

THE TYPOLOGY AND THE PARTICULARITIES OF THE ROMANIAN BORDER STATE WITH HYDROGRAPHICAL SUPPORT

Alexandru ILIEȘ

University of Oradea, Department of Geography, Tourism and Territorial Planning,
1 University str., 410087 Oradea / University of Gdansk, Institute of Geography,
4 Bażyńskiego st., 80-952 Gdańsk, e-mail: ilies@uoradea.ro

Vasile GRAMA

University of Oradea, Department of Geography, Tourism and Territorial Planning,
1 University st., 410087 Oradea, Romania, e-mail: vasigram@yahoo.com

Abstract: The division of a natural territorial system generates new frontiers or limits which demarcate the obtained subsystems. According to the political, economical, military relationships, to the particularity of the physical-geographical background of the determined contiguous border sectors, to the character of the support of the state border line, the outlining of some functional cross-border systems may have many dimensions. The content of this paper refers to elements of hydrographical, infrastructural and political characters and which, combined all together, generate a various typology of the cross-border systems regarding their functionality. The Romanian political area, placed at the EU periphery, the length of the Romanian sector as a component of the Eastern external frontier of the EU (2,172.9 km), offers the best examples of opportunities/barriers on the cross-border inter-connection way, and whose particularities differs from one inter-state sector to the other. Depending on the morphological and morphometrical particularities of the hydrographical support of the frontier's trajectory, and using methods and instruments attested by the geopolitical literature, it had been realized a typology, applied then to the Romania's level and through reference to the Romanian sector of the EU Eastern external border.

Key words: borders, Romania, hydrographical support, EU eastern external border,

* * * * *

INTRODUCTION

The demarcation of the political area by acknowledged frontiers and legislated at the international level represents an essential condition in defining a state, regardless the government type. Within the geopolitical literature it can be identified numerous criteria of classifying the frontiers (Hartshorne, 1950; Jones, 1959; Prescott, 1987; Foucher, 1991; Kleinschmager, 1993; Bodocan, 1997;

Timothy, 2001), but in most of the cases, it's hard to achieve their generalized application, starting from the idea that, in general, each frontier represents the result of a complex process which includes a great and various number of elements for each border sector separately. Moreover, if the physical-geographical component is characterized by steadiness, one cannot affirm the same thing about the role and the functions of its political and juridical frontier, which are characterized by a very pronounced evolution during the last years. The political and juridical factors can simplify or complicate the systems of old or initial relationships between two contiguous border systems. Regarding this approach we will focus our attention on the Romanian border state typology with hydrographical support, and especially on those sectors integrated within the EU Eastern external border. Within this context it is analyzed the hydrographical component which is decisive for the setting up of a cross-border territorial system, its typology in proportion to the state border line, so that in the end we shall apply the obtained results on the Romanian state border and especially on the Romanian sector of EU external frontier. Reaching such an objective considerably contributes to the identification of the main channels of energy and substance transfer in the cross-border regime, to the identification of the volume and the dominant senses, to the hierarchy of the constituent elements and in the end of the decisive territorial system, from the relational and functional point of view.

ANALYSIS FRAMEWORK

From the structural, juridical and genetic point of view, the most complex border sectors of Romania are those of relict type with Ukraine, Moldavia Republic and Serbia, all together totalizing 1,877.4 km and which represent together with the maritime sector 2,172.9 km and 5 segments of the Balkan and Eastern external frontier of the EU (figure 1). It is added to these 1,076 km of EU and NATO internal frontier through the sectors close to Hungary and Bulgaria, but even here being differentiate, the Romanian-Hungarian sector representing the Schengen frontier along the length of 444.7 km. From the point of view of the area's largeness, this study is based on a cross-border area determined by a various physical-geographical background generated by the alternation of the mountainous units (the Oriental Carpathians, the Banat Mountains), of the hills (Sucevei Plateau, Bârladului Plateau) and of the low plains (Western Plain, Romanian Plain, Moldavia's Plain, South Dobrudja, the water meadow and the Danube Delta), all these crossed by hydrographical cross-border arteries on sectors of different lengths (as for example the Danube, the Prut river, the Tisa river, the Suceava river and so on). Each hydrographical artery representing the support of the state border's trajectory belongs to a natural hydrographical system determined by the extension of the hydrographical basins of cross-border character and which involves an integrated management. We can mention here as examples the Danube, the Prut river, the Siret river, the Tisa river, the Someș river, the Criș river, the Mureș river, the Timiș river, the Bega river and so on (figure 1).

METHODOLOGY

Regarding the methodology, the proposed approach bases on a structure which, using instruments and methods attested by the geopolitical literature and a field activity information, can make out the internal structure of the determined cross-border systems, reorganize the constituent elements and to redirect the senses and the flows of substance and energy from a border system

of an inferior rank towards a cross-border system of superior rank. There are used statistical data basis and of those gathered from the field, and also graphical rendering of the main phenomena and specific processes. By methods of making out the role, the structure and the functionality of a territorial system (Ianoş, 2000), of regionalizing the area (Cocean, 2005; Cocean and Filip, 2008), of defining the area's structure of a political system (Bufon, 2004) and of a large typology of relationships and cross-border systems (Martinez, 1994; Timothy, 2001), among which those based on the hydrographical support of the border state's trajectory (Prescot, 1987; Foucher, 1991; Bodocan, 1997; Ilieş, 2003; Costachie, 2004; Ilieş, Grama, 2006; Ilieş and al., 2007; Ilieş and al., 2009), there are outlined logical and conclusive answers to the triple question: Where? Why? How? concerning the place, the causality and the integration of a functional territorial system within cross-border regime. The analysis of the state border typology according to the hydrographical character of its trajectory's support and related to the EU external border also plays an important role in defining the functionality of the determined cross-border areas.

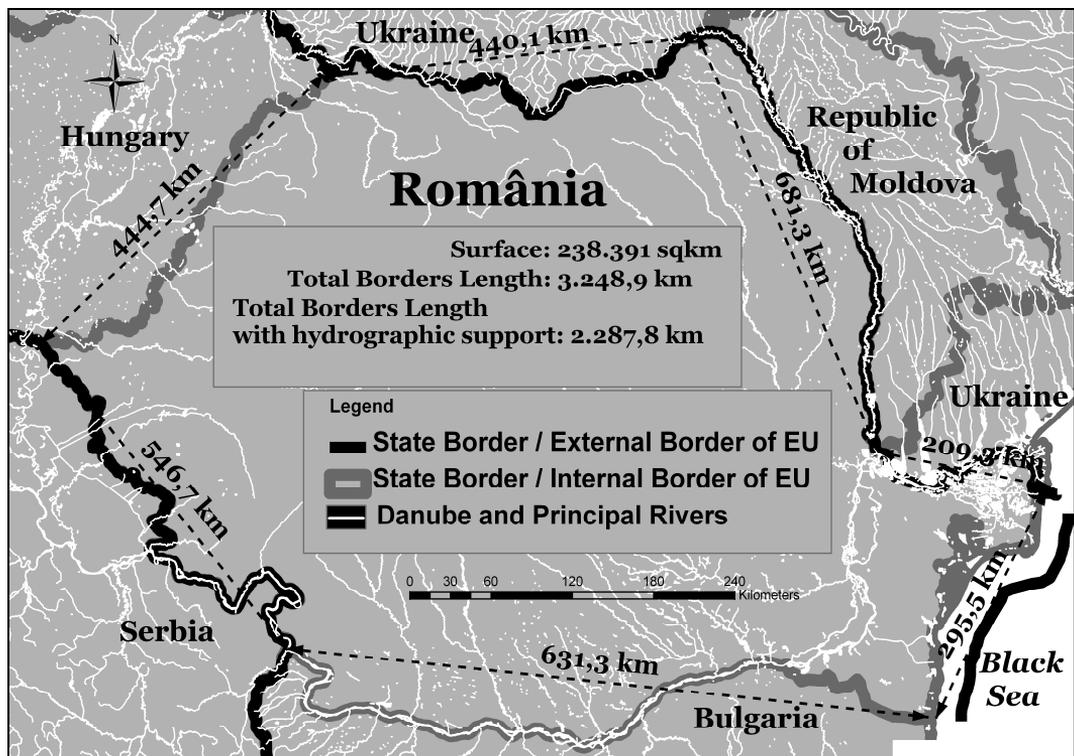


Figure 1. Romanian's borders and its hidrographical support line

THE DIAGNOSTIC ANALYSIS

After almost a half century of contiguity with the Soviet Union, in the present, on the same sector, Romania borders Ukraine and Moldavia Republic, being considered as the most complex border segments from the view of cross-border cooperation. The steadiness is a characteristic of the border sectors with Hungary, Bulgaria and the Black Sea, this last sector receiving this attribute after solving the disagreement between Romania and Ukraine regarding the continental sector within

the area of the Snakes Isle (Neguț, 2008). The role and the functions of the frontier, their importance in defining them, had been completely changed after the socialist system decay, emphasizing the influence of the political background as support for developing a regional order (Forster, 2000, 11). These continuous changes have as a result the amplification of the differentiation/shading off process of the development discrepancies, therefore the border areas are looking for applicable models and strategies capable of transforming them into cross-border territorial systems of a higher functionality rank (Ilieș, 2003, 2004; Boar, 2005; Ilieș and Grama, 2010) and generating development.

If in the case of a territorial system “its internal, structural and functional organization determines the maintenance of the same order, in terms of different types of external aggression” showing a very strong resistance to the changing (Ianoș, 2000, 25), the appearance of a barrier of state border type or other type of conspicuous administrative limit may introduce significant perturbations within its functioning mechanism, especially within some homogenous natural units. The complexity of the interaction between two contiguous border systems and the determination of the systemic functionality level results also from the relief’s morphology, from the morphological characters of the river beds of the lakeside surfaces, of the rivers and streams, from the particularities of their transversal and longitudinal profiles, from the variety of landscapes, demographical and economical aspects and so on.

In the present, Romania owns a frontier which has a length of 3,248,9 km with 7 sectors (the chart), each of them having different characters under the morphological, morphometric and morpho-functional aspect. Regarding the genetic aspect (Hartshorne, 1950; Bodocan, 1997) there is dominant one of subsequent type, regarding the structural aspect (Kleinschmager, 1993) they render profitable geographical attributes such as: ridges lines, rivers and streams, landscape limits, all these assuring them visibility within territory; while concerning the morphological aspect (Jones, 1959) it identifies with that of physical-geographical, antropogeographical and complex type. From all the four categories of support trajectories for the state border of Romania (Foucher, 1991) one can approximate that about 60% has support of hydrographical nature (streams: the Danube; rivers: the Prut, the Tisa, the Suceava, the Mureș and so on; lakes: Iron Gates I and II, Stâncă-Costești), followed by those that rely on mountainous elements with 20% (Oașului Mountains, Maramureșului Mountains, Bucovinei Long Mountain Crests) and which follows disparities of human geography (partially the border with Hungary, Serbia, Bulgaria and Ukraine).

THE TYPOLOGY AND THE PARTICULARITIES OF THE BORDER STATE WITH HYDROGRAPHICAL SUPPORT

There are enough arguments in history which are able to attest the fact that the hydrographical arteries had attracted and had determined on their river banks areas of a great demographical concentration and implicitly of economical development. But we can appreciate that, on a higher level, their morphometrical and morphological particularities correlated to the level of the economical development and of the international opening of the political territorial system which includes them, had determined extremely different and diverse levels of cross-border integration. Practically these reflect themselves in the landscape through the built infrastructure elements and which links the two river banks.

Depending on the density of the infrastructural elements which links two river banks belonging to two contiguous territorial-political systems, the cross-border cooperation can be directed towards three directions:

1) of modernizing a pre-existent structure, considered to be sufficient for the possible flows of energy and substance and for the human resource as the main owner.

2) of projecting, building and developing some new infrastructural elements, insufficient under the quantitative aspect and inefficient under the qualitative aspect, within the prospect of accenting the process of cross-border integration and implicitly of the development of some polarizing centres of economical development and human concentration well-balanced and straight placed (characteristic determined by the geography of the hydrographical artery).

3) of “closing” all the possible ways of cooperation or strictly control of a low number, situation generated by the conflict positions between two contiguous territorial-political systems.

An important characteristic decisive for the cross-border cooperation, especially from the technical point of view, results from *the position of the hydrographical artery related to the border line* (Ilieş, 2003) that can be:

a) *Transversal* – in this situation the border line divides transversally the entire hydrographical artery, this implying the division of the entire hydrographical basin on the same direction, with important implications within its management (Ilieş & all., 2009). In this case, it is created a relationship of “relay subordination” between the territorial-political systems as the state and by extension on the level of the constituent subsystems and which include within the administrative territory a part of the hydrographical artery or basin (figure 2). The relationship of subordination follows a direction from downstream to upstream, representing at the same time an important factor for the cross-border cooperation’s development, especially within the management of using and preserving the quality of water resources. Concerning Romania’s position, the hydrographical arteries that are divided transversally by the state border line have the spring entirely on Romania’s territory (on the border with Hungary and Serbia - figure 2) or on the Ukraine territory (on the Northern sector of the border). A very significant aspect in this case results also from the dimension of the divided territorial-political system, because colligated to the river’s length or to the basin’s largeness in this domino system can be involved more than two states or territorial-political systems of inferior rank. According to the information from the chart 1, in this category the most important hydrographical arteries and the correspondent basins are: the Someş, the Barcău, the Crişul Repede and so on. In this case, the position of the hydrographical artery doesn’t induce majors malfunctioning within the creation of the connections between two contiguous border systems, but this problem, depending on the morphometric and morphological particularities of the valley, is rather transmitted inside the border systems by dividing them transversally and creating some connection malfunctioning between their components.

b) *Longitudinal* – case in which the support of the state border coincides with the line determined by the longitudinal profile of the hydrographical artery according to the adopted principle by the contiguous states (thalweg’s line; the median line and so on). At the Romanian border level there are 46 segments of this type (chart no.1 and 2) formed of 34 permanent hydrographical arteries and 12 channels disposed on 2.287,8 km (Stamate, 1997; www.politiadefrontiera.ro, 2010), representing 59.18% from its total trajectory.

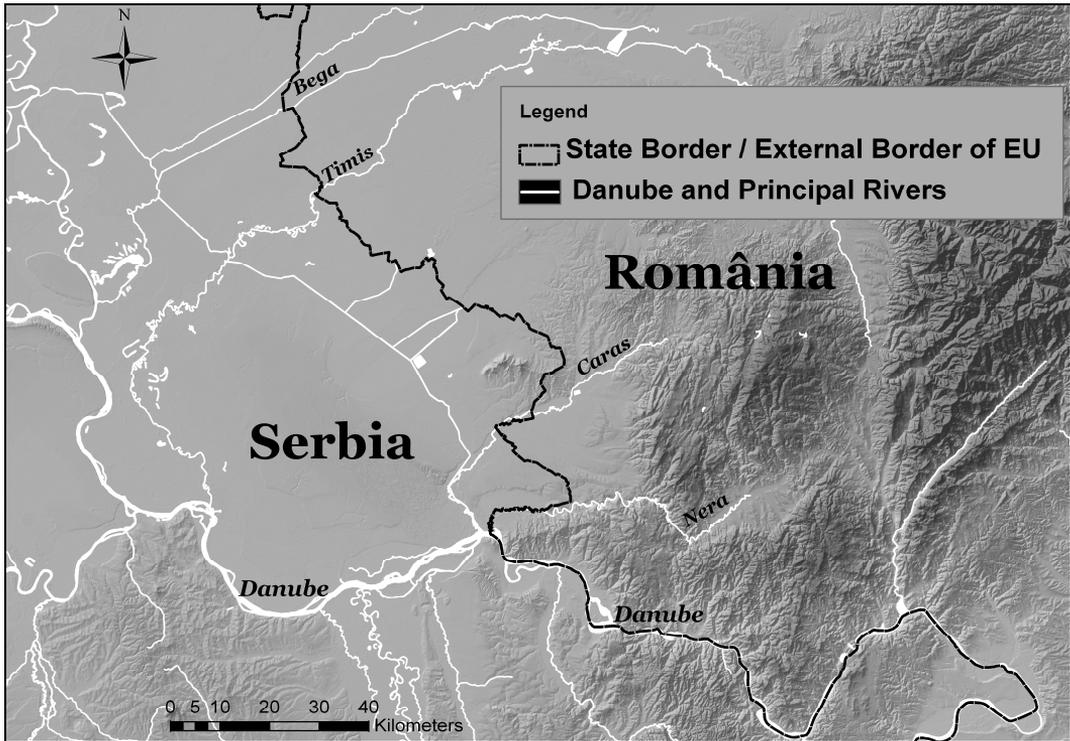


Figure 2. Romanian-Serbian border and position of the hydrographical artery related to the border line: Transversal and longitudinal example



Figure 3. Romanian-Ukrainian sector border (Maramures region) and position of the hydrographical artery related to the border line: Semi-transversal and longitudinal example

The longest border sectors with longitudinal hydrographical support are: the Danube (883.6 km), the Prut (720.7 km), the Tisa (64.63 km), the Mureș (22.3 km), the Nera (21.9 km) and so on. Therefore, the hydrographical basins

divided in most of the cases determine „*independent*” border hydrographical systems, situation generated by the role of “collector” of the main artery of the tributaries situated on the border versants (figure 1 and 2).

c. *Semi-transversal* – situation derived from the longitudinal type, and the support of this kind of border identifies itself with its extremities (figure 3). In this case it is taken into account that part of a hydrographical artery partially and transversally divided by the border line, in that point where it “enters” or “leaves” the state. In case of “leaving” the state, the hydrographical artery separates the superior part of a longitudinal sector and in case of “entering” that means that it separates the inferior part of a longitudinal sector. For example: the Prut river, the Tisa river and so on. Regarding the number of sections, they can be: with one single section; with two sections; with multiple sections. And this type has two variants:

c₁) a situation when both semi-transversal sections belong to the same state. Example: Tisa (figure 1 and 3);

c₂) a situation when the two sections belong to two states. Example: Danube (figure 2);

d) *Of confluence* – situation when the border state support is represented by two or more hydrographical arteries which are in direct connection and in a subordination relationship (confluence). Such a situation is that of the Prut and Danube confluence. The situation becomes more complex when the hydrographical support of the border state superposes itself to over at least two sectors that separate the political area of three different states (figure 4).

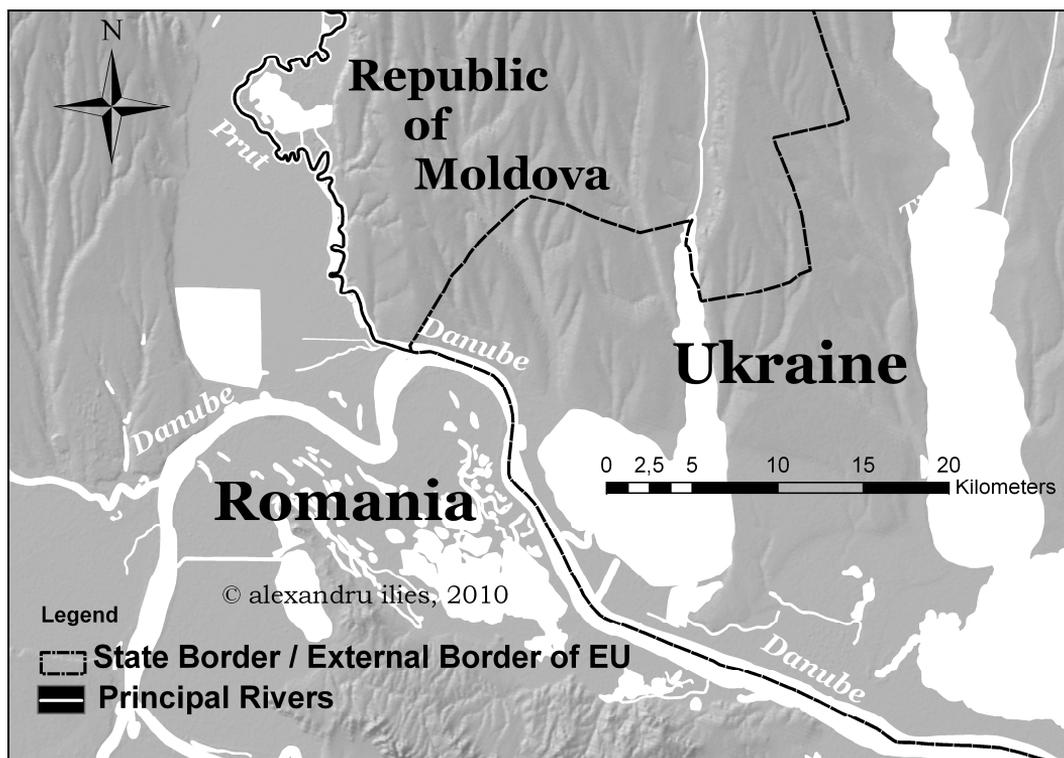


Figure 4. Romanian-Ukrainian-Moldavian sector border and position of the hydrographical artery related to the border line: *of confluence example*.

THE RELATIVE POSITION AND THE ROMANIAN STATE BORDER TYPOLOGY

In the geopolitics, we consider that the ones who play a very important role in defining some border and cross-border systems, both under the quantitative and qualitative aspect, are the morphometrical and morphological particularities of territorial system derived from overlapping the political-administrative framework over the geographical one. In this context, depending on the relative position of the analyzed political-territorial system, resulted from the insertion of the respective state into a super-state structure, the border functions may be extremely diverse, from the military to control of the population traffic and so on, whose importance in defining the border role may be different from a political and juridical system to the other. Within this context, beginning with the integration of Romania into the EU, this has got a relative position at the oriental periphery of EU. This position had redefined the role and the functions of the Romanian border. Therefore, related to the demarked area at the EU level, the state border of Romania belongs to three categories (figure 1):

- a) External border of EU: the sectors with Ukraine, Republic of Moldova, Serbia and the Black Sea, of 2,072.6 km length;
- b) Internal state border of EU: the sector with Bulgaria of 631.3 km length;
- c) Internal "Schengen" type border of EU: the sector with Hungary of 444.7 km length;

THE EASTERN EXTERNAL BORDER OF EU AND THE ROMANIAN HYDROGRAPHICAL SUPPORT OF ITS TRAJECTORY, EXAMPLE OF NATURAL SYSTEM POLITICALLY DETERMINED

Within the context of the proposed approach, we shall mainly deal with the external border of EU with its 4 sectors, which have a series of particularities related to the hydrographical border support. Depending on the morphometrical and morphological characters of the hydrographical arteries – support of the EU external border trajectory, corroborated with juridical status and the political regime of the contiguous states, the connection process of the contiguous border systems simplifies or complicates itself, and implicitly the functionality degree of the generated cross-border system. The hydrographical support of the EU external border trajectory has a length of 1,585.94 km representing 73 % from its total length. If we exclude the maritime sector of 295.5 km (13,5%), the share of the hydrographical support of the entire terrestrial external border (1,877.4 km) increases up to 68.75%.

Applying the typology of the hydrographical border state support compared to its position to the border line, the EU external border dominantly fits the longitudinal type: entirely with the Republic of Moldova through the Prut river, partially with Ukraine through the Danube and the Tisa, Prut, Bilca Mică and Suceava river and with Serbia through the Danube and the Nera, Bârzava and so on (figure 1). The most of the transversal and semi-transversal sections belong to the Romanian-Ukrainian sector (84) and to the Romanian-Serbian (11).

CONCLUSIONS

Each of the mentioned categories involves organization modalities and territorial planning specific for each contiguous state. In the same context we can approximate that the evolution of the cross-border relationships is

influenced under the quantitative and the qualitative aspect by the particularities of the hydrographical support. Therefore, along the EU Romanian external border sector, depending on the particularities of the hydrographical support, one can remark the existence of some border areas limited “at the periphery” by borders: with hydrographical support dominated by the longitudinal type on the Eastern façade (with Republic of Moldavia and Ukraine) and on the South-Western façade (with Serbia along the Danube sector); with hydrographical support combining the longitudinal with the transversal and semi-transversal profiles along the Northern Ukrainian sector and the Serbian “ex-Danubian” one. Depending on the morphometrical and the morphological characters of the hydrographical arteries, corroborated with the economical power and the political desire of the contiguous states for cooperation also results a certain typology of the determined cross-border areas from the point of view of the interconnection and functionality degree. The territorial reflection of these features is also generated by the number, the density and the architecture of the transport and communication system which exist between the two contiguous border systems. These differences are extremely evident if one can make a comparison between the role of the Danube, the Tisa and the Prut rivers as an axis of clotting or of separation of the contiguous border areas. Each constituent part which forms a territorial border and cross-border system may be analyzed, expounded and applied at the territorial structure level determined in accordance with the hydrographical features of the state border support.

We should pay a special attention to the general criteria of organizing the area (Cocean, 2005) and of identifying the mechanisms which ensure the determination and the functionality of some territorial systems (Ianoş, 2000), because depending on these the identified structures can be grouped in territorial units with different degree of interconnection and functionality. The border's typology related to the character of its trajectory's support plays therefore an important role in defining some differentiated border systems according to the potential of economical and social integration.

Acknowledgements

This contribution presents results from research projects: PN II 751/2007 and Cultureg, Modul III-Partnership Romania/Slovenia 2010. The authors acknowledge to anonymous reviewer for their thoughtful suggestion and comments.

REFERENCES

- BOAR N., (2005), *Regiunea transfrontalieră româno-ucrainiană a Maramureşului*, Presa universitară clujeană;
- BODOCAN V., (1997), *Geografie politică*, Presa universitară clujeană, Cluj-Napoca;
- BUFON M. (2004), *Slovenia as a European Contact Area*, in *Slovenia a Geographical Overview (Adamic M eds)*, The Association of the Geographical Society, Ljubljana, p. 21-26;
- COCEAN P., (2005), *Geografie regională*, Presa universitară clujeană, Cluj-Napoca;
- COCEAN P., FILIP, S., (2008), *Geografie regională a României*, Presa universitară clujeană, Cluj-Napoca;
- COSTACHIE S., (2004), *Geografie politică*, Editura Universităţii din Bucureşti;
- FORSTER H., (2000), *Noi condiţii – cadru pentru dezvoltarea unor centre urbane şi regiuni industriale vechi*, in vol. *Turism integrat. Banat şi Maramureş*, Editura Intergraf, Reşiţa, pp. 11-26;
- FOUCHER M. (1991), *Fronts et frontières. Un tour du monde géopolitique*. Edition Fayard, Paris;
- HARTSHORNE R., (1950), *The Functional Approach in Political Geography*, in *Annals of The Association of American Geographers*, no. 40, Washington DC;

- IANOȘ I. (2000), *Sisteme teritoriale. O abordare geografică*, Editura Tehnică, București;
- ILIEȘ Al., (2003), *România între milenii. Frontiere, areale frontaliere și cooperare transfrontalieră*, Editura Universității din Oradea, Oradea;
- ILIEȘ Al., (2004), *România. Euroregiuni*, Editura Universității din Oradea, Oradea;
- ILIEȘ Al., GRAMA V. (2006), *The Dynamics of the Frontier System within the Political Territorial EU Space (ECCS, EEC, EC and EU) 1957-2006*, Revista Română de Geografie Politică, Year VIII, 2, Oradea, p 11-40;
- ILIEȘ Al., ILIEȘ Dorina Camelia, GRAMA V., (2007), *European Political Borders Typology according to the Natural Background Particularities*, in Revista Română de Geografie Politică, Year IX, 2, Oradea, p. 64-73;
- ILIEȘ Al, Grama V, Wendt J, Bodocan V. (2009), *Geographical management of a Borderless Area at the Internal/External Border of NATO and EU. Romanian Case (I)*, Revista Română de Geografie Politică XI (2):166-175;
- ILIEȘ Al., Grama, V., (2010), *The functionality of the borderland Territorial System according with the relief and romanian-ukrainian border-line support*, Revista Română de Geografie Politică, XII, (1),140-150;
- JONES S.B., (1959), *Boundary Concepts in the setting of Place and Time*, in Annals of The Association of American Geographers, no. 49, Washington DC;
- KLEINSCHMAGER R., (1993), *Elements de Geographie politique*, Presses Universitaires de Strasbourg, France;
- MARTINEZ O., (1994), *The dynamics of border interaction: New approaches to border analysis*, in C.H. Schofield (ed.) *World Boundaries*, vol. 1, *Global Boundaries* (pp. 1-15), Routledge Ed., London;
- NEGUȚ S., (2008), *Geopolitica. Universul puterii*, Meteor Press, București;
- PRESCOT J.R.V., (1987), *Political Frontiers and boundaries*, London;
- STAMATE G., (1997), *Frontiera de stat a României*, Editura Militară, București;
- TIMOTHY D.J., (2001), *Tourism and Political Boundaries*, Routledge, London;
- www.politiadefrontiera.ro, 2010.

Submitted:
May 11, 2010

Revised:
September 2, 2010

Accepted:
October 15, 2010

Published online:
November 2, 2010