

NEW RADIOCARBON DATES OF THE NORTH ASIAN STEPPE ZONE AND ITS CONSEQUENCES FOR THE CHRONOLOGY

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ABSTRACT. The chronological problems of the Steppe zone have been under intensive investigation during the last years but no generally accepted chronological system existed up to now. We present new radiocarbon dates of samples from several excavation sites. The dates allow a comparison of the Bronze Age development in the Siberian Steppe Zone with other neighboring regions.

INTRODUCTION

We have been working in the cemeteries of Suchanicha, Potroshilovo, and Bajkara collecting samples for radiocarbon dating. Together with data gathered at the Okunev sites of Čebaki and Ujbat, and a Bainov-sample from Krivaja, these samples give us new absolute dates for different Bronze Age cultures. They include Afanas'ev, Okunev, Andronovo, and Karasuk (classical Karasuk and Kamennyj Log phase) as well as the Scythian culture, the early Bainov, and the late Tes' phase of the Tagar culture—the later related with the Huns. Presented dating is a continuation of the Cupertino project performed in collaboration with the ¹⁴C laboratory and specialists of the Institute of the History of Material Culture of Russian Academy of Sciences (St Petersburg) to investigate chronological problems of the South Russian and Siberian Steppe Zone.

METHODS

Chemical pretreatment of wood and charcoal samples was done with A-A-A treatment (Mook and Streurman 1983). The procedure for separating the collagen fraction of bones was done essentially according to Longin and Olsson (Longin 1970; Olsson et al. 1974). Dating was performed with gas proportional counters of the Houtermans-Oeschger type, using methane at 133.3 kPa pressure as a filling gas. Measurement control and data processing were achieved with the help of computers (Görzdorf 1990; Görzdorf and Bojadžev 1996). Since 1997 (Bln-4977) a modern electronic measurement has been used. Preamplifier, pulse amplifier, comparator, pulse shaper, and anti-coincidence are located in a box (19 cm × 10 cm × 5 cm), which is directly connected to the counter. Detection of variation in the environmental radiation and inspection of the long-time stability of the electronics were required in order to reach measurement accuracy (Görzdorf 2000). The δ¹³C-measurements were done by H Erlenkeuser and colleagues (Leibniz-Labor, University of Kiel) and are reported with respect to PDB-standard.

RESULTS

The tree ring count of charcoal and wood samples could not be determined. In the calibration program OxCal v3.4 (Ramsey 1995, 2000) we used the decadal calibration curve (Stuiver et al. 1998) as a first approximation for all samples. The calibration intervals were presented with confidence of 68.2% in a 10-year rounded form. The following table shows the dating results and locations:

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Ujbat (53° 43' 31''N, 90° 22' 16''E)		
Bln-5196	burial mound 1, grave 4, human bone	-19.5‰ 4016 ± 30 BP 2580–2470 cal BC
Bln-5195	burial mound 1 grave 1, human bone	-19.5‰ 3734 ± 29 BP 2200–2160 cal BC 2150–2120 cal BC 2090–2040 cal BC
Potroshilovo (53° 54' 14''N, 91° 33' 15''E)		
Bln-5163	enclosure 5, grave 1 human bone	-19.3‰ 3397 ± 30 BP 1740–1680 cal BC 1670–1630 cal BC
Bln-5194	grave 7 human bone	-20.4‰ 3295 ± 32 BP 1610–1520 cal BC
Bln-5198	enclosure 5, grave 2 human bone	-20.1‰ 3269 ± 28 BP 1610–1510 cal BC
Bln-5197	grave 11 human bone	-19.7‰ 3189 ± 28 BP 1500–1420 cal BC
Bln-5193	grave 20 human bone	-19.7‰ 3164 ± 28 BP 1500–1470 cal BC 1460–1400 cal BC
Bln-5164	grave 7 human bone	-17.7‰ 2994 ± 26 BP 1300–1190 cal BC 1180–1160 cal BC 1150–1130 cal BC
Bln-5165	grave 1 human bone	-15.4‰ 2905 ± 26 BP 1190–1180 cal BC 1130–1020 cal BC
Krivaja (53° 33' 27''N, 91° 39' 16''E)		
Bln-5166	grave 1 human bone	-15.6‰ 2552 ± 32 BP 800–760 cal BC 690–660 cal BC 630–590 cal BC 580–560 cal BC
Bajkara (53° 53' 37''N, 67° 25' 20''E)		
Bln-5031	burial mound 4, grave wood	-25.6‰ 3408 ± 37 BP 1750–1630 cal BC
Bln-5032	burial mound 2 grave 3 wood	-26.3‰ 3346 ± 42 BP 1690–1600 cal BC 1570–1530 cal BC
Bln-5200	burial mound 2 grave 2 human bone	-20.0‰ 3279 ± 28 BP 1610–1510 cal BC
Bln-5169	burial mound 2 grave 1 human bone	-19.8‰ 2506 ± 28 BP 770–750 cal BC 690–540 cal BC
Bln-5185	burial mound 2 grave 1 human bone	-20.2‰ 2496 ± 28 BP 770–750 cal BC 770–540 cal BC
Bln-5188	burial mound 8 grave human bone	-20.6‰ 2370 ± 29 BP 510–390 cal BC
Bln-5029	burial mound 1, trench 1/3 birch bark	-28.9‰ 2338 ± 35 BP 480–470 cal BC 420–370 cal BC 270–260 cal BC
Bln-5030	burial mound 1, trench 3/5 wood	-29.0‰ 2343 ± 31 BP 480–470 cal BC 420–380 cal BC
Bln-5184	burial mound 1, north, fire place charcoal	-26.7‰ 2083 ± 26 BP 160–130 cal BC 120–50 cal BC
Bln-5187	burial mound 1, grave 1, skeleton 1 human bone	-19.4‰ 2081 ± 25 BP 150–130 cal BC 120–40 cal BC
Bln-5172	burial mound 9, grave human bone	-19.5‰ 1952 ± 26 BP 20–90 cal AD
Bln-5199	burial mound 1, grave 2, skeleton 2 human bone	-19.1‰ 281 ± 24 BP 1520–1560 cal AD 1630–1660 cal AD
Bln-5028	burial mound 1, trench 3 wood	224 ± 31 BP 1640–1680 cal AD 1770–1800 cal AD 1940–1950 cal AD

COMMENTS AND CONCLUSIONS

Figure 1 shows earlier published results (Görsdorf, Parzinger, Nagler, and Leont'ev 1998) together with the above-presented dates. Dates from Suchanicha, Potroshilovo, Čebaki, Ujbat, Krivaja and Doge Baary II can be considered as an important progress in the absolute dating of South Siberian cultures. From Suchanicha, for example, we now have 15 dates from the same site, which seems extremely interesting. Nevertheless, the results of these dates and their interpretation cause trouble when compared with the prevailing ideas on absolute chronology of South Siberian cultures (Vadeckaja 1986). That fact should not surprise, because all older dates published by specialists have mostly been uncalibrated (Semencov et al. 1969). But this also means that the dates presented in this paper can only be considered as a first step and must be followed by many more dates from South Siberia and neighboring regions to solve the still existing chronological problems.

The earliest graves from the extensive cemetery of Suchanicha on the eastern shore of the river Jenisej and North of Minusinsk belong to the *Afanas'ev culture* dated for between the middle of 3rd and the beginning of the 2nd millennium BC (Vadeckaja 1986, 11–26). The calibrated dates from Suchanicha, however, speak for quite an earlier chronological position of this culture (Figure 1): they mostly belong to the first half of the 3rd millennium BC, one of them even going back to the end of the 4th millennium BC (Bln–4764).

In general, Afanas'ev is followed by the *Okunev culture*. We are able to present two new Okunev dates from Ujbat. All dates of the Okunev culture from Čebaki and Ujbat V (Görsdorf, Parzinger, Nagler and Leont'ev 1998) fit quite well in this new tendency of higher dating of South Siberian cultures. Okunev was considered to start around 1800 BC and to end around the middle of the 2nd millennium BC (Vadeckaja 1986:27–40). But six new dates, from graves (Ujbat V) as well as from a hill-fort-like settlement or sanctuary (Čebaki), show the same result: they all belong to the last third of the 3rd millennium BC, reaching the very beginning of 2nd millennium BC (Figure 1).

Five new dates for the Andronovo culture come from the Potroshilovo graveyard, which is not too far from Suchanicha. These dates clearly show that the “classical” Andronovo phase (Fedorovka phase) follows Okunev and mainly belongs to the first half of the 2nd millennium BC. The transition between Okunev and Andronovo-Fedorovka should be somewhere in the first third of the 2nd millennium BC. In case of the chronological relation between Andronovo-Fedorovka and “classical” Karasuk our dates again show a sequence. At the moment it seems that the Karasuk culture follows Andronovo-Fedorovka and the transition should occur after the middle of the 2nd millennium BC. Nevertheless, we do not have enough dates for “classical” Karasuk (only two from Potroshilovo graveyard) to solve this chronological problem.

The six Karasuk dates from Suchanicha (Figure 1) represent the so called “*Kamennyj Log phase*” of that culture. There has been a long discussion on the chronological position of Kamennyj Log; some scholars consider it to date back to early Karasuk, others (the majority) to late Karasuk or even as a kind of transition to early Tagar (Leont'ev, Parzinger, Nagler 1996:175–204). If Kamennyj Log really represents late Karasuk and the transition to early Tagar, then the above presented dates—that with the exception of Bln 4763 date mostly to the last two centuries of the 2nd millennium BC—are a big surprise. The last third of the 2nd millennium BC is the time of the late Shang dynasty (Anyang), as historical dates as well as new Chinese ¹⁴C dates prove (Lin Yün 1986:242). The relation between Anyang and Karasuk, however, is out of question. In any case, the problem is still not definitely solved. It depends also on the interpretation of Kamennyj Log, especially in relation to Karasuk, which is rather an archaeological problem. Taking into account the dates from Potroshilovo and Suchanicha presented above, it seems that “classical” Karasuk and Kamennyj Log are almost contemporaneous

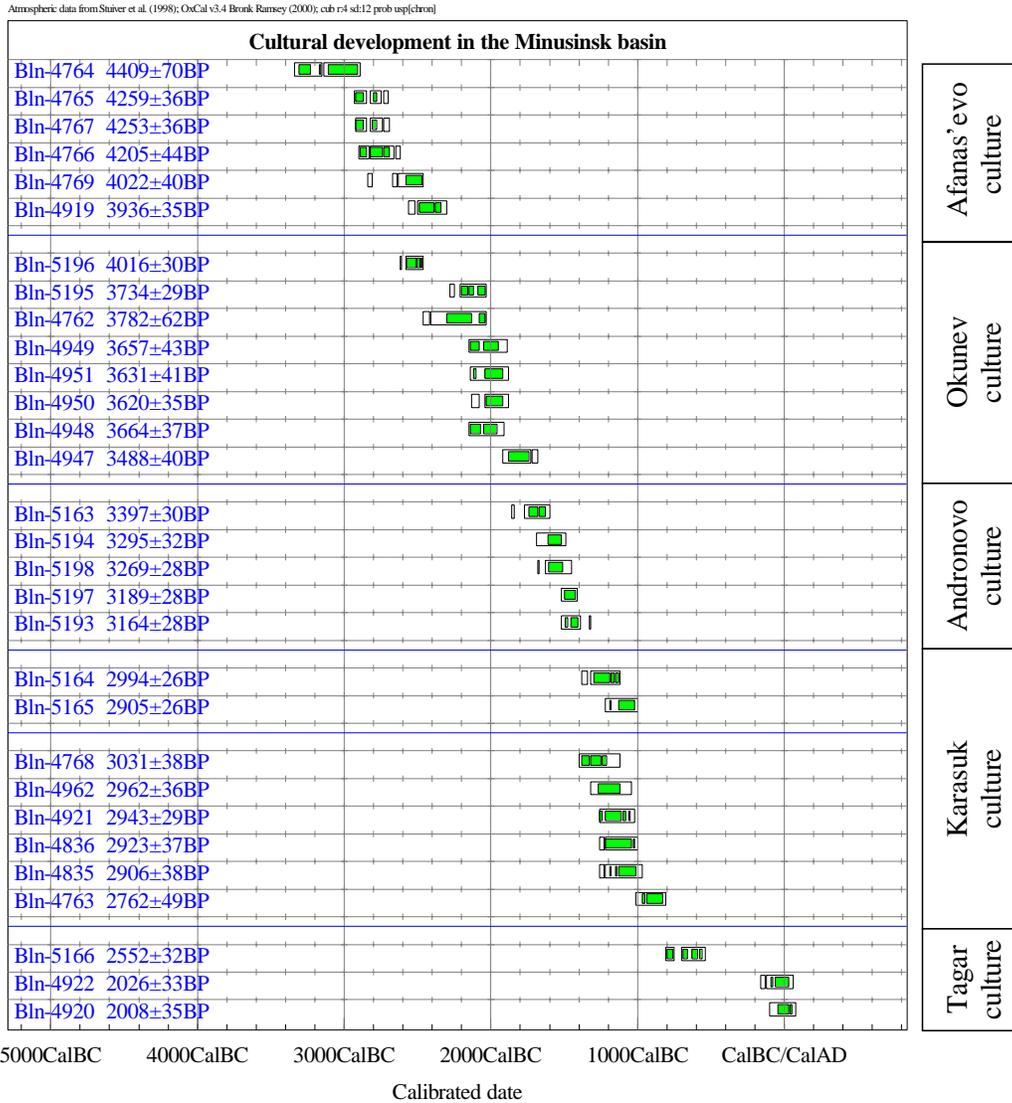


Figure 1 Cultural development in the Minusinsk basin

during the last three to four centuries of the 2nd millennium BC. If future dates prove this result, then Karasuk and Kamennyj Log should be considered as different cultures that existed at the same time within the Minusinsk basin. But in that case, one has to check the archaeological definitions for both of them—quite a complicated topic—that cannot be treated here in detail.

One date from Krivaja is of special importance. It is a new date for the Bainov phase—the earliest phase of the Tagar culture in the Minusinsk basin that may be considered to belong more or less to the so called early Scythian Arzan horizon, or maybe slightly younger. The date presented above fits quite well into our chronological framework following the youngest Kamennyj Log dating from Suchanicha. This would mean that the transition between Kamennyj Log and the earliest Tagar culture should

have taken place at the latest in the 9th century BC. However, we have to wait for further dates to be certain.

The youngest dates from Suchanicha belong to the latest phase of the Tagar culture, the so called *Tes' phase*, that Russian scholars always considered to represent the Huns mentioned in Chinese annals for the last centuries BC in the north of their empire. The relative and also absolute chronology of that period is leaves many open questions. The *Tes'* phase of the Tagar culture has always been dated as the last two centuries BC (Vadeckaja 1986:129–56). But our three dates from graves in the Suchanicha graveyard are slightly younger (Figure 1).

Another interesting point for chronological investigation is the burial mound cemetery of Bajkara near Sergeevka (north of Kazakhstan), about 1600 km west of the Minusinsk basin. We dated a set of samples from this site (Figure 2). The dates of the Andronovo culture point to about the same age as the ones in the Minusinsk basin. The dates of scythian and sarmatian graves in Bajkara give us time marks for the use of the graveyard in the second half of the first millennium BC and the first centuries AD. The two young dates determine the time of robbery in the mound cemetery of Bajkara.

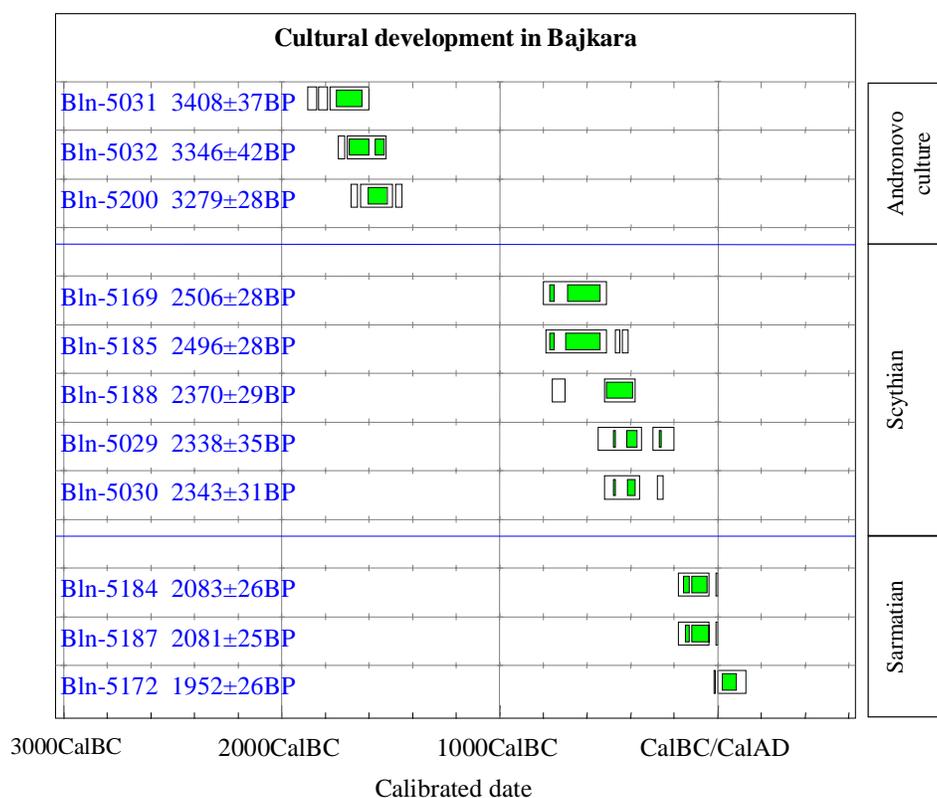


Figure 2 Cultural development in the excavation site Bajkara

It was our aim to show that the absolute chronology of most of the South Siberian cultures still is not at all sure. Thanks to new ^{14}C dates we have to get used to the idea of higher chronology for most of these cultures. For example, the high age of the Afanas'ev culture in the Siberian Steppe contradicts the often expressed opinion that the pit grave culture spread from west to east. Discussion based on uncalibrated dates is completely useless and anachronistic. That also means breakup with most of the traditional chronological points of view. The discussion is definitely continuing and the only solution is to collect as many samples for ^{14}C and dendrochronology as possible in order to get a much more complete, new set of dates.

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