

## ARCHAEOLOGICAL TRANSFORMATIONS: CROSSING THE PASTORAL/AGRICULTURAL BRIDGE

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*...Just as a cart does not resemble a horse, the migrations of the third and second millennia B.C. pastoralists who were still involved with agriculture did not resemble the migrations of mounted nomads in later centuries. The former were markedly slower and more gradual, and land suitable for cultivation interested the migrators no less than new pastures did (Khazanov 1994: 94).*

*Native historical descriptions of the Aztlan migrants contain contradictory information on the cultural sophistication of these peoples. In some accounts they are said to have lived in caves, made their living by hunting with bows and arrows, and wore animal skins for clothing. These traits describe peoples known as Chichimecs (barbaric peoples from the north)... Contrasting with this picture of the migrants as barbaric Chichimecs are descriptions of complex economic and cultural activities such as the planting of maize, the construction of temples, and the use of the ancient Mesoamerican 52-year calendar...The presence of these contradictory traits among the Aztlan migrants is part of the dual conception of the cultural origins of the Aztecs, who believed themselves descended from both savage Chichimecs and civilized Toltecs ( Smith 1996: 40-41).*

Current archaeological theory celebrates the limitations of archaeological evidence. The archaeological record, we are told, is always ‘underdetermined,’ making possible, if not inevitable, multiple and sometimes contradictory interpretations or ‘readings’ of that past. Karl Lamberg-Karlovsky taught me through example and through countless stimulating encounters over the last three plus decades to reconstruct imaginatively the prehistoric past and to search for larger patterns in the bewilderingly complex, ever

accumulating archaeological record. This mandate did not mean that any interpretation was possible; clearly some were wrong, others implausible, and others speculative or possible, if by no means certain. Karl's practice of prehistory did not accept the hopeless uncertainty of archaeological knowledge, the relativist morass of some post-processual archaeologies. One did the best one could with limited evidence and one did so boldly and imaginatively, not being afraid to be wrong and being willing to change one's interpretations with the inclusion or recovery of new information. Karl Lamberg-Karlovsky taught me the invaluable lesson that the practice of prehistory was a creative exercise and that its pursuit should be intellectually enjoyable. I am forever indebted to his insight into the reconstruction of the prehistoric past. This interpretative essay, which is dedicated to Karl, is offered in this same spirit: it is admittedly speculative and in need of more rigorous confirmation. Possibly it is mistaken, though, hopefully, it will prove stimulating.

The concept of an archaeological culture, however problematic in itself, is based on detecting similarities in material remains that are relatively restricted in time and space. What happens when a people moves or changes fundamentally its way of life, switching from an agriculturally based to a pastorally based economy or the reverse? The same people or their direct descendants now exhibit a different archaeological culture. How can we detect such archaeological transformations? This essay looks at two such transformations: the collapse of the gigantic Tripol'ye settlements south of Kiev in the first half of the IVth millennium BC and the settlement or peopling of the lowland plains of Margiana and Bactria at the end of the IIIrd millennium BC. The disappearance of the gigantic Tripol'ye sites is seen as a switch from an extensive agricultural and mixed economy to one placing more emphasis on the herding of livestock, particularly cattle, and consequently becoming more mobile. The settling of the plains of Margiana and Bactria during Late Bronze times was undoubtedly a very complex process that contained several components, including strong influences from the long-established settlements of southern Turkmenistan immediately to the west and from other early large sites to the south in Baluchistan that already had public architecture and other material culture similarities with the later remains of Margiana and Bactria. This essay focuses on the northern component of the Bactria Margiana Archaeological Complex (BMAC): Andronovo-related nomadic cattle herders who gradually entered the plains of southern Central Asia

and became more intensive irrigation agriculturalists, adopting the material culture of their more 'civilized' sedentary neighbors.

### **A. Archaeological Transformation 1: the rise and fall of the gigantic Tripol'ye settlements and the opening up of the steppe**

The Cucuteni-Tripol'ye culture emerged in the 2nd quarter of the Vth millennium BC with clearly established Neolithic roots extending back into the VIth millennium (Starcevo Cris, Bug-Dniester, etc.). Over time there is a clear expansion of Cucuteni-Tripol'ye settlements to the northeast from an original concentration along the numerous left-bank tributaries of the Danube and the Middle Dniester (Monah and Monah 1997: 36) towards the Bug and Middle Dniepr area near Kiev; some later Tripol'ye settlements are even located east of the Dniepr (cf. *Arkheologiya Ukrainskoi SSR* 1985: maps 5, 192; 6, 204; and 7, 224). Before the discovery of the gigantic settlements the largest known and excavated settlement was Vladimorovka which contained c. 200 houses spread over an area of c. 34 ha. The picture radically changed in the late 1960s when K. Siskin utilized aerial photos and discovered a series of extremely large settlements, mostly located in the forest-steppe region between the Bug and Middle Dniepr rivers; these included the settlements of Majdanetskoe (270 ha), Dobrovody (250 ha), Tal'janki (400 ha), Veselyj Kut (150 ha), Miropol'e (200 ha), Kosenkova (70 ha), Cicerkozovka (60 ha), Onoprievka (60 ha) and P'janezkovo (60 ha). Extensive field investigations began in the early 1970s and included geomagnetic surveys to locate houses and plot more precisely the over-all plan of these gigantic settlements.

Settlements increase in size from Tripol'ye A (20 to 60 ha) to Tripol'ye B1 (150 ha) or from the middle to the last quarter of the Vth millennium, but the largest settlements, such as Majdanetskoe and Tal'janki, date from the last quarter of the Vth through the first several centuries of the IVth millennium BC, or, in general, one can refer to a more than half millennium period of existence for these extremely large settlements, c. 4200-3600 BC (compare Videjko 1996: 53 with Chernykh 2000: 57-59). Most of the gigantic Tripol'ye settlements are clustered quite closely together in a rich black earth zone between the Bug and Dniepr rivers approximately 120 km. due south of Kiev (Fig. 1). Comparatively in terms of the *overall size* of the settlements, these gigantic Tripol'ye settlements are as large, or larger, than the earliest city-states of Sumer and precede them

chronologically by more than half a millennium. The evidence for specialization and internal social differentiation, on the other hand, is much less, and for this reason I will not refer to them as 'cities' or 'proto-urban formations' but simply as 'giant sites' or 'gigantic settlements'.

Scores of houses have been excavated, particularly from the settlements of Majdanetskoe, Tal'janki, and Veselyj Kut. Excavations of the houses and study of their materials, particularly the ceramics, led the archaeologists to conclude that most of the gigantic settlements experienced two phases of growth: a cluster of unplanned houses expanded outwards forming concentric 2-3 oval rings of interconnected houses (Fig. 2). The ceramics show little differentiation within the settlements, suggesting that each settlement in its final phase of maximum extent was occupied simultaneously for a relatively short period of time, possibly less than a century, before its abandonment typically after having been deliberately burned down. The houses are rectangular in shape (20-30 m. long X 6-10 m. wide), possibly reinforced with wooden posts; most are thought to have been two story structures with the living areas with hearths and benches/beds in the upper story, and kitchens, work rooms, and animal stalls (?) downstairs. The archaeologists believe that the houses, which formed the oval rings, were interconnected with one another, possibly creating their own separate system of enclosures for controlling their large herds of cattle and other animals (Fig. 3).

It is clear at least at the largest site Tal'janki that the central area formed by these concentric circles lacked architectural structures and formed a large open space. The two ellipses at Tal'janki were separated from each other by an unbuilt area 70-100 m. wide. Within the inner ellipse radial rows of houses extend towards the center in the northern part of the settlement, but the center of the site, encompassing roughly 60 ha also comprised an open unbuilt area (Fig. 4). The interconnections linking the houses together did not constitute any system of fortifications, and references to such fortifications are illusory and driven by the myth of the invasion of kurgan building pastoral nomads from the east. The later kurgans located within the area of the Tal'janki settlement are just that: later and unrelated to the occupation or final abandonment of this gigantic Tripol'ye site (Kruc and Korvin-Piotrovsky personal communication).

Some of the plastered walls of the houses were painted. There are some special or 'public' structures, such as the 'M' complex at Majdanetskoe, which are larger in size (336 sq.m.) and more richly decorated, but the vast

majority of the houses (over 80%) are very similar to one another with little difference in shape or size (60-120 sq. m.). Videjko believes that the distribution is basically bimodal with roughly 10% of the houses being substantially larger (270-400 sq. m.). It also must be mentioned that the sites are so large that many open areas, including the centers of the settlements, have not yet been thoroughly investigated, and, consequently, the final interpretation of the settlement structure may require revision. Nevertheless, the overall picture is one of extremely large 'planned' unfortified settlements with very little indication of internal social differentiation. Excavations at Majdanetskoe have also revealed that only c. two-thirds of the investigated buildings were dwellings, a finding that necessitated a one-third reduction in the estimated population of the settlement (cf. below). In terms of their forms and dimensions, the houses of the contemporaneous smaller settlements are essentially identical to those found in the giant sites.

There is a three-tiered settlement pattern: the gigantic settlements (100-400 ha); middle-sized (20-60 ha); and small (2-10 ha). The settlements are clustered in groups. Typically there are 1-2 middle-sized and/or 2-3 smaller settlements found within 3-10 km. from one of the gigantic settlements (Videjko 1996: 66). Demographic reconstructions are based on the assumption of 5-7 persons/house, and the houses within the settlements form groups (of related families?) of up to 20 houses or 100-140 people. The large settlement of Tal'janki with 2700 houses was inhabited possibly by more than 15,000 people, and, adding then the numbers for the satellite settlements within its cluster, the total population may have exceeded 30,000 (Videjko 1996: 72). These calculations are, of course, rough and preliminary, but, taken all together, they show that tens of thousands of people occupied a relatively restricted area of the forest-steppe between the Bug and Middle Dniepr rivers at the end of the Vth and beginning of the IVth millennium.

It is essential to reconstruct the basic subsistence economy of the gigantic sites and their satellite communities. Cucuteni-Tripol'ye settlements inherited the basic constellation of plant and animal domesticates that had diffused into the Balkan peninsula from the ancient Near East: emmer, einkorn, and bread wheat (*Triticum aestivum*), naked and hulled barley, peas, vetch, lentils; and sheep, goat, cattle, and pigs. They also grew buckwheat (*Fagopyrum esculentum*) and millet (*Panicum miliaceum*), the latter particularly in the eastern area where the giant sites are located; cultivated

both wild and domesticated grapes (*Vitis vinifera*), though the latter may have been introduced later in middle Tripol'ye times (Masson and Merpert 1982: 235); and gathered wild and, apparently, domesticated fruits, such as plums. Hunting and fishing were always important subsidiary activities, as indicated both by the osteological finds of species such as aurochs, deer, elk, and horses, and artifactual remains, such as copper and bone fish hooks and flint arrowheads; there is some indication that hunting and fishing may have even increased in importance as the Cucuteni-Tripol'ye culture began to break up and expanded into the dry steppe zone to the south (Masson and Merpert 1982: 237).

An extensive form of sowing summer wheat and barley interspersed with the growing of vegetables, such as peas and lentils, most likely occurred on the extensive meadows that surrounded the gigantic settlements. A strong indirect case for the use of a primitive plow or ard to create furrows in soils possibly already loosened by hoes can be made by the discovery of large elk antlers with clearly worked ends, such as that found on the settlement at Novyie Ruseshty I (Masson and Merpert 1982: 233, Fig. 18; 234); two types of ards, fashioned from deer and elk antlers, have been recovered: one with a vertically set blade for working recently cleared land; and the other with a horizontal blade for working intensively cultivated fields (Monah and Monah 1997: 80). A clay model of two yoked bulls (oxen?) drawing a sledge was recovered from Majdanetskoe, and traces of yoking and harnessing have been found on steer bones from Tal'janki and other giant sites (Videjko 1996: 70, n. 68). It is difficult to imagine how these large sites with their thousands of inhabitants could have maintained themselves without harnessing oxen to draw these plows, a development which would have increased several times the arable area (Videjko 1996: 70 with references). Similarly, it is reasonably conjectured that the short duration of these settlements suggests an extensive form of possibly shifting cultivation, involving the burning of vegetation and trees and the periodic movement of fields for renourishing the soil. It is hypothesized with supporting palynological evidence that such ecologically destructive practices led to deforestation and an anthropogenically-induced environmental crisis which was one of the factors responsible for the break-up of the giant sites and the fissioning of the culture into separate regional components by the middle of the IVth millennium.

Animal husbandry also played an extremely important role in the subsistence economy of these gigantic settlements. Although some regional

variation can be observed, cattle were clearly the most important domesticated species and kept for meat and milk production, as well as some most likely for draft purposes. Large numbers of pigs were also raised, while sheep and goats, in general, assumed a much more subsidiary role (Masson and Merpert 1982: 234), though their numbers and significance seem to increase after the break-up of the settlements and occupation of the open steppe on Usatovo-related sites when pastoralism formed a more central role in the economy and when influences from the steppes to the east and the Caucasus to the southeast are more discernible. Rustling of cattle among the different Tripol'ye communities must have been a constant problem, and, as already suggested, the large open spaces within the gigantic settlements may have functioned, in part, to secure their herds at night.

The relative insignificance of sheep and goats in the overall economy of the Cucuteni-Tripol'ye culture may suggest an extremely limited production of woollen textiles, despite the evidence for weaving as suggested by the occasional spindle whorls and more numerous finds of what are interpreted as loom weights. There is some evidence for the use of wool (e.g., spun balls of wool recovered from the Cucuteni A-B settlement of Iablona I [Monah and Monah 1997: 71]), but it is extremely limited and some zooarchaeologists even questioned whether the sheep that they kept were covered with wool (Monah and Monah 1997; for an alternative interpretation for the faunal remains from Draguseni see Bolomey and El Susi 2000: 172). Linen indisputably was woven, as well as other plant fibers, and the numerous bone scraping tools for working skins and animal pelts suggest that the Tripol'ye peoples also typically clothed themselves in leather garments. The use of wool may have been much more restricted, suggesting that their extremely extensive agricultural and pastoral economy had not fully experienced the benefits of the Secondary Products Revolution (Sherratt 1981; 1983) that had already taken place farther south.

Much scholarly ink has been spilled on explaining the demise of the incredibly rich Balkan Chalcolithic settlements (or Kodzadermen-Gumelnitsa-Karanova VI *Verband*) at the end of the Vth millennium and, subsequently, of the breakdown of the Cucuteni-Tripol'ye Culture into numerous regional post-Tripol'ye variants or groups (cf. Parzinger 1998a: 465; and 1998b). The two main competing theories have been to emphasize the destructive effects of a concerted movement of mounted pastoral

nomads from the steppes to the east (e.g. Lichardus 1988; Lichardus and Vladar 1996; Lichardus and Lichardus-Itten 1998), on the one hand, or to document major climatic changes, involving increasing aridization which proceeded south to north, first affecting cultures in Anatolia and the Aegean, then in the northern Balkans, and finally in Romania and western Ukraine, on the other (notably in numerous articles by Todorova, e.g., 1993, 1998). Some have also mentioned the exhaustion of the exploited, easily accessible copper ores in the Balkans, leading to a search for alternative sources, including those farther north and northwest into central Europe.

The theory of a movement of mounted nomads from the east relies heavily on the evidence for Copper Age horse domestication from the Sredny Stog site of Dereivka (Telegin 1986), particularly the demonstration of bit wear on the famous 'ritual' stallion skull found at the site (Anthony and Brown 1991; Anthony 1996). The calibrated C14 date taken from this skull has shown it to date at least 1000 years later in the Bronze Age (Levine 1999: 14, Table 2.1), and there is indisputable evidence now for the mixing of materials from later levels at the site, leading Levine (1999: 15-19) to refer to the entire evidence for Copper Age horse domestication at Dereivka as a myth; other skeptics (e.g., Häusler 1994; 1995) had come to this conclusion even prior to these new radiocarbon determinations, dismissing the evidence for a Chalcolithic horse cult at Dereivka or at Khvalynsk. The archaeological evidence cited to support an east-west movement of peoples, such as the distribution of the abstract and animal-headed stone scepters, is much more reasonably interpreted as indicating the existence of a prestige-goods exchange network than such a migration. If one is going to explain the collapse of the Varna-related cultures as due to an invasion from the east, one also has the problem of circumventing the giant Tripol'ye-culture sites which are beginning to develop at the time of this supposed east-west migration (Videjko 1996: 73). The environmental crisis model has the virtue of proceeding in the right direction: the observed sequential archaeological collapse from the southwest to the northeast corresponds to different latitudinal zones being affected at different times due to this progressive onset of more arid conditions and changes in sea-level.

The giant Tripol'ye settlements were destroyed by fire. This destruction may have been done deliberately by the inhabitants as they shifted their settlements to immediately adjacent areas with overlapping fields (cf.



Kruc 1994). It is also not unlikely that the Copper Age peoples of south-eastern Europe were not averse to fighting among themselves. Videjko (1995: 74) explains the emergence of the gigantic settlements with their enclosures as due to internal competition and fights (*Konkurrenzkamp*) among different Tripol'ye groups, an interpretation that also is consistent with the environmental crisis model; times get tough — for whatever reason, and people get nasty. The direct archaeological evidence for such conflicts, however, is rather limited. The burning of the settlements may have been directly associated with their sequential abandonment and may have been conducted for ritualistic purposes, possibly associated with efforts to rejuvenate the soil.

A strong circumstantial case can also be made for a complementary human-induced environmental crisis; the construction alone of the giant settlements would have seriously reduced the forests within the forest-steppe zone in which they were situated. Similarly, their agricultural economy was extensive, probably involving forest clearance and the periodic shifting of fields or a form of swidden cultivation. They kept large herds of cattle and substantial numbers of pigs, the utilization of which too would have had serious environmental consequences. While it would be nice to have more direct confirmatory evidence, the available pollen analyses from the gigantic settlements are consistent with a pattern of deforestation and an overall reduction in bio-diversity (Videjko 1996: 57, 70-71). The ecology of the Eurasian steppes is very fragile, and even minor climatic changes affect differentially the open steppes proper from the forest-steppe and forest zones to the north (cf. also Parzinger 1998a: 459). Thus, the environmental crisis model championed by Todorova seems consistent with the archaeological record, though it should not be applied mechanically.

What is indisputable is that two major shifts in settlement had occurred: firstly, the abandonment of the Karanovo VI Varna-related sites of the northern Balkans at the end of the Vth millennium and the consequent spread to the northeast and growth in size of the Cucuteni-Tripol'ye sites, culminating in the emergence of the gigantic settlements; and secondly, the collapse of these gigantic, agriculturally-based Tripol'ye settlements towards the end of the first half of the IVth millennium. If the demographic calculations for the giant sites that were presented above are at all accurate, tens of thousands of people were engaged in adopting an even more extensive, more mobile economy, relying principally on animal

husbandry, both cattle-raising and increasingly the herding of sheep and goats (Masson and Merpert 1982: 237), an economy which has been characterized as semi-nomadic. As Parzinger (1998a: 464-465) notes, the changes in settlement patterns, burial rites, and basic economy were fundamental, justifying the term post-Tripol'ye to refer to the new regional groups that emerge at this time. New areas of the steppe are occupied such as the Lower Dniester region by the Usatova post-Tripol'ye group (cf. *Arkheologiya* 1985: 224-225), and the house remains of their settlements, such as at Usatovo-Bolshoi Kuyalnik and at Mayaki, are so insubstantial to non-existent that it is reasonable to identify them as seasonal, possibly summer encampments, despite their size (possibly up to 5 ha at the former site) and surrounding ditches (Parzinger 1998a: 466; Chernykh 1992: 93). Such ditches, of course, could have served different purposes: not only, or even primarily for defense, but also for enclosing and securing their herds.

In any case, the change from the time of the giant agricultural settlements is striking, and clearly what is being recorded is a shift from a more sedentary to a more mobile way of life, or, if you will, agriculturalists are becoming pastoralists. Our categories of analysis — whether they are strictly archaeological, like an archaeological culture, or partly ethnographically derived, such as pastoral nomad or agriculturalist — should be conceived dynamically. The same people or culture can adopt a new economy and change dramatically its way of life in a short period of time — even within the lifetime of individuals within it, as numerous ethnographic studies have demonstrated (e.g., Barth 1964; Beck 1986). Agriculturalists may become pastoralists, and, as shall be shown with the Late Bronze Age evidence from Central Asia, pastoralists may become agriculturalists, adopting many features of the material culture of their agricultural neighbors. Both agriculturalists and pastoralists may also practice metallurgy or an entire range of different crafts. The categories we employ must reflect this basic fluidity and diversity.

Finally, two other related developments are worth noting. Firstly, a major shift in intercultural relations also began around the middle of the IVth millennium and greatly affected these changes in the North Pontic and East Eurasian steppes. The redating of both well-established Caucasian Early Bronze horizons, the Maikop and Kura-Araxes formations, which are based now not only on typological considerations, but also on calibrated radiocarbon determinations (for Maikop see Rassamakin 1999: 163-164; Chernykh 2000: 74-75; Rezepkin 1991; 1996; Trifonov 1996

and Lyonnet 2000; for Transcaucasia cf. Kavtaradze 1983; 1999 and the partial uncalibrated list of Kushnareva 1997: 52) suggest that both began to emerge towards the middle of the IVth millennium, or, perhaps not coincidentally, at roughly the same time that the so-called Uruk colonies have been documented in Anatolia on the middle to upper reaches of the Euphrates. While Chernykh's compilation of calibrated radiocarbon determinations (Fig. 5) suggests a protracted chronological hiatus spanning the middle centuries of the IVth millennium between these Late Chalcolithic and Early Bronze developments, the latter seem to get underway earlier in the Caucasus (Chernykh 2000: 41) and appear partially to bridge this chronological gap. The advent of the well known Early Bronze cultures of the Caucasus marks a radical change in the production and exchange of metals throughout the entire interconnected area. Arsenical bronzes, most of which originate in the Caucasus, replace the copper artifacts, which had been procured originally from the Balkans (Chernykh 1992; Pernicka et al 1997). These changes in the long-distance and increasingly significant procurement of metals and the emergence of these Early Bronze Caucasian cultures must be related also to roughly simultaneous developments occurring farther south that involve the greater integration of northern Mesopotamia, including the Upper Euphrates drainage on the Anatolian plateau, into a larger Mesopotamian world, involving the movement of colonists and traders from southern Mesopotamia, or what now is referred to in the literature as the Uruk expansion (e.g., Algaze 1993, Stein et al. 1996; and Avilova, Antipina, and Teneishvili 1999).

Secondly, it is roughly at this same period of time, the middle of the IVth millennium, that the earliest evidence for wheeled transport is first documented, stretching across a vast interconnected region from northern Europe to southern Mesopotamia (Bakker et al 1999). The precise determination of which area or which archaeological culture first developed wheeled vehicles may prove impossible to document archaeologically simply because the technology diffused as rapidly as it did across this vast contiguous area. The question of origins is much less significant than this phenomenon of convergence, this almost simultaneous evidence for the early use of wheeled vehicles stretching from northern Germany and southern Poland south across Anatolia to southern Mesopotamia, beginning c. 3500 BC or immediately after the collapse of the gigantic Tripol'ye settlements. Wheeled vehicles can be used for different purposes by different cultures (or different purposes by the same culture) across this

interconnected area; they can serve military purposes, function to transport traded goods, such as semi-processed metal ores and ingots, and facilitate the development of a new more mobile way of life based principally on cattle herding. It is shortly after the introduction of wheeled transport that evidence for its massive utilization on the western Eurasian steppes is documented in the excavation of scores of kurgans containing wheeled carts with tripartite wooden wheels. A.N. Gei (2000: 176-177) calculates that over 250 burials with wheeled wagons have now been excavated on the western steppes, 115 of them alone being documented for the Novotitorovskaya culture of the Kuban steppes northwest of the Caucasus (Figs. 6-7). These were not the chariots of a military aristocracy but the heavy, ponderous carts and wagons of cowboys who were developing a form of mobile Bronze Age pastoral economy that fundamentally differed from the classic Eurasian nomadism that is later attested historically and ethnographically.

The opening up of the real steppe beyond the confines of narrow river valleys may have been a relatively rapid process and archaeologically documented by the spread of kurgans over the open western Eurasian steppes, as Anthony (1998) has argued. But this process involved two distinct steps: the first was associated with the introduction of heavy oxen-driven wheeled carts and wagons; and the second, which may have occurred during the 2<sup>nd</sup> half of the IIIrd millennium BC, was associated with the riding of horses and their harnessing to lighter vehicles, developments which greatly enhanced the mobility of the pastoralists occupying the steppes from the trans-Ural region in the east to the Danube basin in the west. This latter process is first convincingly attested archaeologically across this area by the appearance of disc-shaped cheek-pieces first in the east and then rod-shaped cheek pieces farther west, beginning in late Middle Bronze Age times (Boroffka 1998). As based on the density of such finds, this development may have begun in the Don-Volga forest-steppe zone (Priakhin and Besedin 1999: 40), though this problem of origins may prove as insoluble as that for the development of wheeled vehicles. Once developed, the technology may have spread so rapidly that its precise origins will be incapable of archaeological determination, but again it is significant that this innovation was almost immediately adopted across the west Eurasian steppes and then rapidly diffused to the south and east.

Unfortunately, I cannot trace this fascinating story in further detail here. Rather I must now move east around the other side of the Caspian and

jump chronologically forward to the end of the IIIrd millennium BC or to the beginnings of the Bactria Margiana Archaeological Complex (BMAC) when cattle herding pastoralists, who probably now were riding horses and utilizing Bactrian camels, changed their economy and became irrigation agriculturalists. This process is our second example of an archaeological transformation.

### **B. Archaeological Transformation 2: settling down on the lowland plains of Bactria and Margiana**

Ethnologists distinguish different types of nomadism based essentially on two criteria: the extent of animal husbandry relative to agriculture in their economy and the typical species composition of their herds and environmental/climatic conditions to which they have to adapt. Thus, they have recorded a range of herding practices from mixed agricultural/pastoral economies to various forms of transhumance to so-called pure (and poor) nomadism where the nomadic group largely, if not exclusively, subsists totally on its pastoral products. Many question the reality of this last form of nomadism or consider it very exceptional, limited to specific historical and geographical conditions. The animals herded and the environment in which they are herded are also used to separate types of nomadism by large geographic or cultural areas. Thus, in a very accessible and illuminating study Barfield (1993) distinguishes among East African pastoralists; desert Bedouin nomads; pastoral tribes of Southwest Asia; Eurasian steppe nomads; and high altitude pastoralists in Tibet. Khazanov's (1994: 40-69) types are essentially similar. For Barfield each type is principally characterized by its focus on a specific animal that is accorded great economic and cultural value. For the classic Eurasian steppe nomads, that animal is the horse (Barfield 1993: 131-138), though both he and Khazanov (1994: 46) correctly emphasize that this form of nomadism really specializes in two species: horses and sheep. Large stock, principally cattle, are less important, though more so than in Near and Middle Eastern types of nomadism, their significance varying according to two rules: 'in steppe regions there were more large stock than there were in desert regions; and the greater number of large stock the more important the role of agriculture in the general balance of the economy (Khazanov 1994: 47)'. Semi-sedentary peoples, like the Karakalpaks in the region south of the Aral Sea, kept greater numbers of large stock than their more nomadic neighbors to the north (Khazanov 1994: 48).

Eurasian steppe nomadism has also been termed multi-animal nomadism (Bacon 1954: 46), because it herded different species of animals – sheep, goats, horses, cattle, Bactrian camels – together, some of whose value lay principally in transportation and riding. Eurasian nomadism had to adapt to severe continental climatic conditions: a short but very hot and intense summer and a much longer, bitterly cold winter during which time pastures were often covered with thick deposits of snow. Crops can be grown, though evidence for any form of intensive cultivation on the steppes during the Bronze Age is contradictory (cf. Cernych et al 1998; Gaiduchenko 1999); whatever practices were adopted, the growing season had to have been very short, particularly relative to what was possible farther south in Transcaucasia and in southern Central Asia. These continental conditions became more severe, of course, as one crossed the Urals and moved deeper into Eurasia. Horses and, to a lesser extent, sheep were particularly valuable for the fact that they could uncover grass covered with snow by kicking at it with their hooves; apparently horses could reach grass in this manner that was buried up to a half meter in snow (Khazanov 1994: 50). Pastures so uncovered could, to some extent, be utilized by other less well-adapted species, thus eventually leading to the mixed herds characteristic of Eurasian nomadism. Another solution to this problem was to grow fodder and store it for the winter season when it was less available; this solution must have archaeological consequences that are still largely uninvestigated.

Another problem on the open steppe was the availability of water; thus, not surprisingly, many of the migratory cycles of recorded nomadic groups followed the river valleys, moving meridionally north possibly into the forest-steppe zone in the summer and south into warmer, less snow-covered climes in the winter; such a pattern would bring herders in the Volga and Ural river basins annually down to the northern Caspian Sea. Ultimately, their increasing presence would successively displace other herders and cultivators farther south in a kind of chain reaction, until peoples began to traverse the Kyzyl and Kara Kum deserts to reach more hospitable conditions. N. Shishlina (n.d.: 364-365) believes that the open steppe was only progressively occupied. In Yamnaya (pit-grave) times at the end of the IVth and beginning of the IIIrd millennium, the movement of the herders was largely confined to the river valleys and immediately surrounding grasslands; the real open steppe was only occupied during subsequent Catacomb grave times out of necessity (increased aridity and

overexploitation of the neighboring grasslands) and due to their increased mobility and mastery of the horse (cf. also Shishlina and Hiebert 1998). Major rivers, such as the Volga, and even the shallow Sea of Azov freeze during the winter, thus making it possible to cross them without difficulty. East of the Urals and the Ural river basin, the major rivers run south to north, and the climate becomes even more continental and severe, and the typical snow cover gets even deeper. It is easy to understand why the opening of the eastern Eurasian steppe occurred centuries after the opening up of the western Eurasian steppe.

The basic point to be emphasized here is that this classic form of Eurasian nomadism, as known to us historically and ethnographically, is *not* archaeologically attested during the Bronze Age. Morales-Muñiz and Antipina's exhaustive review (n.d.) of the faunal evidence from the steppes from Chalcolithic through Bronze Age times records very little presence of sheep and goats, except at some post-Tripol'ye Usatovo sites, and a continuing focus on cattle that seems only to increase significantly during the Late Bronze Age, an increase which they intriguingly suggest may be related to the development of horse riding for cattle herding purposes, the emergence of cowboys on the 'Wild East' of the Eurasian steppes. If Bronze Age steppe pastoralism is not the same as historic Eurasian mounted pastoral nomadism, then it is misleading to envision hordes of marauding nomads sweeping down off the steppes with their chariots and advanced bronze weaponry to invade and subjugate established agricultural societies to the south. Rather, more mobile semi-nomadic economies utilizing oxen-driven carts and wagons and herding principally cattle spread across the western Eurasian steppes during the 2<sup>nd</sup> half of the IVth and IIIrd millennium; at some point they began to ride horses and develop lighter vehicles and new techniques for harnessing horses to them. Their way of life was never fully nomadic, though obviously successful. As this way of life spread farther east into more continental, colder areas, these cattle herders must have experienced a continuous pressure to move south into warmer climes more suitable for raising their livestock. This process would have been gradual, but relatively continuous leading to the movements or, perhaps better, successive displacements of cattle herders north to south ultimately into areas where permanent settled agriculture had been practiced for millennia.

West of the Caspian this process seems to have been underway at least by the middle of the IIIrd millennium BC with the advent of impressively

large kurgan burials in Transcaucasia (for their dating based on calibrated radiocarbon dates, cf. Kavtaradze 1999: 81; Chernykh 2000: 87-88). East of the Caspian this process was delayed for several centuries, a chronological discrepancy that can also be partially explained by the greater physical separation of the steppes from the cultivated oases of southern Central Asia. The deserts of the Kyzyl Kum and Kara Kum initially impeded this movement of herders north to south (Fig. 8). In other words, while the Caucasus mountains form a sharp geographic boundary between the Eurasian steppes to the north and the highland plateaus of Anatolia and Iran to the south, the Central Asian deserts extend the range of transition between the steppes and the highlands and find no real parallel on the western side of the Caspian, though the dry Nogai and Kalmyk steppes also merge with each other and extend north around the Caspian. These deserts functioned as a more effective cultural barrier until late in the IIIrd millennium BC when the semi-sedentary cattle herders in the Volga and Ural river basins and even farther east were able to traverse these extensive arid expanses by developing even more mobile economies with the help of horses and, most likely, Bactrian camels that had earlier been domesticated in southern Central Asia and eastern Iran. It is therefore not surprising that contacts between the western Eurasian steppes and the ancient Near East developed earlier on the western side of the Caspian since the steppes and the Caucasus mountains, particularly in the northwest along the Kuban basin, were directly contiguous with one another, not separated by waterless deserts, the only problem being how to get around or over the mountains. One can visualize this important physical distinction between steppe and sown on either side of the Caspian as like a wedge opening west to east in which the northwest Caucasian mountains practically touch the Crimean and east Ukrainian steppes, while the oasis irrigation agricultural settlements of southern Central Asia are physically removed from the vast steppes of southern Russia and northern Kazakhstan by the formidable Kyzyl Kum and Kara Kum deserts (cf. Figs. 6 and 8).

While interaction with the steppes in terms of the gradual but continual movements of cattle herders north to south took place later east of the Caspian Sea, its precise beginnings are uncertain due to the somewhat floating, unanchored chronology of Bronze Age steppe remains, particularly for sites located east of the Urals. The excavation of early Andronovo ceramics with Abashev and Petrov elements in association with Sarazm IV



ceramics at Tugaï along the right bank of the Zeravshan river immediately east of Samarkand (Avanessova 1996) suggests that this process may have begun already by the middle of the IIIrd millennium; interestingly, the limited salvage work at this site also yielded considerable evidence for metal-working (crucibles, kilns, slag, etc.), a characteristic practice of the later Andronovo-related groups that moved south into Central Asia during the IInd millennium and worked the tin mines of the Zeravshan valley (Alimov et al 1998). The evidence for a steppic presence in southern Central Asia becomes more substantial with the emergence of the Bactria Margiana Archaeological Complex (BMAC) at the end of the IIIrd millennium B.C., as, for example, recorded by the discovery of scatters of 'nomadic' or 'incised coarse ware' sherds in the Murghab delta, as well as by their occasional occurrence in the excavations of the public buildings in the major centers in the Togolok, Gonur, and Dashly oases.

This paper cannot detail features of the BMAC, nor discuss problems of its origins and geographical extent. As Lamberg-Karlovsky's current work in Baluchistan hopes to demonstrate, these topics are fundamentally related to our current understanding or the state of research and are extremely complex. Most archaeologists of the former Soviet Union initially seized upon the obvious parallels in ceramics and figurines between the BMAC materials, on the one hand, and those found on multi-period tells in the Kopet Dagh piedmont strip of southern Turkmenistan, on the other, to argue for a strong formative influence from this latter region; indeed, the very fact that BMAC remains were first described by Soviet scholars as Namazga VI underlies their belief in this basic genetic connection to the millennia-long developmental sequence established by Soviet archaeologists in southern Turkmenistan. Not surprisingly, Western scholars have observed similarities with other areas and in other materials, including earlier stone and metal seals and public architecture, from sites located to the south in eastern Iran, Afghanistan, and Pakistani Baluchistan to suggest southern roots for the BMAC from these regions, if not also from the Indus Valley itself. Undoubtedly, the BMAC had diverse origins and both these perspectives can be maintained; they are not mutually exclusive or, as B. Lyonnet (n.d.: 48) observes, the BMAC represents 'une culture nourrie des deux poles, "turkmène" et "indien"'. I would also argue, however, that there is at least one other major formative influence on the BMAC that concerns the 'archaeological transformation' discussed here: cattle herding pastoralists from farther north settling down on the

watered plains of Bactria and Margiana and changing their way of life and adopting the material culture of agriculturalists with whom they came into contact. My central thesis is that current archaeological evidence, as limited and problematic as it is, documents precisely the transformation described above; that is, the northern component of the BMAC, which constitutes only one of its formative influences, has been detected archaeologically. What has been found is just what one would expect to show the gradual, but continuous infiltration *and* assimilation of cattle herders into the established sown world of irrigation agriculturalists.

Settlement pattern data for southern Central Asia, such as it is (cf. the calculations and caveats in Kohl 1984: 143-146, 151-154, and 159-160; and also now the more systematic work in the Murghab delta [Gubaev, Koshelenko, and Tosi 1998]), supports the following conclusions: 1) there is scant evidence for occupation of the lowland plains of Margiana prior to the Middle Bronze period or datable to the second half of the IIIrd millennium and later periods (Salvatori 1998: 52); 2) the total known occupied area for the plains of Margiana and northern and southern Bactria during Middle and Late Bronze Age times considerably exceeds the known occupied area for earlier Chalcolithic and Bronze Age remains from the piedmont strip of southern Turkmenistan or even also northeastern Iran (excluding the Gorgan plain), a fact that essentially precludes the possibility of deriving the former exclusively from the latter, as has been postulated (e.g., Biscione 1977); and 3) the most notable disjunction in the settlement pattern data in terms of location, size and nature of settlements from southern Central Asia from Neolithic through Iron Age times or throughout later prehistory occurs precisely during this initial major occupation of the lowland plains of Bactria and Margiana beginning in the last centuries of the IIIrd millennium. The lowland plains watered by the lower Tedjen river and its terminal branches and the lower Murghab were occupied during Late Chalcolithic times (e.g., the Geoksyur oasis and scattered Namazga III materials in the Kelleli oasis of Margiana) probably by settlers from southern Turkmenistan, but this occupation was restricted as the recent survey work has demonstrated. Evidence for an earlier occupation of the Bactrian plains west of the Kunduz valley or west of eastern Bactria (where such occupation has been documented at Shortughai and other settlements on the Ai Khanum and Taluqan plains, Lyonnet 1997: 68-71) is even less apparent, save for the scatters of 'Early Neolithic' lithic materials found in the sands north of the Bronze Age oases of northwestern Afghanistan (Vinogradov 1979).

Salvatori (1998: 52) believes that this picture of a relatively late Middle and Late Bronze occupation of the lowland plains of Margiana and Bactria is unlikely and represents a product of insufficient research and the natural burial of earlier settlements:

In our opinion only a wrong turning taken by the research or conditions of burial under alluvial deposits or the advancing sand dunes (in the distal areas of the delta) have so far stood in the way of the identification of the presence of an earlier settlement pattern.

His view, of course, may be correct, though current negative evidence, which is based partly on the results of his own exhaustive and systematic survey work, suggests otherwise. The lack of substantial prior settlement on the lowland plains of Margiana and Bactria prior to the BMAC or initial Middle to Late Bronze occupation is consistent with the thesis of a gradual peopling of these plains by cattle herders coming from the north to settle down and practice a more secure and stable way of life. Salvatori adopts an *evolutionary* perspective: there simply should be earlier substantial settlement, even though it has yet to be documented and even though a more satisfactory and consistent *historical* explanation suggests itself. It is impossible to calculate precisely the increase in settled area and its overall extent during BMAC times. One major unresolved problem is the contemporaneity of the occupation of the various oases. If Russian archaeologists, like Sarianidi, are correct in arguing for the sequential occupation of the oases and the general movement of settlement in Margiana upstream over time (from Kelleli to Gonur to Togolok to Takhirbai), then the total occupation in any specific period correspondingly would be reduced (cf. Lyonnet n.d.: 53-54). It is unclear to what extent this perspective is correct or to what extent it simplifies a much more complex reality (e.g., Gonur-depe North was occupied during at least two periods, Hiebert 1994: 36-38). Nevertheless, the very rough calculations that can be made suggest minimally a fourfold increase in settlement, comparing the data available for southern Turkmenistan in the Early and Middle Bronze periods with that for the BMAC settlements. It is difficult to consider such a marked increase in settlement as solely the product of a local developmental process.

The BMAC synthesis is highly original, even if some of its practices (e.g., diverse mortuary rituals, use of seals) find their roots farther south in Baluchistan and eastern Iran or west in southern Turkmenistan. However

one interprets the planned public architecture on BMAC sites, its distinctive, easily recognizable character is apparent. Most BMAC sites are at least to some extent fortified, a feature that was not characteristic for most earlier settlements in southern Turkmenistan, and the very presence of such fortifications suggests, of course, that the settling of these plains was not an entirely peaceful process. The conflict may not have not been so much steppe vs. sown, as later arrivals ousting or displacing earlier peoples who had moved into the area; sometimes the new immigrants may simply have occupied settlements that had been earlier abandoned. Many BMAC sites, such as the Dashly 3 'fortress' (Sarianidi 1977) or the later 'fort' at Gonur South (Sarianidi 1998a: 115), record later occupations by peoples who significantly alter the preexisting architecture and often contain considerable evidence for metal working (Sarianidi, Terekhova, and Chernykh 1977). Sites in the Kopet Dagh piedmont strip of southern Turkmenistan typically form multi-period tells that were occupied in some cases for millennia. While the larger excavated sites in Margiana exhibit a cultural sequence and were occupied for some period of time, the total depth of cultural deposit on the BMAC sites never approaches that of the larger tells in southern Turkmenistan or northeastern Iran. The 'deep sounding' of a stratified midden at Gonur North extended down 3.5 m before reaching virgin soil (Hiebert 1994: 30), while the total depth of cultural deposit at Altyn-depe was estimated as at least 30 m. (Masson 1981: 75). BMAC sites exhibit planned, highly symmetrically arranged architecture; by comparison, the proto-urban settlement at Altyn-depe with its winding streets and distinct residential and functional areas (Masson 1988: 5, Fig. 1) seems to have evolved organically over time; it was not pre-planned in the same way as the major BMAC settlements and as even smaller sites such as Sapallitepa obviously were. This contrast of BMAC features with other areas could be extended, the point being that the BMAC represents something original, a unique blend of diverse cultural elements.

How convincing is the empirical support for this thesis of a gradual settling of Margiana and Bactria by northern cattle herders? Do a total of 336 incised coarse ware sherds from 34 'nomadic camp sites' (Cerasetti 1998: 67) constitute sufficient proof for such postulated movements? Evidence for the Indo-Aryans – if that is the correct ethnic/linguistic identification for these cattle herders (see below) – has never seemed so meager and puny. Or does it? What would one expect to find archaeologically to

document the process of gradual but continuous movements of cattle herders onto the lowland plains of Margiana and Bactria? The plains these settlers entered were not totally empty, but sparsely occupied by peoples practicing a form of irrigation agriculture that had been developed over preceding millennia. As they entered these plains, their way of life changed; they focused more on irrigation agriculture, adopting and assimilating the pre-existing material culture of the neighboring peoples they encountered. The process is the inverse of that already adumbrated for the collapse of the gigantic Tripol'ye settlements; there agriculturalists who also herded became pastoralists who also cultivated, adopting an ever more mobile and extensive economy; here cattle herders settled down and began to cultivate crops more intensively than they had previously practiced farther north. This process undoubtedly was very complex.

The peoples living in Tazabag'yab culture settlements, which have been excavated in the Akchadarya delta of the lower Amu Darya south of the Aral Sea, clearly practiced irrigation agriculture (Itina 1977: 44-45). Their practice may or may not reflect influence or even some initial colonization from the south (Itina 1977: 229-231), but this culture also exhibits clear links to the steppes farther north and represents a rapid development from the earlier 'Neolithic' Kelteminar culture documented in the area. The 'steppe' or 'coarse incised' ceramics of the Tazabag'yab culture are those most typically found in Margiana and Bactria, suggesting that these peoples were those first displaced farther south; they already knew how to survive in the new environment that they entered. Later movements may have been more direct with ever more mobile pastoralists moving from the southern Urals and other areas on the Eurasian steppes into the settled oases of southern Central Asia. The important point is that initially at least these movements did not represent armed invasions but gradual, largely peaceful infiltrations and encounters with earlier established cultures, the product being the emergence of a distinctive new archaeological culture or phenomenon, the BMAC, with its diverse multi-cultural roots.

Mexica origins are likewise somewhat obscure and mixed, but when mobile Chichimec groups came into the valley of Mexico from the north they consciously adopted and emulated the high Toltec culture that they encountered. In mixing with the local peoples and in transforming their way of life, they created a new distinctive culture with obvious roots in the Mesoamerican cultural tradition. Numerous other historical processes of movement into an area followed by assimilation into or even absorption by

the local pre-existing culture could be cited to support this model (e.g., the Mongols in China over time becoming Chinese). Each would differ in terms of specific features, such as the number of migrants vs. the number of local inhabitants, and such features would clearly affect the final outcome of the assimilative process; e.g., the language adopted, the degree of continuity or change evident in religion or social and political institutions, etc. Such a process of assimilation obviously affects material culture, but theoretically one can expect that its affects are going to be muted or difficult to interpret. In other words, the archaeological signature of assimilation is likely to be indistinct or hard to decipher.

Jarrige (1985: 63) correctly understood the inherently ambiguous archaeological support for documenting the process of assimilation between the Eurasian steppes and South Asia:

Those who postulate contacts between groups from the Eurasian steppes and those from the northwestern parts of South Asia, however, must not overlook the intermediary or filtering role played by the peoples of southern Central Asia.

Given the existence of these cultures it seems unlikely... to find a continuous line of sites from the Eurasian steppes to the Ganges valley all with 'typical' gray ware or 'steppe-style' pottery which could be used to map the movements of Indo-Aryan populations.... Indeed, the expectation that such a chain of evidence would exist is based on a misconception of the way that population movements actually occurred....

Theoretically there should be some relatively clear instances of mixed 'steppe' and 'sown' character. Where the economy can reasonably be reconstructed as more extensive or pastoralist, steppic elements should dominate; where the way of life is obviously dependent upon some form of intensive agriculture, one would expect the reverse: the dominance of material features not present on the steppe that are either novel or can be linked to the cultures of neighboring areas to the west and south. Current archaeological evidence supports these theoretical expectations.

Incised and ornamented 'steppe' ceramics occur in small proportions on nearly all the BMAC sites that can reasonably be interpreted as permanent irrigation agricultural settlements. This steppic element, which is suggested not only by the ceramics but by metals, such as characteristically

bent knives and sickles (Vinogradova 1994: 43, Fig. 8), and by direct evidence for metal working (Vinogradova 1994: 45, Fig. 10), increases or is more evident in areas, such as the relatively narrow valleys of southern Tadjikistan where pastoralism formed a greater component of the economy (Mandel'shtam 1968; Litvinskii and Solov'ev 1972). The recently published salvage Zardchakhalif burial (Bobomulloev 1999) from the Zeravshan valley near Pendjikent classically illustrates this process of mixture or hybridization. Figure 9 illustrates two bronze bits, a bronze toggle pin capped with the figurine of a horse, and disc-shaped bone cheek pieces that were found together in the burial. The bits and cheek-pieces, obviously, document horse-riding, and the latter in particular, now also found at Djarkutan in southern Uzbekistan (Teufer 1999: 88, Fig. 13.4), clearly attest to a northern connection with the steppes where numerous cheek-pieces essentially identical in form have been found (cf. Teufer 1999 for a list and also Boroffka 1998). Toggle pins capped with animal figures are a relatively characteristic BMAC item, but the depictions of horses are quite rare on these toggle pins (Ligabue and Salvatori 1990: Pl. 82) as they also are on the much more numerous seals and amulets from Margiana and Bactria (cf. Sarianidi 1998b: nos. 112, 1397-98, 1405, 1444-46, 1486-88, 1496) particularly relative to other animals, such as sheep, snakes, eagles and even Bactrian camels. The horseman buried at Zardchakhalif had mixed origins, relating both to the steppe and the sown.

Finally, the well-known depictions on two BMAC-related silver vessels (Fig. 10a-b) also visually record this same process of settling down and transforming the mixed economy of their forefathers into one increasingly reliant on irrigation agriculture. The vehicles depicted in Fig. 10a are not chariots engaged in a hunt, as Amiet (1990b: 161) suggested, but more plausibly I believe form part of a train of oxen-driven wagons and carts with their heavy wooden wheels that are strikingly similar to scores of examples found on the western Eurasian steppes particularly from Novotitorovskaya and Catacomb culture times onwards. The wagon trail of cattle herders, the cowboys of the Wild East, in search of more reliable pastures, had by the last centuries of the IIIrd millennium BC reached the lowland plains of Margiana and Bactria. As they changed their way of life, they emulated the material culture of their settled neighbors and helped form the highly original, culturally diverse phenomenon known as the Bactria Margiana Archaeological Complex.

### **C. Some Incorrect and Correct Conclusions of These Archaeological Transformations**

If the interpretation of the archaeological record offered above is largely correct, then it seems the linguistic/ethnic identifications of C. Renfrew and T. V. Gamkrelidze and Vya. Vs. Ivanov, on the one hand, and those of J.P. Mallory and E.E. Kuzmina, on the other hand, can be reconciled. Or can they? The gigantic settlements of the terminal Tripol'ye culture represent the culmination of 'Old Europe,' an agricultural way of life whose origins can be traced back to the Balkans and, ultimately, to Anatolia. The spectacular Chalcolithic remains of the Balkans clearly emerged out of the earlier and equally spectacular Neolithic remains of Anatolia. During the first half of the IVth millennium Tripol'ye cultivators became cattle herders and spread eastwards across the Eurasian steppes. Their focus on cattle herding, as opposed to the mixed herding later characteristic of the Eurasian steppes, only increased during the Middle and Late Bronze periods, and their way of life, which fundamentally revolved around their cattle, must have been emphasized in all the material and spiritual aspects of their culture, the latter of which eventually find their reflection in the Avestan and Vedic traditions. Gradually and continuously they moved south and changed the ethnic composition of and language spoken in the areas that they entered. The easily recognizable steppic elements in their material culture were transformed. Wheel-made pottery replaced the coarsely incised hand-made pottery, though these peoples continued to exploit metal resources and produce increasingly sophisticated and effective metal tools and weapons. The Indo-Iranians entered Iran, and the Indo-Aryans entered the South Asian subcontinent. A nice, satisfying story perhaps but one that is incapable of being definitively documented from the mute archaeological record...

These archaeological transformations, I would argue, actually tell a different tale. There is no single Indo-European or proto-Indo-European 'homeland' but just an ever unfolding historical process of development in which peoples not only continuously transform themselves, including their basic livelihoods, and sometimes move and enter new areas, but also continuously borrow and assimilate the technological innovations and cultural developments of other peoples with whom they always come into contact. As argued earlier, the precise origin of developments in metal working, wheeled vehicles and horse riding may never be established precisely



because of the rapid sharing and adoption of these incredibly useful and multifunctional innovations. What is more significant is the extent of the interconnections suggested by the huge area over which, for example, wheeled vehicles appear — seemingly simultaneously. It is inherently unlikely that all these developments were the products of a single, particularly gifted ethnic or linguistic group. The herders who initially left the Eurasian steppes were not mounted warriors led by a chariot-riding aristocracy, but impoverished cowboys, who also knew how to cultivate crops, seeking a better life. Archaeological cultures, like the ethnographic cultures that they are often assumed mistakenly to represent, are never pure and unmixed but always contain elements from neighboring or earlier cultures. The origins of the Bactria Margiana Archaeological Complex are not to be sought in southern Turkmenistan, eastern Iran, Baluchistan, the Indian subcontinent, or the Eurasian steppes but in all these areas combined. Like other cultural phenomena, it was a hybrid, the product of a unique convergence of different cultural traditions. The argument for cultural diversity is not based on political correctness, but on historical accuracy. As Karl Lamberg-Karlovsky taught me years ago, the lessons of pre-history are that it is an eminently shared process and that our reconstructions of it must be as inclusive as possible.

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Fig. 1. Concentration of gigantic Tripoli'ye settlements.  
 1. Majdanetskoe; 2. Tal'janki; 3. Dobrovody; 4. Kosenovka; 5. Mosurov 2; 6. Mosurov 3; 7. Tal'noe 2; 8. Tal'noe 3;  
 a. giant settlements; b. smaller settlements. (Adapted from Videjko 1996: 67, Fig. 13.)

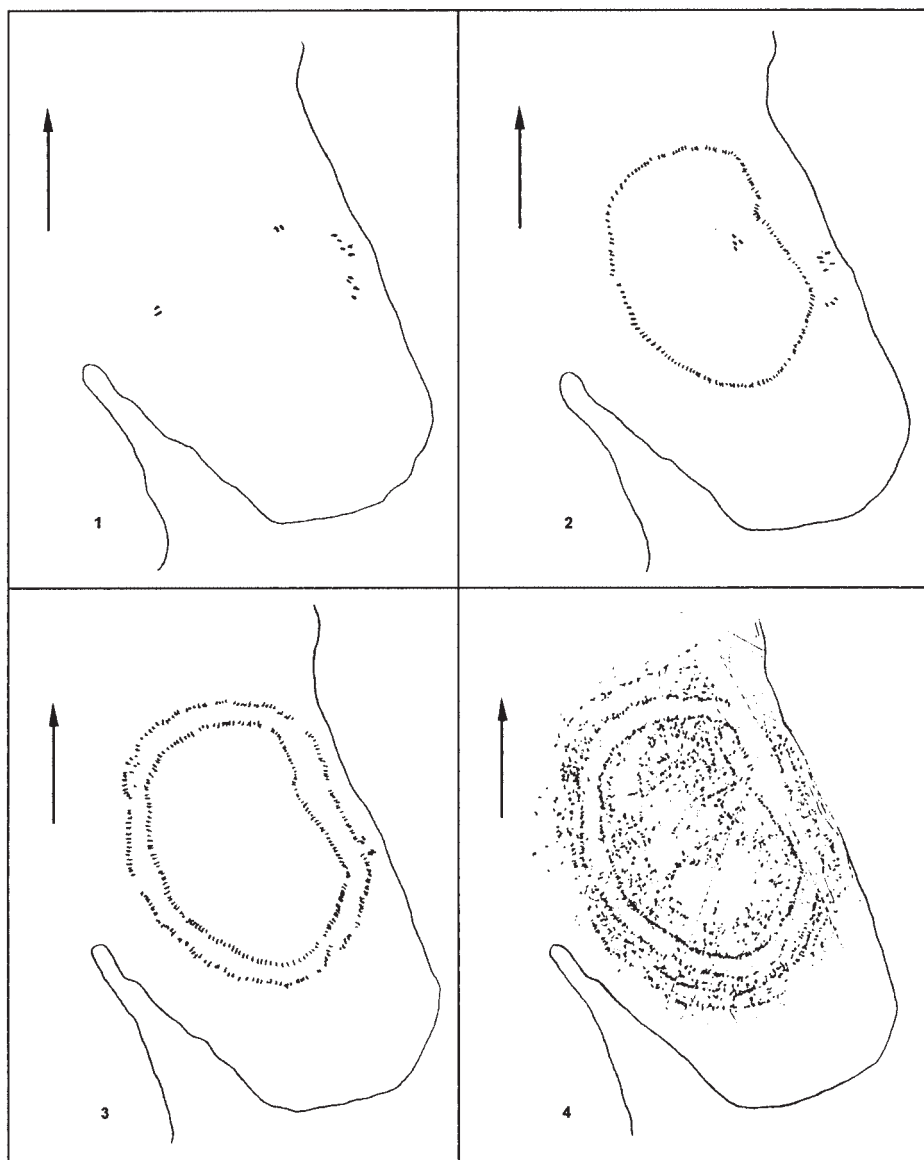


Fig. 2. Majdanetskoe - Building Phases.

1. First buildings; 2. Inner oval ring of houses; 3. Second oval ring of houses; 4. Final phase of house construction. (Adapted from Videjko 1996: 55, Fig. 6.)



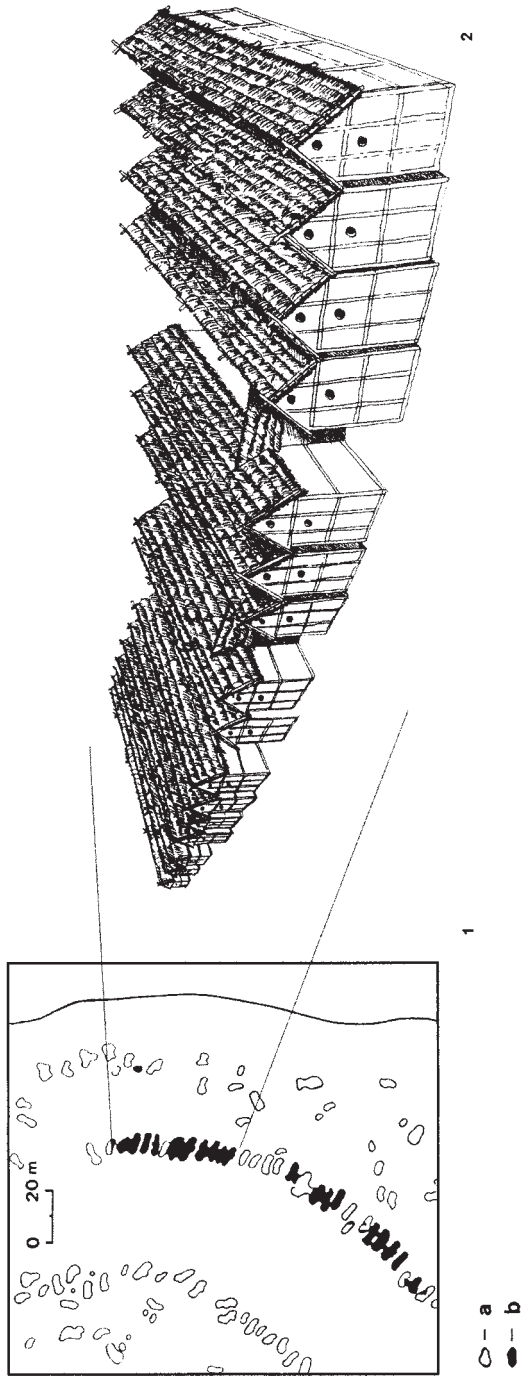


Fig. 3. Majdanetsko Settlement.  
1. Part of ring of houses; 1a. House contours according to geomagnetic measurement; 1b. Discovered houses; 2. Interconnected houses - reconstruction. (Adapted from Videjko 1996: 62-63, Figs. 9 and 10.)



Fig. 4. Plan of the settlement of Tal'janki based on the geomagnetic image.

1. Homesteads of the Tripol'ye culture according to the geomagnetic image; 2. Kurgans; 3. Contemporary buildings and gardens of Tal'janki village. (Adapted from Kruc 1994: 12, Fig. 2.)

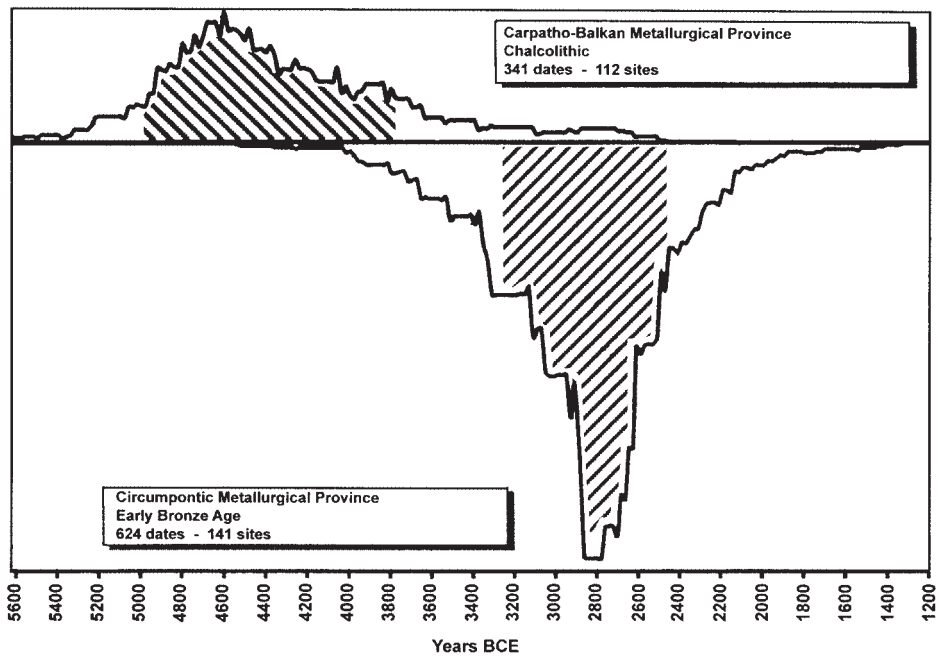


Fig. 5. Distribution of calibrated radiocarbon determinations from the Carpatho-Balkan (above line) and Circumpontic (below line) Metallurgical Provinces. The 67% probability areas are hatched. Note the chronological hiatus between the Chalcolithic and Early Bronze periods (c 3700-3200 BCE) and the frequency peak of Early Bronze dates (c 2800 BCE). (Adapted from Chernykh, et al. 2000: 22, Fig. 13.)

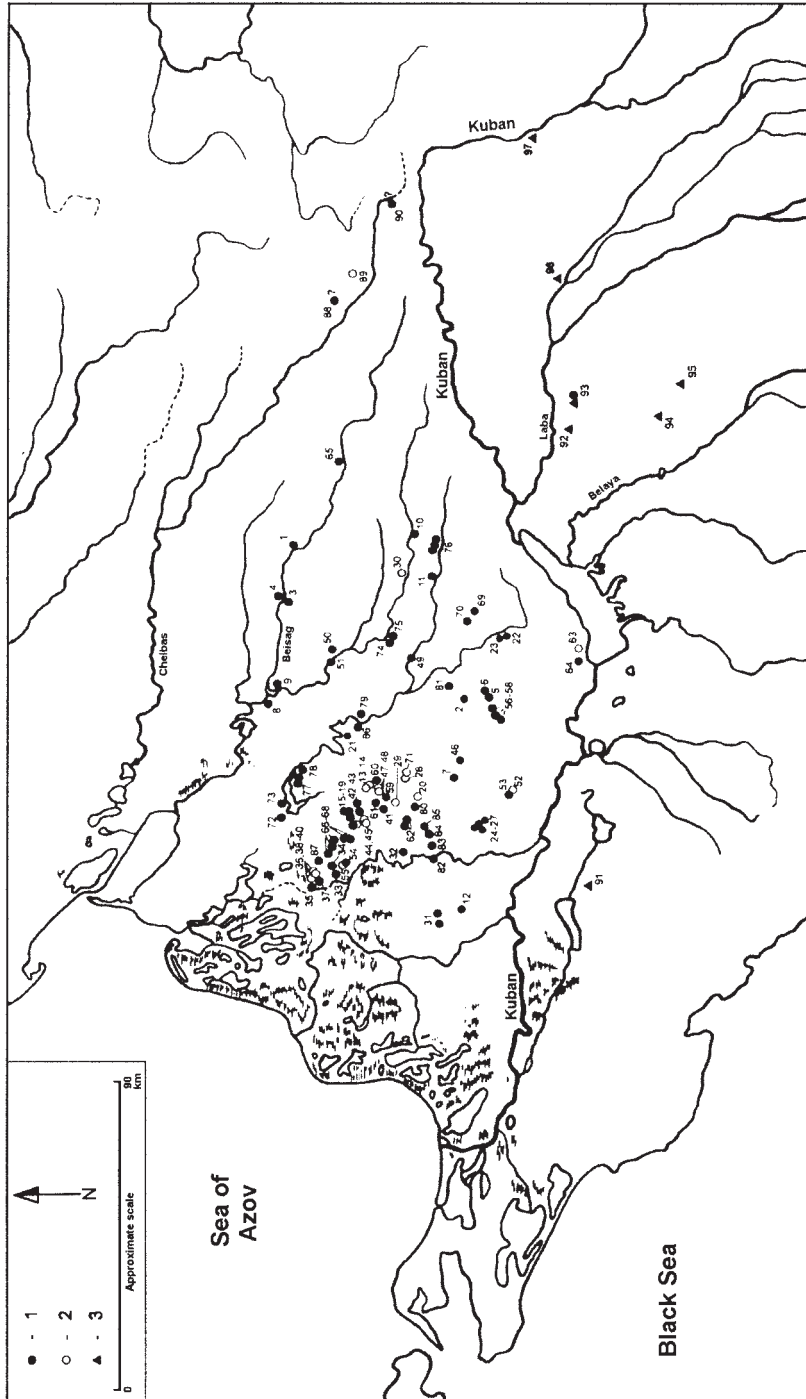


Fig. 6. Distribution Map of Novotitorovskaya Culture Sites.

1. Kurgan cemeteries containing Novotitorovskaya materials; 2. Kurgan cemeteries of the Early and Middle Bronze Age, not containing Novotitorovskaya materials; 3. Sites of the Petropavlosk group. (Adapted from A. N. Gei 2000: 9, Fig. 1.)

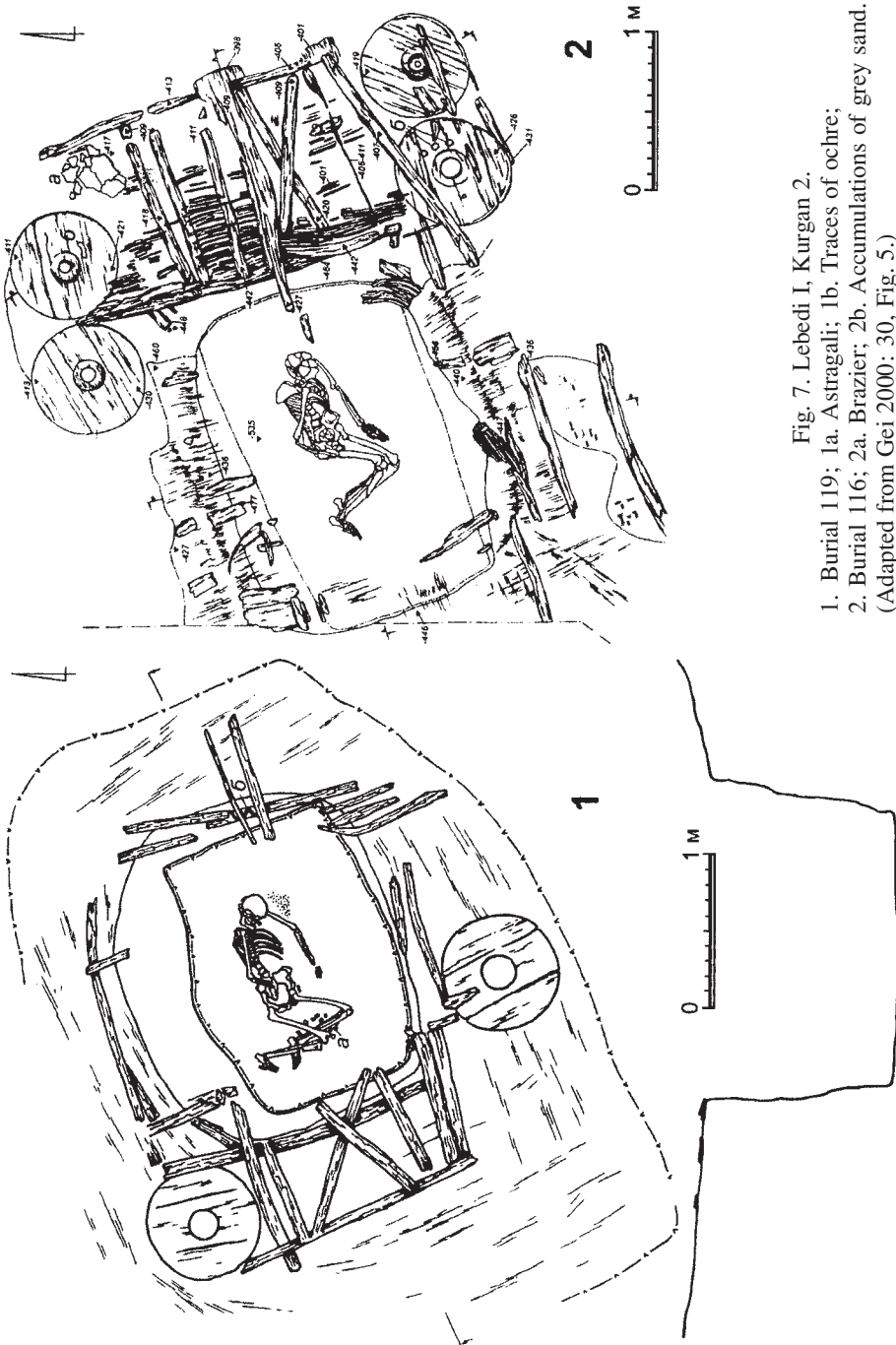


Fig. 7. Lebedi I, Kurgan 2.

- 1. Burial 119; 1a. Astragali; 1b. Traces of ochre;
  - 2. Burial 116; 2a. Brazier; 2b. Accumulations of grey sand.
- (Adapted from Gei 2000: 30, Fig. 5.)

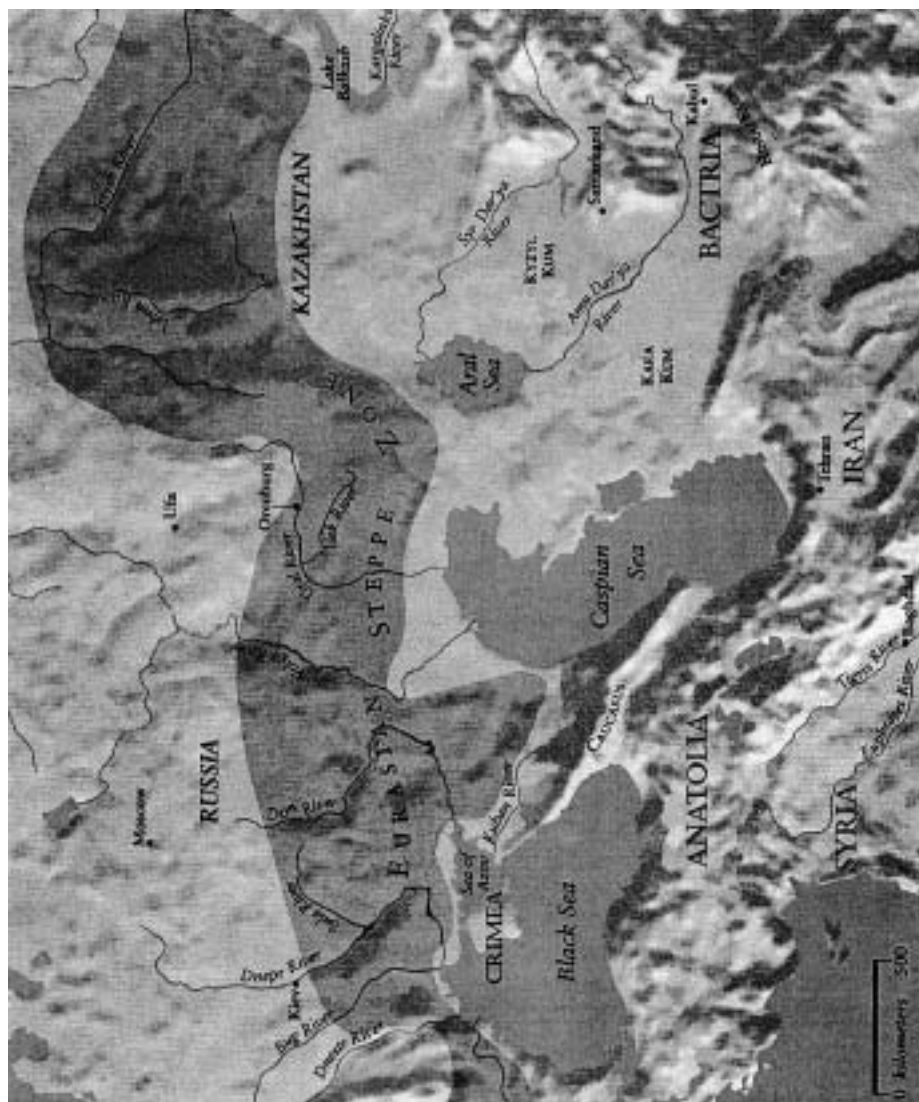


Fig. 8. Eurasian Steppe Zone and the Greater Ancient Near East.  
(Adapted from Aruz, et al. 2000: XIV-XV.)

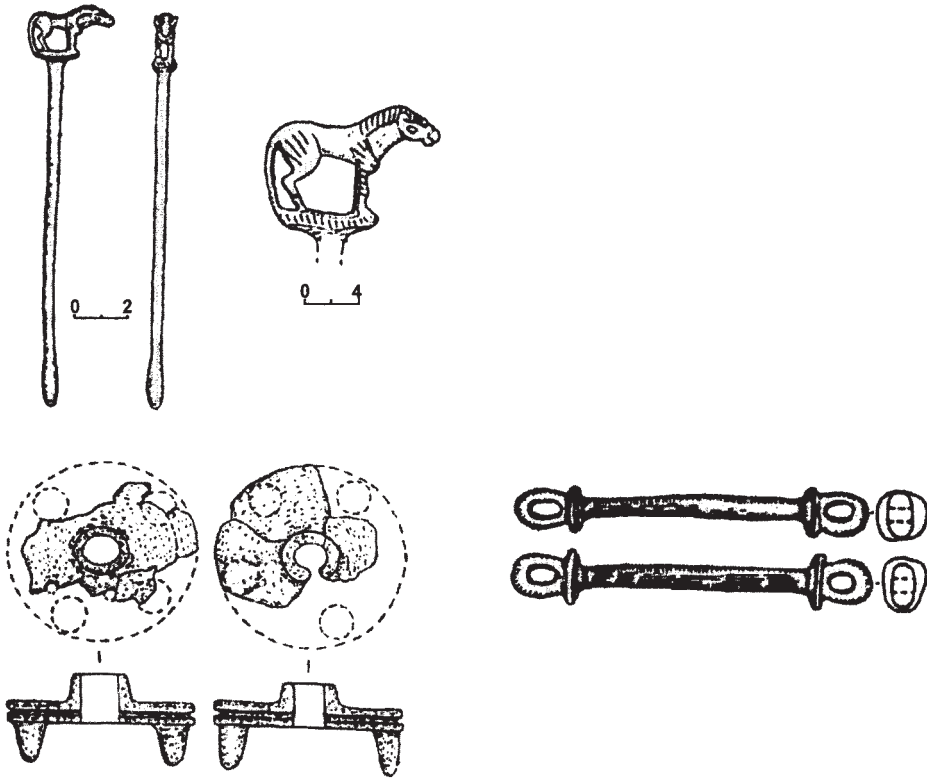
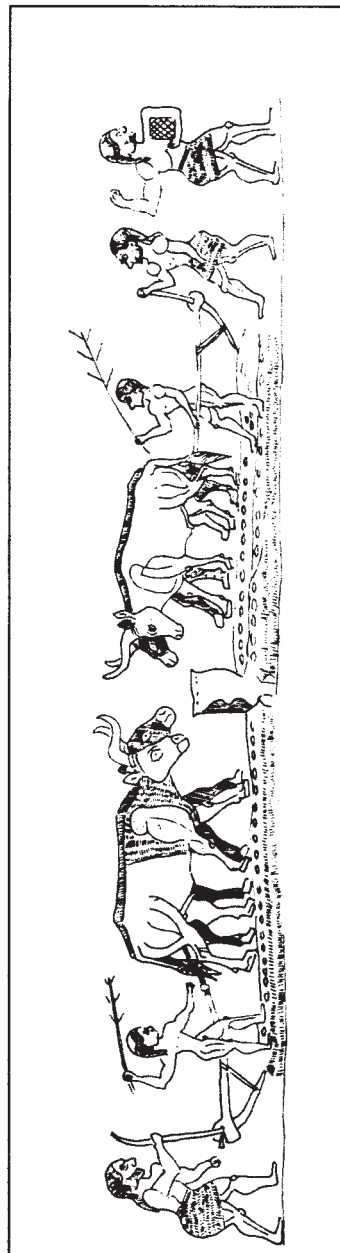


Fig. 9. Selected artifacts from Zardchakhalif burial near Pendjikent, Tadjikistan.  
 (Adapted from S. Bobomulloev 1999: 311, Fig. 2.)



a



b

Fig. 10. From the Steppe to the Sown, Settling the Plains of Bactria and Margiana.  
(Adapted from: 10a. Amiet 1990b: 163, Fig. 6; 10b. Amiet 1990a: 136, Fig. 9.)