

Indo-European communications: the model of “nomadic homeland”

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Abstract.

The authors of the article studied the origin of Indo-European tribes in the light of ancient communications and the spread of the tribes according to wheeled transport relics in the steppe zone of Eastern Eurasia. The authors considered some modern theories related to Indo-European (IE) and Indo-Iranian (Iir) origin, defined IE innovations that marked the territories as possible homelands for IEs, and localized them on the map and. The authors used the method of mapping and analysing of IE innovations for localization of possible homeland territories of IE on the maps and substantiate the polycentric model of the ancestral homeland of IE as model of “nomadic homeland”. According to this model, the IE homeland was localized in the steppe-lands of Eurasian continent, and in the course of time changed its place from Assyrian steppes to Eurasia (Europe and Ural-Kazakh steppes) by two main ways (north and south) through Margiana and Transcaucasia.

Keywords: *steppeland culture, migrations, wheeled transport, cattle-breeding, tin-metallurgy, clan-leadership.*

I. Introduction

Recently, in connection with the publication of the new paleogenetic results [Allentoft et al, 2015; Haak et al., 2015; Lazaridis et al, 2014; 2017; Damgaard et al, 2018a; 2018b; Goldberg et al, 2017], there is sharp increase in the interest of Russian-speaking scholars to the problems of IE culture and origin [http://генофонд.рф/?page_id=3949 Novozhenov, 2015e; Klejn et al, 2017:71-15]. Archaeologists know that some questions of historical reconstructions and cultural genesis, especially questions related to the steppe society, can not be solved within the framework of pure autochthonous development [Anthony, Brown, 2011: 130-160].

There are numerous reports of origin and resettlement of IEs; the most notable ones are the reviews by P. Raulwing [2000], C. Renfrew [1998], and J. Mallory [1997a;b; 2009; 2013; Mallory, Mair, 2000], providing detailed analysis and critique of existing hypotheses on the subject. Among the recent studies considering steppe origin of IEs and developing many provisions of the popular “kurgan hypothesis” by Mary Gimbutas [1970; 1978], the book by David Anthony is of particular interest [Anthony, 2007; *review by L. S. Klein – Horses, Chariots...*, 2010:167-181, *critical review of the problem by J. Mallory*, 2013; Kristiansen, 2012:165-181; Kristiansen et al, 2017:334-347; 2018].

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Prof. Leo S. Klein [2012: 25-34] carefully studied the views on the problem of finding ancestral home of IEs, as well as the current state of this problem. On the basis of two examples of ancient migrations (Hittite-Luwian and Tocharian), he raised the question of the localization of the ancestral homeland on the open spaces of Europe. The model suggested by L.S. Klein is the most consistent, it takes into account archaeological material of the Chemurchek culture (Eastern Turkestan), which was discovered and studied by Dr. A. A. Kovaliov [2004; 2011; 2012a;b]. It was noted that the Chemurchek materials are rather similar to the Elunino materials localized in the Altai Mountains and to the monuments discovered in the north-east part of Kazakhstan [Grushin 2012; Merz, 2007; 2010]. These materials are considered as an early step in the formation of Seima-Turbino metallurgical tradition, which in its turn influenced the formation of the Yin-Shang industry in China [Kovaliov, 2012a: 53-55; Novozhenov, 2012a;c].

Dr. Stanislav A. Grigoryev [2012a: 40] supposed that migration directed to the south of the Urals was one of the important components of the cultural genesis of local tribes [Grigoriev 2012a: 40-48]. Among the innovations that have emerged in the region as a result of migration, he considered megalithic tradition (the 3rd millennium BCE) and Sintashta monuments (the beginning of the 2nd millennium BCE). Thus, the megalithic structures of Vera Lake in the Urals are similar to the menhirs and dolmens of two other regions: the Northern Europe and the eastern Mediterranean [Grigoriev, 2012b: 30-36,43].

Probably, in this uncertain situation, the theoretical model of IE communications, based on the recent data, could clear the historical process.

II. Methods and materials

The concept of spreading of wheeled transport was already developed. The wheeled transport spread from west to east (from Mesopotamia), and from south to north (southern route). It was spread by the herdsmen migrations in the steppes of Central Asia and northern Eurasia [Gamgrelidze, Ivanov, 1984: 950-951]. The discovered geographic locations of rock art monuments (petroglyphs) provide unique data on routes of ancient migrations [Novozhenov, 1994; 2012a;c; 2013b; 2014a;b;d; 2015b;d].

The burials with carriages are well-known and represented by a large series in the Volga region and the Ural-Kazakh steppes (*Figure 1*).



Figure 1. Urals-Kazakh steppes. Reconstruction of true chariot drawn by two horses, according to the evidence of Early Andronovo chariot burials. Reconstructed by Viktor Novozhenov and Krym Altynbekov [2014]



Figure 2. The channels of communication in the 3rd millennium BCE: Era of vans and battle wagons. Colored arrows on the map: white – Pit-Grave and Afanasievo communication channel; yellow – Sumerian communication channel; black – Turanian communication channel; red – Harappan communication channel

They were found not only in Sintashta, but also in Petrovo, Alakul, and other local archaeological cultures and are characterized by reliable series of very early calibrated radiocarbon dating (within the period from the end of the 3rd millennium BCE to 17 BCE). However, it is still rather problematic to synchronize them and the Middle East (Anatolian) findings [Novozhenov, 2012a: 278-286; 2014a]. The proposed route of migration through the Caucasus region is questionable due to the fact of development of Caucasus metallurgical tradition that at that time had already established relationships with the steppe population, but it does not contradict the idea of a possible

“southern” way of Sintashta migration from Anatolia along the southern shore of the Caspian Sea through Turan (West Turkestan-BMAC) and Kazakh steppe (in the South Ural).

All the new facts provided by archaeology and paleogenetics support the existence of transcontinental transport corridor in the northern part of Eurasia that was formed in the latitudinal direction (the northern route) around the steppe zone. In search for new pastures, some groups of herdsmen roamed on their mobile van-homes after their numerous herd, they were gradually moving in the eastern direction and reached Minusinsk Basin, which is natural border of the Eurasian steppe.

These first settlers brought many unusual skills with them. They had pictorial tradition and decorated walls of their van-homes and tombs with ochre. They also built megaliths: stela-menhirs and tombs in the shape of stone boxes that should serve them as dwellings in the other world. These settlers had their own communication system and specific production skills. In a comfortable and sufficiently large ecological niche of the Minusinsk Basin, they established various types of relationships with small indigenous population (through marriages, for example) and got acquainted with local traditions and customs (*Figure 2, 3*).

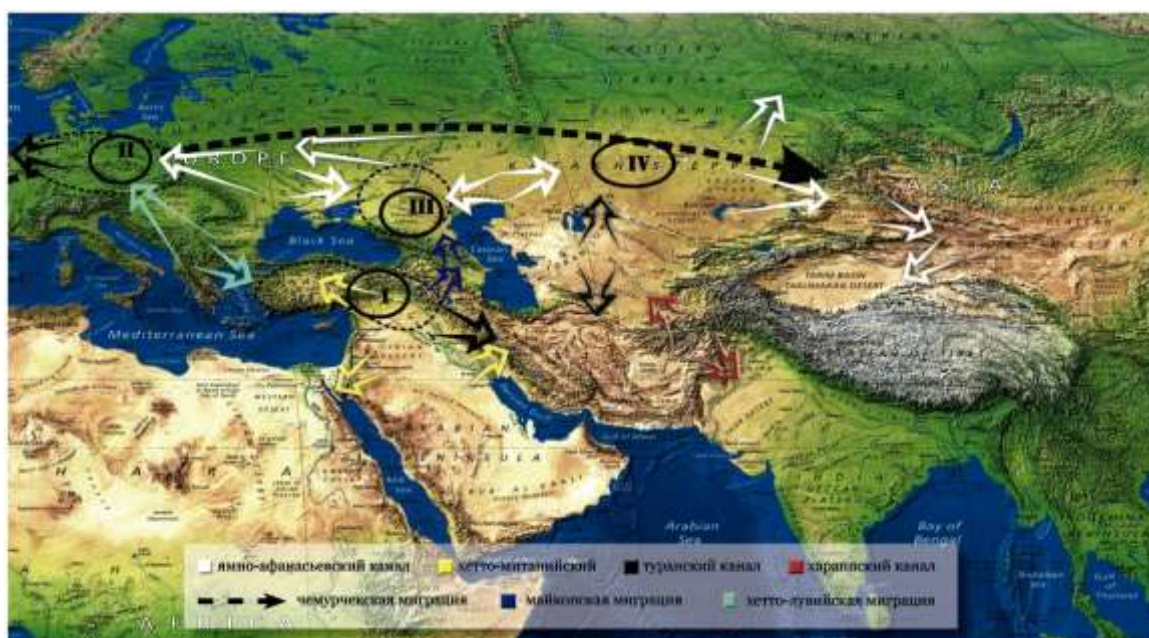


Figure 3. The alleged localization of Indo-European homelands in the 3rd millennium BCE. I – Anatolia and Northern Mesopotamia; II – Central Europe; III – Transcaucasia (foothills and steppe); IV – Late Ural-Kazakh “Indo-Iranian homeland”. Colored arrows on the map: white – Pit Grave and Afanasievo communication channel; yellow – Hittite-Mitannian communication channel; black – Turanian communication channel; red – Harappan communication channel; blue – Maicop migration; green – Hittite-Luwian migration; dotted black arrow – Chemurchek migration

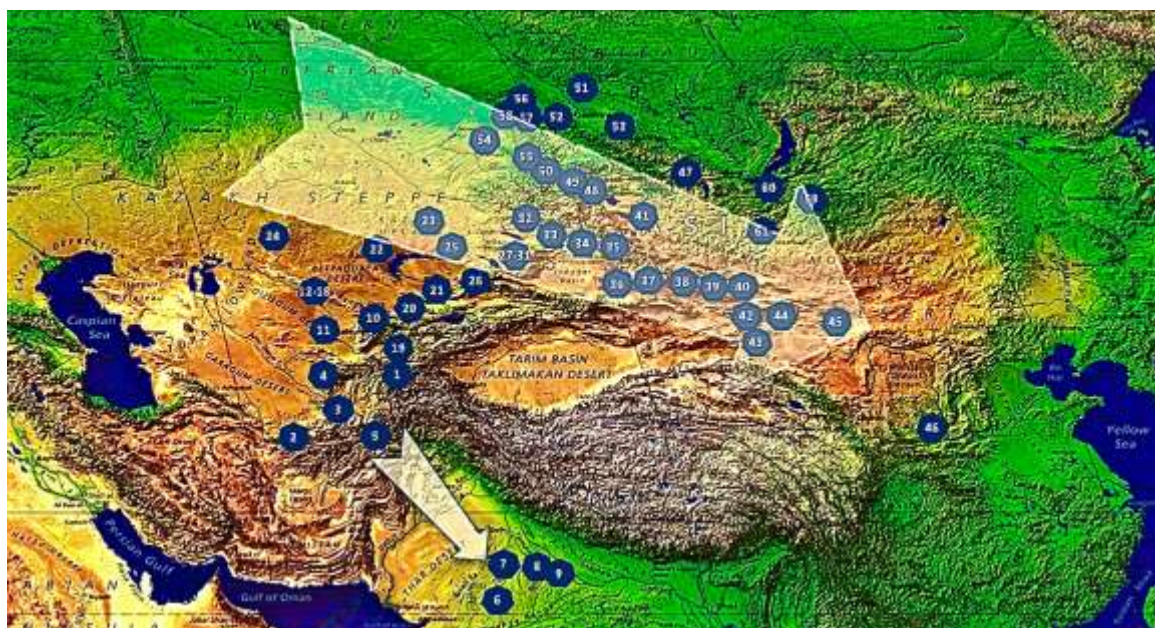


Figure 4. Localization of the petroglyphs of Central Asia, containing images of chariots and carts. 1 – Akdzhilga; 2 – Tekke-Tash; 3 – Ohna; 4 – Karakiyasay; 5 – Thor; 6 – Chibbarnala; 7 – Dharampuri; 8 – Chatur Bhu Nash; 9 – Eda Kalkave; 10 – Zhaltyryk-Tash; 11 – Ters; 12-18 – Koibagar, Arpauzen, Koshkar Ata, Gabaevka, Kokbulak, Ran-Ozen, Xan; 19 – Saimaly-Tash; 20 – Tamgaly; 21 – Chumysh; 22 – Jambul; 23 – Kesteletas; 24 – Baikonur 3, “N”; 25 – Sayak; 26 – Eshkiolmes; 27 – Akbaur; 28 – Kurchum; 29 – Moinak; 30 – Tulkune; 31 – Saur Tarbagatai; 32-35 – Kalbak-Tash, Zhalgyz Tepe, Elangash, Adyrkhayev; 36 – Yamany-Us; 37 – Tsagaan Gol; 38 – Bichigty Am; 39 – Hobd Somon; 40 – Beger Somon; 41 – Chuluut; 42 – Darvi Somon; 43 – Manlan Somon; 44 – Havtsgayt; 45 – Urad (the Lang Mountains); 46 – Jiangsu (Kanguan); 47 – Syin Churek; 48 – Mugar Sargol-Ching; 49 – “The Way of Genghis Khan”; 50 – Ortaa Sargol; 51 – Ust Tuba; 52 – “Shaman Stone” (Oglakhty); 53 – Suhaniha; 54 – Mount Tunchuh; 55 – Oshkol; 56 – Mount Sedlovina; 57 – Mount Shishka; 58 – Mount Polosataia; 59 – Transbaikalia; 60 – Sulek; 61 – Tabangut Obo

Further migration of these groups was only possible in the southern direction. The vector of this movement was oriented to the south-east to the steppe areas of Mongolia and Xinjiang. It passed through the Altai Mountains [Cernykh, 2009], through the “Jungar Gates” and led to the fertile valleys of Central Asia in the south and to endless Kazakh steppes.

III. Results

In the 3rd millennium BCE, there was a global climate change; it became more continental and dry in Eurasia, which was the main prerequisite for the development of mobile lifestyle. Aridization of climate inevitably led to the development of the nomadism, specific cattle-breeding culture in the steppe zone of Eurasia. In the cultural and historical terms, it was a large community of shepherds united by a common way of life (animal husbandry) and by similar systems of mythological concepts.

Similarity of the monuments that are widespread in the steppe zone of Eurasia can be explained by early emergence of nomadism, which became a major cultural and economic factor at the beginning of the 3rd millennium BCE [Merpert, 1974; Shilov, 1975: 5-15]. A. Toynbee [1934: 404] supported the thought that

nomadism originated between the end of 4th and the beginning of the 3rd millennium BCE. It is difficult to agree with the idea that the transition to a nomadic way of life occurred only at the end of 2nd millennium BCE [Khazanov, 1973: 5-10; Griaznov, 1955; 1957; Markov, 1976: 109]; at that time steppe societies obviously already lived by nomadic pastoralism [Kradin, 2007]; according to the point of view expressed by Nurbulat Masanov [2000:116-130; 2011], during that era it became universal.

Animal husbandry is the main activity for the vast majority of “post-neolithic” societies of Central and Eastern Europe, Anatolia, and northern Mesopotamia. It was the main production innovation after the “Neolithic Revolution”. On rich grass pastures of plain and steppe regions of Eurasia, this type of economy, compared to agriculture, provided the alleged “Proto-Indo-Europeans” with a guaranteed and substantial surplus product, therefore enabling their sustainable and progressive development.

In a number of his works, Prof. V. S. Bochkarev [2010; 2012:13-24] analyzed in detail the processes that occurred in the Bronze Age on the vast territory stretching from Eastern Europe to the western part of the continent. As the determining factors behind the cultural genesis of steppe societies, the author defined innovation in the following areas of economic activity: the development of animal husbandry in its various forms, which was directly dependent on climatic conditions of the habitat; the development of metalworking and forming of metallurgical centers that generate innovations in bronze casting and consequently provide the ability to produce innovative weapons; the social changes [Bochkarev, 2012:13-24].

Animal husbandry and horse domestication. Archeobotanical studies conducted in recent years show “extremely weak development of agriculture in the Bronze Age at the entire space of the steppe and forest-steppe territories between the Dnieper River and the Trans-Ural region” [ibid: 14-15]. The nature of the economy was mobile at that time. Presumably, it determined the mobility of numerous archeological cultures of steppe and shifting of their areas, which led to “mixture and blurring of distinct boundaries between them”. This process resulted in a cultural continuity that E. N. Chernykh called “the steppe syndrome”. Archeologically it is reflected by the fact that typological difference between the neighboring cultures sometimes is so small that it is almost impossible to determine precisely where one culture ends and another one begins [Chernykh, 2009].

Metallurgy. Metalworking in Eastern Europe during some periods of the Bronze Age proved to be one of the most advanced in the Northern Eurasia. In the 4th millennium BCE, the technology of using wax model for arsenic and antimony bronze casting appeared in the Caucasus; then it was spread to the steppes. This technology was used in production of axes, adzes, chisels, knives, jewelry, etc. Of course, while the leading role belonged to the Caucasus Center, the subsequent development of the steppe metallurgical traditions was associated with the formation of the Volga-Ural center of cultural genesis. The following innovations can be noted among the results of such development: the use of tin bronze (instead of arsenic and antimony), stone molds (instead of clay), invention of molding with a blind plug. The progress in metalworking greatly influenced the combat tactics and weaponry. Instead of swordsmen or spearmen, the main role in the weapon system of the South Eastern Europe and in the Kazakh steppes was played by archers (especially mounted archers) [ibid: 17-18; Novozhenov, 2013a; Grigoriev, 2013].

Social changes. In social terms, steppe cultures “were complex social organisms well-structured both vertically and horizontally... most of them remained tribal (segmented) societies. Only the cultures of charioteers

(Sintashta, Potapovo, Petrovo, and Alacul) advanced little further. According to some researchers, these cultures were represented by complex societies (chiefdoms)” [Bochkerev, 2012:19].

Wheeled transport. The pragmatic idea of using wheels and mobile homes originated from practical need for development of mobile cattle-breeding societies. The mobile nature of production of nomadic pastoralism and the need for innovative vehicles required the development of skills that were necessary for production of the most modern bronze tools that could not only enhance the production process, but also give advantage in battle [Novozhenov, 2012, 2014a].

Megalithic (Anatolian tradition with megalithic menhirs, according to S. A. Grigoriev) and pictorial traditions played a key role in the system of internal communications of the production groups and began to define their identity [Grigoriev, 2013]. It was the most volatile and complex innovation. Initially, there were few different shapes of megaliths, later the tradition became stable [Novozhenov, 2014a].

The model of “nomadic ancestral homeland”. The model was proposed by V. A. Safronov [1989] as a “dynamic ancestral homeland”. The late writings of IE sources of “Aryan space” describe endless rich pastures and tell numerous stories about repeating change of the ancestral homeland. It is the clear evidence of the fact that the “homeland” of the nomadic people was located in the steppe landscapes, in the steppe expanses of the continent were; localization of the “homeland” was changing in accordance with independent and self-sufficient development of mobile production groups of proto-IEs and their descendants.

Only the combination of all above-mentioned innovations represented at one time and in one place can indicate the center of their origin. Obviously, this region had steppe landscape, it also had a contact zone for interaction with the earliest agricultural imperial civilizations of the Ancient World, which could generate the minimal required innovations in metalworking and in wheeled transport. There is only one such place on the map of Eurasia at the end of the 4th millennium BCE. It is the steppes of Northern Mesopotamia and Anatolia (the so-called “Assyrian steppes”), where the “excess” population of the city-states of Mesopotamia was concentrated [Adams, 1981]. Perhaps, the above-mentioned “proto-Indo-European” innovations were formed in this area. However, such localization of the ancestral homeland [Gamkrelidze, Ivanov, 1984] is controversial in terms of archaeology and linguistics. The authors of the article developed a new scheme that does not contradict known archeological and linguistic facts and gives a model of “nomadic homeland” based on the features of the pastoral way of economy and the laws of its development as a cultural-economy type of society.

The essence of the model is polycentric localization of “homeland”; it takes into account the possibility of “fast” migrations of “proto-cattles” over long distances in search for new pastures and inevitability of their return to the initial area, or to put it simply, the natural development of cattle-breeding on rich pasture grass in comfortable environmental landscapes (*Figure 6*).

The nature and direction of these migrations were not totally random like in “Brownian (random) motion” [Robb, 1991]; it was quite conscious search for new pastures for their cattle. This model also correlates with the formation of known major metalurgical centers in Eurasia at that time: in the Caucasus, Transcaucasia, and Anatolia, then in the Urals, and then in the Ural-Kazakh steppes and the Altai.

It is important to understand the mechanism of operation of the proposed model: the people from young generation departed from their relatives in search for new pastures, they formed their own cattle-breeding

production groups, mastered new territories and contact niches; at the same time their parents and other children stayed in the source areas and formed there their own line of cultural development. Most often, the groups originated from separated young generation having their own line of development, if such random factors as epidemics, natural disasters, battles, and other events did not lead to their extinction, eventually returned back to the original territory of their ancestors. However, in the archeological sense, descendants of different generations became representatives of completely different archeological cultures due to accumulated differences in engineering and crafting knowledge. E. N. Chernykh [2009] called this phenomenon “the steppe syndrome” or “the phenomenon of nomadic cultures”; other researchers dealing with steppe monuments also considered this phenomenon [Gay, 2000]. Cyclical actions within the model are conditioned by the nature of nomadism and cattle-breeding.

IV. Discussion

As this model is related to the earliest possible IE migrations (that took place in the period from the end of 4th to the beginning of 3rd millennium BCE, the first of such migrations could communicate with the Maikop culture and contribute to formation of the new ancestral homeland in the steppe regions of Transcaucasia and Maikop by establishing the Novosvobodnaya community [Korenevsky, 2011]. The above-mentioned innovations enabled it to become independent basis for the further development of local cattle-breeding production groups in the steppe ecological niche. Moreover, all these innovations were actively developing and improving, which gave impetus for migration to new spaces of steppe-meadows in the eastern and western directions.

According to L. S. Klein, Hittite-Luwian migration could correspond to the suggested model, his opinion supported by archaeological materials. However, the means of migration remains unclear, as there is no clear evidence relating to invention or early stage of development of wheeled transport in primitive Europe. The four-wheel carts of Funnelbeaker (TRB) and Baden (Pechel) cultures are the earliest of such evidence. But even in this case, they prove only the fact that these people knew about wheeled transport, but it does not mean that they were able to make it themselves or used it in everyday life. There is no evidence that can prove it, or it is unknown yet.

However, let us assume that the representatives of Funnelbeaker and Baden (Pechel) cultures independently invented the wheeled carriages and we just do not know about it, or even that they came to Anatolia on foot. In any case, according to the findings in the cultural layer of Troy I and their study by N. Kalicz [1963], the date of this migration can be determined as the beginning of the 3rd millennium BCE, later than L. S. Klein supposed. Through the considered cultural innovations, the Balkan communication channel was established in Central Europe. In other words, the vector of Hittite-Luwian migration could be oriented from south to north, or in the opposite direction.

The authors of this work tend to consider Anatolia to be the main region, in which the formation of the “proto-innovations” took place, but do not exclude the possibility of autochthonous development of these innovations on the territory of Central Europe by representatives of the Baden culture and TRB. In any case, no matter how the problem of independent invention of the wheeled transport is solved (it could be invented in Central Europe or on the Danube), there was formed a major center of advanced innovation, closely related to Anatolia and Northern Mesopotamia.

As a result of migration of “proto-IE” groups, three IE “homelands” appeared on the map of Eurasia at the end of 4th or the beginning of the 3rd millennium BCE. The contact zone, where autochthonous and further

development of IE cattle-breeding groups took place, and all three cultural centers (Anatolia and northern Mesopotamia, Central Europe, and the steppe regions of Transcaucasia) were linked by circular migration of production groups; these groups formed communication channels between themselves and the cultural centers.

This relationship is clearly evidenced by the archeological data related to the cultures of Anatolia and Mesopotamia, the western bloc of Pit-Grave culture, and the Maikop culture, as well as by similarity of ceramic ware complexes of earliest layers of Troy and of the above-mentioned European cultures of the Early Bronze Age. It is also evidenced by linguistic data, by the system phenomenon described as the Late-Indo-European linguistic unity [Gamkrelidze, Ivanov, 1984: 895-959].

Thus, at the beginning of the 3rd millennium BCE in the grass-rich plains and steppe regions of Eurasia, there was a unique period of social formation, which can be called “late primitive formation” or even “steppe leaderism”. At this period, the military-bureaucratic understanding of the countries and territories in the agricultural sedentary imperial civilizations contrasted with nomadic pastoralism, mobility, and freedom of the vast steppes.

Communications in the ancestral homeland. Further development of these three ancestral homelands is described as autochthonous development of IE societies in these areas and further migration of young generation mainly in the east and partially in the west directions (according to the movement of the sun in the sky). During this period, probably in the first half and the middle of the 3rd millennium BCE, two transcontinental communication channels were formed: the northern and the southern (*Figures 2, 3, 5*).

European homeland. The development of the European “homeland” was reflected by the development of lowland areas of Europe in the west. It is evidenced by bright and distinctive European archaeological cultures of the Bronze Age, localized in a convenient and fertile local ecological niches. These cultures became self-sufficient due to the development of agriculture and were not prone to significant movements. The relatively mild and humid European climate significantly contributed to this process.

Migration to the east was held by other environmental landscapes: arid and sharply continental regions that were less rich with grass. Living here required territorial development of much larger spaces, new large territories and resulted in migration of the representatives of “northern” megalithic tradition (henges) on the Urals (according to S. A. Grigoriev) and in spreading of Chemurchek culture far to the East Turkestan.

Steppe homeland. According to archaeological data, the development of the Steppe “homeland” was expressed by formation of Pit-Grave culture and its numerous variants and derivatives. Representatives of derived cultures moved in waves to the west towards traditional European “homeland” and to the east to new pastures up to Eastern Turkestan. The northern settlers probably moved to the south at the second half of the 3rd millennium BCE. They passed through the Kazakh steppe (Karagash cemetery, Grigorievka 2 [Mertz, 2008; 2010]) and the valley of Zarafshan, as evidenced by Zamanbaba group of monuments [Kuzmina, 1958]. Thus, they formed Turanian channel, which connected southern and northern branches of IE communications.

At the same time, the authors of this work consider Pit-Grave culture as a community of autonomous and self-sufficient production groups of IEs. They settled in contact zones, “mixed” with the local population, formed their own specific line of development, and became completely separated from their historic homeland. However, despite considerable distance from the source area of migration, the representatives of this culture preserved their languages (dialects) and identity due to communications provided by nomadic cattle-breeders.

For eastern IE clans, there was only one way to survive in the wilderness: they had to “mix” themselves with indigenous population. Consequently, they generated new specific lines of development. Thus, the hypothetical parallel migration of several genetically related production groups in one direction resulted in emergence of different dialects and even branches of the IE “proto-language”: Tocharian, Indo-Aryan, Indo-Iranian, etc. Most likely, the separation of these branches occurred as a result of the different routes taken by these groups during their migration to east.

At the early stages of these migrations, such production groups could move quite independently for a long time, having no contact with other related groups. They could “preserve” and keep their own dialects and traditions, as well as production skills and innovations.

Ancestral homeland in Anatolia and North Mesopotamia. The development of the Anatolian-Mesopotamian ancestral homeland took place in the southern part of the communication channel and had a number of features associated with the interaction of mobile production teams with sedentary civilizations, which resulted in initially “confrontational” nature of such interactions and enabled much greater “speed” of all cultural and historical processes in the area. Hittites, as well as other allied kingdoms developed in Anatolia, regularly fought with Egyptian pharaohs. Migration in the western direction, which possibly even reached savanna expanses of North Africa, resulted in the emergence of the Hyksos dynasty in Egypt. In the eastern direction, the migration contributed to formation of the general context of cultural interaction of all synchronous civilizations of the Middle and Near East, and it is represented by unique monuments of BMAC, Marakhshi state, and some others known in writing tradition [Frankfort, 2006].

Presumably, at the time between the end of the 3rd millennium and the beginning of 2nd millennium BCE, there were cases of Sintashta migration from Anatolia to the Ural-Kazakh steppe (according to S. A. Grigoriev). This migration route passed through the steppe ancestral homeland along the long-established channels of communication or through BMCK along Turanian communication channel.

Since the carriers of this migration had a number of new innovations in building and metalworking (and even chariots, presumably), they determined the peculiarity of local cultural genesis, its further development on the basis of these innovations. The first wave of migrating cattle-breeders (through their individual production groups) brought BMAC cultural media directly to northern steppes.

Ural-Kazakhstan late homeland. The “southern” and “northern” branches of IE communications joined together is in the Ural-Kazakhstan steppes. That could lead to the formation of the new steppe ancestral homeland in this territory at the time between the end of the 3rd and the beginning of the 2nd millennium BCE (*Figures 4, 5, 6*).

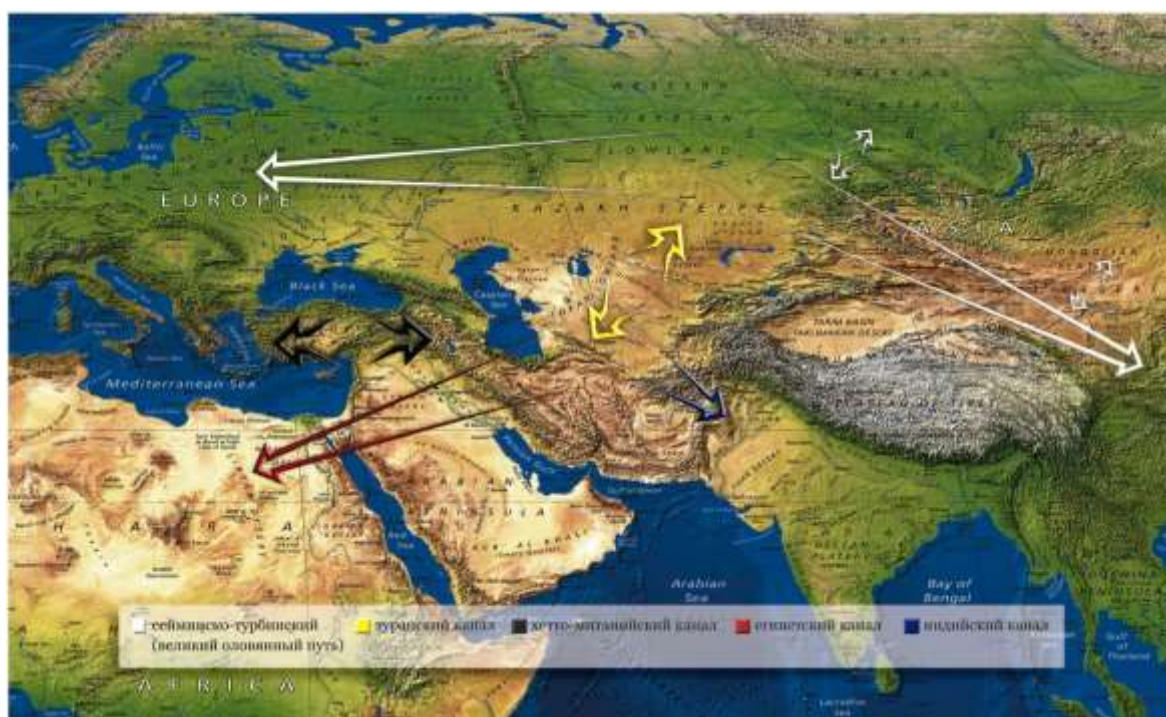


Figure 5. The channels of communication in the 2nd millennium BCE: The era of Chariots. Colored arrows on the map: white – Seima-Turbino communication channel (the Tin Road); yellow – Turanian communication channel; black – Hittite-Mitannian communication channel; red – Egyptian communication channel; blue – Indian communication channel

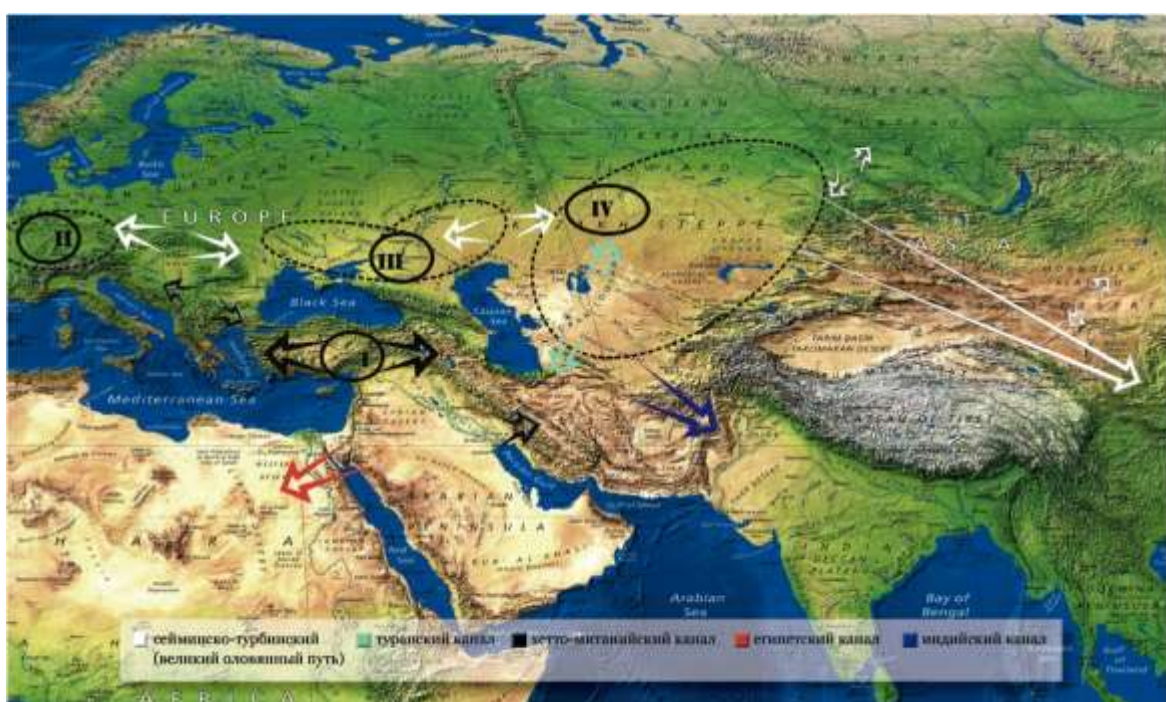


Figure 6. Estimated localization of the ancestral homeland of the late Indo-Europeans at the end of the 3rd and the beginning of the 2nd millennium BCE. Colored arrows on the map: white – Seima-Turbino communication channel (the Tin Road); yellow – Turanian communication channel; black – Hittite-Mitannian communication channel; red – Egyptian communication channel; blue – Indian communication channel

The late steppe homeland provided connection between the descendants of the “first wave” migrants of the northern and southern branches of migration, which apparently had common source areas in the North Mesopotamia and Anatolia and in Central Europe at the beginning of 3rd millennium BCE. Since that time, the cultural characteristics of migrants undoubtedly changed as they were influenced by traditions, customs, and languages of indigenous societies.

In the course of time, this area became the new homeland, where some “cutting-edge” innovations were developed; namely:

- success in domestication and breeding of horses [Gaunitz et al, 2018; Outram et al, 2009; Outram, 2014:719-766];
- progress in development of horse bridle systems [Chechushkov et al, 2018];
- development of casting technology with the use of tin additives for production of bronze socketed weapons; it enhanced capabilities of mobile metal smelting that did not require stationary furnaces [Rusanov, 2011: 314-320];
- advancement in crafting true chariots and producing weaponry adjusted for chariot tactics. At the end of the 3rd millennium BCE, chariots became a powerful “communicator” of Early Andronovo clans in the Ural-Kazakhstan steppes, which contributed greatly to their substantial territorial expansion (*Figure 4*).

The problem of cultural genesis and ethnic attribution of numerous archaeological cultures existing at the end of the 3rd and the beginning of the 2nd millennium BCE on the territory of the steppe Eurasia and Central Asia is, in fact, one of the key problems. However, it appeared that the formation of some synchronous “Asian” steppe archaeological cultures occurred not only on the basis of “Volga-Urals” metallurgical center, which defined the process of cultural genesis in the west. Some of these cultures were formed on the basis of redevelopment of metalworking innovations in this period and perhaps even before in the “Ural-Kazakhstan” metallurgical center. This center was focused exclusively on the innovative technology of the bronze socketed casting in molds, which was conditioned by presence of rich tin deposits in the Urals and Altai Mountains, in the steppes of Kazakhstan, and, possibly, in the adjacent southern areas. Thus, cultural genesis in the Asian steppe occurred under conditions of dialectic interaction of old dying ways of life and emergence of the new metallurgical center.

The localization of metallurgical center determined geographical distribution of archaeological sites of steppe groups and of entire Asian chariot complex (*Figure 4*). The materials of this complex contain striking examples of the mentioned metallurgical tradition. On these territories, a complex of innovations in animal breeding (domestication of the horse) and metallurgy (Seima-Turbino metallurgical tradition and production of bronze vessels) were formed and chariot-riding tradition was developed. It is obvious that a number of horsemen societies in these areas reached the stage of leadership and developed communication channels (pictorial and decorative traditions).

The “chronological boundaries” for the Andronovo culture and synchronous steppe cultures was determined on the basis of a series of calibrated radiocarbon dates given in several papers written by Prof. A. V. Epimakhov in collaboration with other authors [2005: 39-45; 2007: 353-367; 2008: 93-96; 2010: 182-229].

“*Karasuk society*”. This term refers to the entire set of “retinue” cultures similar to Karasuk culture: Elovka-Irmen, Begazy-Dandybay, and others, as well as to the actual Karasuk culture itself (1440-1130 (1450-1050)

BCE). It was well-developed tribal group in Central Asia and adjoining regions. The main monuments of the group, mostly represented by hereksurs and deer stones were located mainly in Southern Siberia, Mongolia, and northern China (Ordos). In recent years, the graves with radial-ray structure were found among the Karasuk antiquities at the sites of Begazy-Dandybay culture [Epimakhov, 2008: 93-95].

According to radiocarbon dating, the Karasuk sites are synchronized with the Chinese Shang Dynasty in traditional Chinese chronology. On the basis of the analysis of C14 and the results of comparing dendrochronological scales with the radiocarbon data, the sites date back to 1700-1050 BCE or 1600-1046 BCE. Probably, with the accumulation of the series, the interval would be narrowed and the two systems would be “harmonized” better [ibid: 92-96].

Seima-Turbino phenomenon and Tocharian migration. As well as N. L. Chlenova and L. S. Vasiliev, the authors of the article believe that Yin-Shang and Karasuk cultures can be “genetically traced back to another still insufficiently known bronze culture” [Vasiliev, 1961:55]. Certainly, ancient “Seima-Turbino transcultural phenomenon” can be considered as such cultural foundation. For Seima-Turbino transcultural phenomenon, one calibrated date for the West Siberian burial ground Satyga is available, 2125-1955 (2140-1940) BCE. Three dates are available for Ust-Vetluzhsky cemetery, 1910-1620 (2020-1600) BCE [Chechushkov, Epimakhov, 2010: 182-229]. Z. Samashev [2010] synchronizes the calibrated date according to new Mycenaean dating by dendrochronological scale within the 18-17 centuries BCE and focuses on the new dates for the Erlitou culture in China (the 17-16 centuries BCE) and Zardchahalifa in Tajikistan (the 21-17 centuries BCE) [Bobomulloev, 1993: 56-63; Kuznetsov, 2002: 81-82].

On the other hand, linguists recorded the existence of several branches of Ilr languages. There are Kafir and Dardic languages, which are spoken by the dwellers of the Hindu Kush mountain range [Jettmar, 1975], or the Indo-Aryan and Iranian (the languages of the Rigveda and Avesta). It is noteworthy that the language of the Avesta is not Ilr substrate [Deaconov, 1989: 21].

The Tocharians are one of the oldest ethnic group of IEs, which is known primarily by the written tradition. Their identification and geographical localization is rather problematic task.

According to the findings of the linguist A. Lubotzky, there are borrowed terms associated with the construction of chariots in Chinese. Some of them were borrowed from the Tocharian language, including one that means “chariot with four horses” [Lubotsky, 1998]. This implies that the hypothetical Tocharians had strong chariot-riding traditions and advanced crafting skills: they were able to make a wheeled carriages, knew technology for production wheels with spokes, rim, tire, and hub; perfectly master the skills of horse training and driving to be able to harness not just pair, but four horses simultaneously; they also had to adjust the reins and design of carriage accordingly. The borrowing of this term (presumably, together with skills that were required for producing and driving quadriga) could occur in East Turkestan at the time between the second quarter and the middle of the 2nd millennium BCE. In other words, the Tocharians were the first people, who invented this innovation, quadriga. However, it is just a hypothesis.

In the steppe, there are no known burials of Early Andronovo with quadrigae relics, but there are sacrificial burials containing remains of several horses (two, three or more). In China, the early chemakyns indicate that the earliest paired sledding and quadriga appeared exclusively in the Late Shang-Yin monuments. In Central Asia, there are three known petroglyphs depicting quadrigae: one in “Chu-Ili” and two in “Gobi”. All of them surrounded by

iconography representing animals and can be attributed to Karasuk time chariots (or even earlier, in case of “Gobi” petroglyphs). Trigas of East Kazakhstan (Moinak, Pokrovka) appeared very early; they are connected with adopted “Indo-Aryan” (Tocharian, or Karasuk) tradition [Novozhenov 2012a: 305-308; 2014a].

The concept of Chemurchek-Tocharian migration, proposed by A. A. Kovaliov and supported by L. S. Klein explains the mechanism of appearing chariots, at least two-horse chariots (bigae, not quadrigae), in ancient China through the line of Chemurchek culture of Altai, which is evidenced by antiquities of Odinovsko-Elunino [Grushin, 2012: 224-228]. This cultural contact obviously led to the formation of monuments of “Seima-Turbino phenomenon” in the area between the Altai Mountains and the rivers Ob and Irtysh. Thus, ancient Chinese could borrow chariot terms from the speech of Seima-Turbino people. This “mechanism” is supported by archaeological materials (by borrowed spears, for example). However, the influence of Seima-Turbino phenomenon requires serious study. The most important issue: it is necessary to prove that Seima-Turbino people really could not use a four-horse chariots, quadrigae. Current data related to this problem is insufficient for making such conclusion.

At the same time, the role of Seima-Turbino production groups and of their brightest representatives (especially blacksmiths, who carried original and innovative metallurgical tradition) in the processes of cultural genesis of the above-mentioned societies was undoubtedly very high [Novozhenov, 2013a:321-329]. Actually, Ural-Kazakhstan (Altai) metallurgical innovation center (later ancestral homeland, as we called it) was formed on the basis of this tradition and its development. They are considered to be mediators connecting all major societies, although the early stages of such “intermediary” operations imply military conflicts and clashes [Bochkarev, 2010:57-58]. If the Tocharians, alleged descendants of the Chemurcheks were so advanced and militant, why they did not use chariots? There is only one answer: neither they, nor their ancestors had skills required for producing chariots. Perhaps, they used vans drawn by oxen, but what chariot-related terms could ancient Chinese borrow from them in this case? Or they used chariots after all, and archeologists just did not find evidence to prove it?

On the other hand, the authors of the article suggested credible “mechanism” of Tocharian migration as relocation of the ancestral homeland and the concept of this ancestral homeland as autonomous, self-sufficient community with its own identity. Its production groups moved within the natural expansion to the east from Pit-Grave and later Catacomb communities. It seems some production groups could break away from the “core” of their culture at the very early period of its development. Such groups moved independently by parallel routes on wheeled dwellings (vans) and autonomously reached areas of Minusinsk Basin and Eastern Turkestan. At the same time, they could keep the elements of their identity, including language, almost intact for a very long time. During rather long migration, despite the possible contacts with other related languages and dialects, the language of the “parent” production group, its traditions and customs were preserved and kept unchanged in verbal form in response to strange and “alien” environment.

V. Conclusions

The above said is indirectly confirmed by the existence on the archaeological map of Central Asia of the monuments left by the alleged IE “settlers”: Lop Nor culture in the Tarim Basin; Chemurchek culture located at the distance of a thousand kilometers to north from it; in the east direction, there are Karakol culture in the Altai Mountains and Sayan cultural bloc of related cultures in Minusinsk Basin and Tuva.

Thus, on the basis of available data on ancient wheeled transport of Eurasia, according to the above-proposed concept of “nomadic IE homeland”, the authors of this work assumed that alleged “Tocharian groups” moved to the east simultaneously with other IE ethnic groups composed of tribes and clans belonging to Pit-Grave culture and its variants. The migration was a result of the natural process: cattle-breeding groups moved in search for unexploited pasturing areas. During the migration, autonomous and self-sustaining production groups kept and preserved their cultural identity.

The offspring of the first “settlers” founded new line of development in the north of Central Asia. In the area between the rivers Ob and Irtysh, this line of development is represented by the materials of Elunino-Odinovsk type and Seima-Turbino circle. Cultural heritage of this line together with its outstanding metallurgical traditions were later incorporated into the new societies of Andronovo and Karasuk that emerged there. Presumably, the population of Central Plains of China borrowed terms related to chariot-riding from the Tocharians through the contacts with one of the two groups mentioned above (this hypothetical scenario implies that they obtained knowledge about producing and riding quadriga through contact with Early Andronovo clans). The cultural identity of the “Seima-Turbino Tocharians” existed for a very long time as part of the cultural association, which consisted of many related groups. It seems that they managed to preserve their identity due to technological advancement and sacred status of blacksmithing activities.

The descendants of other production groups exploited other ecological niches and developed their own lines, keeping their potential “Indo-Iranian” or “Indo-Aryan” identity. As a result of these processes, a new center of cultural genesis emerged in the Ural-Kazakh steppes. This center became the core of the new culture, which developed innovations in social structure, animal husbandry, weaponry, and wheeled transport (chariot riding) and formed its own means both for internal and external communications.

While the basis of the Volga-Don chariot complex was formed from Abashevo substrate and some elements of the local cultures of Post-Catacomb period, the Ural-Kazakhstan chariot complex developed at the local post-Pit-Grave basis under the strong Anatolian influence coming from the south (via BMAC). It was also influenced by Seima-Turbino phenomenon from the northern forest-steppe zone (their alleged descendants moved there before the Tocharians). At the course of time, the vector of development of these two chariot complexes began to shift. In the case of the Volga-Don complex, it moved to the west. In the case of the Ural-Kazakhstan complex, it moved to the east to the Altai Mountains and to adjacent territories in the southern direction. This “shifting” was conditioned by the search for new pastures and tin deposits, which were vital for development at that time.

Later this territory located in the vast Saryarka peneplain, the Tarbagatay Mountains, Ob-Irtysh interfluvium, and plain areas of the Southern Urals became the ancestral homeland of IEs; the identities of Iirs, Indo-Aryans, and of the Tocharian were formed there. The widespread cross-breeding of IEs, which occurred through female line as a result of contacts in the process of development of new territories, was essential for formation of their cultural identity.

However, with the expansion of the range of new pastures, the natural spreading of cattle-breeding groups inevitably met resistance from the indigenous population. The most notable of the conflicts happened when these groups faced forest-steppe clans on Seima-Turbino territory. It was conflict between two communication systems; intense phase of communication where one side used chariots and the other was armed with socketed weapons. Very

soon the nature of these relationships became synthetic, which was clearly manifested by mutual borrowing of advanced technological skills. Anyway, chariots, socketed weapons of Seima-Turbino type, and tin casting technology were actively used by representatives of Early Andronovo and later Karasuk societies. These set of innovations rapidly spread to all contact areas, where steppe clans interacted with ancient sedentary civilizations, and contributed to formation of Turanian, Chinese, Balkanian, and Iranian channels of communication [see: Novozhenov, 2012b:114-145; 2012d: 44-67; 2013: 100-117; 2013a; 2014a:18-267].

Subsequent periods in the history of communications of steppe population of Eurasia demonstrate striking repetition of similar cycles and the formation of standard cattle-breeding channels of communication, based on the new “miraculous” inventions: advances in horse-riding skills and domestication of horses, improvements of reins and harness, invention of the yurt, stirrups, and new types of hard-saddles. Eventually, it brought horse (or camel) riders to the forefront of world history; they became symbols of the era of Early Nomads and of early Middle Ages. The repetition of the same routes and destinations of communications channels is observed in the processes of the Fall of the Western Roman Empire and the Great Migration of People of the 4th-5th centuries CE. This migration was directed to the west towards the homeland of their distant almost mythical and forgotten ancestors.

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