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The Development of the Urban Settlement System in Belgorod Oblast

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Abstract—We have investigated the urbanization processes in the region. The study revealed the characteristics of evolution of urban systems and of the urbanization development stages as well as ascertaining the current formation tendencies for large cities and their suburban zones.

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FORMULATION OF THE PROBLEM

Urbanization reflects a set of complex processes related to growth, formation and development of cities and their systems. Urbanization is a spatial process which is clearly pronounced when mapped onto the territory.

Prior to the 1970s, the study of urbanization in Russia was dominated by empirical generalizations, and it was not until the late 1970s that new approaches made their appearance, along with successful advancements in research with a focus on gaining a more penetrating insight into urbanization from the perspective of social development [1, 2]. At the end of the 1980s, stadial models of urbanization processes that had been proposed by Western scientists in earlier publications came to the attention of national researchers. The novel views substantially revised the then existing understanding of urban development, the concept of the city as a self-organizing system, and the evolution of urban systems as complex self-regulating mechanisms [3]. In the 1990s, specialists most often discussed the stages of spatial urbanization as suggested by J. Gibbs, who identified five stages of its development and was the first to predict the approaching wave of urbanization and deurbanization (according to [3]).

Subsequently, new concepts were formulated to be collectively called the “theory of differential urbanization; as argued by T.G. Nefedova [4], the essence of those concepts remained unaltered, i.e. population concentration and deconcentration in the course of alternation differentiate migrations and growth of settlements differing in size – upward and downward across their hierarchy. The current importance of this research topic is dictated by a need for scientific analysis and forecasting of the urbanization processes,

and for identification of advantages and problems of urban growth in the interests of rational organization and sustainable development of urbanized territories.

SPATIAL CHARACTERISTICS OF DEVELOPMENT OF URBANIZATION PROCESSES

At the end of the 20th century, the urbanization process in Russia entered a new phase implying a dramatic reduction in the growth rates of urban population, whereas its proportion in the total population size changed almost not at all, and even the growth of large cities came to a halt. In this connection Lappo and Pol’yan [5] wrote that urbanization is completed in spite of its “noncompletion”. Nefedova and Treivish [4] stated that the urbanistic processes reflected definite stages in its development which are new to us but familiar to other countries.

A relatively long time has elapsed since, but the questions still remain vital: Is the existing urbanistic structure in the country a consequence of Russia’s demographic and socioeconomic development or a result of definite regularities in the urbanization processes? Is it necessary to devote a relevant effort to a “forced” change of urbanization phases, “build megalopolises” and to stimulate population concentration around large cities, or will the settlement pattern as a self-regulating system cross all the t’s and dot all the i’s on its own accord?

To answer at least some of these questions, we set ourselves the task of identifying the evolution of the urbanization processes, and determine the main advantages and problems of macropolization for this country, based on data for an old developed region of

the Russian Federation with a historically established settlement system, namely Belgorod oblast (formed on January 6, 1954).

Analysis of the dynamics of the number of urban and rural inhabitants, starting in 1959 and on, revealed a priority growth trend of urban population against the total regional population: 424.4% against 124.8% by the year 2011 (Fig. 1).

Three classes of cities were involved in the evolution of the region's urbanization processes: small,

medium-sized and large (or major), with an absolute predominance of small cities. Nowadays, Belgorod oblast has eight small cities, one medium-sized city, and two large cities. We refer to cities with the population between 50 and 100 thousand inhabitants as medium-sized (intermediate). The growth features of urban population and of cities with a different population size indicate a late but rapid urbanization caused by the industrialization as well as by development and exploitation of the deposits of the Kursk Magnetic Anomaly, the transition of cities from one class of population size to another, a significant population concentration in large cities, and by a reduction in population of small cities (see table).

The evolution of the demo-urbanistic structure resulted in the establishment (by the year 1979) of a rather stable hierarchy of the class of cities bearing witness to large-cities' urbanization: two large cities: the regional center – Belgorod (primal city), and the counterbalance city – Staryi Oskol (center of ferrous metallurgy) concentrating two third of oblast's population; one medium-sized city – Gubkin, and the others are small cities (Fig. 2).

On the other hand, macropolization (enlargement of urban forms of settlement) reflected the manifestation of the regular features inherent in urbanization development: concentration of the socioeconomic

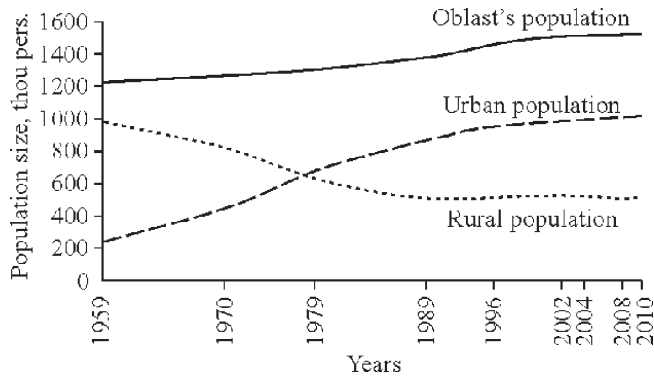


Fig. 1. Dynamics of the population size of Belgorod oblast, 1959–2010.

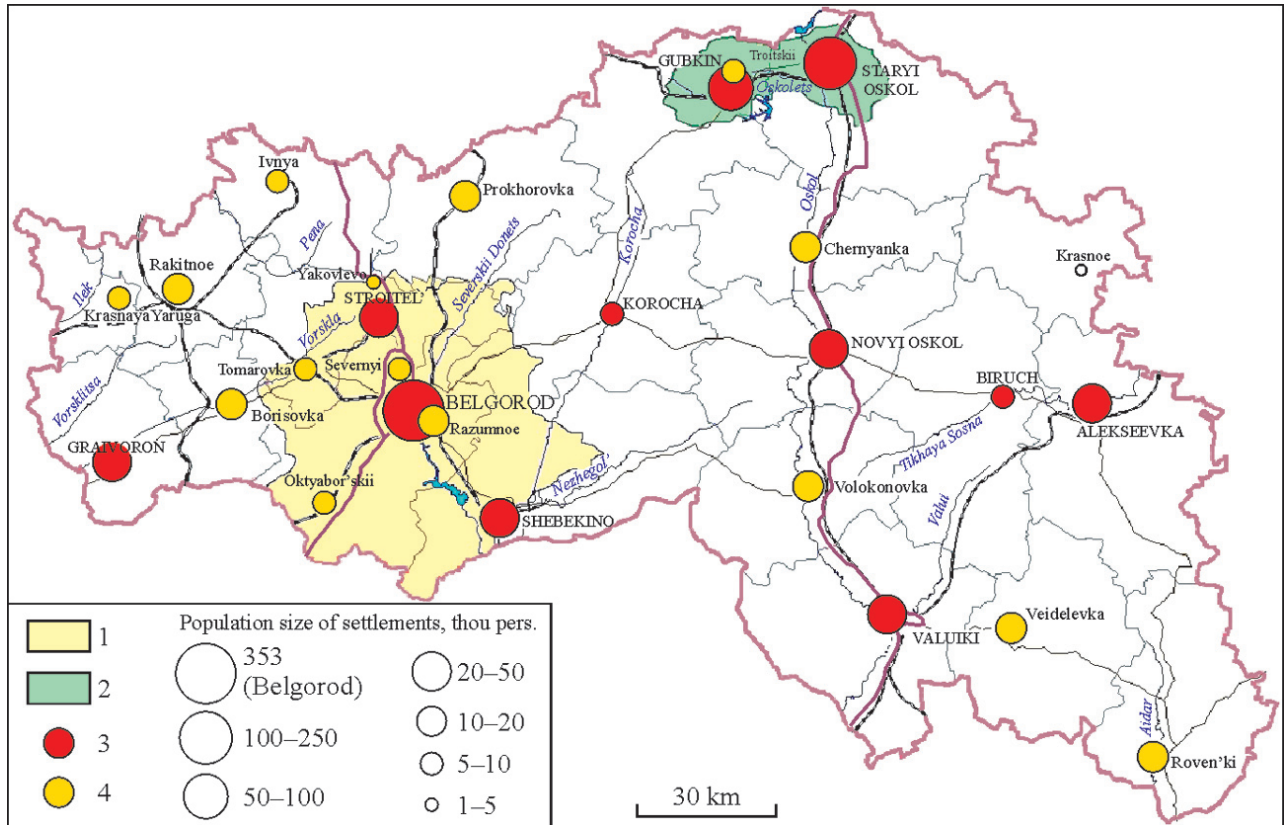


Fig. 2. Urban settlement system of Belgorod oblast, 2010.

Agglomerations: (1) Belgorod agglomeration, (2) Staryi Oskol-Gubkin agglomeration; (3) cities; (4) urban-type settlements.

Dynamics of the main urbanization indicators for Belgorod oblast (1959-2010)*, acc [6–8]

Indicators	Years					
	1959	1970	1979	1989	2002	2010
Urban population size, thou pers.	195.7	364.8	565.4	693.1	811.9	849.5
Proportion of urban population in total population size, %	15.9	28.8	42.2	50.5	53.7	55.7
Number of cities	8	9	9	9	10	11
Population size of large cities, thou pers.	–	151.3	353.8	474.3	552.9	579.9
Proportion of population of large cities in the urban population size, %	–	41.5	62.5	68.4	68.2	68.3
Population size of medium-sized cities, thou pers.	72.3	105.6	65.1	72.2	86.1	86.5
Proportion of population of medium-sized cities in the urban population size, %	36.9	28.9	11.5	10.4	10.6	10.2
Population size of small cities, thou pers.	123.4	107.9	146.5	146.6	171.5	183.1
Proportion of population of small cities in the urban population size, %	63.1	29.6	25.9	21.2	21.1	21.5
Mean annual growth rates of urban population, %	–	7.9	5.7	2.6	1.2	0.5

* Without urban-type settlements.

activities and human capital in large cities attracting the population from villages and small cities. As a result, large cities became centers of the region's territorial-urbanistic structure.

STAGES OF URBANIZATION DEVELOPMENT

Based on construing the evolution of urban systems as complex self-regulating mechanisms, we were able to study the dynamics of the stages of urbanization development. A calculation of the mean annual population growth rates for the categories of cities revealed four stages of differential urbanization, and a general trend of its development for the time interval starting in 1959 when the rural population growth rates had a negative value already.

The first stage (1959–1970) – rapid development of urbanization – is characterized by a growth of large and small cities, the transition of Belgorod from the “medium-sized” to “large” category, and by a continual rural population decline. The second stage (1970–1979) – formation of large-city urbanization (concentration) – showed an inflow of rural population into the large cities of Belgorod and Staryi Oskol, a reduction in growth rates of small cities, and a respective increase for the medium-sized city (Gubkin). The contrast of settlement was enhanced: production and population were drawn up into the centers and concentration areas to form two agglomerations with a concurrent “backwash” of the population from the region's eastern and southeastern hinterland areas. As a result, urbanization drastically altered the historically established pattern of settlement.

The third stage (1979–1989) showed a failure in the systemic change of phases: there occurred an abrupt decrease in the growth rates of all classes of cities, with the exception of the medium-sized city (Gubkin), which was caused, we believe, by the termination of the rapid

stage of oblast's industrialization. Completion of the construction of the country's major ferrous metallurgy enterprise (Staryi Oskol Electrometallurgical Works), machine-building plants, sugar factories, and of enterprises producing building materials signified a dramatic decrease in labor demand. The alteration to the socioeconomic processes in the region was responsible for the transition from “urbanization spreading across the breadth” to “urbanization spreading across the depth”.

The development of the urbanization processes at the fourth stage (1989–2002) gives evidence of the onset of deurbanization (deconcentration) – a reduction in the growth rates of large cities and an increase in the growth rates of small cities and rural settlements, i.e. a more uniform settlement. In Belgorod oblast, those years showed a population increase even for a medium-sized city, with the population growth rates being similar for all classes of settlements. However, the deurbanization process was a short-lasting one, because it was based on the inflow of forced migrants (Russian-speaking resettlers) from CIS countries (the 1990s), having no way of buying housing space at a higher price in oblast's large cities [9]. Therein lies the specific character of the urbanization processes in the subjects of the Russian Federation which received most of the migrants after disintegration of the USSR.

Subsequently (2002–2010), the fourth stage involved suburbanization processes, with population concentration limited to suburban zones of the main agglomerations and with a reduction in the contribution from the core city.

Thus the urbanization dynamics of Belgorod oblast bears out its stadial and evolutionary character, and a regular sequence of development of social processes in a self-regulatory way. It is known that the developed counties with some differences have gone through all the stages. Urbanization is a part of social development,

and if the regularities of development of the phases were taken into account in Russia, then it would be possible to avoid many mistakes and irreparable losses of resources, specifically through a limitation of the growth of large cities and the reconstruction of the rural settlement system, i.e. the division of rural settlements into promising and unpromising [10].

As of 2010, the publications of the scientific community and the plans of the Presidential Administration were discussing the issues relating to the country's spatial development with an intention to transform Russia's settlement structure toward creating 20 large agglomerations [11]. If, however, the idea of population concentration in two tens of major agglomerations is adopted, then the question naturally arises as to what will become the "locomotive" for the depopulated lands spreading over millions of square kilometers. Would it be appropriate to decide on a natural way of self-development as long as there are no well considered scenarios of the future development of Russia's urbanistic structure?

DEVELOPMENT TENDENCIES OF THE SUBURBAN ZONE OF LARGE CITIES

In the first place, the urbanization phase change in Belgorod oblast confirms the natural cyclic behavior of the urbanization processes and, second, is testimony to the phase delay in suburban development, because the centripetal forces leading to population concentration in large cities and urban agglomerations are bound to be replaced by centrifugal forces with the formation of suburbanization, and a growth of small cities and rural settlements.

Beginning in 1992, Russia, in a literal sense, plunged into a demographic crisis, so that a regular transition to a next urbanization phase came to a halt. The question now arises as to whether there were some objective preconditions for the transition to suburbanization between the late 1980s and the early 1990s. In our opinion, the development of a classical suburbanization process under those socioeconomic conditions was unlikely (we do not assign to suburbanization any dacha settlements intended for seasonal recreation and horticulture and gardening).

From the economic, social and infrastructural perspective, Russian society was not prepared for an intense suburban development of large cities (suburbanization): individual transportation was underdeveloped; the level of housing conditions in small cities and rural suburban areas differed markedly from those in large cities, and the contrasts in the living standards and lifestyle were striking; taxes and the cost of agricultural tenancy did not stimulate the construction of new enterprises and institutions in the suburban zone, and there was no purchase and sale of land and its turnover. As a result, the country and its federal subjects (Belgorod oblast in this case) "stagnated" at the large-cities', agglomeration levels,

but that stagnation was a temporary one, with a time delay.

It was until the onset of a transformation of the socioeconomic situation in the country that there occurred changes in the agglomeration formation conditions for many indicators (the level of automobilization increased, parcels of land began to be allotted and sold for individual housing construction, and there emerged new technologies in civil construction and mortgage credit lending). This process engendered objective preconditions for the development of Russian urbanization according to the classical Western scheme: there occurred the transition from the era of large cities to suburbanization and, then, to deurbanization (the development of small cities and rural settlements). The natural course of urbanization continued its development.

Our empirical study of the urbanization processes in Belgorod oblast suggests that all signatures of suburbanization are evident: the centrifugal flow from major cities (with the most prosperous city dwellers leaving for suburbs), and the centripetal flow from non-agglomeration areas. Analysis of the structural dynamics of the Belgorod and Saryi Oskol agglomerations (the boundaries were drawn within a radius of 50 and 35 km, respectively) revealed a further population concentration and an increase in population growth rates in the suburban zones (largely on account of rural settlements), an increase in the proportion of the population living in satellite cities and urban-type settlements, and a reduction in the contribution from the core city. In the Belgorod agglomeration, for example, the increase index of the core made up 116%, with 124% corresponding to the entire agglomeration, however; the contribution from the core city decreased from 63% in 1989 to 52% in 2009, which is evidence in favor of the main attribute of suburbanization (structural suburbanization) (Fig. 3). Concurrent with that process, a classical suburbanization was also evolving, i.e. core city-suburb migration.

A comparison of the demographic and ekistic determinants for the Belgorod and Saryi Oskol agglomerations with the suburbanization processes revealed the priority of the former agglomeration. The Belgorod agglomeration includes three cities, six urban-type settlements, and 194 rural settlements. The Saryi Oskol-Gubkin agglomeration is smaller as regards the radius of influence on the surrounding territory and the ekistic characteristics (one urban-type settlement, and 174 rural settlements). It is going through a complex stage of development: the population growth rates have decelerated both in the cores of the agglomeration (we assign it to bipolar agglomerations) and in the suburbs, but the growth rates still remain positive. Thus the region's urbanization has entered a next evolutionary phase.

When the natural stage of deurbanization began to gain a foothold on Russian soil, the Russian Government [11] again began lamenting imperfection of the spatial

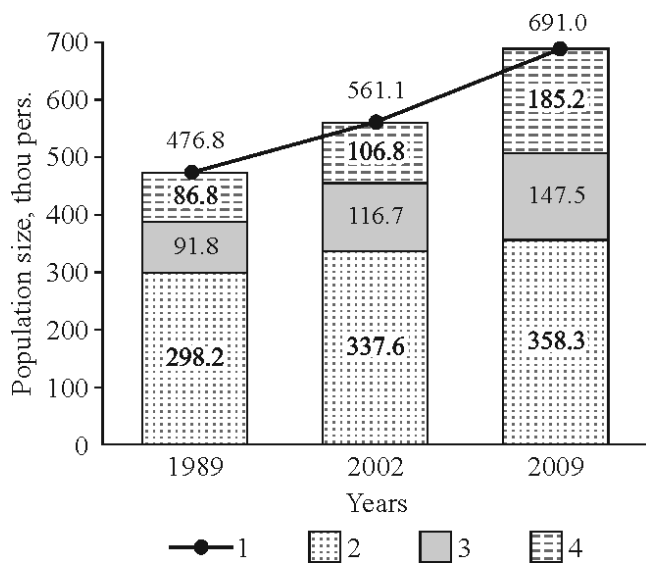


Fig. 3. Population size of the Belgorod agglomeration and its structural elements in 1989, 2002 and 2009, thou pers. (1) agglomeration, (2) city of Belgorod, (3) cities, (4) rural settlements.

territorial organization of the country and declaring a need for the “construction” of agglomerations (megapolises), because they are small in number, and they are not large enough. Proposals arise at the stage of deurbanization under the country’s depopulation conditions. In our view, this is one further dramatic evidence for the neglect of the cyclic behavior of development of the urbanization phases. Furthermore, we are confident that agglomerations cannot be created by the volitional effort by “starting from scratch” without any baseline preconditions. Experience of many bureaucratic campaigns shows that the inefficient mechanisms of state policy are no barrier to a natural development of agglomerations [12].

Adhering to the concept of a natural development of agglomerations, on no account do we negate their socioeconomic effectiveness. Large cities and agglomerations generate, proliferate and support innovations, because they are attractors of a multitude of states. Previously, J. Friedmann [acc 13] suggested six mutually enhancing causes for a predominance of the centers (cores) over the periphery. On the other hand, an intense development of large cities is known to be accompanied by a differentiation of territorial development, a deterioration of the conditions of human life, an enhancement of crisis phenomena in the hinterland areas and habitats that have had no large agglomerations and devoid of development incentives. In addition, the development of the largest agglomerations is conducive to an exacerbation of the socioeconomic problems on underdeveloped and depressive territories, and to a polarized development of the state. Therefore, “relief” policies were also implemented in countries of Western Europe with

regards to the largest agglomerations [14].

In Europe, in connection with globalization (the 1990s), the policy with regards to the largest cities was substantially transformed. The development of large cities was supported, but more flexibly: the emphasis was on infrastructure development in the broadest sense, improvement in the qualities of labor force and environment, and development of small and medium-sized businesses. Also, the major centers were regarded not in isolation but as key points that would provide further incentive to the development of the entire system of cities and the country at large [14].

In Russia, however, even without taking into account the totality of its own and worldwide experience, it is proposed to expend maximum effort and resources in order to draw up the population into a limited number of agglomerations thus fostering a further “socioeconomic polarization” and “demographic desertification” of territories in circumstances where depopulation is progressing, and in a country exceptionally heterogeneous in natural and socioeconomic conditions.

Experience on suburbanization development in countries that have passed through the stages of suburban growth and development is, we believe, also worthy of attention. An example of instructive experience is provided by suburban America, including negative consequences of suburbanization which could not be avoided. The consequences are as follows: social inequality that is engendered by housing segregation; emergence of urban slums (specifically in the downtown area); impoverishment of cities, caused by a decline in tax revenue; gentrification as the transformation of dilapidated inexpensive downtown areas, accompanied by an increase in real property prices, and by infrastructure and population shifts on such territories [15].

CONCLUSIONS

The ongoing precipitous urbanization processes in Belgorod oblast have brought about cardinal alterations to the region’s urban settlement system thereby transforming it from the small-city to large-city system, with two third of the city dwellers being concentrated in oblast’s two cities. Small cities are losing their inhabitants in favor of larger cities around which agglomerations are being intensely formed. A reduction in population size of small cities, and the accompanying intense growth of agglomeration, constitutes regular phenomena which must be taken into account when developing and implementing spatial planning projects.

Some time lag is observed in the progression of structural and classical suburbanization leading to a growth of the demographic and ekistic potential of agglomerations. The development of suburbs of large cities can be attended with negative consequences of a socioeconomic nature, and these should be foreseen

and prevented. In our opinion, it is necessary to use the urbanization management strategies which take into consideration the stages of urbanization evolution.

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