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THE URALS AND WESTERN SIBERIA IN THE BRONZE AND IRON AGES

Ludmila Vladimirovich Kosyakova
and Andrej Epimakhov

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This book is the first synthesis of the archaeology of the Urals and Western Siberia. It presents a comprehensive overview of the late prehistoric cultures of these regions, which are of key importance for the understanding of long-term changes in Eurasia. At the crossroads of Europe and Asia, the Urals and Western Siberia are characterized by great environmental and cultural diversity, which is reflected in the variety and richness of their archaeological sites. Based on the latest achievements of Russian archaeologists, this study demonstrates the temporal and geographical range of its subjects, starting with a survey of the chronological sequence from the late fourth millennium BC to the early first millennium CE. Recent discoveries made in different regions of the area contribute to an understanding of several important issues, such as development of Eurasian metallurgy, technological and ritual innovations, the emergence and development of pastoral nomadism and its role in Eurasian interactions, and major sociocultural fluctuations of the Bronze and Iron Ages.

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FOREWORD

Philip L. Kohl
Wellesley College, Wellesley, Massachusetts, United States

I remember taking an overnight flight from Leningrad (St. Petersburg) to Kyrgyzia (Kyrgyzstan) via Sverdlovsk (Ekaterinburg) in late winter 1986. Just before landing in Sverdlovsk, the stewardess asked me to remove the earphones of a primitive portable cassette player that I had just turned on. Her manner was brusque and peremptory. She demanded to know what I was doing, what I was listening to, and claimed that many passengers believed that I – an obvious, solitary, and clearly suspicious American – must be receiving hidden instructions from someone in the West, perhaps Washington, on this then-novel listening device. I handed her the cassette player and had her listen to the Brahms violin concerto I had been enjoying. . . . Such was Cold War paranoia even as late as the early Gorbachev years in the closed military-industrial center of Sverdlovsk nestled on the Siberian side of the Ural mountains, the same city over which Gary Powers's U2 spy plane had been blown out of the sky in 1960.

In her preface, Ludmila Koryakova refers to the fact that the Urals and western Siberian areas covered in this volume remained a highly restricted military zone until the breakup of the Soviet Union in 1991. Until that time, contacts with the West were practically nonexistent. This isolation affected all fields of knowledge, including archaeology. There was some Western awareness – albeit limited – of Soviet archaeological accomplishments in Central Asia, the Caucasus, and European Russia, but the vast region stretching east of the Urals into western Siberia and northern Kazakhstan was then and has – until the publication of this important study – essentially remained a very large "white spot" on the archaeological map of Western scholars. This volume richly corrects this deficiency. It documents the discoveries of scores of Soviet/Russian archaeologists, ordering and analyzing the Bronze and Iron Age materials from a vast central part of Eurasia. In doing so, it shows us the strengths and distinctiveness of the Russian archaeological tradition.

Whereas Cold War realities clearly inhibited scholarly interaction on both sides of the Iron Curtain, the extent of the information gap varied widely and tended to be sharply asymmetrical: in general, Soviet/Russian archaeologists

were far more familiar with the Western archaeological literature, including theoretical developments in Anglo-American archaeology, than Americans or Europeans knew about the accomplishments of their Soviet/Russian counterparts. The authors of this book are well read in Western archaeological theory, but they consciously and correctly, in my opinion, eschew any extended critical discussion of their guiding concepts and proceed with their main task: writing a coherent cultural prehistory of the Urals and Western Siberia during the Bronze and Iron Ages or roughly from the third through first millennia BC. To accomplish their principal goal, they record a sequence of "heuristically useful" archaeological cultures and more generically defined "intercultural communities" (*kulturnaya obshchnost'*), exhibiting greater spatial and temporal stability and "internal horizontal connections" among culturally related peoples. They also focus on shared metallurgical developments and redefine E. N. Chernykh's inductively derived concept of metallurgical provinces (here termed "techno-cultural networks"). They characterize their general approach as "materialistic . . . presuming causal priority of the material base (in a broad sense) as a primary means of the operation of a society."

With this conceptual and archaeologically appropriate philosophical base, they summarize the evidence. Readers may be overwhelmed by the pageant of archaeological cultures and materials presented, an almost inevitable reaction given the spatial and temporal parameters of their study. This problem clearly reflects the extent of archaeological work undertaken throughout this area and the fact that more investigations almost always document greater cultural diversity, resulting in the definition of even more archaeological cultures. Moreover, the roster of established archaeological cultures also reflects past reality in that it is associated with the mobile types of societies that emerged on the steppes. That is, the bewildering proliferation of archaeological cultures is intrinsic to the nature of steppe archaeology; both "splitters" and "lumpers" of this record can justify their procedures. To some extent, the indistinct differences among many defined archaeological cultures necessarily reflect the dominant herding way of life among steppe peoples, a mobility that fostered intercultural contact and assimilation. There is no correction for this constant merging or mixture of material remains, although it is helpful to be aware of it.

Western readers may be struck by the occasional ethnic, linguistic, and even "racial" attributions of specific archaeological cultures. Koryakova and Epimakhov recognize the problems of such identifications, "their contingent character," and, relatively speaking, attempt them infrequently. They employ them only in "rather clear and well-studied situations," where they can compare such attributions with "well-defined linguistic areas as specialists determine them." Some well-regarded identifications are explicitly accepted even though the evidence they themselves present is sufficiently comprehensive to query them. Thus, E. E. Kuzmina's well-known linguistic attribution of the different variants of the Andronovo cultural tradition, representing essentially

"the entire population of the Urals and Kazakhstan of the Late Bronze Age to the eastern Iranians," is regarded as "reliable requiring no additional proof." Later, we read the "support for the Proto-Iranian (or Indo-Iranian) linguistic attribution of the Alakul and Fyodorovo cultures, or related branches of the Andronovo cultural confederation, requires the supposition that the extension of these languages increased and partly overlapped the distribution of the Proto-Ugric languages. . . . All . . . [the] data representing the Andronovo-like cultures in western Siberian forest-steppe and southern forest are evidence for the hypothesis that suggests very active contacts between the Indo-Iranian and Finno-Ugric languages, expressed in numerous mutual borrowings, a part of which relates to the second millennium BC." If read carefully, their discussion reveals some qualification, a degree of uncertainty characterizing even this relatively well-enshrined linguistic identification. The basic problem, of course, is that material remains are nearly always ethnically, linguistically, and "racially" porous, freely adopted by different peoples speaking different languages and exhibiting different physical characteristics.

No "early civilization" arose on the steppes stretching east of the Urals during Bronze Age times. Archaeologists of the ancient Near East or other areas with substantial evidence for cities and large public art and architecture may be puzzled by their descriptions of sites, sometimes less than one hectare in size, as "large" or "monumental." Here a relative, historical perspective is required. The Sintashta/Arkaim planned settlements with their "outstanding characteristics" and "sophisticated system of fortifications" distributed across "The Country of Towns" may appear relatively puny by Near Eastern standards, but they constitute significant, if, still in some respects, enigmatic, discoveries for the archaeology of the Bronze Age steppes. The numerous complex animal sacrifices in burials at Sintashta in particular, as well as the unequivocal evidence of horse harnessing and the use of lighter spoke-wheeled vehicles ("chariots"), and impressive array of metal weapons – all constitute major discoveries. As Koryakova and Epimakhov point out at length, the degree of social complexity evident in these remains, particularly in the relatively uniform and standardized domestic architecture, is difficult to establish.

From its inception, Bronze Age archaeology on the steppes has focused on the excavation of raised kurgans and not concentrated on locating settlements, the cultural deposits of which often are thin and not clearly visible from the surface. This problem is compounded by the fact that dwellings typically consisted of semisubterranean pit houses that were dug into the ground, making them hard to locate. Similarly, many of the Sintashta-Arkaim settlements are not distinctly visible from the ground; most were discovered through the use of aerial photos, confirmed subsequently by helicopter flyovers and on-ground follow-up inspections. Recently, other planned settlements, difficult to discern directly on the ground, have been documented using different remote sensing techniques. Thus, for example, the later transitional Late Bronze to Early Iron

Age planned settlement of Ciça with multiple concentric rings of dwellings extending over c. 8 ha. or nearly three times larger than the largest Sintashta-Arkaim sites were found farther east in the Irtysh-Ob interfluve between Omsk and Novosibirsk in western Siberia. The site was discovered utilizing magnetometer measurements. One can only wonder how many more settlements-habitation and special-purpose sites of various periods will be discovered across the steppes through the use of aerial photography and more sophisticated remote sensing technologies and geophysical explorations. The more general problem evident here and throughout their study concerns the state of current archaeological understanding. How representative is the evidence in hand? Which regions and areas of concern are well investigated and understood and which lack such determinations? The discovery of the Sintashta-Arkaim settlements was unexpected. How many more important surprises still await us?

Perhaps the most basic and important thesis expounded at length in this study (and reflected in its very structure – Parts 1 and 2) is that the Iron Age of central Eurasia qualitatively differed from its Bronze Age. The mobile dominantly cattle herding *pastoralism* practiced during the Bronze Age must be distinguished from the mounted Eurasian *nomadism* that emerged subsequently only during Iron Age times. Koryakova and Epimakhov opt for what they term the "'later' hypothesis" and cite approvingly A. Khazanov's observation that "Eurasian nomadism as an economic and sociocultural phenomenon could not appear earlier because in many respect it depends on the economic and sociopolitical relations with settled statehood societies." These early nomadic societies and ultimately the first steppe empires (and first appearance of "royal" kurgans) came into being in part because they were caught up in larger systems of interregional interaction and exchange, including regular relations with sedentary states to their south (from China to Rome, including the states of southern Central Asia, such as the Parthian and the Kushan states). True Eurasian nomadism, which they believe first emerged farther east on the Mongolian steppe and then diffused west to the area of their concern, required a level of technological control not just over cattle, but also over horses, sheep, and Bactrian camels, each species of which had to adapt or be made to adapt to the climatic extremes of life on the steppes, particularly to forage throughout the long cold winter when the steppe was covered in snow.

Their well-informed account of the ecological, ethnographic, and historical dimensions of nomadism provides an essential overview to this important topic, as well as a detailed introduction to the basic Russian sources. Their discussion on the nature of mounted Eurasian nomadism is most valuable for its characterization of a type of society that dominated the steppes and adjacent regions for millennia almost into modern times. From this perspective, the earlier Bronze Age is seen as a time of experimentation. At a certain point, lighter carts (or "chariots") pulled by horses, supplanted, though never fully replaced, the

ponderous, oxen-driven solid wheeled vehicles that had emerged earlier probably in the fourth millennium BC farther to the west. Bactrian camels and wooly sheep also assumed greater and greater importance until they became essential components to the "complete package" of true nomadism. Many questions immediately follow from their presentation. For example, to what extent or how is the advent of iron and the gradual dominant utilization of iron tools and weapons related to the emergence of this new type of nomadism with its full complement of several essential distinct species of animals and technological practices essential to that way of life? How did the gradual shift to the production and exchange of iron implements disrupt or change the nature and extent of interactions among closely related societies across the steppes?

A valuable study raises as many questions as it answers. English readers should be grateful to Ludmila Koryakova and Andrej Epimakhov for making such important and complex archaeological materials available to them. This book undoubtedly will remain the basic reference to the later prehistory of central Eurasia for decades to come. The Cold War barrier that isolated this region from Western consideration has now completely melted away. Among many other welcome advances, our understanding of our shared prehistoric past has considerably grown.

PREFACE

This book would never have been written if our region – the Urals – was still a closed military zone as it was until 1991. Since that time, many Russian archaeologists have been able to discuss our research with foreign colleagues and investigate to what extent our findings represent well-known processes of social change and to what extent our cases are novel and thus especially interesting. Few Western archaeologists have had the chance to examine our work and the prehistoric societies we have studied. Many encyclopedias of archaeology and maps of prehistoric cultures leave northern Eurasia as a blank spot, as if this area was not populated.

Thus, the motive for us to write this book is clear, although the project was daunting. It is difficult to write a book for an audience that has little knowledge of our area, and it is also difficult to write in a second (or third) foreign language.

Once I decided to write this book, I presented lectures to foreign universities, delivered papers at international conferences, and discussed the project with colleagues. In particular, Professor Colin Renfew urged me (in 1999–2000) to continue with the idea of writing an archaeological synthesis and felt that *Cambridge World Archaeology* would be an ideal place for it. Andrej Epimakhov contributed his work on regions in which he is an expert. We are grateful to Professor Renfrew for his confidence in us and to the editorial board of *CWA* for accepting the book. Two anonymous reviewers have been patient in helping us clarify both substance and style. We hope that readers will be equally patient with the English version of what is undoubtedly a difficult text filled with names of strange territories, artifacts, and cultures.

We managed to write the text while living for periods of time in Russia, France, and England. Thanks to electronic communications, we were always in contact, although we live in different cities in Russia (Ekaterinburg and Chelyabinsk).

Our book is an advanced introduction to the late prehistory of a substantial part of Eurasia – the Urals and Western Siberia, predominantly within the

steppe and forest-steppe zones. There is no book in any language that attempts to synthesize information in the Eurasian Bronze and Iron Ages. Naturally, we had to choose among many interesting finds and just as many interpretations and discussions of their significance. Although the book includes our own fieldwork, it surveys extensive literature and archival materials that are not easily accessible, even to Russian archaeologists.

The book was written with the financial help of various bodies, primarily the INTAS Foundation (EU), CNRS (France), Leverhulm Trust (UK), a joint grant of the Ural and Siberian divisions of the Russian Academy of Sciences, and grant 05-01-83104a/U of Russian Foundation for Humanities.

I am deeply grateful to my French colleagues and friends – Marie-Yvane Daire and Luic Langouette – for their generosity and support both in Russia during our joint fieldwork and in France during my stay in Rennes. I thank all the staff of the Laboratoire d'Anthropologie (CNRS) of the University of Rennes 1. I am also most grateful to my other French friends: Francine David, Marie-Celine Ugé, and her parents for their hospitality and constant help.

I finished writing the first draft of this book in Durham, England. It is my pleasant duty to thank Professor Anthony Harding for his help in all phases of my stay in Durham, as well as for his reading of the very raw text. I also thank members of the Department of Archaeology of the University of Durham, and Professor Pavel Dolukhanov from Newcastle upon Tyne, who also read the draft version of the book, and his wife Marianna for her practical support in England. In addition, I thank St. Mary's College in Durham, where I wrote numerous pages of this book. The hospitality of the staff and their lively interest in our work was invaluable.

I cannot express in mere words my gratitude to my very good friend Karlene Jones-Bley, who not only constantly encouraged me but also spent a great deal of her time, and even her health, patiently reading numerous electronic texts and correcting my Russian-English.

I want to thank my Russian colleagues and friends who took a major part of my administrative work and teaching on their shoulders during my absence from Russia. Thank you to Svetlana Sharapova, Sofia Panteleyeva, Natalia Berseneva, Dmitry Razhev, Andrew Kovrigin, Alexander Shorin, Alexei Zykov, and all the other members of the Institute of History and Archaeology and the Department of Archaeology of the Ural State University.

I further thank Gennady Zdanovich who opened the door for me to Bronze Age archaeology and inspired my interest in this subject and Svetlana Zdanovich for her most generous hospitality. Andrej and I appreciate the help, advice, and materials of Iya Batanina, Alexander Tairov, Dmitry Zdanovich, Sergei Kuzminykh, Galina Beltikova, Vladimir Stefanov, Olga Korochkova, Yuri Chemyakin, Viktor Borzunov, Evgeny Chibilev, Emma Usmanova, Nikolai Vinogradov, and Vladimir Kostukov.

I address special words of gratitude to my coauthor – Andrej Epimakhov – for his responsibility, patience, readiness to accept numerous "perestroika" in the text, and his valuable contribution to the first part of the book and to the illustrations.

In conclusion, I want to express my deep gratitude to my family for their constant support and forbearance of my long and frequent absences.

I dedicate this book to the memory of my parents – Anna Maltseva and Nikolai Zmatrakov – whose lives were unfairly difficult and short.

Ludmila Koryakova

INTRODUCTION

The Ural area can be defined in terms of its geographic location as a natural boundary between Europe and Asia. It is characterized by great landscape and environmental diversity: steppe, forest-steppe, forests, and mountains. In late prehistory, these areas were occupied by societies on different social and economic levels (nomadic, half-nomadic, settled pastoralists, specialist metallurgists), and different ethnic attributions (supposedly proto-Iranian and proto-Finno-Ugrian speakers). This area offers an interesting opportunity to examine cultural behavior at an important crossroads, where the influences of the East, the West, the North, and the South meet. This interaction resulted in a great variety of cultural traditions that had either European or Asiatic origins. Therefore, it is quite difficult to separate the prehistory of the Urals and Western Siberia area from that of the rest Eurasia.

This book will focus on the problems of the archaeology of the Bronze and Iron Ages, which are characterized by dramatic changes occurring all over Eurasia in later prehistory.

Historical evidence about the Uralian population is extremely sparse and vague. It goes back to Herodotus, later to the Arabian travellers and merchants. In the tenth century CE, they knew the northern lands called "Ugra," but Russians from the city of Novgorod, who first crossed the Urals in the eleventh century and met the Finno-Ugrian population,[1] undertook the first systematic exploration of this territory. Russians colonized the southern Urals and most of Siberia from the fifteenth century onward. The aboriginal Ob-Ugrians settled in the forest, whereas the Bashkir and Tatar peoples, speaking Turkic languages, occupied mostly the southern Ural and the southern part of western Siberia. They were incorporated into the Russian State, which then consisted of two parts: Moscovia and Siberia. The earliest information concerning environments, resources, peoples, and their culture was collected in the eighteenth century by the first academic expeditions.

Archaeological study of Trans-Urals and Western Siberia, which started before revolution by episodic excavations, became more organized in the

1920 and 1930s. The foundation of Uralian and Western Siberian archaeology is associated with the names of V. N. Chernetsov, K. V. Salnikov, M. P. Gryaznov, E. M. Bers, M. F. Kosarev, and many others. Since the time of the first discoveries, the database has greatly increased, especially during the 1970s and 1980s, and local and regional archaeological sequences based on relative chronologies have been introduced into academic circulation. The territory between Urals and Ob river basin is huge, and obviously not all of its regions have been equally studied. There are still a lot of "blank spots" on the archaeological map of Eurasia.

The aim of this book is to summarize very complex archaeological material and to give insights into the past of the large area, which is little known to Western archaeologists and almost completely unknown by a wider audience. Despite the larger scope of cooperation between Russian and Western specialists, many misunderstandings relating to archaeology and prehistory of that area can be found in English-language publications. This circumstance forces us to devote a part of the book to description of archaeological data relating to the period under review. However, we also will discuss major trends in cultural and social development of the region.

ENVIRONMENTAL SETTING

In geographic literature, the concept of "Ural" has several meanings. First, it is accepted that the Ural mountain ridge forms the boundary between Europe and Asia in the northern part of the Eurasian continent. Second, the river Ural[2] flows in the southern portion of this ridge. The third meaning, which at present is known under term of "Great Urals" and which will be used in our book, sees the Ural in a wider context as the region with common cultural and economic characteristics. This concept does not conform to the physical definition of the Ural as a highland. It also does not include the Polar Ural, which is not populated, nor any part of the Northern Ural. However, it embraces not only the middle and southern Urals but also the piedmont lands of the Cis-Urals and Trans-Urals, and a part of the western Siberian lowland.

Therefore, the area under study comprises the central part of northern Eurasia, including the Cis-Urals or easterly part of eastern Europe, the Trans-Urals or the westerly part of Siberia, coinciding with the basin of the river Irtysh, mainly its western bank. In terms of administrative divisions, this area covers several provinces (oblast') of the Russian Federation as well as a part of northern Kazakhstan (Fig. 0.1).

The term "Ural" is of Turkic origin, meaning "a belt." Such a "stone belt" stretches from the Kara Sea to the Kazakhstan steppe over a distance of over 2,000 km. It consists of several parallel mountain ranges, alternating the large depressions with river valleys. The Urals's relief is characterized by a strong

Figure 0.1. Physical map of Eurasia, with area under study.

difference between its western and eastern slopes, which form a watershed of the rivers of the Russian Plain from those of western Siberia. Geomorphologically, three basic parts of the Urals are distinguishable: the Northern, the Middle, and the Southern. Traditionally, according to this division, one distinguishes geographical areas: northern, middle, and southern Cis-Urals and northern, middle, and southern Trans-Urals. These parts have differences in their ecological parameters.

The relatively low Ural Mountains are composed of ancient aqueous and igneous rocks. The most elevated mountains are in the north (Narodnaya – 1,894 m), and in the south (Yamantau – 1,640 m). The lowest mountains (600–800 m) are situated in the middle Ural. Within the mountains are widely spread carst caves.

The mountain area of the Urals and also the Trans-Urals are famous for a high concentration of numerous minerals. The ores (iron, copper, gold, etc.), which are chiefly deposited in the eastern slopes, constitute the richest concentrations on earth. Furthermore, a huge variety of semiprecious stones (jasper, crystal, malachite, serpentine, agate, sardonyx, and others) is contained in the Ural metamorphic rocks beneath the surface.

The most significant characteristic of the area under study comprises the alternating landscape-climatic zones, which influence all forms of human adaptation (Fig. 0.2). The climate changes from the cold conditions in the north, where the mean July air temperature is 6–8°C, to the dry steppe in the south, where it is 22°C. The climate is subject to several factors, including the distance from the Atlantic and the closeness to the Arctic, Siberian, and Central Asian high-pressure areas. Nevertheless, the Atlantic air masses influence the Ural climate rather significantly. Because the Urals lie perpendicular to the direction of the predominant westerly winds, the western slopes are considerably more humid than the eastern slopes. This difference is especially noticeable in winter when the forests of the western slopes are bathed in snowdrifts, but the eastern slopes receive much less snowfall. The difference in precipitation is about 100–150 mm. The influx of cold arctic or hot air masses is stronger in the Trans-Urals, where the fluctuation of weather conditions is greater, especially in the transitional seasons.

Although the Ural Mountains are not very high, they can be considered as a west-east ecological factor forming a boundary between the two main climatic regions (Kremenetsky 2003). In addition, their western side, or Cis-Urals, have a more developed river network. The Kama River (the Volga's left tributary) is the largest and most important. In terms of relief, this area relates to the eastern part of the East European Plain with some hills, high bluff interfluves, and large river valleys. Here, the climate is moderately continental, with long cold and snowy winters, warm summers, and well-defined transitional periods – spring and autumn. The precipitation in the plains area reaches 400–500 mm during warm seasons and about 500–600 mm during the entire year. A vast portion

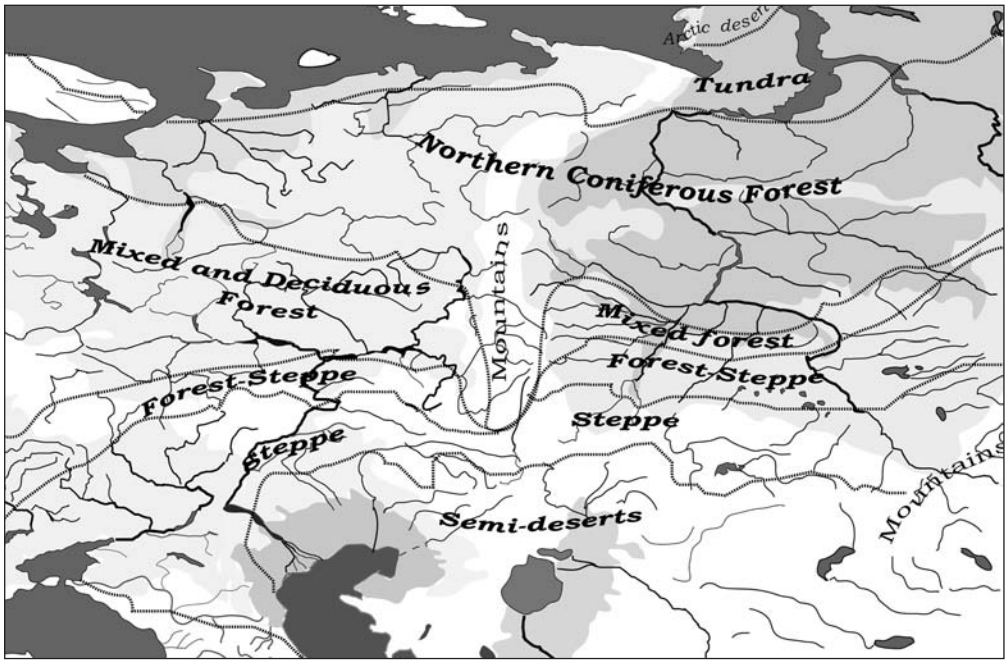


Figure 0.2. Landscape zones of Eurasia.

of this province is occupied by forests: dark coniferous taiga slowly changing first to mixed forest and then to the forest-steppe and then the dry steppe. The river valleys are usually flooded, possessing rich biological resources. In the forest zone, the sod-mid-podzol soils are concentrated, in the left Belaya River bank the podzol-chernozems are spread out. Mixed forests consist of pine, spruce, fir, birch, aspen, oak, rowan, black cherry, and wild apple trees. There is a great deal of frutescent plants, including wineberry and raspberry. The Kama meadows contain many steppe plant species.

The geographic environments of the southern Ural are characterized by arid conditions, which are, however, varied depending on the ecological situation. In the north, there are some high areas and a developed river network, which in the summertime produces rich vegetation in the river valleys. The Ural River, the most southern of the big rivers, flows southward along the eastern slope of the south Ural Mountains, then it sharply turns to the west near the town of Orsk, and it again turns southward and flows into the Caspian Sea (Fig. 0.1). The southern and eastern parts of the southern Urals are represented by dry steppe with poor pastures where there are many salt lakes. The hydrography of this area is influenced by the alternating of wet and dry seasons, each lasting usually about ten years. An important role is played by lakes, which vary in size and origin (elevated, karsts, oxbow). Fresh water lakes are found alongside salty and bitter-salty lakes, which are widely distributed.

The western Siberia area is an almost flat plain with a small northward incline and no abrupt changes in geographic zones, and this is where the largest water systems in Eurasia can be found. The Ob'-Irtysh water basin and a great number of swamps that are predominantly concentrated in the taiga zone. As a consequence, this area possesses the most extensive swamps on the surface of the earth. In the middle Trans-Urals, large areas are occupied by peat bogs and, as a result of higher humidity, unique archaeological objects made from organic materials can be preserved. However, the river network is not very dense. The big transit rivers – the Ob', Irtysh, Ishim, and Tobol – are of the Kazakhstzn type, which is characterized by a high level of spring water (up to 90 percent) and a small water level during other seasons. The rivers flow from steppe to the forest zone, and from early prehistory they have served as the main way of communication between the south and north. Although the navigational season of these rivers ranging from six to three months was a serious obstacle to transportation, pathways formed by the frozen surface of rivers were usually used for overland movement.

The climate is continental. In the warm seasons, warm air comes to the forest-steppe mostly from Kazakhstan and Central Asia and results in droughts and arid conditions. Cold air comes from the Arctic, usually in winter but sometimes in summer, which creates a severe and unstable climate. Additionally, the Ural Mountains retain moisture coming from the Atlantic, and the Altai, Pamir, and Tien-Shan often serve as obstacles to hot air masses.

The general characteristics of the western Siberian climate are the following: rather limited winter snowfall, cold winters, and quick transition to spring, hot summers and constant winds. In the taiga zone, the climate is colder and moister.

Beyond the Ural, the steppe area moves more northward than in eastern Europe (Fig. 0.2). The forest-steppe, situated to the south of the small-leafed forest and represented by multigrass meadows and birch-aspen coppices passes to the steppe, north of which multigrass and feather grass vegetation until recently was predominant. Overall, the landscapes of the Ural-Siberian forest-steppe are characterized by geographic zonality and a mosaic distribution of vegetal assemblages – forests, meadows, swamps, and steppes. Droughts are recurrent here every eight to twelve years. This results in many Trans-Uralian lakes that alternately dry out and then fill with water.[3] The forest zone is inhabited by many species of large animals, including elk, deer, bear, and lynx. The small fur-bearing animals, such as sables, fox, ermine, and squirrels, are also typical in that area.

In the forest-steppe, the fauna is mixed. It is here that both forest and steppe species of animals are found including elk and bear. The Urals and western Siberia represent a variety of landscapes caused by the complex relief, their vast longitudinal extent, and climatic difference between the Cis-Urals and

Trans-Urals. The fauna and flora, naturally, are closely connected to the various landscapes. The differentiating features are clearly manifested in the boundary areas between the basic landscape zones, where there have been some interzonal displacements that resulted from climatic fluctuations. These changes are more pronounced for western Siberia, but they are not as visible for the Ural, primarily because of the complex character of its relief. As we have pointed out, in terms of climatic zones, the western Ural is related to the Atlantic-continental region of the temperate zone, but the eastern Ural is included in the continental western Siberian part with its forest and steppe areas. The northern part is almost completely influenced by the Atlantic-Arctic winds (Khotinsky 1977: 22–3). One can say that the climate of the western Urals was changing according to eastern European regularities, whereas the eastern territories demonstrate more "Asiatic scenarios." Moreover, different landscapes, naturally, do not react synchronically to the temperature and humidity fluctuations.

CLIMATIC CONDITIONS IN THE BRONZE AND IRON AGES

The problem of interrelation between society and environment has always been a focus of attention of various disciplines. This interest was intensified among Russian environmentalists and archaeologists during the past few decades.

Numerous recent publications present historical data on global climate change combined with palynological data, oxygen-isotope analysis, and data concerning lake fluctuations show that there were at least four phases of synchronous climatic change in both hemispheres: (1) 560–800 BP – "minor glacial epoch"; (2)1300–800 BP – climatic optimum of the Early Middle Ages; (3) – 2900–2300 BP – cold of the Iron Age; (4) 6000–7000 BP – last climatic optimum (Dergachev et al. 1996: 13). According to Klimanov (2002), in the northern hemisphere there were several periods of extreme cold and warm climate. Statistical correlation between twenty-four-hundred-year cycles in C^{14} concentration and long-lasting climatic changes has recently been revealed (Vasily'ev et al. 1997).

The cycles of global climate were reflected in regional and local fluctuations, forming regional ecological systems. The landscape reacts differently even on synchronic periodic influences. This is expressed in the heterogeneity of moisture in different territories (Koryakova & Sergeev 1986; Tairov 2003). Pollen and soil analysis, investigation of Eurasian peat bogs, and new hydrological and geological research undertaken recently in combination with radiocarbon dates did not contradict, in general, these theories, but they detailed more complex climatic dynamics. The scale of regional fluctuation of temperature can differ from one global period to another. In particular, even small global warming (up to 1–1.5°C) is accompanied by greater warming in temperate and high latitudes

and smaller temperature changes in northern subtropics. Regional fluctuations also can take place before or after cycles of global climate (Klimenko 1998; 2000; 2003).

The environment of the Volga-Ural–Kazakhstan steppe has been actively studied during recent decades. This research was based mostly on paleosoils under kurgans (Alexandrovsky 2003; Demkin 1997). In the Trans-Urals, a large program of paleoenvironmental research was carried out in the territory of the Arkaim museum-reserve, where a series of pedological analyses comes from (Ivanov & Chernyansky 1996; 2000; Lavrushin & Spiridonova 1999). Substantial information also has been obtained from the middle Urals peat bog sites (Khotinsky 1977; Nemkova 1978) and important evidence has been obtained from the research of lake deposits in the mountain-forest piedmonts of the southern Ural (Duryagin 1999) as well as rich paleogeographic materials received from western Siberia (Ryabogina et al. 2001a; Ryabogina & Orlova 2002; Ryabogina et al. 2001b; Semochkina & Ryabogina 2001). A large series of Holocene sequences also has been received from northern Kazakhstan (Ivanov 1992; Kremenetsky 2003).

Considering all this, we will try to summarize some basic environmental trends, which could have taken place during the period under study.

A society reacts differently to environmental change, depending on its pace (speed) and magnitude. This is most evident in the steppe zone, which, in turn, also has been studied more by archaeologists. Overall, in eastern Europe the fluctuation of moisture did not entail a substantial displacement of the landscape-climatic zones, whereas in western Siberia and Kazakhstan the situation was more complex. Here, the magnitude of fluctuation was greater, and whole zones of landscapes were displaced. As a result, the eastern European population reacted to the environmental change according to an adaptive model, but the Asiatic population chiefly had to follow a migration model.

In terms of geological classification, the Bronze and Iron Ages are related to the middle and later Holocene – its Subboreal and Subatlantic periods, each divided into three subzones. Ivanov (1992) and Ivanov and Chernyansky (2000) summarized all paleogeographic materials of the territory from eastern Europe to Mongolia and correlated them with archaeological periodization (Table 0.1).

The Atlantic period (especially its final stage) is usually considered the time of the climatic optimum of the Holocene, combining the thermal peak with the late Atlantic moistening and when the northern shift of the large leafed forest reached its maximum (Khotinsky 1977: 81; Nemkova 1978: 43). Although there are some data in favor of the statement that this period was not homogeneous, one can distinguish several stages of aridization, which has been reflected in the southern Urals pollen spectrums (Lavrushin & Spiridonova 1999: 100). Archaeologically, the Atlantic period is synchronized with the

TABLE 0.1. *Climatic fluctuations in the Eurasian steppe (after Ivanov and Chernyansky 1996)*

Time		Periodization					
Thousands years BP	Centuries	Geological	Thermic epochs	Epochs of humidification of Eurasian steppe	Archaeological: Epochs	Archaeological: Cultures: Eastern Europe	Archaeological: Cultures: Urals, Northern Kazakhstan
1	2	3	4	5	6	7	8
0	20	SA³	Warming	SA³ Moistening	Contamporanity		
1	15		SA³ Cooling, "minor glacial period"		Middle Ages: Late	Late Nomads	Late Nomads
	10		SA² Warming, "minor climatic optimum"	"Early medieval aridization"	Middle Ages: Early		
2	5	SA²		Early Sub-athlantic alternation of micro-pluvilas and micro-arids	Iron Age	Huns	
	0		SA¹ Cooling			Sarmatians: Late / Middle / Early	Early Nomads
3	5	SA¹				Sauromatians	
	10	SB³	SB³ Cooling	Late sub-boreal moistening		Scythians	
4	15	SB²	SB² Thermic optimum		Bronze Age: Late	Cimmerians	Sargary / Fyodorovo / Alakul / Petrovka / Sintashta
	20			Early Sub-boreal aridization	Bronze Age: Middle	Srubnaya / Catacombnaya	
5	25	SB¹	SB¹ Cooling		Bronze Age: Early	Late Yamnaya	Tersek-Botai cultures: Late
	30		AT³ Thermic maximum			Early Yamnaya	Tersek-Botai cultures: Early
6	35	AT³		Late Athlantic Moistening	Eneolithic	Eneolithic cultures	
	40						Late Neolithic

Eneolithic although in the forest territories the Eneolithic cultures can be seen in parallel with the Yamnaya culture of the Early Bronze Age.

Different scholars studying eastern European and Asiatic areas agree about the characteristics of Subboreal draught and that it was accompanied by significant weather cooling at the beginning of the Bronze Age. To the north of the Caspian Sea, aridity started to increase in the interval between 5200–3700 BP. This process went together with the rise of climatic continentality, and it reached its maximum in the early Subboreal (Early and Middle Bronze Age). This caused the landscape zonation to be displaced at least on one subzone (Demkin & Demkina 1999: 25; Demkin 1997: 158).[4] The second millennium BC is characterized by maximal soil-landscape diversity, and scholars regard this as the time of the beginning of the modern pedological and geographic zonation (Demkin 1997: 152). The continuance of aridity and moisture, if to judge by comparative data from eastern Europe and northern Kazakhstan, was different on either side of the Ural mountains. In the Asiatic part, the warmest period proved to be longer than in the west, and it embraced not only Subboreal-1 and Subboreal-2 but also a part of Subboreal-3; that is to say, it lasted up to the Final Bronze Age. This rise in aridity is diagnosed as gradual (Ivanov & Chernyansky 1996: 152). Some scholars believe the aridity of the second phase of the Bronze Age had catastrophic consequences (Lavrushin & Spiridonova 1999: 100–1).

For the period of the Late Bronze Age of eastern Europe, the humidity is determined as close to modern humidity. It was accompanied by climatic warming, the peak of which coincided with the second and third quarters of the second millennium BC. As mentioned earlier, in northern Kazakhstan aridity continued until the Iron Age and tended to increase. At the second millennium BC, the climatic situation in the Trans-Urals was closer to the climate of eastern Europe. At the beginning of the first millennium BC, it was characterized by a more favorable pattern compared to the western territories, the climate of which evolved to the rising continentality. Consequently, in the mid-second millennium BC, the areas beyond the middle and southern Ural were partly occupied by "insular" forests. The Siberian vegetal complex coexisted together with a prairie one. The end of the second millennium was marked by a general cooling, which resulted in a climatic pattern comparable to the modern pattern. This does not exclude some fluctuation such as a "minor glacial period" of the Subatlantic-3. In the south of eastern Europe, the period of favorable climatic conditions, which provided the flourishing of the Late Bronze societies, in particularly the demographic phenomenon of the Srubnaya culture, ended by the twelfth–eleventh centuries BC (Medvedev 1999a; b). The general cooling reached its peak by the ninth–eighth centuries BC.

The beginning of the Iron Age was characterized by a rise in humidity, which has been recorded for many areas: the northern Black Sea coast, the

northern Caucasus, the Trans-Urals, western Siberia, and the area of the Aral Sea (Demkin & Ryskov 1996; Demkin 1997). The degree of this process, however, varied in different areas. It was quite strong in the western Siberian forest zone, which was dominated by north–west cyclones. Moisture backed by cool climate imposed cold and snowy winters and dry summers. The arid zone did not experience such a strong rise in moisture. In the south of eastern Europe at the turn of the second and first millennia BC, the landscapes of the so-called cold steppe had been formed (Medvedev 1999a). A substantial series of palinological data collected from the sites of Trans-Uralian forest-steppe also demonstrated that the transition to the Iron Age was accompanied by climatic change toward the rise of continental climatic conditions (Larin & Matveyeva 1997). Scholars regard the dramatic climatic changes of this period as the ecological stress that affected many areas and the reason for the changes in economic orientation.

The humid phase, however, was replaced by a new cycle of aridity in the mid-first millennium BC, and again it was stronger in the Asiatic part. Many scholars connect this situation with the Sarmatian migration westward to the Volga and northern Pontic areas (see Chapter 6). Hereafter, short time pluvials alternated with dry periods, but their continuity and frequency were less great.

This climate reconstruction demonstrates the changes in the steppe zone and its adjacent areas. In the forest-steppe and, especially, in the forest zone, the changes seemed less pronounced. Here the climatic and landscape variability was not as contrasting as in the south, but it did take place (Matveyeva & Ryabogina 2003). In the forest zone, one cannot see the great displacement of landscape boundaries in a south–north direction. In fact, there is no real frontier between zones; it is more of a statistical nature.[5] The change of general humidity did not entail the transformation of all the forest into the steppe and vice versa. For example, according to observations of wetland specialists, in the taiga of eastern Europe and western Siberia, in conditions of high humidity the forests tended to decrease because of an increase of swampy areas. At the same time, the situation could reverse in the dry periods[6] (Kosarev 1984: 40). No less complex was the situation in the piedmont areas, where the landscapes moved in a latitudinal direction (Duryagin 1999: 55). The disappearance of broad-leafed forests from the eastern slopes of the Ural in the period after Subboreal-2 is witness to such transformations.

Thus, according to environmental research, the climatic and landscape situation in the Holocene changed several times (Table 0.1). It is believed that at least three big climatic fluctuations occurred during the third to the first millennia BC. High humidity took place in the second half of the third millennium BC and at the turn of the second and the first millennia BC. High aridity is thought to have occurred from the middle of the second millennium BC. This is observed particularly in the soil of the southern area. During the period 5000–3800 BP, the soil had mostly meadow characteristics; in the period

3800–2000 BP, it was a meadow-steppe, and finally a dry brown one (Lukashev & Demkin 1989). Since the Neolithic, there has been a considerable difference between the European and Siberian/Kazakhstan sectors of the steppe and forest-steppe belt (Kremenetsky 2003).

The heterogeneity of the Urals region is fully reflected in the history of its climate. Because global changes were diversified in landscape transformations and regional climatic fluctuations, people migrated and adapted their activities to them.

CHRONOLOGY AND PERIODIZATION

The chronological framework of this book – the Bronze and Iron Ages – is determined not only by the authors' preferences and by expertise but also because these two epochs feature a continuity of social and cultural processes although they are separated by crucial changes (Koryakova 1996; 2002). The beginning of the Bronze Age in the steppe and southern forest-steppe is marked by the emergence of food-producing forms of economies. This was based primarily on livestock breeding, which periodically changed its form over a period of almost two thousand years. Nevertheless, despite these changes in form, it always played a leading role up to the eighteenth century. We will try to show that some trends of social development that came to fruition in the Iron Age were rooted in the Bronze Age despite their difference. Nevertheless, working on this book, the authors came upon many expected and unexpected encumbrances.

Chronological Intricacies

Before we pass to the concrete material, we need to turn our attention to the issues concerning a chronological system. The area under study is not only difficult to describe in terms of cultural representation but also in terms of chronology. These difficulties rest on the fact that the human groups of this territory were in contact with those in surrounding territories, as we saw in the previous chapter, and contained sites that had cultural elements of neighboring areas. This has forced scholars to define the chronological position of an area in reference to either the west or east. Meanwhile, there has been no unified chronological system developed for both eastern Europe and western Asia. Archaeologists have been forced to use the existing chronologies based on concrete types of artifacts and complexes and, wherever possible, verify their conclusions. These existing chronologies might, therefore, result in a definite concept of the initial and final dates of various cultural formations – archaeological cultures, groups, variants, and so on.

The literary sources provide rather scarce information about events and processes in the first millennium BC. Moreover, we have no written information

at all relating to earlier epochs. Therefore, it is necessary that we rely almost completely on the archaeological evidence. The existing system of chronology applying to the local material is, largely, relative; this chronological system is based almost entirely on methods of a comparative typology of material and cross-cultural analogies combined with stratigraphic observation. For the Bronze Age, the lines of analogy are "attached" to the systems of European, Near Eastern, and Chinese chronology. For the Iron Age, a benchmark role is played by Scythian and Sarmatian chronology, which for its part is tied to East Asia, Greek, and Roman imports and influences. Radiocarbon dating is in the process of being introduced into the practice of regional archaeologies, but as yet it does not form a global chronological net.[7] Additionally, in many cases, especially concerning the Bronze Age, Russian archaeologists face the problems of a contradiction between traditional dates and radiocarbon calibrated dates. The more the calibrated dates come into use, the more one has to lower the date for the cultural formations of the Early Metal Epoch. The radiocarbon dates received for the Iron Age, however, concur with the traditional archaeological chronology, except for the dates of the transitional period. There are also problems with calibration of dates between 800 and 400 BC because of a large "plateau" in the calibration curve (van der Plicht 2004).

Most archaeological sites within the area under examination are of a multilayer composition and often provide good stratigraphic sequences that are indeed of great merit. However, because of the great typological variety of material, especially ceramics, and the use of different field methodologies, it is not always easy to coordinate these sequences from different sites in a satisfactory correlated manner.

In general, there are two absolute chronologies for the Bronze Age: (1) a "long" chronology that is more relevant to the western European (more precisely to the Balkan-Mycenaean) scale, and (2) a "short" chronology that is based on eastern Asiatic (Chinese) analogies. The first one gives earlier dates (longer period) than the second one (shorter period).

We need to note the lack of summarizing publications of radiocarbon dates in Russian archaeology. The rare catalogues of dates issued from some laboratories (Orlova 1995) do not greatly change the general situation. Analytical selections of absolute dates relating to the Circumpontic metallurgical province and a summarizing review relating to the Late Bronze Age have recently been published (Chernykh 2002). These dates, however, are not greatly significant for the area under study; additionally, against this general background, the number of eastern European absolute dates is rather limited. There are only a small number of radiocarbon dates recorded for the most eastern part of eastern Europe (Kuznetsov 1996b). In 2002, the first series of radiocarbon dates for the Eneolithic and Early Bronze Age of the Cis-Urals was obtained. For the time being, it is published only in a summarized form (Chernykh & Orlovskaya 2004; Morgunova et al. 2003; Morgunova & Turetski 2002). These sites fall

into the period between the second half of the fourth and third quarters of the third millennia cal BC (Table 0.2). Moreover, judging by funeral ritual and inventory this group does not look homogeneous.

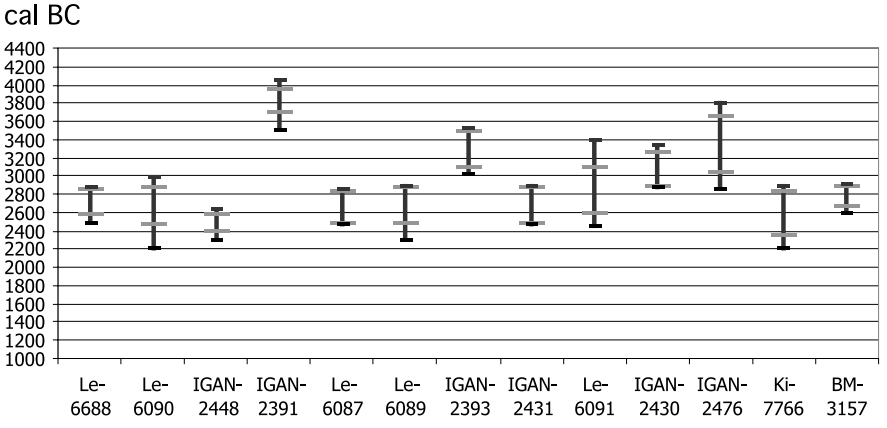
Nevertheless, as a result of this work, the chronological framework of the Circumpontic province (see Chapter 1) was well marked (3300–1900 cal BC), and it has become possible to distinguish the earlier (Early Bronze Age) and later (Middle Bronze Age) phases in its development. However, some dates within the period 2800–2500 cal BC have turned out superimposed, and the probable border between the earlier and later phases has been attributed to 2700–2600 cal BC.[8]

A similar situation has been noticed for the transitional period between the Middle and Late Bronze Age, and when one attempts to divide the Late Bronze Age into phases, we see that the sectors of superimposed dates covered 250–300 years (2300–1600 cal BC, 1900–1250 cal BC, and 1500–900 cal BC). The critical line of the Early Iron Age was marked better around 900 BC (Chernykh et al. 2002b: 21). It is, however, worthwhile to recall that for the enormous territory of the Eurasian metallurgical province only 237 radiocarbon dates from all those collected by Chernykh's team are available for use. Recently, a series of forty dates relating to chronologically different sites of Trans-Uralian Bronze Age have been recorded in the Oxford laboratory (Table 0.3). These dates are the basis of Table 0.4.

One way or another, the disagreement between the two dating systems for the Bronze Age remains. We must wait for serial analyses that will fill in the chronological and geographical "blank spots" that, in turn, will help to create the standard cultural and chronological scales for some regions with their further correlation.

The chronologies of the transitional periods are particularly uncertain. This statement can be fully applied to the transitional period from the Bronze to the Iron Age, although the introduction of iron technology into Eurasia is more or less clear (see Chapter 5). Nevertheless, there are a number of cultures with general parameters that correspond to the Iron Age, but they were based on the production and use of bronze. "Transitional" sites are, in many cases, poor with regard to datable material, or they do not provide any organic remains for radiocarbon analysis. Consequently, one of the constantly debated problems in Russian archaeology is, in a narrow context, that of the origins of the Scythian culture and, in a wider context, that of nomadic cultures. The discovery of the Arzhan kurgan in Tuva was of great importance for this issue and by now a representative series of radiocarbon dates displaying its early age have been obtained (Zaitseva et al. 1997a; Zaitseva et al. 1997b). However, some scholars (Chlenova 1997) still insist on its later date, based on a number of cross-cultural parallels. Meanwhile, the calibrated radiocarbon determinations for Arzhan, Tagisken (Aral Sea area), and some other sites of Inner Asia has demonstrated the older dates for the beginning of eastern nomadic cultures (Hall 1997).

TABLE 0.2. *Radiocarbon dates of the Yamnaya sites of the Cis-Urals (after Morgunova et al. 2003)*



Series of radiocarbon dates also were obtained for key Scythian sites of the northern shore of the Black Sea (Zaitseva et al. 1997a). They correlate with archaeological dates and allow us to coordinate them with sites from southern Siberia.

In general, the chronology of the Iron Age is better established than that for the Bronze Age (Table 0.5). There are several chronologies based on detailed typologies of grave goods, primarily of arrowheads, coming from Eurasian kurgans (Khazanov 1971; Medvedskaya 1980; Milukova 1964; Moshkova 1974; Skripkin 1990; Smirnov 1961). The last few decades have been marked by discoveries of several spectacular unrobbed nomadic graves in various parts of the

TABLE 0.3. *Radiocarbon dates of the Bronze Age sites of the Trans-Urals and western Siberia: Samples: 1 – Seima-Turbino; 2–15 – Sintashta; 18–20 – Petrovka; 21–23 – Petrovka-Alakul; 16–17 – Early Srubnaya; 28–30 – Alakul; 24–27 – Fyodorovo, Fyodorovo-Alakul; 31–37 – Final Bronze Age (for details, see Chapter 2)*