TRANSPORT AND SETTLEMENT STRUCTURES OF ZABAYKALSKIY KRAY IN THE INTERNATIONAL CROSS-BORDER ECOLOGY-CENTERED REGION OF THE EASTERN JUNCTION POINTS OF THE BORDERS OF RUSSIA, MONGOLIA, AND CHINA

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Abstract: *The relevance of the problem of the spatial mutual cross-border structuring of border territories at the junction points of the state borders of the three countries under study is conditioned by the need for their economic, cultural and environmental integration. The purpose of the article is to identify the role of the near-border position (in reference to Mongolia and China) in the formation of transport and settlement structures of Zabaykalskiy kray in the international cross-border three-link region of the eastern junction point of the borders of Russia, Mongolia, and China. The leading approach to the problem study is the territorial and structural method implemented in three stages: identification of near-border spatial differentiation of transport and settlement structures of Zabaykalskiy kray in reference to the state border line (in this case – in reference to the China-Russia border) and in reference to the eastern junction point of the borders of Russia, Mongolia and China; representation of this differentiation as cartographic anamorphoses (distortions); anamorphoses transformation into two ideal models (radial and orthogonal). The radial model prevails in the dialectic interaction of effects of two ideal models in Zabaykalskiy kray, since, apart from the density rate of transport and settlement structures, quite a few characteristics are subjected to its influence and the central reserve transforms the international cross-border three-link region into an ecology-centered region. Article materials may be of use when searching for a compromise for the problem of mutual territorial planning at the junction point of state borders of the three countries.*

Keywords: *state border; near-border position; cartographic anamorphoses (distortions); ideal models; cross-border reserves; priority development areas.*

INTRODUCTION

International cross-border three-link regions (ICTR) are formed on the microlevel at the border of state borders of the three countries and exert a strong influence on the territorial organization of population and economy of each of the three near-border sides but on a different scale. Some of these regions have a cross-border specially protected natural area (reserve) at the very junction point of the borders, which

makes them ecology-centered. The process of cross-border territorial organization of population and economy is an integral part of the cross-border integration.The reciprocal arrangement of facilities, localities and specially protected natural areas in reference to the state border is a prerequisite to the formation of near-border contact links for the arrangement of effective co-operation across boundaries. Reaching understanding and coordinating a mutual (cross-border) territorial organization of near-border objects between three parties (on the ICTR scale) is more challenging than between two parties (on the two-link region scale). It is to solve the coherence problem that the international experience of structuring cross-border three-link territories accumulated over the last decade needs to be considered. ICTR have their geographic peculiarities that make them different from two-link ones, which brings about the need to assess near-border position in a three-link territory, develop a particular plan of cross-border organization of near-border objects, and introduce a special near-border regional policy. The purpose of the article is to identify the role of the near-border position (in reference to Mongolia and China) in the formation of transport and settlement structures of Zabaykalskiy kray in ICTR of the eastern junction point of the borders of Russia, Mongolia, and China. Comprehensive transport infrastructure development projects for the Far East and Baikal region require comprehensive insight into planning, i.e. consideration of objective laws of mutual arrangement of residential, industrial, agricultural and SPNA, which is impossible outside of the physiographic reality. Transport infrastructure that connects border territorial structures with each other and near-border structures of adjacent countries ensures cross-border space continuity. Territorial organization of residential, industrial, agricultural and specially protected natural objects in Zabaykalskiy kray has its near-border peculiarities that make them different from other near-border regions of Russia. Positioning as skilled territorial planning of the location of transport and settlement structures in the near-border region acquires not only economic and geographic but also political and geographic value.

METHODS

Idealization is a central link in the geographic explanation triad. It allows to step back from geographic reality into the world of ideal models that reflect its most significant properties in their pure form and then return to this reality with a deep insight of these properties that are the most relevant to this study. The ideal model is the result of idealization of localization territorial structures, connections and relations. When analyzing the idealization concept of V.M. Gitelson [1968], S.A. Shishulkin says: “In books on science logic and methodology, idealization is a method of the outside world reflection, during which the object under study is considerably simplified and is ascribed absolute properties that it does not really possess. This definition is curious because idealization is represented as a special way to reflect actual reality related to simplification. At the same time, peculiarities of idealization make it impossible to directly define inconceivable object entity in its “pure form” [2009, p. 88]”.

Idealization is an inductive conclusion. “Perception experience represents the lowest information level that serves as the basis for scientific understanding. This information couched in one or another language form gives rise to a host of quite discrepant assertions that are sometimes referred to as factual. They are partly put in order using words and symbols. Next, we can define, measure and classify these facts to

the group and categorize them and, thus, impart a certain degree of seemingly reasonable order to data", – this is how D. Harvey explained the essence and algorithm of inductive scientific explanation [1974, p. 49]. In their practical work, geographic researchers combine universalization and individualization that complement each other and yield full-fledged studies. However, there is a certain conflict of directions among geographers. There is a group of geographers prone to geographic individualization; they are too passionate about the search for new geographic areas, the specification of habitats, etc. For them, idealization ends with mapping. Some of these researchers are critical about universal ideal models. They explain their position by the fact that images presented cannot be found on a map. Geographic map of a certain territory is, fundamentally, its individual ideal model. Each map has a generalization that may be viewed as the process of idealization.

In terms of geographers' inclination to build individual (regional) and universal ideal models, they may be divided into two camps, i.e., representatives of encyclopedic geography prone to inventory and monitoring of geographic reality and representatives of theoretical geography prone to building concepts and proposing new methods. Of course, the best option is a combination of two aspirations in one researcher with the addition of the third – constructive direction. However, interests are more often biased towards one of the two directions. The idealization method is used in geography together with modelling that accompanies it at all stages. The first stage is building of the geographic map charts that reflect laws of near-border differentiation of geographic elements. The second stage is building of distortions or geographic anamorphoses that, at the third stage, are converted in theoretical models, the peak of philosophic-geographic generalization. We should say that scientific explanation has a sequence of stages reverse to research. Namely: theoretical model – geographic anamorphoses – map chart. G.A. Goltz coefficient [1981] is used in the paper as a key indicator; it reflects the concentration of transport and settlement structures. To calculate it, the length of communications is divided by the square root of the product of area indicators by the number of localities:

$$K_{Гольца\ \ \text{Goltz}} \sim \frac{L}{\sqrt{S \times N}}, \text{ where}$$

K is G.A. Goltz coefficient,
L is length of communication, km,
S is area, sq.km;
N is number of localities.

G.A. Goltz coefficient is applied to various communication networks. In the paper presented, calculations were made for motor roads. Two ideal (theoretic) models are shown in dialectic interaction as complementing each other. This is the complementarity principle implementation. Let us consider building models and modelling three-link territories and the role of near-border position in the territorial organization of population and economy. Engineering sciences differentiate between model building and operation, which is referred to as modelling. In geography, building ideal models--maps, carotids (distortions), flowcharts--is model building, while the explanation of their operation, i.e. reflection of geographic reality is modelling.

RESULTS

In theoretical geographic terms, results of the study presented are expressed in two ideal models: orthogonal and radial that simplify territorial structures down to regular geometric figures. ICTR are found in different parts of the world and, despite different geographic locations, they have common features in the territorial organization of urbanized, agricultural, environmental structures with reference to the junction point of three borders, thus demonstrating radial symmetry. This allows us to assert the presence of objective laws of cross-border self-organization. SPNA (reserve, national park, wildlife sanctuary) are normally arranged at the junction point of borders.

These SPNA are girded by concentric circles of recreational, agricultural and urbanized zones. Transportation lanes form a ring around SPNA and are crossed by the state border in three places (Baklanov, P.Y., Novikov, A.N., Ptitsyn, 2016). These ICTR are ecology-centered. Daursky biosphere reserve is situated in Zabaykalskiy kray, at the junction point of the borders of Russia, Mongolia, and China. The Agreement between environmental agencies on setting up "of a shared reserve in the areas adjacent to the Russia-Mongolia-China state border" was signed in March 1994 in Ulan Bator by order of the governments of the three countries. The Agreement provides for the formation of a mixed Russian-Mongolian-Chinese committee in charge of coordination of all types of co-operation in the shared reserve. The parties undertook to ensure "safe passage of wild animals from one part of the reserve to another one" in the shared reserve. The official branding and name of the international reserve were accepted in October 1996, at the II session of the mixed committee in Choibalsan (Mongolia). Its name in English: CHINA-MONGOLIA-RUSSIAN "DAURIA" INTERNATIONAL PROTECTED AREA, short name – CMR "DAURIA" IPA [Brinikh et al. Dauria Reserve. URL: http://oopt.info/daur/comm.html].

"Daurian Steppe" ecological region singled out by experts of the World Wildlife Fund as Part of the "Global 200" program is situated at the eastern junction point of the borders of the three states: Russia, Mongolia, and China and its total area is some 1,100 th. km^2 [Kirilyuk, 2011, p. 84]. An environmental buffer planning form took shape in an area of the Mongolian border; it is represented by the following conservation areas organized: Sokhondo Nature Reserve (Krasny Chikoy and Kyra regions); Dauria Reserve (Ononsky and Borzya regions) with a total area of 253.7 th. ha. This planning form is an alternative to the settlement system as such. Scientific monitoring conducted in the reserves is of importance to border control, too. The only thing needed for the country's boundary protection is awarding high international statuses to the reserves. However, cross-border recreational activities are poorly developed in the territories adjacent to the international reserve (Kozyreva, Novikov, Novikova, 2017). Junction points of the borders of three countries are found in all the continents, except for Antarctica and Australia.

These junction points may be coastal and inland; ecology-centered or have a recreational, agricultural or residential territory as a center. Except for Antarctica and Australia, the continent that is at the bottom of the rating is North America. A peculiarity of this continent is that two existing ICTR are coastal. The first junction point is formed by Salvador, Honduras, and Guatemala. The second junction point is Mexico, Belize, and Guatemala. ICTR of Salvador, Honduras, and Guatemala is both near-border and ecology-centered. International forest reserve Bosque-Montecristo is managed by three countries: Salvador, Honduras, and Guatemala.

Salvador, Guatemala, and Honduras join their efforts to preserve the Montecristo forest reserve situated in these countries. Montecristo is a home to numerous animal and bird species that have been virtually destroyed in the remaining Central America – mountain foxes, howler monkeys, spider monkeys, jaguars, quetzals, striped owls and a few hummingbird species. The most popular site of the reserve among foreign tourists is the Centennial Park. It lies 11 km south-westward of San Salvador and it gets its name due to its virgin territory covered by age-old tropical trees and bushes (the reserve will be jointly managed by three Central American states. URL: http://newsland.com/news/detail/id/256988).

Bosque-Montecristo is girded by a highway 199.4 km long and there are the following twin cities by state borders: Esquipulas (Guatemala) – Santa Fe (Honduras); El Panal (Salvador) – Concepcion Las Minas (Guatemala); San Ignacio (Salvador) – Antigua Ocotepeque (Honduras). The city of Esquipulas is a strong attraction for tourists and Catholic pilgrims. Pilgrims are attracted by the statue of Black (black-skin) Christ who, as legend has it, cured the Guatemala archbishop in the middle of the 18th century.The pilgrimage takes place each year on the 15th of January, which may be interpreted as event-driven tourism.

There are only 129 km from the border crossing Frontera Anguiatu (Salvador) that lies at the border between El Panal (Salvador) and Concepcion Las Minas (Guatemala), to the port of Acajutla located by the Pacific Ocean. The distance from the junction point of the three borders to the Caribbean coast is 165 km and to the Pacific coast – 105 km. The second three-border junction point of Mexico, Belize, and Guatemala is undergoing ecology-centered structuring.

On the side of Guatemala, the Maya biosphere reserve was arranged as early as 1990; it offers protection to vast territories of rainforests and archeologic sites. The reserve is an important scientific tourism destination; scientists from different countries study the ancient culture of Maya during archeologic excavations. Archaeological site Uaxactun lies in the northern part of Peten department (Guatemala) within the Maya natural reserve. In ancient times, it was one of the most important political centers of the region…

The name of the site – *Uaxactun* – is made up of words *uaxac* – "eight" (according to the 8th 400-year cycle) and *tun* – "rock" (i.e. stela) (Safronov, 2015, p. 112). As a tourist attraction, Uaxactun plays an important role in the structuring of the ICTR being formed. On the side of Belize, Rio Bravo reserve adjoins the border; in fact, it is the continuation of the Maya biosphere reserve and it can also boast of a host of ancient cultural and archeologic sites. There is the Calakmul biosphere reserve (Reserva de la Biósfera Calakmul) at the Mexican side. All the three reserves share a common idea – conservancy and preservation of archeologic and architectural (pyramids) sites of the Maya civilization. SPNA of the three-border junction point of Mexico, Belize and Guatemala are girded by a motor road 1,373 km long. This circular route runs through the cities of Chetumal (capital of the state of Quintana Roo in Mexico), Belize (Belize), Belmopan (Belize), Guatemala (Guatemala), Palenque (Mexico).The biggest attractions of these cities are the capitals Belmopan (Belize), Guatemala (Guatemala).

The distance from the three-border junction point to the Caribbean coast is 98 km and to the Pacific coast – 594 km. The ecology-centered ICTR mentioned can boast of a unique geographic location thanks to their double coastal position about the Pacific and Atlantic Oceans.

South America has 13 three-border junction points; 9 of them have Brazil as one of the three participants. There are no coastal junction points. All the junction points, except for two: Brazil – Bolivia – Paraguay and Brazil – Columbia – Peru are continental. These two junction points are ultracontinental. Africa has more than 50 three-border junction points. However, almost all of them are continental and ultracontinental. There are 4 coastal junction points in Africa found at the Atlantic coast: Equatorial Guinea, Cameroon, Gabon; Cabinda (Angolan province) – Kongo – Zaire; Sierra Leone – Guinea – Liberia; Ivory Coast – Liberia – Guinea. There are 4 junction points on the Indian coast: RSA – Swaziland – Mozambique have two-border junction points; Eritrea – Ethiopia – Djibouti; Eritrea – Ethiopia – Somali.

April 2002 saw the opening of the Great Limpopo Transfrontier Park that combines Kruger Park in RSA, Gonarezhou, Mangini-Pan and Malipati parks in Zimbabwe and Limpopo in Mozambique. As of today, this is the world's biggest national park. Besides, state borders are abolished in the territory of Great Limpopo and tourists may visit it with a visa of one of the three countries (Kruger. URL: http://tonkosti.ru/%D0%9A%D1%80%D1%8E%D0%B3%D0%B5%D1%80).

There are active processes of ecology-centered territorial structuring at the three-border junction point of Democratic Republic of Congo, Rwanda, and Uganda. 1929 is recognized as the official year of birth of the Virunga park. Back then, it was titled Albert and Kivu national park. In 1969, separate **Virunga National Park** was detached from Albert and Kivu common environmentally protected site. Presently, the park's territory borders the land of Rwenzori National Park in Uganda and the national volcano park in Rwanda. A few years ago, Democratic Republic of Congo, Rwanda, and Uganda came forward with an initiative of setting up a cross-border biosphere reserve in the border territory that was supposed to include **Virunga National Park** (National parks and reserves of the world/**Virunga National Park**.URL: http://www.nparks.ru/virunga.php).

Tri-National de la Sangha is a cross-border reserve of the three countries that have united their SPNA situated at the shared junction point of borders: Congo (Nouabale-Ndoki), Cameroon (Lobeke) and Central African Republic (Dzanga-Sangha). In Africa, there are two four-border junction points that deserve attention: Algeria – Mauritania – Western Sahara – Morocco and Zambia – Zimbabwe – Botswana – Namibia. The latter junction point is ecology-centered. The Kavango-Zambezi cross-border reserve includes Angola in addition to the four mentioned countries. Its peculiarity is that, apart from the four-border junction point, it comprises the ecology-centered three-border junction point Angola – Zambia – Namibia. Victoria Falls are one of the areas of Kavango-Zambezi.

Europe has some 40 three-border junction points including coastal junction points of the following states: the Netherlands – Germany – Belgium; Russia – Poland – Lithuania; Russia – Estonia – Lithuania; Bulgaria – Greece – Turkey; Romania – Ukraine – Moldova. Europe has no ultracontinental junction points. Europe has ecology-centered three-border junction points, too. In 2005-2008, Pasvik reserve took part in the formation of the Pasvik-Inari three-sided cross-border park jointly with environmental institutions of Norway and Finland. Now it is a part of it. The project provided for setting up a platform for the development of sustainable natural tourism in the common natural region, joint research, monitoring, the spread of knowledge about the park in each of the three countries. Paatsjoki River valley and Inari lake are the common natural, geographic, cultural, and historical region. Pasvik region is curious in terms of its history; it is a

meeting point of different cultures. At various times, riverbanks were inhabited by Saami, Russians, Finns, and Norwegians. Paatsjoki River used to be the most important transport channel for the areas remote from the Barents Sea. It was used to transport people, goods, and logs (official website of the reserve Pasvik, URL: http://www.pasvik51.ru/content).

Asia has a little more than 40 three-border junction points. There are 4 coastal junction points: Syria – Lebanon – Israel; Israel – Jordan – Saudi Arabia; Iraq – Saudi Arabia – Kuwait; Russia– China – North Korea. It should be noted that ecology-centered structuring is observed at the border of Russia, China and the Democratic People's Republic of Korea, on the side of Russia and China. At the border of Russia and China, there is a cross-border reserve called "Land of the Leopard" that comprises: territory of the state natural biosphere reserve "Kedrovaya Pad" (Russian Federation); territory of the state federal nature reserve "Leopardovy" (Russian Federation); and territory of the national nature reserve "Hunchun" (People's republic of China).

SPNA of the Russia-China cross-border area is separated from the three-border area with a narrow strip of 15-20 km. "Land of the Leopard" is oriented towards the junction point with an agricultural area where regional environmental management restrictions are minimal compared to other areas of the park. There are some 150 three-border junction points in the world that offer various opportunities for the formation of international cross-border ecology-centered regions; about 20 of them are coastal. In Zabaykalskiy kray, radial organization of transport and settlement structures, which is formed here as in other three-sided cross-border territories of the world, is enhanced by the orographic factor (terrain).

The models are based on two physiographic matrices: orthogonal model – parallel ridges (and intermontane hollows, correspondingly) and their common orientation from south-west north-eastward. Radial model – centrifugal increase in height above sea level in reference to the eastern junction point of the borders of Russia, Mongolia and China (Uldza-Toreyskaya Plain).Initial balanced economic and geographic manifestation of the two models is demonstrated by two types of density zoning of transport and settlement structures – parallel (orthogonal model – fig.2) and arched (radial model – fig. 3).

The terrain has a dialectic effect on the formation of transport and settlement structures, which may be shown as two theoretical models: orthogonal and radial. Orthogonal or lattice model of the transport and settlement organization of the eastern junction point of the borders of Russia, Mongolia, and China applies subject to the concurrent perception of the terrain and transport networks that make up the lattice-like appearance of the cross-border area. The fact is that nearly all ridges are oriented from south-west north-eastward (in figure 1, these are the lines of CD Combined model).

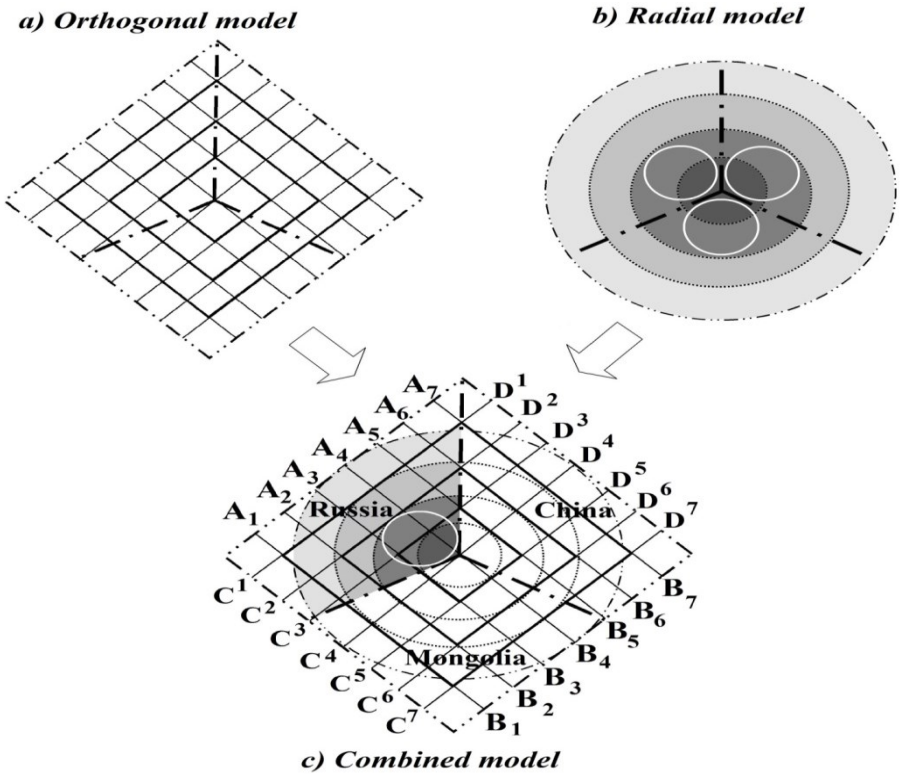

Fig. 1. Correlation of ideal models of the cross-border three-sided territory of the eastern junction point of the borders of Russia, Mongolia, and China.

The radial model, just like orthogonal one, is based on orography (terrain) and height above sea level rather than the direction of ridges. A.T. Naprasnikov writes: "Zabaykalskiy kray is a huge mega-depression surrounded by mountains: on the west – Khamar-Daban and Barguzin Ranges; on the north – North-Baikal and Stanovoy Highlands; on the east – Olekmin Range and Greater Khingan; on the south (in Mongolia and China) – ridges of Mongolian Alps, Khingan, Khentii and Qin Ling (2003, p. 107)". Complementarity of orthogonal and radial models. As can be seen, when the models are superimposed (fig.1), the squares convert into circles inscribed into one another. The circles diverge in a concentric manner from the junction point of three borders. This is deviation of the ridge and river configuration from linear to the arched pattern about the junction point.

When two models are combined, their complementarity is manifested not only in the conversion of squares into circles but also in congruence of linear structures of the road network that cross the junction point of borders. They confirm both orthogonal and radial properties of the cross-border organization of territorial structures, for example, a section of the Chita-Borzya railway (at the Russian side). The orthogonal model dominates in the public mind of Russians and requires no proof. The second model is radial; unlike the first one, it has a start point for the perception of territorial differentiation of natural and economic structures. Unlike the first one, it focuses on the junction point of borders from the beginning. Orthogonal model implementation. The near-border position played the main role in the spatial organization of Zabaykalskiy kray, in particular, in terms both of saturation with transport and settlement structures and their spatial configuration expressed in terms of G.A. Goltz coefficient (1981) by

municipal districts of Zabaykalskiy kray in reference to the line of the China-Russia border. Orthogonality is expressed in the row pattern of the areas parallel to the state border, that alternate according to the vector perpendicular to it, which is oriented towards the inner part of the region. Out of 31 municipal districts of Zabaykalskiy kray, 12 are on the border of cross-border regions of Mongolia and China (fig. 2).

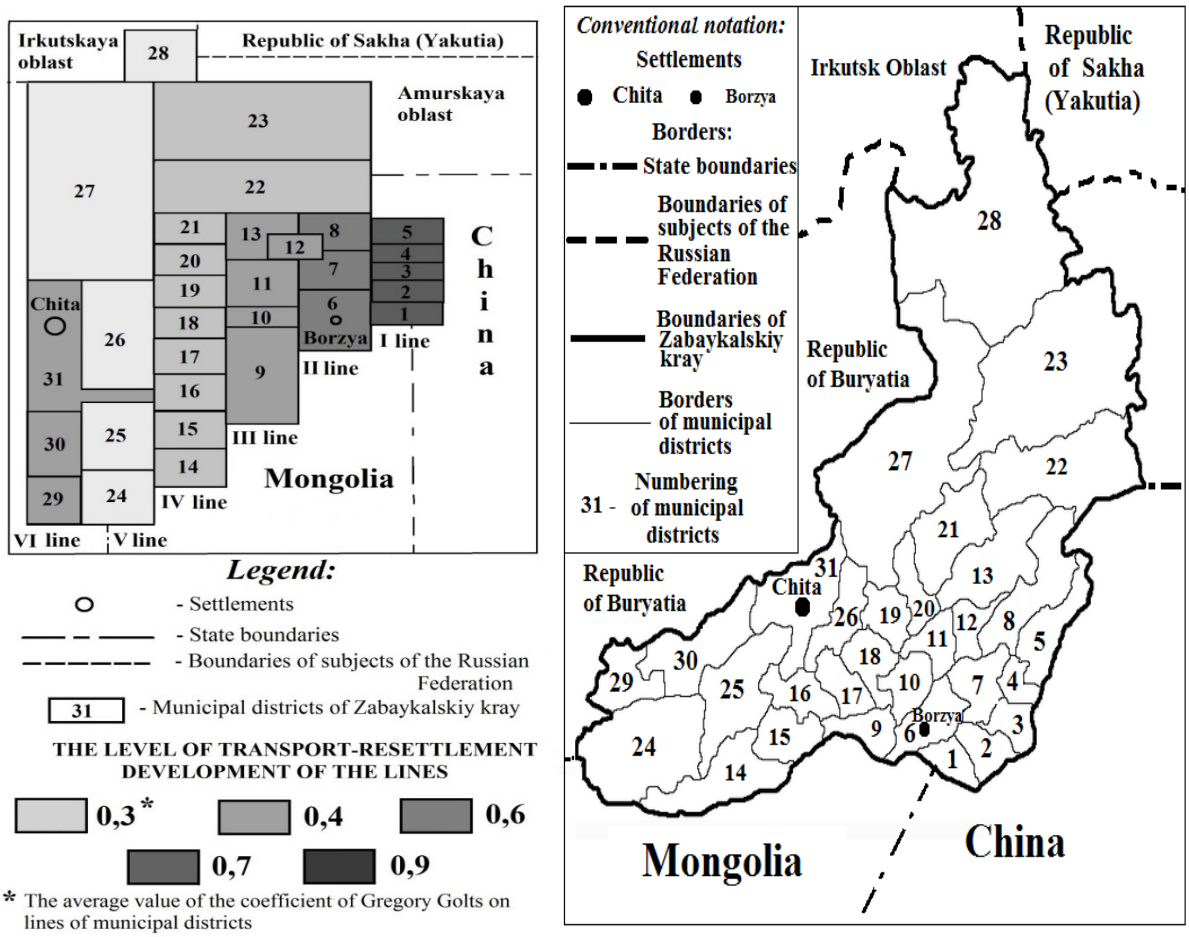

Fig. 2. Transformation of the political division of Zabaykalskiy kray into an orthogonal anamorphosis.

Near-border row pattern implies the identification of several municipal districts about the Russia-China state border. Based on orthogonal and radial models, two anamorphoses are proposed that reflect the political division of Zabaykalskiy kray: orthogonal and radial with only the principle of the vicinity of municipal districts preserved. Goltz coefficient calculated by rows decreases from row to row with the distance from the Russia-China section of the state border from row I to V, which is expressed as an orthogonal anamorphosis (fig. 2). The radial anamorphosis (fig.3) that demonstrates the operation of the radial model reflects territorial differentiation of G.A. Goltz coefficient in Zabaykalskiy kray about the eastern junction point of Russia, Mongolia and China. According to research findings (Novikova, 2014), the priority development areas (PDA) being formed on the south-east of Zabaykalskiy kray demonstrate radial direction of the development vector.

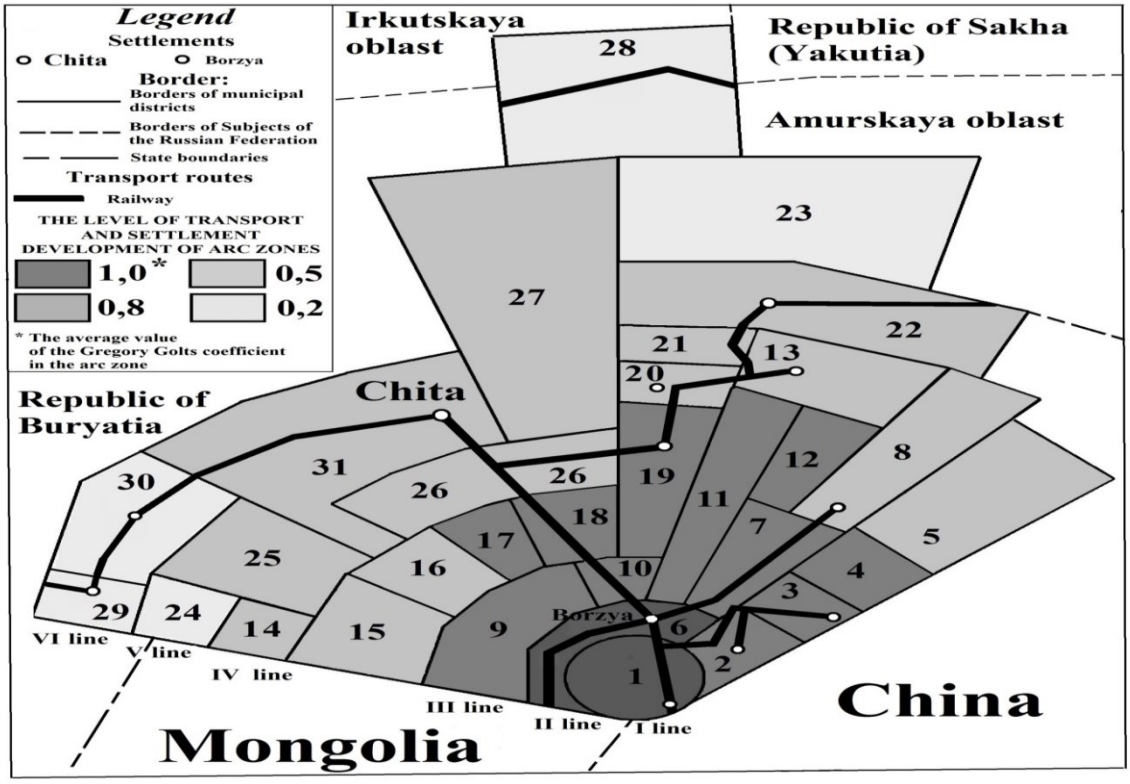

Fig. 3. Radial (arched) anamorphosis (distortion) of the political division of Zabaykalskiy kray.

The near-border position of Zabaykalskiy kray has an inconsistent effect on the territorial development of its transport and settlement structures and economy. Inconsistency in the contact and non-contact (buffer) role of the near-border position in the territorial organization of population and economy of Zabaykalskiy kray is manifested in two directions: temporal and spatial. Temporal direction is a change of the role in time depending on the nature of relations between Russia and China. Let us mention some crucial events that have aggravated the relations between the countries. 1689 saw the first treaty between the countries. Despite its certain virtues (establishment of diplomatic and trade relations), it was the defeat of the Russian counterpart as it was a land-for-peace accord. 1858 saw the Treaty of Aigun with China that was signed by Governor-General Count N.N. Muraviev-Amurskiy on behalf of Russia. According to this treaty, Russia recovered territories and established the border along Argun River.

The Chinese came to develop the regions of the Russian Empire bordering Mongolia in the middle of the XIX century. Chinese merchants gained the right to visit Siberia according to the Convention of Peking of 1860.Right after "Russia-China Trade Regulations" were adopted in 1862, most of the Chinese who traded in Kyakhta Maimaicheng moved their operations to Russia… The first Chinese to have "settled down" in Siberia were the merchants from trade firms of Guihuacin (Hohhot) who worked in Outer Mongolia. Most merchants settled down in Zabaykalskiy kray and only very few of them moved forward, to the west (Datsyshen, 2014a, p. 136). The military history of Russia in the XX century begins with a military conflict officially referred to as "Military campaign in China in 1900-1901". Russia held the military campaign based on the troops that got together in the Siberian military district. In 1900, martial law was for the first

time introduced in the Siberian military district. Some 100 th. people were mobilized in Siberia for the war with China. In summer 1900, Siberian railways transported 54,410 military men and 11,407 horses. 188,200 pounds of military cargo were delivered to Zabaykalskiy kray. Daily lives of Siberians were subject to the tasks of the war with China. Military activities were unrolling in the eastern section of the Siberia border. Small military troops were sent to near-border cities of the Chinese Empire. By the end of 1900, relief enlisted men mobilized in Siberia returned home, but Russian troops kept on combating Chinese resistance in Manchuria (Datsyshen, 2014b, p. 119). One of the key events that changed the near-border position of Zabaykalskiy kray was the conflict of 1929 at the Chinese Eastern Railway (CER). 1969 saw a military conflict between the USSR and China for Damansky island on the Ussuri River.

The alternation of periods of good-neighbourly relations and tense periods is a normal course of history. The most important thing is that the two countries never had to conduct large-scale warfare against one another. Still, the cycled pattern of relations between the two states is extreme (good-neighbourly or tense), which has an adverse effect on the psychological well-being of the population, especially residents of the municipal districts that border China. When relations with China aggravate, this population is viewed as an additional defence line with typical increased vigilance and observation raised in them. In the times of tense relations with China, patriotic upbringing has its peculiarities. However, during hinge periods of improved relations, the population raised with certain principles have difficulties “switching over” to a different type of reality perception, which brings about certain discomfort – feeling of a cross-border threat. In the 1980s, the situation got worse when the population lost their strategic status that the government underpinned with additional material rewards. Of course, the population lost these rewards with the improvement of relations between the countries. Zabaykalskiy kray has a unique geographic position due to the combination of two types of its political-geographic and physiographic conditions that feature the repetitive mode of swings: near-border and intercontinental. The latter, as is the case with near-border position, has its wide range of temperature rather than political conditions, which brings certain discomfort into life activities of the population.

According to the research by V.F. Zadorozhny, A.T. Solovova, and A.T. Naprasnikova, the daily temperature range in Zabaykalskiy kray in January is 13°C, and in February – up to 16-17°C. In summer, with the same daily air temperatures, their minimum night values are 13-16°C lower (2005, p. 9). Seasonal temperature differences are even higher. Of course, the political regime has multi-year cycles, but they do not always exceed the time needed for generations to alternate. Unlike the temporal direction that has an interstate level, the spatial direction of change in the role of the near-border position is manifested on the intraregional level. This is an increase in the density of transport and settlement structures on drawing near the line of the China-Russia border expressed with G.A. Goltz coefficient. According to the authors, layering of the orthogonal structure that features decrease in the development rate from row to row (from layer to layer) detached from the China-Russia border is the geographic result of adaptation to “historical swings” – the alternation of hostile and good-neighbourly relations between Russia and China. Military fortified areas – potential defence lines – were arranged inside certain layers parallel to the China-Russia border.

The atmosphere is layered because of adaptation to temperature differences. Its layering ensures effective contact and barrier functions with the outer space permitting

the light through but protecting the Earth's surface against overheat (overcooling) and harmful radiation. It should be noted that the ozone layer is not an outer atmospheric layer; it lies deep in the stratosphere. Likewise, buffer structures (military fortifications) are not outer; they lie at the border of rows II-III and IV-V.The level of transport and settlement development as readiness for near-border in-touch capabilities changes in waves: from row I to row V, there is decrease and in row VI, there is a sharp rise. The position of Mongolia in the context of Russia-China relations is curious. Of course, it is an independent state that has become such thanks to the USSR to a large extent. In line with the orthogonal model, during tense relations with China, Mongolia acts as an outer non-contact (buffer) territory and during good-neighbourly relations, it plays a role of a contact link – mediator. In either case, Mongolia as an independent state acts as a third link in the radiosymmetrical cross-border structure and ensures symmetry of the cross-border three-link territory of the eastern junction point of the borders at the local level.

According to the author, this form of the territorial organization expressed in alternation must become a thing of the past. Modernity requires in-touch capabilities of all the areas, but one cannot ignore the historical experience of cyclical changes in the nature of the near-border position. According to the author, all the territories have to be able to develop cross-border in-touch capabilities; territorial structures need to be made capable of mitigating "historical swings" – alternation of hostile and good-neighbourly relations between Russia and China at the expense of the double purpose. The author does not support the idea of the primitive switchover from economic in-touch capabilities to military buffer state. There are alternatives to the military infrastructure. Alternatives imply the double purpose. The double purpose matter was addressed in the home rocket production industry where the aircraft that put satellites and space stations into orbits had to reach military ends if needed. A similar phenomenon is observed in the near-border geography, i.e., a near-border system of settlement of Cossacks with their arable areas, reserves.

Cossacks as a social class cultivated near-border arable areas, thus retaining vast expanses and guarding borders. Reserves, with the entire range of environmental co-operation, have a system of cross-border monitoring that may be also viewed as military monitoring of population flows. In this context, the population is perceived as a part of armed power rather than users of nature. Alternation of contact and buffer areas in the radial structure has a different implication – this is a manifestation of centrifugal and centripetal processes with regard to the eastern junction point of the borders of Russia, Mongolia, and China rather than adaptation to "historical swings" – the alternation of hostile and good-neighbourly relations between Russia and China. In this case, we deal with the gravity model; however, it is not a city in its center, which is normally the case in geography, but a local three-link cross-border territory of the eastern junction point of the borders of Russia, Mongolia and China that has three near-border central cities (Borzya in Russia, Hailar in China and Choibalsan in Mongolia). These three cities have to operate as transport and logistics centers and form ringed (although stated geometrically, they rather have a triangular shape) structures with near-border twin localities. The interior space of these structures has to be represented not only by the conservation areas that play a role of a cross-border platform of active ecological co-operation, but also by the tourist attractions that should be situated right at the junction point of the three borders, the road to which has to be laid from all the three central cities across the reserve.

It is possible that, in certain sections, the road must run through subways or overpasses without interrupting the continuity of the reserve.

It should be noted that the town of Borzya is not considered in strategic documents as PDA; priority is given to Zabaykalskiy kray (Zabaykalskiy district, which is shown with number 1 on maps), which is explained by its position directly at the Russia-China border.According to the authors, this is the manifestation of the orthogonal model and if priority was given to Borzya, it would be the manifestation of the radial model.The geographic position of Borzya as a potential logistics center capable of redistributing cargo traffic between the three countries--Russia, Mongolia, and China--has not been appreciated yet. Let us focus on the geography of customs posts in Zabaykalskiy kray: apart from the posts arranged right at the border: Starotsurukhaitu (Priargunsky district, shown with number 3 on maps), Verkhny Ulkhun (Kyrinsky district – 14), Zabaykalskiy (Zabaykalskiy district – 1), Soloviev (Borzya – 6); there are also posts in districts that are not near the border: in Chita district (district number in figures – 31), Petrovsk-Zabaykalskiy district (29), Aginsky district (17).The latter three reflect the special transport and geographic position in reference to the border and demonstrate intraregional boundaries of border territories with an increase in the distance to it. Borzya used to be a military town of Zabaykalskiy kray. Its buffer function that demonstrated the alternation of contact buffer strips from the China-Russia border has become a thing of the part and its contact function has not been established.The mindset of regional authorities has not changed either – stereotypes based on the orthogonal perception of territorial structures prevail.

Let us consider the inclination to centrifugal and centripetal nature in the radial organization of the population and economy of Zabaykalskiy kray. Borzya (6) and Zabaykalskiy (1) districts that make up the Russian central part of the cross-border three-link region of the eastern junction point of the borders of Russia, Mongolia, and China have the attraction effect on the regions of the peripheral frontier zone of the first order. However, their forms are more compact, and the rate of transport and settlement development is quite high, so the effect is not visible. This effect is well demonstrated by the near-border peripheral zone of the second order (district numbers: 2; 3; 4; 7; 9; 10; 11; 12; 17; 18; 19): its districts (fig.2 – map charts) have a prolonged configuration in reference to the central zone and the districts are polarized and have developed and undeveloped transport and settlement structures. Developed parts gravitate towards the nucleus and undeveloped ones form buffer arched spaces, beyond which – in the near-border peripheral zone of the third order (district numbers:5; 8; 13; 14; 15; 16; 20; 21; 22; 25; 26; 27; 31) centrifugal trends are observed, i.e. there are no economic connections with the central zone. Thus, the second peripheral zone or, to be more exact, its central part that features polarization is the boundary between centrifugal and centripetal forces.

Let us address the location of PDA that are viewed as drivers of the regional economy in orthogonal and radial structures in order to identify their transformation trends in the context of the strategy of social and economic development of Zabaykalskiy kray for the period until 2025. PDA were singled out in line with the strategic directions of development of Zabaykalskiy kray until 2025 approved by law No. 295-ZZK of Zabaykalskiy kray on 10 December 2009 (http://docs.cntd.ru/document/922220912). Author's theoretical aspects are backed up by the modern PDA studies conducted by P.Ya. Baklanov (2014). In Zabaykalskiy kray, regional authorities have singled out ten PDA for the attraction of state and private investment:

1. Trade and industry zone of Zabaykalsk urban-type settlement.
2. Zabaykalskiy territorial mining and smelting enterprise.
3. Wood industry development area – Amazed PPM.
4. Priargunsk agricultural zone for grain and feed production and development of cattle breeding.
5. Alkhanai tourism and recreational area.
6. Industrial area in Mogoituy settlement.
7. Agricultural production and processing regional area in Agin-Buryat Area.
8. Agglomeration area based on Chita and adjacent localities.
9. Construction industry development area.
10. Charsky territorial industrial complex.

It should be noted that out of 10 potential PDA, 4 are located in the near-border district, 3 – in Agin-Buryat Area (district numbers 16; 17; 18) that has its peculiar geographic position in reference to the border and junction point of the border of the three countries. *Trade and industry zone of Zabaykalsk urban-type settlement*. The reason for the addition of Zabaykalskiy settlement to PDA is its position near the Chinese border. Zabaykalskiy district (1) enjoys a key position; it is situated at the junction of the borders of the three countries. In terms of the radial model, this is a central position, although the district has no cross-border transport crossing with Mongolia. These transport functions are performed by neighbouring Borzya district (6). Therefore, the authors have identified both districts as the central zone. In our opinion, certain parts of Borzya district (town of Borzya and Solovievsk settlement) had to be included in the common PDA with the united development program and strategy. The transport and geographic position of Zabaykalskiy settlement at the Russian side is implemented in two main directions: north-westward (across Borzya and Chita) and north-eastward (across Krasnokamensk and Priargunsk). Both these directions fit both in the radial model – as rays radiating from the center and orthogonal model – as elements of the lattice structure.

In terms of its cross-border position, Zabaykalskiy settlement is equally under pressure and gravity of the adjacent Chinese side, which is not the case with the Mongolian side. Cross-border pressure is manifested in the supply of goods and services from the adjacent side and gravity – in demand. It should be noted that cross-border market zones of supply and demand disseminated by the Chinese counterpart to the territory of Zabaykalsk trade and industry zone are mainly implemented at the expense of consumer goods. The industrial element of the trade and industry zone lags too far behind the trade element. *Zabaykalskiy territorial mining and smelting enterprise*. This area is situated in the south-eastern part of the region and it covers Aleksandrovo-Zavodsky (7), Gazimuro-Zavodsky (8), Nerchinsko-Zavodsky (5) districts. This PDA has been singled out due to the implementation of the comprehensive project titled "Creation of transport infrastructure for the extraction of mineral resources in the south-east of Zabaykalskiy kray" with the participation of the Investment Fund of the Russian Federation. The outlooks of active social and economic development of this region are related to the implementation of several large investment projects in extraction and processing of mineral resources, development of transport infrastructure. The main focus of the area will be extraction and processing of mineral resources (copper, gold, silver, iron, zinc, lead, coal). Five mining and processing combined works based on

Bugdainskoye, Bystrinskoye, Kultuminskoye, Lugokanskoye, and Solonechenskoye fields are planned to be built in the area. They will be used as the production base. The Naryn – Lugokan railway line planned to be built will be used as the infrastructure backbone of the territory. Area development provides for the completion of construction of Novoshirokinsky MCC, development of Noyon-Tologoyskoye and Berezovskoye fields. Kutinsky (Priargunsky district) and Kharanorsky (Borzya district) coal strip mines and Kharanorskaya SDPP – branch of WGC-3 JSC (Olovyanninnsky district) are located in the vicinity of the complex. These facilities are expected to provide the projects under construction with power resources (Law No. 295-33K of Zabaykalskiy kray dated 10 December 2009 http://docs.cntd.ru/document/922220912).

Aleksandrovo-Zavodsky (7), Gazimuro-Zavodsky (8), Nerchinsko-Zavodsky (5) districts in the radial arched-beam organization of the population and economy of Zabaykalskiy kray have a beam-oriented geographic position. Territorial organization of the development process is oriented from south-west north-eastward, so the development vector goes along the Argun River coast and state border. A distinctive feature of modern social and economic development of Siberia is an inconsistency between contraction of territorial structures of population and economy and the introduction of new PDA creation projects. The choice of these regions is due to their competitive advantages: natural or human resources; special geographic position; availability of industrial or social infrastructure.

Wood industry development area – Amazar pulp-and-paper mill (PPM) is situated in Mogochinsky district (22). The Amazar PPM construction and launch project has a long history; its launch dates have been postponed more than once. This is a controversial project implemented with the involvement of Chinese partners. In terms of the near-border market and geographic position, allocation of future market zones, in our opinion, has embedded problems. The plant construction project is dictated by cross-border demand for forest resources that has caused cross-border attraction for more than two decades – wood import to China. The project was planned to drastically change the situation and export the semi-finished product – paper pulp – instead of wood, i.e. change the position of the central element – production plant – about the border. However, this does not change the geography of product and resource market areas. The resource market area remains in Russia and the product area becomes cross-border. Of course, allocation of product sale profit, availability of jobs – these are the benefits of the project, but environmental issues such as forest exploitation implications remain with Russia. Amazar PPM operation is not only China-oriented; if implemented, the project will cement connections in the orthogonal structure. *Priargunsk agricultural zone for grain and feed production and development of cattle breeding* is in Priargunsky district (3). Priargunsky PDA formation is targeted both at home and foreign markets. Homemarkets – grain, foods, meat; foreign – rape oil. In terms of the cross-border position, the geography of raw materials and product areas is planned the same way as Amazar PPM; cross-border product area at the Chinese side, and near-border raw materials area at the Russian side. China has a growing interest in rape growing and rape oil production in Zabaykalskiy kray.

Alkhanai tourism and recreational area is in Duldurginsky district (16) of Agin-Buryat Area of Zabaykalskiy kray; it is based on the Alkhanai National Park – holy site for Buddhists. The park has a curious position in the orthogonal and radial structure. At the times of the Russian Empire, the territory of modern Agin Area was surrounded by man-

made buffer zones that may be described both in terms of the orthogonal (spatial isolation from Chinese border territories) and radial model (isolation from Mongolian border territories).However, in modern times, the Alkhanai park forms cross-border market areas offering tourism and recreational services based on religious pilgrimage to holy sites .Market areas cross not only buffer zones that separate them from the state borders with Mongolia and China, but also these borders. Cross-shaped configuration of market areas is in line with the orthogonal structure and has two directions crossing in the park: from the north-west south-eastward that covers a part of the Republic of Buryatia and border territories of China; the second one – from the south-west north-eastward that brings together Chita on one side and border territories of Mongolia on the other side. Zabaykalskiy kray must not compete with territorial brands: natural brand – Baikal and historical brand of Mongolia – Genghis Khan; instead, it must be a part of their tourist routes. If one assesses the location of the Alkhanai tourism and recreational area in terms of centrifugal and centripetal forces in reference to the eastern junction point of the borders of Russia, Mongolia, and China, one can observe the well-balanced influence of these processes.

Industrial area in Mogoituy settlement is located in Mogoittysky district (18) of Agin-Buryat Area of Zabaykalskiy kray; its construction started in 2007. It is financed by budgetary funds. This area is subject to cross-border pressure by adjacent Chinese territories that invest funds in it and seek to dominate there. There are no Mongolian investors.

Agricultural production and processing regional area in Agin-Buryat Area. This area has a historical focus: grain, wool, and meat production. Chinese partners are interested in wool production; they buy it at higher prices than offered by Russian resellers. Considering the territory of the district in terms of cross-border influence, the author is inclined to conclude that in the modern period, cross-border integration and globalization of the territory of Agin Area (districts 16; 17; 18) occupies a special strategic near-border position of a contact link, which is manifested in the variety of PDA identified: trade and industrial, agricultural, tourism and recreational.The activity of Chinese businesses in the area and the earlier mentioned fact of confessional space saturation with external representatives evidence its special position. The Chinese and Mongolian vectors of co-operation across boundaries that places orthogonal models under command are not equivalent: Mongolian interaction vector has bigger cultural and historical focus, while the Chinese one focuses on the economy.

Agglomeration area based on Chita and adjacent localities attracts attention not due to its near-border geographic position, but due to its status of a capital. However, as we already said, it is in row VI (where Chita is situated) that the increased rate of transport and settlement development and, thus, readiness for the implementation of near-border in-touch capabilities is observed. This readiness is represented by the railway main line that connects row VI and row I and two customs posts: in Chita (31) and Petrovsk-Zabaykalskiy (29) districts. *Construction industry development area* is in the territory of Olovyanninnsky and Mogoittysky districts in the interfluve of Onon and Turga Rivers. It specializes in the production of building materials (Zabaykalskiy kray development strategy 2030... URL:http://opzab.ru/news/144). The planning of this area is needed to service neighbouring PDA: Mogoittysky, Zabaykalskiy, Priargunsky. This is why its development is subject to the implementation of projects in adjacent areas.

The Charsky territorial industrial complex is in Kalarsky district (28). It is not affected by the near-border position. In terms of the radial model, one can say that, due to a big distance from borders and transport isolation (the district may only be reached from neighboring subjects of the Russian Federation or by air), centrifugal forces produce maximum influence. Considering the trend to the change of the PDA near-border geographic position, one may conclude that the Chinese factor has a bigger functional effect as it enhances orthogonal structures and connections. The Mongolian vector that could enhance radial structures lags the Chinese one in terms of its development. However, the balance of orthogonal and radial structures implies readiness for the change of vectors and even third – buffer option of implementation of the near-border position. In terms of sustainable development, management-level recommendations include establishing a balance between two directions of co-operation across boundaries by enhancing the Mongolian vector. Presently, cross-border relations are built on the principle of binary oppositions: "Russian-Chinese" and "Russian-Mongolian". The trilateral format is required; its foundation has already been laid in reserve nature management. To do so, the project of the three-link cross-border reserve needs to be implemented. Only then a ring-shaped recreational area may be arranged around this cross-border core with the involvement of all the three parties. This area will foster the development of the ring-shaped transport network. This centrifugal strategy of development of co-operation across boundaries launched in 1995 has never been implemented. Presently, there is a trend towards a centripetal strategy: heavy economic use of natural resources in the near-border area; transport development with concurrent modernization of border crossings. This results in aggravation of environmental issues of the cross-border area, which increases the relevance of ecology-centered organization of the three-border area.

The inconsistency of the role is manifested in the opposition of not only two models (orthogonal and radial), but also two strategies (centrifugal and centripetal).Although the centrifugal strategy is implemented faster, it lags behind the centripetal one with its binary organization. However, matters are resolved faster in the two-sided format compared to the three-sided one; reconciliation procedures take less time. Strategy implementation inconsistency has not yet reached its peak due to its incomplete implementation. One cannot ignore peculiarities of transport and settlement structures in Mongolian and Chinese territories adjacent to Zabaykalskiy kray. It should be noted that the orthogonal model applies to eastern Mongolia (Dornod aimak).Rows of somons (municipal districts) of Dornod aimak have a clear pattern corresponding to the ridge extension (from south-west north-eastward).The higher density of transport and settlement structures is observed in the central row (0.4).North-westward and south-eastward, these indicators decrease to 0.2 and 0.3, correspondingly (Novikov, 2017).

At the border of Russia and north-western China, there are two ring territorial structures: Zabaykalskaya and Prikhankayskaya that represent cross-border geographic amphitheaters. Zabaykalskiy amphitheater has three sections (Russia-Mongolia-China), Prikhankaysky has two sectors (Russia-China).Between these two amphitheaters, there is a ring structure confined by Greater Khingan on the west and north; Lesser Khingan on the north and north-east; Zhanguangchailing ridge on the east; Changbai mountains on the south-east. Sunneng Pingyuan Plain lies in the center of this structure. In social and geographic terms, the center is a triangle with the following cities as its corners: Qiqihar, Harbin, and Baicheng. Daqing is in the center of the triangle. On the south-west of the

semiannular structure where the junction point of the borders of the three provinces Inner Mongolia, Jilin and Liaoning is located, there is an exit from the semiannular structure along the Liao River valley towards the Gulf of Liaodong. Dongbei Pingyuan Plain that covers the center of the semiannular structure and its exit to the gulf features better development of transport and settlement structures with G.A. Goltz coefficient of 0.883. In the peripheral, the more elevated part that covers the provinces Inner Mongolia, Heilongjiang, Jilin, Liaoning, the coefficient is 0.761. Transport and settlement characteristics of the territories of Mongolia and China adjacent to Zabaykalskiy kray are provided in table 1.

Table. 1 Comparative geographic description of Zabaykalskiy krayand adjacent Mongolian and Chinese territories

No.	Territory	Area, km^2	Population density, pers/km^2	G.A. Goltz coefficient
1	Zabaykalskiy kray (Russia)	431,500	2.5	0.530
2	Dornod(Mongolia)	123,597	0.68	0.373
3	Inner Mongolia (China)	1,183,000	20.8	0.689
5	Heilongjiang (China)	460,000	83.2	0.937

"Fan-shaped" (radial-sectoral) territorial differentiation of geographic components and properties is observed in Zabaykalskiy kray as one of the three sectors of the radial cross-border structure forming around the three-sided reserve at the junction point of three state borders (table 2). The radial-sectoral organization of transport and settlement structures is conditioned by two factors: orographic (terrain) and near-border position in reference to the international cross-border ecology-centered region of the eastern junction point of the borders of the three countries: Russia, Mongolia, and China. In this study of transport and settlement structures, we are dealing with a physiographic or, to be more exact, an orographic matrix that conditions cross-border territorialization of transport and settlement structures. Historical and geographic evolution experience must be taken into consideration during land-use planning and identification of PDA.

There are a few matters in this study to be discussed; this discussion may foster further research in this area and start new debates on the pages of this journal. The synergizing effect is observed at the junction point of three borders: it brings together not only benefits but also issues of trilateral co-operation. The authors of this article believe that SPNA (reserves) are the manifestation of the cross-border environmental co-operation strategy. There could be another standpoint, i.e. three-link reserves are a certain form of moratorium on the near-border economic use of natural resources that becomes a source of negative cross-border economic effects (in environmental economics, these are referred to as externalities) on adjacent countries. Perhaps, the countries are not yet ready to large-scale economic interaction in the form of local ICTR without harming each other's ecology? Maybe, there is a political reason and they willingly establish SPNA in order not to harm each other and not to undermine their good neighbourly relations? The matters of cross-border environmental relations are addressed by many scientists: Kox H.L.M., Vander Tak C.M. (1996); Gurtzgen N., Rauscher

M. (2000); Candel-Sanchez F. (2006); Gilman P., Pochat V., Dinar A. (2008); Baklanov, P.Y., Novikov, A.N., Ptitsyn, A.B. (2016).

Table. 2 Geographic characteristics of near-border radial areas

No.	Name of the area	Mean height above sea level, m	Mean area of municipal districts, th. sq km	Goltz coefficient	Correlation with natural zones (predominant landscapes)
1	Zabaykalskiy kray	1,338	13.919	0.530	-
2	Central frontier zone	1,049	7.050	1.086	Steppe
3	Peripheral frontier zone of the first order	1,199	5.445	0.843	Steppe dominates forest-steppe
4	Peripheral frontier zone of the second order	1,364	15.000	0.531	Forest-steppe and taiga
5	Peripheral frontier zone of the third order	1,637	29.583	0.295	Taiga

However, active structuring of ring roads and organization of recreational areas and further on – inward – dissemination of the "structuring impact" manifested in Zabaykalskiy kray as the density rate of transport and settlement structures (G. Goltz coefficient) says for the authors' standpoint.

CONCLUSION

1. International reserves are formed at junction points of borders of three countries in different parts of the world. These reserves are girded by recreational areas, roads and "set the radial vector" of structuring for adjacent territories. These international cross-border three-link regions may be described as ecology-centered.

2. The radial model prevails in the dialectic interaction of effects of two ideal models in Zabaykalskiy kray as, apart from G.A. Goltz coefficient, a variety of characteristics is subject to its influence. As the distance from the eastern junction point of the borders of Russia, Mongolia, and China increases, geographic zones that differ from each other with the following physical, economic and geographic characteristics may be singled out in the radial direction in Zabaykalskiy kray:

- natural landscapes that vary from the nearly complete dominance of steppe in the central zone, an equal combination of steppe and forest-steppe landscapes in the peripheral zone of the first order, dominance of forest-steppe landscapes in the zone of the second order and nearly complete dominance of forests in the zone of the third order;
- mean area of municipal districts of Zabaykalskiy kray that increases when moving from one zone to the other away from the junction point of the borders of Russia, Mongolia, and China;

- configuration change of municipal districts in peripheral zones expressed in the prevalence of the radial configuration in the zone of the first order, combination of the arched and radial configuration in the zone of the second order (subject to combined configuration of individual districts) and absence of the features of identified configuration forms in the zone of the third order;

- change in the nature of cross-border in-touch capabilities with adjacent border territories: only two districts of the central zone have both railway and highway connection with adjacent areas of Mongolia and China; in peripheral zones, in-touch capabilities are ensured using road transport only, not all the municipal districts are engaged in cross-border in-touch capabilities;

- near-border position has an inconsistent influence on the formation of transport, settlement and economic structures of Zabaykalskiy kray. This influence results in layering (row pattern) of municipal districts;

- in terms of the radial model, the row pattern is the manifestation of centrifugal and centripetal forces in reference to the junction point of the borders. In the orthogonal model, this is the adaptation to "historical swings" from tense to good-neighbourly relations between Russia and China.

3. The spatial organization of PDA that are viewed as regional economy drivers is subject to the dialectic influence of radial and orthogonal models.

4. Alternation of radial structures is observed in adjacent territories of China.

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