THE ANALYSIS OF STRUCTURE AND DYNAMICS OF THE TERRITORIAL SYSTEM. CASE STUDY: CHIOAR – LĂPUŞ REGION

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Abstract: The notion of territorial system is often met in the Romanian and universal geographical literature, proving to be the most complex denomination of a spatial reality, within which certain processes and phenomena take place relating, as well as certain agents which act upon its components. Chioar - Lăpuş Region represents a spatial entity that, being considered territorial system, offers the possibility of organization and most favourable development of the territory, making it functional. Taking into consideration the methodology and principles which the traditional territorial systems are based upon, we will transform the two ethnographic regions, Chioar and Lăpuş, into a complex region, meant to flourish and that is to constitute a pattern of territorial system also applicable for other cases. The systemic analysis of the territorial unit includes the study of relief, of the hydric and climatic component, but also of the human component and of the implications which they have within the territorial system and the exchanges of matter, energy and information which they show with a view to working and dynamics, highlighting the quality of open system.

Key words: region, Chioar, Lăpuş, macrosystem, dynamics of territory

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INTRODUCTION

The region proposed for study represents an important part of the space located in the south of Gutăi and Tibleş volcanic mountains, within the territory of Maramureş County (figure 1). The delimitation of areal is not the simplest thing to do, considering the region as a superposition on two of the mental areas (Cocean, 1997; Ilieş, 1999), ethnographical of Romania, Chioarului Land and Lăpuşului Land, neighbouring, but from this point of view distinct and at the same time with numerous common elements between them, and with the surrounding regions. As natural limits of this areal we will consider Someş Valley in the west, Gutăi Mountains, Lăpuş and Ţibleş in the north, in the south Dealul Mare, Prisnel, Boiului Plateau and Breaza Peak, and the administrative limit with Sălaj, Cluj and Bistriţa Năsăud counties (Ilieş, 1998). As surface, we considered the administrative units located within the perimeter of the limits exposed above, totalizing 19 communes and 3 cities.

Why territorial system? The new approach of regional geography is precisely the systemic one. In a geographical area, there take place many processes, phenomena and activities, of any nature, unequally distributed within the territory, and that is why it is necessary to carry out a

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http://istgeorel.int.umarde.ro/Reviste/Anale/anale.htm
continuous systematization and organization in order to maintain the territorial balance and to prevent its transformation into a chaos. Thus, all these elements are connected, have relations with each other, like a system. Basing on a methodology applied in the case of other systems, at different scales, (Coffey, 1981; Prélaz-Droux 1995; Ianoş, 2000, Skyttner, 2005; Cocean and Filip, 2008, Ilieş and all, 2010), but also of the two systems taken separately, we will try to demonstrate that Chioar-Lăpuş region, is a system whose components function extremely well together, which will result from its analysis, depending on its two main components: natural and anthropogenic.

Figure 1. Chioar-Lăpuş territorial system in Romania

METHODS AND METHODOLOGY

This study is proved scientifically by information obtained from various sources, bibliographical, official statistics and capitalized in order to obtain most favourable results. Also, we used patterns also applied in the case of other regions, identifying the main elements, specific to this type of approach (Ilieş & Grama, 2010). The starting point in this analysis was represented by the usage of the principles and working methods specific to geography, as a science, as well as those of territorial systems.

The first stage, that of collecting data was carried out by bibliographic method. Also, this method gives the researcher the occasion to obtain information useful to highlight the evolution of the events occurred before starting to perform the study proposed (Cocean, 2005). The bibliographic resources capitalized, both regarding the territory analysed (Posea, 1962; Dezsi, 2006; Puşcaş, 2007) and the methodological part (Ianoş, 2000; Spănu, 2000; Cocean, 2005; Marston et al., 2005; Strahler, 2010; Christopherson, 2011; Getis et al., 2011;) were identified in the Library of the University of Oradea, as well other publications relating to the territory proposed in the study within „Petre Dulfu” County Library from Baia Mare.

The analysis, as method, in this case refers to the form, composition and dynamics of the territorial system, taking into consideration its structure beginning with localization and limits,
pursuing the influence of geological conditions, relief, climate, waters, vegetation, fauna and soils, on phenomena occurred, as well as the possibilities it offers, reaching the relation of the human being - environment binomial, as well as some aspects representative for human settlements and appertaining to the community (Petrea, 2005; Armaș, 2006).

The last stage during scientific approach is that of synthesis, meant to remake the unity of the system, both as spatial structure and as theory, bringing complete value to the study.

This moment marks the interpretation of the results of analysis and their presentation, highlighting the system oneness.

CHIOAR-LĂPUȘ REGION: TERRITORIAL SYSTEM. CONCEPT

By definition, territorial systems are "constituted of elements and relations which aim at attaining some common purposes" (Ianoș, 2000, p. 21). So much the more, the territorial system represents the hospitable macrosystem necessary for the existence of the human being as well as the environment to develop activities specific to human beings. We can distinguish within the territorial system two component parts which define it, namely, natural macrosystem, represented by relief, soil, waters, climate, vegetation and fauna, and the anthropogenic macrosystem, built, representing the social - economic and cultural aspect. These two main components, materialized in macro-systems, relate, being indispensable one without the other, and if one operates defectively, it has impact upon the whole territorial system (Ianos, 2000, figure 2).

Ioan Mac considers the territorial system as an „integrative geographic entity, spatially materialized in ground, that functions by exchange of mass, energy and information between its
parts and between it as a whole and the environment” (Mac, 2000, p. 495). The territorial system functions on the basis of some principles as they were defined by I. Ianoș, representing the essential element on which a scientific theory rests (the principle of integrality, integration supposing „the ordered union of various components forming an ensemble” (Pop, 2006, p. 88), fulfilling the condition necessary for the working of the system, the principle of oneness, that shows that there are similar systems, but not identical, functionality, self-adjustment and self-control, dynamic balance, causality, coherence, that reveals the homogeneousness of the territorial system and synergy, that coordinates the component elements for the fulfillment of the same function). In the organization and working of the territorial systems a direct or indirect impact is held by laws, more precisely the laws of geography, among which the law of zonality and azonality distinguishes, that explains the dynamics and aspect of the territorial systems, of rhythmicity, of self-organisation, of compensatory exchange of mass, energy and information, the law of geographical diffusion and other general or special laws which substantiate the complex processes which identify within systems.

The territorial systems vary depending on the scale on which they are approached, having specific space and time characteristics and suppose the discussion of the same problems: structure, dynamics, organization and their development. These territorial systems seen hierarchically present themselves at macro level and include the area, domain and natural region which are associated with the great spatio-temporal units of the Earth and are characterized by stability and hardly modifiable. Micro level is represented by geosystem, geofacies and geotop, and allows for the analysis and organization of a system within a malleable macrosystem, aiming at an area where actions of territorial planning and arrangement can be applied (Ianoș, 2000).

„The territorial system is homogenous and complex, characteristics which are given by the relations established – in a certain area – between all components of the geosystem, natural and artificial (induced by human being)” (Josan, 2002, p. 169). Considered parts of the geosystem, territorial systems function on the basis of the same laws from which they were created. As regards the region proposed for study, the approach as territorial system represents a challenge, taking into account carrying out of the study in regional context, having its components integrated in a well-structured ensemble, that assign to it the unique character comparative to the territorial systems found in the neighbourhood. Moreover, in 2005, P. Cocean approaches the region as an open system, having feed-back type relations with the environment and all factors which have a certain influence on it. This bimodular, natural and anthropogenic system demonstrates a strong connection, that can exist between its component parts, activating on the basis of the transfer of matter and energy, its functionality and dynamics being determined precisely by these relations existing within it (Sinha, 1992; Spânu, 2000; Petrea, 2005; Christopherson, 2011).

THE ANALYSIS OF STRUCTURE OF CHIOAR-LĂPUȘ TERRITORIAL SYSTEM

A territorial system, by the totality of activities carried out within it, is organised in a certain way, irrespective of the relation between its component parts. The aim of the territorial systems is to establish some common finalities from economic, social and cultural point of view (Ianoș, 2000), also considering the relation with the environment, pursuing at the same time the consequences which the impact of human activity has upon the environment.

„In the structure of a territorial system, landscape and anthropogenic environment interpenetrate, overlap and interact in defining the relations which lie at the bottom of its operation” (Ilieș & Grama, 2010 p.142). The analysis of these concepts supposes the knowledge of the way in which the system organizes itself and is functional, involving „the study of the components and depending on the role and importance held in the system” (Petrea, 2005, p. 194). As a matter of fact, the first stage in the approach of analysis „is precisely represented by the identification, study and quantification of the system components, made simultaneously with the analysis of the inter-relations established between subsystems, between subsystems and the whole,
between the functional ensemble resulted and the surrounding systems, of the role of this ensemble in the structure and dynamics of the hierarchically superior system” (Spânu, 2000).

As regards the territorial system proposed, Chioar-Lăpuș, we can notice the interaction between its component parts, also having relations with surrounding territorial systems, of the same order, (Maramureșului Land; Năsăudului Land, Oașului Land, Codrului Land, Silvaniei Land), but also with the big system to which the system of superior order belongs (Maramureș County).

Thus, this territorial system is considered, at meso-scale, as a regional system located south of Maramureș County. This represents, at the same time, a subsystem within Maramureș County, as well as within the North-Western Development Region (figure 3).

The components of the natural macrosystem, as it is provided in figure 2, show reciprocal relations, exchanges of matter and energy between them and represent the basis of the anthropogenic macrosystem (Petrea, 2005).

From the point of view of relief, Chioar-Lăpuș territorial system enjoys the presence of a variety of heights and ages, from the confluence of Someș with Lăpuș, as far as Țîbleș Moutains, alternating depression steps with hilly and mountain stages (figure 4). In the North – East part Gutăi, Lăpuș, Țîbleș volcanic mountains, with average altitudes of over 800 m, impose passing through the hilly regions to depression areas Lăpuș and Copalnic, between which crystalline massifs Șatra and Preluca and Pietriș Hill stately rise.

These depressions are closed to the south by high hilly units, Mare-Prisaca Hill, Boiului Plateau and Breaza Peak, with altitudes as far as 600 m. Baia Mare Depression widely opens the territory to the west and north - west, the altitudes decreasing from the south to the north – west, constituting the lowest step of the territory studied (Dezsi, 2006; Pușcaș, 2007).

Figure 3. Chioar - Lăpuș subsystem of Maramures and North-West Region
Chioar-Lăpuș territorial system is drained by „the longest river of Maramureș county, collecting the waters of Ighiș and Țiblăș Mountains, from Breaza Peak and from Preluca” (Șainelic, 1986). Lăpușul forms its hydrographical basin (figure 4) by collecting the waters from the whole region, excepting the south-western part that is directly assigned to Someș, characterized „by a hydrographic network well specified in the high regions and by an uncertain, wandering, diffluent network, in depression area” (Posea, 1962, p. 181).

The hydrographic network of Lăpuș river, the most striking dynamic component of the natural macrosystem can be included at the level of holarhic analysis, in the hydrographic system of Someș river, the national hydrographic system, etc.; this fact supposes the exit from the system. As a matter of fact, Lăpuș river constitutes as an axis of development, that ensures the transfer of matter and energy, from the system, as well as with the surrounding systems.

![Legend](image)

**Figure 4.** Chioar - Lăpuș territorial system. Relief units and hydrography (Ethnographical Area Limit after Posea, 1962, Dezsi, 2006, Pușcaș, 2007 with the modification of the author)

The climate of this region is, on the whole, moderate temperate continental (Dezsi, 2006), allowing the installation of topo-climates. „It relates with relief and waters and leaves its mark on the spreading of plants, forest vegetation and grasslands, and of the animals within the territory, thus controlling the whole system of natural components directing at the same time the sense and dynamics of inter-relational fluxes” (Pușcaș, 2007, p. 199).

In order to systemize and organize the territorial system, we analyse, besides the natural component, the anthropogenic component too, that appears on this support. Thus, the anthropogenic macrosystem is composed of the human factor, its specific activities, system of dwellings, as well as the mentality or behavior which the community shows. Also, at the level of
the anthropogenic macro-system it can be highlighted the dynamics of the system, the flux of energy and matter and, of course, its functionality. It is population that influences for the most part the system, being conditioned by the entries and exits from the system, expressed through the indicators of natural movement of population. Chioar - Lăpuș territorial system is superposed upon a territory with a population belonging to the rural environment concentrated for the most part in 21 communes, and urban population in 3 cities, at the level of the year 2011 (figure 6).

It can be noticed the influence exerted by natural factor that favoured the birth of localities within the territory; thus, most of them are located in the north-western part of the region, which coincides, from the point of view of relief, with Baia Mare Depression, and their reduced concentration is visible in the North-East and East, located in the mountain area, but also in the south, in Boiului Plateau.

The dynamism and organizational capacity of human factor impose and are proven by the laws and decrees on setting up new communes. If, at the level of the year 2002 (figure 5) there were in this territory 21 administrative units, 2 urban and 19 rural, at present, their number amounts to 24, as the same time as publishing in the Official Gazette 310 from April 7, 2004, of Law 83/2004, declaring as town the locality Șomcuta Mare, preserving the structure of the former commune, and of Law 84/2004 by which Coaș and Coltău communes were established, separated from Șăcăleni commune. Also, a year before, in the Official Gazette 523 from July 21, 2003, by Law no. 334/2003 according to art 1., paragraph (1) „Groșii Țibleșului commune, Maramures county is established, being composed of Groșii Țibleșului village, by reorganization of Suciu de Sus commune of the same county”.

![Figure 5. Administrative component and population number - 2002](http://www.lege-online.ro)
Thus, we can notice the dynamics and functionality of the system, by the network of human settlements, which present the composition with the strongest degree of anthropization, being influenced by population and economic activities, constituting inputs and outputs fluxes from the system, through reorganization.

The population of the region, that is the dynamic factor, by the activities carried out within this territory, has an important role in the organization and development of the territorial system. This "creates a typical social environment, influences on the economic activities through the quantity and quality of labour power, human settlements by numerical growth" (Ianoş, 2000, p. 23). Chioar - Lăpuş Areal totalizes a population of approximately 97,000 inhabitants, at the level of the year 2002, recording a regress at the level of the year 2011, when from the provisional data the number of inhabitants decreases to approximately 92,000. (table 1, 2).

Table 1. Number of population per rural administrative units in the territorial system, year: 2002
(Data source: DJS, Maramureş - 2011, www.maramures.insse.ro/phpfiles/ComunicatRPL%202011MM.pdf)

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Copalnic-Mănăștur</td>
<td>5838</td>
<td>5569</td>
</tr>
<tr>
<td>Coaș</td>
<td>-</td>
<td>1378</td>
</tr>
<tr>
<td>Coltău</td>
<td>-</td>
<td>2496</td>
</tr>
<tr>
<td>Coroieni</td>
<td>2327</td>
<td>2173</td>
</tr>
<tr>
<td>Boiu Mare</td>
<td>1276</td>
<td>1116</td>
</tr>
<tr>
<td>Cernești</td>
<td>3814</td>
<td>3686</td>
</tr>
<tr>
<td>Băiuț</td>
<td>2699</td>
<td>2278</td>
</tr>
</tbody>
</table>
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Table 2. Number of population per urban administrative units, in the territorial system, year: 2002
(Data Source: DJS, Maramureș – 2011, www.maramures.insse.ro/phpfiles/ComunicatRPL%202011MM.pdf)

<table>
<thead>
<tr>
<th>Town</th>
<th>Population 2002</th>
<th>Population 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Târgu Lăpuș</td>
<td>13355</td>
<td>11324</td>
</tr>
<tr>
<td>Șomcuta Mare</td>
<td>-</td>
<td>7455</td>
</tr>
<tr>
<td>Cavnic</td>
<td>5205</td>
<td>4862</td>
</tr>
<tr>
<td>TOTAL</td>
<td>18560</td>
<td>26641</td>
</tr>
</tbody>
</table>

Figures 5 and 6 present also, the number of population, at the level of the administrative units (communes and cities), highlighting the dynamics which it has within the territorial system. Following two cartographic representations, we can notice that in most localities population decreases from one census to another one, but what is important to be underlined represents the increase in the number of inhabitants in the two localities, Satulung and Recea. This increase is due to both creating new jobs in the region, and to population migration from town (Baia Mare), to rural localities nearby. The natural environment is favourable for population, having a reciprocal relation, by its number it indicates the degree of anthropization; thus it can be noticed an unequal distribution in the territory, more underlined in the North - West and West.

About demographic dynamics we can say that is negative on the entire surface area, less the territory of north-west, where the population increased from census to another. Very low negative values is due to establishment of new commons in 2003 - 2004, population wich in 2002, was part of the big common, now is independent.

Analysing the evolution of population in the two environments, rural and urban, (table 1, 2) we can notice that at both censuses rural population dominates, but there are small modifications at the level of the year 2011, when population in urban environment increases, precisely due to the fact that one of the rural localities became meanwhile town, but maintained the same organizational structure in the administrative unit. Urban environment remains a polarizing factor for the region and allows for the development of the most important activities abreast of population.

In the case of the territorial system Chioar - Lăpuș, economic activities are represented by agriculture, considering the rural character of the region, but also the physiognomy of the favourable natural environment. Mainly, this is realized on individual properties, being of subsistence, and more recently, it produces consumer goods, especially for urban environment. Both growing plants and growing animals, traditional branch at the level of the region, maintain agriculture as basic economic branch. Industrial activity is not representative for this region but
there are some branches, which individualize, such as wood processing, extraction industry (mainly building material), but also processing of agricultural products. At the same time, due to the location close to the polarizing centre, the most important at the level of Maramureș county, Baia Mare town, the most part of labour force in the region migrate. With a transportation structure predominantly road transportation (figure 6), the connection between the localities of the region is ensured, as well as the connection with neighbouring localities and with outside territorial systems. Railway transportation is present in Baia Mare Depression, following Someș flow and is absent in the rest of the region due to the natural environment. As far as the behaviour of human community is concerned, we can state that it is influenced by population, within localities or human settlements „creating attitudes, customs of dwelling” (Ianoș, 2000, p. 24) or specific customs. Considering that the region proposed to be territorial system superposes upon two regions which are „country” type, it is known the importance of traditions and customs which each of them undertakes and keeps throughout the years.

Taking into consideration the two component parts of this system but also of a certain system, the natural component and anthropogenic component, it can be noticed that the links and relations which establish between them are responsible for the organization and functioning of the system.

**CONCLUSIONS**

As a conclusion, we can state that in order to function a territorial system needs the systematization of information, which is unequally distributed in space, and its rational organisation, regardless of its nature. The two component parts of the territorial system, relate with each other, one of them being development macrosystem and resource for the other one (natural and anthropogenic environment), as well as reciprocally, the anthropic influences upon the evolution of the natural environment, like the analysis presented in this study.

Chioar - Lăpuș Region is located in a diverse geographical area, noticed by its complex natural environment and the interaction between climatic potential and hydric resources, landscape component, but in close connection with the anthropogenic activity, which implies the preservation and maintenance of the relations with the environment, with all of the spatial and functional factors, which act on it. By presenting Chioar - Lăpuș Region as a territorial system, we try to organise it with a view to a sustainable functioning, by maintaining the status of mental space within the system and finding a strategy for development, just taking into consideration the areas of positivism, of attractiveness, and the areas of negativism, establishing a balance between them.

Chioar - Lăpuș territorial system is an anthropogenic system, dominated by a rural population, that carries out typical, traditional activities, on a natural support, this thing proving the links within it, and urban environment polarizes the region. This type of approach needs interdisciplinary implications because the system is in its turn composed of subsystems at the level of which certain processes and phenomena take place which lead and maintain its functionality. The systemic analysis of Chioar - Lăpuș territorial unit supposes awareness of the situation existing at the level of natural and anthropogenic elements, at the exchanges of matter and energy, which define its dynamics.

This region full of tradition, considered as territorial system, can play a prominent part as to the economic development through different activities, as well as to social development, going beyond any barrier and accepting the identity of the other, because there is potential, the only thing needed being to achieve a common strategy for its capitalization, for the South of Maramureș county located between Someș and mountain area.

**REFERENCES**

