

CENTER-PERIPHERY RELATIONS AND CONNECTIONS: REGIONAL DIMENSION

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Abstract. *Historical experience shows uneven socio-economic and territorial development of countries and regions at different scale, the objective existence of geographical contrasts "center – periphery". There is some universal cyclic recurrence of events influencing the emergence, strengthening or leveling-off of these contrasts. Stages and territorial center-periphery concept in contemporary geographical science is more developed at the global and macro-regional scale. However, the "center - periphery" relations is quite clearly evident at the national and regional level. The paper reflects the spatial features of "center-periphery" relations and connections at the regional scale. Ukrainian Black Sea Region (excluding Crimea) with high level of spatial connectivity is used as a key model. The peculiarities of the spatial differentiation of the territory be the "center-periphery" characteristics are revealed. A set of diagnostic indicators for space dividing into central, peripheral and transitional areas is offered.*

Пилипенко І.О. **Центро-периферійні відношення та зв'язки: регіональний вимір.** *Історичний досвід свідчить про нерівномірність соціально-економічного, територіального розвитку країн і регіонів різного масштабу, об'єктивне існування географічних контрастів типу «центр – периферія». Існує і певна цілком універсальна циклічність подій, що впливають на виникнення, посилення або нівелювання цих контрастів. У сучасній географічній науці більшою мірою розроблені стадіальні та територіальні центр-периферійні концепції розвитку для світу в цілому та окремих макрорегіонів. Разом з тим, відношення типу «центр – периферія» досить яскраво простежуються і на рівні окремої країни та її регіонів. У статті відображені просторові особливості «центр-периферійних» відношень і зв'язків на регіональному рівні. В якості моделі виступає Українське Причорномор'я (за виключенням Автономної Республіки Крим), яке відрізняється високим рівнем зв'язності території. Виявлено особливості просторової диференціації території за ознаками «центр-периферія». Запропоновано групу діагностичних показників для поділу простору на центральні, периферійні і перехідні території.*

The rearrangement of social and economic space requires rapid administrative solutions based on reliable scientific and practical approach. In the majority of modern programs of region and state development the control objects (of region, district, city) are generally considered as simple simplexes, inherently homogeneous objects. At the same time the spatial organization of administrative units belonging even to the lowest rank are notable for complexity, multifunctionality, essential internal differentiation. Modern general conception of state management must be oriented to solve objective issues of social and economic inequality both in public (social stratification) and space aspects.

Modern geographical science enlightens prevailingly phasic and territorial conceptions of central and peripheral development for separate macroregions and the world in general. Additionally, the “center – periphery” links can be easily observed on the state and regional levels. In Ukraine modern theories and conceptions of social geography are prevailingly addressed to the issues of regional development. During the analysis of geospace differentiation one always deals with fundamental study and assessment of internal natural, economic, scientific, labour potentials of each region. Such research shows the universal character of “center – periphery” type of models in order to describe the polarization of geographical space and its separate components.

Great scientific interest in studying the center-periphery relations and the relations presented in the theoretical scientific work (Friedmann (1979), Heidenreich (2003), Raagmaa (2003), Leyzerovich (2006), Kagansky (2004), Zubarevich (2008), Artobolevsky, Baklanov, Treyvish (2009), Nefedova (2009), Mezentseva (2001), Topchiev (1988, 2005), Pylypenko (2008-2009)) and studies that studying specific regions (Hukalova (2009), Malchikova, Pylypenko (2009), Mezentsev, Gladky (2009), Pylypenko (2006), Gritsai, Joffe, Treyvish (1991)).

The following provisions can be regarded as the starting point of conceptual perception of “center – periphery” type of systems:

1) “Center – Periphery” is a fundamental category which characterizes the set of hierarchical order of geographical objects and explains the heterogeneity of geospace. The internal (genetic) order of geospace triggers the hierarchy of geographical objects concerning their spatial organization. Thus the “center – periphery” category can be considered as an extent of geospace hierarchy.

2) The “Center – Periphery” category has topological character. The main topological character of geographical objects in geospace is a location. Geospace is a sum (integral) of locations. Location differentiation triggers its hierarchy which is reflected in central and peripheral organization of geospace. From genetic point of view the Center is an advantage in location system, and the Periphery is a disadvantage. Thus Center and Periphery are topologically based.

3) The development and interaction between Center and Periphery are accomplished according to the rules of self-organization and synergetics. The difference of locations of geographical objects triggers their interaction. According to the system conception it's the self-organization of set of geographical objects which is reflected in forming geosystems and geocomplexes. Thus central and peripheral organization of geospace is the result of self-organization and extent of its development.

4) From genetic point of view topological category “Center – Periphery” acquires metric characteristics during its development: original Centers and Peripheries fix the difference of locations, show the extent of order and self-organization of geospace; afterwards they are changed as a result of superposition of such metric characteristics as demographic, infrastructural, economic, social potentials etc.

5) One should differentiate Center and Periphery between basic (natural, geospatial) and derivative (artificial, administrative). The first one is a result of

topological and, consequently, metric heterogeneity and self-organization of geospace, while the second one is a result of socially conscience converting the locations with certain topological and metric characteristics into those having central or peripheral functions. It's noteworthy that in case of discrepancy of artificial and natural Centers and Peripheries the latter option often requires the intensification of administration and the use of specific social, economic, politic control levers.

6) Multifunctionality and hierarchy of geospace triggers the multifunctionality of "Center – Periphery" type of system. It also causes the issue of superposing functions in locations with certain topological, metrical and administrative characteristics. The prime cause of such a problem is the specific diversity of Centers and Peripheries, the specific intensity of geospace relatively its location. Such a superposition can be constructive and destructive, and in case of constructive superposition one can often observe synergetic effect in the system development.

Analysis of this material and fulfilled research of periphery concept allows the author to define a *social and economic periphery* as a part of geospace, within the limits of which the speed of social and economic processes is minimal or their vector doesn't coincide with the vector of development of social nuclei. In addition, such nuclei first of all include big and middle cities.

On the other hand social and economic center is thought to be a part of geospace, which has functional relations with its development base (first of all periphery), and in contrast to other parts it is notable for social attractiveness, high concentration of social processes and phenomena which constantly get more complex. Besides, the important property of the Center is correspondence of its features to the specific distinct features of geotaxons or geosystems of objective or subjective character.

To identify the spatial features and regularities of "Center – Periphery" systems on the region scale we chose Ukrainian Black Sea Region. The main method of spatial analysis was topological approach. The essence of such an analysis is based on the following provisions:

1. *Topological analysis provides the greatest result in social and economic research when applied to topological geospaces with high level of coherence.* The example of such a geospace is Ukrainian Black Sea Region and neighboring regions. The research covers such regions as Odessa, Mykolayiv, Kherson Regions and their neighbours Vinnytsia, Kirovograd, Dnipropetrovsk, Zaporizhya Regions. Despite the fact, that the Autonomic Republic of Crimea in the majority of Ukrainian regionalization schemes, together with Mykolayiv, Odessa and Kherson Regions, is generally included into the same taxon (Black Sea or Southern economical/social geographical area), in this paper we exclude it from the research area. Such approach is determined by the specificity of this Ukrainian administrative territorial unit, especially by its geographical peninsular location. The significant transport geographical isolation of the AR of Crimea develops the specific communication type with mainland Ukraine. Actually, we can observe the decrease of communicativeness between mainland Ukraine and the AR of Crimea. The uniqueness of natural conditions and resources, the original settlement history of these territories together with the specific character of geographic location permit us

to state the aimlessness of including the AR of Crimea in the research area, primarily due to the considerable differences in geospatial structures between the mentioned regions and the AR of Crimea.

2. *Selection of operational territorial units for research.* As operational territorial units (OTU) we selected administrative territorial units - districts of the regions and towns of regional subordination, totally 196 units.

3. *Selection of metric characteristics of analysis and their transformations.* In terms of assessing the complex of social and economical characteristics comprising different blocks of the "quality of population life" category (by I. V. Hukalova), we ranked the administrative territorial units. We selected the following main characteristics of social development: migration balance as the indicator of social economic attractiveness of operational units, population amount per 1 worker, rate of the average employees' salaries, investment to fixed assets (per 1 person), number of small enterprises (per 1000 people) and unemployment rate (%), retail turnover (per 1 person) and volume of services supplied to the population (UAH). The mentioned indices were further ranked, besides the highest rates corresponds to the 1st rate, the next one – to the 2nd, the lowest – the 196th. We took into consideration the equality principle of the selected social and economical indices, that's why on the basis of received ranks we deducted the integral social development rank formed by the influence of the above mentioned factors (the arithmetical mean of the rank coefficients of the operational units due to above mentioned indices). Thus, we got the nominal metric geospace at this research stage.

4. *Reasoning of the compound analysis methods of nominal geospatial properties and geospatial topological characteristics.* Taking into consideration the such topological geospatial property as coherence and results of the previous research stages while reasoning of such methods, we determine the following basic statements: a) topological distance (the neighborhood rank) appears as a space unit; b) the complex of OTU of the same topological distance forms topological "stripes": Center – prime stripe, the 1st rank neighbours – the 1st stripe and topological "stripes"; c) the topological stripe gets the value of integral social development rank as an arithmetical mean of OTU analogous comprising values. Thus, the offered approach allows to combine benefits of topological and metric geospatial measurement. The results of the topological analysis are presented in tables 1 and 2.

Table 1 – Social development rank indices of the administrative units at different topological distances from region centers

Region	Center Development rank	Generalized social development rank indices of the administrative units at different topological distances from region centers						
		Distance 1	Distance 2	Distance 3	Distance 4	Distance 5	Distance 6	Distance 7
Vinnytsia	5	38	104	111	102	92		
Dnipropetrovsk	10	11	69	95	67	134		
Zaporizhya	12	58	109	142	116	90		
Kirovograd	20	21	137	112	114	124		
Mykolayiv	3	65	122	112	104	188		
Odessa	1	14	66	101	152	158	82	158
Kherson	17	40	72	136	134			

Table 2 – Change of social development ranks through peripheral region stripes

Directions	Social development rank at the topological distance												
	Center	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Odessa-Vinnytsia	1	31	167	109	195	171	168	129	88	59	38	5	
Odessa-Mykolayiv	1	9	41	78	3								
Mykolayiv-Kherson	3	47	51	17									
Kherson-Zaporizhya (right bank)	17	51	70	118	65	149	50	12					
Zaporizhya-Dnipropetrovsk	12	50	95	11	10								
Dnipropetrovsk-Kirovograd	10	11	101	131	100	124	21	20					
Kirovograd-Vinnytsia	20	21	99	182	112	174	74	79	154	61	79	38	5
Kirovograd-Mykolayiv	20	21	136	93	186	71	47	3					
Kherson-Zaporizhya (left bank)	17	29	104	135	113	156	132	73	50	12			

5. *Topological analysis of “Center – Periphery” systems.* According to the results of the previous research stages, a topological geospace transforms itself morphologically from the net structure into linear one, where the topological distance is a unit of distance. The further research of “Center – Periphery” multilevel geosystems is possible in directions of the analysis of the following parameters of periphery changes (as transition parameters from Center to Periphery), among which we should emphasize: a) the description of the morphology of social economical indices *outline* in administrative territorial units, implemented in “Center 1 – Center 2” directions through the peripheral area; b) *capacity* – the number of "spheres", "stripes" of administrative territorial units comprising Periphery; c) *gradient* (changes of a peripheral index per distance unit).

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