

SPATIAL-FUNCTIONAL ORGANIZATION OF SETTLEMENTS IN VOJVODINA

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This paper summarizes the results of recent exploration of spatial and functional organization of Autonomous Province of Vojvodina in the Republic of Serbia (hereinafter referred to as "Vojvodina") based on identification of the level of development of spatial and functional connections and relationships within its settlement network. The research is theoretically and methodically based on principles of regionalization and recent doctrines of regional development, contemporary spatial planning and social and economics disciplines of social geography. Results to a great extent identify and scientifically explain problems of the development of spatial and functional organization of settlement network in Vojvodina. Based on these results, a recommendation for a possible model of a sustainable settlement network in Vojvodina has been given.

Key words: Spatial and functional organization, regional spatial planning, Vojvodina.

INTRODUCTION

Settlements in Vojvodina represent a relatively stable, conditionally homogeneous and polycentric settlement system where medium-sized cities (in demographic sense), suitably and evenly distributed on its territory, are the major structural elements. The settlement system of Vojvodina has so far been a subject of many scientific research studies from the realm of physics and social geography. However, there is an impression that so far the aspect of spatial-functional relationships and connections in the Vojvodina settlement network as a whole has not been sufficiently investigated in an adequate way. The fact is that settlement systems are also very dynamic and complex categories, so that their continuous research is an imperative. The constant and continuous need for spatial planning and other development policy instruments to have an appropriate scientific explanation of conditions for the existence and effects of the development of hierarchical structure and spatial-functional relationships and connections within the settlement network, goes in favor of the need for settlement system exploration.

SPATIAL AND FUNCTIONAL ORGANISATION PARADIGM

Theoretical and methodological starting points of Vojvodina settlement network exploration are based on spatial organization paradigm based on functional-process approach and nodal regionalism whose instrument is the urban region. The nodal region (Symsanski, Newman, 1973, Tošić, 2000, Tošić, Nevenić, 2007) concept based on empirically determined fact that urban settlements through their activity influence the regional integration and differentiation of a complex and heterogeneous space, thereby creating specific spatial systems known as urban (nodal or functional) regions, or functional-urban regions, is in the basis of a functional-process approach in the exploration of relationships and connections within settlement network. Thus, urban region is a space of functional integration of cities and settlements in their influence zones.

The **process functionalist** approach gives the character of evolutivity to the spatial-functional structure of settlement network because the relationship between elements of settlement system is changing and dependable on strength, intensity, quality, time duration and territorial range of connections between them. Urban regions develop under conditions of dynamic processes of concentration and decentralization of functions, population, jobs, and public services, i.e. under conditions of successive turns of stages

of urbanization. Evolutive stages of the development of urbanization are synchronized with the achieved economic development, i.e. level of socio-economic transformation of population.

In the research, the Vojvodina settlement network was considered as a complex, open and dynamic urban region system. Functional-process approach and nodal regionalization based on it are scientific concepts of a balanced regional development and decentralization of the European Union (EU), both at macro- and mezo-regional, as well as local level. Finally, this approach was also implemented in the Spatial Plan of the Republic of Serbia (SPRS, 2010), further elaborated in regional spatial plans.

The research has yielded the results which to a great extent confirm the following hypotheses (Krunic, 2012):

1. Vojvodina settlement network is a sub-system of settlement network of Serbia, with a complex and dynamic spatial-functional structure whose organization is the manifestation of interaction between numerous internal and external factors stemming from natural-geographic, settlement,

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demographic and socio-economic specificities of the territory and its surroundings.

2. The basis of contemporary settlement network in Vojvodina is made up of urban regions which have successively developed through stages of urbanization of a polycentric character, which is spatially implicated by a dispersive distribution of urban settlements, but also by a higher level of socio-economic transformation of rural settlements compared to other parts of Serbia.

3. Through influence of towns/cities with central places functions, a complex and dynamic spatial-functional structure of settlement network has been developed in Vojvodina. Urban region is made up of a core (town/city, central place) and influence zone with socio-geographically and socio-economically transformed settlements with a certain level of urbanity.

4. Spatial-functional connections manifested through movement of population, material goods and information, specifically manifesting themselves in the form of Daily Urban System (DUS) have developed within urban regions. The level of development of urban commuting within the settlement network in Vojvodina is an indicator of the development of spatial-functional relationships and connections within it. There are a lot of analogies between urban regions and daily urban systems of settlement network in Vojvodina.

5. By their hierarchy, urban regions are differentiation factors, but also factors of integration, as well as factors of the spatial directing of the development and organization of settlement network in Vojvodina. Thus, they are also instruments for the complex research, planning and directing of overall development processes. The development of spatial-functional relationships and connections in settlement network of Vojvodina can be controlled and directed towards the accomplishment of strategic development goals through a system of planned measures and actions.

PROCESSES AND TRENDS IN SPATIAL-FUNCTIONAL ORGANIZATION OF URBAN REGIONS IN THE EU

Urban regions are a product of complex interactions between towns/cities and their surroundings (Figure 1). Degree of influence of urban regions on spatial-functional integration and differentiation in geographic space is directly dependent on the transition stage of urbanization of a subject space and society. Early industrial phase of urbanization is followed by polarization effects, reduced over

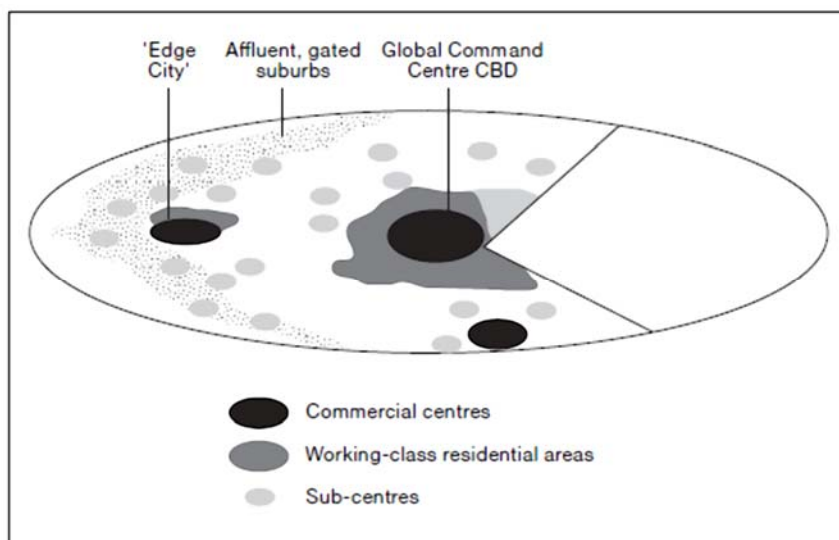


Figure 1. Model of postindustrial world metropolises (Hall, 2006).

time through phases of gradual decentralization of urbanization. Urban regions have developed under conditions of permanent dynamic concentration and deconcentration processes, i.e. under conditions of successive turns of polarization and decentralization phases of urbanization (Tošić, 2000).

In the EU, areas of functional integration and multimodal corridors have been defined, conceived on spatial organization paradigm. This should contribute to the creation of an integrated urban system of balanced hierarchy and strong spatial-functional connections (Hall, Pain, 2006, Tošić *et al.*, 2009). The Metropolitan European Growth Areas (MEGAs) model has been proposed within the INTERREG² program as the most coherent model of the EU decentralization and balanced development.

The concentration, as a result of the center/periphery concept and general regularities in economic development (Mihajlović, 1970, Peru, 1986) has become a precondition for polycentric development. In regions with greater population density, functional division among towns/cities is more intense, i.e. diversification and specialization of functions is faster. The formation of functionally connected urban/agglomeration systems in this region provides more favorable possibilities for future regional development through increasing the general quality and specialization of services and business conditions. In less populated regions, potentials for developing functionally connected agglomeration systems are limited, primarily because of distance between urban centers themselves.

² Initiative to stimulate cooperation between regions in the EU.

Socio-economic transformations and their spatial manifestation in urban systems of former socialist countries, which are today member countries of the EU or are in different stages of the process of integration into the EU, have many common characteristics, but they more indicate the accelerated development of unfavorable center/periphery structure. The recent exploration of socio-economic transformations of population in Croatia, as well as social space of the city of Zagreb, indicate significant negative changes. After 1990, the urban social segregation has been increased (Prelogović, 2004). There is a pronounced correlation between the population size and achieved level of socio-economic transformation, or functional integration into urban region (Bašić, 2004, Bašić, 2005; Ilić, Toskić, 2004). The post-industrial development of Slovenia is characterized by general global trends affecting the economic, social and spatial development of the city: concentration of capital, knowledge, jobs, and highly qualified labor, infrastructure, etc., in larger cities; the tertiarization and specialization of production; regional centralization and increased social segregation (Ravbar, 1997, Pak, 2003, Rebernik, 2004). The metropolization process, which started in Poland back in 1980s, has been intensified, but in new spatial and social relationships. Economic, social and spatial transformations of cities and urban regions are almost identical to those in other former socialist countries (Lisowski, 2004). The situation is similar also in Romania where the development-planned regions have been formed aiming at reducing regional disparities. These disparities have been intensified particularly after approaching and later accession of the country to the EU, due to inflow of the greatest part of foreign

direct investments in Bucharest and several regional centers. Demographic processes are marked with massive migration of working-age population into developed EU countries, as well as migrations from de-industrialized cities into rural areas (Benedek, 2006, Ianos, 2010).

PREVIOUS RESEARCH ON NETWORK OF SETTLEMENTS IN VOJVODINA AND THEIR ROLE IN SPATIAL PLANNING

The research on settlements in Vojvodina has a long tradition, almost as long as the process of their contemporary continual development itself, initiated in the 18th century, aiming at reorganizing the existing and create new settlements. Geographical research and results obtained mainly after the WWII are shown in this paper (Krunić, Tošić, 2011). The papers presented below particularly deal with spatial and functional aspects of emergence and transformation of settlement network in Vojvodina.

Bukurov (1983) classified the geographic basis of emergence and development of settlements in Vojvodina, in the paper under the same title, into natural and social ones. Analyzing the position of settlements in Vojvodina, Ćurčić and Đuričić (1994) continued Bukurov's research from the aspect of geomorphological, mainly orohydrographic characteristics (position, shape and structure of settlements). Ćurčić (1991) explored and defined general conditions in which contemporary settlement network in Vojvodina emerged. Đere (1979) considered the urbanization in Vojvodina after WWII from the aspect of spatial planning: spatial manifestation; emergence of a complex urban network structure; urban population growth; and changes in urban hierarchy. He also analyzed the towns/cities, as main holders of production and service functions, as well as bigger rural settlements, which over time formed a „complex and extensive territorial division of labor“ as a result of „general economic and social development of space“ (Đere, 1984). Ćurčić (1993) concluded that settlements developed in changing political, economic and cultural ambiances. The functional transition from rural to urban-type settlements, with accompanying functional restructuring and diversification, is typical for towns/cities in Vojvodina. In addition to industrial development, the administrative development was also important for the development of cities, thus also other functions, thereby intensifying population density (Ćurčić, 1989). In one of the first research works on daily commuting in our

literature, Bajić (1971) associated its development with intense development of industries and related activities (through the concentration of economic activities in cities, the workplaces and places of residence became separated) and agricultural mechanization (creating labor surplus in rural areas). The development of cities in Vojvodina was characterized by „agrarian urbanization“, so that in these areas, over a long period of their development, only several cities got a polyfunctional character: Novi Sad, Subotica, Zrenjanin and Pančevo. Analyzing the standard deviation according to groups of activities, authors noticed territorial dispersion and heterogeneity of urban functions (Đuričić, Romelić, 1993). Perišić (1985), while exploring the agglomeration system of Serbia, started from inter-dependence of the development of network of settlements in general, urban settlements and transportation, as well as regularities in emergence and formation of „group forms“ in these networks. He identified primary and secondary agglomeration systems in Vojvodina. Veljković *et al.* (1995) with associates analyzed the place and role of cities in the settlement network of Serbia as a whole, elaborating the hypothesis of four phases of development of towns/cities and formation of development axes. Recognizing the basic factors of emergence and development of settlements in Vojvodina, Dorić (1985) considered the transport–geographical position and relief dominant. Taking that the city in spatial planning could not be considered separately and without its sphere of influence (gravitating zone), he considered that urban functions and their range were the measure of „activities“ of the center and „absorbing power“ of its surrounding. He noticed that these influence zones were spaces of fast and unplanned changes in the way and intensity of using suburban land, as well as that they were accompanied by socio-economic transformation of population.

In the SPRS (1996), settlement networks are considered as instruments of rational functional organization of space. According to the specified criteria, 34 functional areas have been defined. In SPRS until the year 2020 (SPRS, 2010), the tendency to form polycentric urban system is also a major plan determination. The concept of development harmonization of network and functions of centers is instrumentalized by the Plan by defining Functional Urban Areas (FUA). Elaborating the concept of development of settlement systems specified in the SPRS 2010, the Regional Spatial Plan of AP

Vojvodina (RSPAPV, 2011) recognizes the hierarchical and polycentric settlement system. It has been concluded that functional connections and relationships in Vojvodina are characterized by coherence, which is to be improved by better functional connections between regional, sub-regional and municipal entities, and particularly by improving and strengthening horizontal–spatial connections between centers.

SPATIAL ORGANIZATION OF VOJVODINA

Contemporary spatial-functional organization of settlement network in Vojvodina has been considered though the analysis of dynamism and spatial distribution of its population (Krunić *et al.*, 2011), economic activities, infrastructure connectivity, and changes in land use, while functional relationships and connections have been considered from the aspect of urbanization expanding process and manifestation of daily commuting of labor force.

The polarization process has been identified in Vojvodina, i.e. in its settlements system, manifesting itself through increasingly intense concentration of population, on the one hand, and increased depopulation, on the other hand (Figure 2, Figure 3). There is a growing number of large settlements in terms of populations size, with simultaneous increase in percentage of their population in the total population, whereby disperse focal points of concentration are formed. These zones are centers or important sub-centers of urban regions. Contrary to this process, the number of small settlements is increasing, at the same time maintaining the percentage of their population in the total population at the same level, which indicates the deconcentration process. Settlement groups in this zone are mainly in border areas in North and Middle Banat. To summarize: The polarization of spatial distribution of population of Vojvodina is intensified and accelerated. The Belgrade–Novi Sad metropolitan area whose sub-center is Pančevo, and prospectively Zrenjanin and Sremska Mitrovica, gains in importance in intensification of the polarization process in Vojvodina.

Urbanization process in the settlement network in Vojvodina has conditionally taken place in two stages. Early stage, after WWII until the beginning of 1980s was characterized by polycentric polarization in which, besides Novi Sad and Subotica, other towns/cities, equal by demographic size, were: Zrenjanin, Pančevo, Sombor, Kikinda, and Vršac. In the second stage, lasting longer than the first one, the settlement network of Vojvodina has developed

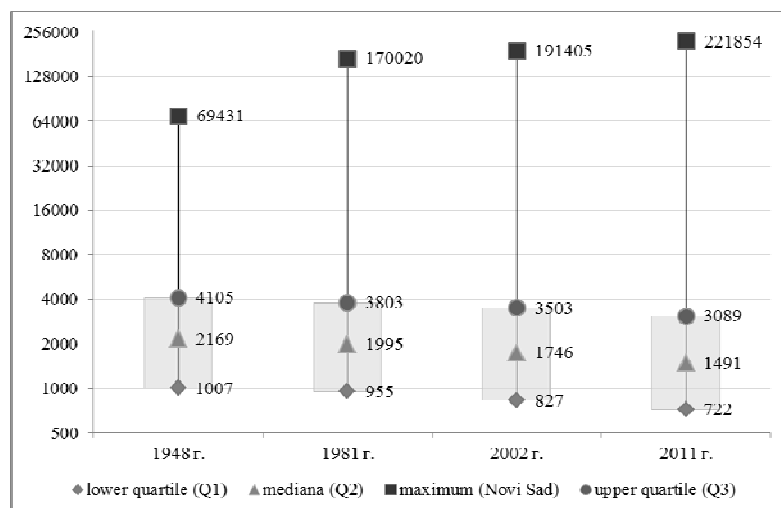


Figure 2: Box-plot analysis of number of inhabitants in Vojvodina settlements according to selected census years. Number of inhabitants shown on ordinate is a logarithmic sequence to base 2.

under the influence of monocentric polarization in which Novi Sad has a dominant role, while other, once developed urban centers, have begun to lag behind. This is particularly pronounced in towns in Banat: Kikinda, Vršac and to some extent also Zrenjanin.

Administrative position of centers also determines their economic importance, thus strengthening the labor demand function. Municipal and urban centers are poles of economic development in which sub-regional and local labor force is concentrated. However, with the recession of industrial sector and related service sector, the polarization of work centers has begun. It is assumed that larger centers have maintained their economic importance, thus clearly determining daily commuting, as well as migration of population in general. This additionally reduced functional capacity of smaller centers to mainly administrative and public service functions. The „vicious circles“ (according to the Myrdal-Hirschman concept, explained in: Bradford, Kent, 1977, Očić, 1998, Fujita *et al.*, 1999) is thus accelerated, because the reduction of functions will stimulate emigration, thereby making it more difficult to maintain administrative-public function. However, the deindustrialization, wrongly understood as a complete closure of factories and not as the evolution of industry towards technologically more advanced and flexible branches along with synchronized development of tertiary sector, has changed economic structure of Vojvodina, and Serbia as a whole, causing severe consequences on overall social development.

Further development of public services, as well as other services in Vojvodina and Serbia as a whole, will be at odds with constitutional rights and declared standards, on the one hand, and

economic conditions, under the Christaller's principle of „minimum demand“, on the other hand. Favoring the economic viability over approximately equal social standard has brought about changes in functioning and hierarchical organization of a part of public services (social and health care, education). Further effects will manifest themselves according to the already mentioned negative spiral. Despite obvious polycentric settlement network in Vojvodina and quality infrastructure connections, it is not clear why the concen-

tration of otherwise spatially completely indifferent activities in Novi Sad and other centers of the region, is still insisted on (a part of the functions of health care, education, defense and police, while completely the functions of social and public services).

The level of development and spatial distribution of infrastructure systems in Vojvodina, particularly transportation infrastructure, enable relatively homogeneous development of economy and complementary services. Problems in infrastructure system functioning are of technical/technological and organizational character with increasingly present negative effects of minimum demand. Peripheral centers of Sombor and Kikinda urban regions, and to some extent also Vršac, have reduced development possibilities due to absence of valorization of cross border connections with Croatia, Hungary, and particularly Romania. For example, considering that Romania has problems with regional disparities and distance of its capital city, Bucharest, from development centers in the EU, Temisoara has a role of a gateway city / transport hub. Therefore, there is no reason for Serbia, Vojvodina and local self-governments not to valorize new transport function of peripheral centers in Banat. Railway traffic, waterways and airports are not operational, or are unjustifiably neglected.

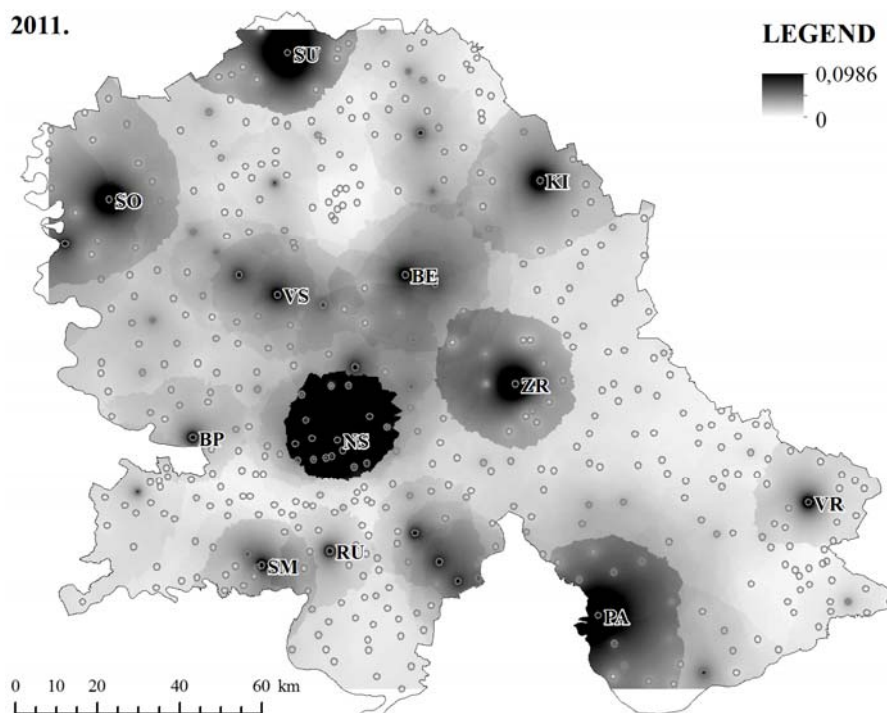


Figure 3. Model of population distribution according to rank size rule in the year 2011

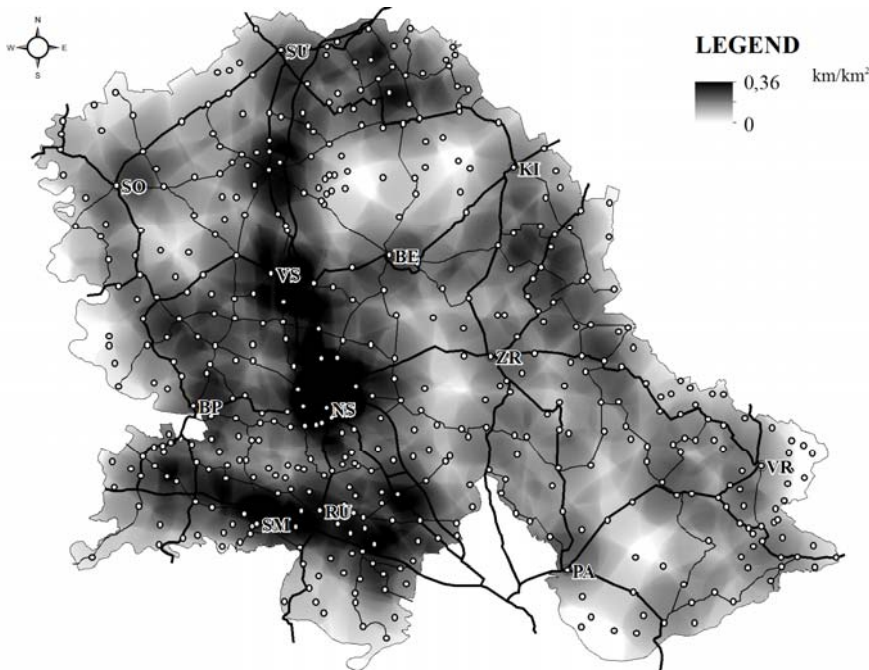


Figure 4. Centers of transport importance according to the density of road network per km².

Based on the presented analyses of the distribution of population, settlements, road network (Figure 4.) and its burden, there is a clear analogy: hierarchical importance of centers – hierarchical importance of roads – level of development of transport functions (traffic intensity). Settlements and transport corridors connecting them create a spatial structure, **axes or development belts** (Vresk, 1993), characterized by dynamism and concentration of population, economy, services and capital. Existing road network and development impulses spreading around them have created morphologically visible and functionally determined zones of more intense development. These zones are being formed between the following urban centers: Belgrade–Novi Sad, Belgrade–Pančevo, Belgrade–Sremska Mitrovica, Novi Sad–Subotica, Subotica–Sombor, Crvenka–Kula–Vrbas–Srbobran, Novi Sad–Bačka Palanka, etc. More intense changes in land use, particularly transformation of agricultural land into land intended for commercial facilities, will take place in wider and narrower zones of these development axes, whereby spatial conflicts and conflicts of interest will become prominent. To this end, besides urban areas functionally defined in the SPRS, the development axes are certainly to be considered as major instruments in planning and development of space both at national and regional level, into which it is necessary to integrate different strategic and sectoral development policies.

SPATIAL AND FUNCTIONAL RELATIONSHIPS

It has been empirically noticed and scientifically ascertained that development processes shift from cities-hubs of urban regions into surroundings through sub-urbanization, de-urbanization and daily population mobility. Many examples have proven the hypothesis that the intensity of daily commuting of working population and size of urban areas are in directed correlation with the intensity of socio-economic transformation of regions (Tošić *et al.*, 2009, Krunić *et al.*, 2009).

By their intensity and spatial range, the urbanization impulses reflect functional importance of centers. Morphologically, they most frequently manifest themselves in the form of concentric circles or linear systems where urbanity declines with distance from centers. However, some sub-regional differences are obvious. Zones of more intense urbanization are located around Novi Sad, in South Bačka and Belgrade–Novi Sad metropolitan area. Lower level of urbanization is found in zones with greater concentration of rural settlements without significant centers in north-eastern (Kanjiža–Kneževac) and south-eastern Banat (Sečanj–Plandište). Urbanization has a greater influence on “more rural” settlements, i.e. those with a lower-level socio-economic transformation. Furthermore, in settlements with similar functional capacity and spatial closeness there are noticeable effects of agglomeration and polycentric

complementary development (Crvenka–Kula–Vrbas–Srbobran and dual-center system along the Tisa River). Analysis of the level of urbanization shows two apparently opposite processes in urbanization belt between Belgrade and Novi Sad: urbanization zone is extended, but in plenty of settlements a decline in urbanization has been observed. Here, the centers of metropolitan areas have a negative polarization effects on settlements in immediate surroundings. Thereby, the model of the level of urbanization highlights the problem of regional disparity: in which moment and under what conditions the positive impulses from centers towards settlement surroundings, which stimulate their socio-economic transformation, will become negative, thus having influence on weakening in functional capacities of settlement surroundings making them totally dependent on centers, with accompanying degradation of their socio-economic structure?

In Vojvodina, DUS have developed in the function of general development trends. They have formed the complex, hierarchized and dynamic spatial-functional structures (Figure 5.). According to territorial range and intensity, twelve centers of daily commutes stand out. There are plenty of differences between them, so that they can be classified in several groups and sub-groups. Influence of Belgrade on scope, directions and spatial manifestation of daily mobility of workers from Vojvodina is significant and closest to Novi Sad, thereby also obtaining the function of one of the primary DUS in Vojvodina. Other centers in the contact zone, like Šabac and Smederevo, have a local importance. To summarize: DUS in Vojvodina have territorially expanded, at the same time increasing the functional dependence of settlements whose residents commute from work centers. However, there are two assumptions according to which this is rather a matter of growth, and not development of DUS. The first assumption is based on depopulation process, whereby, besides the population decline, the population's median age advances, thereby also a relative percentage of active population, with a simultaneous decline of its absolute size. The DUS territorial range is thus expanding due to smaller capacity of surrounding settlements to „respond to the demand“ of centers for labor force. The other assumption refers to disturbance in the general economic structure of Serbia, thus also Vojvodina, hitting more the industry and former agricultural combines and less the tertiary sector. At the same time, this process was spatially uneven, so that more important economic capacities and services remained in

larger urban centers. The employment opportunities in places of residence have thereby been diminished, thus intensifying the daily commutes. However, it is crucial to continue to explore to what extent is daily commuting of workers under local conditions merely a phase leading to their permanent move into urban centers?

Daily urban systems of Vojvodina are structures interweaving in space and time. They are more intense in centers of pronouncedly different hierarchical ranks (e.g. Novi Sad-Bačka Palanka) where the lower-rank center is a focus of local integration and, at the same time, a sub-center of a higher-rank system. At centers of approximate functional capacities, wider delineation zones are formed in which there are settlements conditionally independent or equally dependent on both centers (Čenta between Belgrade and Zrenjanin, Bajmok between Subotica and Sombor, etc.). It has been concluded that distance between centers is of great importance in polarization and integration of space. Greater zones of periphery have been created where distance between centers is greater than their functional capacities, e.g. to the south-west of the Subotica-Kikinda line and in Zrenjanin-Vršac-Pančevo triangle. In this sense, the growth and development of daily urban systems is in the function of the traffic network level of development. There are two kinds of preconditions for the development of local work centers. They emerge as sub-centers in zones of interweaving of higher-rank DUS, or at sufficient distance from them, in order to develop independently. One gets an impression that sustainable development in the long run is more possible in poly-nodal urban systems than in mono-nodal ones.

By implementing the model of DUS determination, daily urban systems in Vojvodina have been defined, as well as functional differentiation of settlements within them. Settlements are classified into five groups which, according to settlement type, have the following major characteristics:

- 1. DUS center or core** is a settlement with a pronounced concentration of workplaces. Besides Novi Sad, the largest urban settlements in Vojvodina also belong to this group.
- 2. DUS secondary center** is a settlement with considerable concentration of workplaces. This group comprises larger urban settlements in Vojvodina, i.e. municipal centers. Due to its relatively big share of daily commuters in the total number of workers, Pančevo, as a sub-center of Belgrade agglomeration, also belongs to this group.

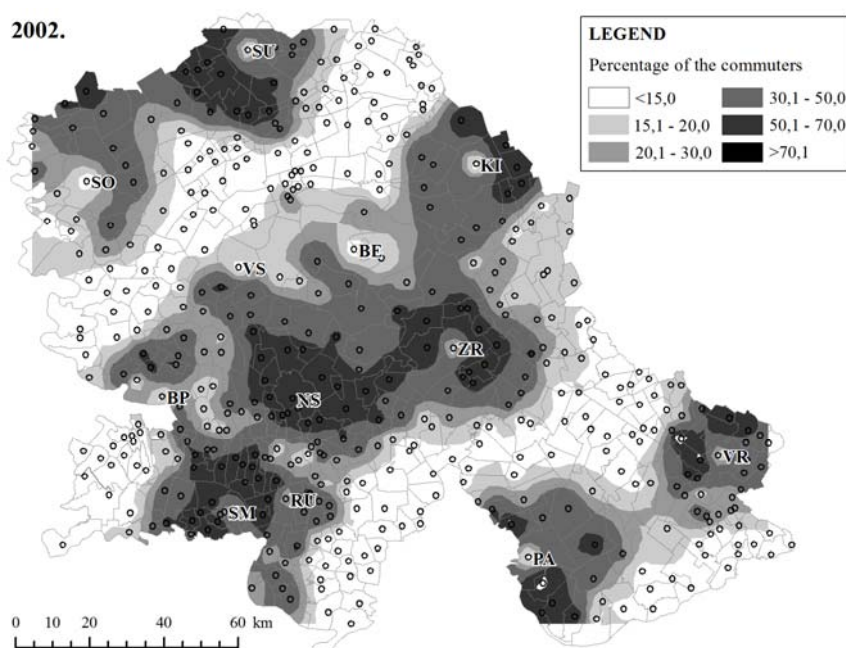


Figure 5. Changes in the morphology of the DUS's of Vojvodina, 1981 - 2002.

3. Zones of strong influence comprise functionally dependent settlements with mainly negative balance of commutes, which are functionally directed to DUS center in which more than half of daily commuters travel from their places of residence. Number of settlements belonging to this group is increasing, thus indicating the intensification of polarization effects of primary and secondary DUS centers.

4. Zones of weak influence comprise two types of settlements: functionally weakly dependent and relatively functionally dependent settlements. Their capacity as work centers is small, but positive, compared to the settlements belonging to previous groups. Nevertheless, settlements belonging to this group show certain functional dependence on other centers. They are most frequently under the influence of several centers, thus having no clear functional orientation.

5. Periphery is comprised of settlements of small influence, or those without clear influence of centers on labor force movement. Their number has decreased because they have fallen into the group of settlements under influence.

A level of polarization of territory of Vojvodina has been identified starting from assumptions that population size reflects settlement functional capacity, that the level of their urbanization is a result of the achieved phase of socio-economic transformation of population, as well as that daily commuting of labor force is an indicator of spatial connections and functional relationships within urban region. It

is a heterogeneous system of multi-layered polycentricity. On the one hand, multi-nodal systems have been formed around centers of urban regions: central and polycentric one, formed by Novi Sad, and insular-peripheral one formed by Subotica, Zrenjanin, Sombor, Kikinda and Sremska Mitrovica. The intensity of influence on surroundings of these centers is not equal. Polycentric systems of great importance for functional organization of Vojvodina include the Belgrade-*Novi Sad* metropolitan area, whose sub-center is Pančevo, and also potentially Sremska Mitrovica, as well as smaller town agglomerations along Belgrade-*Novi Sad* corridor: *Indija* and *Stara Pazova*. The third polycentric system is being developed in northern parts of the *Novi Sad* urban region, actually in zones of its contact with Sombor and Subotica regions, where centers of local importance are: *Bačka Palanka-Bač-Odžaci* and *Crvenka-Kula-Vrbas-Srbobran*. The complexity of structure is conditioned by a simultaneous participation of functions of the same center in several polycentric systems. If the development of this systems would still have the character of spontaneusness, the direction of polarization would be on Subotica-*Novi Sad*-Belgrade line and west of it. That is why it is necessary to direct development impulses from polycentric system of Belgrade-*Novi Sad* metropolitan area and wider zone of *Novi Sad* urban region to the east of Vojvodina, where *Bečej*, *Zrenjanin* and *Pančevo*, and potentially *Kikinda* and *Vršac*, will have a key role.

CONCLUDING CONSIDERATIONS

Based on the abovementioned, the spatial-functional organization of Vojvodina could be the following: 1) Novi Sad and its polycentric urban region comprising most of settlements in south Bačka and western slopes of Fruška Gora Mountain. 2) Regional integration centers - Subotica, Zrenjanin and Pančevo. Their roles and functional capacities are different; 3) Centers of approximately equal functional importance and territorial range - Sombor, Kikinda and Sremska Mitrovica; 4) Vršac, a sub-regional integration center; 5) Sub-centers of urban regions or independent local integration centers with zones of delineation of higher-rank center influences, such as - Bačka Palanka, Bačka Topola, Senta, Bečej, and Ruma. This group also includes local polycentric systems of agglomeration physiognomy: Crvenka-Kula-Vrbas-Srbobran and Indija-Stara Pazova; 6) Other municipal centers whose development will be conditioned by the development dynamism of urban, regional and sub-regional associations. They are under strong influence of polarization, while those weaker ones have no sufficient capacity for integration of their administrative territories; 7) Other settlements form a heterogeneous system that is more or less integrated into systems and sub-systems of urban regions. These settlements will develop in direction of functional dependence on centers and general development impulses. Settlements with specific functions, closer to centers and with accessible position, will have more development chances.

Further research efforts should be directed to determine to what extent the settlements in Vojvodina could resist depopulation and reduction of functional capacity in future, due to economic structure transformation of their urban regions. Based upon this research, spatial planning instruments need to be adjusted. Given that numerous examples in Vojvodina have confirmed that there is a correlation between intensity of daily commuting of workers and size of influence area of towns/cities with intense socio-economic transformation of their regions, further research efforts are needed to determine to what extent daily commuting of labor force will be merely a phase in a permanent move into urban region cores.

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