THE SPRAWL OF VILNIUS CITY – ESTABLISHMENT AND ANALYSIS OF GROWING URBAN REGION

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Abstract. The aim of the paper is to establish general trends of the development of Vilnius. The city has been growing very fast during recent years but actual scale of such process and its consequences are not established. The revelation of actual characteristics and main factors of spatial fluctuations of the city is most important task of this research. How development of Vilnius is affected by the situation in surrounding region and how it could be established were the central questions of the research. Process of transformations of rural area into the urban one is of great concern among geographers, because this is an area of the most dynamic changes, where various socio-economical tensions are almost inevitable, while rational planning and sustainable development of such areas are quite limited.

References 8, Figs. 7. In English, summary in Lithuanian.

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Introduction

Cities, like all social spatial systems, constantly evolve and this evolution includes both transformation and expansion of their space. Such an expansion or, in other words, transformation of surrounding areas is not taking place in empty space and it usually means transformation of rural areas into urban ones. Urban regions occur at places where both structures – urban and rural – coexist together. Territories surrounding cities are very dynamic and experience a huge impact by city development processes even in cases when territories of cities (formal or informal) do not expand there. All post soviet capital cities have experienced fast growth and huge transformations in various urban sectors during last decades. Numerous studies have been carried out of various scientists in different countries. They have tried to reveal the actual spatial expression of analyzed cities and their regions. Nevertheless the research field of spread of post-soviet cities is still quite new. As an example of such studies, analyses of daily urban systems of Ljubljana and Belgrade could be mentioned (Pichler-Milanovic, Krevs, 2010; Stamenkovic, Gataric, 2010).

The growth of city inevitably results in the clash of urban and rural societies, forcing changes in both sides. Such a situation has positive and negative effects in various fields of human environment. It creates opportunities in some places and (or) raises conflicts elsewhere. The aim of this paper is related to the analysis of development of Vilnius city region, which takes place in the area which not only differs from urban one in the sense of life style or environment. Vilnius is developing in the area with different ethnical, cultural, political and economic environment. This transformation process and its scale is a central point of this research. Authors try to determine the shape and size of Vilnius urban region, whose development was mainly influenced by politic transformations and global factors during the last two decades. The research was funded by the Lithuanian Science Council (agreement No. MIP-26/2010).
1. Methodological aspects – defining concept of Vilnius urban region

The definition of concepts “urban” and “rural” has been fundamental task in human geography for many decades. There are several traditional well known methods of measurement and distinguishing urban and rural areas, though all of them have some disadvantages and were criticized many times. The first one, descriptive definition is based on observations and measurements of various statistical indicators, but they mostly describe and not explain interdependences. The result is certain index of “rurality”, which could describe some characteristics of a place, but could hide other. The second one is based on socio-cultural attitude, which analyses changes of characteristics of residents, which depend on the environment where they live. Analysis of the way of life is the central one here. It also can reveal some characteristics of social life in certain place, but the “way of life” itself is quite a disputable indicator of urban or rural environment. The third way, proposed by British researcher H. Halfacree is based on post-positivistic approach. The definition of “rural” could be found in people everyday speech. If people use such terms as rural and urban, country or city, it means they exist. (Halfacree, 1993).

This idea is acceptable for the authors of the paper. They do not try to define these terms, nor do they seek to establish exact places of urban and rural space in study area. Authors understand that the same place could be perceived as a city by one person and as a village by the other, but if some place is a city at least for someone, than this place is at least partly an urban space and vice versa. It is not very important to establish exact limits in the urban-rural continuum, which hardly exists. The most important is to establish places of transformation from rural or semirural (in old suburban towns) areas into new urban ones. The most interesting phenomena take place, most tensions and problems arise there. Therefore identification of such zones is one of the central questions of geographical research. Authors of this paper are keen to use term “urban region” in order to identify places, where such transformation has already happen or is happening now.

Existence of fundamental differences between Vilnius urban and surrounding rural areas (environment) are taken for granted. Authors like any other observers visiting the place could notice them easily. Such distinction exists in the discourses of ordinary people and it would be irrational to question it. We just could state, that Vilnius city is where Vilnius residents live, even if it is a place in old village some 30 km from the city. In other words, one living in some particular area asked “are you a resident of Vilnius city?” should answer “yes”. Authors’ field trips to settlements that surround Vilnius municipality and conversations with local population and governors, were the main tools of establishing differences in such a perceptions.

The concept of city region has been very important in urban geography for a long time. M. Weber understood importance of interrelations of city and its surrounding back in XIX century. The term city region has been in use since about 1950 by urbanists, geographers, economists and urban planners to mean a metropolitan area and hinterland (similar term – metropolitan region). Typically, it denotes a city, conurbation or urban zone with multiple administrative districts, but sharing resources like a central business district, labour market and transport network, such that it functions as a single unit. This concept is based on that the cities’ life and functions are determined by the resources available in surrounding region. At present this concept is loosing its importance (partly because of globalisation processes). At present, city or urban space might be considered as region in itself. The concept of region is also quite liberal, so one could easily approach city as a kind of region. Authors of this paper tend to use term “urban region” in later sense. Concept “city region” or “city functional region” (or metropolitan region in case of main cities) would suite more defining area, which is closely connected to the city by the means of mutual dependences (city and its hinterland). However, the biggest part of such city region cannot be defined neither as urban region nor urban space or a city. But namely the urban region is the main object of this paper.
The spatial expansion of a city is an expression of expansion of society (Vanagas, 1996). Relations between urban and rural environment becomes extremely complex and attracts more and more attention from spatial planners (Antrop, 2004). Limits between urban agglomeration and rural areas disappear; land use in those areas has big degree of variety. The establishment of actual city limits becomes extremely complicated task, requiring a lot of uncertainty. And it is not very likely that any established limits would survive for longer period. There is not much doubt that in studying urban processes it is often worthwhile having closer regard to dominant travel patterns during the working day (to the extent that these can be estimated and recorded), than to the rather arbitrary boundaries assigned to administrative bodies such as municipalities. Inevitably City Regions change their shape over time and quite reasonably politicians seek to redraw administrative boundaries from time-to-time to keep in-tune with perceived geographic reality. (Scott, 2004).

Authors treat Vilnius urban region as a territory where residents of Vilnius city permanently live and work. It does not mean that this is pure urban space; it just means that it is an area, where city already exists. Wider concept, Vilnius city functional region, is treated as functionally united spatial system, where capital city is one of the main factors of development of the area and vice versa. Obviously city regions of capital cities typically include whole countries and areas beyond.

It could be stated that most of contemporary factors determining development and formation of Vilnius urban region and many other post soviet urban regions started to make decisive influence just after 1990. This process continues because of changing economical, political and social situation. Strength of urban regions is closely related to territorial differentiation of economy. Vilnius and its surrounding areas experience the most remarkable transformations of economy as well as social structure during last decades but these changes differ a lot in different parts of the region. One of the most important tasks of the research was the identification of areas where processes of rural-urban transformations are taking place.

2. Vilnius urban region – general trends of transformations in post soviet city

Fast transformations of physical and social structure of Vilnius and other post soviet cities have been taking place during last decades. Without any doubts, most of those transformations are directly caused by the political and economic changes in such countries. All of these transformations have made some impact on urban space. However political and economic reforms were not the one and only factor of transformations of urban space (changes of existing urban space and its sprawl in previously rural areas) during this period. Actually it dominated just at the beginning of 90ies and was always accompanied by “natural” evolution of cities, which are stimulated by technological, economic and social progress, urbanization, globalization and regionalization processes all over the world. At present those factors dominate, though post soviet heritage is still making strong influence, at least for the reason, that big parts of such cities are dominated by “soviet developments”. As a result there were quite intense transformations in contemporary Vilnius urban region during last two decades. These transformations emerged in two ways: 1) changes of old urban structure and 2) city expansion (or transformation of previously rural territories into urban ones). Processes of structural transformations and territorial expansion are typical to Vilnius city like for any other developing city in the world. Those processes can’t be adequately understood ignoring wider context, e.g. influence of whole Vilnius city region, but the size of the paper does not allowed us to go into detail analyses of processes taking place there.

The analysis of main trends of development of Vilnius city revealed that transformations inside existing Vilnius municipality were more significant than city expansion at the beginning of post soviet period. This was at least partly determined by the abundance
of non-used land inside the city and vast areas of non profitable or otherwise redundant establishments (like big manufactures in central part of the city, or soviet military facilities). Huge differences of structure of society, economy and urban space between democratic market economies and soviet command economies were main reasons for such a situation. According to economical and geographical logic, one could have expected that space of former communist city would inevitably start to change. Features which are typical to western cities should appear here. The biggest transformations should appear at places where differences are the highest, e.g. spaces for previously non or almost non existing economies and “societies” should appear. First of all, these changes will determine significant transformations of existing land use in city and later assimilation of new territories around it. The latter process is more complicated because more concerned players, which could potentially make impact on this rural-urban transformation, are involved.

Though the influence of various factors related to “soviet heritage” is still evident, other forces are playing much more important role at present, because transformation of economy and many spheres of social life are over. Trends of development of economy throughout Lithuanian territory and in neighbouring countries, international economics and politics, evolution of socio-economic processes, prevailing images or fashions and many other factors are determining and will determine further development of Vilnius urban region. However one of the most important factors, which always will make decisive influence on processes of urban development, is related to the peculiarities of the socio-economic situation in surrounding region, because it determines conditions or background of city sprawl. Of course it is not a causing factor, but it is limiting one. So it will not cause the spread of the city, but will make impact on the speed and pattern of its growth.

3. Urban region – defining the object of the research

Areas surrounding city administrative limits are one of the most dynamic spaces in human environment. Constantly changing urban and rural activities coexist here. Those spaces have tight economic, cultural and social mutual dependencies with a city. One could describe those “war zones” as areas of extreme competition between urban and rural world, where urban one usually has more competitive advantages. Obviously the clash between those two worlds doesn’t have straight frontline and the influence of the city on rural surroundings tends to diminish going father from core city, though the pace of diminishing differs depending on local site factors.

Fig.1 illustrates hypothetical scheme of spreading city region. The degree of urbanisation of landscape reaches the lowest levels at the peripheral parts of urban region. The pace of the sprawl of a city and scale of city region depends both of capability of a city to expand and on various limiting or promoting factors (protected territories, highways, water bodies, state borders etc.) Of course no exact and strict limits exist in such situations.

As it was mentioned earlier, city regions typically involve urbanized, semi-urbanized and rural areas. Semi-urbanised and urbanized areas present the most significant part, which could be named as urban region (or metropolitan area, as it is sometimes defined). This urban region typically consists of core city, or completely urbanized area, without any objective or subjective features of rural landscape (or an area, which would be called countryside by nobody). Middle part of such an urban region consists of semi urban landscape, where urban lifestyle, urban landscape and images dominate, but rural features are still clearly visible. Urban perceptions dominate here and people usually do not hesitate, when asked if they live in the city. Suburban settlements have pattern of extended zones or small towns. The peripheral part of an urban region could be described as a war zone (or a clash zone, zone of competition, depending on actual situation and authors preferences), where urban world starts its fight with rural one but it’s far from reaching the final victory. It’s predominantly rural space. Suburban settlements (or houses) are scattered, isolated and surrounded by vast agricultural
spaces. This is a part where urban lifestyle, landscape, and identity spirals down and reaches the lowest levels at the edges. Areas outside this urban region also have very strong mutual dependences with the city, so they apparently could be named as part of city functional region (e.g. hinterland of the city) but not the city itself. In the case of Vilnius, authors tend to call it Vilnius country region, though the term itself could be under discussion.

Such a simplified structure of urban region was hypothetically drawn partly by the deductive reasoning, partly by existing theoretical studies of urban sprawl and partly by impressions gained during observations of phenomena taking place in Lithuanian cities. There are no doubts that the scheme, like most simplifications of reality, is quite general and it easily could be modified (for example changing number of peripheral parts, which also could be named differently). Eventually no clear limits of social phenomena or different zones exist in time space continuum. All classifications and models are in some degree conceptual simplifications, but the main objective of the scheme is to serve as a framework for next task, which is related to the exploration of development of Vilnius urban region.

3. Revealing structure and scale of Vilnius urban region

One of the central questions of the research of development of a city is revelation of its actual size or establishment of its urban region. Where city begins and where it ends is a permanent question of urban studies, which probably will never be completely answered. Most studies analysing capital city (and other cities as well) deal with the territory which is legally ascribed as a city municipality; however, without any doubts, city as a social spatial system usually stretches far beyond its legal limits. Studies of municipalities may hide a lot of phenomena taking place in contemporary urban world. Also there are a lot of evidences, that in some cases rural areas penetrate city limits as well. Such a dual existence allows one to perceive a city and a country both as a separate “worlds” and as a one coherent system. The next task is revelation of structure of such a system – establishment of actual size and structure of Vilnius city region – functional spatial system with integrated social, economic and natural environment and its central part - Vilnius urban region - area, where city already exists.

Authors faced quite serious problems when trying to achieve this seemingly simple task – establishing area where city exists. One of the main problems was related to lack of
“objective” data. There is almost no ordinary or easily affordable statistical data concerning smaller areas than municipalities in Lithuania and no special studies, which could help establish spatial patterns of urban world, were carried out there (e.g. sociological pools, trying to establish urban-rural lifestyle areas in Vilnius city region). Authors had to elaborate methodology, which would be based on various available indirect and direct indicators, helping to identify actual processes of formation of urban space in this study area. The exact indicators were chosen because of their availability and suitability for purposes of the research, e.g. establishment of pattern of urban region of Vilnius city. Four main indicators, indirectly revealing actual distribution of Vilnius urban region were analysed. The results of these analyses allowed us to identify generalised limits of the city region and its’ structure.

There are no doubts, that intensity of traffic flows is directly related to commuting phenomenon, which is closely related to suburban developments (fig. 2). Intensity of traffic flows and its increase in the main and national roads is reliable indicator, which could be used to identify the scale and dispersion of commuting flows. According to these flows it is possible to evaluate relative limits of commuting zones. The widest limit of commuting zone, which corresponds to the noticeable increase of transportation, indicate approximate labor market region, which is one of the most important components of functional city region. Intense commuting zone which is closer to the city core identifies spatial expression of urban region (or suburbanized zone) and shows the directions where suburbanization processes are most intense.

![Fig. 2. Limits of Vilnius city functional region according to intensity of traffic flows (according to the data of Lithuanian Road Administration under the Ministry of Transport and Communications)](image_url)

Quite similarly, various zones of Vilnius city functional region could be revealed analyzing the flows of public transportation (fig. 3.). The analysis of destinations of suburban buses at city bus station obviously helps to reveal the range of Vilnius commuting zone, though one trying to establish exact zones of different intensity of commuters should go into deeper analysis of this phenomenon. In this case the location of final stops of suburban
bus lines and the number of buses per day were use as an indicator of Vilnius commuting flows (inter alia, railway passenger transportation gave similar results).

It should be noticed that in both cases the widest limits of commuting zones are similar by area and configuration. Obviously passenger flows to Vilnius stretches to much wider territories, but they are mostly related to other reasons than everyday commuting.

Land prices of various land use types is another indicator, which could help to establish limits of Vilnius urban region, because the city is the main origin of higher demand for a land in the area (fig. 4). Authors established areas, where prices of land of various destinations are noticeably higher than in surrounding region. In order to reveal the limits of impact of Vilnius city on land price (e.g. to establish limits of urban region), 9 different land use types were analyzed (e.g. commercial parcels, industry and logistics territories, agriculture parcels, administrative buildings and accommodations, etc.). The areas of increase of prices differs in different land destinations, so authors made a general integrated scheme of land prices, which show areas of some increase of prices at the edge of city region and big impact on all types of land in near city area. The great demand for land could be explain by the city sprawling processes. The evaluation was based on maps of land price of Lithuanian territory (http://www.registrucentras.lt/masvert/). The impact zone of Vilnius city is the biggest and most obvious one in Lithuania. As a consequence, presumption that Vilnius city and its’ economy does not end at the administrative boundary can be confirmed again. Vilnius affects quite remote areas with its economic, social and political gravity.

Previous analyses were based on more or less objective statistical data; however, as it was stated earlier, these data are not absolutely reliable or exact. The city is a mental construct of residents of the country and its definition as well as spatial pattern could vary among different individuals or groups. Using obtained results as a background, authors implemented series of field trips to Vilnius urban region trying to form own impressions about outspread of Vilnius city and trying to find out some perceptions of those living in

![Limits of commuting zone](image-url)
Authors identified and marked urban structures on the edge of urban region visually (e.g. intensity of suburbanization process, factories etc.). Interviews with employees...
of local administrations and other local residents revealed problems of development of the area and even their reasons, which are hardly noticed by other methods. Authors determined relative limits of an area where residents of Vilnius city live. Zones of intense suburbanization (it has extended character and appear in forms of vast settlements) and detached suburbanization are showed in the scheme. Infrastructure has decisive impact on configuration of these areas, though particular distribution of new dwellings is more related to the existing network of settlements and land supply. Beyond the zone of detached suburbanization Vilnius urban region vanishes. It is an area of Vilnius city (functional) region (or metropolitan region), where people, having close relation with the city (it is one of the main destinations of their jobs and retail services), live, but they do not perceive themselves as Vilnius residents. Moreover, it is an area, which is being used by Vilnius residents as a recreational location for summer houses, what once again confirms the statement, that this area is not perceived as Vilnius city.

The spatial pattern of the city region is quite generalized, thus unsurprisingly different indicators gave slightly different results. It is very difficult, if possible at all, to draw precise limits and structure of such a complex rapidly changing social system in situation where accurate data are not available and objective analysis based just on positivistic approaches is not suitable. Anyway, authors tried to draw at least relative, generalized limits of identified zones of Vilnius urban region (fig. 6). The use of several methods and different types of data guarantees certain degree of reliability of received results. Similar results obtained by the use of different methods, demonstrate that Vilnius city region is more vivid than expected or appreciated by local politicians.

Vilnius urban region reveal territory where Vilnius residents live and work permanently (or it’s a location of Vilnius residents and economy). Wider area – Vilnius city region identifies areas where local economy is deeply related with integral functions of Vilnius city. Most important of them is labour market region, identifying space mostly integrated with the city by the means of everyday commuting to it. The fact that the permanent flows of people already exists, makes sufficient premise to state, that this is an area of potential

Fig. 6. Integrated scheme of limits of structural parts of Vilnius city region

6 pav. Integruiota Vilniaus miesto funkcinio regiono struktūrinių dalii ribų schema
sprawl of the city, cause it’s a distance, at which permanent residents of the city could live at present economic and infrastructural conditions. Wider region has much weaker relations with the city. It is an area, which uses goods and services provided by city (majority of its residents visits city at least few times per year), area which provides resources for city and its residents (students, immigrants, places for recreation, agricultural products etc.). Economic, social and other relations consolidate this territory that can be seen as integral region. There are 550 thousands official inhabitants in Vilnius city (http://db1.stat.gov.lt/statbank/default.asp?w=1680). However, according to different calculations, there are some 700 – 800 thousand residents in Vilnius urban region. Even more residents live in a cities’ labour market region or whole metropolitan region.

Such a complicated situation permits to draw a simplified picture of a city region, which starts at a centre as a pure urban space and vanishes in rural one at the outskirts. Obviously such a structure does not have a clear limits or coherent entity, but one analysing it could approach such region as a circle of fading colours. Structure of this circle would depend on intensity of colour or, in other words, proportion of urban and rural space inside it. The intensity of colour would reveal proportion of urban and rural space inside the region. According to this concept structure of Vilnius city region is presented in fig. 7.

![Simplified structure of Vilnius city functional region](image)

Fig 7. Simplified structure of Vilnius city functional region

Vilnius city region is divided into two main parts. As it was mentioned earlier urban region is a territory where residents of Vilnius live and work permanently. The structural parts of it (core, middle part and peripheral part) are differentiated according to urbanization and suburbanization level. The second part of Vilnius functional region – Vilnius country region – involves wider territories which overlap urban region, with the exception of core part of the city. Vilnius serves as a labour market as well as market for services and goods. Such a wider spatial social system should be logical background (frame) of research of various social and even ecological phenomena.
Conclusions

The development of Vilnius city resulted in the fast sprawl of its territory. Such inevitable spread takes part in the culturally different environment and creates spaces of mixed societies, which inevitably coexist together.

Such urban and semi-urban area could be expressed and defined as an urban region, which origins as a completely urban core in the centre and ends up as an almost completely rural space, with sparks of urban perception at the peripheral edge.

Many methods based on inductive analysis of “reliable” data and positivistic approach could help establish tentative areas of such regions but reliable, though subjective results and understanding of the processes taking place there should be gained by researcher, who monitors them directly. Field trips are inevitable in this case.

The research of urban processes should concentrate on actual coherent spatial systems, which function as a city, but not on municipalities, which illustrate just legally established city areas. Studies of actual cities or city regions should provide answers to those organising administrative divisions of the country. The spatial planning should recognize and deal with such systems as unified whole, regarding its mixed nature, while present planning system in Lithuania, based mostly on municipal level, almost inevitably would create almost no premises for sustaining development of regions exceeding municipal boundaries.

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VILNIAUS MIESTO PLĖTRA – URBANISTINIO REGIONO NUSTATYMAS IR ĮVERTINIMAS

Santrauka
