

**THE ROLE OF THE INTEGRATED NETWORK CONCEPT IN
ELABORATING THE TERRITORIAL DEVELOPMENT CHOREMES.
CASE STUDY: THE PERI-URBAN ZONE OF THE
MUNICIPIUM OF BISTRITA**

VASILE ZOTIC*, VIOREL PUIU*

ABSTRACT - The choreme is a pattern of high generalization and abstracting concerning the status, the dynamics and the way of organizing a territory. This foreshadows territorial patterns in implementing the future anthropic structures, the evolutive directions of settlements, the best areas for developing and the critical ones, which claim specific measures of rehabilitation, the areas with some potential in development and the underdeveloped ones. Working out the choreme pattern of development relies on a series of theories (the theory of polarized space, the network theory, the theory of force axis, the theory of the rising poles, the theory of behavior, the clusters theory, and the fractals theory), and concepts of development (the concepts of system, region, potential, norms, sustainable development, discontinuation, stability, and the resource concept) aiming at scientific grounding the territorial transforming actions. The summary of these theories and concepts which are at the basis of territorial development concretize themselves in a new innovating concept of development – the concept of integrated network or the polarized space. The concept of integrated network represents, in thinking the organizing of the territory, an operational component, having the role of a vector in delimitating and establishing the locations of different categories of geographical territorial systems, which are natural or anthropic, already existent or in the making.

Key words: integrated network, choreme, periurban area, territorial development.

1. CHOREMIZATION – THE FINAL STEP IN TERRITORIAL PLANNING

The choreme is a very general and abstract model of the state, the dynamics and the organisation of a territory. This model foreshadows the territorial patterns for the implementation of future anthropic structures, the evolutions of settlements, the best areas for development, as well as the problematic zones which require specific measures for rehabilitation, the areas with a development potential, and the underdeveloped zones.

The chorematic development model relies on several theories (the theory of the polarised space, the theory of networks, the theory of the force axes, the theory of the growth poles, the theory of behaviour, the cluster theory, and the theory of the fractals) and on concepts of development (e.g. system, region, potential, norm, sustainable development, threshold, balance, resource, etc.) which justify from a scientific point of view the actions targeting territorial modelling. The synthesis of these theories and concepts underlying territorial development becomes the concrete form of an innovative concept in development – *the concept of the integrated network or polarised space*.

In the studies on territorial planning, the concept of integrated network is a basic operational component whose role is establish and delimit different territorial-geographic, natural, or anthropic categories, either existent or prospective.

* “Babeș-Bolyai” University, Department of Human Geography, Faculty of Geography, Clinicilor Street, no. 5-7, 400006 Cluj-Napoca, Romania.

E-mail: zoticv@geografie.ubbcluj.ro

* “Babeș-Bolyai” University, Department of Human Geography, Faculty of Geography, Clinicilor Street, no. 5-7, 400006 Cluj-Napoca, Romania.

E-mail: viorel_puiu@geografie.ubbcluj.ro

The development of this concept relies on numerous theories and reference models which aimed at stimulating the theorization, the understanding, and the creation of territorial structures. From among the classic models we mention those developed by von Thünen, Weber, W. Christaller, and V. J. Reilly. From among the contemporary models we mention those by J. Forrester, B. Rodoman, and B. Mandelbrot, etc. In geographic Romanian literature, G. Gusti (1974), A. Molnár, A. Maier, and N. Ciangă (1975), and more recently I. Ianoș (1987, 2000) applied this concept to the study of the Romanian territory. These scientists focused only on the development of the anthropic systems, without analysing the relations between the natural and the anthropic systems and their territorial development.

Contemporary authors have resumed the classic ideas about modelling territorial structures focusing exclusively on anthropic structures and adapted them according to modern theories (the theory of the systems, the theory of the fractals, the theory of the polarised space, synergetics, and the theory of the choremes), in order to model the geographic systems according to their entire territorial complexity which results from overlapping the anthropic and the natural systems.

2. THE POSITION OF THE TERRITORIAL-ANTHROPIC SYSTEMS WITHIN THE CONCEPT OF THE INTEGRATED NETWORK

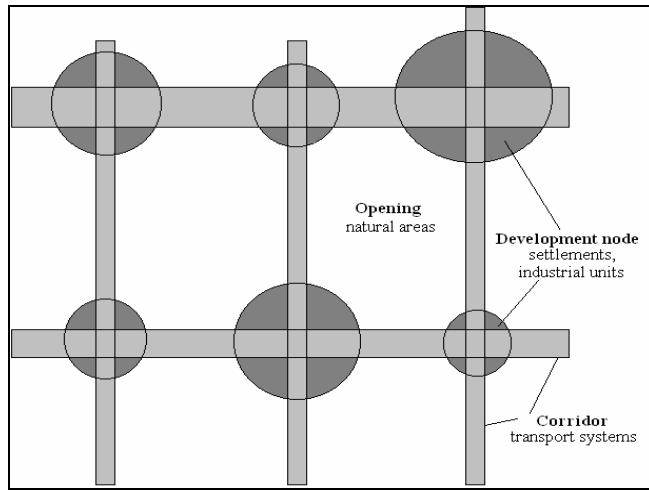
The territorial-anthropic systems are organized according to the way in which different categories of natural or anthropic development potentials, with the most favourable location according to the *mini-max energetic principle*, are turned into account. The directions of spatial extension of the anthropic systems are vectorised according to the fields of maximum development potential. The tendency of the anthropic systems to get crowded in certain locations and the low degree of covering the territory in several others explains the trend of the anthropic systems to develop close connections in order to facilitate the mass and energy exchanges which ensure their existence. Only when getting overcrowded or developing at several levels, do anthropic systems have the tendency to “overflow” in their neighbourhood. In over-crowded territories, this creates the premise of development due to the anthropic systems represented by settlements, industrial areas, roads, railways, etc. and the over-exploited plots of land in agriculture on whose outskirts there are areas where such systems are scarcely represented. Beyond the space dominated by anthropic systems there is the “free space” where complex natural systems develop mostly. One cannot talk about the complete disappearance of the natural systems within the areas where the anthropic component reaches its maximum development. However, it is true that they undergo great changes or certain subsystems are annihilated, especially those characterised by above ground development.

The development of the anthropic systems in areas with maximum favourability, determines the punctual and the area distribution of the natural systems (ecosystems). Among these systems, genuine transit corridors develop. They facilitate the exchange between the anthropic systems and among them transportation systems (“*the force lines*”) develop (according to G. Gusti, 1974). In conclusion, the territorial development and distribution of the anthropic systems gets the aspect of a unique network where systemic areas with different densities are highlighted. The anthropic system network is made up of “*nodes*” where the settlements are situated and get crowded, “*stripes*” along which the transportation systems develop and land is used intensively by other categories of anthropic systems (especially, agricultural systems), and „*eyes*” which represent the territories on the periphery of the anthropic systems, mostly occupied by natural systems in various balance phases, associated with plots of land over-exploited in agriculture (according to G. Gusti, 1974).

Within the nodes, settlements with different “geographic dimensions” develop and spatial hierarchies act as territorial “*attraction poles*” generating mass and energy fluxes that move along the stripes (according to G. Gusti, 1974).

These settlements are also ranked according to the dimension and the ranking of the settlements between which they develop. Thus, real “*development corridors*” may be identified. They include transportation systems and their neighbouring areas (due to the advantage of their location) and they get economic value as the territory develops. Consequently, the “*development corridors*” become the location preferred for a complex series of economic activities. The settlements with a favourable position, lasting and high-quality demographic potential, become real “*development poles*” with different territorial ranks which vectorise, sustain, and coordinate the development of the anthropic systems and of the territorial network they create.

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*Fig. 1. The territorial model of a reticular network of anthropic systems
(according to G. Gusti, 1974).*

3. THE POSITION OF THE NATURAL SYSTEMS WITHIN THE CONCEPT OF INTEGRATED NETWORK

The natural pattern of a territory consists of geosystems of diverse ranks and their spatial and temporal interaction under normal circumstances, which leads to a final dynamic and high-level balance capable to endure anthropic intervention, within certain limits. Exceeding the tolerance thresholds, i.e. breaking the extant connections, both horizontally (between systems have the same rank) and vertically (within the hierarchy), leads to certain destructive processes of increasing amplitude and intensity and which are generically called *geographic risks*. When they are not under control, they may endanger the development opportunities of a territory. At present, recovering the balance within these systems is possible only through permanent anthropic interventions.

Under ideal conditions, the territorial network of protected areas ensures not only the preservation of biologic and landscape diversity (including all biotopes, vegetal associations, succession phases, and animal populations, and all landscape structures), but also the long-term preservation of their functional features (including the possibility that they recover their former natural state and exclude disorders) inside the respective region. But after accumulating experience, the impossibility of the “classical” anthropic network to respond to all these needs has become obvious. The “classical” anthropic network has major conceptual drawbacks, such as *isolationism* or the preference to protect and preserve only “exceptional” areas to the detriment of the major ones. Moreover, in the context of national environmental policies, the very network of protected areas has been seen from the positions of “*the residual principle*”, i.e. it has never been in the top position of environmental priorities.

In order to get out of this deadlock we must construct *the ecologic network (pattern)* (R. Noss, 1992, A. Tiškov, 1995, A. van Opstal, 1999, etc.), according to the principles of the integrated and unitary, open and profoundly hierarchical geosystem capable to sustain the dynamic spatial-temporal processes of all ecologic systems: from the territorial microscale to the territorial macroscale.

Processes may also be differentiated, mainly, according to their manifestations: regular animal migrations, the continuous exchange of individuals between populations within the territorial megapopulations, and the continuous mass and energy flux inside the landscape (the bio-geochemical flux) which is undisturbed by the anthropic activities, etc.

Generally, several basic elements of this network have been highlighted: *the ecologic nodes*, *the ecologic corridors*, *the polyfunctional ecologic modules*, *the “a-territorial” point spots*, and *the areas for ecologic reconstruction*.

“*The ecologic nodes*” (the centres). They may consist of, at least, two types of natural areas; the main condition of their existence is their low anthropization level.

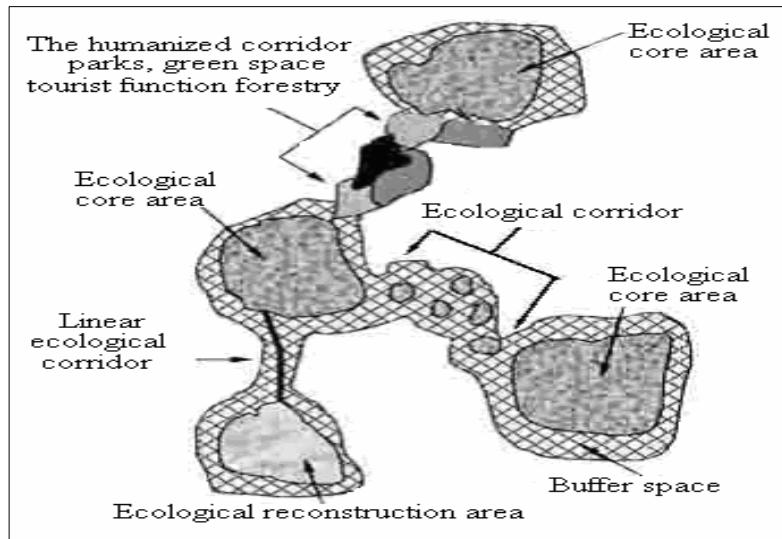


Fig. 2. The conceptual model of an ecologic network
 (according to I. M. Bouwma, ed., ECNC, 2001).

In the former case, we refer to the protected areas declared either according to the international conventions that Romania has joined or according to the national legislation or according to the decisions of the local councils.

In the latter case, we refer to areas which do not have this status, but function within the limits of certain special normative acts (sanitary protection zones, objectives of strategic public interest, such as water accumulations – drinking water sources, forest areas in the reproductive fund, etc.). These ecologic centres ensure the functioning of the ecosystems in the context of their spontaneous dynamics. They sustain the populations of rare and endangered species and the populations of the typical or economically important species which have environmental and geosystemic stability functions, etc.

“The ecologic corridors”. They ensure the optimal conditions for populating-repopulating the territory, the migration ways with a view to hibernation and reproduction, including resting and rehabilitation areas, and the genotype exchange. In addition, they maintain the exchange relations between the ecologic centres and the adequate bio-geochemical exchange level in the landscape, etc.

The river meadows have always functioned as ecologic corridors. Nowadays, because of their increased anthropization, they have obviously diminished this function. To a certain extent, their role may be overtaken by the less affected interfluvies or by various green protection stripes of anthropic origin. According to their form, the ecologic corridors may be linear (in this case, they include only the marginal biotopes, the so-called ecotopes) or stripe-like (including integral biotopes). The basic requirement for the development of ecologic corridors is the territorial and functional continuity within “the ecologic space”.

The polyfunctional ecologic modules (polyfunctional natural reservations). These are different from the first category because of their internal zoning into areas with a highly severe protection status (absolute reservations), entertainment zones, etc. The former are buffer zones or ecologic links where access and the use of the resources are limited.

“A-territorial” point spots. The so-called “monuments of nature” are included in this category. They have small dimensions; they are sectorial and have diverse informational baggage, sometimes of an affective nature. Here the small patches of spontaneous flora are included. They belong to the humanised areas having the ecologic shelter role.

Areas for ecologic reconstruction. They consist of zones submitted to anthropic intervention and which have undergone ecosystemic recovery (erosion degraded areas, abandoned quarries, etc.).

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4. THE CONCEPT OF INTEGRATED NETWORK

On the waves of the ecologic movements and alarming reports, B. Rodoman (1974) proposed another report in order to preserve Nature, which was, then, considered a utopia. This concept entered the geographic literature under the name of *the concept of integrated network*.

The still unmodified natural zones were declared reservations and would be interconnected through “green corridors” in a single network that included the zone, the region, the country, and, finally, the whole continent. Protection stripes, plots of waste land and quarries which become agricultural land again, river meadows, extinct linear erosional forms, marshes, and interfluviums would be used in this respect. The transportation ways crossing these corridors would be raised (through estacades) or tunnels would be dug for them (Figure 3).



Fig. 3. Ecologic passway over a highway, in Austria.

Consequently, two different networks would intersect: *the anthropic network consisting of development corridors with centres at communication junctions and animal tracks meeting inside the reservations*.

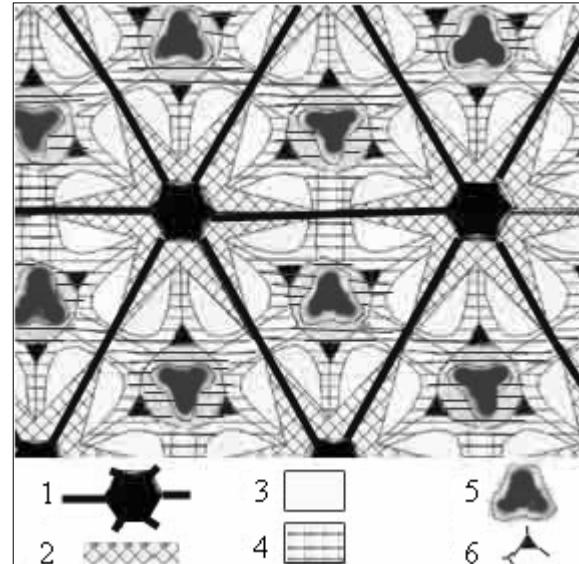
On these networks, there appear functional areas and between them there appears a third network – the network for leisure. This third network is made of tracks, roads, tourist spots and entertainment areas (Figure 4).

Fig. 4. The conceptual model of integrated network (after B. Rodoman, 1974): 1. Growth poles and development corridors; 2. Inhabited areas, ecologic industry; 3. Intensive and half intensive agricultural areas, resource exploitations; 4. Periurban entertainment parks, tourist and agricultural-tourist zones, extensive agricultural zones; 5. Natural reservations, buffer zones, ecologic corridors; 6. Tourist and health resorts, tourist routes.

The areas submitted to cultural influences (humanised) and the “wild” zones contribute to the creation of an ideal equal-rights landscape. However, at intersection points, the natural network is given priority as it is the “weak” link (it remains continuous while the anthropic network becomes discrete). Consequently, anthropic-generated systems connect normally with the natural systems and they generate strong, functionally structured networks.

Such a vision of the territory leads to establishing the functions of each territorial system precisely and to a tree-like (fractal) hierarchy of the natural and anthropic systems (Figure 5).

Implementing such a network on the territory will meet the optimal development requirement of systemic evolution for the two great system categories and the appearance of a long-term territorial balance. On the contrary, the exhaustion and the intensive evolution of the anthropic systems lead to hypertrophy which cannot be controlled and managed by man. Accepting the rules that result from this territorial structure, *stripes* and *nodes* are meant, especially, for anthropic development, while *the eyes of the networks* are spaces preserved for territorial harmony. They host, mainly, the components of the ecologic network as well as spaces with excessive anthropic exploitation.



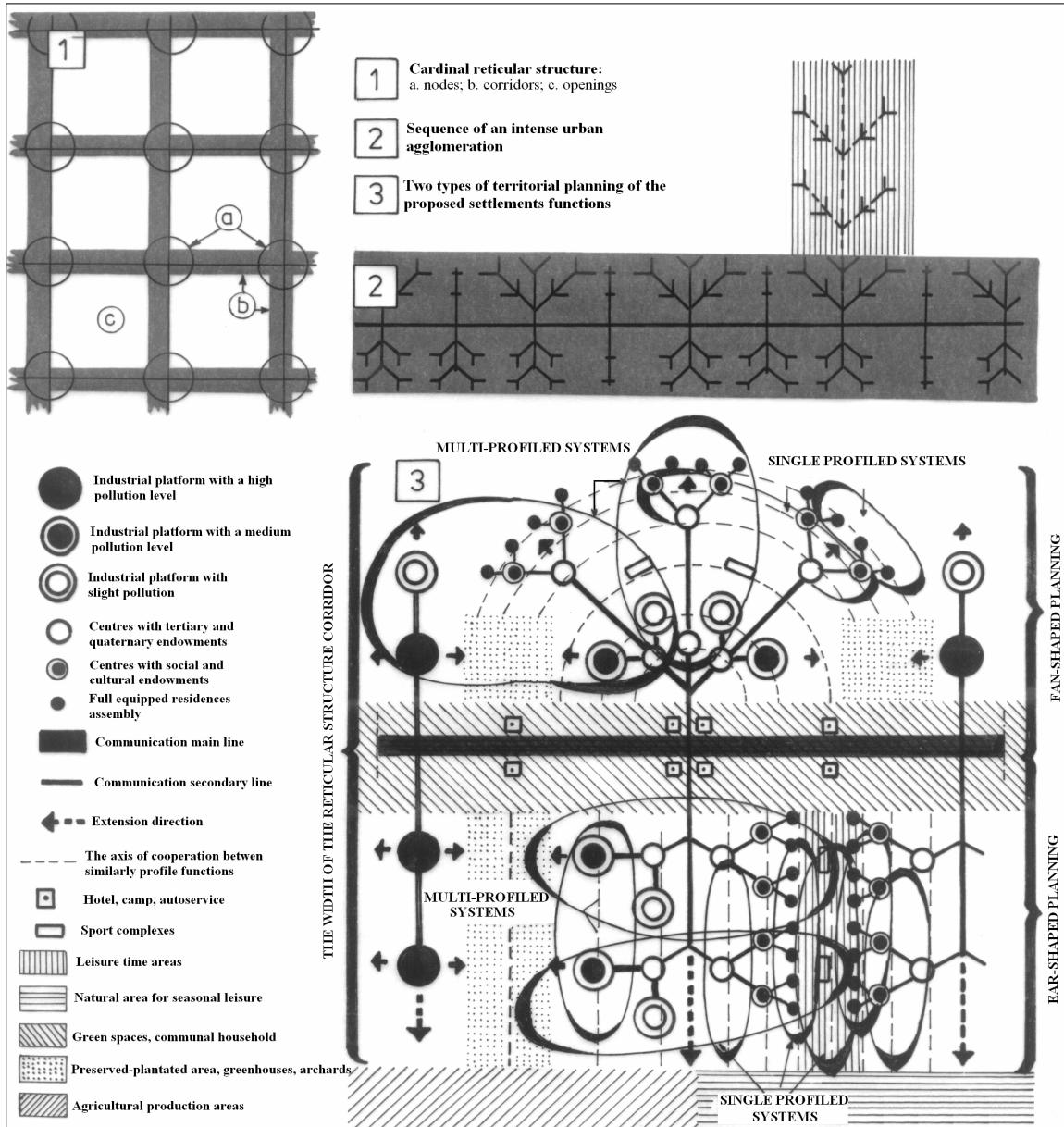


Fig. 5. Virtual sketch for a future territorial planning of the anthropic systems according to the concept of integrated network (according to G. Gusti, 1974).

Within the stripes, development corridors with various rankings evolve. They also contain the component nodes of the settlement networks. The essential role of development corridors is to concentrate the transportation infrastructure and the intensely exploited economic components (settlement cores, warehouses, industrial platforms, railway depots, airports, etc.). They make up a territorial network with an organic hierarchy which appears as an obstacle to the free development of the ecologic networks.

5. APPLYING THE CONCEPT OF INTEGRATED NETWORK TO THE DEVELOPMENT CHOREME FOR THE PERIURBAN ZONE OF THE MUNICIPALITY OF BISTRITA

According to expectations, in the periurban zone of the municipality of Bistrița, there has been no territorial development according to the *concept of the polarised space*, but rather a random one. This has led to the chaotic extension of the inhabited area in the municipality of Bistrița, the destrukturering of the

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territorial ecologic unity because of uncontrolled deforestation and drainage of the humid areas, the complete occupation of the river meadows, the lack of correlation between agricultural activities and the biopedoclimatic potential of the territory, the overlapping of several fluxes and the appearance of the traffic blockage points, the lack of correlation between the present land use and its former use, the lack of a common policy for the development of the municipality of Bistrita and its periurban zone. Consequently, because of the choreomatic territorial model of the periurban zone of Bistrita, we propose a new territorial configuration in correlation with the theory of the polarised space adapted to the local context.

The suggested model is used for prospective development. It has three phases and they are described in their temporal sequence (phase I – 2005-2010, phase II – 2010-2015, and phase III – 2015-2025).

Implementing measures for a certain development phase creates favourable premises for the evolution of the following phase and then it finally reaches the actual choreomatic structure of development which can ensure the optimal structuring of the territory under scrutiny and a location according to the existent potential of the anthropic components. But for this kind of evolution, random development will appear and this will, finally, lead to crises and conflicts with an unpredictable end. This state may lead to territorial involution or, at best, to stagnation and the maintenance of the actual structures already exhausted from the conceptual point of view.

The future development of the periurban zone of Bistrita has the following control elements and dynamics vectors:

- The natural pattern of the territory and its geologic, morphologic, hydrologic, climatic, and biotic elements;
- The prognosis of its demographic evolution;
- The spatial development of its settlements in correlation with its demographic evolution;
- The typology and the potential of its resources as well as their location;
- The typology, the intensity and the location of the risk phenomena;
- The A 15 highway route and the location of its access junctions;
- The location of the airport of Bistrita and the route of the express road that connects the airport with Bistrita and Năsăud.

The dominant element which gives personality to territorial development in the periurban zone, together with the natural pattern, is the A 15 highway route. At present, there are three proposals for the A 15 highway. One of the proposals is not feasible from the start (the middle variant in PATR¹ 2004).

Consequently, the northern and the southern variants will give territorial development a distinct personality according to the final option of the route. The predicted demographic evolution and the structural economic mutations to appear in the first and the second development stages are insignificant. On the long term this prognosis is not certain. Therefore, the demographic and the economic component will be part of the new territorial configuration after the building of the highway.

Extrapolating the ideas encapsulated in the concept of the polarised space to the territory under scrutiny and correlating them with the control elements and the dynamics vectors of development, we propose two choreomatic development models. These two models are developed according to the two variants proposed for the highway route.

The 1st variant of the choreomatic model refers to the southern route of the highway (Figure 6).

The future territorial development of the periurban zone of Bistrita will be influenced favourably and decisively if the southern variant of the highway is chosen. This is due to the following aspects:

- It will cross two other high rank transportation ways (infrastructure) (the main railway no. 400 and the Bistrita airport); therefore, it ensures the development premises for mixed transportation, and all the entailing advantages;
- Easy access to the Bistrita airport from the exterior periurban space and, consequently, the extension of its polarising area inside the county and at regional levels;
- This highway variant is not exactly a transit highway (like the northern one) for the periurban zone, but a connection which will turn into account the territory south of the periurban zone and the economy of Bistrita. Thus, a series of economic agents whose activities depend heavily on transportation will migrate towards the two highway junctions and they will, consequently create

¹ Planul de Amenajare a Teritoriului Regiunii de Nord-Vest/ The Spatial Plan of the North-West Region.

two new industrial centres. The former centre will be at the junction in Sărătel and it will attract heavy and mixed transportation because of the communication potential of railway no. 400. The latter centre will be at the junction in Jelna which will attract several economic agents interested in transporting raw materials or finite products of low value and weight. This centre will also be influenced by the communication potential generated by the airport of Bistrița. The two new industrial centres are the ideal location for the development of industrial or service parks;

- It will stimulate the demographic and the economic development of the localities situated along the highway because of their growing communication potential. Thus, Sărătel and Jelna will become poles of economic development poles with a VII rank mixed function at the national level. They will take over some of the economic activities of the municipality of Bistrița. The other settlements will also undergo an ascending trend as far as their economic and demographic development is concerned;
- Both residential and agricultural land use in the southern part of the periurban zone will be intensive;
- In connection with the Bistrița – the Bistrița Airport express road, the southern variant of the highway will modify the spatial extension of Bistrița from the existent northern variant to the southern one. This change is to the advantage of the municipality because the plateau on the interfluvium between the Bistrița and the Budacului Valley is more stable, from the morphologic point of view, than the southern slope of the Cetății Hill;
- In case the southern variant is chosen, the northern area of the periurban zone will become relatively unimportant, as agricultural activities are the most important. The only element stimulating development will be the Bistrița-Năsăud express road which will somehow turn into economic account Dumitra Depression where several economic agents who have interests both in Bistrița and Năsăud will migrate. Consequently, along the express road, a narrow development corridor will appear and its extension will be limited by the morphologic component;
- The localities in the central-western area of the periurban zone (Tărpiu, Blăjenii de Sus, Caila, and Valea Măgherușului) will have a low potential for economic development, they will continue to have a residential function which will be accompanied by the agricultural function.

Besides the direct positive or negative changes brought by the southern variant of the highway and which will have some impact on the development of the periurban zone, there are several other aspects related to its future spatial configuration:

- Along the Șieului and the Bistrița Valleys a development corridor ranked Ib (at the national level) will appear. Along this corridor there will be economic activities characteristic of the secondary and the tertiary sectors as well as intensive agricultural activities on the plots of land still available. The contour and the implementation of this development corridor will determine the concentration of economic activities between which there are relations of dependence on a small area and the preservation of the other plots of land for agriculture and for environmental protection. This way, the anthropic unity of the territory is created and the anthropic intervention is allowed within “large” limits while the remaining land is to be preserved for agricultural needs and for the recovery of environmental factors. The corridor will have narrow sectors overlapping the national road sectors between the localities where the development will be possible mostly along an axis (near the road, these areas will be transit sectors). The corridor will also have wider sectors overlapping the localities where there are all the circumstances for complex development because of the labour force, the infrastructure buildings, the junction of several transportation and communication ways ensuring access to raw materials as well as the sales of local, zonal, or regional finite products. The „dishevelling” effect appears in certain sectors of the corridors because of natural components which cannot be integrated into the economic and technological structures of the corridor in order to observe the environmental protection rules. Consequently, they will appear as an ecologic island in the corridor and will function as shelters for the biotic elements under huge pressure in the corridor itself. We refer here to the riverbed and the meadow of the Șieului and the Bistrița Valleys which divide the Ib corridor into two. Here the resulting secondary axis may represent a territory reservoir in the first phase and later there will appear several economic structures;

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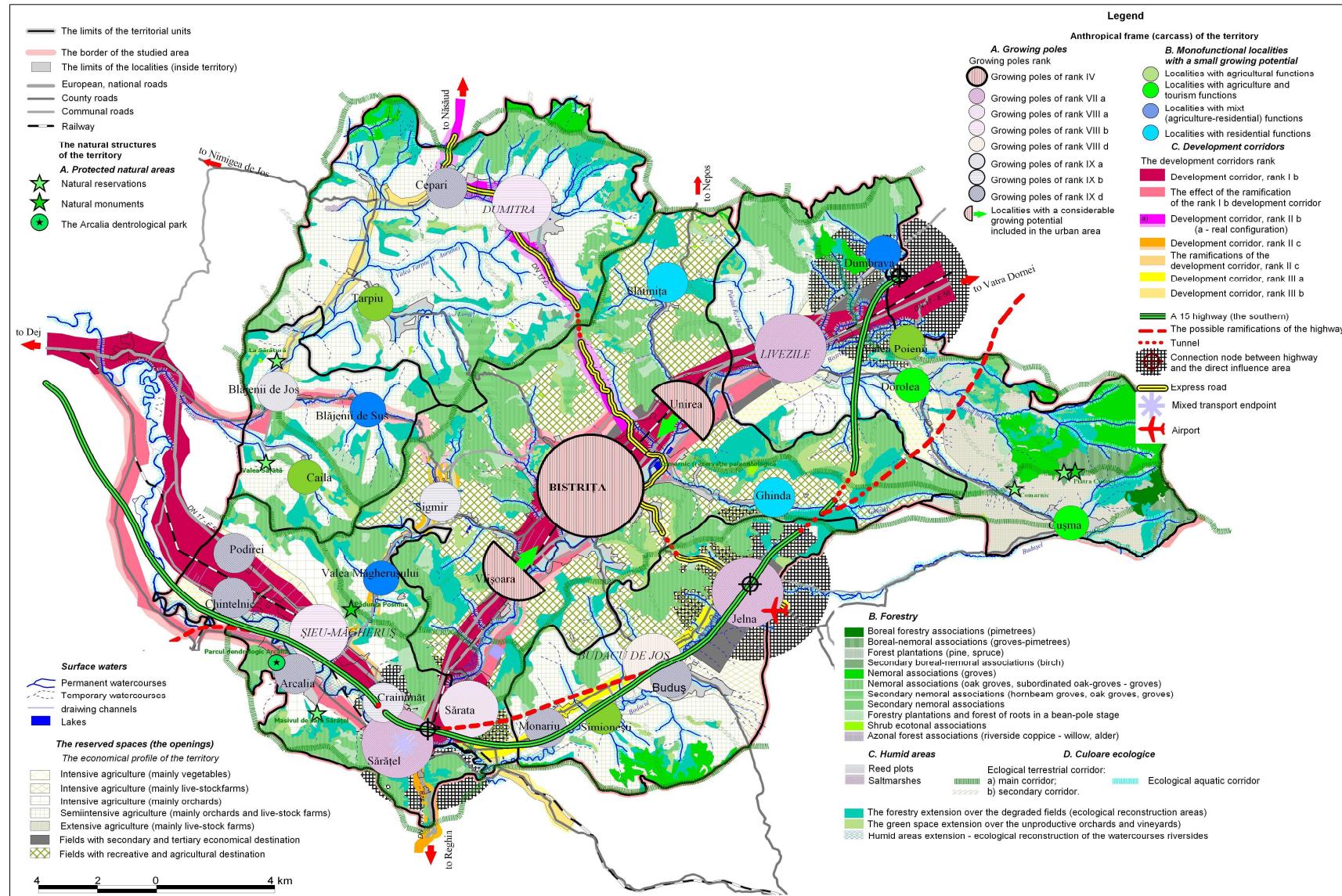


Fig. 6. The chorematic model of the periurban zone of the municipality of Bistrita, according to the concept of integrated network. The 1st variant refers to the southern route of the future A 15 highway.

- Another development corridor will be in the periurban zone and will go beyond its boundaries. It will develop along the future Bistrița-Năsăud express road. This is suggested to be rank II b at the national level and will not be very wide because of the morphologic conditions. It is in this area that several economic activities of common interest both for Bistrița and Năsăud will concentrate. The corridor is fragmented because of an obstacle, the Cetății Hill, which is to be cut by a tunnel. This area will be an important ecologic path that will connect the ecologic fluxes on the northeast – southwest direction. At the same time, this development corridor will connect the two municipalities more closely both from the economic and the social point of view and will, therefore, exclude any competition and disputes about the polarised space;
- On the road detouring the DJ 151 and DJ 173 B county roads, the development of a corridor ranking II b (at the national level) is suggested. This will mean much heavy transit traffic (parking lots, warehouses, repairing workshops, gas stations, motels, etc.). From this corridor, there starts another road ranked II c, at the national level, which will develop on the ramification of the detour road following the route of the existent DC 31 A communal road. This II c road will have the same economic profile;
- A development corridor ranked II c (at the national level) will take shape from Sărățel continuing on DN 15 A national road. This development area will include transportation activities to Bistrița and its periurban zone (storage areas, raw material sorting and pre-compressing spaces, and industrial locations for processing large amounts of raw materials, etc.) because of the presence in its proximity of the Sărățel railway station and the main railway no. 400, the future highway junction and the terminal for mixed transportation;
- Besides the corridors already presented, in the periurban zone there will be two other development corridors of local importance. One of them is between Blăjenii de Jos and Cepari, along the present communal road DC 31 C, ranked III b at the national level, where some activities of primary processing agricultural products will develop. The second corridor will go along the county road DJ 172 G between Sărățel and Jelna. Its appearance will be stimulated because of the highway and the existence at its extremities of two junctions, one with the highway and the other with the airport terminal for mixed transportation. This corridor is very favourable for the new enterprisers in the area who depend on regional and international transportation. The price of land is still reasonable and the connections with Bistrița will be very advantageous, mainly due to the Bistrița – Jelna express road and also because of the detour road belt – the southern variant. This development corridor will determine the development of, at least, one industrial park that will, finally, stimulate the development of the entire Budac Depression;
- In the southern area of Dumbrava, a third junction will develop. This one will ensure the access to the southern variant of the highway, it will also be a common junction for the northern variant and it will connect Bistrița directly to the flux from and towards Moldavia. Around this junction, an industrial park and warehouses will develop because this location has all the possible advantages (flat relief, complex transportation and communication infrastructure, and labour force which is only 10 km away);
- The two highway junctions (Sărățel and Dumbrava) will determine the axial development of Bistrița, which will finally result in an intensely urbanised area along the Bistrița Valley.

Besides these, we suggest several ecological corridors to support of ecological fluxes and connect all biotopes in a unique territorial ecosystem. Thus, riverbeds should be reconsidered as secondary ecological corridors and, consequently, should be protected. Forested interfluvies should be reconsidered as main ecological corridors. In junction areas between the economic development corridors and the ecological ones, the natural ones will develop firstly. Where the junction cannot be avoided (e.g. the highway junction, the express road junction or other categories of technical infrastructure), ecological passages should be built.

Implementing all the territorial development measures step by step will bring about positive structural changes in land use beyond the development corridors and their economic profile. Thus, some of the non-productive pastures and orchards should be included into the ecologic belt of the territory.

The agricultural areas inside the development corridors or in their neighbourhood should be intensely used, according to their bio-pedoclimatic potential in order to cover the urban population's current needs. Thus, vegetables can be grown in the corridor of Șieu and orchards can develop on the higher terraces. To all

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these, we can add the area situated south of the villages of Livezile and Dorolea. In the Budacu Depression milk cow husbandry, which is traditional, is to be developed on an intensive basis.

The northwestern area of the periurban zone (the Dumitra Depression and Blăjeni) are to develop mixed, partially intensive agricultural activities in orchards and animal breeding. The partially intensive character of these activities is, first of all, because they are not close to the urban market and because of also the lower bio-pedologic potential of the land.

The eastern area of the periurban zone seems to specialise in extensive animal breeding, which will turn into account the large areas of natural pastures.

The pieces of land situated in the neighbourhood of the inhabited area of Bistrița should be reconsidered as areas whose function is entertainment. Only several plots of land should be used for implementing ecological agriculture.

The chorematic development model proposed for the southern variant of the highway is, in our opinion, more advantageous, from all points of views, for the development of Bistrița than the northern variant.

As a consequence we plead for this development variant, even though the length of the highway sector through the zone increases by about 22 km. The supplementary costs of the highway construction will be compensated by the long-term advantages of this variant.

The 2nd variant of the chorematic model refers to the northern route of the highway (Figure 7).

The northern variant of the highway in the periurban zone of Bistrița has a running route. The advantage of choosing this variant consists in lower financial costs as its length is about 22 km shorter than the southern variant. That is why the impact upon the social and the economic development in the periurban zone and, implicitly, in Bistrița is much more diminished than in the southern variant. Consequently, the northern variant generates only one junction node with a development zone. This junction node is fragmented into two by the Cetății Hill. Half of this area will develop south of the village of Dumitra and the other part north of Unirea.

The Bistrița-Năsăud express road will connect the two towns and turn them into a unitary system. The other communication junction node is identical, from the point of view of its location and economic potential, with the junction node of the southern variant, at the exit of the periurban zone and south of Dumbrava.

The northern route also brings changes in ranking development poles. The development poles in the Dumitra Depression become more important whereas those from the Budacu Depression get lower rankings.

The configuration of the corridors remains unmodified, with the exception of the corridor along the DJ 172 G county road.

The northern highway route will influence the spatial development of Bistrița in that direction. But this development will be hindered a lot by the obstacle of the Cetății Hill.

In conclusion, the chreme of the future development in the periurban zone of the municipality of Bistrița on the northern variant of the highway is not very advantageous and would not bring more to the development of the Bistrița-Năsăud urban system.

In this context, the proposed infrastructure is the Bistrița-Năsăud express road which will increase the access route only by about 12 km, in case the southern highway variant is chosen.

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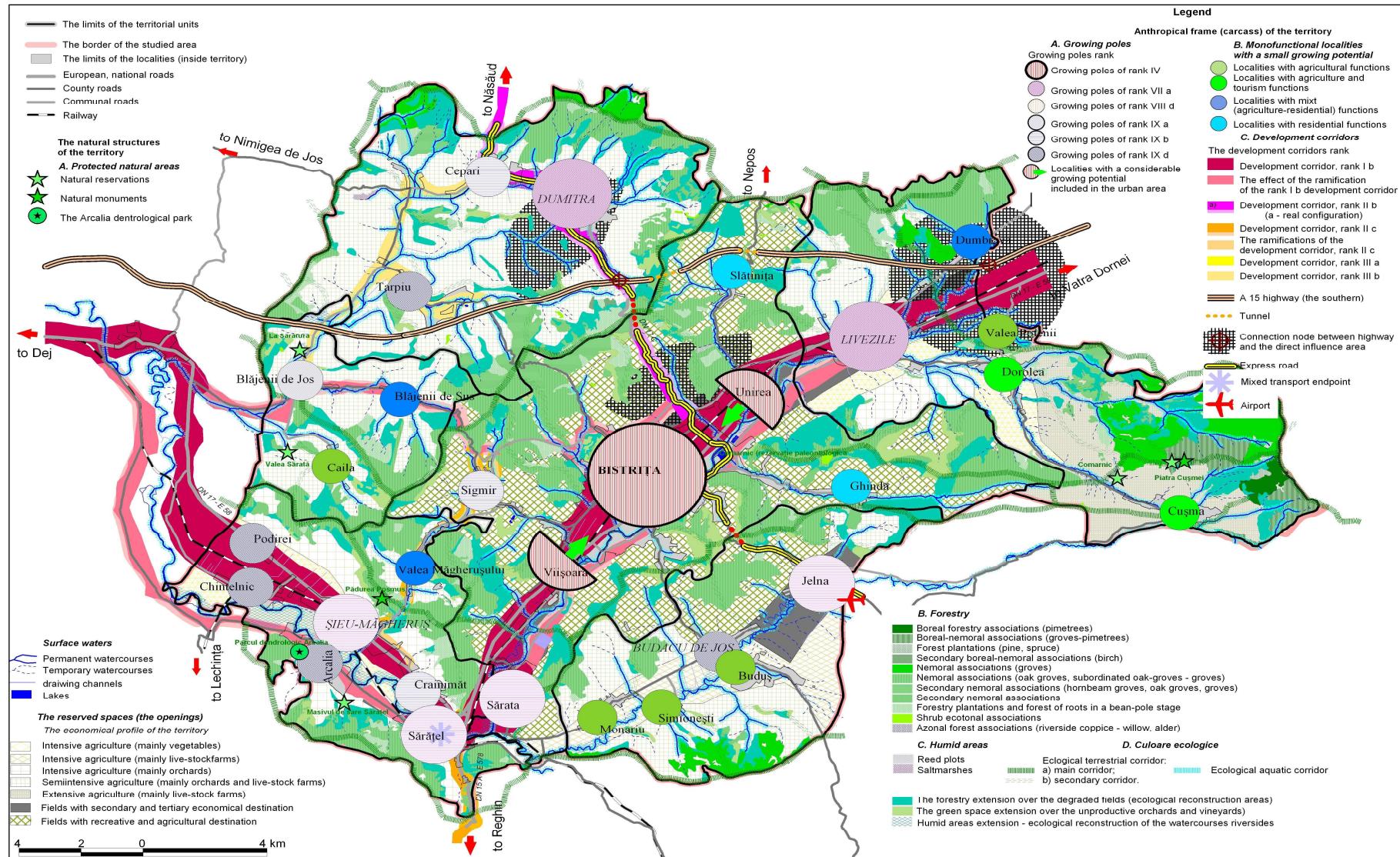


Fig. 7. The choreomatic model of the periurban zone of Bistrița, according to the concept of integrated network. The 2nd variant of the northern route of the future A 15 highway