

THE POSITION OF RURAL-URBAN FRINGE IN THE FRAMEWORK OF HUMAN SETTLEMENT SYSTEM

Sorin AVRAM¹

Abstract. The term of rural-urban fringe is more or less used in the specialized Romanian literature, which might be a consequence of the fact it superposes or confounds itself, as delimitation, with the periurban area or/and urban periphery. A brief presentation of the terms included in the equation of territorial delimitation, starting with the urban CBD to the effectively rural region, clarifies the succession of different concentric areas in a certain proportion. In order to reveal the expectancy horizon of this term, it is also necessary to study the situation at international level, where it is used to the prejudice of periurban or where both terms are used. This study emphasizes that an empirical research on terminology is far from being sufficient, the analysis of the methods used in determining the limits being also quite necessary, as our main target is to observe if the areas are superposed or if they are complementary.

Key words. rural-urban fringe, space, periurban, urban periphery, human settlement system

Rezumat. Poziția franjei rur – urbane în cadrul sistemelor de așezări. Termenul de franja rur – urbană este mult mai puțin utilizat în literatura românească de specialitate, ceea ce ar putea fi o consecință a faptului că se suprapune, se confundă în delimitare cu zona periurbană sau/ și cu periferia urbană. O trecere în revistă a termenilor ce intră în ecuația delimitării teritoriale, începând cu CBD-ul urban până la regiunea eminamente rurală, limpește într-o oarecare proporție succesiunea diferitelor areale concentrice. Dar pentru a dezvălui orizontul de așteptare al acestui termen este necesară analiza accețiunii la nivel internațional, acolo unde este utilizat în detrimentul periurbanului sau acolo unde se întâlnesc ambii termeni. Această analiză scoate însă la lumină faptul că o cercetare empirică asupra terminologiei nu este suficientă, fiind necesară și prioritizarea metodelor utilizate în determinarea limitelor, pentru a observa dacă arealele se suprapun sau sunt complementare.

Cuvinte cheie. franja rur – urbană, spațiu, periurban, periferie urbană, sisteme de așezări

Introduction

As an open system, the town is an organism within which and through which the matter and energy flux do not cease at the limit of the built perimeter, as it marked by inputs and outputs, as well as by modifications or alterations of the recently mentioned capital. Taking into account these ideas, it is obvious that the initial system becomes a subsystem within the framework of an ampler vision of the territorial system.

The issue of delimitations or, generally, the study of human settlement system is the object of international documents that represent norms for the implementation of principles and methods on the base of which decisions aiming at sustainable development are taken. Among the most important documents, we mention – The Habitat Program of the UN (Habitat II), Green Book on the Urban Environment, Agenda 21, ESPON Program. All these programs developed at an international level deal with the argument of human settlements systems, recommending the inclusion of the close

outside cities to urban centers – the cities, but they do not clarify the limits and the succession of the belts. Consequently, delimitation, used methods, and, seemingly, terms depend on the researchers, all these varying from one case to another or from one country to another.

The aim of this research is to synthesize, as much as possible, the terms used in the specialized literature regarding the urban-rural transition space through an analysis of the terminology and international linguistic problems. We also present the methods used in the delimitation of the aforementioned space using the situation of different international urban centers, which are significant for the analysis of the rural-urban perimeter.

Definition of the terms

The main actor within human settlement systems is obviously the *town*, which influences

¹ University of Craiova, Geography Department, sredinay@yahoo.it

settlements through its position and rank. The human geography dictionary defines this term as an entity with a concentration of the inhabitants' number starting from a minimal threshold (which differs from one country to another), with a professional structure preponderantly involved in the tertiary and secondary sector, as a space characterized by a specific architecture and a great number of services offered to people. The outer limit of the city is not hard to be determined in the territory, because its features are easily noticeable, starting from its name or from the term of urbanism, which comes from the Latin word *urbs* that signified "the art of building the city". Thus, it is defined as the surface covered by buildings and equipped with town infrastructure.

Problems occur when trying to determine the internal limits of the town, especially *the center* and *the urban outskirts*, but also its functional zones. The center is the symbol of the concentration of the administrative and economic-commercial activities; of course, it is facile to determine the residential zones, as well as the former industrial platforms that presently are included to the city (but, as we shall further observe, they can be also considered as part of the rural-urban fringe, if we evaluate these zones in terms of landscape and, especially, if these units are no longer used). In this case, what is periphery and where do we place it?! I think the difference or its location is mainly related to the correct usage of the term. If we use urban outskirts/ outskirts of the urban, then we clearly aim at the inner urban / built-up space and if we use the term of town outskirts, then we aim at the space located out of the city urban limit, which belongs to the suburban zone and represents an indicator of the urban pressure upon the neighbouring space. Topologically, the term of outskirts indicates the limit, the edge of something steady (systematization of the elements emphasizes the same features), while axiologically, it indicates the way or the zone through which it is achieved the limits' exceeding (Stan, 2008). International literature encompasses the area formed by the outskirts both inside the urban space (Canada, Australia), as well as outside it (France, England), both variants being accepted, but with the specification of urban outskirts (namely built-up outskirts, as part of the urban) or of outskirts of the town (where the town networks are no longer present and living conditions are not optimal); the two terms express different things, the outskirts of the city being shared with the suburban zone.

Out of the urban limit, there are *the suburban settlements*, which, through their specificity, are

dominated by the town activity and represent the main source of the town labour force. Specific especially in the USA, the suburban zone represents the place where new residential districts and commercial complexes of the shopping mall type develop.

There appears a new dilemma – suburban settlements are included or not to *the periurban*; the two terms refer to two distinct areas or to the same area. I believe, the key for solving this dilemma, is the analysis of the inhabitants' professional structure and, more obviously, of the land use and of the living way of the communities from the respective perimeter. One may say that suburban zones can be even centers inside the periurban zone, settlements-centers that distinguish themselves through a greater density of the buildings as compared to the periurban zone, where the density of building (especially the residential ones) is much lower and land use is mainly agricultural.

Definitely, the two zones with completely different features are completed by *rural zones*, where labour force is involved in the primary sector. Land use is characteristic to agricultural activities and the inhabitants' way of life is specifically rural.

The human geography dictionary defines the term of "rururban" as the area located between the town and the rural zone, without delimiting it accurately in space, where the urban functions intermingle with the rural ones. It practically defines the *rural-urban fringe*, specifying its limits and position within the framework of territorial systems only at a descriptive level, as a transition zone between the two extremes. The Oxford Dictionary of Geography presents the term as being the transition zone between urban and rural, but also between urban and suburban, a defining element being land use (sport grounds, airports, malls, parks), which gives an urban note to the rural zone. The inner and outer limits of this zone are the most accurately determined through the method elaborated by L. Weiguo and F. Tian (2002). They propose an analysis of the satellite images for delimiting different types of land use achieving the distinction among urban, rural, and transition zone at the pixel level. The calculus gives the threshold among the three zones, the preponderant percentage emphasizing the limit through a *t* – test of differentiation of the rural-urban continuum, also rendered by Ianos and Heller (2006).

In Asian countries, especially in China, rural-urban fringe is defined as the surface located outside the urban outskirts/ the limit of the built-up

surface to the region with rural features. It is preferred the term of fringe instead of periurban because it is considered that the force of the town alters the features of the fringe and not vice versa through the penetration of the village features into the town or the fringe perimeter (Xu Feng, 2004).

Coming back to the regime of the urban theory (as we have mentioned above, for a sustainable development, the areas surrounding the towns must be seen as a whole), liberal economic policy considers that territorial systems develop by means of private capital and partly public capital. This situation is legislated by public administration for ensuring environmental protection and harmonious development of the human settlement system (Stone – 1993), as we shall further notice by analyzing the methods used for the delimitation of the rural-urban fringe.

Analysis of methods

In order to exemplify the methods for determining the rural-urban limits, we shall use the quantification and systematization achieved by N. Gallent, J. Andersson, and M. Bianconi (2006), based on the frequency these instruments are used by experts in the field. We shall further detail the most frequent and scientifically important methods, classifying them as it follows:

1. *Margin of built-up zones* – the base principle for settling the inner margin of the fringe is imposed by the margin of the built-up surface, specificity of the urban, while the outer margin is given by the rural area. This method is the most frequently used by Countryside Agency – UK (2002), Bunker and Halloway – Australia (2001), Foot – Italia (2000), Urban Planning Act, Japan (1968).
2. *Land use* – method briefly rendered previously, developed by L. Weiguo and F. Tian (2002) and used by ReUrbA – UK and Olanda and Broughton – UK (1996). It involves the analysis of land use for establishing the margins on the base of the binary pixels principle. If 1 is attributed to the cells where urban predominates and 0 to the cells where rural predominates, then the transition area develops where the values combine and there is also located the rural-urban fringe and its margins.
3. *Transition zones* – method that involves the determination of the margins through the empirical analysis of the transition area between urban and rural as a discontinuity / differentiation of the geographical space; the method was used by Hite – USA (1998).
4. *Metropolitan zones* – it is the case of Montreal model that uses the functional and structural features of the territorial administrative units within a metropolitan zone for settling the margins of different zones from the studied perimeter.
5. *Inside the rural* – a less frequent situation, through which the urban functions can be found within a specific rural perimeter due to delocalization; the most used principle is that of the densification of the buildings and built-up surfaces generally (Heimlich and Anderson, 2001).
6. *Urban meets rural* – it is the situation where the urban continuum appeared for a long period and the analysis of the present town infrastructure and of the services offered to population defines the margins of the fringe; a peculiarity of this case is the possible lack of the traditional fringe.
7. *Pressure zones* – it is expressed as the urban shadow through which the town exerts pressure upon the neighbouring regions and involves the study of the influence the center and the urban outskirts have upon neighbouring areas through the influence the last one acquires for penetrating the margins.
8. *Population* – it is an indicator frequently used in different studies of human settlements geography through the analysis of demographic structures and their distribution in space. Such an example is represented by the zones of urban influence established based on the demographic density values (Fig. 1). It can be achieved in GIS system using the administrative territories and the inhabitants' total number. By means of interpolation and Voronoi analysis there are obtained isolines that limits the areas characterized by different values of the same influence. Consequently, there is achieved an analysis of the dynamics of the parameters during time, but also at present, by superposing different used values (demographic structure, professional and educational structure, inhabitants' number, number of owned vehicles, etc.) of what the areas making up the metropolitan zone represent.
9. *Territorial – administrative policy* – a decisive factor for establishing the margins of the fringe through the decision power of imposing restrictions for horizontal development or, on the contrary, permissive measures according to the sustainability capacity of the territory. The method may be applied using the model proposed by Alonso

(1986), where the limit urban – rural is given by the optimum of the agricultural rent vs. the incomes generated by rents, which may lead to an excessive horizontal extension of the town without a restrictive administrative policy. As it can be noticed in fig. 2, the increase of the rent value (curve C), on the background of urban extension and of a greater life quality within the fringe, leads to

the renunciation at the income generated by agricultural rent in favour of a potential greater income generated by rent. The inner margin of the fringe migrates outward from UF1 to UF2. This method is extremely precise for settling the inner margins, but less accurate for the outer margins, due to the reduced differences of the rural-urban rent.

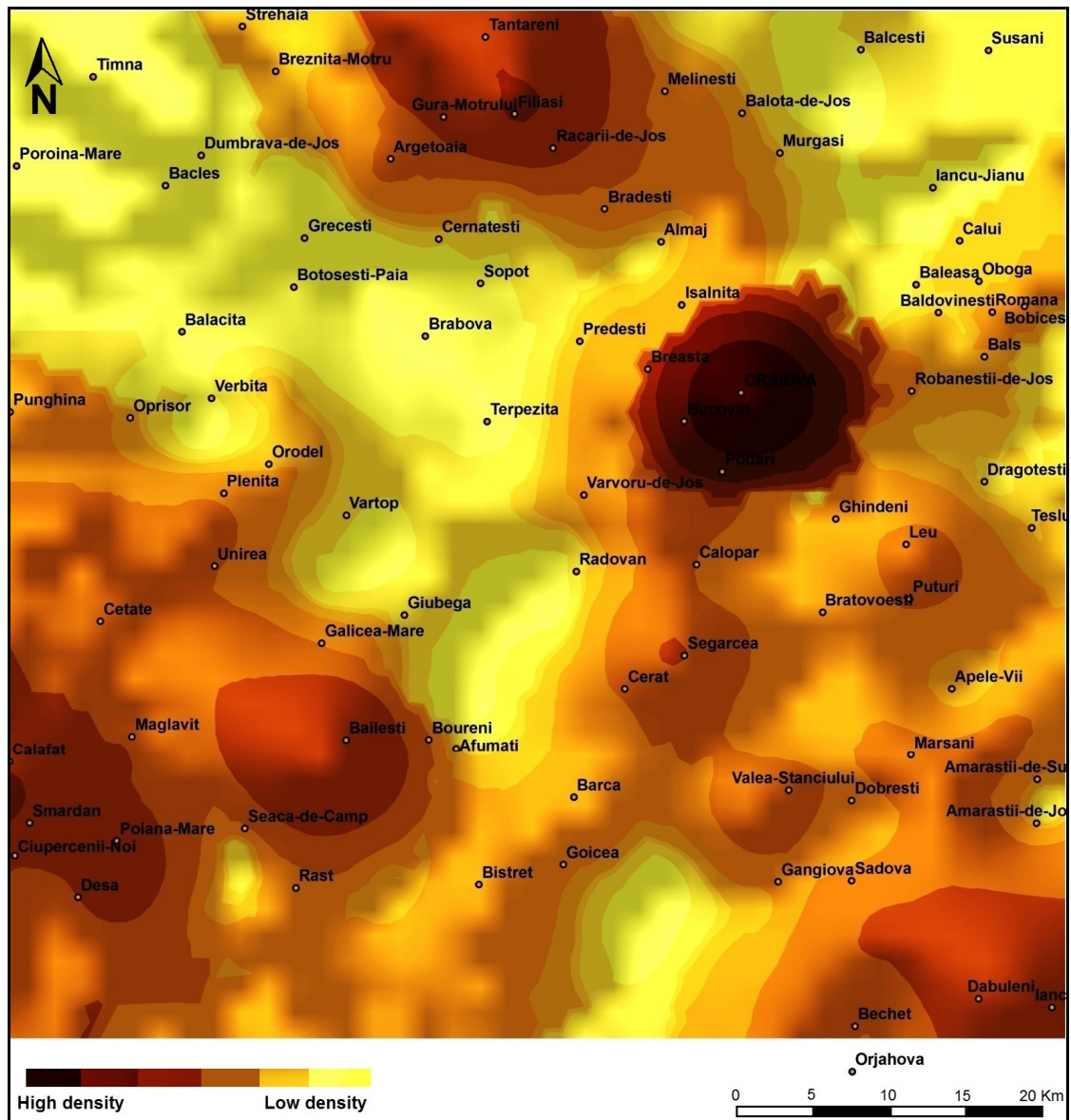


Fig. 1. Zones of urban influence by means of demographic density

10. *Economy* – it is the binder of present civilization. Through a restrictive policy meant to preserve the natural areas from the green-yellow belt of the cities, it is determined an increase of the value of the terrains belonging to rural-urban fringe (Fig.

3). The method involves the utilization of microeconomic principles that helps us determine both the inner and the outer margins of the fringe by analysing the demand and offer and by monitoring the land price.

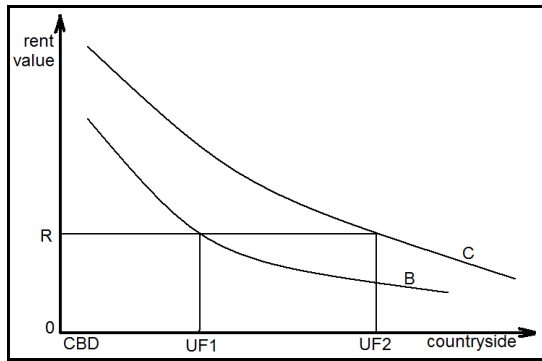


Fig. 2. Determination of the fringe margins through the analysis agricultural rent vs. incomes generated by rent (after Alonso's model, 1986)

(B =rent value before urban extension, C = rent value after extension, UF = fringe margin, R = rent value)

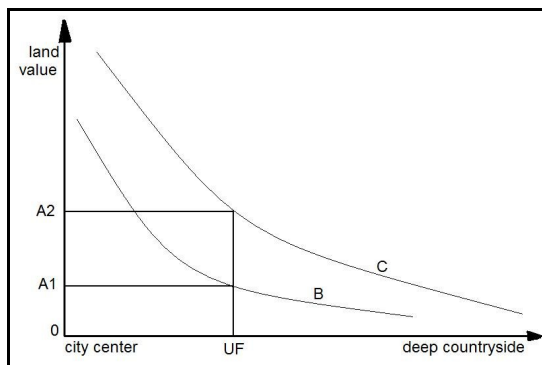


Fig. 3. The effect of urban extension upon land value
(B =land value before urban extension, C = land value after extension UF = fringe margin aleatory chosen, $A1$ =land initial price, $A2$ = the price after extension)

Source: Pacione M., 1999

11. *Accessibility* – as a method of studying the fringe limits it refers to the quality, quantity, and distribution of road infrastructure that, due to its nature, may be a limiting factor for the fringe or an expansion factor on both sides of the access route, as well as along it, due to its capacity of shortening the distances to the working place; for example, railway infrastructure, through the possibility of reducing distances, but only in case there are permanent trains at favourable intervals and regular-established stops; tram/subway lines have the same impact and may be taken into account for settling the margins of the rural-urban fringe.

12. *Landscape* – as a value of geographical continuity it can be used as a method for determining the spatial territorial limits. The note of the transition dominant landscape raises certain problems as those of the railway lines that introduce the fringe inside the urban space through the

corridors they create, imposing the aspect of the fringe landscape.

13. *Way of life* – it is defining in the areas where the margin is subject to certain interferences and where this aspect can be analysed, because it supposes the presence of a permanent inhabitancy and of a social life expressed at the community level.

Study models of the rural-urban fringe

By applying the theories upon the territorial systems on the base of the aforementioned methods, it resulted a series of models of the fringe positioning and shape. The simplest or the most idealist model is that when the belts display different features and succeed each other concentrically (Fig. 4) starting from the town center – residential zone and/or former industrial zone – urban outskirts (which make up the urban perimeter) – suburban zone – periurban zone (which make up the rural-urban fringe zone).

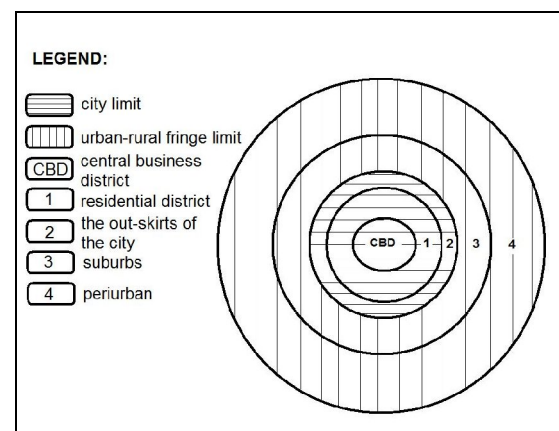


Fig. 4. Processing after Burgess model for urban models of land use

The model that includes the variable – suburban settlement to belong to the periurban perimeter, is proven by David Waugh (2000). The rural-urban continuity is given by the inclusion of the fringe, through intense transformations of the area exerted by the urban, which permanently alters its functions (Fig. 5).

The model that emphasizes the best field reality in the analysis of the rural-urban fringe is that of Montreal city. It used the functional and structural features of the territorial-administrative units within a metropolitan zone in order to settle the limits of different zones from the studied perimeter (Fig.6). The model starts from the premises of studying the functions of the main urban pole, of the secondary urban poles and of the rapport between them and the perimeter located.

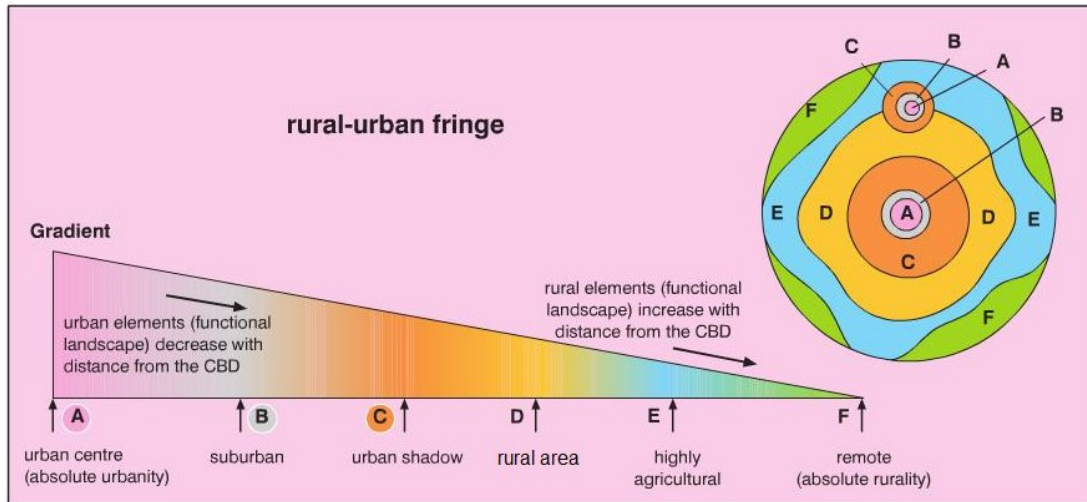


Fig. 5. Rural – urban continuum proposed by David Waugh (2000)

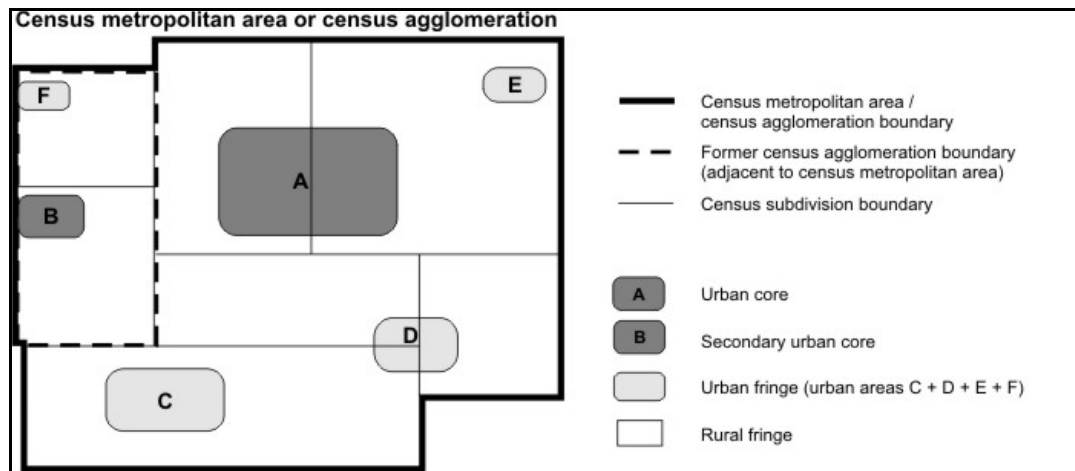


Fig. 6. Main and secondary urban poles and the positioning of the fringe types (Montreal model, 2006)

between them. It also makes the difference between the fringes of all studied urban centers, as well as of the rural fringe.

Conclusions

By briefly rendering the terminology used within the framework of territorial systems in order to analyse and denominate the urban-rural transition space, it resulted that the rural-urban fringe/belt includes the area of suburban settlements and the periurban zone, its limits varying from one case to another. The inner margin of the fringe is generally given by the contact with the town built-up surface, through its outskirts, while the outer margin by the contact with the truly rural area. The initially proposed model is a simple model, because it does not include either the suburbs variable included in the periurban as independent human settlements with a greater density of the built-up surfaces or the variable of inclusion of the secondary urban poles

within the extended fringe through the externalization of certain functions of the main urban pole.

However, the model allows us a better vision upon the concentricity of the belts and their space succession. Consequently, it may represent a theoretical model for the initiation of the researchers in identifying the aforementioned zones, for a better implementation of territorial planning and a supporting instrument for decision makers.

Models that are more complex prove the difficulty in dealing with the argument because each case is true. At the same time, all the three presented models are correct as they represent only a starting point in the analysis of the territorial systems, and especially of the rural-urban fringe. Difficulty consists in precisely determining the zone because its functions are quite diverse and the mixed character between rural and urban persists, aspect derived from the name itself.

REFERENCES

- Angelescu, M. (1996), *Rețele Edilitare Urbane*, Edit. Didactică și Pedagogică, București
- Coppolani, J., Jalabert, G., Levy, J.P.(1982), *Toulouse et son agglomération*, Edit. de L Institut de Géographie de la Toulouse, Toulouse
- Erdeli, G., Căndea, Melinda, Braghină, C., Costachie, S., Zamfir, D.(1999), *Dicționar de geografie umană*, Edit. Corint, București
- Gallent, N., Andersson, J., Bianconi, M.(2006), *Plannings on the edge, The context for planning at the rural – urban fringe*, Edit. Routledge, London
- Ianos, I.(2004), *Dinamica urbană – Aplicații la orașul și sistemul urban românesc*, Edit. Tehnică, București
- Ianos, I., Heller, W.(2006), *Spațiul, Economie și Sisteme de Așezări*, Edit. Tehnică, București
- Johnston, J., Swallow, K. (2006), *Economics and Contemporary Land use Policy*, Edit. Resources for the future, Washington DC
- Marinescu, I.(2006), *Disfuncționalitățile mediului urban, studiu de caz – Municipiul Craiova*, Edit. Universitaria, Craiova
- Mercandino, A.(2006), *Urbanistica tecnica, Pianificazione generale*, Edit Il Sole 24 Ore, Milano
- Mitroi, M.(2002), *Zona periurbană a Municipiului Craiova*, Edit Universitară, Craiova
- Pacione, M.(1999), *Applied geography: principles and practice*, Edit. Routledge, London
- Pallister, J., Bowen, Ann, Clay, R., Di Landro, Carmela, Phillipson, O.(2002), *Longman – Geography for GCSE*, Edit. Longman, Essex
- Surd, V., Bold, I., Zotic, V., Chira, Carmen (2005), *Amenajarea teritoriului și infrastructuri tehnice*, Edit. Presa Universitară Clujeană, Cluj
- Steiner, F., Butler, K. (2007), *Planning and urban design standards*, Edit. John Wiley & Sons, New Jersey
- Xu, Feng (2004), *Modelling the spatial pattern of urban fringe*, Edit. International Institute for Geo-Information Science and Earth Observation, Enschede
- *** (2004) – *Oxford Dictionary of the Geography*, Edit. Oxford University Press, New York.

Translated into English by Vlăduț Alina/ Tradus în engleză de Vlăduț Alina