



United Nations
Educational, Scientific and
Cultural Organization



World Heritage Convention

PRESERVATION

OF THE FROZEN TOMBS OF THE ALTAI MOUNTAINS







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Staff Head in the Form
of Large Gryphon's Head
with a Deer's Head in its
Beak. Wood and leather;
carved. H. 35 cm Pazyryk
Culture. 5th century BC.
Inv. no. 1684/170.
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The views expressed in the articles contained in
this publication are those of the authors and not
necessarily those of UNESCO.

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Foreword

Koïchiro MATSUURA

Director-General of UNESCO

THE SAFEGUARDING AND PROTECTION of the world's cultural heritage has long been considered one of UNESCO's foremost achievements. Since its creation some 60 years ago, the Organization has responded to numerous threats confronting heritage, whether they result from armed conflicts, natural disasters, uncontrolled modernization, touristic development or other factors. In recent years, a new threat has emerged as the focus of great international concern, namely climate change. In keeping with its mission to safeguard the world's cultural diversity, UNESCO has consistently sought to rise to all of these challenges over the past six decades.

In this context, the project presented in this booklet – the Preservation of the Frozen Tombs of the Altai Mountains – is especially timely. Undertaken by UNESCO's World Heritage Centre in collaboration with a distinguished international team of partners, this initiative is among the first of its kind, addressing, as it does, urgent cultural issues related to the environment and climate change. As stated in its title, the project's principal aim is to ensure the preservation and conservation of the remarkable frozen tombs that lie scattered across the Altai Mountains, which spread over China, Kazakhstan, Mongolia and the Russian Federation. These ancient tombs, or *kurgans*, contain unique relics of the vast Scythian civilization that once flourished on the Eurasian steppe and have been preserved intact in the permafrost, or frozen ground for over 2,500 years. The tombs contain the remains of mummified human bodies and sacrificed horses, as well as a range of everyday artefacts including saddles, furniture and textiles.

However, these precious objects are now under threat from various factors, most notably global warming, which is precipitating the meltdown of the permafrost that has guaranteed their preservation over millennia. To meet such new challenges, the World Heritage Committee requested the World Heritage Centre to develop a number of innovative strategies to assist States Parties to more effectively deal with the consequences of climate change on cultural and natural sites. The outcomes of the project on the frozen tombs of the Altai Mountains have been very useful in the process of elaborating such strategies.

It is my hope that the project for the preservation of the Frozen Tombs will inspire those countries with territory in the Altai Mountain range to strengthen their efforts to safeguard the region's immense heritage. We are pleased to note that the Russian portion of the Altai Mountains was inscribed as a natural site on the World Heritage List in 1998. UNESCO heartily encourages all of the countries concerned to work together to ensure that the natural and the cultural value of the entire Altai Mountain region is recognized internationally and protected accordingly.

Thus far, this project has served to focus wider international attention on the larger problems confronting other natural and cultural heritage sites affected by global warming and climate change. Indeed, this project has already enriched the international debate on this issue. I am confident that this booklet, with its insightful articles on the Altai region by several eminent specialists, will stimulate further reflection on matters related to conservation, sustainable development and climate change to the benefit of heritage in other regions of the world.

I would like to express my gratitude to the UNESCO/Flanders Funds-in-Trust for its generous contribution to this landmark project and to the publication of this booklet. My sincere thanks also go to all of the contributing authors and institutions, which have graciously lent their time and expertise to ensuring the quality of this booklet.



Koïchiro MATSUURA

Swan. Felt; applique.
H. 30 cm Pazyryk
Culture. 5th - 4th
century BC.
Inv. no. 1687/262.
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Introduction

Junhi HAN

World Heritage Centre, Culture, UNESCO

THE PUBLICATION OF THIS BOOKLET marks the end of the *Preservation of the Frozen Tombs of the Altai Mountains* project, which was launched in 2005 and carried out by the UNESCO World Heritage Centre with financial support from the UNESCO/Flanders Funds-in-Trust (**Fig. 1**).

Until quite recently, issues surrounding the frozen tombs of the Altai Mountains were known about by only a limited number of specialists, due to difficulties of international access to regions of the former Soviet Union. The frozen tombs and material contained in them constitute invaluable research material to shed light on the nomadic peoples that inhabited the Eurasian Steppe in the first millennium BCE, as well as on their neighbouring civilizations, such as the Persian Achaemenid Empire.

Excavations carried out on the Scythian barrows lying between the Ural and Altai mountain ranges in the 17th and 18th centuries CE, which formed the basis of the collection put together by Peter the Great that is now in the State Hermitage Museum in St. Petersburg (**Fig. 2**), already yielded considerable information on the Scythians and on the other nomadic tribes that once inhabited this region. However, certain customs and cultural aspects of these peoples could not have been confirmed had it not been for excavations carried out in the frozen tombs of the Altai Mountains themselves. For this reason, these frozen tombs are invaluable for the light

their contents shed over what is still a little-known period in the history of the peoples that have occupied the Eurasian steppe.

Over the last three years, the UNESCO project that this publication records has been successfully raising awareness of the importance of frozen tombs of the Altai Mountains at international level. The aim of the present publication is both to record this project and to shed further light not only on the uniqueness of the tombs as research material, but also on the mountain landscape, which shows how the nomadic peoples of this region have interacted with their natural environment over the millennia.

The first section of this booklet deals with some of these issues, looking at historical, anthropological, archaeological and art-historical aspects of the Altai Mountains. The first article, “The Scythians: Nomadic Horsemen of the Eurasian Steppe,” introduces the Scythians and what is known about them, taking readers from the coasts of the Black Sea to Tuva (the Republic of Tuva in the Russian Federation) on the southern edges of Siberia. It was in this region that the so-called “Scytho-Siberian style” of art is now believed to have originated, thanks to the recent research carried out on the *kurgan*, or burial mound, Arzhan-2 in Tuva by a joint German and Russian team (H. Parzinger, Deutsches Archäologisches Institut (DAI) and K. Čugunov, State Hermitage Museum) (**Fig. 3 and 4**). By describing

Fig. 2 Comb with a Scythians in Battle. Gold; cast and chased. 12.6 x 10.2 cm Scythian culture. Late 5th - early 4th century BC Solokha Barrow. Inv. no. Dn-1913.1/1 © The State Hermitage Museum, St. Petersburg.



Fig. 1 Archaeological remains in the Golden Mountains of Altai: burial mounds (*kurgans*), Bronze-Age stelae and stone circles.

© Gary Tepfer.

the position of the Altai in the broad context of Eurasia as a whole, the article serves as an introduction to those that follow dealing with specific themes.

The second article, “The Frozen Scythian Burial Complexes of the Altai Mountains: Conservation and Survey Issues,” introduces two of the most important valleys in the Altai Mountains, the Bashadar and Ukok Valleys, which are parts of the UNESCO World Heritage Site, and suggests future challenges in carrying out research on the frozen tombs that are located in them.

The third article, “Culture and Landscape in the High Altai,” concerns the cultural landscape

of the Altai, providing readers with a chronological profile of the region. When travelling in the Altai, it is easy to appreciate the many human civilizations that have flourished there over the millennia: Bronze and Iron Age structures are scattered across the landscape in the form of petroglyphs and deer-stones, as well as in the shape of the burial mounds themselves. Later Turkic Period (ca. 500 to 900 CE) culture is represented by the presence of beautiful anthropomorphic standing stones, or *balbals* (Fig. 5, 6 and 7). The article describes how the combination of archaeological remains in the Altai from different periods in the last three millennia has given rise to a unique cultural landscape. This is, in part, a

Fig. 3 and 4 Hair Pins from the Arzhan-2 *kurgan*, Tuva Republic, Russian Federation.

© Deutsches Archäologisches Institut, DAI, Berlin.





landscape that is human-made, created over millennia by people who had a profound knowledge of the mountains. The objects that they have left behind convey their builders' sensitivity to the colours of nature and the textures of the stones and other natural materials, shaping these to become the expressions of human culture.

Research carried out in the Altai Mountains and in neighbouring areas has indicated the kinds of interaction and mutual influence that once existed between the Altai and neighbouring regions. It has also been suggested that trade routes existed across the region long before the famous "Silk Roads" came to life that once joined East and West across Eurasia. It is this aspect that the fourth article, "Ancient Altai Culture and its Relationship to Historical Asian Civilizations," concentrates on, providing a comparative analysis of objects from the Altai, from the Xinjiang and Gansu regions of China, and from the ancient Persian Achaemenid Empire.

The last article in this section traces the influence of the Pazyryk culture of the Altai

peoples on those further to the east and beyond southern Siberia. Objects (Fig. 8) found in the *kobuns*, or burial mounds, belonging to the early period of the Shilla Kingdom (ca. 57 BCE to 668 CE) in ancient Korea show striking similarities with those found in the frozen tombs of the Altai Mountains, as well as with objects discovered in the Central Asia, for example at Tilia Tepe in what is today's northern Afghanistan. Magnificent treasures from this site were recently shown to the public for the first time at an exhibition organized by the Musée Guimet in Paris

(*Afghanistan, Rediscovered Treasures: Objects from the National Museum of Kabul*) (Fig. 9).

Objects yielded from the Shilla *kobuns*, consists of the items of weaponry, horse equipment and gold, form indeed the "Scythian triad" found in the easternmost parts of the Eurasian continent. This raises the question of whether such similar cultural phenomena could have coexisted without there at the same time having been connections between Central and Far East Asia.

Fig. 5 A *balbal*.

© Gary Tepfer.

Fig. 6 Stone *balbals*: often found near the burial mounds, these standing stones, or *balbals*, vary in shape from rough, unpolished stone steles to skilfully carved anthropomorphic stone figures. They are thought to be memorial monuments (Turkic period, ca. 500-900 CE).

© Gary Tepfer.

Fig. 7 A *balbal*, Gorno-Altai Museum, Republic of Altai.

© UNESCO, J. Han.



Fig. 8 Shilla Golden Crown from Kyungju, Shilla Kingdom, 5th-6th century CE. Gilt Bronze, H: 59.5 cm; D. at base: 17 cm, MA 1642.

National Museum of Korea © Thierry Ollivier / Musée Guimet.



Fig. 9 Golden crown, Afghanistan, Tilia Tepe, Tomb VI, 1st century CE. Gold, 45.0 x 13.0 cm. MK 04.40.50.

National Museum of Afghanistan © Thierry Ollivier / Musée Guimet.

By searching for the “missing links” that once connected Central Asia to the Korean peninsula, the author of this article attempts to show that a “Route of the Steppes” could have existed across this part of Asia in ancient times, joining Central Asia with Far East Asia along the southern edges of Siberia and through the Altai Mountains. Further study should now be carried out to fill in this missing chapter in the history of the Eurasian continent, and this will have profound implications for our understanding of the interactions and extension of nomadic culture across the Eurasian continent.

The booklet’s second section deals with the background and various technical aspects of the UNESCO project, along with future challenges for research and conservation, including how to safeguard the research material contained in the frozen tombs. The project has helped produce a detailed inventory and map of the frozen tombs in certain parts of the Altai by using the most modern mapping techniques developed with the aid of satellite images. Such geophysical techniques have also been used to monitor the permafrost in the Altai, and these are described in the articles in section two.

The third section of the booklet describes various challenges facing the Altai and the frozen tombs. The first article, “The Altai: Heartland of Asia,” examines how the sustainable development of the region might be pursued by incorpo-

rating insights from existing international programmes, such as UNESCO’s Man and Biosphere (MAB) and World Heritage programmes, as well as from other programmes linked to sustainable development. The challenge here is to arrive at an appropriate balance between the conservation of the Altai Mountains and their existing ecosystem and rich archaeological heritage, and the development process, taking into account the social and economic needs of the local population. Finally, as a result of research on the frozen materials found in the tombs, a relatively new issue has emerged: how to conserve the organic material that the tombs contain, including human bodies. The last article, “Excavation and Sampling Techniques in the Frozen Tombs of Kazakhstan,” deals with this subject.

Despite the wealth of information contributed by the authors of these articles, this booklet is nevertheless all too limited in scope and detail when compared to the complexity of the issues facing the frozen tombs and the Altai Mountains as a whole and the challenge of protecting them from various threats, including climate change. However, it is our hope that it may contribute to raising awareness of the fragile environment in which the tombs are found and the natural and man-made threats currently confronting them, as well as of the need not only to protect these sites at an international level, but also to recognize their great cultural value. In the light of this, the larger objective of the booklet is to draw the international community’s attention to these crucial issues, in order that it may reflect on them and mobilize international resources for whatever future actions are deemed necessary.

In closing, I should like to express my gratitude to the Flanders Government of Belgium, not only for its funding for the project, but also for the support it has provided throughout. I also should like to extend my gratitude to the Ministry of Information and Culture and to the National Museum of Kabul (Islamic Republic of Afghanistan), to the Musée Guimet (France), to the Museum for Pre- and Early History, Staatlich Museen zu Berlin, and to Bordon Art Design (Germany), and to the State Hermitage Museum (Russian Federation), for their cooperation in the publication of the booklet. Finally, I would like to express my personal thanks to all the authors of the articles, who kindly accepted to contribute to this publication in spite of their tight schedules. ■



Eurasian Steppe

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BRONZE AGE

P E R I O D O F

-1000

-900

-800

-700

-600

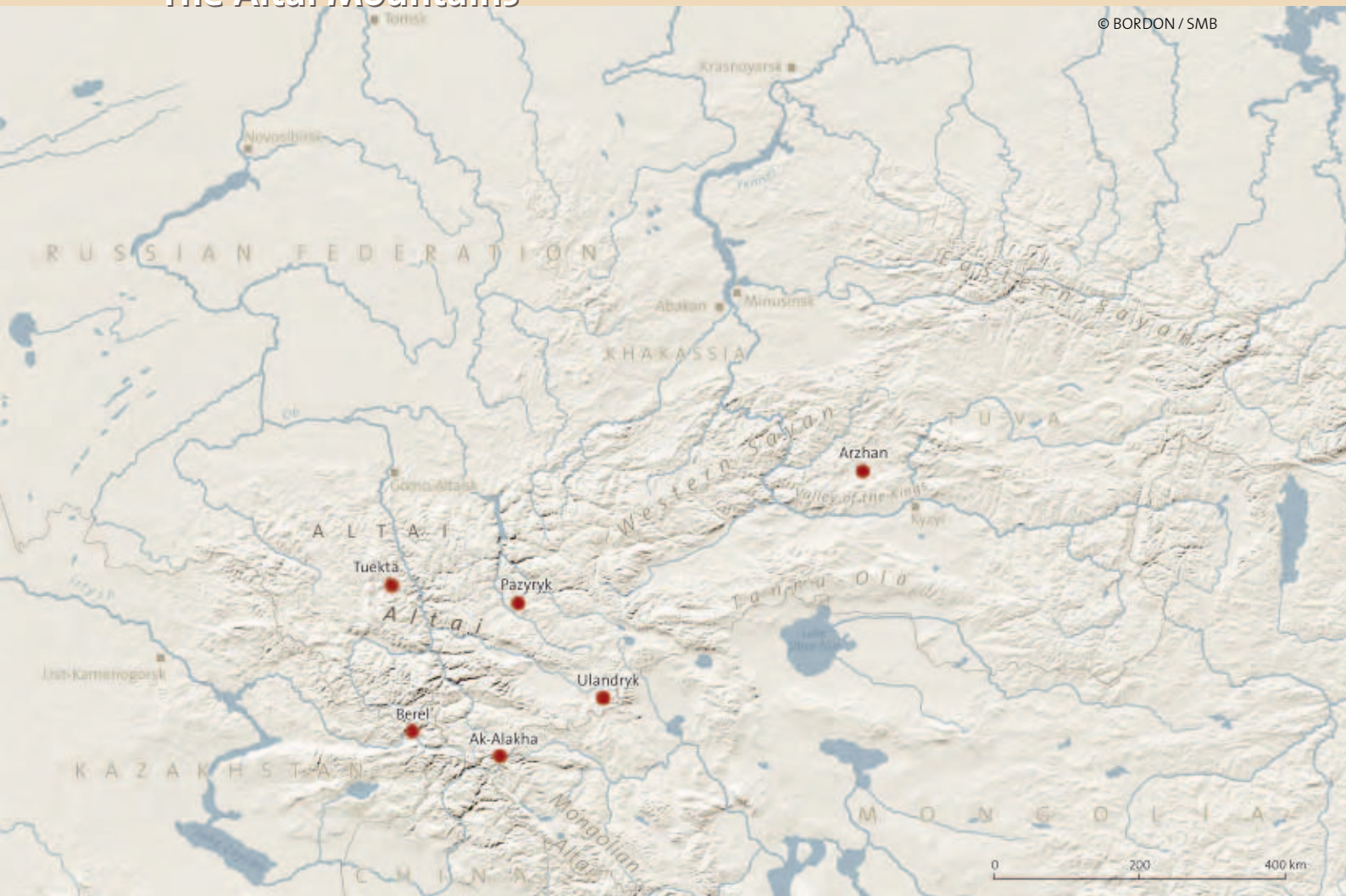
Ca. 750: Arzhan 1

Ca. 600: Arzhan 2

Chronology

The Altai Mountains

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● Locations of famous *kurgans*

F I R S T N O M A D S

-500 -400 -300 -200 -100 0 AD

Ca. 440-400: Tuekta 1

Ca. 314-311: Ulandryk 4
 Ca. 300-282: Pazyryk 2
 Ca. 299: Pazyryk 3
 Ca. 295: Pazyryk 1
 Ca. 294-293: Berel' 11
 Ca. 274: Ak-Alakha
 Ca. 264: Pazyryk 4
 Ca. 250: Pazyryk 5

From various recent publications.

CHAPTER 1

SCYTHIANS IN THE EURASIAN STEPPE AND THE PLACE OF THE ALTAI MOUNTAINS IN IT



The Scythians: Nomadic Horsemen of the Eurasian Steppe

Hermann PARZINGER

President, Stiftung Preussischer Kulturbesitz, Germany

OVER THE PAST 300 YEARS, *kurgans* from the Scythian age have been discovered between the Yenisei River in the east and the middle Danube in the west, drawing attention to the monumental burial mounds and highly decorated golden objects of the Eurasian nomadic horsemen that built them during the 1st millennium BCE. Originating in southern Siberia in the late 9th and early 8th centuries BCE, and extending during the 7th century to Kazakhstan, the southern Urals, Russia and through the Ukrainian steppe to the Carpathian Basin, the Scythians and related horse-dependent nomadic peoples (the Sauromatae and Saka, etc.) were replaced by other peoples (the Xiongnu, Wusun and Sarmatians) around 200 BCE before finally disappearing from history.

The Ancient Greeks wrote about the extraordinary customs of the Scythians, and the historical tradition stated by Herodotus places their origins in Central Asia, southern Siberia and the northern borders of China and in areas where our knowledge of them depends on archaeological sources.

Scythian life on the steppe depended on mobility since pastures had to be periodically relocated to support the herds that represented wealth and prosperity, and therefore often needed to be defended from other nomadic groups. This led to the stratification and militarization of nomadic society, which further increased the importance of the warrior horsemen. However, the many Scythian forts to the north of the Black Sea indicate settlement, craftsmanship and even agriculture. The town of Gelonus (probably today's Belsk), for example, described as a large fortress by Herodotus, was built completely out of wood and surrounded by a 5km-long wall. While there is a need for further research on Scythian settlements, much more is known about these people's burial customs. These had a special meaning for the Scythians,



Fig. 1 Gilded figures of stags from the Filippovka princely grave in the South Urals.

© The State Hermitage Museum, St. Petersburg.

particularly for members of the ruling class, called *basileis*, or “kings”, by Herodotus. Several of these large *kurgans*, or burial mounds, have been excavated since the 19th century, and they give an impression of the grandeur of the Scythian ruling class.

The *kurgan* mounds of Čertomlyk, Solokha, Kozel, Kul'-Oba, Oguz, Tatjanina Mogila, Ryžanovka and Tolstaja Mogila, among others, have yielded bodies wearing grave-clothes decorated with sheets of gold. These ornaments are made of thin gold foil, and they often show Scythian-style animal figures, as well as motifs of Greek origin. The same applies to the gold used to make the quivers, dagger-handles and scabbards, the decorative plates of buckles, sceptre-handles, and so on, all found in the tombs. Torcs, pectoral decorations and bracelets are also made of solid gold. All these objects have symbolic meaning, since they signify the status of the buried person. Plates made of precious metals, bronze cauldrons, Greek chalices and

Left The highest peaks of the Altai Mountains: Tavan Bogd in the Mongolian section of the Altai.

© Gary Tepfer.

Fig. 2 Reconstruction by D. Pozdnjakov of the male body found in princely grave 5 of the Arzhan-2 *kurgan*.



Fig. 3 Reconstruction by D. Pozdnjakov of the female body found in princely grave 5 of the Arzhan-2 *kurgan*.



wine-amphoras complete the inventory of objects found in such tombs.

While Herodotus describes the Scythians' burial rituals in detail, he barely mentions the wealth of gold in the graves. Instead, he provides a great deal of other material that helps us to understand the archaeological discoveries that have been made in the Scythian zone to the north of the Black Sea, as well as in those territories located further to the east. Herodotus explains that when a Scythian king died he was buried in a large, square tomb. The body's intestines were removed before it was filled with scented herbs and embalmed in wax. The preserved Scythian mummies found in the *kurgans* of the permafrost zone of the Altai Mountains prove Herodotus's account of Scythian burial customs. He adds that the Scythian king's wife, cupbearer, servants, horsemen and messengers would follow their master to the tomb, along with horses and some-

times even cattle. All these were strangled or killed. Archaeological excavations carried out in many parts of the Eurasian steppe have borne out Herodotus's descriptions.

Monumental *kurgans* for the use of the ruling class were also built by the eastern neighbours of the Scythians, for example by the Matiani in the Kuban area of the north-western Caucasus. In Kostromskaja and Kelermes (7th c. BCE), the central grave pit of the *kurgan* was topped by a construction in the form of a wooden hut. The dead bodies of horses, still wearing their bridles, were arranged in the grave. In the hills of Ul'jap, the *kurgans* (4th c. BCE) contain wooden structures that house the graves, these containing gold, silver and bronze plates and Greek ceramics, but no traces of the dead body. Perhaps these were "symbolic graves" (cenotaphs), built for Scythian-Matiani chiefs who had been killed fighting elsewhere.

There are also complexes of this kind in the Sarmatian region of the lower Volga Valley and in the southern Urals. While these are mostly empty, gold artifacts have been found in them that exhibit remarkable artistry. The princely grave of Filippovka (4th c. BCE), close to the mouth of the Ilek River in the Urals, might be mentioned, for example. Here, a long *dromos*, or narrow entrance passageway, leads into a tent-like wooden construction that forms the grave chamber, this containing gold weapons, gold and silver plates and other prestige objects made of precious metals. (Fig. 1)

Although substantial differences exist in the details of the construction of the *kurgans* and in the configuration of the grave chamber, they repeat the same basic principles, connecting them to the monumental burial mounds of the north Pontic steppe. Beneath the monumental stone barrow, built with enormous effort, the underground grave construction is found, and this symbolizes the status of the deceased through the many prestige objects made of gold and other precious metals found in it, as well as the numerous valuable imported items it contains.

However, our information about the peoples of the Central Asian steppe and their customs is not as reliable as that about the north Pontic Scythians. According to Herodotus, the Argippaei people are to be found at the foot of high mountains after crossing a vast area of steppe north of the Caspian and Aral Seas. These people, he writes, are typically bald from birth and have snub noses and long chins, which could be seen as evidence of a predominantly Mongolian-type population in the region. While their costume, consisting of hooded-and-belted sleeved shirts, long trousers and boots, was like that of the Scythians, the latter were not able to communicate with the Argippaei without an interpreter, leading to the conclusion that they belonged to a different language group. (Fig. 2 and 3)

Herodotus also says (Book IV, 27) that griffins guarding gold are to be found further east. If by this he actually means a human tribe, then the term “griffin” could be understood as being a tribal symbol, because the griffin plays a prominent role in Scythian-Siberian animal style. It is surely no coincidence that Herodotus indicates the presence of griffins guarding gold in an area that seems to correspond to the Upper Ob and the Altai Mountains. This region is rich in gold

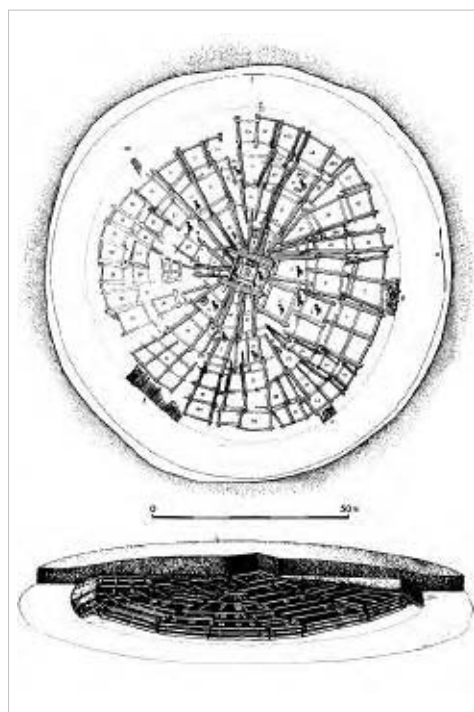


Fig. 4 Arzhan-1 *kurgan* excavated by M. P. Grjaznov.

deposits, and mineral wealth of this sort might have led to Greek, Persian and Scythian interest in the region.

However, the history of this region during the 1st millennium BCE is unknown, due to a lack of written evidence. As a result, archaeological discoveries have an important role to play in reconstructing the history of the ancient nomadic horsemen of southern Siberia. Many of the characteristics of the Scythian culture of the northern Black Sea area can also be found here, including the horse-based nomadic economy and lifestyle, the use of animal style in artifacts and the construction of monumental *kurgans*, which express the social structure of a society with a warrior elite.

As is the case in the north Pontic region, the Siberian-Kazakh *kurgans* have in many cases been looted. East of the Ural Mountains, only one golden hoard has been found, namely that discovered during the excavation of an undisturbed grave in the Issyk *kurgan* in south-east Kazakhstan (5th c. BCE). Here, the head-dress, clothes and weaponry of the so-called “Golden Man of Issyk” have been found, decorated with innumerable sheets of gold, together with silver plates and other items. This region was in the south of the original steppe belt and in the

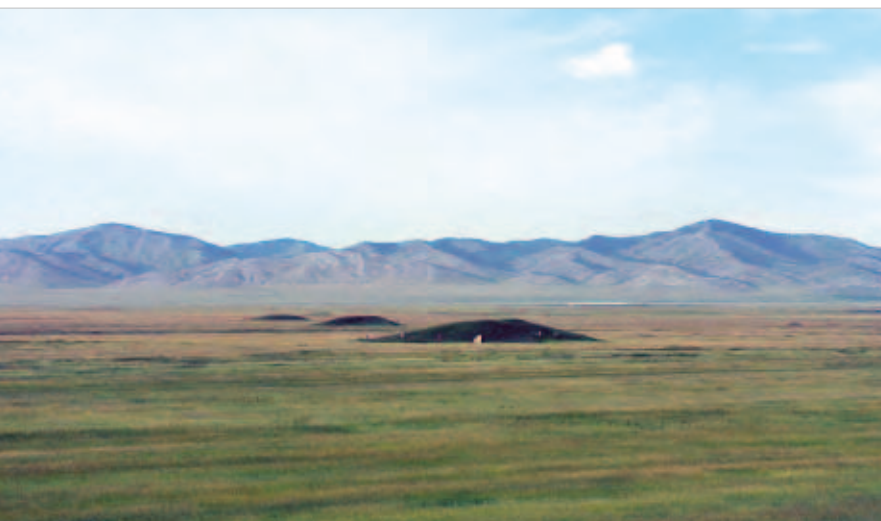


Fig. 5 Steppe near Salbyk in Khakassia in southern Siberia.

settlement area of the Central Asian Saka people, who ruled large parts of Central Asia from the Aral Sea in the west to the foot of the Tien Shan in the east and whose contacts reached into neighbouring parts of north-west China and the Persian Achaemenid Empire.

The excavated princely graves in southern Siberia are similar to the Pazyryk Culture *kurgans* in the Altai Mountains (Pazyryk, Tuekta and Bashadar). Seepage and condensed water collects in the tombs beneath the massive burial mound, this then freezing to form ice that not only freezes the embalmed body in the tomb, but also all the other organic materials, such as clothing, shoes, carpets, ceremonial wagons, wooden carvings,

horses and their saddle blankets, head-dresses and decorative straps, etc. As a result, it has been possible to ascertain that the preserved bodies were tattooed with animal motifs. These bodies had also undergone a special embalming procedure in which the intestines, brain, muscles and other soft tissues were removed, the body stuffed with organic material and then sewn up with horsehair.

Many more of these so-called frozen *kurgans* have been found on the Ukok Plateau (Ak-Alakha, Verkh-Kaldzhin and Ulandryk), as well as in the Kazakh (Berel') and Mongolian parts of the Altai Mountains (Olon-Kurin-Gol). These demonstrate the lively mental world and complexity of the early nomadic horsemen, owing to their extraordinary state of preservation.

Other monumental Scythian burial mounds in southern Siberia show that these originally contained golden hoards in the same way as did north Pontic catacomb graves. Tuva, a region in the heart of Asia between the western Sayan and the Tannu Mountains, has a special significance here, since along the banks of the Uyuk, a tributary of the Yenisei River, the princely necropolis of Arzhan is located. This huge cemetery, containing hundreds of *kurgans*, offers a rare concentration of monumental burial mounds. The Arzhan-1 *kurgan* was excavated by M. P. Grjaznov in the 1970s, laying bare a complex wooden construction that features a unique wheel-like burial chamber covered by a flat stone platform (**Fig. 4**). A doubled beam chamber in the centre contained

Fig. 6 Tagar Culture *kurgan* near Salbyk in Khakassia in southern Siberia.

Photos: © DAI, Berlin.





the looted burial goods that originally belonged to a princely couple. The many small gold objects left behind by the grave-robbers show the wealth that existed at the time, these graves containing weapons, ornaments, jewels and horse harnesses dating back to the late 9th and 8th century BCE.

The Arzhan necropolis in Tuva has thus far provided the oldest discoveries of Scythian-type remains. However, a few other materials found nearby (in the Minusinsk Basin and the Altai region) can be considered along with these discoveries, these additional items providing the context and real significance of the discoveries made at Arzhan, since researchers now agree that the origins of the nomadic horsemen and their

related Scythian-type culture, in which animal style plays a central role, should be looked for in these areas of Siberia. (Fig. 5 and 6)

The Arzhan-2 *kurgan*, a princely grave dating from the very late 7th century BCE and excavated at the beginning of the present century, contains over 5,600 golden objects and is the first undisturbed hoard of its kind found in Siberia. It is a little later in date than the Arzhan-1 *kurgan*, belonging to a later period of the early Scythian age (7th-6th c. BCE). Numerous masterpieces in the shape of artifacts employing animal style were found in it, together with other items of a quality that had previously not been found in southern Siberia. As a result, the discovery of this *kurgan*

Fig. 8 Princely grave 5 in the Arzhan-2 *kurgan*.

Fig. 9 Finds and male skeleton from princely grave 5 of the Arzhan-2 *kurgan*.



Fig. 7 Arzhan-2 *kurgan* during excavation.

Photos: © DAI, Berlin.



Fig. 10 Gold animal figures from the head-dress of the man's body found in princely grave 5 of the Arzhan-2 *kurgan*.

© The State Hermitage Museum, St. Petersburg.

changed ideas about the death rituals employed by the elite of the Scythian nomadic horsemen in the region. It is not only great wealth and grandeur that distinguish this double grave of a man and his wife, but also the way in which the couple's burial seems to have been staged, employing rituals that were strictly performed for members of the elite. (Fig. 7-8-9-10)

We are now sure that the Arzhan-2 *kurgan* is not just an isolated example, but that on the

contrary it represents just the tip of an iceberg. The discovery tells us that we should expect the discovery of further princely burials beyond the Urals that contain hoards of gold, this realization only coming after some 300 years of archaeological activity in Siberia. However, this, after all, is one of the most significant and most fascinating characteristics of archaeology as a scientific pursuit: the fact that archaeology is still yielding substantial, and at the same time unexpected, discoveries that not only add to or help to clarify views of bygone periods of human history, but also help to change them profoundly and over the long term.

It was also lucky that the princely grave of the Arzhan-2 *kurgan* came to light at the beginning of the 21st century, since modern archaeology is better equipped than it was decades or centuries ago. Such new archaeological techniques and facilities need to be employed in order to allow us further insights into the lives of the Scythian nomadic horsemen, whose remains are found in the permafrost of the Altai Mountains and in the unique frozen *kurgans* of Eurasia. ■

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The Frozen Scythian Burial Complexes of the Altai Mountains: Conservation and Survey Issues

Vyacheslav I. MOLODIN

First Vice-Chairman of the Siberian Branch of the Russian Academy of Sciences,
Institute of Archaeology and Ethnography, Russian Federation

THE ALTAI MOUNTAINS are extremely rich in archaeological sites, among the oldest of which are the sites of Karama and Ulalinka that bear witness to a human presence on this territory 800,000 years ago.¹ Remains dating back to the Palaeolithic, Neolithic, Bronze and Iron Ages and the Early and High Middle Ages have been discovered and surveyed in the Altai,² (Fig. 1) among the most important of them being the Scythian frozen burial complexes of the so-called Pazyryk Culture.

As a result of a unique set of circumstances – the severe climatic conditions in the high mountains on the one hand, and the specific architecture of the burial sites on the other – these tombs have been preserved in ice lenses, thanks to which unique objects made of various organic materials have been conserved, including items made of wood, textiles, thick felt, horn and leather. Some of these objects are masterpieces of arts and crafts (Fig. 2). In some cases, the ice lenses have also preserved mummified human bodies with intact tattoos and hair-dresses (Fig. 3). All these findings have led to a comprehensive understanding of the burial practices of this culture, as well as of the clothes, weapons and horse trappings that existed two-and-a-half thousand years ago, allowing for study at an almost ethnographic level.

The elevated artistic style of almost all the everyday objects found, as well as that of those used in warfare, is testimony to the high level of culture among the populations concerned, and consequently also of the high level of their spiritual world. This allows the Pazyryk Culture to be ranked among the outstanding cultures of Scythian Eurasia. There is also no doubt that this culture was closely linked at an ethnic and cultural level to the leading centres of civilization



at the time in China, India and Achaemenid Iran. This makes the study of the Scythian remains of the greatest interest in the context of the Eurasian subcontinent in general. For this reason, too, this culture is interesting not only for the scientific community, but also for anyone interested in the history of humanity as a whole.

The frozen burial complexes of the Altai Mountains were first discovered in Berel and Katanda by the Russian academician V.V. Radloff in 1865. Further studies were undertaken by M. P. Gryaznov (*kurgan* 1 of the Pazyryk necropolis) and S. I. Rudenko (*kurgans* 2-5 of the Pazyryk necropolis, Bashadar), as well as by V. D. Kubarev (Yustyd, Ulandryk, the Sailugem burial complexes), N.V. Polosmak and V. I. Molodin (Ukok Plateau), Z. Samashev and H.-P. Francfort (Berel necropolis), V. I. Molodin, H. Parzinger, D. Tseveendorj (the Olon-Kurin-Gol 6 and 10 necropolis).³ Considering that more than a thousand burial complexes of the Pazyryk Culture have been studied,⁴ the above-mentioned sample represents only a small number of them.

Fig. 1 Tavan-Bogda Ulla peak in the central part of the Altai Mountains.
© V. Molodin.

However, compared to other known archaeological complexes, these ones are incredibly rich in terms of information, and they contain a unique variety of objects and remains of burial practices. The scientific and cultural value of these complexes has clearly enriched the world's knowledge, bringing new understanding of the peoples and cultures of this Asian region during the 6th – 3rd c. BCE (Fig. 4).

The study of the Pazyryk sources of the Ukok Plateau has been conducted in a multi-disciplinary way.⁵ As a result of investigations that have involved specialists in the domains of physics, chemistry, biology, anthropology, genetics, paleo-zoology, paleo-botany and geology, new

information has been obtained, allowing for a significantly higher level of interpretation of the sources to be attained.⁶ Among the most significant recent findings is the fact that the populations of the Pazyryk Culture were very closely related to today's Samodi populations (Selkups) in Western Siberia, as well as to the Kazakhs and Uigurs, which was discovered through evolutionary and genetic analysis. Through a technique involving calculations of genetic distance, a philological-genetic tree was drawn up showing linkages in the mitochondrial gene pool of different ethnic groups in North Asia.⁷ A model of the ethnogenesis of the Pazyryk populations was developed, and this showed them to be of synthetic, Iranian-Samodi origin.⁸

The comprehensive examination of Ukok mummies has also been undertaken,⁹ with data being collected concerning the preparation of bodies for burial and the particular use of mercury compounds.¹⁰ Study of the mummies' hair through carbon and nitrogen isotopic analysis and synchrotron radiation has led to conclusions about diet, which included fish as an important component,¹¹ and about possible causes of death, for example through poisoning as a result of inhaling copper vapour.¹² Such studies have also proved that gold was locally available and that the Pazyryk populations had the means to make gold foil or amalgam.¹³

One of the most important objectives of archaeology is the dating of archaeological sites. The fact that wood has been well preserved in the frozen complexes means that dendro-chronological dating techniques can be used, which offer major possibilities for the relative and absolute dating of sites, being as precise as the exact year. Based on the materials from the Pazyryk sources of the Altai, a number of "floating" or relative dendro-chronological scales have been developed, the longest of which covers a period of 415 years.¹⁴ The main results of multidisciplinary studies have been reflected in a number of monographs and dozens of articles.¹⁵

Today, the critical issue is the conservation and study of the frozen tombs within the burial complexes of the Pazyryk Culture in the Altai Mountains, there being two main threats to their conservation. First, there is global warming, which is leading to the melting of the area's glaciers and of the ice lenses in the tombs. The thorough analysis of meteorological data collected

Fig. 2 Pazyryk Culture hair decoration in the form of a carved wooden reindeer. Upper-Kaldjin-II necropolis, excavated by V. I. Molodin.
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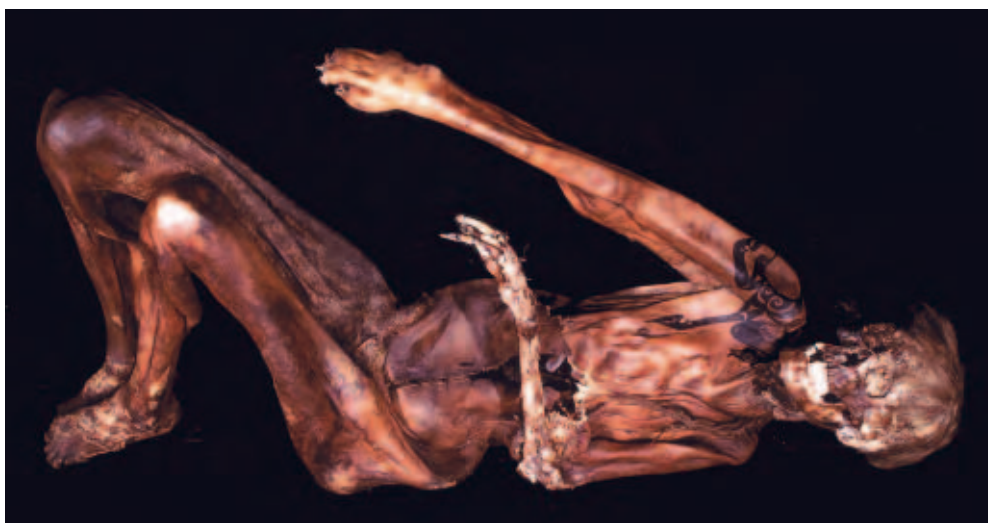


Fig. 3 Pazyryk Culture male mummy with preserved hair and shoulder tattoos. Upper-Kaldjin-II necropolis, excavated by V. L. Molodin.

by the Kosh-Agach meteorological station for the 40-year period between 1958 and 1998 has shown a clear tendency towards the warming of the climate, this being particularly evident during the winters. This warming has multiple consequences, including the thawing of the permafrost.¹⁶ This causes damage to the frozen archaeological complexes, as has been demonstrated at the Pazyryk *kurgan* of Upper Kaldjin-I.¹⁷

The second threat is anthropogenic. Active human influence on the environment and on cultural-heritage sites is linked to economic activities, and these sometimes lead to the irreplaceable loss of archaeological properties. In order to mitigate this, a new law concerning cultural-heritage properties in the Russian Federation now regulates the study of archaeological sites situated in economic-development zones. Article 40 of this law stipulates that “under exceptional circumstances, the terms of conservation of archaeological properties includes emergency field archaeological activities undertaken within the procedures determined in Article 45 of the present Federal Law”.¹⁸ This law and other measures aim to facilitate the study of endangered sites that are deteriorating because of anthropogenic and natural factors, including the frozen sites on the Ukok Plateau and in other locations in the Altai Mountains.

High-quality field surveys of the archaeological complexes are also necessary, as is a multidisciplinary approach to the objects of such surveys. Of course, each archaeological property is unique, and each can in theory give exceptionally valuable



Fig. 4 Detail of female mummy *in situ*. Ak-Alakha-3 necropolis, excavated by N. V. Polosmak.

Photos: © V. Molodin.

scientific and cultural information. This is particularly important to bear in mind when focusing on the preservation and study of the frozen sites, which are probably under the greatest threat because of the above-mentioned factors.

Thanks to the long history of surveys of the Scythian archaeological sites in the Altai Mountains, it has been possible to determine the zones where the most-valuable sites of the Pazyryk Culture, including the frozen *kurgans*, are concentrated. Two large areas of concentration can be pointed to.

First, there is the Karakol River Valley situated in the central part of the Russian Altai Mountains in the part of the mountains that is most convenient for human habitation. At the administrative level, this area is located in the Ongudai province of the Altai Republic (Russian Federation). The Valley is approximately 40km



Fig. 6 The Ukok Plateau beyond the Ak-Alakha River.
© V. Molodin.

long from the Karakol river-head to its confluence with the Ursul River. The entire left bank of the river features Pazyryk Culture burial sites from the village of Boochi to Kulada, and the Valley contains a concentration of complexes composed of huge *kurgans* made of piled stones several dozen metres in diameter. *Kurgans* of such dimensions can be found in other Altai areas, but only as rare and isolated specimens. Their dimensions are comparable to those of the widely known Pazyryk burial complex studied by S. I. Rudenko and M. P. Gryaznov.¹⁹

These burial complexes most certainly belonged to the highest rank of Pazyryk society (chiefs or kings). This assumption is confirmed by the results of excavations at two large *kurgans* of the Bashadar necropolis (**Fig. 5**) situated in the Valley near the village of Kudala and studied in the past by Professor S. I. Rudenko.²⁰ All these *kurgans* have traces of looting from ancient times, but it is certain that some of them contain ice lenses, which have preserved a variety of objects. This, at least, is what happened at the Bashadar and Pazyryk *kurgans*. In addition, it is important to note that all the large *kurgans* of the Pazyryk Culture that probably belonged to the highest rank of Pazyryk society (including the *kurgans* of the Pazyryk and Bashadar complexes) were surveyed in the first half of the last century according to field methods that were accurate at the time but that have now become outdated. The use of geophysical methods, as well as a comprehensive study of the over-burial monuments, would certainly provide further very valuable scientific information.

There is a need to document and map these sites, as well as to delimit them physically from economic activities and to monitor them geophysically, in order to determine anomalies in the

permafrost. The methodology of such surveys was developed by Russian geophysicists during studies of Pazyryk Culture complexes in the Mongolian Altai.²¹ After conducting surveys of this sort, it should be possible to consider excavations at one or two sites and the subsequent conservation of any finds in museums. However, in order to meet present scientific and methodological standards, costly activities of this sort can only be carried out by large academic expeditions. It is also important to note that any such surveys should be preceded by awareness-raising activities among the local Altai people.

The second area of concentration of archaeological sites in general, and of Pazyryk sites in particular, is the Ukok Plateau situated in the south of the Russian Altai Mountains at the juncture of Russia, Mongolia, China and Kazakhstan (**Fig. 6**). In the early 1990s, the Institute of Archaeology and Ethnography of the Siberian Branch of the Russian Academy of Science executed large-scale surveys in this region, resulting in the mapping of more than 400 archaeological sites situated on the Plateau.²² Two groups of archaeologists, led by Prof. N. Polosmak and academician V. I. Molodin, surveyed 22 complexes of the Pazyryk Culture, including seven monuments with permafrost (**Fig. 7**).²³ Unlike the central part of the Altai Mountains, this section represents the periphery of the Pazyryk Culture, and findings made in it do not include burial complexes of the elite of Pazyryk society. The largest *kurgans*, excavated by N.V. Polosmak (first, the Kuturguntas *kurgan*),²⁴ belonged to the middle level of Pazyryk society at best.

However, thanks to the specific situation of the Plateau, including its difficulty of access and severe weather conditions, a significant number of the archaeological sites have remained in their primordial state. It is also more likely that the ice lenses they contain will survive global warming, given the severe climatic conditions on the Plateau. It should also be noted that pilot activities have been undertaken on the Ukok Plateau, with the aim of developing methods of geophysical monitoring for the identification of frozen zones in the Pazyryk *kurgans*.²⁵ These methods were subsequently successfully applied in the survey carried out under the Russia-Germany-Mongolia project, which aimed to identify and excavate frozen tombs in the Mongolian Altai.²⁶ These considerations all go to show that the

Plateau is a very promising area for carrying out multidisciplinary surveys of frozen burial complexes. Thanks to improvements in geophysical methods, it is possible that monitoring of the Plateau could help identify complexes with frozen areas, as well as determine the level of threat they are exposed to, with a view to conducting salvage excavations of these unique monuments.

However, a major issue in the conservation of the archaeological heritage is the lack of an inventory of the archaeological monuments of the Altai Mountains in the Russian Federation, as well as of those in Kazakhstan, Mongolia and China. In fact, surveys have only been undertaken in some selected areas. Data are scattered through various, often difficult-to-access publications, and they remain partial, often collected without topographical references or reliable links to a coordinates system.

A good example of a modern archaeological map of the region is the inventory of the archaeological monuments of the Ukok Plateau prepared by scholars at the Institute of Archaeology and Ethnography of the Siberian Branch of the Russian Academy of Science.²⁷ This map includes more than 400 properties from various times and cultures, linked on a reliable topographic basis and accompanied by an account of the cultural and historical processes that have taken place in this region of Asia, from the early human populations in the region (in the Upper Palaeolithic) to the ethnographic situation that exists today.

A second good example of surveys aiming to produce an archaeological map of a large region are the activities undertaken within the UNESCO

project with the expertise of the University of Ghent in Belgium and the Gorno-Altai University (Russian Federation) in the Kosh-Agach region of the Altai Republic. A significant portion of the results of these activities has been published and put into scientific circulation.²⁸

Evidently, the creation of an archaeological map of the Altai Mountains should be the main aim of the authorities responsible for the preservation of the cultural heritage, as well as of the scientific communities of all the countries having territory in this mountainous region. When this work has been done, other issues can be considered in a practical rather than in a theoretical spirit, such as documenting and preserving the extremely rich scientific and cultural heritage concentrated in this region. This includes the frozen burial complexes of the Pazyryk Culture that are situated on the territories of different states, as well as the larger variety of other scientific and cultural-heritage sites that equally require studying and preservation. ■

Translated from Russian by Lise SELLEM

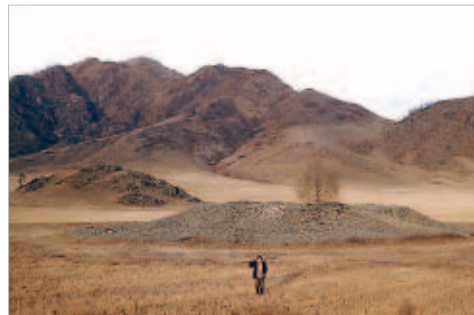


Fig. 5 A giant Pazyryk Culture *kurgan* in the Karakol Valley.



Fig. 7 Excavation of the Pazyryk Culture Upper-Kaldjin-II necropolis.

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Culture and Landscape in the High Altai

Esther JACOBSON-TEPPER
University of Oregon, USA

THE GLACIATED PEAKS known as *Tavan Bogd* (the Five Masters) punctuate the juncture of Mongolia, Russia and China. They also define the spatial centre of a rich cultural tradition going back at least to the upper Paleolithic period and marked, at least in part, by a striking interconnection between archaeological monuments and the larger landscape. This tradition is best known through the burials preserved in the high mountainous areas of Tuva, the Russian Altai, eastern Kazakhstan and western Mongolia and associated with an emerging nomadic tradition within the Altai-Sayan uplands during the first millennium (9th – 3rd c.) BCE.

Yet despite the fame surrounding their cultural remains, the early Altai-Sayan nomads should be understood as only one segment of a long cultural chain centred in the high Altai but extending east, north, west and south from the high river valleys and ridges into surrounding mountain steppe. An examination of that longer tradition, extending over thousands of years, allows us to understand the particular interconnection of archaeology and landscape within the Altai mountain region.

At present, the landscape centred on Tavan Bogd is marked by high, rocky ridges crested by snowfields and glaciers. Valleys are deep and their sidewalls precipitous. These features reflect the ancient advance and retreat of glaciers that left behind scraped and polished bedrock along upper slopes and high plains strewn with boulders. The rocky aspect of the Altai is most pronounced within Mongolia. In that part of the Altai uplift, rivers flowing down from the snow and glacier-draped mountains create ribbons of green meandering through an otherwise harshly dry environment. Only along the border between the Mongolian and Chinese Altai does one find larch forests and occasional lush mountain meadows (Fig. 1).

By contrast, the Russian, Chinese and Kazakh Altai receive more moisture than falls on the Mongolian side of the Altai ridge. These regions



are consequently more heavily forested and the steppe regions greener. What we now find is not, however, what has always existed: the present environmental character of the Altai region, with its variations on all international sides of the ridge, has existed for approximately 3,000 years. Earlier, during the middle Holocene, much of this region was covered with forests of pine, larch, and spruce, but by the Bronze Age (2nd millennium BCE), forests were retreating in the Mongolian Altai and in the Russian Altai's Kosh Agach region abutting Mongolia on the northwest.

Within the present mountainous steppe and forest steppe zone, agriculture other than that involving the gathering of wild grasses has probably never existed on a measurable scale. Hunting, fishing and gathering must have supported human communities down through the middle Holocene. With the onset of the late Holocene (c. 4000 cal. yrs BP), characterized by a drier and cooler environment and by the gradual replacement of forests by grassland, herding began to supplement these economic activities. By the end of the 3rd millennium BCE – that period coinciding with the emergence of the Bronze Age – climate change had resulted in an environment far more hospitable to semi-nomadic, horse-dependent pastoralism.

Fig. 1 Turkic burial and larch forests in the Valley of Elt Gol, Bayan Ölgii aimag, Mongolia.

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Fig. 2 Petroglyph showing elk and aurochs. Late Pleistocene or Early Holocene, Aral Tolgoi, Bayan Ölgii aimag, Mongolia.

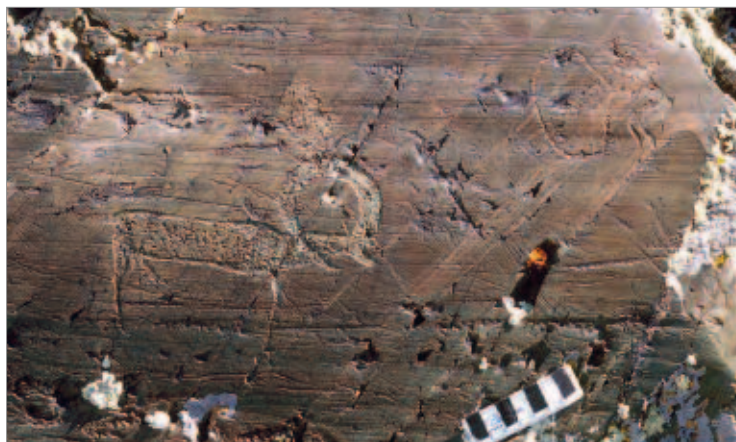
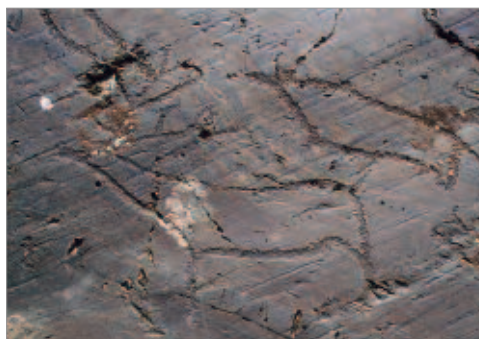
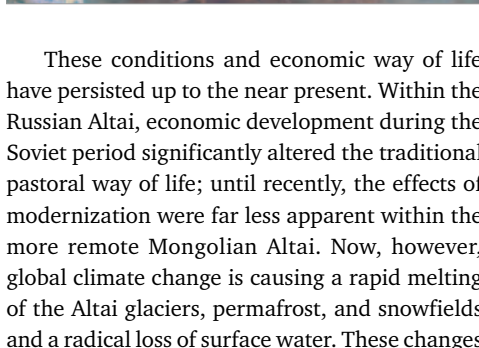


Fig. 3 Petroglyph hunting scene. Bronze Age, Tsagaan Salaa I, Bayan Ölgii aimag, Mongolia.



Fig. 4 Petroglyph caravan scene. Late Bronze Age, Upper Tsagaan Gol complex, Bayan Ölgii aimag, Mongolia.



Photos: © Gary Tepfer.

These conditions and economic way of life have persisted up to the near present. Within the Russian Altai, economic development during the Soviet period significantly altered the traditional pastoral way of life; until recently, the effects of modernization were far less apparent within the more remote Mongolian Altai. Now, however, global climate change is causing a rapid melting of the Altai glaciers, permafrost, and snowfields and a radical loss of surface water. These changes together with stresses created by the ramifications of our global economy threaten the traditional way of life and the steppe environment that

has supported it. This is particularly evident in the Mongolian Altai.

There are no recognized surface monuments from the late Paleolithic period, but a few concentrations of rock-pecked images offer glimpses into the culture of Stone Age peoples. The concentration of such rock art at Aral Tolgoi and the complex of Tsagaan Salaa / Baga Oigor – both within the Mongolian Altai – reflect a concern with large animals such as mammoth, aurochs (wild cattle) and horses represented in a static, profile style (Fig. 2).

These images are echoed in the small Kalgut site on the Ukok Plateau – close, as the crow flies, to the Mongolian complexes. In these complexes, in that of the Upper Tsagaan Gol under the eastern slopes of Tavan Bogd, and scattered throughout other sites in the high Mongolian Altai, rock-pecked imagery of the late Stone Age (early-middle Holocene) continued to reflect the cultural and economic significance of large game animals (elk, aurochs, horses, and bear) and a general lack of interest in the representation of human activities. This changed, however, during the Bronze Age (2nd millennium BCE). Imagery from that period, recorded in the Mongolian and Russian Altai, suggests an increasing density of human communities based on animal husbandry and a growing interest in self-representation. Hunting remained an important theme in Bronze Age rock art (Fig. 3), but it was supplemented by scenes of the herding of large animals, people driving wheeled vehicles, families caravanning (Fig. 4), and even by scenes of raids and conflict. “Hero hunters” and hunters facing off large animals suggest the emergence of an heroic epic tradition. Similarly expressive of cultural texture is the sheer variety of distinctive and expressive styles of representation.

The wealth of cultural expression reflected in Bronze Age rock art is evident, also, in surface monuments tentatively assigned to that period. Massive standing stones aligned within stone frames from north to south are among the most striking of these monuments (Fig. 5). No less impressive are the so-called *khirigsuur* (“khereksur”) characterized by stone mounds surrounded by circular or squared “walls” embellished by radii to the north, south, east and west, and by small stone circles (Fig. 6).

These structures and a great variety of others enlarging on the themes of circle, mound and



Fig. 5 Massive Bronze Age standing stones. Valley of Khovd Gol, Bayan Ölgii aimag, Mongolia.



Fig. 6 Bronze Age *khirigsuur* seen from north-northwest. Khara Zharyk, Bayan Ölgii aimag, Mongolia.

vertical axis indicate the development of a rich ritual life within the Bronze Age. It is still uncertain whether any or all of the mounded structures were intended as burials, or whether they were erected first for ritual purposes but later became *de facto* burial sites. Another surface structure that vividly picks out the shape and internal divisions of an actual dwelling points in the direction of virtual burials – that is, of structures that commemorated a person’s death and “gave” that person a dwelling in the next world. The actual placement of the bodies for which those dwellings were intended remains a mystery.

Surface structures from the Bronze Age reflect a keen awareness of the surrounding landscape, of directionality and of aspect. The powerful forms of standing stones and their placement at passes, against cliffs, overlooking the flow of rivers or at the opening of small valleys into large ones suggest a preoccupation with the integration of the cardinal directions and particular places in the landscape. Within the Mongolian Altai, one repeatedly finds that the placement of *khirigsuur* may correspond to impressive views out to east-flowing rivers, to snow-crested ridges (Fig. 6), or to distant mountains considered to be sacred. At the same time, the *khirigsuur* reaffirm the expansive openness of high plains and their radii and “entrances” reflect a concern for directionality.

The *khirigsuur* become, in effect, diagrams relating cosmos and quadrant, not unlike mandala. A particular form of massive mound, sometimes with a marked collar or rim, appears regularly on terraces facing out to rivers or to high mountains. “Dwellings” are characterized by “entrances” on the west marked by low stones; the greater significance of the east is indicated by larger standing stones of an unusual texture or colouration. Indeed, in all cases one senses a meticulous sensibility to the colour and texture of

stone. Obviously, local builders of these monuments would have wished to use the stones close at hand; but in many cases it is no less certain that they deliberately imported stones contrasting in colouration and marked by unusual textures: for example, to crown a *khirigsuur*, or to mark the “entrances” into the *khirigsuur* or its four corners. Although we look at these surface structures in terms of the typologies of archaeology, a more careful consideration would indicate that they also convey a keen sense of style and the beauty of material; that they are, in other words, indicative of an expressive culture.

When we come down to the age of the early nomads represented so vividly by finds from Arzhan, Pazyryk, Ukok, Berel and the upper Oigor drainage in Mongolia, we find that images and structures present variations on earlier themes. The rock art of that period is still organized primarily around hunts and individual animals, but the execution is frequently more stylized (Fig. 7) and conventionalized than one finds in the Bronze Age. The women and horse-drawn carts seen regularly within earlier rock art virtually disappear while riders appear more often.

Fig. 7 Late Bronze-Early Iron Age hunter and wild goats. Baga Oigor IV, Bayan Ölgii aimag, Mongolia.

Photos: © Gary Tepfer.

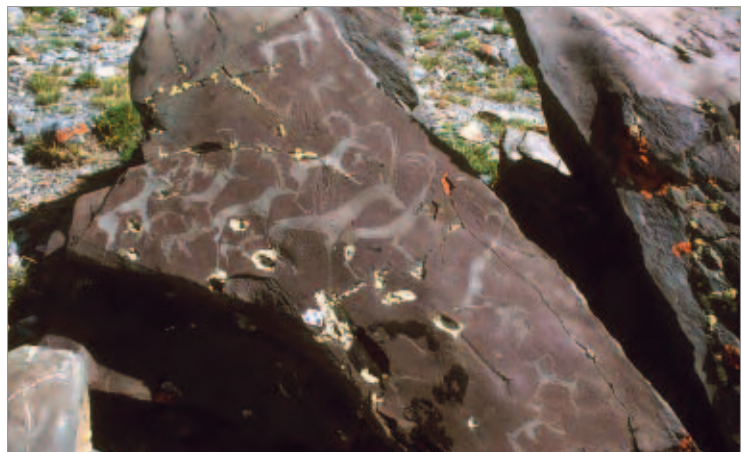




Fig. 8 Turkic period memorial enclosure, image stone and *balbal* seen from the west. Valley of the Sogoo Gol, Bayan Ölgii aimag, Mongolia.
© Gary Tepfer.

In the case of surface structures, we continue to find new variations on old typological themes, as well as a ritual preoccupation with the cardinal directions. Burial mounds are organized in lines running roughly from north to south, while small standing stones (*balbal*) are often set in straight lines running out from the east side of the mounds. In many cases, the eastmost of these stones are marked by two specific elements: unusual colouration and texture and a carving that suggests a human form facing to the east.

This shaped aspect recalls the particular kind of stone known as “deer stone,” which appeared in a number of forms across north Mongolia, Tuva, the Altai Republic and into northern China during the late Bronze and early Iron Ages. Within the Mongolian Altai, there are at least five “deer stones” embellished with a human face and one known case in the Chuya steppe. Like the simple standing stones, the shaped “deer stones”, and the *balbal*, these stones with human faces reaffirm the significance of the direction east. This and the general concern for directionality coincide with all the indications of the actual early nomadic burial ritual.

Monuments of the Hunnu (Xiongnu) period (late first millennium BCE – 5th c. CE) have been only occasionally attested in the high Altai region, and we are not certain which rock art, if any, may be associated with that period of nomadic culture. Materials relating to the Turkic period (c. early 6th – late 8th c. CE and later)

are much clearer. They indicate that the ritual preoccupations that seem to have shaped the more ancient archaeology of the Altai reached their final expressive form with the archaeology of the Turks. Rock-pecked or engraved images indicate a preoccupation with riding, hunting and combat, as well as a great delight in the apparel and weaponry of the mounted rider.

In addition to a burial ritual remarkably similar to that of the Early Iron Age nomads, the Turks built framed memorial enclosures aligned to the cardinal directions and displaying, also, an acute interest in contrasts of stone colouration and texture. In some cases these enclosures would include within their frames or on their east side tall stones of a vaguely anthropomorphic reference. That these simple stones were intended to refer to human figures is indicated by the many Turkic figures that take their place on the east side of the commemoration structure. Within the Russian Altai, most of these figures have been removed from their original settings. Within the Mongolian Altai, however, most can still be found *in situ* and obeying a specific formula: the figures always appear to be male warriors, and with their right hand they hold a cup or vessel before their chest, while with their left hand they grasp a belt or a hanging sword. Embellished by earrings, small beards and fine mustaches, these figures look steadfastly to the east. In almost all cases their view was once extended to the east by a long row of small standing stones (*balbal*) (Fig. 8).

In effect, the great period of Altai archaeology ends with the Turkic period. Even with that, however, the cultures that left vivid traces across the high Altai region created a steady tradition lasting many thousands of years. Stone monuments and rock-pecked and engraved images cover the high Altai like a fine cultural web. Yet, despite its solidity, that stone is vulnerable to impacts brought into the Altai region by climate change and a globalized economy. With the melting of the permafrost, burials are sinking and their preserved contents are deteriorating. Standing stones and Turkic images are literally disappearing into the earth. The influx of tourists into the high mountain regions has also resulted in the degradation and theft of unguarded materials. In these several respects, the integrity of the Altai’s ancient cultural heritage is now seriously threatened. ■

Ancient Altai Culture and its Relationship to Historical Asian Civilizations

Henri-Paul FRANCFORT

Directeur de recherche

Centre national de la recherche scientifique (CNRS), France

THE ALTAI IS LOCATED within the very large and high mountains of the Eurasian continent. However, the Altai never functioned as a complete barrier, and it was never either a noman's land or a totally inhospitable environment. The ancient Altai cultures began during the glacial and post-glacial age, as has been demonstrated by discoveries of archaeological remains and examples of rock art in the region. However, the focus here is on the period of the Iron Age, called the Age of the Ancient Nomads. This latter period, dating from c. 1,000 to 200 BCE, is named the "Pazyryk Culture" after its most brilliant phase that extended from c. 450 to 250 BCE according to the latest research, and it is this short but extremely important period that will be discussed.

The Pazyryk Culture was contemporary with the fall of the Achaemenid Empire in 329 BCE, conquered by the Greeks up to Bactria, and it was contemporary, too, with many important events then taking place in China with the advent of the Warring States period. Discovered as a result of the excavations of *kurgans* since the 1920s, the Pazyryk Culture was characterized by the replacement of the old hunting mode of subsistence by mounted pastoral nomadism. Pastoralists inhabited the wide meadows and valleys of the Altai during late Antiquity and the Middle Ages, and they have lived in the Altai ever since. Pastoral nomadism is a way of life that permits large demographic expansion in a landscape where agriculture is not possible and where predation – hunting and gathering – is not very productive.

However, one must also take into consideration the important fact that all ancient nomadic societies in the Old World were in contact with agricultural sedentary societies, kingdoms and empires, and this is precisely what occurred during the Age of the Ancient Nomads. The splendid discoveries made in the frozen tombs of the Altai

show connections with the steppe cultures to the north and west, as well as with north-western and central China and, in the west, with Persia and Greece. The exceptional function of the Altai, working as a kind of cultural hub, would have remained completely unknown had it not been for the finds made in the frozen burial sites.

On the steppe side, the ancient Altai nomads shared many aspects of their way of life and material culture with their neighbours, as is revealed through their burial customs. It is clear that ordinary people were not interred, or at least were not interred in large burial sites. Members of the elite, on the other hand, were buried in large mounds, or *kurgans*, along with their belongings, horses and sometimes attendants. This practice, along with other elements, is common to *kurgans* found from the Yellow River to the Black Sea, and it can be seen, for instance, in the so-called "Scythian triad" of weaponry, horsemanship and steppe art. Common items of dress include tunics, trousers and high pointed

Fig. 1 Reconstruction of a steppe-style horned horse's head discovered during excavation of the Berel' 11 *kurgan*.

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Fig. 2 Bronze nail from the sarcophagus lid of the Berel' 11 *kurgan* showing steppe-style crested griffin.



Fig. 3 Typical steppe-style gilded wooden horse pendant in the shape of an elk with lobed antlers from the Berel' 11 *kurgan*, a motif transmitted as far as China.



Photos: © Mission Archéologique Française en Asie Centrale (CNRS-MAE) H.-P. Francfort.

hoods, these also being depicted in Achaemenid reliefs and in finds made in Ak-Alakha and at the Issyk burial site in Kazakhstan.

The climatic conditions of the Altai have caused the freezing of organic materials in the large and deep burials of the tombs, thereby preserving a rich and colourful picture of Scythian life and of the Scythians' long-distance relationships. The nomadic steppe tradition of Altai art can be seen in the wooden, leather and textile artifacts found in the tombs, as well as in the mummies themselves and in their dress, headgear and tattoos. Four iconographic motifs particularly illustrate this tradition and the specific character of Altai artistic expression. These four motifs are the horned horse, the flying "beaked" deer, the crested griffin and the elk with lobed antlers.

The horned horse is an ancient, composite image consisting of a horse with horns or antlers, and it is found among ancient rock-art images dating from the late Bronze Age, including those found in the Altai. The bodies of real horses were found in the Scythian burial sites, these wearing masks with elaborate deer or elk antlers or ibex horns (Fig.1). The motif of the flying "beaked" deer is also an ancient image of the steppe, originating in rock-art and stele engravings, the beak-like feature being meant either as the beak of a bird or as a sharp stylization of the animal's muzzle. Curiously, this motif is not used on artifacts, but is found used in the tattoos on the bodies of some Pazyryk individuals, where it features what is clearly the beak of a bird of prey. Another

typical motif of the Pazyryk Culture is the crested griffin, which originates in the images of birds of prey that are so numerous in all steppe art (Fig. 2). The elk with lobed antlers is another typical image, this one also being adopted by other cultures in north-western China (Fig. 3). These observations confirm how deeply rooted Altai nomadic culture was in common steppe tradition, even as it developed its own individuality.

Steppe art is a local tradition, and the discoveries made at Arzhan-1 and Arzhan-2 (Tuva), together with the recent Chilikty finds from Kazakhstan, confirm that during its early phase from the early 1st millennium BCE (the Arzhan-Maiemir phase, according to Gryaznov) to the 6th to 5th centuries this was a purely local art concentrated in the Altai. However, during the 5th and 4th centuries BCE changes took place that led to enhanced exchanges with other cultural and artistic traditions. These exchanges seem to have increased further over subsequent centuries owing to Achaemenid, Greek and Chinese expansion in the steppes, as well as to the mobility of the nomads themselves.

Nomadic cultures developed during the same period on the Chinese side of the Altai and in north-western China, Xinjiang, Gansu, Qinghai and Inner Mongolia. It seems clear that iconographic motifs found among such cultures were inspired by the art of the Altai nomads. The elk head with lobed antlers, for example, found in Ningxia, was definitely derived from the Altai, as was the typical association of a palmetto with two flanking raptor heads, though, as we shall see,



the latter feature ultimately originates in Achaemenid art. Other, more specific motifs include the one termed the “cloud” in China, which has been found at Jiaohe and Goubei in Xinjiang, along with the motif of a bird’s scaly feathers. Both motifs first appeared at Tuekta-1 (400-440 BCE) in the Altai during an early phase of the Pazyryk Culture.

A further typically Altai motif, the “reversed hindquarters” of animals (Fig. 4), was also adopted by Chinese artists. This has been found from Xinjiang (at Alagou, 3rd–2nd c. BCE) to Xigoupan in Inner Mongolia (2nd century BCE), but its most ancient occurrence is in tattoos of the Pazyryk Culture (c. 300 BCE). This motif was used in otherwise purely Chinese pieces, such as in a toilet box belonging to Princess Dou Wan (d. 113–104 BCE) from Macheng (Hebei) and in the painted coffin of the Marquise of Dai (dated to shortly after 168 BCE) from Mawangdui, Changsha (Hunan). The motif disappears from Chinese art during the 1st century BCE. More generally, it has also been observed that the steppe cultures transmitted other artistic elements to Chinese tradition, such as conventions for landscape representation and the image of a chariot in profile. In many cases, such transmission involves both the transmission of the ancient steppe tradition and that of motifs from the Middle East (as is discussed below).

Chinese crafts were also appreciated by members of the Altai elite, with Chou and Mashan silks having been found in Pazyryk-5 (c. 250 BCE), together with a bronze mirror. Chinese Chou silk

featuring phoenix-type embroidery used by the Pazyryk Culture has been found in Alagou in the Tian Shan, this also dating from the early 3rd century BCE.

On the Middle Eastern side, the adoption and transformation of Achaemenid and Greek motifs by the Pazyryk Culture is striking. Main finds come from the Pazyryk-1 and 2 (295-300 BCE), Berel’ II (293-294 BCE), Ak-Alakha-3 *kurgan* 1 (274 BCE) and Pazyryk-5 (250 BCE) *kurgans*. Whether or not related to the conquest of Asia by Alexander the Great, this reflects the fact that the main Achaemenid influence occurred after the fall of the Persian Empire to Greek forces in 329 BCE. However, Greek influence is not always easy to trace, and it is not certain whether it came via the Empire’s eastern provinces (Bactria) or via the steppes from the Graeco-Scythian provinces of the Black Sea.

Achaemenid influence appears in the non-figurative ornaments used on horse trappings, such as the rosette, palmettos, lotus, scroll band, waves, egg or tongue band. A few of these patterns first appeared in trappings found at Bashadar-2 and Tuekta-1, where local steppe decorative ornamental shapes (dot-comma or eye-beak, beads) largely dominate. However, from the time of the Pazyryk-1, Berel’ and Ukok *kurgans* to that of Pazyryk-5, a selection of patterns was made by the Altai artists that did not change much over time, and the bead-and-reel motif, for example, was never widely adopted. Palmetto or lotus patterns can be seen on the bridles of six horses from Pazyryk-1, along with one from

Fig. 4 Wooden belt plaque from the Berel’ 11 *kurgan* showing a tiger attacking a deer and typical steppe-style reversed hind-quarters, a motif transmitted as far as China.

Fig. 5 Wooden horse pendant in the shape of an Achaemenian lotus bud from the Berel’ 11 *kurgan*.

Fig. 6 Gilded wooden horse pendant from the Berel’ 11 *kurgan* in the shape of an Achaemenian hairy lion, here transformed into a mouflon in the beak of a griffin.

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Fig. 7 The Berel' 11 kurgan.

Fig. 11 Wooden coffin ornament from the Berel' 11 kurgan in the shape of an Achaemenian sphinx transformed in steppe style.

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Pazyryk-5, one from Pazyryk-2 and one from Ak-Alakha-1 kurgan 1. The bridles of four horses from Ak-Alakha-3 kurgan 1 and two from Berel'-11 also feature this motif. Achaemenid-looking patterns also appear on various items of furniture, dress and ornaments.

At the time of the Pazyryk-1 and 2 kurgans, horse trappings and felt decorations begin to display Persian-inspired figurative motifs, whether natural or mythical. These include animal elements, such as geese or swans with their



heads turned back, lion heads with hairy manes (**Fig. 5**), or the heads of wild sheep with chevrons on their horns (**Fig. 6**), as well as the faces of bearded men (the so-called Bes Mask).

Possibly imported belt plaques depict lion and ibex in Pazyryk-2. From the same kurgan, an image of a horned lion is used to decorate a wooden torque. In the fifth kurgan, imported textiles and a famous carpet come from the Persian Empire, all possibly manufactured in Bactria. It should also be noted that the lotus motif was used in Bactria in the Hellenistic (3rd – 2nd c. BCE) temple of Ai Khanoum in Afghanistan. Some of the motifs found in these kurgans seem to be of Greek or Greco-Persian origin, including basic compositions like a satyr head with a palmetto-looking hair-dress (kurgan 1), the scalloped mane of a griffin (kurgan 1) and a long-necked acanthus with a griffin (kurgan 1). The joint excavation of the Berel'-11 kurgan in Kazakhstan (**Fig. 7**) by the Margulan Institute in Kazakhstan, the CNRS in France, and the Centro Studi Ricerche Ligabue (CRSL) in Italy has added new elements to this picture in the shape of a Persepolitan griffin, a horned lion, a palmetto and bird, a head en face and body in profile, as well as images of lions and of a sphinx.

If we look at a typical Achaemenid Persepolitan wooden griffin with leather horns and wings, used to decorate the head of a horse (**Fig. 8**), it will be seen that this has been inspired by Persia, including its mane, ears, open beak and protruding eyes. The intermediary find was not found in Bactria, but instead was found at Chorasmia in the shape of the Persepolitan griffin head mould from Kalaly-Gyr.

A second example is the horned lion (**Fig. 9**). Here, we can trace the animal back to a Persepolis bas relief, where it is shown in a fight with the hero king, and from there to many representations on vessels such as rhytons, the handles of amphorae and on an Oxus Treasury aigrette. The animal's mane, horns, paws and scorpion tail are recognizably the same, and it appears in various forms in Pazyryk Culture, recalling the torque in the Siberian collection in the Hermitage Museum and a gigantic torque from Xinjiang. This image of a horned lion can be traced as far as Xinjiang, where it was used to decorate the legs of Scythian bronze cauldrons or offering tables. In Berel', however, the image is used in reduced form on wooden horse pendants, shown, on some pieces,



heads *en face* and the bodies in profile. Scholars who have studied the scene have drawn parallels with the art of north-west China in the Aluchaideng plaque tigers. However, if we simply look at the Persepolis Apadana relief, or at the Treasury of the Siphnians in Delphi in Greece, lions with heads *en face* and bodies in profile attacking a bull or a Greek hoplite can also be found. These date from the 6th–5th centuries BCE and are therefore definitely earlier than the Altai and Chinese pieces.

Wooden horse pendants decorated with images of horned lions heads *en face* and bodies in profile have also been found in Pazyryk-5, and these show clearly visible horns and scorpion tails. A similar stylistic transformation occurred at Berel'-II, where images of horned lions re-stylized in the manner of steppe art have been found both *en face* and in profile. The paws, horns, eyebrows, and muffle with a typical Persian drop pattern (Fig. 10) are clearly recognizable. The heads of such compositions are sometimes selected for ornaments, and lion heads of this sort, sometimes transformed into generic feline heads, are widespread in Asia.

A tattoo recently found on the chest of the buried man in the same Pazyryk-5 barrow has been thought to show an image of a tiger. Yet, the absence of stripes on the body of the animal and the contrast with the enormous mass of the mane

Fig. 9 Wooden horse pendant from the Berel' 11 kurgan in the shape of Achaemenian horned lions transformed in steppe style, a motif transmitted as far as China.

Fig. 8 Wooden horse-head ornament in the shape of a Persepolis-style Achaemenian griffin from the Berel' 11 kurgan.

Photos: © Mission Archéologique Française en Asie Centrale (CNRS-MAE) H.-P. Francfort.

as recumbent on a four-petal lyre-palmetto between the heads of long-necked birds of prey.

This palmetto and bird motif probably also originates in the Persian Empire, as can be seen from its use on a silver bowl from Armenia and on a Persepolis stone tray. However, here again it can be traced to China, being used in the Sino-Siberian art of the C. T. Loo Collection. Excavations of a burial at Chenyangchuan in Ningxia have also brought to light a similar bronze ornament.

Such patterns were selected out of the Persian ornamentation used in monumental or minor arts, such as textiles, court tableware and seals, and introduced into local material supports, artistic schemes and original compositions. Sometimes the patterns were reconstructed following the rules of local stylistic conventions, and their meaning was therefore more or less ornamental, rather than symbolic as it had been in the original use of such patterns in the Near Eastern arts.

One good example of this decomposition and re-composition of Achaemenid art in the Pazyryk Culture is found in the predation theme, where a beast of prey attacks an herbivorous animal with the head *en face* and body in profile. Recently, a tattoo was found on the hands of the female body found in Pazyryk-5, depicting two tigers and a leopard attacking a deer and an elk. In this image the rendering of the big cats by the artist puts the



and the eye depicted in profile in Near Eastern manner suggests instead that this is an image of a lion. Here, the adaptation of an Achaemenid motif into steppe art can again be seen, this time in the form of the body art practiced by the Altai peoples. In the Berel'-11 *kurgan*, the image of a Persian lion with head and eye in profile and a curling hairy mane, known from Iran and Pazyryk, has been transformed into a composition in which a bird of prey grasps the head of a wild sheep in its beak. Nevertheless, the composition retains the canonical proportions of the Achaemenid original, as well as a row of beads and curling mane. A transformed form of the Achaemenid sphinx was also found in Berel'-11 (Fig. 11).

Achaemenid-looking artifacts, whether imported or by inspiration, only appear in elite burials (except for one piece from *kurgan* 22 of

Justyd XII), and are seen on the dresses, artifacts and furniture, as well as on the trappings of the horses discovered in the burial pits near the funerary chambers. Most Achaemenid art in the Altai came from a process of selection of themes, motifs or stylistic elements by the ruling class and artists. The source of this process lay in the use of the objects (not monumental and courtly art, but horse trappings for a nomadic way of life), in the materials and techniques at hand (metal, wood, gold and tin worked by cutting, casting, hammering, etc.), and in the meaning of the images (ornamental or mythological).

The Achaemenid elements are very often reworked or reshaped according to the stylistic requirements of the local nomadic taste of the steppe, following old artistic traditions. However, the importance of Achaemenid art far into the steppes and late into the 3rd century until 250 BCE should not be underestimated. It appears at the end of the 4th century, having been almost completely absent from Central Asia before this date, as can be seen from artifacts found in Arzhan-2 (c. 600 BCE), Tuekta-1 (c. 440) and Chilikty. Similarly, the main period of exchange with the Chinese cultural area came after the 5th century.

The role of the Altai as a cultural hub in spite of its apparent isolation was determined by the prosperity of its pastoral population and possibly also by that population's control of mineral resources like gold and tin. The mobility and speed of its nomadic population during the ancient Iron Age, and its contacts with the expanding agrarian empires, created very original circumstances. But without the knowledge acquired from studying the modest non-elite burials, and from the preserved finds made in the aristocratic frozen burials, nothing of this history would have come down to us. This is why the conservation and study of this unique expression of the world's cultural heritage is such a vital task for the international community of scholars and for UNESCO and why it is a vital task, above all, for the governments and populations of the region, particularly now that this heritage is endangered by global warming and the thawing of the permafrost. ■

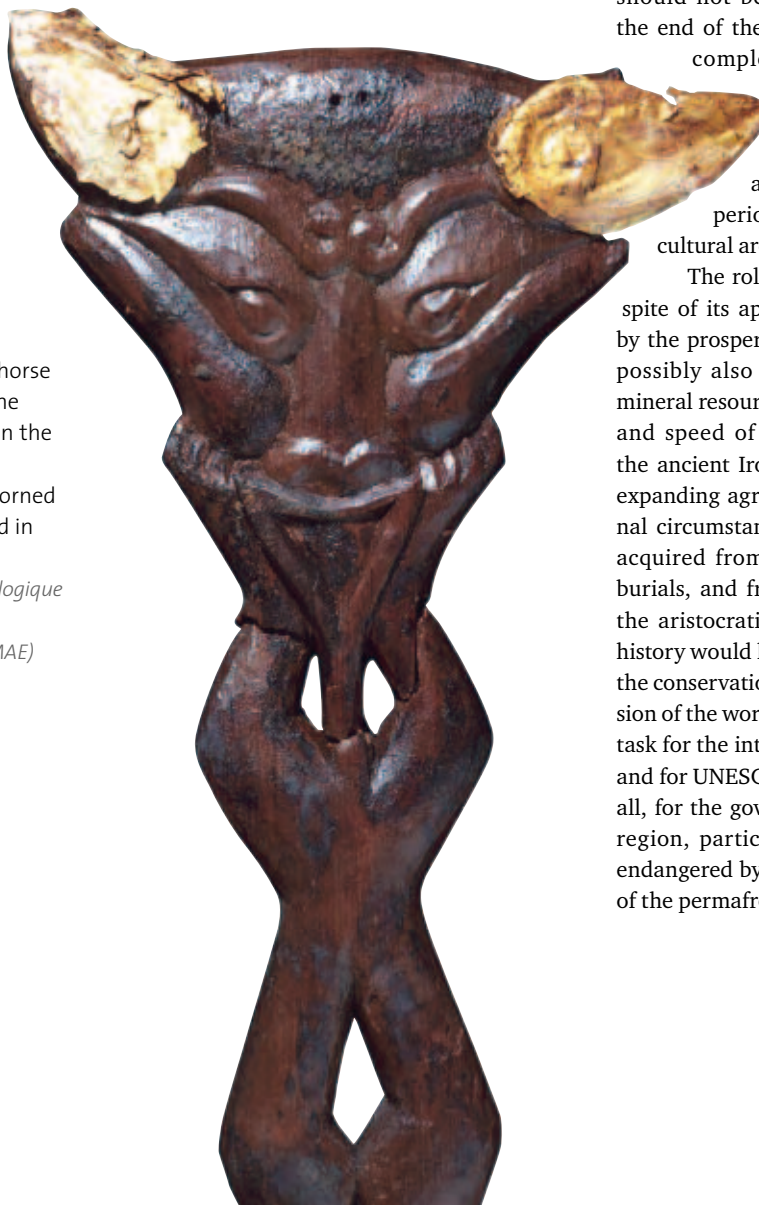


Fig. 10 Wooden horse pendant from the Berel' 11 *kurgan* in the shape of an Achaemenian horned lion transformed in steppe style.

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The Silk Roads and the Road of the Steppes: Eurasia and the Scythian World

Pierre CAMBON

Conservateur en chef
Musée Guimet, France

FOLLOWING the major foreign archaeological expeditions – Russian, British, German, French and Japanese – that took place in Chinese Tukestan (today's Xinjiang) between 1900 and 1914 against a background of imperial rivalries, the idea of the Silk Roads as one of the major routes of exchange between the western world, whether Indian or Iranian, Roman or Mediterranean, and the Far East or North East Asia, to which China appeared to be the gateway, appeared. This idea culminated in the Silk Roads programme launched by UNESCO in the 1990s and in the “Sérinde” exhibition held at the Grand Palais in Paris in 1995.

Avoiding the Taklamakan depression, two main routes joined Kashgar in the West with Dunhuang in the borderlands of China in the East. The older of these routes and the furthest south passed through Khotan and ran south through the foothills of the Himalayas, while the younger went through Aksou, the Quca oasis and the Turfan oasis before reaching China. This was above all a caravan route of the type evoked by Ibn Battuta in his travels, and is was also the route followed by Chinese pilgrims traveling to India in search of religious texts. It was this latter route that led to the expansion of Buddhism, which spread alongside the merchants and the first translators coming from Central Asia, Swat, or Afghanistan and that pivotal region that Aurel Stein called “Serindia” to produce a unique Buddhist form of art in the oases, whose style, codes and iconography influenced traditional Chinese Asia.

This region was conquered during the Han period by Chinese armies, lost during the period of the Six Dynasties and re-conquered under the Tang. It gave rise in the years that followed to the growth of ephemeral empires such as that of the Western Turks before the period of the Mongol invasions that overwhelmed China and the

Iranian world during the 12th century CE under Genghis Khan and his successors, which realized beyond his wildest dreams Alexander the Great's ambition of uniting East and West within a single empire.

Yet, if the “Silk Roads” in the sense in which this term is often understood today means Chinese Tukestan or contemporary Xinjiang, in other words, a frontier zone on the edge of empires, it nevertheless also denotes a sedentary world that has its own history. The world of the oases and the caravans is not that of the steppes and the nomads, the latter being left out of written history. For many centuries, only indirect echoes of this latter world reached us in the accounts left by ancient Greek authors or in Chinese annals, as well as in the later works of Arab travelers.

This world of movement recedes before us and is often compared to the sea or to an ocean whose boundaries are fluid and changing. Alexander the Great stopped at the boundaries of the sedentary world in Afghanistan and did not seek to push beyond the Oxus, following the Achaemenid example in this respect. However,

Fig. 1 Pendants known as “The King and the Dragons”, Afghanistan, Tilia tepe, Tomb II, 1st cent. Gold, turquoise, garnet and lapis-lazuli, 12.5 x 6.5 cm, MK 04.40.109. National Museum of Afghanistan © Thierry Ollivier / Musée Guimet.



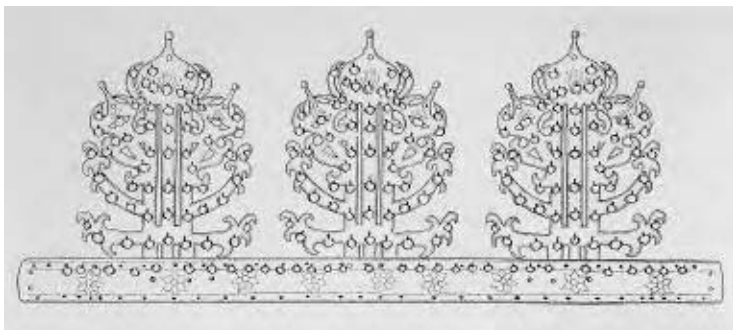
Fig. 5 The Tree of Life, Afghanistan, Tilia-Tepe. MK 04.40.400. National Museum of Afghanistan © Thierry Ollivier / Musée Guimet.



Fig. 2 Golden crown, Afghanistan, Tilia-Tepe, Tomb VI, Bactria, Northern Afghanistan, 1st century CE. Gold, 45 x 13 cm. MK 04.40.50. National Museum of Afghanistan © Thierry Ollivier / Musée Guimet.



Fig. 3 Graphic of the Shilla golden crown from Kyungju, Shilla Kingdom, 5th-6th century CE, Gilt Bronze, H: 59.5 cm; D. at base: 17 cm. MA 1642. National Museum of Korea © Thierry Ollivier / Musée Guimet.



the Scythians challenged him to come after them, and Quintus Curtius reports the threats that the Scythian ambassador contemptuously directed towards the young “Greek” conqueror.¹ Would you like to have us as your friends or your enemies? If the former, our neutrality can be depended upon. If the latter, you run a considerable risk because our territory runs from the Oxus to the Bosphorus and borders ancient Macedonia. “Bear in mind that we hold the keys to Asia and to Europe, and we can act as sentrymen guarding both empires.” The text is clear, and it shows that the author was perfectly aware that beside the sedentary world there existed the world of the steppes and the nomads, which had its own coherence, its own routes and its own forms of communication and circulation.

Russian expansionism from the 18th century onwards had also suggested the existence of this world, and the Greco-Scythian art of the borders of the Black Sea and the Cheronnese was displayed in the collection of Peter the Great, now in the Hermitage Museum in St. Petersburg.² This collection was put together during the push eastwards carried out by the Russian Empire beyond the Caucasus, and it was enriched by finds discovered during the first excavations of the *kurgans* carried out in Ukraine and in southern Russia.³ It bore witness to a hitherto unsuspected art in which gold seemed to be omnipresent and where the work was done with an extraordinary finesse, allying an animal style, often drawing on realism, with Greek influence from the banks of the Bosphorus.

While more oriental pieces from the Russian “Far East” in the same collection seemed more conceptual and obviously abstract in form, the Cheronnese pieces showed a perfect symbiosis of naturalism, dynamically handled themes, and the influence of Hellenic models. When compared to pieces from the Ordos and from Mongolia, which have more rigid, deliberately stylized lines, the Scythian art from the *kurgans* of southern Russia appears to be characterized by an overflowing of scenes and motifs in which animal art is mixed with elements from everyday life, fantasy and legendary creatures, and in which the outline of the thing seen is mixed with lines that play with curves and movement. This art uses an abundance of vivid colours, and it is characterized by a “barbarian” luxury in which semi-precious stones, turquoise from eastern Iran and garnets from Rajasthan are brought into play together.

This symphony of colours is displayed in the group of six tombs of Tillia Tepe, not far from Shebergan and the Afghan frontier. Finds made in these tombs show the same type of decoration in which realism blends with a decorative system of forms and lines. Yet, this “Scythian Gold”, found on Bactrian territory, displays local influences in the materials used (lapis-lazuli from Badakhshan, for example), and it also displays a blending of realism with a system of motifs: the general atmosphere is one in which Hellenism is mixed with Asian motifs, such as the lord of the animals dominating the dragons (Fig. 1). There is a widespread use of a motif in the form of a heart that dates from the 3rd millennium BCE onwards and that has been found in excavations carried out at Gonur in what today is Turkmenistan. The Scythians controlled the routes used to transport gold, and this gold came from the Altai.⁴ It was here, according to Herodotus, that this precious metal was mined under the symbolic protection of griffins – fantastic creatures of the Iranian-Greek world whose hybrid form distantly evokes that of dragons.

Tillia Tepe contained a golden crown whose extremely stylized floral form suggests a tree on which two birds are represented perched on the highest branches, their heads raised and turned upwards towards the sky. This motif is repeated in identical fashion on the four palmettes, with the exception of the middle one, whose swirling decoration seems to refer to the theme of the wheel. While Victor Sarianidi has sought analogues for this in the West (the Issyk kurgan in Kazakhstan near the Kargalinka River),⁵ he could not help but find a link with the Korean crowns of the Three Kingdoms period (1st to 7th c. CE), echoes of which can be found beyond the straits on the island of Kyushu, leading him to suggest a Bactrian influence on the crowns found in Korea. “*Their relationship to [the crown] of Tillia Tepe is so obvious,*” he writes, “*that it demonstrates the strong influence that Bactria must have had towards the East.*”⁶ (Fig. 2 and 3)

Since Sarianidi’s discovery, this comparison has been drawn in Japan as well, and from there in Korea itself,⁷ even if it is one that seems to pose insoluble difficulties, first in terms of the different time periods – Tillia Tepe is conventionally dated to the 1st century on the basis of coinage from Tiberias, while the Shilla tombs are dated in phases from the 4th to 6th centuries CE⁸ – and then



in terms of geography. Distance seems to present a logical difficulty, all the more so since the Shilla kingdom was the most technically backward and the most restricted to the south-east of the Three Kingdoms that divided the Korean Peninsula at the time, as well as the one that was most firmly closed to Chinese influence for the longest period. It was not converted to Buddhism until 524, in other words nearly two centuries after the Paekche and the Koguryo, and only a few years before the Japanese archipelago.

For Li Ogg, the relationship cannot be rationally proven, and resemblance is not proof. For this author, in order to prove Korean influence the correct path does not lead through Central Asia but rather through Siberia, and this should be explored instead of looking for a hypothetical Scythian route via the Silk Roads. “*It seems impossible,*” he writes, “*to trace a route of transmission going from Central Asia to Korea.*”⁹ Drawing upon German studies that for the first time connected the Korean crowns with their Chaman equivalents found in Siberia in the work of Hentze carried out in 1933,¹⁰ Ogg emphasizes the importance of the

Fig. 4 Shilla Golden Diadem, Shilla Kingdom, 5th century CE. National Museum of Korea © Thierry Ollivier / Musée Guimet.



Fig. 6 Golden Necklace, Afghanistan, Tillia Tepe, Tomb II, 1st century CE. Gold, ivory colored in black, pearls diameter 1.8, 2.0, 2.4 cm. MK 04.40.111. National Museum of Afghanistan © Thierry Ollivier / Musée Guimet.



Fig. 7 Golden earrings from Pubuch-ong, Pomun-dong, Kyongju, Shilla Kingdom, 5th-6th century CE, Length 9.7 cm. National Museum of Korea © Thierry Ollivier / Musée Guimet.

Nordic route rather than a connection towards the West. This is confirmed by research in the same direction that draws attention to parallel beliefs and themes, such as those of the bird as the messenger of the soul, or the stag and the tree of life, which the Shilla crowns seem directly to echo in stylized form. “*The Shilla crowns display a strongly shamanistic character,*” Kim Won-yong

writes, “*and the striking similarity in basic idea to the Shaman diadems of the Yenisei region of Siberia must be emphasized.*”¹¹

Nevertheless, the debate is still open, all the more so as the Shilla tombs have been linked with those of the Altai in their design, configuration and the techniques used for burials, and Pak Young-sook emphasizes the unsettling connections between Shilla jewelry and that of the Scythian world.¹² Differences certainly exist – the wooden coffin is placed on the floor in Korea under a pile of stones covered by an earth mound, for example, while in Pazyryk the coffin lies in a pit that is dug out – but the general atmosphere of a nomadic people and a world of horsemen is the same. The same themes are found from Tillia Tepe to Kyongju, with the tree and the bird motif and the form of the crowns being similar, as is the general use of motifs often based on floral forms. The same techniques are also used, including the use of leaves of very fine gold with openwork decoration and round spangles that move with every movement (Fig. 4 and 5), as well as the use of granulation that enhances the design of pearls and motifs and a way of using inset stones or glass that creates lively contrasts (Fig. 6 and 7). This constitutes a whole world of forms that are seldom found in China and that are linked to nomadic migrations.

The fact that the Korean Peninsula was aware of the atmosphere of the steppe is eloquently shown by the use of dragon decoration on a belt buckle from Lolang, its granulation technique being specific to the steppe even if the piece is thought to have come from a Chinese garrison set up by the Han on Korean territory, at least if “classical” historiography is to be believed. (This, however, has been questioned by Pyongyang archaeologists, who consider it to be part of one of the first Korean kingdoms before the emergence of Koguryo.) It is curious that an identical buckle has also been found at Karashahr in Chinese Tukestan (Fig. 8 and 9).

In fact, the debate has for a long time been unconsciously biased since naturally China seemed to be a necessary route towards north-east Asia, and the Scythians were largely perceived as being a western people, something that is probably due to the ancient historians, without of course forgetting the discoveries made on the coasts of the Black Sea. Perspectives changed a little when recent research carried out in Siberia

revealed typically Scythian tombs from a date a lot earlier than had previously been imagined only a few kilometres from the Chinese frontier and Mongolia. Soon after the fall of the Berlin Wall, archaeological digs were stepped up in the Altai, being multiplied and internationalized with the opening up of Russia to joint research. While Japanese history begins in the Kōbun period and the history of Korea remains shrouded in mystery before the beginning of the present era, German-Russian excavations have discovered Arzhan 2 in the Tuva Republic, which is a tomb near west Saian that has remained intact and has been precisely dated to the 7th century BCE.¹³

This discovery, overturning what had previously been thought, emphasizes the existence of a world of the steppe that was much more organized than had previously been supposed. This was a world that had its own codes and was autonomous with regard to China and was much more fluid than might have been expected. Its centre of gravity was in Asia. Arzhan 2 is located far to the north, and its easterly situation, half way between Afghanistan and Korea, suggests a route of the steppes that went round China to the north, bearing out Baltrusaitis's ideas regarding exchanges that took place in the medieval period across Eurasia during the nomadic migrations. While the Turkic and Mongol worlds mixed together at the edges of the empires in Chinese Turkestan, the Scythians moved further to the north, and probably further to the east, than might have been thought from an early period onwards. A connection with north Asia is therefore not so absurd, above all if one remembers that Korean is considered to be an Uralo-Altaic language, in other words one that comes from the region between the Urals and the Altai.

Other worlds exist beyond that of the Scythians, and the echo of these is to be found in the legendary traditions referred to by the ancient authors: “*beyond the Issedones,*” reports Herodotus, “*live the one-eyed people, the Arimaspians. Beyond the Arimaspians are griffins that stand guard over gold, and beyond them are the Hyperboreans who extend all the way to the sea.*”¹⁴ While Scythia extended from the Bosphorus to the Altai, further to the north and east it was also in contact with mysterious regions, domains of cold and night, situated at the edges of the world. This idea was developed in almost identical fashion by Damastes in his



work “On the Peoples”: “*beyond the Scythians live the Issedones; and beyond these are the Arimaspians; beyond the Arimaspians are the Rhiplean Mountains on which the Borean wind blows (the north wind) and on which snow never falls, and beyond these mountains live the Hyperboreans who extend to the other sea.*”¹⁵

Fig. 8 and 9 Golden Buckle from Seogan-ri, Tomb IX, South Pyongan Province, 1st-2nd century CE, length 9.4 cm. National Museum of Korea © Thierry Ollivier / Musée Guimet.

To return to the subject more generally, nothing should be excluded in advance: since the Scythians occupied a territory that extended from the Danube to the Yenisei River, and since, going in the opposite direction, the origins of Korea lie in Siberia, it would be logical to imagine that contacts existed on the Altai side, and Pak Young-sook rightly raises this issue. Can it not be imagined that a branch of these nomadic peoples that once occupied Eurasia could have pushed its migratory movements further to the east and to the Korean Peninsula? Before the Three Kingdoms period, three ethnic groups existed in northern Korea in the 3rd century BCE, the Ye, the Maek and the Choson.¹⁶ The first two of these groups are thought of as having come from Baikal through China or Mongolia, while the last is still of unknown origin, even if it was the first group to have used iron and created the first state attested to in Korean history, Ko-Choson, before disappearing as a result first of Chinese pressure and later of that of the Yemaek.

Nothing is known, on the other hand, of what took place in the south before the emergence of the Shilla kingdom around 57 BCE.¹⁷ But, as Kwon Young-pil has remarked,¹⁸ the flying horse painted on the saddle of Ch'onmach'ong from Kyongju is not unlike the stylistic treatment given to animal art found among the Scythians, with its decoration of crescents or stylized blades that recall semi-precious stones set into a background of gold. This is a distant echo, perhaps, of population movements the epicentre of which seems to have been in the Altai, which itself served as the heart of the continent. It is as if Korea had been the ultimate destination of the route of the steppe and the final destination of this nomadic world that once occupied Eurasia.¹⁹

“Would it be too far-fetched,” asks Pak Young-sook, “to assume that these nomads and horse-riders dwelling in the vast Eurasian steppes did move eastwards, settling in various places, and finally reached the Korean peninsula, at the far end of the steppes?” ■

Translated from French by David TRESILIAN

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20. Pak Young-sook, op. cit., p. 47.



A Glimpse at the Project

OUTPUT 1: Thorough inventory of the frozen tombs and other archaeological remains

OUTPUT 2: Production of topographical and morphological maps of the frozen tombs

- Field campaign 2005: the Dzhazator Valley, Altai Republic, Russian Federation
- Field campaign 2006: Bukhtarma Valley and Berel', Kazakhstan
- Use of CORONA satellite images to pinpoint the tombs

OUTPUT 3: Establishment of an international network and sharing of knowledge and experience

- UNESCO Workshop *Preservation of the Frozen Tombs of the Altai Mountains: Strategies and Perspectives*, 28-31 March 2006, Gorno-Altai, Altai Republic, Russian Federation
- *International Conference on Scythian Archaeology and the Archaeology of the Altai Mountains*, 4-6 December 2006, Ghent, Belgium

OUTPUT 4: Capacity building for Russia and Kazakhstan through training

- Training in mapping technique through satellite images, 19 February-25 March 2007, Ghent University, Belgium

OUTPUT 5: Raising awareness on endangered frozen tombs and global climate change

- Exhibition *The Frozen Tombs of the Altai Mountains*, December 2006, Ghent University, Belgium
- *The Frozen Tombs of the Altai Mountains*, Catalogue of the Ghent exhibition, UNESCO World Heritage Centre and University of Ghent. (Ghent, 2006).
- Exhibition *Preservation of the Frozen Tombs of the Altai Mountains*, April 2008, UNESCO, Paris, France.
- *Preservation of the Frozen Tombs of the Altai Mountain*, Promotional brochure of the project, UNESCO Publications. (Paris, 2008).
- Various articles in the *World Heritage Review* and other periodic journals

Left Group picture taken at the Ghent Conference, 4-6 December 2006, Belgium.

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Top Conference in Gorno-Altai, members on excursion in the Karakol Valley visiting the Bashadar *kurgan*, March 2006.

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Bottom Conference in Gorno-Altai, March 2006.

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CHAPTER 2

UNESCO PROJECT *PRESERVATION OF FROZEN TOMBS OF THE ALTAI MOUNTAINS*



Background to UNESCO Preservation of the Frozen Tombs of the Altai Mountains Project and Perspectives for Transboundary Protection through the World Heritage Convention

Junhi HAN

World Heritage Centre, Culture, UNESCO

Background to UNESCO Preservation of the Frozen Tombs of the Altai Mountains Project

The towering, jagged Altai Mountains stretch some 2,100 km across China, Mongolia, Russia and Kazakhstan, the Russian section of this mountain range having been inscribed as a natural site on the World Heritage List in 1998. The area inscribed includes Altaisky Zapovednik and a buffer zone around Lake Teletskoye, as well as Katunsky Zapovednik and a buffer zone around Mount Belukha. It also includes the Ukok Quiet Zone on the Ukok Plateau.

The region represents the most complete sequence of altitudinal vegetation zones in central Siberia, ranging from steppe to forest-steppe and mixed forest and sub-alpine vegetation to alpine vegetation. It is also an important habitat for endangered animal species, such as the snow leopard. However, although the Altai Mountains were inscribed for their outstanding natural value on the World Heritage List, their cultural value should also by no means be underestimated (Fig. 1).

This is so because the Altai Mountains bear unique witness to the ancient Scythian culture that flourished in the Eurasian steppe during the 1st millennium BCE. The Scythians and other contemporary tribes in the Eurasian Steppe developed a distinct nomadic way of life that was homogenous throughout the Eurasian steppe from the Black Sea area to the Mongolian plains, and they interacted with neighbouring civilizations in China, India, Iran, Mesopotamia and Greece.

As the Scythians left little built heritage behind them and no written records, there are only two sources of information that can provide us with information about this nomadic civiliza-



tion today. The first is the description left by the Ancient Greek historian Herodotus, who devoted the fourth book of his *Histories* to the Scythians. The second is the archaeological sites, namely the Scythian burial mounds, or *kurgans*, that still dot the landscape and the artefacts that these contain (Fig. 2).

Often very well conserved, the *kurgans* found in the Altai Mountains are of the utmost importance as a source of information on ancient Scythian civilization. The local climate, together with the particular way the *kurgans* were constructed, created ideal conditions for their preservation. When rain seeped into the tombs it froze and never thawed. As a result, all the materials buried in the tombs – metal objects, gold and pottery, and organic materials such as wood, leather, textiles and even the mummified bodies of humans and sacrificed horses along with their gears such as harness and saddles – have been preserved intact over the millennia. To this day, the only frozen tombs discovered anywhere in the world are those found in the Altai Mountains.

Many 19th-century scholars were sceptical of the description of the Scythians given by Herodotus, in spite of numerous archaeological discoveries showing that as a witness he was conscientious and trustworthy. Now the organic



Fig. 1. The highest peaks of the Altai Mountains: Tavan Bogd in the Mongolian section of the Altai.

Fig. 2. *Kurgans* lying north to south in the Mongolian section of the Altai.

Photos: © Gary Tepfer.

Left Terminal: Griffin Holding a Stag's Head in its Beak. Wood and leather; carved. H. 23 cm Pazyryk Culture. 5th century BC. Inv.no. 1684/169. © The State Hermitage Museum, St. Petersburg.

Fig. 3. Pile Carpet.
Wool; knot technique.
183 x 200 cm.
Pazyryk Culture.
5th-4th century BCE.
Inv.no.1687/93.
© The State Hermitage
Museum, St. Petersburg.



material yielded by the frozen tombs of the Altai has confirmed Herodotus' accounts of Scythian culture. Occupation, dress, weapons, as well as customs such as the embalment of the corpses of chieftains, burial with a concubine, purifying after burial, and scalping of slain enemies are confirmed by study of the artefacts from the frozen tombs in the Altai Mountains. This information could not have been determined by the research made on the Scythian *kurgans* in the Black Sea region alone.

Artefacts found during the excavation of the frozen tombs, in particular the organic materials, have shed light not only on the Scythians themselves, but also on the other civilizations with which they were in contact. The ancient Persian and Chinese textiles found in the frozen tombs of the Pazyryk period, for example, are older than any surviving examples of such textiles to be found in Persia or China (Fig. 3 and 4).

Research on the tombs has also revealed previously unknown connections between different regions during the second half of the 1st millennium BCE. Clothes discovered during a research project led by a Sino-French team (Institut du patrimoine et de l'archéologie du Xinjiang, A. Idrissi/CNRS-Ministry of Foreign Affairs, Debaine-Francfort) in the Taklamakan desert (Djouboulak-Koum), for example, show striking similarities to those found in frozen tombs from the Pazyryk Culture (6th to 3rd centuries BCE) in the Altai Mountains, thus showing the connections that already existed between these regions, and between East and West, long before this route became better known as the "Silk Roads".

The first discovery of frozen tombs in the Altai dates back to 1865 by the German-Russian academician V.V. Radloff in Berel and Katanda. However, modern scientific research on the Scythian tombs only started with S. Rudenko's

excavation of a series of large and small burial mounds, which took place between 1945 and 1949 in Pazyryk and Tuekta. The discovery of frozen materials in the Pazyryk tombs provided a good understanding of how the ice had formed within the tombs, and these early tombs yielded not only organic material such as carpets and wooden objects, but also perfectly preserved embalmed human bodies. Research on the contents of the frozen funerary chambers considerably broadened knowledge of nomadic culture of the Altai, which these mid-century scholars dubbed “Pazyryk Culture” (Fig. 5 and 6).

However, it was only in the 1990s that multi-disciplinary research using modern techniques began. Between 1990 and 1995, the Institute of Archaeology and Ethnography of the Siberian Branch of the Russian Academy of Science in Novosibirsk carried out excavations of *kurgans* on the Ukok Plateau in the Altai Mountains, including excavations at *kurgan* of Ak-Alakha 3 (N. Polosmak) and one of the *kurgans* in the Verkh-Kaldzhin necropolis (V. Molodin). The former *kurgan*, excavated in 1993, was the first barrow found that contained solely a woman, a beautifully tattooed corpse later known as the “Ice Maiden”. She was wearing some of the oldest items of female attire ever discovered from a nomadic society. In particular, her blouse, made of imported wild silk, provided evidence of long-distance trade of Pazyryk people of the Altai with India.

The French CNRS, led by H.-P. Francfort, and the Margulan Institute of Kazakhstan, led by Z. Samashev, in collaboration with the Italian Ligabue Research Centre, then excavated a rich frozen burial ground known as Berel’ II (4th-3rd centuries BCE) between 1998 and 2000. This excavation yielded two partially decomposed mummified bodies, along with 13 fully-harnessed horses that had apparently been sacrificed, thus providing much material for anthropological and paleopathological research as well as for research on DNA. Examination of the organic matter found in the horses’ stomachs, for example, revealed much about the history of the flora of the region, and even indicated in which season the tombs had been constructed.

The most recent research carried out on the Altai frozen tombs took place between 2004 and 2006 and was jointly conducted by the German Archaeological Institute (DAI), led by H. Parzinger, the Institute of Archaeology and



Ethnography of the Siberian Branch of the Russian Academy of Science, led by V. Molodin, and the Institute of Archaeology of the Mongolian Academy of Science, led by D. Zeveendorzh. This research took place in Bayan Olgy in the southern part of the Altai Mountains to the northwest of Mongolia. *Kurgan* Olon Kurin Gol 10 discovered during these excavations was of particular scientific interest, since it contained an intact burial chamber containing a mummified blond warrior who was fully dressed and equipped with a complete set of weapons (Fig. 7).

Through dendro-chronological study of the wood used for the burial chamber, the findings were identified as belonging to the Pazyryk Culture (early 3rd century BCE). The research thus provided valuable information regarding the extent of this ancient culture, which up until then had only been known in the northern part of the Altai. It also considerably enlarged knowledge of

Fig. 4 Carpet (Detail).
Felt; applique.
640 x 450 cm.
Pazyryk Culture.
5th-4th century BCE.
1687/94.

© The State Hermitage
Museum, St. Petersburg.



Fig. 5. Applique: Cockerels. Leather; carved. 12 x 17 cm. Pazyryk Culture. 5th century BCE. Inv.no.1295/43.

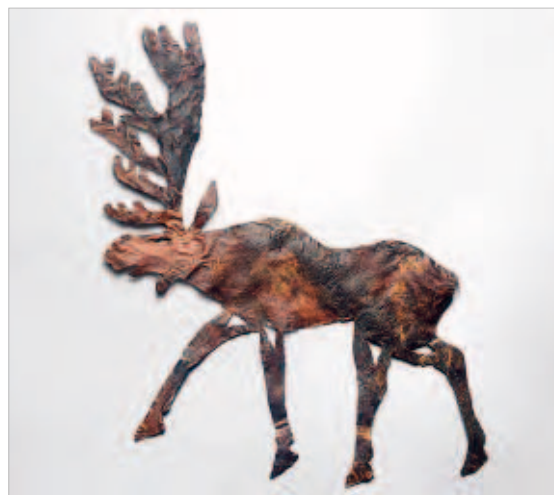


Fig. 6. Applique: Figure of an Elk. Leather; carved. 26.5 x 30 cm. Pazyryk Culture. 5th century BCE. Inv.no.1684/283.

Photos: © The State Hermitage Museum, St. Petersburg.

the relations between the different nomadic peoples that existed at that time, in particular between southern Siberia and other regions.

Today, however, the permafrost of the Altai Mountains is endangered by climate change, and the frozen tombs are particularly threatened. Mountain permafrost, its average temperature usually remaining within one or two degrees of freezing point, is very sensitive to climate change, and temperature records made over the past 30 years in Mongolian mountain regions have shown a 0.1°C per decade rise in permafrost temperatures in the Khentei and Khangai regions and a 0.2°C per decade rise in the Kovsgol region. Research has also shown that the glaciers in the Altai Mountains have been melting for decades. Rough estimates indicating that these glaciers have lost up to 27 % of their mass over the last 100 years, with average retreat rates now standing at between 9 and 20 m per year. Further degradation of the glaciers is almost certain, and it is closely linked to the melting of the region's permafrost.

A significant reduction in the amount of permafrost found in the Altai Mountains, or even its disappearance, is thus predicted for the middle of this century. The most significant impact will be near the lower boundary of the alpine permafrost, where the frozen ground is very sensitive to climate change. Many frozen tombs are situated within this area of discontinuous permafrost, and they are therefore highly vulnerable to thawing. This will lead to the loss of invaluable material that could shed light on the important nomadic cultures that flourished in the region during the 1st millennium BCE.

Perspectives for Transboundary Protection through the World Heritage Convention

Alerted by these developments, archaeologists, climatologists, geographers and geocryologists drew UNESCO's attention to this urgent issue and requested its assistance. Subsequently, a project, the *Preservation of the Frozen Tombs of the Altai Mountains*, was set up under the UNESCO/Flanders Funds-in-Trust in 2005.

This project proposed the drawing up of an inventory of the *kurgans* in the Altai Mountains and the production of accurate maps, made using advanced satellite imaging techniques (Fig. 8). A second step would then be to identify and locate the frozen tombs, and this has now become possible thanks to sophisticated geophysical and geocryological survey techniques, which, when combined with satellite imagery, can produce accurate maps of the permafrost zone. A third step would be to monitor the permafrost layer, in order to determine the rate of thawing of the frozen tombs. UNESCO's World Heritage Centre, working under the above-mentioned project, has initiated such a monitoring programme to discover how quickly the permafrost zone is thawing in the Russian part of the Altai, and results from this programme will be published in the project's final technical report in 2008.

Yet, climate change is a global phenomenon, and it is obvious that efforts to prevent the frozen tombs from thawing can only preserve a very limited number of them at best. Further excavation work therefore also needs to be considered, in order to save as much of the research material

still in the tombs as possible. Clearly, any excavations should be carried out in such a way as to respect the local populations of the Altai.

The current UNESCO project is at present limited to the first of the steps outlined above, in addition to the World Heritage Centre's on-going permafrost monitoring programme. It is therefore hoped that the international academic and scientific community will also take steps to help ensure that the invaluable material contained in the Altai tombs can be preserved or at least documented for posterity. Cooperation between the four countries whose territories extend across the Altai – China, Kazakhstan, Mongolia and the Russian Federation – is also essential, as is cooperation among the many scientific research institutes located in Eurasia, in order for this to come about and to obtain the most efficient working methods and best synergy.

It is also desirable for an archaeological park to be established in the areas in which frozen *kurgans* are concentrated, such as in the Bashadar, Tuekta and Berel' Valleys to quote only a few, in order to ensure their proper management and preservation. Such a park would serve as an open-air museum for educational purposes, while also contributing to the sustainable development of the communities in the area. It would also facilitate the monitoring of the frozen tombs located within the park's boundaries, helping to prevent the loss of undocumented material. The four countries whose territories extend across the Altai could also consider setting up further trans-boundary protection mechanisms for the frozen tombs and the other archaeological heritage making up the Mountains' unique landscape through inclusion of the sites on the World Heritage List.



Fig. 7 Overview of a grave, *kurgan*-1, Olon Kurin Gol 10, early 3rd century BCE.

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Indeed, the World Heritage Committee, conscious that the World Heritage List should be a representative list of the heritage of humanity as a whole, requested ICOMOS first in 1994 and then again in 2000 to “proceed with an analysis of the sites inscribed on the World Heritage List and the Tentative List on a regional and chronological, geographical and thematic basis,” and to draw up an action plan to fill any gaps in it. This request was seen as a way of including representatives of the diverse cultural heritage of humanity as a whole on the List, and the ICOMOS analysis showed that certain cultures and civilizations were either at present not represented on the List, or were seriously under-represented, nomadic cultures among them.

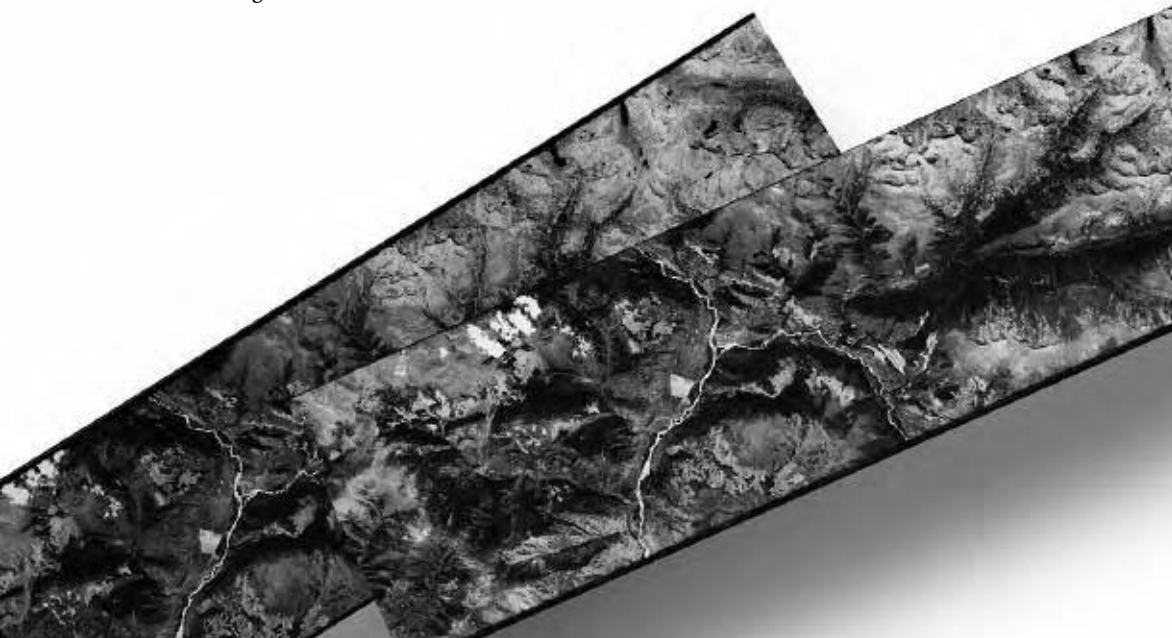


Fig. 8. Stereoscopic Corona KH-4B satellite images of Berel', Kazakhstan.

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Kurgans, Mogoitin Gol, Mongolian Altai.
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Over past millennia, many cultures have spread out over and influenced vast geographical regions, cutting across boundaries as they did so. Empires such as the Chinese, Persian, and Roman, to cite only some of the best known, have exerted enormous influence over the rest of the world and have given common cultural references to vast areas, even as these common references were also modified by local cultural features. Yet, cultures are not the exclusive product of such empires. Indeed, these empires' distinctive cultural patterns, created by elite groups, always existed in contrast with or in parallel to patterns that evolved independently of the empires' sedentary elites, and these co-existing cultures often stood in symbiotic relationship with each other, while sharing common historical timelines.

It is clear, for example, that the sedentary civilizations and empires of the past often came into

contact with the nomadic cultures around them, and each evolved by interacting with the other. As a result, in order to grasp an accurate picture of such sedentary civilizations, it is also important to have a sense of the nomadic cultures outside them. The nomadic culture represented by the frozen tombs of the Pazyryk Culture in the Altai Mountain, for example, marvellously preserved traces of Persian civilization even decades after the end of the Persian Empire. It is also well acknowledged that the art of the Western and Eastern Zhou dynasties played an important role in the emergence of the so-called Scytho-Siberian animal style of art that flourished across Eurasia Steppes during the 1st millennium BCE.

Further research on the ancient nomadic cultures of the Eurasian steppe should be carried out both by national and by international academic institutions, and it should be encouraged by the international community. The aim of such research would be not only to shed light on what is still a little-known period of human history (that of the 1st millennia BCE), but also to investigate its possible inclusion as World Heritage mixed sites. This would be in line with the World Heritage Committee's Global Strategy of including non-represented or under-represented cultures on the World Heritage List, since nomadic cultures once flourished in the Eurasian Steppe during the 1st millennium BCE have little presence on the List despite the important roles they have played in the general history of humanity. ■

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UNESCO-Sponsored Field Campaigns in the Russian and Kazakh Altai

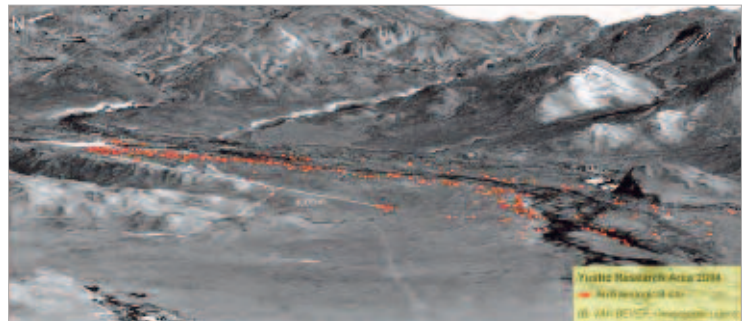
Jean BOURGEOIS and Wouter GHEYLE

Department of Archaeology,
University of Ghent, Belgium

GRAVE ROBBERS and fortune hunters have been the traditional enemies of the frozen tombs of the Altai, but today a new threat, climate change, hangs over them. This is causing the permafrost in this part of Siberia to thaw, destroying the hitherto well-preserved remains found in the frozen tombs.

The Earth's climate has changed continuously throughout history, from the Ice Ages, when ice covered significant portions of the planet's surface, to the interglacial periods, when the ice retreated to the poles or melted entirely. During the last 2,000 years, the climate has been relatively stable, with two minor deviations: the "Medieval Warm Period" (900-1300 CE) and the "Little Ice Age" (1500-1850 CE). Records from land and maritime stations indicate that the Earth's global mean surface temperature warmed by between 0.4 and 0.8 °C during the 20th century, indicating a near level trend in temperatures from 1880 to about 1910, a rise to 1945, a slight decline to about 1975, and a rise to the present. Warming is now occurring over most of the globe and is consistent with the global retreat of mountain glaciers, the reduction in the extent of snow-cover, the earlier melting of ice on rivers and lakes in spring, and increases in sea-surface temperatures and ocean heat content.

The Earth's surface is currently warming at a rate of about 0.17 °C a decade, or 1.8 °C a century, and the top 10 warmest years have all occurred since 1990. Climatic change has also been reported from many regions of Central Asia. Air temperature in the Altai Mountains increased at a higher rate than the global mean during the 20th century, for example, and in the western Mongolian sector of the Altai Mountains the rise in mean annual air temperature has been 0.3 °C per decade over the last 50 years. Winter warming is now strongly pronounced in the high mountain areas and inter-mountain valleys (0.6 °C per



decade) of the Mongolian Altai, while being less detectable on the adjacent plains. Temperature data from the Mongolian mountain regions for the last 30 years show a rise in permafrost temperatures by 0.1 °C per decade in the Khentei and Khangai and 0.2 °C per decade in the Hovsgol regions.

While the frozen tombs of the Altai are likely to disappear if global warming continues, it would be unforgivable not to try to protect the remaining tombs, which constitute the irreplaceable remains of the ancient nomadic cultures of the Eurasian steppe. The UNESCO project, *Preservation of the Frozen Tombs of the Altai Mountains*, described in this booklet and carried out in cooperation with the University of Ghent, Belgium, and financed through the UNESCO/Flanders Funds-in-Trust, aimed to assist in the conservation of the frozen tombs of the Altai Mountains, particularly by carrying out accurate mapping of two research areas in the Russian and Kazakh sections of the Altai, mapping the locations of the tombs and drawing up a thorough inventory of them.

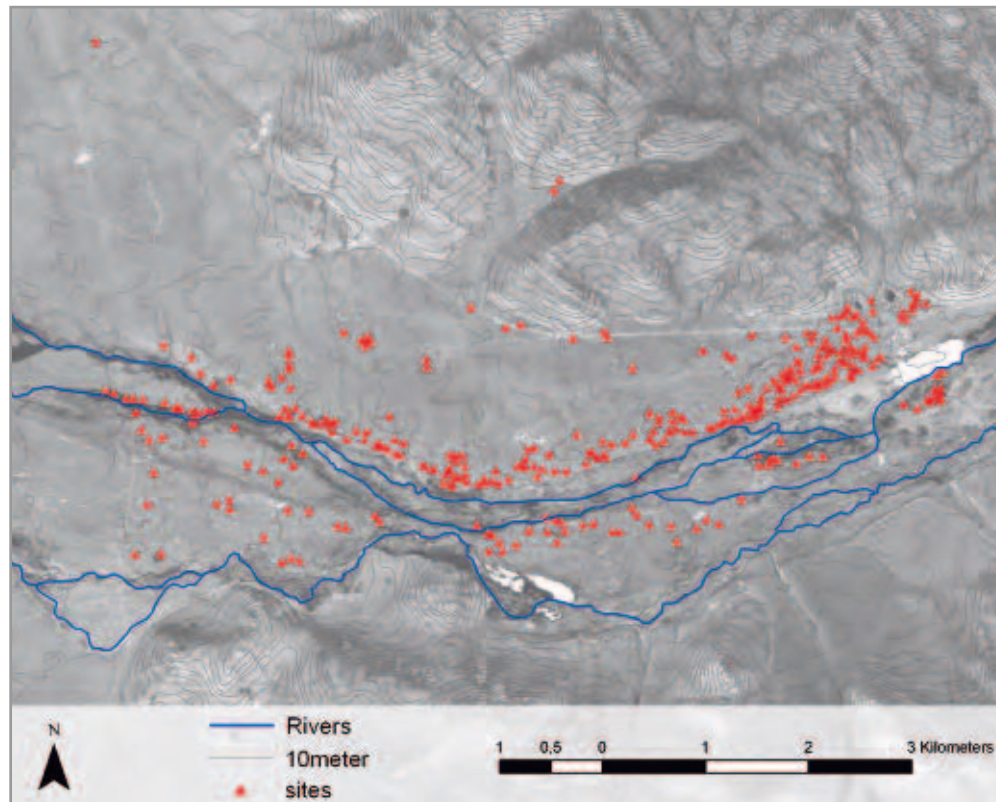
The first thing that needed to be done in order to make protection possible was the drawing up of a detailed inventory of the burial mounds. Accurate and detailed maps are essential, but they are not at present available. Taking into account the huge area of the research zone,

Fig.1 3D view on the valley of Yustyd, based on the CORONA image.

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Fig. 2 Map of the middle part of the Yustyd Valley, showing archaeological sites and 10m contour lines, based on the Corona satellite images.

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the high costs of topographic measurements and the absence of complete coverage by aerial photographs, this part of the work was executed with the help of satellite images, such as those taken by the CORONA satellite. This satellite took detailed images of various areas including the Altai Mountains during the 1960s and 1970s. Over 800,000 high-resolution black-and-white negatives of the Earth's surface were taken, and part of this formerly secret archive is now available to researchers. The images are well suited for archaeological research due to their very high resolution and low price, as well as to the fact that they document landscapes as they were 40 years ago, these having in many cases now been drastically changed or destroyed by urbanization, industry or large-scale agriculture.

However, the greatest advantage of the CORONA images is the fact that the satellite originally took two stereoscopic images. By combining these in the right way, a 3D view of the landscape can be obtained (Fig. 1). By inserting the geographical coordinates of certain points (Ground Control Points, or GCPs) into the digitized images using the correct software it is even

possible to generate precise orthophotos, height models, contour lines and detailed topographic maps from them (Fig. 2). Part of the University of Ghent's fieldwork, therefore, was devoted to gathering useable GCPs. Using a Global Positioning System (GPS) receiver, geographers Dr. Rudi Goossens and Dr. Alain De Wulf from the Geography Department of the University of Ghent located visible points in the CORONA images, such as crossroads, old farm houses and sharp outcrops, etc. With the maps made as a result of this used as background for the archaeological inventory survey, a campaign was launched to document the archaeological heritage and to pinpoint the locations of the Scythian tombs.

Archaeological sites and structures were first located using GPS receivers accurate to a few decimetres. These structures were described on a standard information card, measured and photographed. A tentative date for each structure was assigned, based on the structure's morphology, the relevant literature and comparisons with other sites. A description of the geographical context, and especially of indications of permafrost



occurrence (periglacial phenomena such as pingos and solifluxion, etc.), was recorded. All the sites were then added to the Altai Database (the Altai Archaeological Inventory), which is linked to the cartographic material produced through a GIS (Geographic Information System).

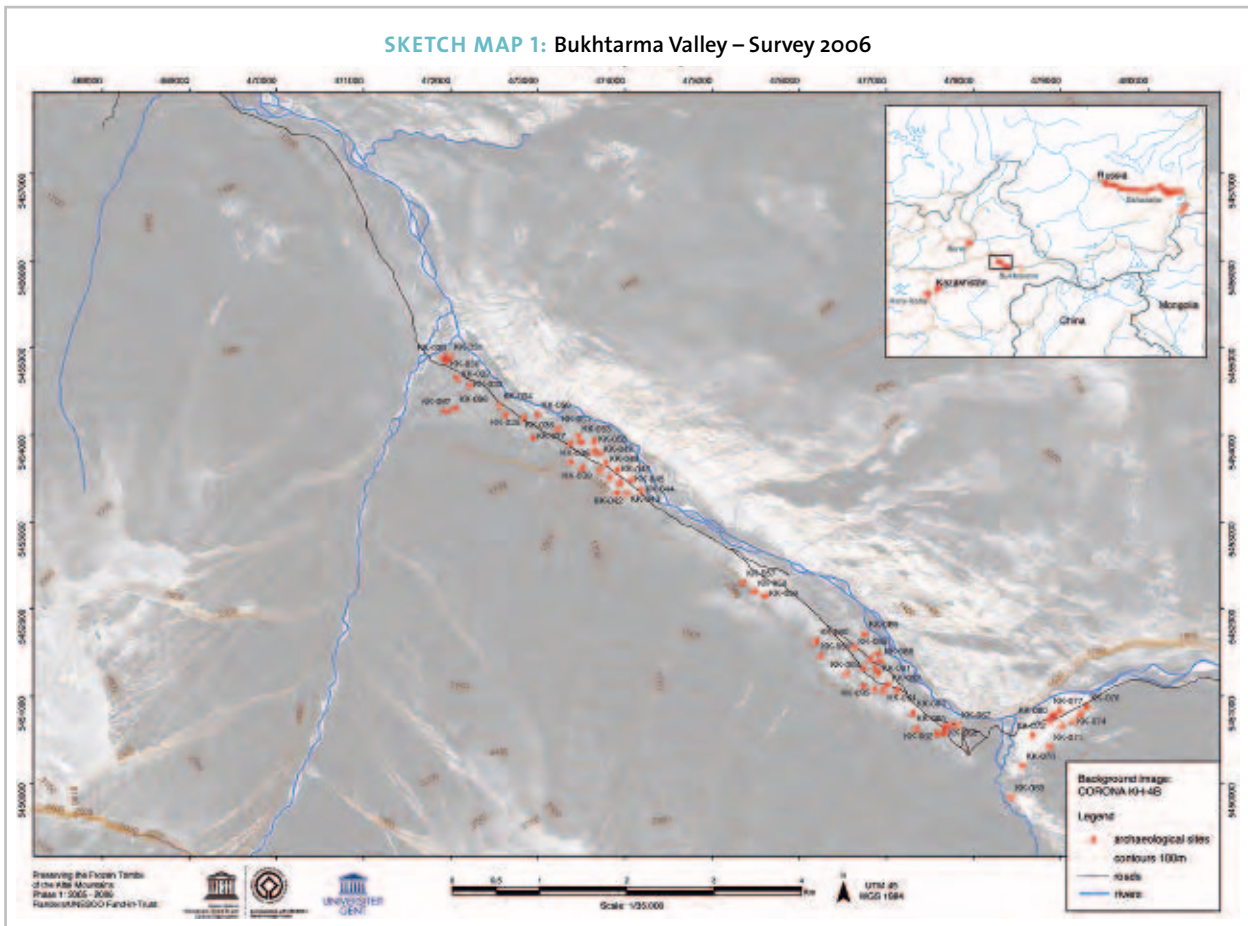
The first fieldwork season took place in July and August 2005 and was carried out jointly by the University of Ghent and the Gorno-Altai State University. The team consisted of 20 Russian, Belgian, Dutch and French archaeologists and geographers, among them six students and volunteers. The chosen area was the Dzhazator High Valley in the southern part of the Russian Altai, just north of the famous Ukok Plateau. Over a six-week period, more than 50 km of the Valley was mapped and over 1,600 archaeological structures documented. The main focus of the campaign was the higher parts of the Valley at an altitude of about 2,000 to 2,600 m. Aside from the archaeological research and the necessary GPS measurements, several soundings were made in search of permafrost. These soundings were taken in order to make temperature measurements of the subsoil, allowing an idea

of the spread of frozen ground in Dzhazator to be gained. A map was then made showing areas where permafrost was most likely to be situated (Fig. 3).

The oldest structures recorded date back to the 3rd millennium BCE, 12 sites possibly dating to this very early period. These are all burial monuments, consisting of a round or oval setting of large stones with a central grave. They are mostly rectangular and are generally dated to the Afanassievo period. Only nine other structures were attributed to the Bronze Age (3rd-2nd millennium BCE): two *kereksurs* – large structures that consist of a large-ish high central mound enclosed by a circular or quadrangular bank – and seven large stelae, or isolated standing stones. More than a thousand structures dating to the Iron Age (roughly 1st millennium BCE) were recorded, including burial mounds, *balbals*, or small standing stones, stone circles and small stone platforms. The Scythian *kurgans* varied from between five and 15 m in diameter, and are characterized by a central depression due to the collapse of the burial chamber and/or robbing. In almost all cases, the sites are surrounded by *balbals* and

Fig. 3 *Kurgan* in the Dzhazator Valley in the Russian Altai.

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stone circles in the east, or by small concentrations of stones (stone platforms) in the west.

The Turkic period was also well represented, some exceptional monuments from this period being recorded. In total, 112 *ogradki*, or enclosures with accompanying rows of *balbals*, were recorded, these having up to 90 standing stones in a straight line to the east that was sometimes

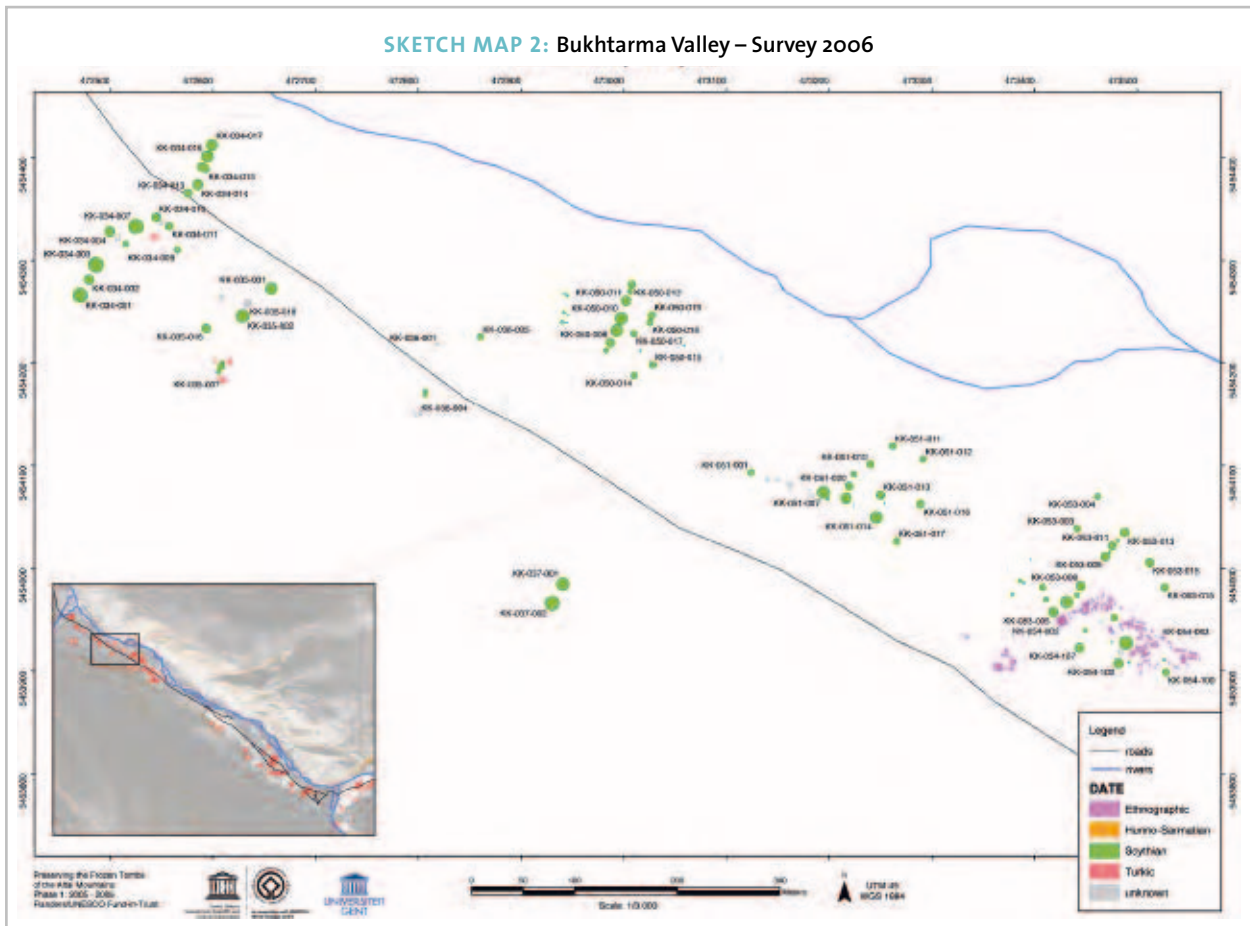
over 200 m long. In some cases, the *ogradki* seemed to be isolated, while in others they appeared to be arranged in clusters of three to five. There were also some special types of *ogradki* in the valley, these featuring rectangular ditches and banks, or nicely sculptured standing stones. The stones, statues in the form of human figurines, are commemorative monuments.

The second fieldwork season took place in July and August 2006 and was carried out by the University of Ghent, the Almaty Margulan Institute of Archaeology and the Gorno-Altai State University. Work this time focussed on the Kazakh Altai, and three different valleys were surveyed, all in the district where the well-known archaeological site of Berel' is situated. A team of about 20 archaeologists and geographers worked in the upper part of the Kara-Kaba Valley, the upper part of the Bukhtarma Valley, and in the Berel' area, as well as along the Bukhtarma River (Fig. 4).

Fig. 4 Team working on the 2006 excavations in Berel', Kazakhstan.

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In the Bukhtarma Valley (Fig. 5) several large burial places were located and documented dating from the Scythian period to more recent times. In total, 1,005 archaeological structures were recorded at 56 sites (this average of 18 monuments per site is rather high, distorted by the fact that site KK-102 had 400 individual structures) as shown on sketch maps 1 and 2. The Scythian period was again well represented, with 240 individual monuments. 93 monuments were dated to the Turkic period, and 126 to the Hunno-Sarmatian period (Hunno-Sarmatian burials are very uncommon in the Kazakh part of the Altai Mountains, making this was an interesting find).

The third research area was the Berel' necropolis, located on the third terrace of the Bukhtarma Valley 1,100 m above sea level. This site is well known, due to the recent discoveries of frozen tombs made here by the Margulan Institute of Archaeology in Almaty. In total, 72 structures were recorded on the river terrace, at

Fig. 6 Installation of data loggers in the Ulandryk Valley in the Altai Republic, Russian Federation.
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Fig. 5 The Bukhtarma Valley in Kazakhstan, area of the 2006 excavations.

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10 different archaeological sites. Most of these, 60 in total, were Scythian. 10 Turkic structures were also recorded, together with a further two of unknown date.

Research during the fieldwork also focused on the use of geomorphological and geocryological techniques to study the condition and evolution of the permafrost in and around the burial mounds. In 2005, a team of geographers from the University of Ghent made measurements of soil and subsoil temperatures through soundings and test pits, plotting these against Aster and Landsat satellite images. The idea behind this fieldwork was to combine the Aster Digital Elevation Model and Landsat thermal band to pinpoint areas where permafrost was probable. In total, 28 investigations were carried out in different geographical contexts spread out over the Tarkhata and Dzhazator Valleys. In 10 cases, permafrost was discovered at depths of 45 to 215cm. In 2006, S. Marchenko of Alaska University joined the

team to study permafrost conditions in the Yustyd area (Ulandryk Valley), and data loggers were installed at different depths in several places in the Valley (**Fig. 6**). As these instruments measure temperatures throughout the year, they can provide insight into the depth of thawing during the summer in and around Scythian burial mounds located at different altitudes and in different areas of the landscape.

Such research, some completed and much still underway, will help to reveal which tombs are the most endangered by climate change and to suggest the technical solutions needed to preserve the frozen ground under the burial mounds. ■

Climate Change and its Impact on the Frozen Tombs of the Altai Mountains

Sergei MARCHENKO

University of Alaska Fairbanks, USA

PERMAFROST has received much attention over recent years because surface temperatures are rising in most areas of the Earth where permafrost is found, causing widespread thawing and degradation. The thawing of the permafrost that is already taking place at the lower altitudinal limits of the permafrost distribution in the mountains of Central Asia could in future give rise to dramatic changes in ecosystems and in infrastructural performance. Numerous periods of warming and cooling took place in the mountains of Central Asia during the Late Holocene period (approximately the last 3,000 years), and ground temperatures and the extent of the permafrost in the Altai, Tien Shan and Pamir Mountains and on the Tibetan Plateau have repeatedly fluctuated over recent millennia, brought about by planetary changes in the climate. Altitudinal oscillations in the average annual air temperature 0°C isotherm saw a range of about 300 m over this period.¹

Traces of former permafrost and the results of numerical simulation have shown that permafrost formation occurred and then completely disappeared at the altitudinal lower boundary of the alpine permafrost distribution in some regions of Central Asia at least three times over the last 1,000 years.² At the altitudinal lower limit of alpine permafrost distribution, ground temperatures are now close to 0°C , and at some sites permafrost degradation has already started. As a result of deep ground thawing, a residual thaw layer between the seasonally frozen layer and the permafrost table at different sites has appeared over the last 10–15 years.

Analysis of the measured active layer and of permafrost temperatures coupled with numerical thermal modeling (permafrost temperature reanalysis) has shown that most of the recently thawed permafrost was formed during the Little Ice Age. Older Siberian permafrost that has continuously existed since the last Late Pleistocene

glaciation (c. 18,000 years BP) is still generally stable. However, in some regions, such as in Central Siberia, the Tien Shan, the Tibetan Plateau and the Altai Mountains, this Late Pleistocene permafrost is now only a few tens of degrees from thawing.

Air temperatures in the mountains of Central Asia increased at a higher rate than the global mean during the 20th century.³ Geothermal observations carried out from 1974 onwards, and from 1990 to 2006, indicate that the permafrost has been warming in the Tien Shan Mountains over the last 30 years. Increases in permafrost temperatures in the northern Tien Shan over the period 1974–2004 vary from 0.3°C to 0.6°C . Borehole temperature data has shown that the thickness of the active layer increased during the last 30 years from between 3.2 and 3.4 m in the 1970s, to a maximum of 5.2 m in 1992 and 5.0 m in 2001 and 2004. The thickness of the average active layer for all measured sites increased by 23% over the thickness recorded in the early 1970s. As a result of deep ground thawing, a residual thaw layer between 4 and 8 m deep has appeared at different sites.⁴

Temperature data for the last 30 years from Mongolian mountain regions show a rise in permafrost temperatures of 0.1°C per decade in the Khentei and Khangai and 0.2°C per decade in the Hovsgol mountain regions.⁵ Latitudinal permafrost in north-eastern China is less sensitive to recent climatic changes. At the same time, the mountain permafrost and the permafrost on the Qinghai-Tibetan Plateau is much more sensitive to climatic warming.⁶ Over the last 15 years permafrost temperatures 20m deep on the Qinghai-Tibetan Plateau have increased by 0.2 – 0.3°C .⁷ During the 20th century, significant permafrost degradation has occurred within most permafrost regions in China.

Changes in the climate and in the cryosphere have had a direct impact on the thermal state of the frozen tombs (*kurgans*) in the Altai and in

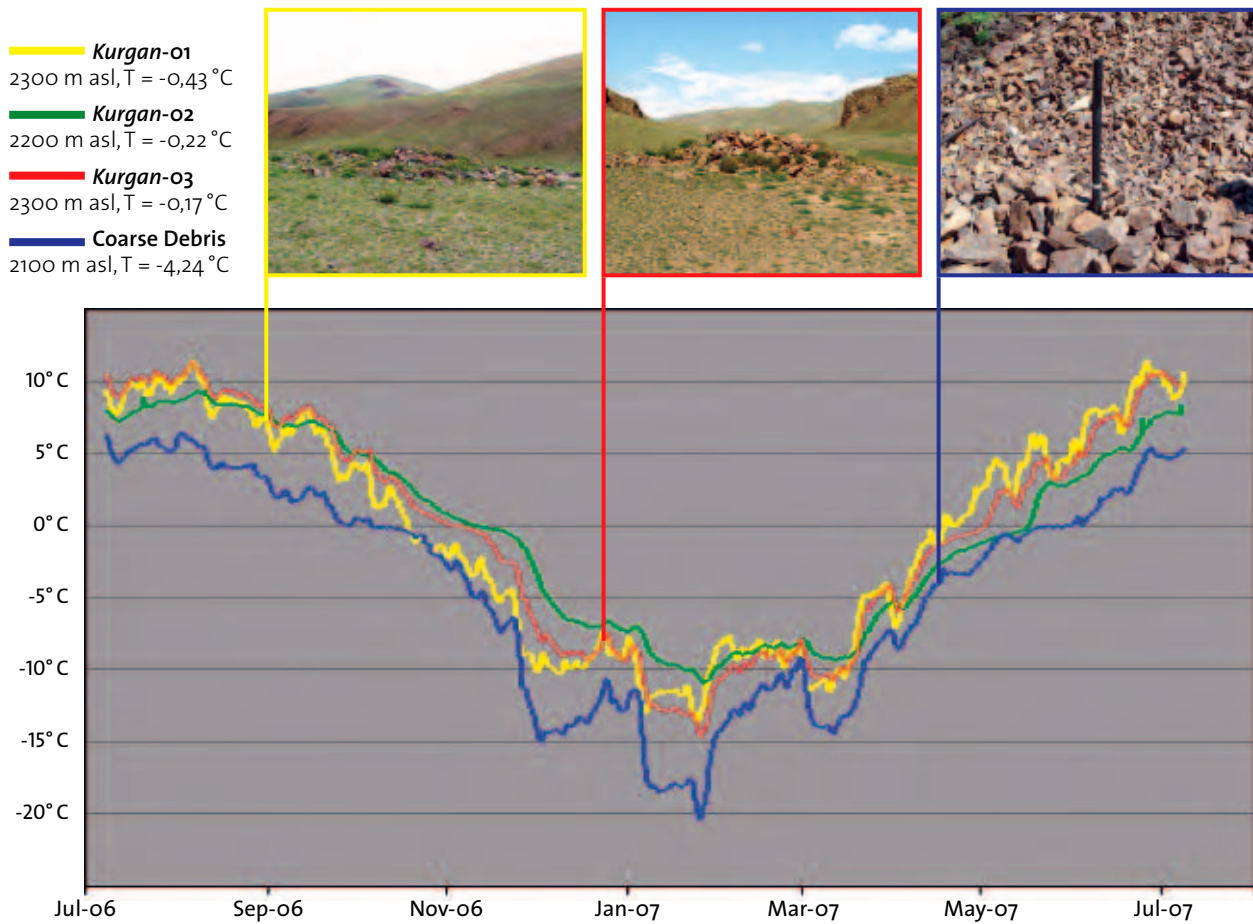


Fig. 1 Temperatures in the Ulandryk Valley. © S. Marchenko.

other mountain regions of Central Asia. Both geothermal observations and results from permafrost modeling have indicated significant changes in the temperatures and extent of the permafrost during the 20th century in Central Asia.⁸ The most significant impacts on the thermal state of the permafrost have been observed near the altitudinal lower boundary of the mountain permafrost distribution, a region where the frozen ground is very sensitive to changes in surface energy balance.

In the high mountain regions, further near-surface permafrost degradation will probably accompany a transformation in environmental conditions and may lead to slope instability and permafrost-related hazards such as landslides, thermokarst and mudflows, as well as to the disappearance of the frozen cores of the Scythian tombs. Modeling of alpine permafrost dynamics shows that the altitudinal lower boundary of the permafrost distribution has shifted upwards

by about 200 m since the end of the Little Ice Age (c. 1850). During the same period, the area of permafrost distribution in some mountain regions of Central Asia has decreased by approximately 15%.⁹

During summer 2006, within the UNESCO project, a joint team from the University of Ghent (Departments of Archaeology and Geography), the Gorno-Altai State University (GASU) and the University of Alaska Fairbanks (UAF) installed data loggers to measure year-round ground temperatures in the Ulandryk Valley (Kosh-Agatch region, Altai Republic, Russian Federation). The sensors were installed within an altitudinal range of 3,300–3,100 m above sea level (ASL), and the temperature data were successfully collected in 2007. **Figure 1** shows the annual temperatures at a depth of 0.7 m inside the burial mounds and within natural coarse debris at different altitudes.

As can be seen from **Figure 1**, the coldest mean annual ground temperature (MAGT) at a

depth of 0.7 m (-4.24°C) was recorded in coarse debris without fine-grained soils where the free convection of air occurs. Ground temperature inside the Scythian tomb (*kurgan-03*) at the same elevation was only -0.17°C below zero. Both sites are located at the lower altitudinal limit (2100 m ASL) of the geothermal investigations carried out in this Valley. The highest site investigated (*kurgan-01*: Fig. 1), situated at 2,300 m ASL, showed a MAGT of -0.43°C , because only conductive heat transfer takes place in blocky material of this sort mixed with fine-grained soils.

The thawing and freezing of the soil is affected by many factors, with air temperature, vegetation, snow accumulation, soil moisture and ground structure being among the most

significant. The geothermal observations and modeling carried out indicate that, for the mountains of Central Asia, favourable conditions for permafrost occurrence and preservation exist in coarse blocky material where mean annual temperatures are typically $3\text{--}5^{\circ}\text{C}$ colder than the mean annual air temperature (MAAT) and in surrounding fine-grained soils.¹⁰ In such deposits, the ice-rich permafrost may still be stable even when the MAAT exceeds 0°C . Frozen tombs located near the altitudinal lower boundary of the permafrost distribution are most vulnerable to climatic warming, as are tombs with a coarse debris layer less than 1.5–2 m thick and less than 18–22 m in diameter, or if blocky materials are mixed with soil.¹¹ ■

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CHAPTER 3

CHALLENGE FOR CONSERVATION AND DEVELOPMENT



The Altai: Heartland of Asia

Yuri P. BADENKOV

Institute of Geography, Russian Academy of Science, Russian Federation

THE OUTSTANDING Austrian geologist Edward Suess (1831-1914) once called the Altai the “ancient crown of Asia”, but for the modern world the Altai’s central part, the Ukok Plateau in particular, is better known as the meeting place of four states: the Russian Federation, China, Kazakhstan and Mongolia. These countries’ frontier areas are economically underdeveloped and peripheral mountain regions, and they are therefore only marginally affected by human activities, having no large-scale industry or big cities, for example, and the local populations are made up of diverse ethnic groups that maintain rural life patterns.

Due to the Altai’s geographical position, mountain relief and severe climatic conditions, the rich biological diversity of the region is still intact, as are its many diverse landscapes. UNESCO, in recognition of this, has awarded the title of World Natural Heritage Site to a group of five sites in the region, and the Altai’s cultural heritage is of no lesser significance. Indeed, this region, though small in area, is at the crossroads of four of the world’s major religions – Buddhism, Shamanism, Islam and Christianity – and this heritage too must be protected and preserved. Today, the time has come to implement a sustainable regional development agenda for the preservation of this region’s outstanding biological, landscape and cultural heritage.

Of special relevance here is the Scythian civilization that dates back 2,500 years and whose remains, frozen in permafrost burial mounds, are found in all four countries having territory in the Altai. Judging by the abundance of these mounds, civilization flourished in this region during the prehistoric period, despite the harsh climatic conditions, and archaeological research conducted over several decades has shown that the region was never isolated from the rest of Asia.

However, today in the current period of globalization and climate change, the cross-border Altai region is under threat both from human pressures and from environmental factors. Human pressures include the major infrastructure

development projects that are currently underway, such as the construction of a transport corridor and gas pipeline between China and the Russian Federation across the Ukok Plateau, as well as increasing tourism in the area that requires the development of hotel infrastructure and supporting communications and services. The long-term social, economic and cultural effects of such developments on the region are not clear, and, what is more, they have not yet been investigated. Even if the effects of these developments are not yet fully known, the risk of profound changes in life patterns and local economies is obvious, including geopolitical and demographic effects.

The second major threat to the Altai is environmental in the shape of on-going climate change. Studies have revealed warming trends, the inevitable result of which will be the deterioration of the permafrost, with associated impacts on construction, changes in environmental conditions, including animal habitats, vegetation cycles, etc., and the need for adjustments to industrial and agricultural patterns in the region. These threats constitute major challenges for scientists and politicians, who have been calling for an evaluation to be carried out of the scope and nature of the risks to the Altai and for preventive actions to be carried out to ensure the conservation and development of the region in the face of such natural, economic and geopolitical uncertainties.

Actions that could help to preserve the Altai’s natural and cultural heritage, while also being in line with sustainable development strategies that adequately respond to the existing risks, include the framing of an international treaty, first proposed in 1998 and to be called *The Altai Convention*, which would guarantee the sustainable development of the Altai and the conservation of its natural and cultural heritage and would be signed by the Russian Federation, China, Kazakhstan and Mongolia.¹ Other activities include the establishment of a cross-border *Altai Biosphere Reserve* on the basis of proposals put

Left Terminal: Stag on a Ball. Wood and leather; carved. H. 12 cm. Pazyryk Culture. 5th century BC. Inv. no. 1684/153. © The State Hermitage Museum, St. Petersburg.

forward at the 1998 Urumchi International Conference on Sustainable Development and subsequently developed in various publications and project activities; the inscription of Scythian archaeological sites in the region as UNESCO World Heritage Sites; and the setting up of field archaeological heritage sites in the Altai.

Many of these things have been called for before, and some of them were proposed as long as a decade ago at the Urumchi Conference referred to above. However, in some cases they have not yet moved much beyond declarations.² Regional cooperation is now both as desirable as ever and more realistic, and the time has come for the implementation of these declarations.

Political and institutional drivers for regional cooperation include the activities of the *Altai: Our Common Homeland* International Coordination Council, which brings together the executive and legislative authorities of the Altai frontier areas of the four countries concerned, and the wealth of knowledge and experience gained through national and international projects in the area of

sustainable regional development and the conservation of the Altai's natural and cultural heritage. One such project is the UNDP-GEF (Global Environment Facility) sponsored "Biodiversity Conservation in the Russian Portion of the Altai-Sayan Ecoregion," which is now underway.³

A further driver has been the launch, in 2006, of a branch of the Russian Federation's National Commission for UNESCO in the Altai Republic, in order to develop UNESCO projects in the region. UNESCO's strong interest in, and support for, initiatives for heritage development and conservation in the Altai through the Organization's "Man and the Biosphere" and "World Heritage" programmes is also very encouraging and has led thus far to the organization of two international workshops, the first in Gorno-Altaiisk in 2005 and the second in Ghent in 2006, among other activities.

Taken together, these strong regional drivers and the needs they are designed to meet show that the time has now come to implement regional cooperation programmes in the Altai. ■

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2. For example, see "The Altai Declaration" in BANSKOTA, Mahesh et al (eds.). *Strategic Considerations on the Development of Central Asia*. (Council for the Sustainable Development of Central Asia / ICIMOD, 1999), pp. 127-129.
3. See <http://www.altai-sayan.org>

Excavation and Sampling Techniques in the Frozen Tombs of Kazakhstan

Jorge VASQUEZ

Régisseur des expositions
Musée du quai Branly, France

IN 1998 AND 1999, the *Mission archéologique française en Asie centrale* (MAFAC), in cooperation with the Kazakh Archaeological Institute and the Italian Liguabé Foundation, carried out two excavations of a so-called “frozen tomb” at the site of Berel’ in Kazakhstan, and I was invited to participate as a specialist restorer by Henri-Paul Francfort, director of the excavations.

The notion of a “frozen tomb” involves the burying of bodies and various objects in soil that is permanently frozen – permafrost – thus guaranteeing the sometimes exceptionally well-preserved organic remains that can be found in such tombs. This type of soil is characteristic of polar regions and of high-altitude zones. There are many so-called frozen sites in the mountainous region of the Altai in southern Siberia, including the site of Pazyryk, first excavated in 1929, and that of Ukok, excavated in 1992. Other sites have also been recently discovered by German and by joint French and Mongolian teams.

The conservation of bodies and organic artifacts is a complex process, and it is one that is closely linked to the type of grave, the depth of the burial, the cycles of thawing and freezing that have taken place, the sediment type and the amount of water held in the soil. Publications available on frozen sites of this sort seldom explain the excavation methods used, restricting themselves to explaining that warm water was used to thaw the materials found. At Berel’, guidelines for excavation and sampling of the archeological remains were drawn up, in order to preserve the “cold chain”, slow down deterioration and not put future scientific analysis of the objects found at risk.

The Berel’ necropolis is located in a large, high valley 1,200 metres above sea level in the Kazakh part of the Altai Mountains on the border between China and Russia. This valley has long been used as a pass between Chinese Turkestan



Fig. 1 Two pairs of wooden horns in the shape of ibex horns found during excavation of the Berel’ 11 *kurgan*.

and southern Siberia, and more than 20 of the burial mounds it contains have been recorded. The Berel’ necropolis is the most southerly of the mounds that have been found, and it features as such on maps of Siberian frozen tombs. All the burial mounds, or *kurgans*, at Berel’ belong to the eastern Scythian culture (Saka) and to the Pazyryk period that lasted some 50 years during the 5th century BCE (between 420 and 350 BCE, according to dendro-chronological analysis). The first and largest *kurgan* in this necropolis was excavated by a Russian specialist in Turkic civilization in 1865, and it was excavated again by a St. Petersburg team in 1958. This *kurgan* had been looted, and nothing now remains of the organic materials and fragments of ornaments that it contained. However, notes taken by the archaeologists at the time record the remains of 16 horses in the tomb, as well as of a funerary chamber.

In 1997, MAFAC decided to excavate the smaller burial mound No. 11 at the Berel’ site, thinking that it might contain objects similar to

Fig. 2 A refrigerated lorry used at the site to store the excavated remains.



Photos: © Mission Archéologique Française en Asie Centrale (CNRS-MAE) J. Vasquez.

Fig. 3 General view of the horses found during excavation of the Berel'11 *kurgan*.

© Mission Archéologique Française en Asie Centrale (CNRS-MAE) J. Vasquez.



those found in the other *kurgans*. Surveys carried out with the assistance of a geo-cryologist indicated that temperatures close to 0° C existed at a depth of 1.5 m beneath the *kurgan*.

Excavation of the mound was carried out in two phases, the first in autumn 1998 and the second in spring 1999. Because of the monumental shape of the burial mound – a massive stone structure some 23 m in diameter and 2 m high with traces of a looting shaft on the top – it was decided to drive excavation shafts into the mound in order to locate the funerary chamber and reach the cold layers as quickly as possible and prevent thawing from taking place. The burial pit, located almost in the centre of the *kurgan*, measured 5 m by 5 m and had been filled up with stones that had fallen into it during previous looting. Excavation of the tomb was delayed because of the mess of wooden beams the chamber contained, caused by the wrecking of the funerary chamber. During our work at the *kurgan*, the ground, ordinarily about 0° C, warmed rapidly, temperatures reaching 4 to 5° C in the afternoons.

The first objects were found around four metres below ground level three days before the end of the excavations: two wooden horns in the shape of ibex horns (**Fig. 1**) covered with gold and silver leaf were found above the heads of the horses' bodies found lying on their sides against the tomb's northern wall. The horses were wearing all their trappings. On the southern side, clearance of the burial chamber revealed that it had been covered with alternating pieces of birch bark and branches. The walls were made of broad wooden planks, assembled using mortis joints. Many wooden objects were found in the shaft that had been driven into the tomb by looters, these being mixed with broken pieces of horse

trappings and organic remains, including bones, pieces of skin and hair. Since winter was drawing on, and a number of outstanding objects had already been found, MAFAC decided to continue excavation of the site during the following spring. The mound was back-filled in order to guarantee low temperatures during the winter, this helping to preserve the objects.

Excavations resumed in May-June 1999, when temperatures were around 15° C and thus warmer than during the fall, average ground temperatures now being between 4 and 7° C. The excavations continued until the site had been fully excavated.

The aim of removing samples of artifacts from an archaeological site is to be able to guarantee the proper preservation of the objects and not to compromise future scientific analysis by the use of chemical products. A special feature of the Berel' site was that the remains had been preserved by their burial in frozen ground, and, in order that this "cold chain" should not be broken – which would have spoiled the information the bodies contained (including information on parasites and skin tattoos) – a refrigerated lorry was brought to the site to store the recovered remains (**Fig. 2**).

Two methods were used to remove the samples, according to the materials. The bodies of human beings and horses were removed in sections and stored in the refrigerated lorry. No chemical product was used, in order to avoid contamination that could vitiate future biological analysis, such as DNA testing. Other objects were removed individually, and then humidified and stored in a cold environment. In order to protect the organic material from the sun during the excavation, a light wooden structure covered

with a tarpaulin was erected above the burial mound. Survival blankets were also used to preserve the temperature of the organic remains during excavation.

The bodies of the horses were found on two levels, each level containing six bodies. Each horse was covered by a layer of birch leaves. The upper bark layer was removed in order to get an overview of the horses' position (Fig. 3), revealing that they were in a precarious state of preservation. For the first level, the objects placed on the horses were removed, and the bodies were cut into sections with a chainsaw. An archaeozoologist, Sébastien Lepetz of the French Centre national de la recherche scientifique (CNRS), indicated where the cuts should be made, these going round the horses' saddles and trappings (Fig. 4). This was difficult work as the horses were often lying on top of each other, their bodies being tangled up together (Fig. 5).

In order to remove a block of material, an area or section was first identified and cleared of any other materials around it. It was then wrapped in cling film and bubble wrap, and gently removed from the soil using Styron support trays. Once the block had been separated from the soil, it was made more rigid with cling film and placed in the refrigerated lorry. All cuts made to the material were recorded with a digital camera as the blocks were taken out. Nevertheless, the bodies found on the first level quickly began to decompose, which meant that the harnesses had to be left in place.

During the removal of sections of material from the second level on which the remains of the horses were found, the pieces of bark were removed as the work progressed and other objects were left in place. This way of proceeding helped to slow down the decomposition of the bodies, though it had the disadvantage of making it impossible to get an overview of the horses *in situ*.

In the funerary chamber, the most-looted part of the whole, the organic materials were poorly preserved since the sarcophagus had been opened by the looters to contact with the air and heat. As a result, the human bodies had been almost completely destroyed, and only two human bodies in the form of skeletons, together with some organic material, were found. These bodies had not been buried at the same time, and the first had been moved by looters. The man's head-dress was intact. These corpses were



Fig. 4 Cutting the excavated remains into sections.



Fig. 5 Horse trappings were laid across each other and tangled up together.

Photos: © Mission Archéologique Française en Asie Centrale (CNRS-MAE) J. Vasquez.

cleared of the surrounding materials by a geneticist-anthropologist, Eric Crubézy, and taken out in sections.

All fabric or wooden objects were excavated using Styron support trays. The objects were then systematically cleaned on site using water vapour, this allowing for greater “readability” of the remains in question, when, that is, they were not too damaged (Figs. 6 & 7). After the identification, recording and measurement of the objects, drawings were made of them and pictures taken. They were then wrapped in cling film and stored in the refrigerated lorry. The wooden architectural elements, bark and pieces of stone sarcophagus were removed by hand and then humidified before being wrapped in cling film and stored in

Fig. 6 & Fig. 7
Horse trappings after
cleaning on site to
allow ease of
interpretation.

Photos: © Mission
Archéologique Française
en Asie Centrale (CNRS-
MAE) J. Vasquez.



the refrigerated lorry. All the remains were taken to Almaty and stored at -14 °C.

During winter 2000, all the materials removed from the site were investigated by a multi-disciplinary laboratory team. This allowed all the objects to be investigated under better conditions, leading to a better understanding of their substance and the analysis of the trappings. Investigation of the bodies indicated that they had been treated after death, for example by threads sewn into the skin, and various anatomical, biological and genetic tests were carried out.

The removal of samples of archeological remains from the Berel' necropolis led to the recovery of many organic and composite objects of every kind. Apart from the decorated horse trappings, several saddles were also found, as well as the sarcophagus and the architectural elements of the tomb. For this kind of site, a so-called "frozen tomb", the procedure of removing samples of the remains and then cleaning them for readability *in situ* allowed the archeological team to identify the objects as the work progressed and to accumulate a lot of archeological information at the site, while at the same time ensuring the conservation of the excavated artifacts.

Nevertheless, the organic remains removed from the Berel' site will need freeze-drying treatment in order to ensure their long-term preservation. This should only be done in a laboratory that has the necessary equipment and trained staff. ■

Translated from French by Laura FRANK



Herodotus

[4.71] “... Here, when the king dies, they dig a grave, which is square in shape, and of great size. When it is ready, they take the king’s corpse, and, having opened the belly, and cleaned out the inside, fill the cavity with a preparation of chopped cypress, frankincense, parsley-seed, and anise-seed, after which they sew up the opening, enclose the body in wax, and, placing it on a waggon, carry it about through all the different tribes. On this procession each tribe, when it receives the corpse, imitates the example which is first set by the Royal Scythians; every man chops off a piece of his ear, crops his hair close, and makes a cut all round his arm, lacerates his forehead and his nose, and thrusts an arrow through his left hand. Then they who have the care of the corpse carry it with them to another of the tribes which are under the Scythian rule, followed by those whom they first visited. On completing the circuit of all the tribes under their sway, they find themselves in the country of the Gerrhi, who are the most remote of all, and so they come to the tombs of the kings. There the body of the dead king is laid in the grave prepared for it, stretched upon a mattress; spears are fixed in the ground on either side of the corpse, and beams stretched across above it to form a roof, which is covered with a thatching of osier twigs. In the open space around the body of the king they bury one of his concubines, first killing her by strangling, and also his cup-bearer, his cook, his groom, his lacquey, his messenger, some of his horses, firstlings of all his other possessions, and some golden cups; for they use neither silver nor brass. After this they set to work, and raise a vast mound above the grave, all of them vying with each other and seeking to make it as tall as possible.”

Herodotus (484 - 425 CE) describing the funeral practices of the Scythians in *Historiae*, Book IV.

RECOMMENDATIONS



RECOMMENDATIONS MADE AT THE UNESCO INTERNATIONAL WORKSHOP

“The Frozen Tombs of the Altai Mountains: Strategies and Perspectives”

Organized by: UNESCO, World Heritage Centre,
in technical co-operation with Ghent University

Hosted by: Gorno-Altai University, Altai Republic, Russian Federation
28–31 March 2006

Preamble

Participants in the International workshop on the Preservation of the Frozen Tombs of the Altai Mountains: Strategies and Perspectives”, held in Gorno-Altai, 28-31 March 2006, namely 50 archaeologists and geologists, from Belgium, China, France, Kazakhstan, Mongolia, Russian Federation, the United States, and the representatives from UNESCO and UNESCO World Heritage Centre,

Noting that the Russian part of the Altai, namely Altaisky Zapovednik and a buffer zone around Lake Teletskoye; Katunsky Zapovednik and a buffer zone around Mount Belukha; and the Ukok Quiet Zone on the Ukok Plateau, was inscribed on the World Heritage List as a natural site;

Further noting that the Katunsky Zapovednik also figures in the list of the UNESCO Man and Biosphere Reserves;

Recognizing the importance and unique value of the archaeological and cultural remains, including the frozen tombs, scattered in the Altai Mountains, which cover a significant contiguous part of China, Mongolia, Kazakhstan and the Russian Federation, belong to the past shared between these countries, and in which truly international cultures developed, attested by contacts with major civilizations of the ancient world, including China, Persia, Greece and others, and which therefore constitute a common legacy for humanity;

Bearing in mind the fact that the global warming phenomenon is threatening the permafrost which allowed preservation of the tombs and their relics for several millennia;

Calling attention to the fact that the destruction of the frozen tombs as well as the valuable relics located inside would lead to a great loss of significant knowledge about one of the once flourishing civilizations in the history of humanity;

Appreciating the efforts made by UNESCO, in close co-operation with Ghent University, Belgium and thanks to the UNESCO/Flanders Funds-in-Trust, to take initiatives to preserve the frozen tombs;

Left Plaque: Panther Curved Round. Gold; cast, chased. 10.9 x 9.3 cm. Sakae Culture. 7th - 6th century BC. Inv. no. SI -1727.1/88. © The State Hermitage Museum, St. Petersburg.

Recommend, in the spirit of the resolution adopted by the workshop “Synergy of Natural and Cultural Diversity as Basis for Sustainable Development of the Altai Mountainous Region”, held at UNESCO in Paris, on October 11, 2005, attended by Government of Russian Federation as well as of the Altai Republic,

that the authorities of the Russian Federation and of the Altai Republic,

take all measures to preserve the World Heritage Value of the Altai Mountains and ensure that all the activities on the World Heritage Site be undertaken in accordance with the World Heritage Convention;

start a co-operative process with neighbouring States Parties such as China, Mongolia and Kazakhstan, to consider a possible transboundary expansion, as recommended by the World Heritage Committee;

make efforts to submit the request for the inclusion of the Ukok Plateau on the World Heritage List by extending the nomination of “Golden Mountains of Altai” into a mixed (natural and cultural) site;

that the other concerned countries, such as China, Mongolia, and Kazakhstan;

take necessary steps to submit the site of the Altai Mountains on their respective territories for inscription on the World Heritage List and to the UNESCO MAB Reserves List for a better preservation of the Altai Mountain in its integrity;

that the concerned authorities, academics, scholars, institutes and universities;

urgently take all the necessary measures to safeguard and preserve the frozen tombs in the Altai Mountains, endangered by thawing due to global warming. To this end, the following technical recommendations were made:

- the establishment of an accurate map and a thorough inventory of all archaeological monuments, as a first step, accompanied by detailed information related to their location, and description, since the frozen tombs should be considered as part of the unique cultural landscape of the Altai Mountains. This will be the basis of long-term efforts for preservation of the frozen tombs endangered by thawing. It is of utmost importance that surveys focus upon all archaeological remains present in the area. During the selection of areas and monuments to be protected, all elements of the cultural and archaeological landscape should be taken into account;
- the identification of a compatible methodology for mapping the Altai Mountains. Integration of maps is most important, and should take into account the norms and particular circumstances of each country. A discussion between archaeologists and other specialists should be organised, as there is a crucial need to determine the most appropriate scale of these maps;

- the organisation of activities and the initiation of projects in order to develop models to understand better environmental conditions in the Altai Mountains in the field of geology, geo-cryology and climatology in the past (paleo-environment) and into the future;
- the monitoring of the frozen burial sites. Given their deteriorating condition, all appropriate technologies should be used. Therefore the participants urge for the organization of a discussion between archaeologists and other specialists to determine the best methods to be used.

carry out all activities related to survey and excavation on the frozen tombs according to the highest professional and ethical standards, including dialogue with and respect and consideration for, indigenous people, as well as respect for environmental integrity;

undertake all the activities such as excavation, preservation, conservation and development in accordance with UNESCO recommendation on “International Principles Applicable to Archaeological Excavations” and International ICOMOS’s relevant charters;

make efforts to launch a global strategy for preservation of the frozen tombs and cultural heritage of the Altai Mountains in a long-term perspective;

that UNESCO World Heritage Centre

support the initiative for launching a global strategy for the preservation of cultural heritage in the Altai Mountains, including the frozen tombs, which constitutes a unique cultural landscape in the Eurasian continent.



Plaque with Bulls.
Bronze; cast.
13 x 6.5 cm.
Tagar Culture.
2nd - 1st century BC.
Inv. no. 1126/212.
© The State Hermitage
Museum, St. Petersburg.

The participants of the workshop wish to express their gratitude to the UNESCO World Heritage Centre for the organisation of the Workshop and for the support of this initiative. ■



Afterword

Ivan BELEKOV

Chairman of the Parliament of the Altai Republic, Russian Federation
Chairman of the branch of the National Commission
of the Russian Federation for UNESCO in the Altai Republic

THE ALTAI REPUBLIC OF THE RUSSIAN FEDERATION was honoured when the Russian part of the Golden Mountains of the Altai was inscribed on the World Heritage List as a natural site in 1998. The Altai Mountains represent an invaluable expression of the region's natural and cultural heritage. Recently, however, their preservation has come under threat. The UNESCO project, *Preservation of the Frozen Tombs of the Altai Mountains*, has led to international awareness being raised of their cultural value as well as of the present threats to them, such as climate change, the thawing of the permafrost and various related development matters. The approach to the preservation of the cultural heritage employed by the UNESCO project and the technical work carried out under it have helped to increase public understanding of the value of the Mountains and the need to preserve the unique cultural landscape of the Altai. This is especially important because for many centuries natural and cultural diversity has been considered a single whole by the Altai nation.

I would therefore like both to thank the UNESCO World Heritage Centre for its work and to express my renewed support for it. During an international workshop on the *Synergy of Natural and Cultural Diversity as the Basis for the Sustainable Development of the Altai Mountainous Region*, held on 11 October 2005 at UNESCO Headquarters in Paris in the presence of the Organization's Assistant Director-General for Culture, recommendations were made that stressed the cultural value of the Altai Mountains. They also highlighted the Government of the Altai Republic's wish that the cultural value of the Golden Mountains of the Altai should be recognized by their inscription as a mixed site on the World Heritage List. Indeed, the *kurgans* and the artifacts that have been found in them constitute invaluable testimony of the cultures and civilizations that once flourished on the Asian steppe, and they are of the utmost importance not only for understanding the history of this region, but also that of the world as a whole.

It is my fervent hope that UNESCO will continue its invaluable efforts, which are aimed at preserving this rich landscape and protecting both the natural and cultural value of the Altai Mountains for succeeding generations.

Left Bridle Plaque:
Ibex. Wood, leather;
carved. 10.4x8.9 cm
Pazyryk Culture.
5th–4th century BC.
1685/151.

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Museum, St. Petersburg.



Ivan BELEKOV



Front cover Terminal:
Stag on a Ball.
Leather, wood; carved.
H. 11.5 cm. Pazyryk
Culture. 5th century BC.
Inv. no. 1684/154.
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Frontispiece Plaque
from a Horse Harness,
with an Eagle. Wood;
carved. 3,6 x 4,6 cm.
Pazyryk Culture.
6th century BC.
Inv. no. 2179/131.
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Title page Pazyryk
Culture horse-harness
decoration in the form
of a carved wooden
vulture. Ak-Alakha-1
necropolis, excavated
by N. V. Polosmak.
© *V. Molodin*

Last page Plaque
Shaped Like an Eagle
Gold; stamped.
1.7 x 2 cm.
Pazyryk Culture.
6th century BC.
Inv. no. 2824/1.
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World Heritage Convention

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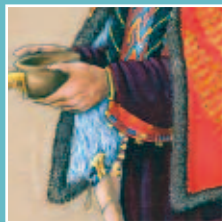
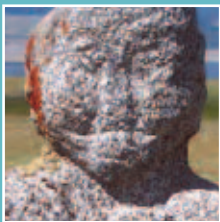
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PRESERVATION

OF THE FROZEN TOMBS OF THE ALTAI MOUNTAINS



With the support of
the Flemish government

