Impact of the Environment on Human Migration in Eurasia
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Impact of the Environment on Human Migration in Eurasia

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FOREWORD

This book is a collection of the articles presented at the NATO Advanced Research Workshop (ARW 979859) held in St.Petersburg, from the 15-18 November 2003 in the Hermitage Museum. The title of the workshop was “The impact of the environment on Human Migration in Eurasia”. More than 40 scientists from Russia, Ukraine, Kazakhstan, Poland, Germany, Switzerland, The Netherlands, United Kingdom, Belgium, Finland, Lithuania and Latvia took part. The themes of the workshop focused on the origin, development, interactions, and migrations of prehistoric and ancient populations, specifically the Scythians, in Eurasia and their relationships with the environment of the time. The discussion of these questions necessitated the participation of specialists from a wide range of academic fields. Beyond any doubt, the environment played an important role in the life of ancient nomadic populations, forming the basis of their economies and influencing various aspects of their mode of life. In this respect, the collaboration of specialists in the Humanities and Science is essential for the solution of scientific questions concerning these peoples.

Over the past few years, a large amount of new proxy data related to environmental changes during the Pleistocene and the Holocene and their impact on human life has become available. Our discussion was predominantly limited to environmental changes related to the Holocene. In this period of about 10000 years, the main focus was on the 1st millennium BC. Apart from global-scale environmental changes, our discussions concentrated on the local environment, which included the physical landscape features of the geographical areas of interest: forest, steppe, forest-steppe and so on.

From the huge landmass of Eurasia, the region of interest to the workshop was the Eurasian steppe belt. This area being predominantly defined by grassland formation has several important common characteristics in soils, climate, and animal life and forms a huge latitudinal belt stretching from Central Europe, via Ukraine, the South Urals, northern Central Asia, Southern Siberia, and further into Mongolia and China.

During the 1st millennium BC, important cultural processes occurred throughout the steppe belt, which eventually resulted in the emergence of ‘Scythian-type’ cultures which played an important part in the history of world culture. The Scythian sites have been investigated since the 18th century, resulting in the discovery of outstanding archaeological assemblages and works of art which are displayed in the best museums of the world. Yet notwithstanding dramatic achievements in Scythian studies, numerous puzzles related particularly to the Scythians’ origins, interactions, migrations and their detailed chronology remain poorly understood and need further discussion.
It is important to note that the beginning of the 1st millennium BC corresponded to important social and cultural transformations that marked the transition from the Bronze Age to the Iron Age. The sites belonging to this period were unevenly distributed over the steppe belt of Eurasia. Both the European sector of this belt, and several regions in Western Siberia, are rich in Bronze Age sites. Yet several large areas of the mountainous regions of southern Siberia became actively populated only at the beginning of the Iron Age, contemporary with the appearance of Scythian-type cultures. The question arises as to when, how and from where the Scythian cultures arrived in that area? One of the possible explanations may be sought in environmental changes. The entire 1st millennium BC was marked by intensive human migrations directed both from the east to the west, and backwards. These migrations may be at least partly linked with environmental changes. The changes that have become apparent due to multidisciplinary studies conducted in that area, are of considerable interest to a broad scientific community involved in the problems of global climate change.

The key objectives of the ARW consisted in gaining a better understanding of the following issues:

1. The history of development of the Scythian cultures in Eurasian territories,
2. Methodological problems connected with the development of the chronology of these cultures caused by fluctuation in atmospheric radiocarbon;
3. Environmental and climatic changes during the time of the formation and development of the Scythian cultures in Eurasia;

The book is therefore subdivided into three sections reflecting the three key themes: Archaeology, Chronology and Environment.

The book opens with the archaeological section. It contains papers linking archaeology of different sites and interprets them in the light of possible impacts of environmental and climatic changes on human behavior in the context of the Scythian cultures. Among the most important Scythian monuments discovered in various parts of Eurasia, a particular importance is attached to the Arzhan-2 Barrow, a new site discovered in 2001 in the Republic of Tuva. The significance of this discovery is difficult to underestimate, as this monument remained intact from its construction. The unusual abundance of all kinds of archaeological materials throws a completely new light on Scythian history and culture. The preliminary results of the investigation of the materials from Arzhan-2 are discussed in the article by Russian and German archaeologists who discovered the site (K.Chugunov, H.Parzinger and A.Nagler).

The current state of research on ‘Classical’ (i.e. European) Scythia is the subject of the papers by A.Yu.Alekseev (Russia) and S.Makhortykh (Ukraine).

The wide panorama of the history of settlement of the Southern Siberian regions (Khakassia Republic) beginning from the early Bronze Age is
considered in the article by N.Bokovenko. Both Alekseev and Bokovenko in their papers also consider the problems of defining the radiocarbon chronology for these cultures.

It should be noted, that in spite of the long history of investigations of Scythian cultures, the problems of their chronology are not fully resolved. For a long time, the chronology of the European Scythian cultures was based on typological comparisons and historical sources while that of the Asian Scythian cultures, was largely based on radiocarbon dating. Only relatively recently, were the first radiocarbon dates obtained for European Scythian monuments. As a result, it has become possible to compare the chronological position of these cultures in Europe and Asia, and to develop a unified radiocarbon time-scale which can be used with other scientific evidence.

The second section focuses on the current state of the Scythian chronology and the means by which it may be improved. The difficulties in defining a precise chronology are related to the plateau in the $^{14}$C calibration curve around 2500 BP and the fact that the atmospheric radiocarbon concentration which is the basis of the $^{14}$C chronology, fluctuates in time due to variations in cosmic rays, solar activity, and related phenomena. Several approaches to overcome this difficulty were proposed, including the use of tree-ring chronologies and sophisticated curve-matching techniques (‘wiggle matching’) (papers by van der Plicht, Hajdas, Zaitseva, and Gorsdorf).

The third section of the book focuses on environmental changes, environmental reconstructions and the influence of climatic changes on the behavior of ancient populations. This chapter includes a wide spectrum of studies. The articles by Dergachev and van Geel include new data from different isotopic methods related to cosmic rays and solar activity. For the reconstruction of climatic change and its nature, different approaches are often used: traditional pollen analyses combined with geological evidence (Dirksen, Kalnina, and Gaigalas) and geochemical investigation supported by statistical factor analysis (Koukova). Papers by Aleksandrovski, Porotov and Shishlina used geomorphologic and soil analyses for reconstruction of the environmental setting during the Eneolithic period in the Northern Caucasus. A paper by van Strydonck used stable isotope studies based on $\delta^{13}$C and $\delta^{15}$N in bones to assess past diet and environment. A comparative analysis of horse bones from the Arzhan-1 and Arzhan-2 monuments was shown in the article of Bourova who suggests that the changes in the anatomy of the horses could reflect landscape changes and the availability of fodder. New evidence concerning the role different toxins play in the life of ancient humans, and their connection to environment and adaptation are presented by Derham.

Several papers discussed the problems of migrations and their possible connection to environmental changes. Various models of migrations were discussed in the paper by Dolukhanov, based on a statistical analysis of
radiocarbon dates, including Upper Palaeolithic, Neolithic and Bronze Age sites.

This book brings together for the first time many new results and new, often non-orthodox ideas and approaches in the studies of the relationships between ancient humans and nature. Therefore we hope that this book may be useful and of interest to a wide circle of readers in various fields of knowledge.

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