and material culture can be correlated in prehistoric contexts at robust, persistent material-culture frontiers, which, while admittedly unusual and atypical in most pre-state border regions, when they *do* occur usually are language frontiers. When a frontier of this type disintegrated, as the Tripolye C2/steppe frontier disintegrated about 3500-3000 calBC, and a new economic system and set of status symbols diffused across it, as it did after 3300 calBC, language probably spread with the new economy and status system. Arguments based on independent data suggest that this frontier was the western frontier of Proto-Indo-European. Proto-Indo-European societies had social institutions that would have encouraged the recruitment of new speakers—aggressive warfare by young men newly initiated into war-bands, feasts hosted by patrons, the sacrifice and consumption of cows and horses, public praise poetry that encouraged the patron's generosity, verbal jousting and boasting, mead-drinking, and, as we can see from the archaeological record, the display of status weapons such as daggers and polished stone maces. The poetry and speech-making that accompanied these events were one important medium through which foreign observers were recruited into the language. *Let us speak great words as men of power in the sacrificial gathering*, was the standard closing attached repeatedly to several different hymns (RV 2.12, 2.23, 2.28) in the family books, the oldest part of the *Rig Veda*, probably composed about 1500 calBC. This was not just a call to action, but a device for recruiting new clients. It seems to me that we can now apply these linguistically-documented social institutions to a specific

archaeological time and place, providing a clearer understanding of the initial spread of the Indo-European languages.

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