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OLD-DEVELOPED AREAS IN THE SPACE OF RUSSIA

The North of Sverdlovsk Oblast: A System of Cities on the Edge of the Old-Developed Urals

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Abstract—This article discusses the territorial development of the system of cities in the north of Sverdlovsk oblast, which is interesting in that it occupies a border position between the mining Urals and the resource-rich North. This territory is distinguished by an abundance of single-industry towns with a difficult socioeconomic situation. They have been undergoing a massive economic restructuring over the past 10 years, accompanied by changes in labor markets and spatial redistribution of the population within urban okrugs. The study is based on a retrospective analysis of the factors of formation of the urban system and the diagnosis of the current state of all its elements. Statistical indicators of the dynamics of the population and industrial production, on which the local economy relies, were considered, and institutional changes were studied, which entailed, among other things, the restructuring of the economic base. The upper levels of the manufacturing industry in most cities are being liquidated due to market conditions, changes in the strategies of the new owners, and obsolescence of technologies and equipment. Old enterprises of the extractive industry close due to the exhaustion or unprofitability of resource extraction, but new enterprises and industries appear that are less labor-intensive and are often localized outside urban areas. Conceived as a new center for the industrial development of the territory Bogoslovsky Industrial Park faced serious restrictions in its implementation and could not become an alternative to retiring enterprises, either in the labor market or in the formation of the local budget. Cities are rapidly losing population, while in the economy, small enterprises dispersed throughout the studied urban okrugs come to the fore for extraction and primary processing, similar to what happened more than 200 years ago during the resource development of the north of Sverdlovsk oblast.

Keywords: single-industry towns, Sverdlovsk oblast, mining Urals, mining industry, urban shrinkage

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INTRODUCTION

The territory of the north of Sverdlovsk oblast is the outskirts of the zone of continuous development in the Urals; it is, in a sense, the borderline. On the one hand, it is still the mining Urals, with the heritage of the manufacturers of the 18th century, with large operating enterprises of the heavy manufacturing industry. On the other hand, this is already part of the North, at least these are the northernmost areas of Sverdlovsk oblast and the entire Ural region, with relatively harsh natural and climatic conditions by Ural standards and an important role of the mining industry in the structure of the economy. As part of the field research, the territories were covered as part of six urban okrugs: Serovsky, Krasnoturyinsky, Karpinsky, Volchansky, Severouralsky, and Ivdelsky.

The considered cities form a separate system. The study area is located outside the compact settlement system of the Middle Urals. The nearest city with a population of over 100000 people, Nizhny Tagil, is located 200 km south of the southernmost city of the area, Serov. In part, the isolation of the territory is connected with the peculiarities of historical development. Settlements arose, developed for a long time, and currently continue to develop based on the extraction of natural resources, as well as their processing.

Isolation largely explains the internal integrity of the territory. As settlements developed, technological and raw material ties were established between the largest enterprises, and production chains were built, from the extraction of raw materials and the production of auxiliary products to the production of finished products. Over time, the cities in this territory developed and became larger and the connections between them became more complicated. In addition to industrial ties, the cities were connected by labor and cultural trips of the population. The isolation and internal integrity of this urban system, which was called Serovskaya, was emphasized by researchers as early as the 1970s, and there were prospects for development on the basis of a compact core of the territory of a full-

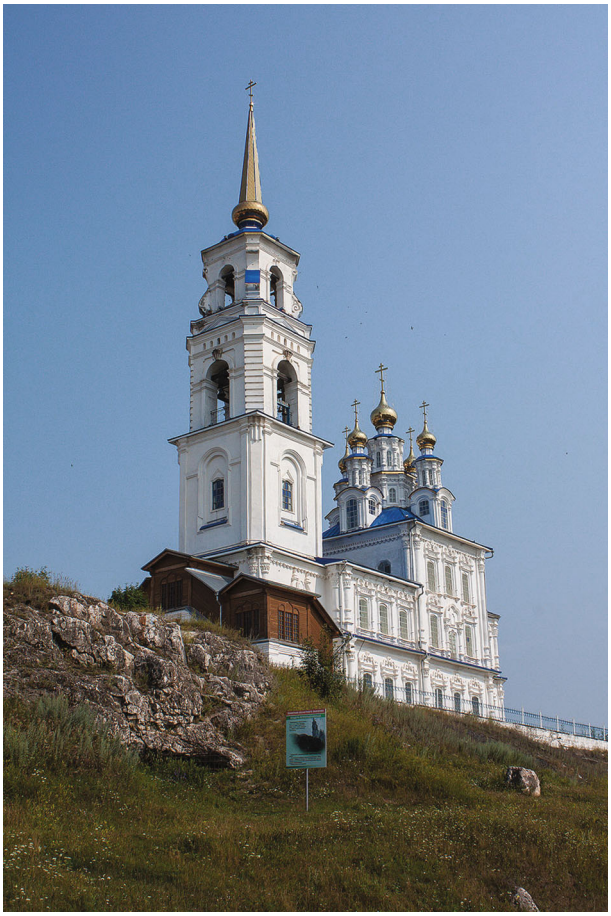

Fig. 1. Severouralsk. The Peter and Paul Cathedral in Pokhodyashinsky baroque style. Photo by K.V. Averkieva.

fledged urban agglomeration (Animitsa, 1975). Modern agglomeration links between cities were considered in the 2010s, and the authors (Averkieva et al., 2015) could not come to unambiguous conclusions about either the formation of the agglomeration or about its center.

THE HISTORY OF INDUSTRIAL DEVELOPMENT OF THE URAL NORTH

Until the end of the 16th century, the territory of the north of Sverdlovsk oblast was poorly developed. The main population beyond the Urals were the Mansi tribes, which, in turn, were gradually driven out by the Russians from the territory of the Kama and the Urals even earlier. The development of the territory of the Northern Urals by Russians intensified after the construction in 1595–1597 of the Babinovskaya road, which led from Solikamsk to the Verkhoturye fortress. Until 1923, Verkhoturye remained as the administrative center of the entire north of the modern Sverdlovsk oblast.

The beginning of the actual industrial development of the territory of the north of Sverdlovsk oblast occurred in the middle of the 18th century. A native of Verkhoturye, the merchant and industrialist M.M. Pokhodyashin, chose the iron industry as a direction for investing money, which by that time had been successfully developing in the Middle Urals for half a century. In 1758–1760 the first Pokhodyashinsky plant, Petropavlovsky, was built, on the basis of which modern Severouralsk was subsequently formed (Fig. 1) (Bessonov, 2001). Slightly later, before 1771, the Nikolae-Pavdinsky and Bogoslovsky factories were also built, modern Karpinsk "grew" from the latter. Initially, Pokhodyashin's factories were ironworks, but the opening in the 1760s of rich copper mines made it possible to reorient enterprises to more profitable copper smelting production. One group of copper mines was located in the north, in the area of the Peter and Paul Plant, the other were in the southern part of the area on the banks of the Turya River. At the Turyinskie mines a settlement was formed, which later became the city of Krasnoturyinsk.

The entire mining industrial area received the name and status of the Bogoslovsky mining district. After the death of M.M. Pokhodyashin, it was sold to the state treasury, and by the middle of the 19th century it came to a standstill. Both the depletion of copper deposits and the fascination with gold mining since the 1820s (including in the north of the territory near the modern city of Ivdel) played a role in the deterioration of copper smelting production. By 1875, the Turyinskie copper mines were exhausted and the copper smelters of the Bogoslovsky district stopped.

In 1877, the mining engineer A.A. Auerbach considered the location of the Bogoslovsky district on the Western slope of the Ural Mountains, i.e., the availability of cheap waterways to the southern regions of Siberia. Auerbach decided to build a metallurgical plant here, joining the battle for a state contract for the supply of rails for the Trans-Siberian Railway (Auerbach, 1897). The plant was built in 1893–1895 and named Nadezhdinsky after the owner of the Bogoslovsky mining district. At the same time, the new settlement of Nadezhdinsk, the modern city of Serov, was founded.

In order to provide the new plant with iron ore raw materials, in the vicinity of the Nadezhdinsky plant, the development of the Bogoslovsky iron ore deposit began in 1894. The main raw material base of the plant was the Auerbakhovsky mine, which later formed the basis of the Bogoslovsky Mining Administration. In the village of the Bogoslovsky Plant (modern Karpinsk) at the end of the 19th century several enterprises appeared (chemical, glass, and chrome); it became the administrative center of the Bogoslovsky mining district, although the new Nadezhdinsky plant developed at a faster pace.

During the World War I, the equipment of the Klein brothers' machinery industry plant was evacuated from Riga for the production of engines and roll-

ing equipment and was placed on the premises of the Nadezhdinsky Plant. Already in the 1930s this production was separated into a new enterprise, the Serov Mechanical Plant. In the same years, the coal industry appeared on the territory of the Ural North. For the first time, industrial production of brown coal began in 1900 on the territory of modern Volchansk; 10 years later coal mining began in Bogoslovsk. Coal and locally produced coke were supplied to the metallurgical plants of the Bogoslovsky mining district (Nadezhdinsky, Bogoslovsky, and Sosvinsky), as well as for the needs of the railway.

The change in the sectoral and territorial structure of industry was facilitated by geological surveys carried out in the Northern Urals in the 1920s–1930s. Thus, bauxite deposits were discovered in the vicinity of the former Petropavlovsk Plant, which were generally known earlier, but were of no interest to anyone in the 19th century. Bauxite mining at the mines of the "Krasnaya Shapochka" deposit began in 1934. With a gradual increase in production at the Severouralsky bauxite mines (SUBR), a permanent settlement was founded, called Novaya Ploschad and then Subrovsky, which later merged with the Petropavlovsky settlement and formed the city of Severouralsk. In 1940, a decision was made to build an aluminum plant near the bauxite deposit, in the village of Turyinskie Rudniki (which, after the construction of the plant, was transformed into the city of Krasnoturyinsk). The beginning of the WWII accelerated the construction process; specialists and equipment from the Dnieper and Volkhov aluminum and Tikhvin alumina refineries were evacuated here.

In parallel with the Bogoslovsky aluminum plant (BAZ), the construction of the Bogoslovsky thermal power plant (BTPP) was carried out as an energy source for aluminum and steam for alumina production. The main supplier of coal to the BTPP was the Bogoslovsky mine. As a result, at the beginning of 1941, the city of Karpinsk was formed from the settlements of Bogoslovsky and Ugolny. In the first year of the Great Patriotic War, the machinery industry plant was evacuated to Karpinsk from Stalino (Donetsk), and subsequently, the Karpinsk machinery industry plant. In the same years, coal mining resumed at the Volchansky open pit, in which two settlements arose, which later formed the city of Volchansk.

The forced industrialization of the Ural North required a large number of workers; this territory became a major center for forced migration in the 1930s–1940s. The dispossessed peasants, the German Labor Army, were resettled here, and the labor camps of the NKVD operated here,[1] which inherited several penal colonies that are still operating today.

[1] Ivdelsky ITL. // International Society "Memorial". http://memo.ru/history/nkvd/gulag/r3/r3-106.html.

In the post-war years, the Serovskaya GRES (PP) was put into operation and in 1958, the Serov Ferroalloy Plant. In Karpinsk and Volchansk, along with coal mining, machinery industry began to develop. In Ivdel, a chain of wood-chemical industries was created. After the start of the development of oil and gas resources of Western Siberia, gas transit began through the territory of the Northern Urals, several linear production departments of main gas pipelines were formed: Krasnoturyinskoye, Ivdelskoye, and Karpinskoye.

Since the late 1970s, the first signs of a decline in the industry of the region began. The coal industry was the first to suffer. The availability of cheap gas from Western Siberia became a factor in reducing the need for brown coal power. As well, the coal deposits themselves were largely depleted. The peak of coal mining in Volchansk was recorded in 1961–1965 (39 million tons of coal were mined), after which a steady decline in production began, caused by technological issues. Since 1975, the gradual liquidation of logging enterprises on the territory of Ivdel began.

In the 1990s the industrial crisis hit the cities of the north of Sverdlovsk oblast even more strongly; by the beginning of the 2000s, coal mining in Karpinsk was finally stopped, and in 2019, in Volchansk. The machinery industry plants of Karpinsk were in a difficult situation; thus far, only one is operating. The forest industry was almost completely curtailed and thrown into the shadow sector (only the initial links have been preserved, logging and primary wood processing) in the Ivdelsky district. Several mining enterprises were closed throughout the region (the mine at the Polunochnoye deposit, the Valentorsky copper quarry, and the Turyinsky copper mines). However, the exploration of new minerals is carried out regularly and gold mining is currently expanding; in Krasnoturyinsk, since 2020, a new processing plant is being built, which will serve several deposits of the Ural North.

THE CURRENT SITUATION OF CITIES IN THE URAL NORTH

All cities in the north of Sverdlovsk oblast are losing population (Table 1). The maximum population of the entire group of cities occurred in the post-war period, which was the result of forced industrialization with the involvement of the external population, including through forced migration. The total population increased by six times from 1926 to 1959. A decrease in the total population of the cities of the territory has been observed since the turn of the 1950s–1960s, at which time multidirectional demographic trends were outlined in the cities of the region. In half of the cities, Volchansk, Karpinsk, and Ivdel, the populations reached a historical maximum, after which they began to decrease. Both the achievement of the ceiling for the development of the coal industry and the disman-

Table 1. The population of the cities of the Northern Urals according to censuses (1926–2010) and current record (2020) of the population

City	Population, thous. people								Population dynamics, %	
	1926	1939	1959	1979	1989	2002	2010	2020	1989/1959	2020/1989
Volchansk	0.1	n.a.	25	14.8	14.8	11	10	8.5	59	57
Ivdel	1.6	4.0*	22	15.9	19	19.3	17.8	15.4	86	81
Karpinsk	5	19.8	49.5	36.7	37	31.2	29.1	25.9	75	70
Krasnoturyinsk	6	10	62.6	61	67.3	64.9	59.6	56.2	108	83
Severouralsk	0.8	6.4	25.9	32.5	36.1	34.7	29.3	25.6	139	71
Serov	33.4	65	97.9	101.5	104.2	99.8	99.4	95.9	106	92
Total	46.9	>105.2	283	262.5	278.4	260.9	245.2	227.5	98	82

* Excluding special contingent.

Compiled by authors according to population censuses: 1959, 1979 (http://webgeo.ru/index.php?r=33&page=1), 1989 (http://demoscope.ru/weekly/ssp/rus89_reg1.php); materials of the All-Russian population censuses of 2002 and 2010.

tling of the system of forced labor camps had an effect, as a result of which part of the forcibly recruited population left the Northern Urals. In the other three cities, Serov, Krasnoturyinsk, and Severouralsk, where industry developed, in the 1959–1989 period the population increased.

In the post-Soviet period, all cities began to lose population. Volchansk shrank by almost half, and Karpinsk and Severouralsk each lost 30% of their inhabitants. Ivdel lost 19% of its inhabitants; its population is supported by correctional institutions, but they are becoming fewer. The largest cities of Krasnoturyinsk and Serov are the slowest to lose their inhabitants. All the cities are characterized by negative natural and migratory movement.

For a long time, all the cities (or the settlements that preceded them) were closely connected by industrial ties and, due to short distances, could exchange personnel. Even the possibility of forming a two-center agglomeration was considered (Animitsa, 1975; Averkieva et al. 2015), but the decrease in population and the disruption of production chains do not allow us to expect an increase in intercity interaction. Production ties began to weaken in the 1960s, when, with the development of new deposits in the peripheral regions of the Soviet Union and Russia, the development of minerals in the north of Sverdlovsk oblast began to lose its comparative advantages. For the consumption of certain types of raw materials, the region has become dependent on external supplies. Thus, Serovskaya GRES and Bogoslovskaya BTPP began to use natural gas from Western Siberia and coal from Ekibastuz (Kazakhstan) as fuel instead of local Volchansk coal. The alumina (former aluminum) plant in Krasnoturyinsk is gradually increasing the share of raw materials from the Timanskoye deposit (Komi Republic) and the dependence on bauxite supplies from neighboring Severouralsk is weakening. The volume of iron ore mining also decreased: in the 1980s the Bogoslovskoye Mining Administration mined 4.5–5 million tons of raw ore per year, while now the production volumes have decreased to 2–2.5 million tons, and the main consumer, the Serov Metallurgical Plant, is gradually switching to steel scrap and generally reducing production.

Ownership of the main production assets by various holding companies (Table 2) also does not contribute to the strengthening of intercity interactions, and the fact that all enterprises in the cities of the Ural North are not of great interest to the owners of holdings allows us to predict a further decline in production. In some cases, only the threat of social explosions keeps the owners from liquidating enterprises.

With the exception of Ivdel, all the cities of the Ural North are included in the Russian list of single-industry settlements. Volchansk, Karpinsk, Krasnoturyinsk, and Severouralsk are classified in the first category with the most difficult socioeconomic situation, while Serov is in the third category, which includes single-industry towns with a stable economic situation.

In itself, inclusion in the list of single-industry settlements does not guarantee state support. In the case of the group of cities in the north of Sverdlovsk oblast, Krasnoturyinsk was chosen, since the reorganization of the large Bogoslovsky aluminum plant led to a large release of personnel and the large protests of the population[2] caused the regional authorities to fear an increase in social tension.

In 2014, the creation of the Bogoslovsky Industrial Park began, which gradually received TASED status (territories of advanced socioeconomic development), which is popular in Russia. They also depended on cooperation with the "Rusal" corporation (including the processing of red mud–aluminum production waste), which owns the Bogoslovsky aluminum plant,

[2] Procession and rally held in Krasnoturyinsk. https://krasnoturinsk.info/novosti/shestvie-i-meeting-proxodyat-v-krasnoturinske/. Accessed August 17, 2022.

Table 2. The production assets of large business in the cities of the north of Sverdlovsk oblast

Company (parent in brackets)	Production assets	City of presence (bold marks the settlements in which the company is the leader in terms of the number of employees)
Ural Mining and Metallurgical Company	Metallurgical plant them. Serov	**Serov**
	Theological Mining Administration	Krasnoturyinsk (**n. Rudnichny**)
	Northern copper-zinc mine	Ivdel
Rusal	Severouralsky bauxite mine	**Severouralsk**
	Bogoslovsky aluminum plant	**Krasnoturyinsk**
	Bogoslovskaya CHPP	Krasnoturyinsk
Gazprom transgaz Yugorsk and OGK-2 (Gazprom)	Ivdelskoye LPU MG*	**Ivdel**
	Krasnoturyinskoye LPU MG	Krasnoturyinsk
	Karpinsky LPU MG	Karpinsk
	Serovskaya GRES	Serov (**Energetikov settlement, Serovskaya GRES settlement**)
Uralvagonzavod	Volchansk Mechanical Plant	**Volchansk**
	garment factory	Karpinsk
Polymetal	CJSC Gold of the Northern Urals	Krasnoturyinsk (**Vorontsovka**)
	OOO Krasnoturyinsk-Polymetal	Krasnoturyinsk (**Vorontsovka**)
CHEMK group of companies	Serov Ferroalloy Plant	Serov, Ivdel (**Marsyaty**)
–	Karpinsky Electric Machine Building Plant	**Karpinsk**
Rostec	Serov Mechanical Plant	Serov

Compiled by authors based on materials from websites of large companies.

* Linear production management of main gas pipelines.

and, conditionally, on the central position of Krasnoturyinsk in the system of cities in the north of the region. The industrial park has been able to attract only nine stable working residents[3]: the largest of these is the Russian–Chinese LesKom Razvitie company, specializing in the production of wooden sticks for ice cream, and a service company for the repair of power equipment. The new enrichment plant under construction is located away from the industrial park, but enjoys the benefits provided by the TASED status.

CITIES OF THE URAL NORTH

Ivdel, the most northern city, is remote from Serov with Krasnoturyinsk. Its industrial development began later than that of others, although it belongs to the territory of the old development, since back in the 19th century in its vicinity, gold was washed and timber was harvested for metallurgical production. In the 1930s it became the center of a system of correctional camps: the prisoners felled the forest and were engaged in the construction of roads. The system consisted of 15 camp departments, including 47 camps, the number of prisoners reached 22000 people, and in the post-war years, up to 30000 people.[4] The city (and the workers' settlements surrounding it) inherited several correctional institutions from Ivdellag, which became the main employers in addition to the medical facility that serves gas pipelines from Urengoy, Nadym, and Yamburg. Recently, colonies have been closed one after another, out of five, only three remain, and their fate is also in question: the area is too remote, the depreciation of all funds is very high, the cost of maintaining prisoners is high, and it is almost impossible to build a prison economy here, as prisoners no longer allowed in the forest business.

[3] Theological industrial park. https://investural.com/facilities/industrialnyj-park-bogoslovskij.

[4] Glutsky I. Ivdellag turned 75 // Regional newspaper, 2012. http://www.oblgazeta.ru/society/2116/.

Fig. 2. Ivdel. Central (a) and peripheral (b) parts of the city. Photos by K.V. Averkieva.

Among the cities of the Ural North, Ivdel is a stable leader in terms of migration outflow. The population of the city was artificially supported by prisoners, who are getting less numerous; now it receives a small recharge due to the resettlement program of the villages included in the urban okrug, but still continues to lose population. The city's economy is decreasing every year: wood processing is practically nonexistent, sawmills and a hydrolysis plant have long been closed, penal colonies are being liquidated, and medical facilities do not require many workers.

The central part of Ivdel (Fig. 2a) is built with five-story houses, which in the 2010s underwent a major overhaul; this part of the city is improved and well maintained. The condition of the settlements within the city limits and surrounding the city is worse, since their prospects are unclear, and to maintain the old housing stock from old wooden houses (Fig. 2b) is difficult. At the same time, the area where Ivdel is located is very picturesque. The city is surrounded by cedar forests, it is inscribed in the complex relief of the northern part of the Middle Urals; the green "sea" of the West Siberian Plain is visible from the city.

Fig. 3. The center of Severouralsk and larch alley. Photo by K.V. Averkieva.

Severouralsk is part of the old-developed core of the Ural's North; it was founded first in the entire group of cities and repeatedly changed its specialization. Now its city-forming enterprise is SUBR (Severalboksitruda), which owns three bauxite mines. The city is truly single-industry and, frankly, problematic: it has the worst HIV incidence rates in the region, a high proportion of people with disabilities (industrial injuries are a frequent occurrence at SUBR, since explosions are not uncommon in mines due to stress relief); the city has had a protracted political crisis (Averkieva, 2015) due to frequent changes of mayors.

During the post-Soviet period, the city lost almost 30% of its population and the decline continues. Attempts to diversify the economy so far have not brought great results. Along with SUBR, there are several small factories of building materials and small light industry enterprises (confectionery production, a brewery, and a garment factory). A comprehensive investment plan assigned to each single-industry town provided for the development of tourism. Severouralsk really has some potential: the magnificent Peter and Paul Church, a picturesque location near the main Ural Range, proximity to the mountains, including the famous Dyatlov Pass and Mount Denezhkin Kamen. With investments it would be possible to develop ski tourism and various types of sports tourism, but the remoteness of the city and the lack of financial sources do not allow these plans to be realized. The city itself has a compact structure; the central part is built in the Stalinist style, with a picturesque larch boulevard (Fig. 3). The residents themselves say that they feel sorry for their city, "it is not one of those places where it is easy to leave and board everything up" (from an interview with a local entrepreneur). However, with the growth of the crisis in the city-forming enterprise, the city will inevitably continue to lose population.

Fig. 4. Volchansk. City tram. Photo by K.V. Averkieva.

Fig. 5. Karpinsk. City center. Photo by K.V. Averkieva.

Volchansk is the smallest and most geographically complex city in the north of Sverdlovsk oblast. Outside the Ural North, it is famous for being the smallest city in Russia with a tram line (Fig. 4). It connects two parts of the city, Lesnaya Volchanka in the northeast and Volchanka in the southwest, which are separated by a brown-coal section that is no longer active. The two parts of the city are separated by 5.5 km, by road this distance is extended to 7 km. The tram travels this path slowly; the residents prefer to move between parts of the city on minibuses, which run faster and more often. However, the tram line is preserved as a unique object in the hope of tourists, the local history museum even offers tram excursions, but the tourist flow is not at all large.

In the best years of the heyday of the entire group of cities in the Ural North, the southern part developed faster, where the workers of the open pit and coal mines lived. In the northern part, the Volchansky Mechanical Plant (VMZ) was built, which was supposed to receive the miners who were released after the technical re-equipment of the mine. Now VMZ has become a city-forming plant, it is part of the Ural-VagonZavod corporation and produces various types of railway cars. The northern part of the city at VMZ is better landscaped and maintained, it is slowly losing residents; the main life is concentrated here, although the administration still remains in the south.

Karpinsk is the city with the most changeable fate, having survived several waves of ups and downs. In its best years in the 1960s, it numbered almost 50000 people, but by now it has shrunk to 50% of that. In the 1930s a large lignite mine worked here; during the Great Patriotic War Karpinsk received several evacuated machinery industry plants, in the post-war years, to equalize employment, a cotton spinning factory for 3000 jobs was built, where women from several cities of the Ural North could find work at once. In the post-Soviet period, the entire city-forming base began to collapse. The cotton-spinning factory was the first to close, coal mining was stopped in the early 2000s, and machinery industry productions were closed one after another.

A small renaissance happened under the last mayor of the city, in the early 2010s. He now holds the post of vice-governor of Sverdlovsk oblast, before that he was the minister of construction of the region and a deputy of the State Duma. The work of the city head occurred at the beginning of his political career, and he attracted regional funds to the city budget with great zeal. This made it possible to improve public spaces (Fig. 5), repair apartment buildings and actively build new housing to resettle dilapidated and dilapidated housing, rebuild a children's hospital, build a recreational complex, and accelerate gasification of individual houses. Against the backdrop of a permanent economic downturn, all these measures were unexpected, but aroused great approval among the residents. Now, the city continues to lose population.

The development of Karpinsk is mixed, there are multi-apartment brick houses, and collective housing of the frame-fill type, and an extensive sector of individual development. Because of the curves inscribed in the relief of the streets with squat log cabins (Fig. 6) Karpinsk, perhaps more than others in the north of Sverdlovsk oblast, looks like a real Ural city of the old development. Sometimes residents of neighboring Volchansk and Krasnoturyinsk move to the city if they want to change their apartment to a house, not outside the city, but within the city limits. In case of the development of new natural resources (projects for the extraction of copper-bearing ores, gold, and olivine near the city have already been developed), Karpinsk will probably receive a new impetus for development and a new round of the industrial spiral will begin.

Krasnoturyinsk, is the second most populous city, but in some way the central city of the Ural North. It would seem that at almost 100000 Serov should be the

Fig. 6. Karpinsk. Individual residential development. Photo by K.V. Averkieva.

Fig. 7. Krasnoturyinsk. Central square. Photo by K.V. Averkieva.

main city in this system, but the head of the Northern Administrative District of Sverdlovsk oblast is located in Krasnoturyinsk and the name of the large Stolichny shopping center is self-explanatory. The metropolitan ambitions of Krasnoturyinsk are also based on the social composition of the population. Since the Bogoslovlag played a big role in the history of the city, there were many Germans here, German surnames are still not uncommon in the city, and the "German cultural trace" has been preserved.[5] Among the prisoners there were many representatives of the creative intelligentsia from all over the Soviet Union.

However, the ambitions and bright past of the city at the Bogoslovsky aluminum plant are not enough to maintain a stable socioeconomic position. As in other cities of the Ural North, the peak of the last industrial breakthrough came in the 1960s, and since that time the city has been gradually losing its positions and population. The most painful blow came in 2014, when aluminum production was finally stopped, the electrolysis shops were dismantled, and the aluminum plant became an alumina plant, although it retained the familiar name "BAZ." Increased attention to the problems of the city on the part of the federal authorities, as embodied in the creation of the Theological Industrial Park with the status of PSEDA, is, by and large, only a grand gesture, which was followed by no real changes in either the labor market or in the city's economy. In addition to the BAZ and the industrial park, there are other industries in the city: woodworking, several mining companies, including those specializing in gold mining, large city-serving food production facilities, and Gazprom's healthcare facilities, but the usual support necessary for the stable functioning of the once developed urban environment and infrastructure does not occur.

The architectural appearance of Krasnoturyinsk is very harmonious. Mass construction here began in the postwar years, when BAZ was put into operation. It was designed by specialists from Lengiprogor, which is why Krasnoturyinsk is sometimes called "Ural Leningrad." From the semicircular central square (Fig. 7), the main streets of the city diverge like rays. Blocks of 3–5-story buildings of the "Stalinist" style stretch

[5] The book of memory of the German-Labour Army members of the Bogoslovlag. 1941–1946. Aut.-stat.: V.M. Kirillov // Information portal of Russian Germans "RusDeutsch." http://www.rusdeutsch.ru/?bogoslov=2&de=&put=003.html.

Fig. 8. Serov. Lenin street in the city center. Photo by K.V. Averkieva.

along the main street; it ends with an expressive building of the BAZ recreation center and the city's landscaped embankment of the Krasnoturyinsky reservoir. Here, unlike neighboring Karpinsk, one tram line has still been preserved.

Serov is the largest and southern among the cities of the Ural North. For several decades it had over 100000 inhabitants. Its economic position is considered the most stable compared to other cities in the north of the region due to two large metallurgical enterprises: a plant named after Serov and the Serov Ferroalloy Plant. However, this well-being is very conditional. Although the plants are functioning, they are not among the most promising and priority holdings for the management, UMMC[6], which owns the plant. Serov, is betting on a new metallurgical plant in Tyumen and specialists from Serov are being given the opportunity to move to the new production facility. ChEMK[7], the owner of the ferroalloy plant, has more convenient assets in Chelyabinsk oblast. However, thanks to the large population and the abundance of other industries (engineering, food, building materials, and woodworking), the city's economy remains afloat.

Serov is a type of gateway to the Ural North. Previously, Moscow was connected with Serov by the "Northern Ural" train; now its route has been extended to the YaNAO and Serov has ceased to be the final destination. Several railway lines diverge from Serov, one connects the cities of the Ural North and reaches Ivdel, where it connects with another, a direct line from Serov, which leads to Western Siberia. Another branch leads to Sosva, to the northeast of Sverdlovsk oblast, which is known for large-scale logging and an abundance of correctional institutions. Now most of them are closed, the villages are being settled, and many are moving to Serov, which supports its population. At the same time, there is practically no migration inflow from other cities in the north of Sverdlovsk oblast: the urban labor market is scarce, and the quality of the urban environment is inferior to neighboring cities.

There are several dominant features in Serov's architecture: the Palace of Culture of Metallurgists and the long-closed "Ural" restaurant in a constructivist style unusual for the Ural North, the 3-kilometer Lenin Street, built in the central part in the "Stalinist" style (Fig. 8), as well as the Palace of Culture of Zheleznodorozhnikov and several residential blocks in the eastern part of the city. However, in general, the development of the city has a chaotic character; numerous wooden two-story barrack-type houses have been preserved, there are large areas with individual buildings, for example, the Metallurgists, Samsky and Sovietsky districts, which together occupy more than half of the city area.

CONCLUSIONS

The north of Sverdlovsk oblast is the most peripheral part but is a full-fledged part of the old-developed Urals. The industrial development of this territory proceeded in waves. Starting from the middle of the 18th century ferrous metallurgy was replaced by copper smelting and gold mining, copper-smelting production faded away, giving way to revived ferrous metallurgy; later nonferrous metallurgy returned to the fore, but in the form of aluminum production. To serve the basic industries, many auxiliary ones arose: logging, mining of ore and coal, electricity generation, and numerous urban service bases.

After their rapid breakthrough in the mid-20th century the cities of the Ural North are going through a difficult period. Ferrous metallurgy operates by inertia, the upper levels of nonferrous metallurgy have been dismantled, leaving only the extraction of nonferrous metal ores and the production of alumina and coal mining has been stopped. Once only supplementing urban labor markets, machinery industry enterprises, the production of building materials and woodworking, are becoming city-forming, although they themselves are in a precarious position. All cities are losing population, some rapidly, in some places the population is maintained by the influx of residents from the countryside and the workers' settlements that surrounded the cities, as their economic base is collapsing even faster than in the cities.

However, we do not consider the processes as irreversible. During its development, this territory has repeatedly found itself in a crisis situation, but has always found new resources for development. It is not very clear what will help to preserve the cumbersome infrastructure of the Northern Urals cities and what will help the inhabitants of these places to wait for new impulses for development.

[6] Ural Mining and Metallurgical Company.
[7] Chelyabinsk Electrometallurgical Plant.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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