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## Okunev Culture and the Dene-Caucasian Macrofamily

*The article discusses the linguistic affiliation of the Okunev people. Arguments are cited favoring the idea that they spoke a Dene-Caucasian language belonging to the Yeniseian branch. This is indirectly evidenced by genetic and cultural ties between Okunev ancestors and Native Americans, by parallels to Okunev art in prehistoric China and on the northwestern coast of North America, and by Okunev type petroglyphs in northern Kashmir, where, in addition, a linguistic isolate is preserved—Burushaski, a language related to Yeniseian. Being a relict population, which remained in the place from where the Dene-Caucasian speaking tribes had migrated in various directions, Okunevans may have been ancestors of Yeniseians (another contender is the Karasuk population, whose ties with Okunevans remain to be established), as well as collateral relatives of Na-Dene, Sino-Tibetans, and other Dene-Caucasians. Alternative proposals, such as a Uralic, specifically Samoyed affiliation of the Okunev language, are less probable for several reasons. The idea that this language was Indo-Iranian, which almost necessarily follows from the hypothesis that the key role in Okunev origins was played by Yamnaya-Catacomb tribes, is quite unlikely. This idea is much more plausible with regard to Chaa-Khol people of Tuva, who display marked cranial affinities with a number of Yamnaya and Catacomb groups and with Scythians of the Pontic steppes. Okunevans proper show no such affinities.*

**Keywords:** Southern Siberia, Bronze Age, Okunev culture, Dene-Caucasian languages, Yeniseian languages, Burushaski.

### Introduction

The linguistic affiliation of people associated with prehistoric cultures is often believed to be an intrinsically unsolvable problem. However, the collation of linguistic, cranial, population genetic and archaeological evidence may clarify the picture in great measure. Ideas outlined in this article are not proofs; in fact, they themselves require proof. So far, they are only food for thought.

There are two principal language macrofamilies in northern Eurasia—Eurasian, proposed by J. Greenberg (2000, 2002); and Dene-Caucasian, reconstructed piecemeal by S.A. Starostin (1984, 2005), S.L. Nikolaev

(1991), A. Vajda (2010), G.S. Starostin (2012), and J.D. Bengtson (2017). The latter includes four families—North Caucasian, Yeniseian, Sino-Tibetan, and Na-Dene, and two isolates—Basque and Burushaski.

Regarding the Nostratic macrofamily, as it was reconstructed by V.M. Illich-Svitych (1971: 45, fig. 1) and A.B. Dolgopolsky (2013: 13), it has now become clear that if Dravidian and Kartvelian are related to its “core”, which consists of Indo-European, Uralic, Altaic, Chukotko-Kamchatkan, Eskimo-Aleut, and Yukaghir (they are sometimes jointly referred to as Narrow Nostratic), then the relationship is at a very deep level. Even further from this “core” is the Afrasian (Semitic-

Hamitic) macrofamily (Starostin G., Zhivlov, Kassian, 2016). “Narrow Nostratic” largely coincides with Greenberg’s Eurasiatic.

The objective of this study is to review facts that may help in assessing the linguistic affiliation of the Okunev people at least at the macrofamily and hopefully at the family level, or maybe even at the level of separate branches.

### Eurasiatic or Dene-Caucasian?

In the last years, I have been applying various multivariate methods to *The Global Lexicostatistical Database* (<http://starling.rinet.ru/new100/trees.htm>), composed by the leading members of the Moscow comparativist school—G.S. Starostin, A.S. Kassian, and M.A. Zhivlov\* and to A.Y. Militarev’s Afrasian database. The models I used, mixed genealogical-areal and quasi-areal, are described in my studies concerning various language families—Indo-European (Kozintsev, 2018a, b; 2019a, b), Eurasiatic (Kozintsev, 2020a, b), Afrasian (Kozintsev, 2021; Kozintsev, Militarev, 2022), and Dene-Caucasian (Kozintsev, 2023a, b).

The mixed genealogical-areal model, implemented by means of the SplitsTree4 package by D. Huson and S. Bryant (<https://software-ab.informatik.uni-tuebingen.de/download/splitstree4/welcome.html>), resulted in a network of principal language families (see *Figure*). Generally, the network agrees with the glottochronological tree composed by G.S. Starostin ([https://starlingdb.org/new100/eurasia\\_short.jpg](https://starlingdb.org/new100/eurasia_short.jpg)). But unlike the normal genealogical tree, the network takes into account not only vertical (temporal) relationships, but also horizontal (spatial) ones. Therefore, the branches within clusters are arranged not in a random order, as in usual trees, but according to possible areal ties, which are shown as “collaterals” near the branches’ bases. The network was rooted by the Dravidic family, which is the most distant from the others. The Kartvelian branch is connected with the Eurasiatic macrofamily, specifically with its Indo-European branch, by areal and possibly also by genealogical ties.

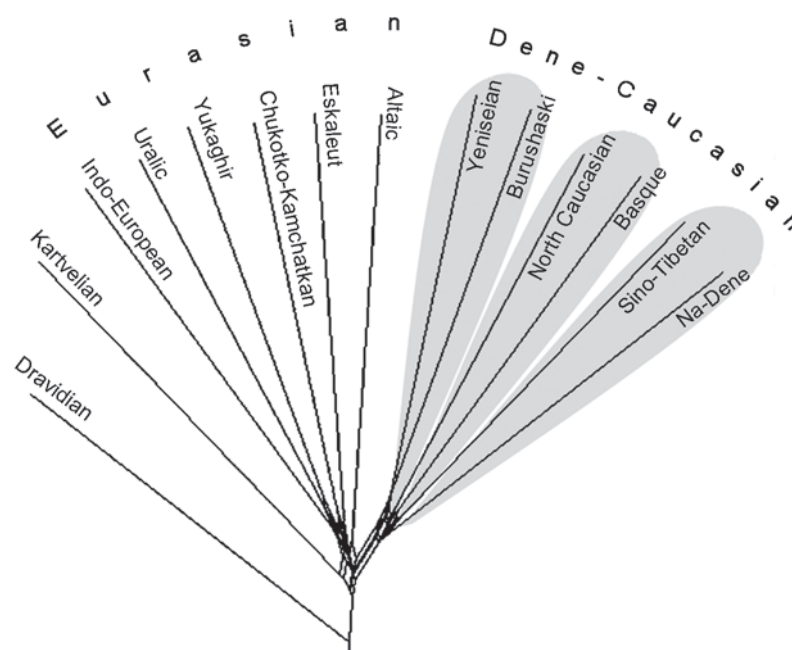
The Dene-Caucasian macrofamily falls into three pairs, established by G.S. Starostin (2009, 2016: 361) (see *Figure*). The most distinct pair, taking a central geographic position, consists of the Yeniseian languages and Burushaski. Their relationship is quite evident (Toporov, 1971; Starostin S.A., 2005), although the glottochronological estimate of their separation is mid-7th millennium BC (G.S. Starostin’s unpublished

data; see (Kassian, 2010: 424)). Another rather distinct pair is geographically western, and consists of Basque and North Caucasian. The relationship between the two members of the eastern pair, Sino-Tibetan and Na-Dene, is the most problematic because of their early separation and areal ties (see (Kozintsev, 2023a, b) for details). The geographically central pair, Yeniseian-Burushaski, takes an extreme position within Dene-Caucasian on the graph owing to its connection with Eurasiatic, specifically Altaic (the most isolated Eurasiatic branch). “Collaterals” possibly indicate early contacts between the common ancestor of Yeniseian and Burushaski, on the one hand, and proto-Altaic, on the other.

Because geographic considerations rule out both the Dravidian and Kartvelian affiliation of Okunev people, it remains to choose between two major macrofamilies, Eurasiatic and Dene-Caucasian. In essence, the choice could already be made on the basis of cranial and genetic ties of Okunevans with Native Americans (Kozintsev, Gromov, Moiseyev, 1999; Vasilyev et al., 2015: 323–325; Balanovsky, 2015: 312; Allentoft et al., 2015; Zacho, 2016: 38; Hollard et al., 2018; Kim et al., 2018) and parallels to Okunev art in China and America (Vasilyev et al., 2015: 469, 489–538). Admittedly, the fact that elements of the Okunev artistic style have been discovered in Bronze Age cultures of Xinjiang, such as Gumugou and Xiaohe (Molodin, Komissarov, Nesterkina, 2019) could suggest connections with Tocharians. But Tocharians, who spoke an Indo-European, i.e., Eurasiatic language, were definitely people of western descent, and it is with them that the western traits in the Bronze Age cultures of Xinjiang can be associated. No such parallels are found in Okunev art.

The results of the genome-wide analysis of the Tarim Valley people, buried at three cemeteries broadly contemporaneous to Okunev—Xiaohe (1900–1700 BC), Gumugou (2200–1900 BC), and Beifan (1800–1600 BC)—were quite unexpected. An earlier study of uniparental markers attested to either admixture, as in Xiaohe (Li et al., 2010), or to western origin, as in Gumugou (Cui et al., 2009), whereas craniometric data for the latter cemetery revealed ties with Andronovo people of the Middle Irtysh and Rudny Altai (Kozintsev, 2009). However, amazingly, a detailed study of the sample mostly from Xiaohe at the genome-wide level has demonstrated affinities with the Botai and Okunev people, as well as with their probable ancestors represented by the Malta boy (Zhang F. et al., 2021). A high content of the ANE (Ancient North Eurasian) autosomal component reveals very deep Southern Siberian roots for those people. Disagreement with previous findings may stem partly from heterogeneity (especially chronological) of the samples. On the other hand, individuals who lived in Dzungaria earlier, in the beginning of the 3rd millennium BC, were genetically related to Afanasyevans, and it is

\*I am extremely grateful to them for granting me access to their unpublished matrix of pairwise lexical matches between languages.



Network of language families and isolated languages, rooted by Dravidian. “Petals” are tentative clades within the Dene-Caucasian macrofamily.

apparently those people who should be considered ancestors of Tocharians (Ibid.).

If the new genetic findings are indeed more accurate than the former, then Okunev elements in the cultures of Gumugou and Xiaohe (see above) receive a plausible explanation. Not only do they clarify the evidence concerning the southward expansion of Okunevans, but provide indirect clues as to their linguistic affiliation. Indeed, Okunev-like petroglyphs representing masks with “antennae” or “horns” of the so-called Mugur-Sargol type (after the eponymous site in Tuva) have been discovered on the Upper Indus (Jettmar, 1985; Devlet, 1997; Sokolova, 2012). Such representations are especially numerous among the petroglyphs of the Upper Yenisei, but their distribution area is much wider, spanning the territory between Armenia and the Lower Amur. Being associated with the Okunev tradition, as most specialists believe\*, most of them apparently postdate the Okunev culture (Devlet, 1997). Because such petroglyphs are absent in southwestern Central Asia, whereas, as has now become clear, Okunevans or their relatives had definitely reached Xinjiang, it was proposed that the Okunev artistic tradition spread to the Upper Indus from that area (Francfort, 1991; Bruneau, Bellezza, 2013). New genetic data lend additional support to that hypothesis.

\*Y.A. Sher (1980: 229–232) appears to have been the only one who doubted that. In fact, he ascribed virtually all Okunev art to Afanasyevans (Sher, 2006)—a view that can hardly be entertained today.

### Which of the Dene-Caucasian branches?

There are no indications that Tocharians or any other Indo-European or Eurasiatic speakers had reached the Hindu Kush-Himalaya region before it was settled by Indo-Iranians in the course of the Andronovo expansion. Of particular interest in this respect is the affinity between two branches of the Dene-Caucasian macrofamily—Yeniseian and Burushaski (see above). Because they diverged many millennia before the emergence of the Okunev culture, which has local roots in Southern Siberia, it can be suggested that the now extinct languages of the Yeniseian-Burushaski clade had survived there for a long time, after which the speakers of one of them migrated to northern Kashmir.

How could that have happened? The best known answer is provided by G. van Driem’s “Karasuk hypothesis”, stating that a “macro-Yeniseian” language, ancestral to Burushaski, was introduced to northern Kashmir by some group associated with the Karasuk culture (2001: 1201–1206). Van Driem proceeded from the conclusions drawn by N.L. Chlenova (1969), who had demonstrated an overlap between the Karasuk distribution area and that of the Ket toponyms. However, while there is little doubt that Kets had migrated from the south, their roots do not reach further than the Altai-Sayan region. Contrary to van Driem, nothing indicates the expansion of the Karasuk culture to the Upper Indus. Judging by the petroglyphs, the migrants to that area were descendants of Okunevans or of some of their relatives.

Certain facts, on the other hand, suggest that the ancestors of the Burusho had migrated from the Tarim Basin (Chesnov, 1977), possibly together with the Okunev artistic style (see above)\*. The possibility that Okunev-type petroglyphs of northern Kashmir are associated with the linguistic ancestors of the Burusho has already been entertained by K. Jettmar (1975: 289–294). If upheld, this would imply that Okunevans spoke a Dene-Caucasian language belonging to the Yeniseian-Burushaski clade, most likely Yeniseian. That the language of the 4th millennium BC Botai people of northern Kazakhstan was Yeniseian has been proposed by Vyach.Vs. Ivanov (2011), and V. Blažek (2017) inclines to the same opinion. Genetic affinities between Botai and Okunev populations (Yu et al., 2020) support the idea that the latter spoke Yeniseian.

However, the Burusho are genetically related to neither Okunev people nor Kets (this is yet another example of disagreement between the evidence derived from various disciplines, see (Kozintsev, 2022)). Judging by the Y-chromosome haplogroups, they are virtually indistinguishable from their Indo-Iranian neighbors (Qamar et al., 2002)\*\*. Language, then, could have been borrowed.

Turning back to genetic roots of Okunev people and Yeniseian speakers, we should pay particular attention to the ANE autosomal component mentioned above. It was first described in an Upper Paleolithic boy who lived at Malta about 24 ka BP, and then in a male and a girl from Afontova Gora II dating to 15–17 ka BP (Raghavan et al., 2014; Fu et al., 2016). The frequency of ANE is maximal in Kets, Selkups, Chukchi, Koryak, and Native Americans. Among the ancient groups, those closest to Kets in this respect are Karasuk and Okunev people (Flegontov et al., 2016). It is from the latter that Kets could have received this component in their Altai-Sayan homeland (Ibid.). From Southern Siberia, ANE spread in two directions: westwards, to Eastern Europe and the Caucasus, and eastwards, to the New World, where it is quite frequent in American Indians (Ibid.). A possible connection between the westward spread of ANE from Siberia and the expansion of Dene-Caucasian languages was mentioned by A.A. Romanchuk (2019: 166–167, 181; 2020).

\*According to Chesnov (Ibid.), the affinity between Yeniseian and Burushaski is due to contacts between the speakers of those languages in the Tarim Basin. As was later demonstrated, however, the proximity of both those branches was caused not by contacts but by common descent, and their last common ancestors had lived much earlier than elements of the Okunev culture reached Xinjiang.

\*\*The same applies to Dravidic-speaking Brahui and Tibetan-speaking Balti, only the Hazara being different from others (Qamar et al., 2002). This, to all appearances, testifies to an insufficient sensitivity of the genetic analysis at the haplogroup level.

## Discussion

All the facts cited above entitle us to believe that Okunevans played a very special role in the ethnic and linguistic history of Eurasia. Their language may have belonged to the Yeniseian family. Cranial and genetic data concerning a “collateral” relationship between the Okunev people and the Native Americans, as well as parallels between Okunev art and that of Tlingit, remind us of the linguistic hypothesis linking Yeniseian to Na-Dene (Vajda, 2010). Admittedly, according to G.S. Starostin and his colleagues, this connection is rather indistinct. But in any event, it appears quite likely that the language of Okunevans belonged to the Dene-Caucasian macrofamily. A very wide distribution of parallels to the Okunev artistic style in Siberia, the Far East, China, and America (Devlet, 1997; Vasilyev et al., 2015: 469) supports this idea.

Could the Okunev people be also collateral relatives of the Sino-Tibetan speakers, whose homeland, as the new findings suggest, was located in the middle part of the Yellow River Basin in the 6th–5th millennia BC (Sagart et al., 2019; Zhang M. et al., 2019)? And if so, couldn't this account for the incipient connection between the Yeniseian-Burushaski clade of the Dene-Caucasian macrofamily and the Altaic branch of the Eurasiatic macrofamily, as the genealogical-areal model suggests (see *Figure*)? Indeed, the trajectories of both these macrofamilies at the early stages of their existence were evidently similar. The primary homelands of them both, to all appearances, were situated in Southern Siberia or Eastern Kazakhstan (with regard to Eurasiatic, see (Kozintsev, 2020a); with regard to Dene-Caucasian, see (Kozintsev, 2023a, b)). The speakers of both proto-Altaic and proto-Sino-Tibetan, apparently, migrated from there to northern China along the same route—via Dzungaria. Eventually, both their secondary homelands, too, turned out to be close to one another in both time (7th–4th millennia BC) and space—southern Manchuria (with regard to Altaic, see (Robbeets, 2017)).

These considerations might seem at odds with the timescale, since the Dene-Caucasian macrofamily, according to the glottochronological estimate, split in the mid-11th millennium BC (Kassian, 2010: 323), so the Okunevans, who lived in the second half of the 3rd to the early 2nd millennium BC could have belonged only to one of its filial branches, probably Yeniseian, like the Karasuk language (see (Kosarev, 1973))\*). But although Okunevans themselves could take part neither in the peopling of America nor in the proto-Sino-Tibetan migration to China (because they lived later), nor in the migration of the linguistic ancestors of the Burusho to the

\*J. Janhunen (1998) believes that Yeniseian was spoken by the Tashtyk people.

Upper Indus (because Yeniseian and Burushaski had split long before that), the totality of archaeological, cranial, and genetic data suggests that they were a unique relict group that survived for several millennia in the place from where its ancestors and descendants spread along various routes.

Can the Eurasiatic (narrow Nostratic) attribution of the language that the Okunev people spoke be excluded? The answer is no. Theoretically, it might belong, for instance, to the Uralic family, specifically to its Samoyed branch (Vadetskaya, 1983), or to the Altaic family (see above). But what, in that case, would account for the “American” ties of Okunevans, showing up in cranial, genetic, and archaeological data? What would account for the presence of a language related to Yeniseian and of the Okunev type petroglyphs in one and the same hard-to-reach mountainous region, remote from Southern Siberia?

It was hypothesized that Okunevans were Indo-Europeans, specifically Indo-Iranians (Pyatkin, 1987; Sokolova, 2012). This conclusion would be nearly inevitable if it were possible to demonstrate that the roots of the Okunev culture are in the Eastern European steppes. So far, the attempts at demonstrating this have been unsuccessful (Kozintsev, 2022) and will hardly succeed in the future. But could we at least assume that the hypothetical immigrants—people of the earliest (Uybat) stage of the Okunev culture, whose mortuary rite showed parallels with that of the Yamnaya and Catacomb cultures of northeastern Caucasus (Polyakov, 2022: 83, 132, 154, etc.)—were Indo-Iranians? But who then were the Chaa-Khol people, who resembled Okunevans culturally while differing from them sharply in physical type, which was very similar to that of certain Yamnaya and Catacomb populations in Ukraine and of later Scythians (Kozintsev, 2007; Kozintsev, Selezneva, 2015)? A striking similarity between the Chaa-Khol people and Scythians is a weighty argument in favor of the Indo-Iranian, possibly even Iranian, affinities of the Chaa-Khol. Okunevans proper, at least those studied thus far, show no such close cranial parallels in Eastern Europe or Northern Caucasus (Kozintsev, 2020b). Possibly, studies of the Uybat crania, currently being undertaken by A.V. Gromov and his students, would correct this conclusion.

On the other hand, could the Uybat people, at least those who migrated to Southern Siberia from the Eastern European and northeastern Caucasian steppes, have spoken one of the Dene-Caucasian languages? This idea, at first sight, agrees with the view of G.S. Starostin (2016: 363–365) and A.S. Kassian (2010: 416–417, 428–432), who hold that these languages spread to eastern Central Asia from the west—from regions adjoining the Near Eastern center where the production economy had arisen. But if the source of the hypothetical migration was the northeastern Caucasus, and if they spoke a Dene-Caucasian language, then this language

could belong only to the North Caucasian branch. The problem, however, is that no traces of North Caucasian languages have been found in Siberia. The Southern Siberian homeland, on the other hand, is favored not only by geographic considerations but also by the spread of the ANE component from there both to the west (to Europe and the Caucasus)\* and to the east (to the New World). This reconstruction agrees with the fact that Okunevans, who lived near the presumed Dene-Caucasian homeland, show the highest content of ANE, and the same is true of their tentative descendants (Kets) and collateral relatives (Native Americans).

## Conclusions

1. The totality of available biological and cultural data indicates an exclusive status of the Okunev people as an aboriginal relict group.
2. Their language likely belonged to the Yeniseian branch of the Dene-Caucasian macrofamily. The Eurasiatic (specifically, Uralic) or Indo-European attribution is less probable.
3. Even if the Okunev origin was affected by a migration from northeastern Caucasus, the language of the presumed immigrants, no matter whether it belonged to the Indo-Iranian branch of the Indo-European family or to the North Caucasian branch of the Dene-Caucasian macrofamily, must have been displaced by an indigenous language spoken in Southern Siberia.

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\*On the basis of recent findings, the route whereby proto-Basque had spread to the Pyrenees was tentatively reconstructed: as geneticists believe, the autosomal component AF, which spread to Europe from Anatolia together with the “neolithization package”, originated from the mixture of the Anatolian hunter-gatherers with migrants from the east, specifically from Iran. The date of the latter migration is estimated at the 11th millennium BC, which agrees with the glottochronological estimate of the disintegration of proto-Dene-Caucasian (Chintalapati, Patterson, Moorjani, 2022).

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