

## Chapter 9

# Late Neolithic/Late Copper Age 3500–2200 BC

Sarunas Milisauskas and Janusz Kruk

### Introduction

By the beginning of the Late Neolithic/Late Copper Age, most of Europe was occupied by farmers. Only the coniferous and tundra areas of northern Europe remained inhabited by hunters and gatherers. In some areas politically complex societies already existed. However, there is a discontinuity in some aspects of the archaeological record after 3500–3000 years of farming societies in Europe; perhaps this reflects crises or major changes at the end of the “Old Neolithic” or “Old Europe.” Over the years archaeologists have concentrated on origin problems: farming, political complexity, or this or that culture. The endings of things have received less attention. In southeastern Europe, for example, anthropomorphic clay figurines disappeared, large settlements were abandoned, many were destroyed by fire, and burial mounds appeared. This affected northern Bulgaria and southern Romania first, around 3800 BC. The shift in the Tripolye culture, i.e., no more big sites, big houses, female figurines, and painted pottery, seems to begin about 3500 BC and is almost complete by 3000–2800 BC. Around 3100 or 3000 BC, most large settlements disappeared in central Europe. How are we to interpret these undoubted changes seen in the archaeological record?

Two major explanations, migrations or locally initiated changes, compete to account for these developments. In Gimbutas’s (1991) widely popularized narratives, warlike, male-dominated Late Neolithic cultures destroyed the peaceful, female-centered, goddess-worshipping “Old Europe” of the Early and Middle Neolithic (Shennan 1993). Gimbutas postulated invasions by the pastoralists (called the Kurgan culture by Gimbutas) from the steppes of eastern Europe. Her hypothesis has been criticized by numerous archaeologists (Häusler 1981, Anthony 1986, Whittle 1996). One problem with this explanation is that horse riding is still not well documented in central and western Europe at this time. An alternative explanation involves “economic and technological changes, including exchange networks in combination (or not) with social and settlement changes, such as decentralization of settlement, fission of households, and even growth in the power of males to control joint action of the scattered villages” (Tringham and Conkey 1998:40). Likewise, Bankoff and Winter (1990:175) see “gradual changes over a considerable period of time, rather than necessitating explanations involving unique dramatic events such as migrations or invasions.”

There are certainly Late Neolithic/Late Copper Age developments requiring explanation. Some archaeologists argue that the onset of the Late Neolithic coincided with large-scale movements of pastoralist and other ethnic groups in Europe. Therefore, we must discuss such hypothesized migrations of pastoral groups into central, western, and northern Europe. Many scholars, especially Gimbutas

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S. Milisauskas (✉)

Department of Anthropology, State University of New York, Buffalo, NY 14261-0026, USA  
e-mail: smilis@buffalo.edu

(1956), have maintained that the Late Neolithic saw not only the influx of pastoralists from the steppes of southern Ukraine but also the appearance of the Indo-European-speaking peoples in various parts of Europe. However, demonstrating prehistoric migrations or even the presence of a pastoral economy, indigenous or immigrant, is not a simple matter. We suggest that the migration hypothesis should be treated with caution. Archaeologists have long speculated about Late Neolithic linguistic and ethnic identities, using the stylistic attributes of pottery and stone tools to differentiate the archaeological cultures, which supposedly coincide with such groups. Gimbutas (1991), for example, equates the Globular Amphora culture with Indo-European speaking peoples. Kilian (1955), Puzinas (1983), Merkevičius (1996), and Rimantienė (1996) associate the Bay Coast (Cord Ware) culture with prehistoric Baltic-speaking populations. How, in general and if at all, do ethnic groups and ethnic differences show up in the archaeological record? After wrestling with the problem for nearly 200 years, archaeologists are no nearer the answer to this question than they ever were. Ethnohistoric data tells us that some or all of diet, domestic architecture, community plans, burials, and yes, pottery, art styles, jewelry, weapons, etc., can be markers of ethnicity. The same data tell us that few or none of these things *need* vary ethnically.

The Late Neolithic/Late Copper Age is associated with two major technological innovations: woolly sheep that produced new materials for clothing and wheeled vehicles (Sherratt 2006, Horváth et al., 2008). Sherratt (2003) argues that these innovations originated in the Near East and spread rapidly along the Danube corridor in Europe. Horváth et al. (2008:455) speculates that these inventions “spread from 2 directions at the same time: from western and east-central Europe (Köninger et al., 2001) and Anatolia through southeast Europe (Uruk expansion: Sherratt 2003), and met somewhere in the Carpathian Basin.” Kalicz (1963) and Němejcová-Pavůvková (1992) emphasize also the linkage of the lower Danube with Anatolia, thus linking the phenomenon of Uruk and the Boleráz phase (3500–3300 BC) of the Baden culture.

## Chronology and Cultural Sequence

Using archaeological material, it is hard to separate the Late Neolithic/Late Copper Age from the Middle Neolithic/Early Copper Age. The Late Neolithic began at different times in various regions in Europe, in central Europe, for example, around 3200 BC. The central European Bronze Age, which succeeded the Late Neolithic, began about 2200 BC. However, the Bronze Age in Greece was already under way during the transalpine European Late Neolithic. Likewise, the Neolithic/Copper Age ended at different times across Europe, around 2500 BC, for example, in southeastern Europe. In the Ukrainian and Russian steppes west of the Urals, the Early Bronze Age begins about 3500/3300 BC.

Archaeologists have defined Late Neolithic/Late Copper Age cultures mainly on the basis of pottery styles. The following are the more important of the archaeological cultures, which fall within the timespan of the Late Neolithic: the southeastern European Late Gumelnița, Salcuța, and the Late Tripolye culture of the Ukraine, the central European Cord Ware, Globular Amphora, Bodrogkeresztúr, Baden, late Funnel Beaker, and Bell Beaker cultures. Some scholars regard some of these cultures as Early Bronze Age, especially in southeastern and western Europe. There is considerable variation among these cultures in other archaeological manifestations such as burial practices and settlement systems, variations that are very difficult to explain. During the Late Neolithic we also find large ceramic style zones in Europe. The Cord Ware, Globular Amphora, Baden and Bell Beaker cultures may be regarded as such style zones. There is nothing particularly new about style zones in the European Neolithic. The Early Neolithic Linear Pottery culture and the Middle Neolithic Lengyel culture also can be regarded as artifact style zones. However, the Cord Ware and Bell Beaker zones were larger than anything in the earlier prehistory, except the Linear Pottery, and that was the product



of first farmer pioneer immigration. Since that is not a possible explanation for the Late Neolithic, it is a new development.

The Globular Amphora, Corded Ware, and Baden cultures or ceramic style zones dominate the central and eastern European Late Neolithic. The first two have yielded scanty economic and settlement data; Hodder (1990:175) appropriately describes their archaeological record as “almost pure burial archaeology.”

In discussing Late Neolithic developments, our emphasis is on the Corded Ware, Globular Amphora, and Baden cultures, since they are frequently cited as examples for a migrationist interpretation of culture change. The Corded Ware culture is also called Battle-Axe, or Kurgan, culture.

Baden culture sites occur in Hungary, northwestern Romania, Slovakia, the Czech Republic, eastern Austria, and southern Poland and they date between 3500 and 2800 BC (Horváth et al., 2008) (Fig. 9.1). The earliest phase is called Boleráz and is dated 3500–3300 BC. Sherratt (2006) noted that the first occurrence of wool-bearing sheep and wheeled vehicles coincides with the appearance of the Baden culture. He emphasized that “The Baden culture thus marks one of the major transformations in European prehistory – even if the origin of some of its critical features is to be found outside Europe, and indeed can be traced back beyond to the areas which saw the beginnings of writing and city-life,” (Sherratt 2003:425). Recently, Furholt (2008) argued that Baden culture does not exist; only the early Baden ceramic style spreads over parts of central and southeastern Europe.

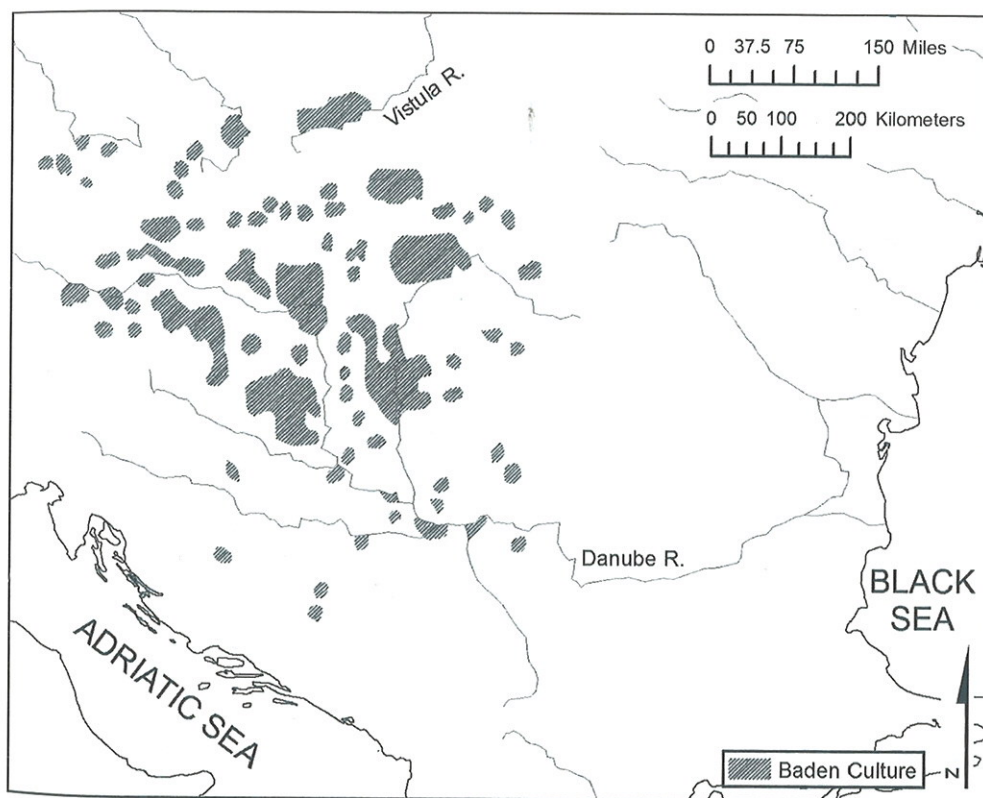


Fig. 9.1 Distribution of Baden culture sites (After Sochacki 1970)

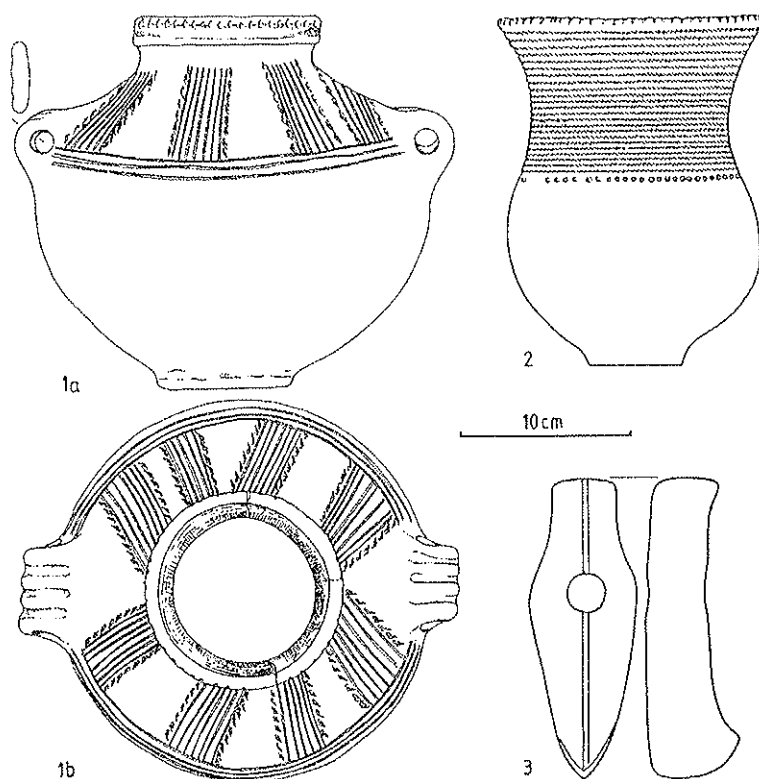


Fig. 9.2 Corded Ware artifacts: 1a, 1b, Type A amphora (Krbice, Czech Republic); 2, Type A beaker (Goleniów Zdżary, Poland); and Type A axe (Lutomiersk, Poland) (After Machnik 1979, Smrż and Buchvaldek 1998)

The Corded Ware culture is one of the most widely distributed of the Late Neolithic. Its earliest, pan-European horizon (3100–3000 BC), is defined by Type A axes, Type A amphorae, and Type A beakers, found in mound burials (Fig. 9.2). This horizon's existence has been questioned over the last 20 years. Behrens (1994, 1997) argues the term should be limited to Denmark, where it was first defined by Glob (1944).

This culture extended from the Rhine to the Upper Volga River, from Finland to the Alps and the Carpathians. It includes many local cultures such as the Swiss and Saxon-Thuringian, Single Grave culture, the Swedish Boat-Axe, the Finnish, and East Baltic Bay Coast (*Rzucewo*, *Haffküste*) culture, and the southeastern Polish and Middle Dnepr, Fatianovo culture (Fig. 9.3). The entire complex occupied mostly the northern part of the deciduous forest zone.

Around 2900–2800 BC the earliest Corded Ware pottery and burials appeared in the Carpathian foothills (southeastern Poland), suggesting to some the intrusion of a new people into those regions (Machnik 1979). Similar developments are noted by Rimantienė (1992a, 1996) in the East Baltic area, and by Kristiansen (1989) in Denmark.

Since mounds, cord-ornamented pottery, battle axes, and red ocher in burials occur in the Pit-Grave (Yamnaya) culture of the southern Ukraine and Russian steppes and the Corded Ware culture, some archaeologists believe the latter were immigrant descendants from the former. However, this hypothesis has some problems. Corded Ware finds appeared around 2800 BC in western Europe. If we accept the migration hypothesis, we must allow that Pit-Grave culture populations moved before 2800 BC into central Europe from the steppe region of the southern Ukraine. Some Corded Ware traits are



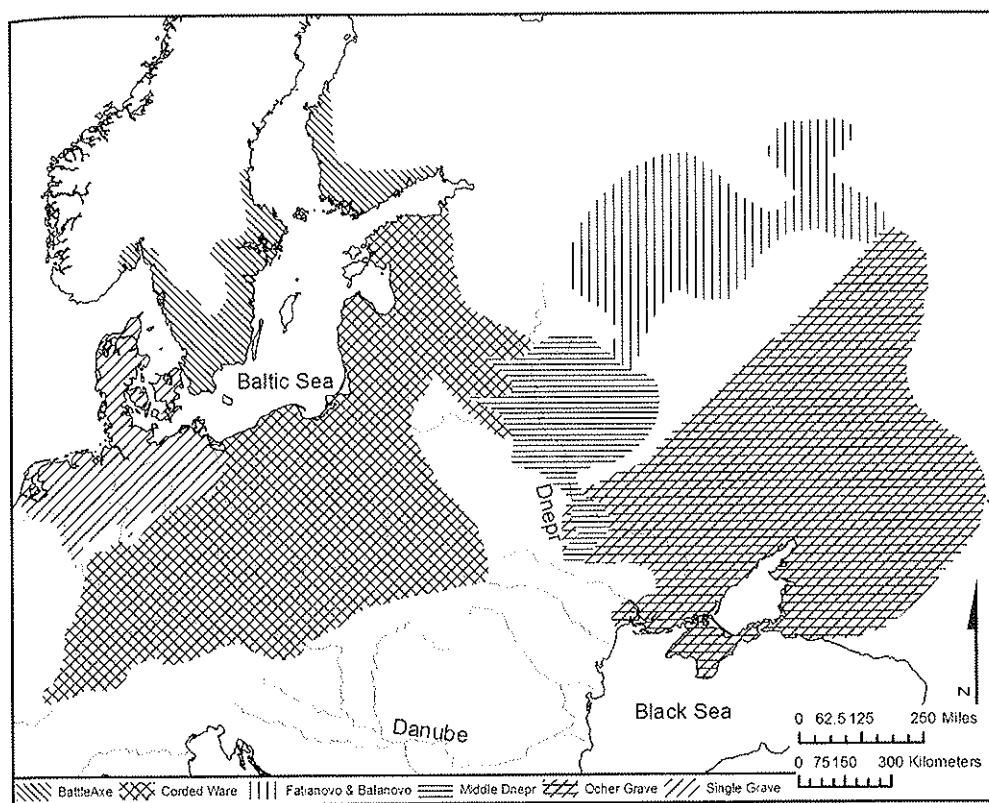


Fig. 9.3 Corded Ware groups and related cultures

found in the other Neolithic cultures of central and eastern Europe. Cord ornamented pottery is found on Funnel Beaker, Globular Amphora, Comb-and-Pit Ornamented Pottery sites, and Funnel Beaker sites often yield battle-axes. It is difficult to establish from the available archaeological evidence the route by which Pit-Grave populations could have migrated into central Europe before 2900 BC. The most likely route would have been from Romania through the Carpathian Mountains into central Europe. There are graves in Romanian Moldavia and southeastern Hungary which are similar to those occurring around the Black Sea. At Baia-Hamangia in Romania, graves containing burials adorned with red ochre have been dated around 2600 BC (Quita and Kohl 1969). This might indicate the expansion of steppe peoples from the Ukraine into southeastern and central Europe, although red ochre occurs so frequently in prehistoric ritual contexts that it is difficult to base any argument of population movement solely on its presence.

The Bodrogkeresztúr, Funnel Beaker, and other Neolithic cultures were present in central Europe before 3100 BC. If we accept Neustupný's (1969) view that, in the Czech Republic anyway, the Corded Ware culture had a subsistence strategy based on agriculture, then migration probably cannot be invoked to explain its appearance in some areas of central Europe. It is possible that different ethnic groups exploited the same region at different periods, but archaeologists cannot usually distinguish ethnic differences on the basis of their material remains alone. It would be easier to recognize such groups if they had different subsistence strategies. If Corded Ware represents a pastoral way of life, it could represent newcomers to central Europe who migrated from the east along the Carpathians. We know that in historic times pastoral groups have moved back and forth through the Carpathians and Balkan ranges.

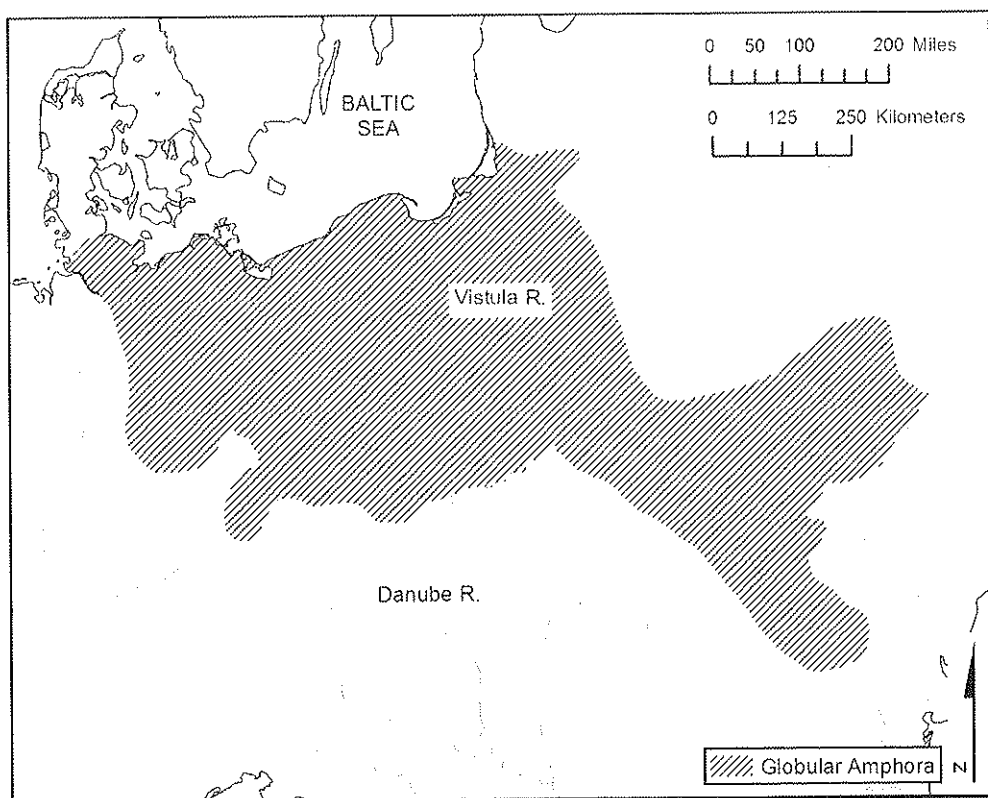


Fig. 9.4 Distribution of Globular Amphora culture sites (After Wiślański 1970)

Another question worth asking is what would have caused Pit-Grave peoples to migrate into central Europe. We know that in historic times, pressure from one set of pastoralists on another often triggered a chain reaction of migrations that eventually affected Europe. For example, in Asia, group A would press against group B, which, in turn, would press against group C, etc., which eventually would affect the groups living in Europe. But it is very difficult to demonstrate that any Late Neolithic society in Asia or Europe had such a military advantage over its neighbors that it could have forced them to migrate. Thus, even if we postulate a pastoral economy for the Corded Ware culture, it does not mean that it originated in the steppe region.

The Corded Ware, Globular Amphora (Fig. 9.4), and Baden style zones overlap in some regions. One explanation is that there were three different peoples, with different subsistence strategies occupying the same region. However, as Machnik (1970) has demonstrated, only the Corded Ware Early Phase overlaps with the Globular Amphora culture. Machnik has also noted that in areas where there are many Globular Amphora sites, there are few Corded Ware sites, and vice versa. For example, there is a great concentration of Globular Amphora sites along the Warta, Middle Vistula, and Bug rivers, while the Corded Ware culture finds are rare in those areas. In the Upper Dnestr and San drainages, there are large numbers of Corded Ware finds. In some areas, Late Corded Ware overlaps with the Comb-and-Pit Ornamented Pottery culture and the Bell Beaker phenomenon.

The Late Neolithic/Early Bronze Age Bell Beaker phenomenon is found in western, central and west Mediterranean Europe, 2900/2800–2000/1900 BC (Fig. 9.5) (Harrison 1980, Czebreszuk 2004). It appeared in central Europe around 2500/2400 BC. Nicolis (2001) and Czebreszuk and Szmyt (2003) publications contain numerous articles about the various aspects of the Bell Beaker phenomenon. As



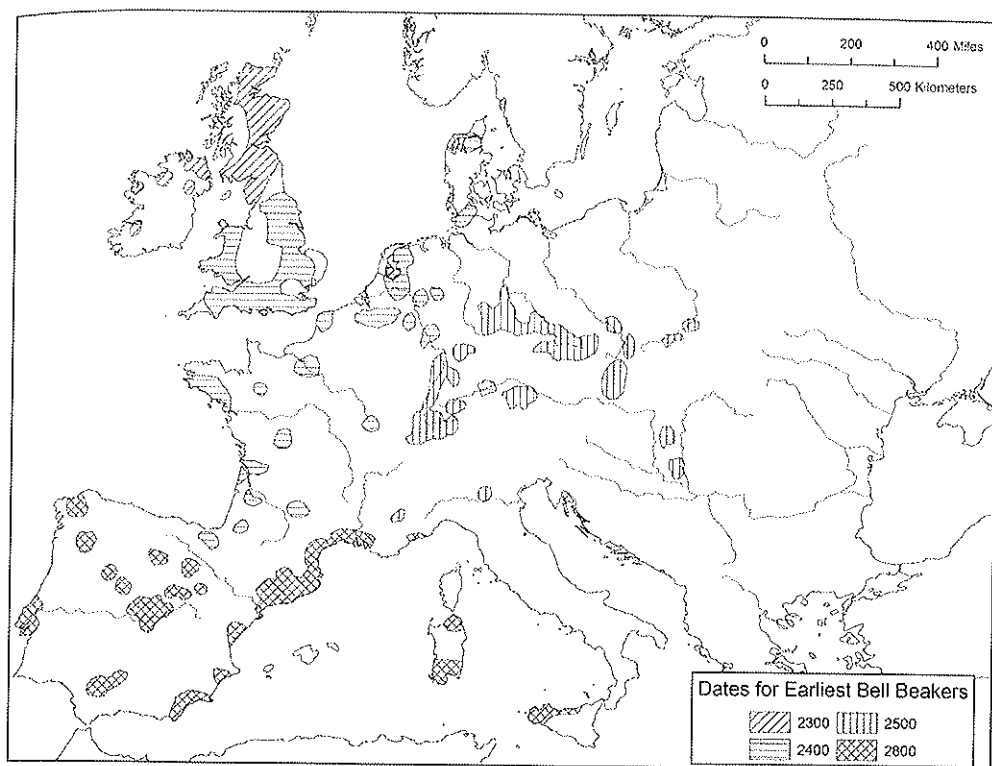


Fig. 9.5 Distribution of Bell Beaker culture sites (After Kamińska and Kulczycka-Leciejewiczowa 1970, with modifications)

is the case with some other Late Neolithic cultures, most of our evidence for Bell Beakers comes from burials. In the past, the Iberian Peninsula was favored as its area of origin. Chronology tends to support this hypothesis, since the earliest radiocarbon dates around 2800 BC occur in Iberia, southern France, and northern Italy. Chronological data also indicates that the Bell Beaker phenomenon spread from the southwest toward the northeast. Today some archaeologists tend to prefer local origins for the Bell Beaker phenomenon. However, the Bell Beaker burials around Stonehenge in England indicate some migration. “On the basis of isotope testing of the man’s teeth” from a burial at Amesbury, “archaeologists concluded that he had spent his youth in the Alpine regions, while his son, buried nearby, was a native Briton” (Czebreszuk 2004:483).

Bell Beaker male burials usually contain a bell-shaped beaker, copper dagger, wrist guard, v-perforated button, and a flint knife. They contributed to the development and spread of metallurgy in Europe. Bell Beaker peoples used simple casting methods to produce copper daggers, flat axe heads, and halberds. Archery must have played an important role in hunting, fighting, and “sports” of the Bell Beakers. Flint arrowheads, archer’s wrist guards, and shaft straighteners for polishing the arrow shafts form the archery set in male burials. Furthermore, models of bows made of bone and antler have been found in central Europe.

Various hypotheses have been proposed to explain the Bell Beaker distribution. Childe (1957) argued that nomadic communities of merchants, warriors, or prospectors for metals were responsible for this manifestation. The historically known example of the Roma of Medieval Europe reminds us that it is indeed possible that nonpastoral nomadic groups, practicing some economic or technological specialization, existed in Europe during the Late Neolithic. However, since archaeologists cannot yet

demonstrate ethnic variability from material culture alone, and since little is known about Bell Beaker subsistence and settlement systems, interpretations of their way of life must remain speculative. J. Shennan (1977) interprets the Bell Beaker artifact assemblages in terms of a pan-regional system of prestige competition between emerging elites, expressed visibly in the types of mugs they used in public feasts and in certain preferred weapons. The elites were local, but the system of competition was not.

The Late Neolithic cultural-historical picture is further complicated by the occurrence of the Comb-and-Pit Ornamented Pottery (North Eurasian or Proto-Ugro-Finnish) culture in Poland, Finland, the Kaliningrad district of Russia, in Lithuania, Latvia, Estonia, and northern Russia; this overlaps with Corded Ware in some areas. Sites of this culture are found near lakes, rivers, or on sand dunes, from which pottery, flint, and stone artifacts have been recovered. Many archaeologists believe that these people practiced a hunting, fishing, and gathering way of life, because no bones of domesticated animals have yet been recovered. However, some of their potsherds show imprints of domesticated grains.

The Globular Amphora culture, named for its most characteristic vessel form, is another important Late Neolithic manifestation in central Europe and parts of eastern Europe. It is found in the Elbe, Odra (Oder), Vistula, Upper Siret, Upper Prut, and Upper Dnepr basins and extends up to the Middle Dnepr basin (Fig. 9.4). Both ornamented and unornamented vessels have been found, their motifs can be stamped, cord impressed, or incised. The frequency of cord-impressions increases through time (Wiśłański 1966, 1969, 1970). Since some Globular Amphora burials are of the passage grave type, the culture is sometimes considered to be connected with "megalithic cultures," of western Europe.

Traditional assumptions about the Corded Ware and Globular Amphora cultures may be wrong. Different ceramic styles may not represent different ethnic groups at all, but may reflect some other cultural variation along some other dimension. The presence of different archaeological cultures in central and eastern Europe during the Late Neolithic is difficult to explain, and one way of making some sense out of the data is to try to correlate artifact styles with ecological niches, human adaptations, and subsistence practices. Much has been written about the pastoral ways of life of supposed Corded Ware and Globular Amphora peoples. Such hypotheses, while attractive, rest on slender bodies of archaeological evidence.

## The Appearance of Wheeled Vehicles

The appearance of wheeled vehicles in Europe between 3500 and 3000 BC was a major socio-economic development (Bakker et al., 1999, Sherratt 2006) (Fig. 9.6). Recently, three volumes devoted to wagons and animal traction were published, including numerous articles by various specialists (Könninger et al., 2002, Fansa and Burmeister 2004, Pétrequin et al., 2006). The earliest types are four-wheeled wagons, but by the end of the fourth millennium BC, two-wheelers appeared. It seems that wheeled vehicles appeared more or less simultaneously in the Near East and Europe. Some archaeologists (i.e. Childe 1951, Piggott 1983, Sherratt 1997) have argued for the diffusion of wheeled vehicles from the Near East to Europe, while others such as Häusler (1992) and Vosteen (1999b) have stressed their local development. However, Bakker et al. (1999:787) suggest "That wheeled vehicles were invented independently at about the same time in Europe and the Near East is improbable. Their complex construction, which remained in use for ages in relatively little changed form, and comparable technological solutions in both areas suggest a connection, as does the proximity in time and place." It is possible that wheeled vehicles originated in the Near East and later diffused to Europe. Maran (2004) speculates that the invention of wagons occurred in an area north of the Black Sea. There are arguments about the function of the earliest wagons. According to Sherratt (1996:163) they



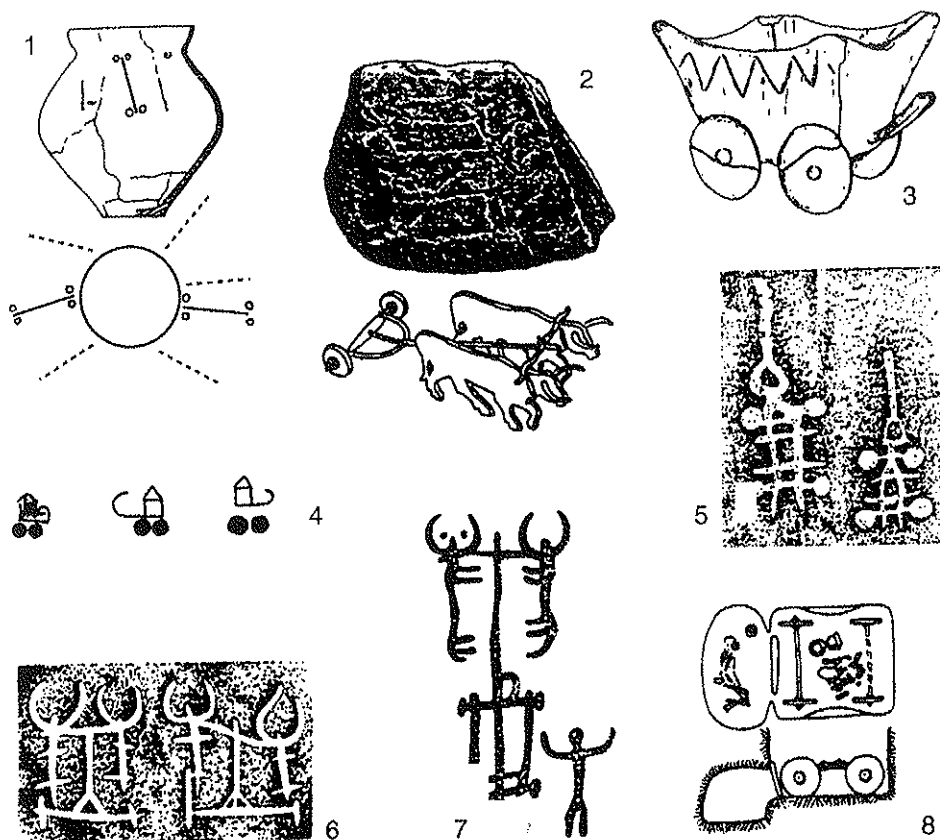


Fig. 9.6 The earliest evidence for usage of wheeled vehicles (After Kruk and Milisauskas 1999). 1 – Funnel Beaker vessel from Ostrowiec Świętokrzyski, Poland (After Uzarowiczowa 1975); 2 – sandstone tablet found in a megalithic burial mound at Züschen, Germany (After Kühn 1935), reconstruction of yoked oxen (After Evers 1988); 3 – cup in the form of wagon from a Baden culture cemetery at Budákalasz, Hungary (After Foltiny 1959); 4 – pictographs from Uruk IV, Iraq (After Piggott 1968); 5 – Bronze Age engraving from Smedtorpet, Sweden (After Evers 1988); 6 – Late Neolithic or Bronze Age engraving from Melitopol, Ukraine (After Evers 1988); 7 – Bronze Age engraving from Uchtasar, Armenia (After Evers 1988); 8 – wagon burial in a catacomb grave at Tri Brata, Eliste, Kalmyk steppes on the lower Volga, dated to the second millenium BC (After Sinicyn 1948)

were initially associated with elites. Vosteen (1999a) considers their purpose to have been ritual or religious; everyday use, if any, would have been secondary.

Most of our data on wagons come from central, eastern, and northern Europe (Piggott 1983, Höneisen 1989, Bakker 2004, Bondár 2004, Burmeister 2004, Schlichtherle 2004, Čufar et al. 2010). The earliest evidence for four-wheeled vehicles in Europe occurs at Flintbek in northern Germany and at Bronocice in southern Poland and dates to about 3500–3400 BC (Zich 1993, Milisauskas and Kruk 1982). Maran (1998) notes that the earliest cattle burials likewise appear around the same time suggesting a relationship between wagons and cattle. Wheels have been found under the burial mounds of the Pit-Grave (Yamnaya) and Catacomb-Grave cultures in the steppes around the Dnepr, Don, and Lower Volga, and are dated to the latter part of the third millennium BC (Sinicyn 1948, Häusler 1985, 1992). “Solid-wheeled wagons and carts, probably pulled by oxen, appeared in steppe wagon graves” of the Yamnaya culture by about 3100–3000 BC (Anthony 1995:561). Anthony (1995:561) points out that “Wagons provided the bulk transport for tents, food and supplies that for the first time

freed herders from logistical dependence on river valleys and permitted them to move deep into the steppes with their herds for an entire season." Late Neolithic solid wood wheels have been found in the Netherlands, northern Germany, Denmark, Switzerland and other countries. Most of them are dated after 3000 BC. The Corded Ware Zürich-Pressehaus find in Switzerland, for example, is dated to 2710–2690 BC (Ruoff 1978, Ruoff and Jacomet 2002, Schlichtherle 2004).

A 20-meter long cart-track was found under a Funnel Beaker elongated mound at Flintbek, consisting of two parallel wheel-ruts and "a single shorter wheel-rut parallel to them. Each wheel-rut was 5–6 centimeter wide and the gauge of the wagons must have been 1:10–1:20 meter. The 'wavy' bottom of the longitudinal sections points to wheel impressions, and not to track marks of sledges" (Bakker et al., 1999:783).

A vessel incised with wagon motifs was found in a late Funnel Beaker pit at Bronocice (Milisauskas and Kruk 1982, Bakker et al., 1999). It is 10.5 centimeters high and is incised with designs representing four symbolic themes (Fig. 9.7). The wagon motif appears five times around the vessel. In addition, there are incisions, which may represent trees, fields, and water. The motifs probably represent the everyday activities and beliefs of a Funnel Beaker community. Günther (1990) and Pollex (1999) see a more religious symbolism in the incised motifs. One of the motifs may represent a sun symbol; supposedly the "sun wagon" was pulled by cattle. Likewise, Malecki (1995) emphasizes the

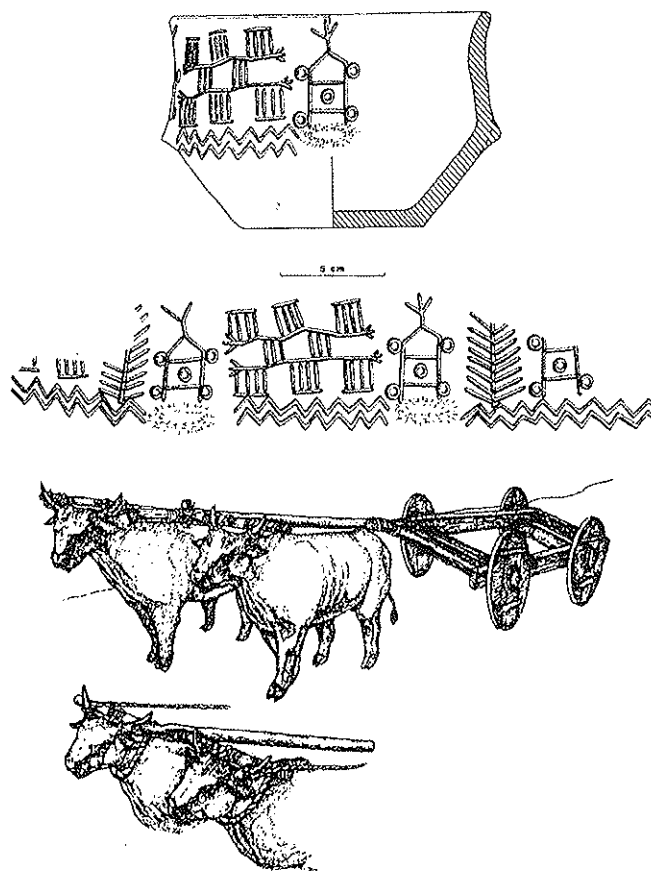


Fig. 9.7 Motifs inscribed on the Bronocice vessel (*top*) and reconstructed illustration of oxen pulling a wagon (*bottom*)



religious and astronomic function of the incised motifs. Some of the motifs on Neolithic (Copper Age) carvings on the rocks at Val Camonica in Italy are similar to those on the Bronocice vessel. A bovine long bone in the same level of the pit which yielded the vessel has been radiocarbon dated to  $2775 \pm 50$  bc; 3400 BC (GrN-19612), some 200 years earlier than the Late Uruk pictographs of carts from the Near East.

There is more evidence for wheeled vehicles from the central European Late Neolithic/Late Copper Age. Models of clay wagons belonging to the Baden culture have been found at Budakalász and Szigetszentmárton, Hungary (Banner 1956, Kalicz 1976), and a wagon-shaped pottery vessel from Radošina, Slovakia has been dated to the Late Neolithic (Němejcová-Pavůvková 1973).

Bronocice also yielded the impression of a cord on a bovine horncore dated around 2900–2700 BC (Milisauskas and Kruk 1991). The part of horncore where the cord was tied was 6.5 centimeters in diameter. This suggests that oxen were used for pulling plows and wagons, since they made up approximately 20–25% of the cattle recovered from that site. Oxen were already being castrated in the Early Neolithic and their use as Middle Neolithic draft animals should cause no surprise (Ghettie and Mateesco 1973, Döhle 1994). They can be utilized for work at three or four years of age (Higham 1968:87). Ox-carts are slow, traveling at no more than 2 kilometers per hour (Evers 1988). Bogucki (1993) argued that cattle were used for pulling logs and firewood for households since the Early Neolithic.

## Wool Production

Dating the first use of sheep for wool production is not easy for Neolithic Europe. Wool-producing sheep were present in the Near East by the sixth millennium BC (Bökönyi 1976). Only specific breeds of sheep produce wool, and Early Neolithic European sheep based on skeletal evidence are assumed to have been non-wool-bearing types. Some scholars suggest that wool-bearing sheep were introduced into Europe during the Late Neolithic (Benecke 1994). However all sheep breeds have an undercoat of wool which can produce small quantities of wool. The gradual development of a wool coat at the expense of the outer hairs or kemp resulted in wool-fleeced breeds (Ryder 1983:16–17). Recent mtDNA studies reveal that European and Asian sheep breeds have complex genetic histories due to significant gene flow in ancient times (Meadows et al., 2005, Tapio et al., 2006). When archaeologists discuss wool production, they are generally looking for some large-scale textile-related enterprises. But sheep fleeces may first have been used for felting, not fiber production (Hurcombe 2008).

Wool has been identified in the Caucasus in the later fourth millennium BC (Shishlina et al., 2003). In western Europe, the earliest evidence for wool is the carbonized wool from Clairvaux-les-Lacs around 3000–2900 BC. Schibler (2004) suggests that there is an increase in sheep and goats in Corded Ware settlements in Switzerland around 2800 BC. “This result coincides with an increase of the mean size of the sheep and a higher proportion of animals that were slaughtered at an older age (Hüster-Plogman and Schibler 1997:81–3). During the same period buttons and needles made from bone and antler were found for the first time” (Schibler 2004:153). He concludes that this evidence reflects the presence of woolly sheep and the use of wool for textile production.

There is indirect evidence for wool production at Bronocice in Poland. The occurrence of numerous spindle whorls, loom weights, and spools indicate some sort of textile production. The number of such artifacts increases through time. Only 0.48 textile artifacts per pit occur during phase 1 (3800 BC). There is an increase to 1.6 artifacts per pit by phase 4 and to 3 artifacts per pit during phase 6 (2900 BC). The increase may be associated with wool production from sheep flocks.

Types of spindle whorls may indicate their use in wool production (Rast-Eicher 1997). The data from the Swiss Neolithic sites along Zürich Lake indicate that conical spindle whorls were used for

flax, while flat and narrow ones were used for wool. At Bronocice, both types occur. In Late Neolithic times Bronocice's sheep may have supplied the local community's woolen needs, though the amount of wool produced per sheep was probably small, since primitive sheep usually do not grow more than a kilogram of wool (Ryder 1983:96).

## Subsistence Strategies

As previously discussed, it is not easy to interpret archaeological data about the subsistence strategies of various Neolithic/Copper Age societies. This is especially true of the Late Neolithic, for we have very little data about its economy in some regions of Europe. There are some differences in the archaeological data on subsistence strategies among different sites and regions, but the causes of such variation have yet to be explained. To some extent, this variability may be associated with ecological zones. There is a geographic dimension; animal remains from Pit-Grave sites in the Ukraine and Russia may reflect adaptation to a steppe environment. Other differences are not so easy to interpret. Major changes in subsistence practices begin to occur in the Late Middle Neolithic and continue into the Late Neolithic in some regions. Intensive exploitation of uplands, where many Late Neolithic settlements are located, begins around 4000 BC in central Europe. The majority of Funnel Beaker-Baden sites in the Bronocice region were upland settlements. Large areas of forest were cleared, probably by fire, and there was a marked increase in silt deposition, probably from the resulting soil erosion. For example, by the onset of the Late Neolithic the Bronocice region had become a forest-steppe environment. These anthropogenic changes may have been caused by and may well have encouraged the more widespread herding of domestic animals. Thus, Late Neolithic subsistence behavior should be seen as a modification of earlier practice and not as innovation marking a complete break with the past. Central European societies seem now to have been more committed to the herding of domestic animals.

Data from the Pit-Grave site of Mikhailovska show that cattle and sheep/goat were the two most important animals in its steppe-adapted ecology, while the pig played an insignificant role (Tsalkin 1970). The large number of cattle and sheep/goat at Mikhailovska may indicate the practice of pastoralism. However, it is more likely that this bias represents the adaptations of a mixed farming way of life to steppe ecological zones; indeed, cattle and sheep/goat are usually the dominant animals at many sites located within the steppes. Cultivated millet, wheat, and barley impressions have been found in Pit-Grave pottery in graves in Ukraine. Pigs require shade and tend to thrive in a forested habitat. Mikhailovska also yielded numerous horse remains. As mentioned earlier, horses are also abundant on Middle and Late Tripolyean sites. The association between the ecological zone and the type of animals present is also found at Gumelnița sites in the steppe zone of the Lower Dnestr and Southern Bug basins in the Ukraine and Moldova. The frequencies of sheep-goat are the same as, or greater than, those of cattle, while the frequencies of red deer and wild pig, which are forest animals, are relatively low. Again, it should be emphasized that the Gumelnița culture spans the Middle and Late Neolithic. Different phases of this culture can be used to illustrate subsistence and settlement organization for the Middle and/or Late Neolithic.

It has already been noted that some Middle Neolithic domesticated plant assemblages showed an increase in the proportion of barley remains. The same is true for some Late Neolithic assemblages. As near as can be established, the cultivation of bread wheat also became more prevalent at this time.

Although it is often assumed that the transition to the Late Neolithic is marked by the appearance of pastoral peoples in some regions of Europe, this hypothesis is difficult to demonstrate with archaeological data. Krader (1959) defines pastoral societies as those which depend chiefly on herds of domesticated animals for subsistence. Many archaeologists consider nomadic pastoralism and



sedentary agriculture to be two mutually exclusive subsistence strategies. But pastoralists need not be nomads: “pastoral movements can be classified on a scale from stationary to transhumant to nomadic” (Prescott 1995:165). We know that pastoralism involves livestock rearing and some degree of seasonal mobility, but we do not yet know enough about the possible range of variation in Late Neolithic subsistence practices. Certainly, ethnographically known pastoralists display a considerable range of variation in this respect; herders may inhabit villages part of the year, cultivate crops, or hire themselves out to work for members of their own or another ethnic group. They may themselves produce the fodder needed during the winter, or purchase, or otherwise extract it from the sedentary farmers with whom they come into contact (Dyson-Hudson 1972). The traditional archaeological picture of groups of pure pastoralists displacing groups of pure farmers is a naïve oversimplification. Even if the Late Neolithic practice of pastoralism could be demonstrated, it would be far from any detailed description of that subsistence strategy. One would need to know the variety and number of animals herded. This depends not only on the size of the group and the availability of pastures, but also on various social and economic needs such as land, fodder, and food, as well as rituals, ceremonies, and the prestige arising from interrelationships with local and nonlocal groups. It would be helpful to know the degree of dependence on livestock and the alternative possibilities for resource exploitation such as agriculture, hunting, fishing, or even warfare. At present, little can be said about these matters.

First, we examine the subsistence strategies of the Corded Ware and Globular Amphora peoples. We try to infer Corded Ware subsistence strategies from burial data, though this admittedly is poor. Relative species frequencies represented by bone artifacts and animal remains suggest the Corded Ware use of cattle, sheep/goats, pigs, and horses, in that order of importance. Cattle and sheep could have been pastured during the spring, summer, and fall, but would need to be stalled and fed during central European winters. Thus we suggest that only seasonal, or transhumant, movements of flocks and herds were possible. The use of pigs suggests that the Corded Ware peoples were not nomadic, but at least semi-sedentary animal herders.

Thus, the hypothesis of Corded Ware pastoralism remains undemonstrated. As yet, there is little archaeological evidence that the peoples responsible for the Corded Ware archaeological record were pastoralists in Krader’s (1959) sense. To many archaeologists, the paucity of settlement and domestic architectural data for this culture suggests that they were nomads, or at least practiced transhumance. One can raise a number of questions. Was Corded Ware architecture so flimsy? Were particular occupations of small size and/or short duration?

Kadrow (1994) suggests that the early Corded Ware populations practiced pastoralism in south-eastern Poland. Around 2600–2500 BC, Funnel Beaker-Baden farmers were disappearing, and thus later Corded Ware groups incorporated farming in their subsistence strategy. Pastoralists could not survive “without access to agricultural products” (Kadrow 1994:74). Brazaitis (2005) pointed out that Lithuania was heavily forested, thus it would have been possible only in limited areas to practice pastoralism.

Neustupný (1969) has argued that the Corded Ware peoples in central Europe depended on farming for subsistence. Plow marks have been found under some Corded Ware mounds; sickle blades occur in some burials, as do domesticated animal remains. Cereal imprints occur in some Corded Ware pots. It is possible that various regional Corded Ware groups differed in their subsistence adaptations. Malmer (1962), Strahm (1971), Czebreszuk (2004), and Schibler (2004) have noted that this culture is associated with agriculture in Switzerland, southwest Germany, and Sweden. Strahm (1971) has maintained that the Corded Ware subsistence strategy in Switzerland was based on agriculture, since the archaeological material of that culture occurs in villages located on the edge of lakes. Clearly, the Alpine Corded Ware peoples exploited a different ecological niche. Malmer (1962, 1969) has argued that the Swedish Corded Ware culture was also agricultural. He found 58 settlements and 244 burial mounds of the Corded Ware culture in Sweden; however, it is unclear if the settlements were permanent villages, occupied year round. It is very interesting that in Scania, southern Sweden, the

heaviest concentration of Corded Ware material occurs in the same areas where most of the Scanian Funnel Beaker burials and settlements have been found. Here, at least, Corded Ware groups occupied terrain and utilized soil similar to those of their Funnel Beaker predecessors, and were likely farmers themselves. The Swedish Corded Ware communities appear to have been the descendants of local Funnel Beaker groups and not immigrants. Much of our evidence for Corded Ware plant utilization comes from cereal imprints found on pottery. Mathias and Schultze-Motel (1971) analyzed 125 pots for plant remains from eastern Germany and found imprints of barley, emmer wheat, einkorn wheat, and oats.

The Bay Coast (*Rzucewo, Haffküste*) local group of the Corded Ware culture occurs along the Baltic coast of northeastern Poland, the Kaliningrad (called Königsberg prior to World War II) district of Russia, and Lithuania (Fig. 9.8). These people appear to have subsisted to a great extent on maritime fishing and sea-mammal hunting. At Šventoji in Lithuania harbor seal (*Phoca vitulina*), ringed seal (*Phoca hispida*), gray seal (*Halychoerus grypus*), and harp seal (*Pagophylus groenlandicus*) were hunted (Daugnora 2000). At Rzucewo, the remains of over 100 seals were recovered, as well as those of other wild and domesticated animals (Niezabitowski 1933). This suggests that archaeologists should study the adaptations of the Corded Ware people in the different ecological zones. It is unrealistic to expect a similar adaptation in the coastal areas of the Baltic Sea and the loess uplands of southeastern Poland and the northwestern Ukraine.

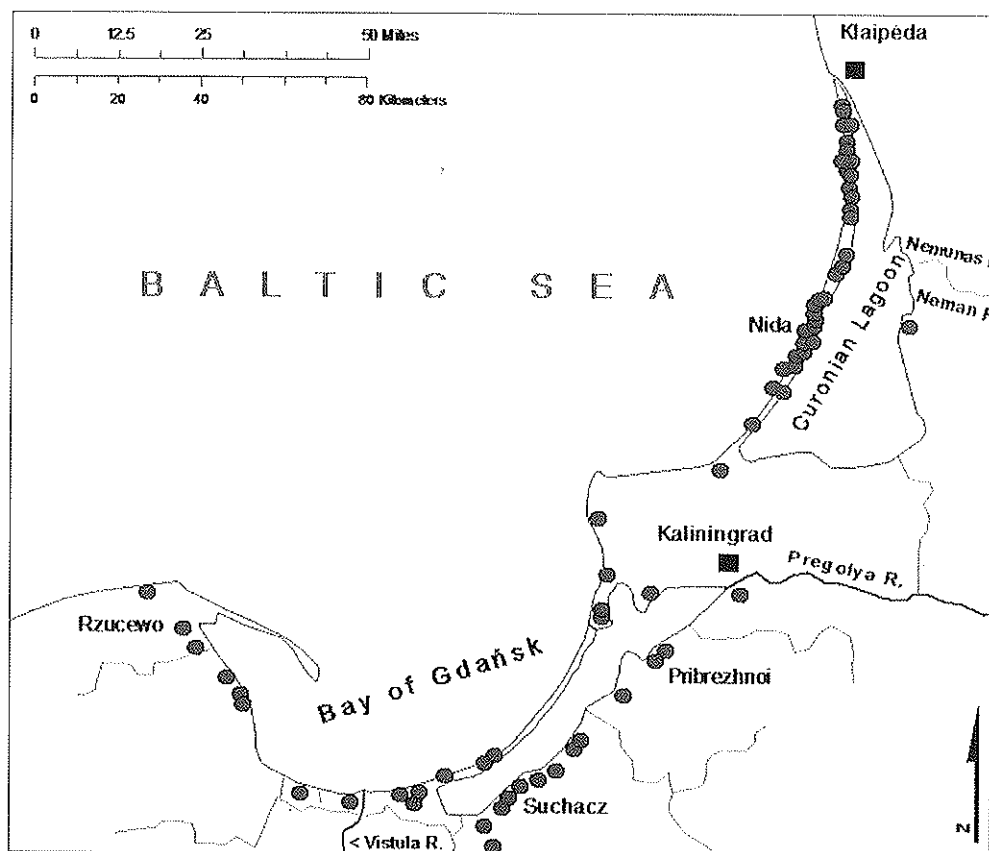


Fig. 9.8 Distribution of Bay Coast Culture sites (After Tetzlaff 1970, with modifications)

As in the case with most central European Late Neolithic cultures, there is little information available concerning subsistence practices of the Globular Amphora peoples. Some graves have yielded sickle blades, and the remains of wheat, barley, and pulses (leguminous plants) that have been found in baked clay objects. Burials often contain the remains of cattle and pig, the latter usually represented by their lower jaw bones. Occasionally, there were apparently deliberate interments of whole cattle. Sheep-goat appears to have been of less importance.

The users of Globular Amphora pottery mined banded flint at Krzemionki Opatowskie in Poland. Exploitation extended over an area 4 kilometers in length and 30–1220 meters in width (Balcer and Kowalski 1978, Borkowski et al., 1989) involving approximately 1000 mine shafts, 4–11 meters deep. Mining tools, such as antler picks and stone hammers, were found in the mine area. Numerous axe rough-outs or semi-finished pieces were traded from this site. The production facilities, and the axes and chisels produced there, indicate the skill with which this exploitation was carried out. According to Lech (1991:569), "The absence of wear traces, the careful polishing and the fact that they were frequently placed in megalithic graves indicate that they were not tools, but weapons and symbols of prestige." Banded flint axes were exchanged as far away as 600 kilometers from Krzemionki. It is noteworthy that the earlier Funnel Beaker exchange systems carried such goods no further than 180 kilometers.

Cattle and sheep/goat predominate on Baden sites, although there are many remains of wild animals at some sites. The consumption of alcoholic drinks is associated with the northward spread of the Baden culture, and numerous handled jugs and cups have been found on Baden sites (Sherratt 1997).

The animal remains from the Bell Beaker site Csepel-Háros in Hungary and Liptice II in the Czech Republic should be mentioned. The horse dominated the faunal remains at Csepel-Háros and cattle at Liptice II. One should be cautious in drawing conclusions from these two sites concerning the adaptations of all Bell Beaker peoples.

## Settlement Organization

Late Neolithic/Late Copper Age settlement data comes from many sites, but it is not easy to reconstruct the settlement systems of all regions in Europe. Since some Middle Neolithic cultures such as Tripolye, Gumelnița, and Funnel Beaker continue into the Late Neolithic, it can be assumed that there was continuity in their settlement systems. However, as previously mentioned, large settlements disappear in some regions around 3500–3000 BC. The Mediterranean region has more Late Neolithic settlement data than central or northern Europe.

Late phase Gumelnița in southeastern Europe has yielded good settlement data, for example, at Căscioarele in Romania, 60 kilometers south of Bucharest. The settlement, which was eventually destroyed by fire, is located on a small island in Lake Catalui (Dumitrescu 1965). During its phase B occupation it consisted of 16 scattered houses, showing no discernible plan or common orientations. Houses were constructed of wooden-post frameworks with walls plastered with clay. Most had one square hearth, usually over 1 square meter in area, and yielded clay loom weights, clay spindle whorls, querns, and flint and bone tools. The smallest house was  $4.5 \times 4.5$  meters (approximately 20 square meters) in area, while the largest was  $16 \times 8.8$  meters (approximately 141 square meters). An individual family probably inhabited each house; the population of the settlement is estimated at over 100 people.

Corded Ware burial mounds, seasonal camps, and, much rarer, permanent settlements are known. It is possible to estimate the density of distribution of burial mounds. There is one mound per square kilometer in the Grzęda Sokalska area of southeastern Poland (Koman and Machnik 1993). By this arithmetic, over 300 mounds may have been erected in 314 square kilometers of the Bronocice area

during the entire Corded Ware period (2900/2800–2400 BC). In some regions mound density was higher; there are hundreds, perhaps thousands, in the Carpathian area (Machnik 1997). Buchvaldek (1987) estimates Corded Ware population densities at 1–2 per square kilometer. Neustupný (1983) used data from the Vikletice cemetery in the Czech Republic, in use for a century, to suggest a community population of 25 at any one time. In the Bronocice region, mounds were surrounded by flint graves, thus a small necropolis held, on the average, the remains of five individuals. Assuming a life expectancy of 25 years, we estimate that 1500 individuals were buried in the 300 Corded Ware cemeteries in the region over a period of half-a-millennium. Applying the formula used by Acsádi and Nemeskéri (1970), we estimate a Corded Ware population of 125 people in the Bronocice region at any one time.

Corded Ware settlements are rare in central Europe, but they are present (Buchvaldek 1986, Turek 1995, 1997) and there is good settlement data from Swiss sites. Only two Corded Ware settlements are known in Moravia (Turek and Peška 2001:415). Behrens (1973) reports the remains of square houses near a large concentration of burial mounds at Luckar Forst near Altenburg, Saxony-Thuringia. Schlette (1969) reports the postmolds of a structure at Bottendorf, in the Arten region of eastern Germany. Remains of rectangular wooden structures have been found for the Bay Coast (Rzucewo) “group” of the Corded Ware culture at Suchacz (Ehrlich 1934, Tetzlaff 1970) in Poland, Nida (Rimantienė 1989), Daktariškė (Butrimas 1982), Žemaitiškė (Girininkas 1990), and Gluobiai (Juodagalvis 1992) in Lithuania. However, for other groups we have very poor evidence for any sorts of houses. To many European archaeologists, the absence of house structures for most Corded Ware groups suggests that these peoples were pastoral nomads who did not need to construct permanent houses. However, large cemeteries like Vikletice, in the Czech Republic, may indicate the presence of permanent settlements. Swiss Corded Ware sites have remains of houses.

Data for Globular Amphora settlement systems are also sketchy. Permanent villages are believed to have consisted of a few small square and trapezoidal houses, rare examples of which have been found. Archaeological materials found on sand dunes and sandy hills probably represent seasonal camps. As with Corded Ware, this culture is frequently considered to have been one of nomadic herders. Szymt (1996) suggests a three-tiered Globular Amphora settlement hierarchy for the Kujavia region in Poland. There are single settlements of one to three houses, with 4–15 people. Three to five such settlements form a local group exploiting 160–310 square kilometers. Some 20 local groups form a regional grouping of 400–2000 people. If her estimates are at least approximately correct, it will be seen that Globular Amphora population densities were quite low in comparison with those of the Funnel Beaker culture.

The densities of Bell Beaker settlements vary in Europe. There are about 230 settlements in Moravia, which is one of the highest densities (Turek and Peška 2001). Most sites are small, consisting of 1–3 pits, and are located in the lowlands near watercourses.

## Warfare

Evidence for warfare has a varied distribution in the different areas of Europe during the Late Neolithic/ Late Copper Age. In France, numerous fortified sites are found (Cassen and Boujot 1990); for example, in the Charentes and adjoining regions approximately 60 fortified sites are known (Giorgetti 1994). Some, such as Champ-Durand in Vendée, have a triple row of interrupted ditches with dry-stone walls and towers to protect entrances. Large fortified settlements in the Mediterranean countries suggest an intensification of conflict among societies of the period. In Portugal, most settlements were located on hilltops and some of them were fortified (S. Jorge and V. Jorge 1997). There are impressive stone-built fortified settlements at Los Millares, Cerro de la Virgen, Zambujal, and Vila Nova de São



Pedro in Iberia. Monks (1997) has synthesized the evidence for warfare in Iberia from 3500 to 2200 BC, noting a significant increase after 3000 BC, during the Chalcolithic period. Bows and arrows appear to have been the main weapons, but hand-to-hand fighting also took place. Monks (1997:13) points out that fortified and non-fortified sites were situated in locations affording natural protection. Most sites have stone walls; ditches are less common. The labor invested in large sites was enormous, requiring more than 100,000 workdays. Los Millares in Almeria was “surrounded by an extensive defensive system, comprising three lines of walls, associated bastions, towers, a ditch. . . and, in a later phase, outlying forts” (Monks 1997:15). The site probably enclosed an area of 2 hectares (5 acres), and was built of limestone held together with mortar. “The outerwall, which belongs to a later phase, is over 300 meter in length, with an elaborate barbican entrance flanked by towers and bastions, and an outer ditch. Openings or arrowslits provide good visibility as well as providing protection for archers firing from within the towers” (Monks 1997:15–16). In the latest phase, approximately 12 outlying forts were constructed. Large sites such as Los Millares and Zambujal were occupied for 500 and 800 years, respectively, while smaller sites were occupied for 100–300 years. Around 2200–2000 BC most fortified sites were abandoned.

As previously mentioned, some archaeologists speculate that large parts of southeastern, central, and western Europe were conquered by people from eastern Europe. One would thus expect to find more evidence for conflict in the Late Neolithic. Most Gumelnița sites were fortified in Bulgaria. The poor quality of settlement data in central Europe tends to limit this evidence to greater numbers of battle-axes, projectile points (arrowheads), and other artifacts assumed to be weapons. There are, however, a few fortified sites in central Europe, such as Homolka in Bohemia, belonging to the Řivnáč culture (Ehrich and Pleslova-Štiková 1968) and the Funnel Beaker-Baden occupation at Bronocice (Milisauskas and Kruk 1990).

The hypothesized pastoral economy of some Late Neolithic cultures, such as the Corded Ware, is believed to have predisposed them to warfare and the numerous battle-axes are cited in support of this notion. The battle-axe is a weapon, not a tool for chopping wood or other domestic activities. Corded Ware is also called the Battle-Axe culture, which supposedly reflects its militaristic character. Vandkilde (2006) and Westermann (2007) suggest that the corded beakers and the shafthole axes found in Corded Ware male burials denote male identity. They assume that drinking rituals were practiced by warriors. Perhaps high-ranking Corded Ware males were organized into warrior clubs (Vandkilde 2007:68). The four Corded Ware burials at Eulau in Saxony-Anhalt, Germany, indicate the presence of violence or warfare around 2500–2400 BC (Haak et al., 2008). Some 13 individuals were killed. DNA studies indicate that there was a genetic relationship between the dead persons in one grave, possibly a “family grave”: an adult male (40–60 years), an adult female (35–50 years), and two boys, 4–5 and 8–9 years old. Some of the 13 individuals were killed by blows on their heads or flint arrowheads. For example, the 8–9-year-old boy had a fractured skull. Some of them tried to defend themselves from the blows of attackers as reflected by injuries on their arms and hands. “Overall, the injury patterns point to a violent event, which probably resulted in the death of all 13 individuals. The most plausible interpretation is that the graves are the result of a violent raid, with 85% of the dead being subadults and women, and the survivors returning to bury their dead” (Haak et al., 2008:18227). The strontium analysis of their teeth indicates that the women grew up in a different region, suggesting the practice of exogamous virilocal patterns of marriage.

If there was Late Neolithic pastoralism, cattle raiding is a possibility, as herd animals are mobile and relatively easy to steal. Few people are needed merely to look after a herd, but more would be necessary to protect it from an attack. Cattle raiding may have caused a warlike value system to develop, in which the military exploits of successful warriors were rewarded with higher social status, personal prestige, or at least more cows.

Settlement and demographic data suggest conflict between various populations in central Europe. In southeastern Poland, there seems to have been a Late Neolithic decrease in population, while people

concentrated themselves into a smaller number of large settlements. Ecological factors seem inadequate to explain the 75% population decline in some regions of southeastern Poland. The surviving farmer-herders of the Funnel Beaker-Baden culture continued to cultivate cereals and garden crops, though there was greater emphasis on stock breeding. Large areas were available for the grazing of cattle and sheep because of the extensive deforestation that had occurred in the region. War and invasion may have been factors. If Corded Ware people were in the region by 2800 BC, they may have been a threat to the indigenous Funnel Beaker-Baden people. Bronocice was fortified during its phase 6, the frequency of flint axes there increased, and over half of the region's population concentrated itself in one settlement. Animals herded by the Corded Ware populations in areas of Funnel Beaker-Baden cultivation could have caused conflicts between them.

The Funnel Beaker-Baden occupation at Bronocice has yielded burial data for an anomalous catastrophic event, either an epidemic or a massacre. One burial pit contained 17 individuals, 12 of whom were children or infants (Kruk and Milisauskas 1982, Pipes et al., 2010) (Fig. 9.9). Also, some of the features of the phase 6 occupation yielded only skulls, which may be evidence for conflict or violence, since it is doubtful that such depositions would be associated with ancestor worship.

Evidence of conflict among the Bell Beaker groups comes from burial data. Most archaeologists assume that the rich male burials containing copper daggers, wristguards, and flint arrowheads were those of warriors (Turek 2002, Vandkilde 2006, Sarauw 2007). There are a small number of female burials, such as Tišice in the Czech Republic, with weapons (Turek 2002). Turek (2002) speculates that these were a group of women warriors. The Tišice warrior woman, 40 years old, was buried on her right side as were most men whereas women were generally buried on their left side (Fig. 9.10). Her burial was associated with the following grave goods: 5 bell beakers, 1 cup, 1 large ovoid pot, 2 gold plates – hair pieces, 2 stone wristguards, 1 copper dagger, 1 copper awl, and 1 amber bead (Fig. 9.11). There are traces of timber construction of a burial chamber. Vandkilde (2007:73) suggests that “The few instances where females are buried as males recall the modern Albanian tradition of



**Fig. 9.9** Funnel Beaker-Baden multiple burial from Bronocice, Poland



**Fig. 9.10** A female Bell Beaker warrior, buried at Tišice, the Czech Republic (Photograph courtesy of J. Turek)

women becoming men if males for some reason were lacking in the family.” However, some archaeologists consider this period as peaceful (Skak-Nielsen 2009). Skak-Nielsen (2009:357) argues that the daggers were used for the slaughter and sacrifice of livestock, and thus a dagger would indicate the bearer’s high status and wealth in livestock (Skak-Nielsen 2009:352). He concludes that “The seven or eight centuries of the Late Neolithic in southern Scandinavia and also early parts of the Copper and Bronze Ages in other parts of Europe may have been a relatively peaceful interval between more warlike eras. Nick Thorpe (2006:158) has reached similar conclusions regarding the Later Neolithic and Early Bronze Age in Britain and Ireland” (Skak-Nielsen 2009:357).

## Ritual and Social Organization

Impressive megalithic monuments continued to be constructed in western and north-central Europe. In northern France, depictions of women appear on such late Neolithic monuments (Twohig 1981, L’Helgouach 1993). This calls into question Gimbutas’s interpretation of Late Neolithic developments, which emphasizes predominance of masculine symbols, values, and beliefs. However, given





**Fig. 9.11** Bell Beaker artifacts associated with the female warrior burial at Tišice, the Czech Republic (Courtesy of J. Turek, photograph by P. Berounsky)

the well-documented cultural variability of the Late Neolithic, we are sure that there was plenty of room for all sorts of ideologies.

In the western Mediterranean region, spectacular temple architecture and figurative art flourished between 3600 and 2500 BC on Malta (Renfrew 1973, Stoddart et al., 1993, Malone 1998). According to Malone (1998:163) the cultural complexity of Late Neolithic Malta has “no near parallels of development in the western Mediterranean.” The islands of Malta cover 316 square kilometers (120 square miles) and they are located 93 kilometers (57 miles) south of Sicily. They were colonized by farmers around 5000 BC. Between 3600 and 2500 BC impressive religious buildings, such as Ggantija and Tarxien, were constructed of coralline limestone. Small, medium, and large figurines played a role in ceremonial behavior (Malone 1998). Small figurines, usually made of clay, may have served private rituals. Medium-sized ones occurring in tombs and temples may have been for public and private rituals. “Large figurines, generally of stone, were sizeable enough to be visible over some distance. It appears they were intended for public display and veneration” (Malone 1998:156). These large figurines range from 50 centimeters to 2 meters in height, and many show a corpulent image, suggesting a “repetition of an icon or image found in many religions,” (Malone 1998:156). Those with large buttocks and thighs are assumed to represent women, though only a small number of figurines have specific sexual characteristics such as breasts. As Malone (1998:156) points out, many figurines are genderless and the obese Mediterranean men have equally rotund forms. Why were such temples constructed on Malta and not elsewhere? The physical isolation of islands comes to mind. Population and ecological stress may have played a role. According to Malone (1998), probably late Neolithic Malta was a densely populated and socially stratified society. It should be pointed out that Gimbutas (1991) considers Malta as an important location for Mother-Goddess worship.

Pollex's (1999) analysis of cattle burials suggests that religious beliefs were changing in central Europe between 3500 and 2200 BC. “Burials of up to 10 animals have been reported, either near or within human graves or unconnected with humans, but associated with other domestic animals” (Pollex 1999:542). Most cattle burials belong to the Globular Amphora culture, but they are also found on late Funnel Beaker, Baden, and Schönfeld sites (Gabałówna 1958, Behrens 1964, Wetzel 1979, Wiślański 1979). They may reflect cattle's importance in economy, the high status of their owners, or they may symbolize sacred animals (Gabałówna 1958, Behrens 1964, Pollex 1999).



Traditionally, the social organization of Globular Amphora and Corded Ware societies has been considered to have been patrilineal, as these cultures are believed to have been pastoralist, and ethnographic data indicates that most pastoral societies are patrilineal. But archaeological evidence for this hypothesis is weak. As indicated earlier, data about Corded Ware and Globular Amphora subsistence and settlement system are not very informative.

Most data come from mounds and cemeteries. Corded Ware peoples erected burial mounds and dug flat moundless graves. Corded Ware mounds were not constructed of stones as were the megalithic monuments, but they likewise stood out in the landscape for hundreds or thousands of years providing memory and myths for successive generations. Some flat graves probably originally had mounds, subsequently destroyed by farming or other activity, their fill scattered over the fields. Individuals were buried in pits dug into the ground. Most frequently, a grave contains a single skeleton in a contracted position (Fig. 9.12). Corded Ware females were usually buried on their left side and the males on the right side (Turek 2000). This contrasts with the Bell Beaker custom; males were buried on their left side and females on the right side. Turek (2000:7) noted that “It seems very likely that the main feature of the Corded Ware and Bell Beaker burial rites, which is the symbolic differentiation of the male and female distinction even applied to child burials” (Turek 2000:7). Pottery, stone axes, and flint artifacts are the most common burial goods. The builders of Corded Ware mounds emphasized their locations in the landscape by selecting the highest local elevations. That such sites were symbols is undoubted, but just what they symbolized – ancestors, territoriality, chiefly power, collective identity – remains unknown. Most likely, they represented a community’s claim to a landscape.

As in many other Neolithic cultures, there are more men than women buried in the Corded Ware cemeteries and mounds (Siemen 1992). Not all skeletons have been analyzed by physical



Fig. 9.12 Corded Ware burial at Bronocice, Poland

anthropologists. Many skeletons were classified as male because artifacts such as arrowheads were found buried with them. Women have no distinguishing artifacts associated with them, thus some of the disproportion between the sexes can be accounted for by the numerous unclassified skeletons, some of which belong to women.

Judging from data found at Vikletice and other cemeteries in the Czech Republic, there was a significant association of gender and age groups with specific types of burial treatments (Buchvaldek and Koutecký 1970, Neustupný 1973). Neustupný's (1973, 1983) analysis of 134 Corded Ware graves at various Bohemian sites and 120 graves from Vikletice alone showed differences between men and women in ornaments, tools, weapons, and pottery form and decoration. At the Żerniki Górne cemetery in southeastern Poland, 64 Corded Ware graves contained 77 skeletons; 27 were identified as male and 22 as female. Gender differences are strongly reflected in Corded Ware burials. Arrowheads, antler tools, and wild boar tusks are associated with men (Kempisty and Włodarczak 2000), while ornaments such as antler beads are mainly associated with women. Copper artifacts, rings, and spirals have been found in 6 burials, 4 female and 2 male. Since copper was a nonlocal material and presumably valued for that reason, these individuals represent either "richer" families or special achieved status. Women were buried on their left side, 20 out of 21. Men were buried on their right or left sides, in about equal proportions (Kempisty and Włodarczak 2000: table 14). It is unclear why there were differences in men's burial positions or why one woman was buried on her right side. Flint axes were found in men's and women's graves, but those associated with women were smaller. Probably women's axes were used for lighter jobs, such as cutting branches for firewood. Kempisty and Włodarczak (2000:147) assigned points for various artifacts found in graves (based on the value of artifacts, e.g., two points for copper artifacts or ceramics, one point for flint or bone artifacts), thus men had 38 points on the average, women 21, and children 5. As a society oriented toward the herding of animals, the Corded Ware culture seems to have put more emphasis on rituals associated with men at the time of death. The average age at death for the entire population at Żerniki Górne was 28 years. If children are excluded from this calculation, then the average age of death for adult men was 43 years and for women 36 years.

Włodarczak (2006) has analyzed Corded Ware burials in southeastern Poland. In the earliest phase deceased males were buried in mounds but did not have stone battle-axes and flint arrowheads. In later phases, some adult males were buried with battle-axes, flint arrowheads, corded beakers, bone artifacts, wild boar tusks, and grindstones; these are classified as warriors (Włodarczak 2006). Women and children were usually buried in flat cemeteries. Battle-axes were found in 21% of the male graves. Most adult male and female graves were not rich in burial goods. Males buried on their left side like most women do not have arrowheads and battle-axes. Children's burials may reflect their families' statuses. Some boys' burials have miniature objects such as battle-axes, possibly reflecting their higher status. This would imply that status was inherited.

There are some 400 Bell Beaker cemeteries containing over 1000 burials in Moravia (Turek and Peška 2001). As previously mentioned, Bell Beaker males and females were differentiated by their burial positions.

Most information on Globular Amphora social and ritual organization also comes from burials notably stone-lined cist graves, 2.5–6.0 meters long and 1.0–2.0 meters wide, dug into the ground with mounds of stone and earth over them. Some graves lack stone construction and some were lined with wood. In eastern Germany, Funnel Beaker megalithic tombs were frequently reused for Late Neolithic burials (Schuldt 1972, Nagel 1985). Rectangular or trapezoidal passage graves are rare. The number of skeletons in graves ranges from 1 to 17; however, usually only 1, 2, or 3 skeletons are present, and only rarely are they completely articulated. Probably after a person died, his/her body was placed in a tree or on a scaffold. After the flesh had been removed, or had decayed, the bones were placed in the grave. The most common grave goods are pots, flint axes, and the remains of animals, especially pigs, suggesting that animals played some role in rituals and feasts. Pigs may have



**Table 9.1** Distribution of children's age at death at Vihvatinsti

Age groupings	Number	Percentage (%)
1–5	13	48
6–10	11	41
11–15	3	9

been important less for their nutritional value and more as symbols of wealth and prestige, as was the case in Melanesian societies of the recent past.

As previously mentioned, the occurrence of deliberate Globular Amphora and Baden cattle burials suggests the ritual importance of the species. Their owners may have been nomadic herders, but the mere presence of cattle does not prove this. If Globular Amphorae peoples practiced a pastoral economy, perhaps they had a patrilineal kinship system. Burial data reflects age and probably gender differences. Out of 122 analyzed skeletons, roughly 10% belong to children (Wiślański 1969). Only certain children were buried and, assuming a ranked society, only children with higher status at birth may have enjoyed this privilege. The small number of individuals in burial structures indeed suggests a cultural selection by privilege. Wiślański (1969) has summarized burial data from 124 Globular Amphora graves in Germany and Poland, 90 of which contained only one or two individuals; only 11 graves had five or six individuals. In the eight double burials where sex of individual was determined, one held two women, while seven contained one woman and one man each; women were usually younger than men. Women may have been put to death at the time the men died.

Data from the Late Tripolye cemetery of Vihvatinsti, which belongs to the Late Neolithic period or perhaps even the Early Bronze Age, show no associations of a particular age or gender group with burial goods, either in regard to kind or quantity. One statistically significant association is that of undecorated pots with adult men. Archaeologists usually and too easily assume that women made pottery, artifacts that are associated with women's activities. However, the making of pots and the disposing of them are two different activities. Vihvatinsti yielded a very large number of children's burials, roughly half of those in the cemetery (Passek 1961). If we divide the children into the three age groups, we find the fewest deaths between the ages of 11 and 15 (Table 9.1). This distribution still indicates underrepresentation of infants in terms of normal mortality, if the sample is considered representative. Out of 53 skeletons, 9 were classified as 50 years or over. Thus, at birth a person had a 17% chance to reach the age of 50. This is essentially unchanged from the Middle Neolithic. In summary, there is little information about the social and ritual organization of Late Neolithic cultures in central Europe. Mediterranean Europe has been much more informative.

## Ranked Societies

We can assume that small-scale and ranked societies were present in various regions of Europe after 3500 BC. The discussion about such cultures in the Middle Neolithic is also applicable to the late Neolithic. As previously mentioned, the archaeological record from Malta and Iberia suggests the presence of ranked societies. The impressive settlements such as Los Millares were likely the centers of small-scale polities. However, archaeological data from the central European Late Neolithic does not present much stronger evidence for more complex societies.

Farmers may have been late in coming to England, but soon they were putting up funerary and other monuments that may reflect social distinctions. Bradley (1991) has examined the changes through time in the types of archaeological monuments in Wessex, and argues that they relate to sociopolitical developments. Around 3500 BC, causewayed enclosures and elongated mounds were being

constructed. Causewayed enclosures “are characterized by 1–3 concentric ditches and banks enclosing areas 1.5–7.7 hectare,” (Shennan 1999:880). In the elongated mounds, the number of people buried in them is too small to account for populations; there is a selection who gets buried in the long mounds. By 3000–2200 BC, the Wessex landscape is dominated by henges. “These are circular banked enclosures with a ditch typically inside the bank, varying very considerably in size (0.1–12.5 hectare) as well as in elaboration,” (Shennan 1999:880). Like the causewayed enclosures, the larger henges required numerous person-hours for their construction. They may have been centers of individual polities (Bradley 1991:53).

## The Origin and Dispersal of the Indo-European-Speaking Populations

Archaeologists have long speculated about the association of archaeological cultures with linguistic and ethnic groups. Since most modern European peoples speak Indo-European languages, this language family especially has attracted the attention of linguists and archaeologists alike. Beginning with Sir William Jones in 1786, scholars have noted that nearly all the languages of Europe as well as those of Iran and northern India were related, and derived from a single Proto-Indo-European language (Daniel 1968, 1976). This is shown by the many sets of similar words in the different languages, for example, Sanskrit *agni*, Latin *ignis*, Lithuanian *ugnis*, Polish *ogień* for “fire;” Sanskrit *devas*, Latin *deus*, and Lithuanian *dievas* for “god.” In the scenario favored by most linguists and most archaeologists, the early Proto-Indo-Europeans spread out from their original homeland and their languages diverged into the families now existing or known from the historical record: Baltic, Celtic, Germanic, Italic, Slavic, Greek, Armenian, Anatolian, and Indo-Iranian (Fig. 9.13). “The location of the Indo-European speakers before major differentiation into the various stocks is the Indo-European homeland,” (Mallory 1997:93). Where and when was Proto-Indo-European spoken?



Fig. 9.13 Distribution of the major stocks of the Indo-European languages (After Mallory 1997, with modifications)



What is the archaeological identity of the Proto-Indo-Europeans? Archaeologists, linguistics, physical anthropologists, population geneticists, and others have offered various answers to these questions. Some scholars, notoriously Gustaf Kossinna (1902), located the Indo-European homeland in northern Germany and in Scandinavia, thus providing justifications for extreme nationalism in Germany and elsewhere. Archaeologists tend to forget or ignore that one of the twentieth century masters of their discipline, V. Gordon Childe (1926), wrote *The Aryans: A Study of Indo-European Origins*, in which statements were made that reflected the racist theories of the 1920s. "At the same time the fact that the first Aryans were Nordics was not without importance. The physical qualities of that stock did enable them by the bare fact of superior strength to conquer even more advanced peoples and so to impose their language on areas from which their bodily type has almost completely vanished. This is the truth underlying the panegyrics of the Germanists: the Nordics' superiority in physique fitted them to be the vehicles of a superior language" (Childe 1926:212). Later in his career, Childe would not have written such a statement; in fact, he disowned his linguistic interpretation used in the *Aryans* (Green 1981). It should be pointed out that "by our current standards," many archaeologists of the nineteenth century or the 1920s "could be convicted of racism" (Renfrew 1994:156).

Renfrew's (1987) *Archaeology and Language* rekindled interest among English-speaking archaeologists in the study of Indo-European origins. Other recent works, Gamkrelidze's and Ivanov's (1984) *Indoeuropeiskii Yazyk i Indoeuropeitsy* (*Indo-European Languages and the Indo-Europeans*), Drews' (1988) *The Coming of Greeks*, Mallory's (1989) *In Search of the Indo-Europeans*, Markey's and Greppin's (1990) *When Worlds Collide: Indo-Europeans and Pre-Indo-Europeans*, and Jones-Bley's and Huld's (1996) *The Indo-Europeanization of northern Europe*, have presented a wide range of competing theories on the matter.

Some linguists speculate that the initial separation of the Indo-European tongues occurred between 5000 BC and 2500 BC (Mallory 1997:100). It is assumed, perhaps too easily, that reconstructed Proto-Indo-European represents an ancient vocabulary (Anthony 1995). "For example, \*kmtom (one hundred) is thought to be a good approximation of the Proto-Indo-European root that developed into the cognates šimtas (one hundred) in Lithuanian, centum (one hundred) in Latin, and satem (one hundred) in Old Persian," (Anthony 1995:15). The reconstructed Proto-Indo-European vocabulary has a distinctly Neolithic flavor with words for domesticated plants and animals, plows, wheeled vehicles, and wool. The earliest appearance of domesticated plants and animals in Europe dates ca. 7000 BC, but wheeled vehicles and wool only appear some 3000–3500 years later. The earliest written Indo-European languages, Anatolian Hittite and Mycenaean Greek, date between 1900 and 1400 BC, too late to account for the divergence of the various language groups (Mallory 1997). Probably the Baltic, Celtic, Germanic, Italic, and Slavic proto-languages emerge between 1500 and 500 BC.

Mallory (1997) presents the four most common models for Indo-European origins. All these models can be criticized from a linguistic and/or archaeological perspective. The proponents of the "Baltic-Pontic" model date Proto-Indo-European to the Mesolithic and give it a distribution from the Baltic to the Black Sea (Kilian 1983, Häusler 1985). This is a very large area and could accommodate the ancestors of many Indo-European languages in Europe and Asia. The model implies, for example, that the Linear Pottery people spoke an Indo-European language.

The Anatolian model proposes that the spread of Indo-European languages in Europe is associated with the dispersal of the earliest farming societies from Anatolia (Renfrew 1987, Safronov 1989, Cavalli-Sforza et al., 1994). The Zvelebil's (1988, 1990) and the Sherratts (1988) modified this model. But many archaeologists have observed that no Indo-European languages are documented in the earliest Mesopotamian records (Anthony 1991), although the earliest written Indo-European documents, in the Hittite and Luvian languages, do occur in Anatolia around 1900 BC. It would be a mistake to dismiss Renfrew's hypothesis. His position was extensively evaluated by David W. Anthony et al. (1988).

If we limit our attention to the Balkans and central Europe, we might consider the region to be linguistically interactive with several related languages. We assume there was continuity in central Europe between Early Neolithic peoples and their successors, such as Lengyel and Rössen cultures. Thus, at least until 3500 BC we can assume that central European languages were derived from those of the first farmers. The Funnel Beaker culture, in its turn, had a northern or central European origin. It is the later Neolithic cultures, such as Baden and Corded Ware, that present problems for a model of linguistic continuity, as it is not clear if these later cultures had a central European origin.

Marek Zvelebil (1995) proposes a three-stage acculturation model for the appearance of Indo-European languages. Like Renfrew he assumes their spread in southeastern and central Europe was associated with the dispersal of farmers from Anatolia. In the circum-Baltic area and other regions, indigenous hunters and gatherers came into contact with agriculturalists and this led to a change in language. This was a very gradual process occurring over hundreds of years. The languages of farmers carried higher prestige and became *lingua franca* in Europe.

The Balkan/central European model dates the Proto-Indo-European breakup to around 5000 BC (Göranberg 1964, Diakonoff 1985). Again, many European languages could have arisen in this territory. This model assumes that the earliest Neolithic peoples of central Europe, that is the Linear Pottery culture, spoke a Proto-Indo-European language. It is difficult to account by this model for the presence of Indo-European languages in the steppe regions of eastern Europe; there is no evidence that central European or Balkan cultures expanded into steppes during the Neolithic.

The Pontic-Caspian model is one most familiar nowadays to English-speaking scholars. It places the Indo-European homeland in the steppes north and northeast of the Caucasus Mountains between 4500 and 3000 BC (Piggott 1965, Gimbutas 1970, Mallory 1989, Anthony 1991, 2007). Mallory (1997:115) has pointed out that all four models have problems, but that this one is the "least bad." It is assumed that the linguistic territory of the Proto-Indo-European culture was no larger than 500,000–750,000 square kilometers; roughly the size of France or Spain (Mallory 1989, Anthony 1995). Anthony (1991:215) notes that the presence of wheeled vehicles in the Proto-Indo-European homeland suggests a dispersal after 3300 BC. The most likely agent of this dispersal is the Pit-Grave (Yamnaya) culture (3500/3300 BC – 2500–2300 BC) of the Pontic-Caspian steppes. The Pit-Grave culture possessed riding horses and wagons; these may have provided greater mobility. Around 2900–2700 BC there is some evidence of an intrusion by the late Pit-Grave culture into the lower Danube Valley and the Carpathian Basin (Ecsedy 1979, Sherratt 1983). Baden/Ezero and Corded Ware cultures might have served as the medium for the spread of Indo-European languages in Europe.

As previously mentioned, the terms for different parts of wheeled vehicles could not have entered the Proto-Indo-European vocabulary before 3500 BC (Anthony 1991). The term for horse is reconstructible in the Proto-Indo-European vocabulary. There is no evidence for presence of horses in Anatolia or Greece during the Early and Middle Neolithic. At least for central, eastern, and northern Europe, the archaeological data is not inconsistent with a hypothesis dating the appearance of Indo-European languages after 3500 BC. The collapse of cultures derived from the Danubian tradition occurred around 3500 BC; large settlements disappeared from many parts of Europe around that time. The Corded Ware and Baden cultures may be associated with the introduction of the Indo-European languages. In a major article, Häusler (1998) strongly reiterates his objections to the introduction of Indo-European languages into central and northern Europe from the Pontic-Caspian area. In Häusler's scenario, there was cultural and presumably linguistic continuity since the Mesolithic. One can argue that in Scandinavia and the East Baltic area (Girininkas 1996), where the local foragers adopted agriculture, cultural continuity exists, but not in central Europe. We assume that Linear Pottery farmers introduced their language or languages into central Europe. It is unlikely that farmers would adopt a language spoken by foragers, but they probably incorporated some words. However, it is possible that Mesolithic foragers in the Circum-Baltic area spoke a Proto-Indo-European language.

## Conclusion

There are many uncertainties about the Late Neolithic economies, settlement, and ideologies. The available archaeological evidence can be interpreted in various ways; debates and arguments will continue. Perhaps as new interpretative approaches develop and further field work is conducted, some of these issues will become clearer.

The traditional invocation of migration to explain Late Neolithic changes in some parts of Europe is not currently popular. However, materialist invocations of internal developments, population increase, and/or agricultural intensification also seem inadequate to us. Warfare may well have been a process of culture change, and an important one. The increased availability of domesticated horses may have facilitated rapid long-distance plundering, and the wealth realized from such activities may have underwritten the costs of social and political innovations at present only dimly perceived.

It would be not surprising that people became conscious of their ethnic identity during the later Neolithic. We can see continuity of occupation of a specific place or region, and we can observe regional stylistic differences in artifacts. Such stylistic differences may reflect ethnicity (Wobst 1977).

The Indo-European problem will continue to challenge archaeologists. Even if Childe was later dissatisfied with his *Aryans* (1926), he still, at the time of his death, hoped to find the cradle of the Indo-Europeans (Green 1981).

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