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Wang Yinchen

Northwest University
Xi'an, China

E-mail: nwuwangyinchen@outlook.com

The Remains of Afanasievo Culture Found in Northwest China: A Review

Afanasievo culture (3100–2500 BC) is the first archaeological culture of the Iron age in southern Siberia, which has an important influence on the origin and development of pastoralism in eastern Eurasian steppes. It is noteworthy that some remains of the Afanasievo culture have been found in Xinjiang and western Inner Mongolia. This paper reviews these remains, pointing out that Afanasievo culture mainly spread out along two mountain corridors, the western one was the Altai–Tarbagatai–West Tianshan corridor, and the eastern one was the Altai–Khangai.

Keywords: Eurasian Steppe, South Siberia, northwestern China, Xinjiang, Inner Mongolia, Early Pastoralism.

Ван Иньчэн

Северо-западный университет
Сиань, Китай

E-mail: nwuwangyinchen@outlook.com

Следы афанасьевской культуры, найденные на северо-западе Китая: обзор

В Южной Сибири Афанасьевская культура (3100 – 2500 гг. до н. э.) – первая культура железного века, которая оказала важное влияние на происхождение и развитие скотоводства в степях на востоке Евразии. Важно отметить, что следы афанасьевской культуры были найдены в Синьцзяне и на западе Внутренней Монголии. В данной статье рассматриваются эти следы, отмечается, что афанасьевская культура в основном распространена вдоль двух горных хребтов – Алтай–Тарбагатай–Западный Тяньшань на западе, Алтай–Хангай на востоке.

Ключевые слова: евразийские степи, Южная Сибирь, северо-западный Китай, Синьцзян, Внутренняя Монголия, раннее скотоводство.

The remains of Afanasievo Culture (3100–2500 BC) are mainly distributed in northwestern Altai and Minusinsk basin in Russia. Its cultural characteristics are mainly reflected in tumuli with round stone enclosures, human bone lying supine with flexed limbs, egg-shaped pottery with sharp or round bottom, and cedar needle-shaped patterns. There is a strong connection between Afanasievo people and Pit-Graves people in Volga-Ural, which is reflected in the characteristic of physical anthropology [Debets, 1948], genetic information [Allentoft, Sikora, Sjogren, 2015; Mathieson, Lazaridis, Rohland, 2015] and burial custom [Morgunova, 2014]. They might be the first people who herded the domesticated sheep in the eastern Eurasian steppe [Hermes Taylor, Tishkin, Kosintsev, 2020].

Except for Russia, some relevant remains have been found in Uzbekistan, Mongolia and China, roughly distributed in two lines (fig. 1). This paper has reviewed these remains, and preliminarily discussed cultural characteristics and the diffusion process of Afanasievo culture.

Relevant Remains Found in the West

There were seven relevant graves and one round stone enclosure found in the southern Altai, Tarbagatai mountain, Ili valley and Upper Zeravshan river basin (tabl. 1). A.A. Kovalev has written two papers to discuss the characteristics of relevant potteries, such as egg-shaped pots and burners [Kovalev, 2017; 2019].

On the southern Altai steppe, graves 21–22 of Ayituohan I can be recognized as the remains of Afanasievo culture, which were reflected in the round stone enclosure, human bone lying supine with flexed limbs, their heads to the west (fig. 2, 1), and similar funerary objects (egg-shaped pottery and burner, (fig. 3, 13)). However, stone slab coffins found in graves 21–22 of Ayituohan I (fig. 2, 2) could not be regarded as the cultural characteristic of Afanasievo culture because coffins were rare in Afanasievo's graves in the Russian Altai and Minusinsk basin. On the contrary, similar stone slab coffins were often found in the graves of Okunev Culture, Chemurchek Culture and Karakol Culture, which were the three main archaeological cultures in Sayan-Altai after Afanasievo culture. Human bones from Ayituohan I grave 22 can be dated from 2600 BC to 2500 BC (tabl. 2, fig. 4). In this period, Afanasievo culture was replaced by Okunev Culture in the Minusinsk basin [Polyakov, 2022], and Chemurchek Culture was raised in southeast Altai. In this background of cultural history, we assume that graves 21–22 of Ayituohan I could belong to Afanasievo people who went south to Altai. The new stone slab coffins might be important evidence to reflect the fact of cultural communication between different people in the Trans-Altai region.

In the Tarbagatai mountain and Ili valley, the cultural characteristics of the relevant remains are roughly similar to Afanasievo cultures, such as round kurgan, human bone lying supine with flexed limbs, and their heads to the west. But it's worth noting that the catacomb's construction was also found in these related graves. In addition, grave 15 in Songshugou cemetery was only found round kurgan that was built with ordinary sand and loess (fig. 2, 3), not the round stone enclosure. Besides, one pottery unearthed

Table 1. Relevant Remains Found in the West

Region	Site/ Cemetery	Monuments	Artefacts	Reference
Habahe county, Xinjiang, China	Ayituohan I Cemetery	Grave 21: round stone enclosure, 3 pits(A, B and C), stone slab coffins, human bone lying supine with flexed limbs, head to the west.	Pit A: egg-shaped pottery	Hu Xingjun, Zhang Jie, Hou Zhijun, 2017.
		Grave 22: round stone enclosure, late grave intrude into its pit, 2 human bones were buried in two layers, both were lying supine with flexed limbs, heads to the west.	egg-shaped pottery and burner	
Hoboksar County, Xinjiang, China	Songshugou Cemetery	Grave 15: round kurgan, human bone lying supine with flexed limbs, head to the west.	egg-shaped pottery, microlith	Alifujiang Niyazi, Ning Xing, 2018.
		Grave 16: round stone enclosure, catacomb, human bone lying supine with flexed limbs, head to the west.	egg-shaped pottery	
Tacheng City, Xinjiang, China	Abudula Reservoir Cemetery	No relevant burial was found	pottery fragments decorated with needle-shaped patterns	Hu Xingjun, Alifu, 2016.
Emin County, Xinjiang, China	Huoerjite Cemetery	Grave 9: round kurgan, human bone lying supine with flexed limbs.	flat bottom pottery	Wang Yongqiang, Hou Zhijun, Yan Xuemei, et al., 2018.
Yumin County, Xinjiang, China	Aletengyemule Reservoir Cemetery	Grave 74: round stone enclosure, human bone lying supine with flexed limbs, head to the west.	egg-shaped pottery	Hu Xingjun, Ai Tao, 2012.
Nilka County, Xinjiang, China	G218 III Grave 5	Pit A: pit-grave, human bone lying supine with flexed limbs, head to the west.	Flat bottom pottery	Telbayier, Liu Hanxing, Cao Yu, et al., 2020.
		Pit B: catacomb, human bone lying supine with flexed limbs, head to the west.	egg-shaped pottery with sharp bottom,	
		Pit C: catacomb, 2 human bones lying supine with flexed limbs, heads to the east.	stone tool	
Samarqand, Uzbekistan	Zhukov site	round stone enclosure, a 0.47-meter high stela was standing central.	spherical pottery, egg-shaped pottery and burner	Avanesova., 2012.

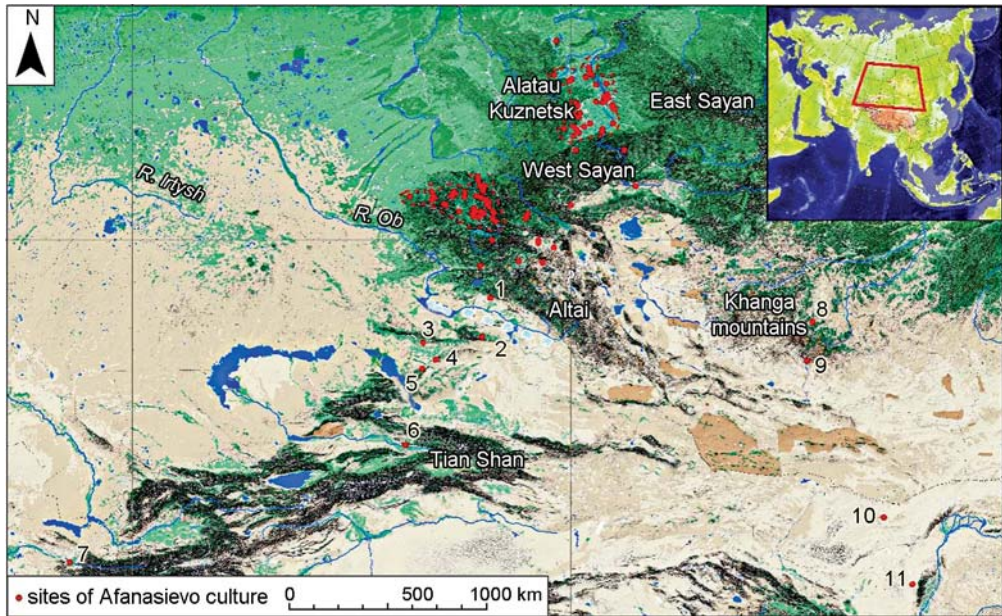


Fig. 1. Major Archaeological Sites Mentioned in the Text.

1 – Ayituohan I Cemetery (阿依托汗一号墓群); 2 – Songshugou Cemetery (松树沟墓地); 3 – Abudula Reservoir Cemetery (阿布都拉水库墓地); 4 – Huoerjite Cemetery (霍吉尔特墓地); 5 – Aletengyemule Reservoir Cemetery (阿勒腾也木勒水库墓地); 6 – G218 III (墩那高速III标段); 7 – Zhukov site (святилище Жуков); 8 – Altan sandal uul (Алтан сандал уул); 9 – Shatar chuluu (Шагар чулуу); 10 – Suhongtu Site (苏红图遗址); 11 – Toudaoshazi Site (头道沙子遗址).

Table 2. ^{14}C Dates of the Relevant Remains Found in the West (human bone samples, AMS)

Sample	Monuments		Lab number	^{14}C age (BP)	Reference
AYTHI_M22	Ayituohan I Cemetery		BA141956	4060±25	Hu Xingjun, Zhang Jie, Hou Zhijun, 2017.
SSGSD_M15	Songshu-gou Cemetery	Grave 15	Beta-473968	4370±30	Alifujiang Niyazi, Ning Xing, 2018.
SSGSD_M16		Grave 16	Beta-473968	4100±30	
ALTEML_M74	Aletengyemule Reservoir Cemetery Grave 74		BA120452	3940±40	Hu Xingjun, Ai Tao, 2012.
HJRT_M9	Huoerjite Cemetery Grave 9			4250±30	Wang Yongqiang, Hou Zhijun, Yan Xuemei, et al., 2018.
G218III_M5_A	G218 III Grave 5	Pit A		4280±30	Telbayier, Liu Hanxing, Cao Yu, et al., 2020.
G218III_M5_B		Pit B		4230±30	
G218III_M5_C_S		Pit C, southern human bone		4270±30	
G218III_M5_C_N		Pit C, northern human bone		4240±30	

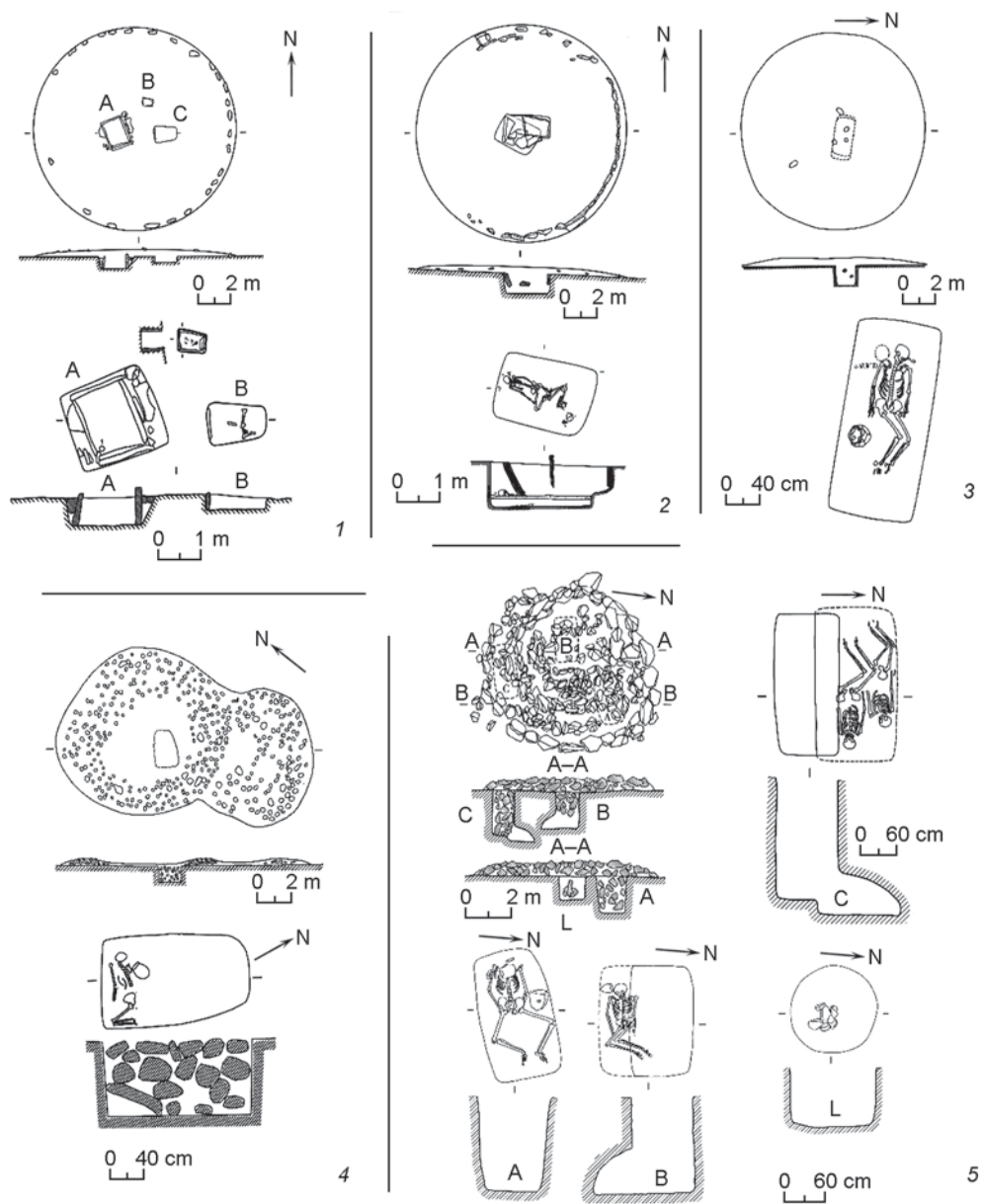


Fig. 2. Relevant Remains Found in the West.

1 – Aytuoahan I grave 21; 2 – grave 22; 3 – Songshugou grave 15; 4 – Aletengyemule Reservoir grave 74; 5 – G218 III grave 5; [1: Hu Xingjun, Zhang Jie, Hou Zhijun, 2017: fig.47,48,52,53; 3: Alifujiang Niyazi, Ning Xing, 2018: fig.14; 4: Hu Xingjun, Ai Tao, 2012: fig. 21–22; 5: Telbayier, Liu Hanxing, Cao Yu, et al., 2020: fig.2;].

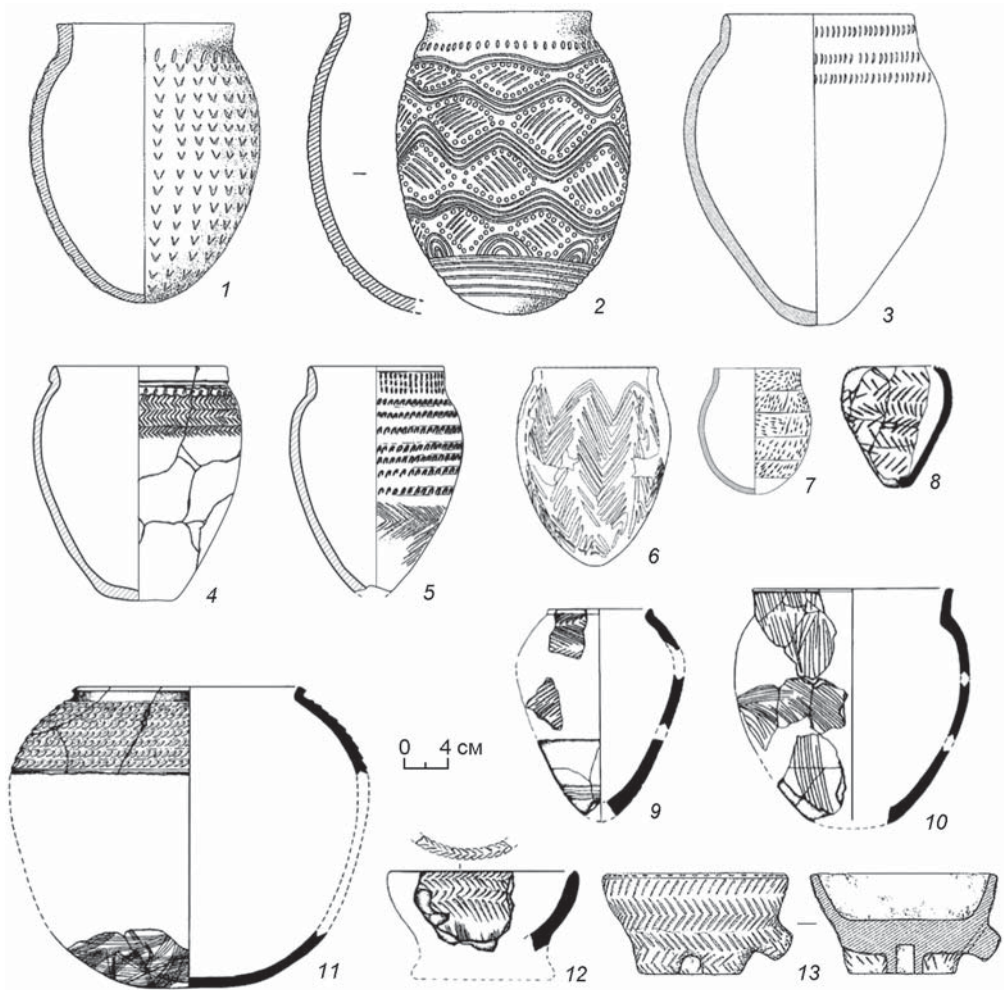


Fig. 3. Relevant Potteries Found in the West.

1-3, 5-10 – egg-shaped pottery (1 – Ayituohan I grave 21; 2 – grave 22; 3 – Songshugou grave 15; 1, 5 – G218 III grave 5B; 2, 6 – Songshugou grave; 1, 7 – Aletengyemu Reservoir grave 74; 1, 8-10 – from Zhukov site) ; 4 – flat bottom pottery (G218 III grave 5A; 2) ; 11 – spherical pottery (Zhukov site) ; 12, 13 – burner (12 – Zhukov site, 13 – Ayituohan I grave 22:2) . [1, 2: Hu Xingjun, Zhang Jie, Hou Zhijun, 2017, fig. 63; 3, 6: Alifujiang Niyazi, Ning Xing, 2018, fig.39; 4, 5: Telbayier, Liu Hanxing, Cao Yu, et al., 2020, fig.6; 7: Hu Xingjun, Ai Tao, 2012, fig. 55; 8-11: Avanesova., 2012, fig.2].

in Ili is similar to Afanasievo's egg-shaped pottery, but its bottom is flat (fig. 3, 4). This pottery is more likely to be an imitation.

Based on the comparison of pottery ornamentation, Kovalev argued that the relevant remains found in Xinjiang may be directly related to the vertical Pit-Graves culture in the western Eurasian steppe, and not necessarily formed by the influence of the Afanasievo culture in South Siberia [Kovalev, 2019].

Kovalev's opinion has some reasonable points. For example, the round kurgan built by sand and loess reflects more on the influence of Pit-Graves culture. However,

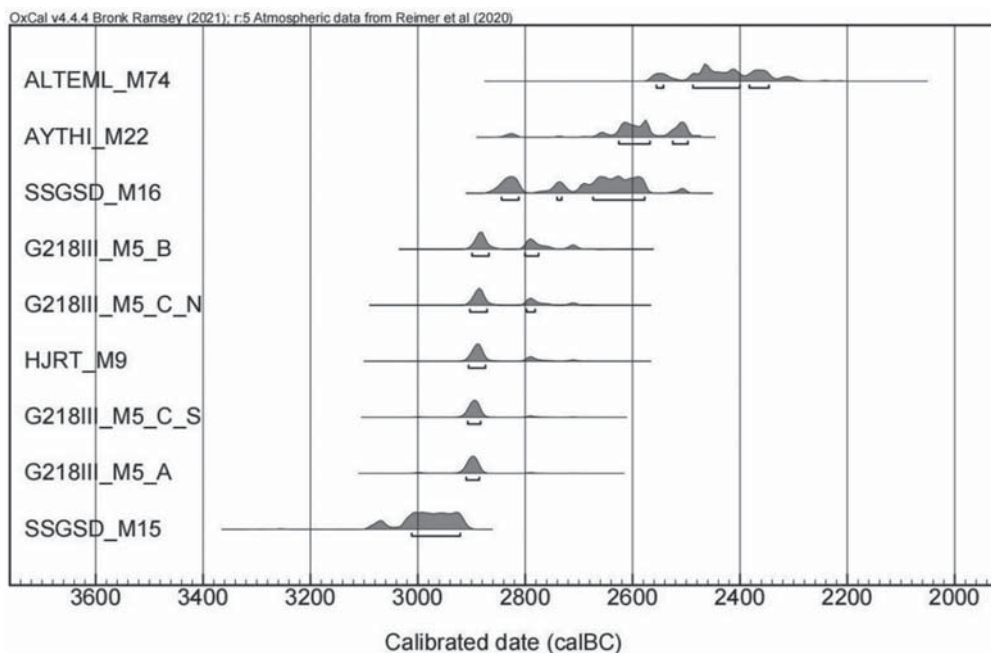


Fig. 4. Calibrated dates of Relevant Remains Found in the West.

on the whole, most of these graves have a round stone enclosure, which is one of the characteristics of the Afanasievo culture that is most different from the Pit-Graves culture. Therefore, the relevant remains in Tacheng and Ili should also belong to the Afanasievo people who went south to the Altai Mountain. It dates from 3100 BC to 2400 BC (tabl. 2, fig. 4), which is roughly in the same period as the Afanasievo culture. It also reflects that the Afanasievo people had been spreading along the mountain corridor of Altai, Tarbagatai and west Tianshan mountains. In this process, the Afanasievo culture not only absorbed other cultures' characteristics but was also accompanied by communication and integration between different people.

Research by Zhang Fan [Zhang, Ning, Scott, 2021] and V. Kuma [Kumar, Wang, Zhang, 2022] showed that the early Bronze Age people in north Xinjiang (e.g. Dzungaria_EBA1&2) represented by Ayituohan I graves 21–22 and G218 III grave 5 not only maintained close genetic distance with the Afanasievo people but also mixed with the genes of the North Asian people. Moreover, the mt-DNA and Y chromosome haplogroup of Songshugou grave 15 were been severally identified as A10 and C2b1, which were common in East and North Asian people (Table 3). Although this individual is not genetically related to the Afanasievo people, his grave, burial conditions and funerary objects still show a cultural link to the Afanasievo culture. It should be a good case to show the cultural exchange and mutual learning between different groups in funeral customs and material culture.

In the western end of the Tianshan mountains, Upper Zeravshan river basin, similar round stone enclosure and relevant potteries were also found in Zhukov site, Samarqand, Uzbekistan. A stela stands in the centre of this stone enclosure, surrounded

Table 3. DNA Information of Relevant Individuals in Xinjiang

Monuments	Sample	Mt-DNA haplogroup	Y haplogroup	Reference
Ayituohan I Grave 22	AYTH_M22B	U5a1a1	Q1b1	Zhang, F., Ning, C., Scott, A. et al., 2021.
	AYTH_M22C	T2d1a		
Songshugou Grave 15-16	SSG_M15_o	A10	C2b1	Kumar V., Wang W., Zhang J., et al., 2022.
	SSGM16	H2b		Zhang, F., Ning, C., Scott, A. et al., 2021
G218IIIM5	G218_M5_1	U5a1b	R1b1a2a2c1	Kumar V., Wang W., Zhang J., et al., 2022.
	G218M5-2	H15b1	R1b1a1a2a2	Zhang, F., Ning, C., Scott, A. et al., 2021
	G218M5-3N	U5a`b	Q1b1	
	G218_M5_3_o	R1b1	R1b1a2a1a	Kumar V., Wang W., Zhang J., et al., 2022.

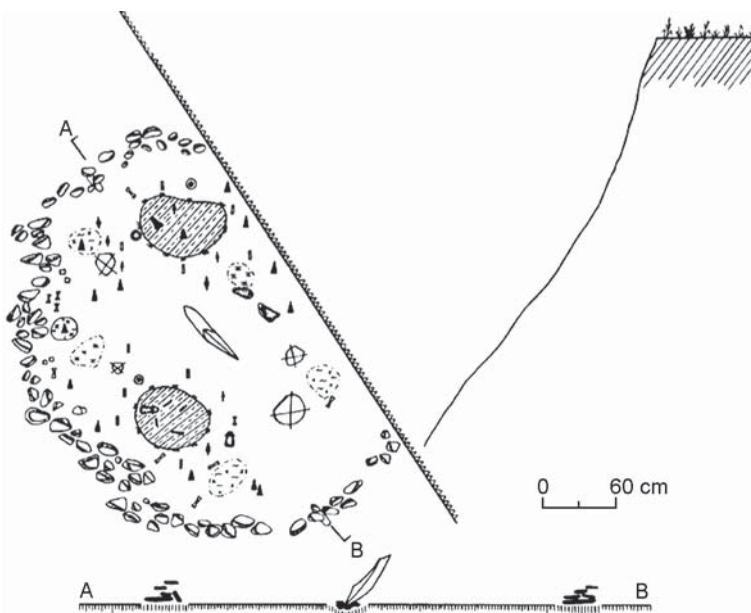


Fig. 5. Relevant Remains Found in the West. Zhukov site [Avanesova, 2012, fig. 1].

by fire remains, stone tools, animal bones and potteries (fig. 5). This round stone enclosure is different from Afanasievo's enclosure which is for burial. Hence, N. A. Avanesova considered that the Zhukov site should belong as a ritual monument in the 3rd millennium BC [Avanesova, 2012]. It is noteworthy that the potteries yielded at the Zhukov site included spherical pottery, egg-shaped pottery and burner that are similar to Afanasievo's potteries in the Minusinsk basin [Lazaretov, 2017] in terms of category, morphological characteristics and decorative pattern. Can we conclude from

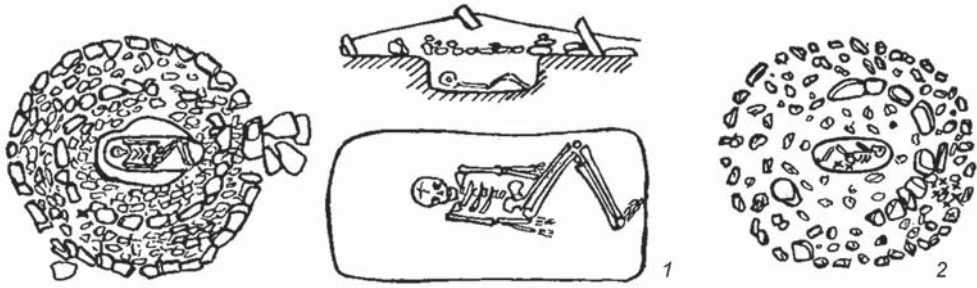


Fig. 6. Afanasievo's graves in Shatar chuluu.
1 – grave 2; 2 – grave 3 [Novgorodova, 1989].

Table 4. Relevant Graves Found in Khangai and Shatar Chuluu

Monuments		Kurgan(meter)	Pit(meter)	Human bone	Notes
Altan sandal uul	Grave 1	Diameter 4.3, height 0.2~0.3	Depth 1.1	flexed limbs, head to the east.	
	Grave 2	Diameter 4.1, height 0.3~0.35	Length width 1.4×0.6, depth1.5	flexed limbs, head to the east.	
	Grave 3	Diameter 4, height 0.3	Length width 1.3×0.7, depth1.4	flexed limbs, head to the west.	
Shatar chuluu	Grave 1	Diameter 10, height 0.7	Length width 2.8×2, depth1.7	flexed limbs, head to the east.	double round stone enclosure
	Grave 2	Diameter 6.5, height 0.35~0.4	Length width 1.5×0.9, depth0.7	flexed limbs, head to the west.	double round stone enclosure
	Grave 3	Diameter 7, Height 0.35~0.4	Length width 1.6×0.9, depth1.1	flexed limbs, head to the east.	Excavated in 1975, double round stone enclosure

this case that the Afanasievo people entered Central Asia along the Altai–Tarbagatai–West Tianshan mountain corridors? Perhaps we need more archaeological discoveries to this question systematically.

Relevant Remains Found in the East

There were six relevant graves and some potteries found in the Khangai mountains region and Alshaa league (Алшаа аймаг).

Altan sandal uul and Shatar chuluu respectively located in northern and southern Khangai. In 1971 and 1975, V.V. Volkov, who led a joint Soviet-Mongolian historical and cultural expedition, excavated six round stone kurgans at these two cemeteries [Volkov, 1980; Novgorodova, 1989. p. 81–85]. Although no more funerary objects were found, the structure of the graves and burial customs were consistent with the Afanasievo culture (fig. 6, tabl. 4).

Table 5. ¹⁴C Dates of Individuals in Shatar Chuluu

Sample	Monuments	Material	Lab number	¹⁴ C age (BP)	Sample
AT-26	Grave1	Human bone	OxA-36222	4410±31	Taylor W., et al., 2019
AT-25	Grave1	Human teeth	OxA-36221	4415±31	

Table 6. DNA Information of Relevant Individuals in Shatar Chuluu

Monuments	Sample	Mt-DNA haplogroup	Y haplogroup
Grave1(AT-26)	N1a1a1a1	R1b1a2a1a (R-P311)	Rogers L. L., et al., 2020, Jeong C., et al.,2020
Grave2(AT-25)	U5a1	J1a (J-CTS5368)	

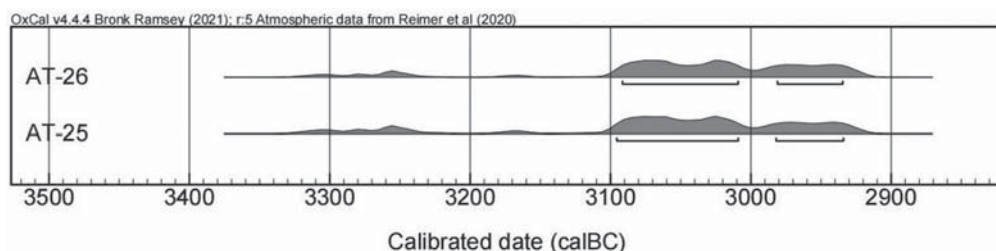


Fig. 7. Calibrated dates of Relevant Remains Found in Shatar chuluu.

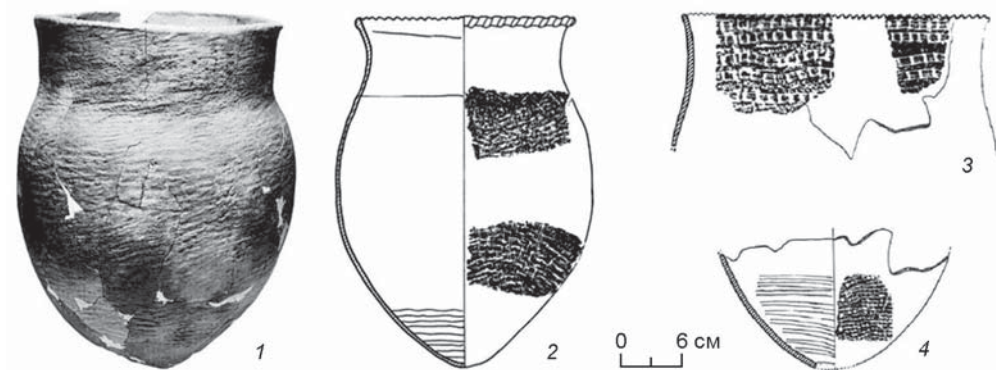


Fig. 8. Relevant Potteries Found in Mongolia and Inner Mongolia, China.

1 – stored in the Institute of History and Archaeology at the Mongolian Academy of Sciences; 2 – collected in the Toudaoshazi site; 3, 4 – collected in the Suhongtu site [1: Turbat Ts., 2016: fig. 27, 2: Wen Chenghao, Li Shuicheng, 2016b, fig.8, 3, 4: Wen Chenghao, Li Shuicheng, 2016a: fig.6].

W. Honeychurch investigated these two cemeteries in 2018 [Honeychurch, Rogers, Amartuvshin, 2021]. W. Taylor, L.L. Roger and Jeong Choongwon did some research about ¹⁴C dates and ancient genomes of the individuals from Shatar chuluu grave 1–2 [Taylor, Wilkin, Wright, 2019; Rogers, Honeychurch, Amartuvshin, 2020; Jeong, Wang, Wilkin, 2020]. The calibrated ¹⁴C datas from 3100 BC to 2900 BC (tabl. 5, fig.

7). The results of genetic tests are also consistent with Afanasievo people (tabl. 6). These pieces of evidence suggest that some of the Afanasievo people migrated from the Altai Mountains to the Khangai Mountains region in the hinterland of the Mongolian Plateau around 3000 BC.

Except for these six graves, there are two egg-shaped potteries and some fragments found in the Gobi Desert.

One of them was introduced in the Multi-volume catalogue “*Archaeological Relics of Mongolia VI: Ancient Ceramic Potteries of Mongolia*”. Ts. Turbat indicated that this egg-shaped pottery was black-grey in colour, decorated evenly with cord impressions (fig. 8, 1), and stored in the Institute of History and Archaeology at the Mongolian Academy of Sciences (МҮШИЯ ТАХ) [Turbat, 2016]. According to the author’s observation, this egg-shaped pottery had a high neck and round bottom, and the edge of its neck has jagged edge. Recent studies by Russian scholars show that similar high-neck egg-shaped pottery was common during the early phase of Afanasievo culture, especially in the remains of Russian Altai [Lazaretov, 2017; Polyakov, 2022], which were dated from 3100 BC to 2900 BC [Polyakov, Svyatko, Stepanova, 2018]. But it is puzzling that this egg-shaped pottery was decorated evenly with cord impressions which were commonly seen in potteries of North China in the 3rd millennium BC.

Other potteries (fig. 8, 2–4) were collected at Toudaoshazi and Suhongtu sites in Alshaa left banner (Алшаа зүүн хошуу), Inner Mongolia, China [Wen, Li, 2016a, 2016b]. They were similar to the above-mentioned egg-shaped pottery decorated with cord impressions (fig. 8, 1) and showed a cultural connection with the potteries in the early phase of Afanasievo culture. But the cord impressions were rarely found in the Afanasievo potteries of South Siberia, which might imply the influence of pottery decoration technology from North China. Above all, it is incredible that the Afanasievo egg-shaped potteries were brought into western Helan Mountain. The process of pottery spreading is still to be explored in the future.

Conclusion and Discussion

The archaeological remains mentioned above are generally distributed along two mountain corridors. The west corridor was the Altai–Tarbagatai–West Tianshan, there were found relevant remains linked with different phases of Afanasievo culture, which showed that Afanasievo people were active for a long time on this route. The east corridor was the Altai–Khangai corridor, there were found less relevant remains, they were only linked with the early phase of Afanasievo culture. But this route might be crossed the Gobi Desert and extended to the Helan Mountains in the southeast because of the potteries’ evidence found in Alshaa.

In general, the archaeological findings presented above show that the Afanasievo culture spread outwards mainly through mountain corridors, and might have contacts and communication with Central Asia and North China. The migration of Afanasievo people was the main factor in cultural spreading. The new raised early pastoralism and corresponding high protein diet might also have played an important role in the

migration of Afanasievo people, including but not limited to the relatively stable source of food such as meat and milk, and the motivation of seeking pasture. These questions are to be researched and explored in the future.

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