

AN EFFICIENT MODEL FOR SPATIAL PLANNING: TERRITORIES AT THE HEADS OF AXES

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Abstract

Anisotropic spatial structures of development axes or corridors exert their influence upon the adjacent territory in a specific manner, through series of vectors that act in parallel or in transverse in rapport with their own development. Their planning will take into consideration the peculiarities of this action, in the sense of differentiating its catalyzing aspects that must be amplified and turned over an area as extended as possible. In this respect, the planning of territories at heads of axes has multiple functional valences, besides their own affirmation. They induce, directly or indirectly, active principles in the system, through the transit of raw materials, persons, goods and interests. They become genuine "bridgeheads" of the interconnection with the adjacent spatial systems, ramparts for increasing the territorial cohesion and diminishing the economic and social disparities by alleviating or removing the peripherisation phenomena.

1. Introduction

In a recent approach (Cocean, 2010a), a series of structural and functional characteristics of gravity axes were highlighted, including their univocal and bi-univocal character, as well as the nucleation phenomena occurring within them. Starting from their anisotropic arrangement (Dauphiné, 1979), axes determine a mostly linear conveyance of the active principles in the system (energy, goods, interests), with a dominant discharge at extremities and a secondary one in the lateral proximity of their own configurations. At the same time, due to the remarkable concentration of habitats, of local, zonal or regional growth poles, respectively, they generate obvious disparities in relation to the surrounding territories, gradually developed into genuine repulsive areas (Ianoş and Humeau, 2000), although they lack neither resources nor the conditions favorable for a sustainable development.

2. Methodology

The analysis of the phenomena developed in the perimeter of the spatial gravity axes is a complex operation that can be captured in all its details through rigorous introspections, which commence with the perceptions in situ of the physical, anthropogenic or environmental systemic conditionings. The accumulation of information, its storage and processing by using the GIS technology allows the operator not only to capture the processes in their spatial and temporal interacting, but also the evolutionary, prospective modeling by creating many possible scenarios. In this context, mapping becomes a necessity, but also a goal of the analytical-statistical approach, the application of spatial planning patterns being strictly associated with the territory thus defined and illustrated.

3. Functional specificities in gravity axes

A closer look at the dynamics of the force lines in the gravity corridors highlights, besides their univocal or bi-univocal character determined by the manner of orientation and localization in relation to the triggering and discharge points, certain traces of specificity generated precisely by their own manner of manifestation. As a result, three major types of axes can be distinguished, namely closed, pseudo-closed and open axes.

Closed axes (Figure 1) have a relatively simple structure, taking, in the absolute majority of cases, the appearance of some branches, diffluences belonging to some axes of higher level. However, their obstruction, closing up at the extremity opposed to the connection point with the major corridor they broke away from, is typical for their structure and functionality. Hence, many aspects derive, with the most striking implications for spatial planning action.

The most illustrative examples of closed axes are grafted on the second and third order tributaries of the main rivers in the country (Siret, Olt, Argeş, Mureş, Jiu, Buzău, Someş and Tisa), where systems of linear, “valley” – type habitats (Ilieş, 2007), spatially obstructed in the origin area by orographic barriers, are individualized through natural, traditional organization, accomplished by translation or saltation from downstream

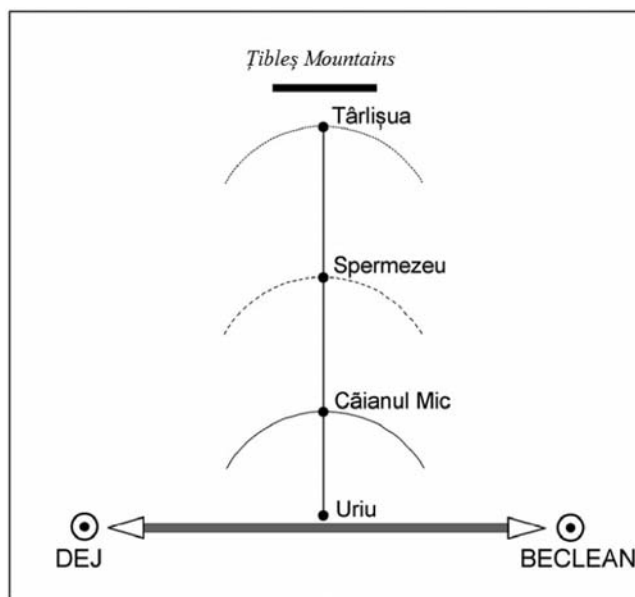


Figure 1: Closed axis of the Ilișua Valley

to upstream. Such an axis, detached from the Someșul Mare corridor and having as terminal unit the commune of Târlîșua, located under the impregnable ridge, in terms of access, of the Țibleș Mountains appears in Figure 1. The sketch suggests, through adequate representations, the decrease in the role and the systemic functions of settlements that compose the axis as the distance from the junctional nucleus, with attributions of local growth pole, increases (in this case, the village of Uriu, situated on one of the major gravity axes of Northern Transylvania, namely the Someșul Mare axis). The progressive reduction of the systemic role of settlements can be noticed at the level of the majority of its components, starting with the demographical and economic potential and continuing at the level of technical infrastructure and of the efficient management of the territory.

Pseudo-closed axes. The closing must not be understood only in the physical sense, made by a major natural obstacle (mountain massif, the most common), where the infrastructure fractures (access routes, electricity, water and gas supply networks) are frequent, but also by the great distances that can separate the elements of some territorial systems from the others. A good example in this respect is offered by the Arieș Valley (Figure 2), which, from the functional viewpoint, is an axis closed by the joint action of the two factors previously invoked: the presence of the Bihor mountain range, which the road over the Vârtop Pass fails to surmount, but to an insignificant extent, and the relatively great distance that separates the spatial system of the Arieș corridor from the Beiuș Depression, the functional interrelation between the two systems being detected only as regards the tourist transit.

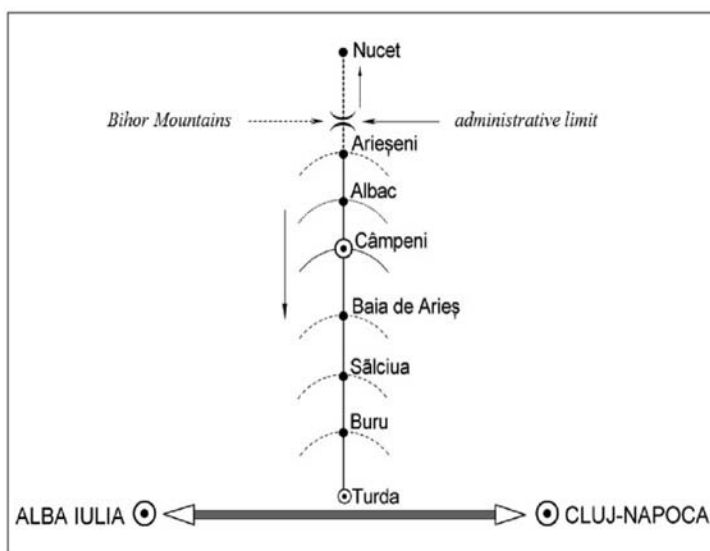


Figure 2: Pseudo-closed axis developed on the Arieș Valley

Similarly, the axis of the Sălăuța Valley, despite its opening towards the Maramureș Depression over the Șetref Pass, has in the village of Romuli an extreme, peripheral point, beyond which the influence of the polarizing centre of Năsăud is actually no longer present. Such gravity corridors, also found in great number, form a distinct category, intermediary between the closed and the open axes, and can be defined by the term of pseudo-closed axes. However, this spatial entity is nothing but a higher evolutionary stage of closed axes towards their openness by total connectivity with other neighboring territorial systems.

Furthermore, the obstructive nature in such axes can occur and is amplified by the setting of the political-administrative boundaries of different orders (commune, county, regional or even national) on these natural obstacles, resulting in the divergent orientation, sometimes even forced, of numerous vectors from the economic or social fields.

Unlike the previous category of axes, where the dissipation phenomena is evident from the centre to the periphery, in the pseudo-closed axes more complex phenomena appear, namely the individualization of some growth poles (Baia de Arieș, Câmpeni) favored by local concentrations of the development principles due to the more obvious anisotropy and to their greater length. The openness towards other systems, even if modest, plays the role of catalyst, loading and unloading its own functional aggregate with complementary attributes.

The open axes are either higher level corridors (the Danube, Siret, Mureș and Olt) or link bridges of junction between two higher level axes. In terms of spatial location, they generally bring together river corridors developed in parallel, such as Târnava Mare – Târnava Mică – Mureș (Conțiu, 2010), Jiu – Olt, Siret – Prut, major morphological corridors separated by mountain ranges (the Getic Sub-Carpathian

corridor and the depression corridor of Southern Transylvania, surmounting the massive orographic barrier of the Southern Carpathians), hilly ridges or extended plateaus (the Hârtibaciu Plateau, between the Făgăraș – Sibiu – Apold depression corridor and the Târnava Mare corridor) or the combination of them (the Siret River corridor and the morphologic corridor of the Moldavian Sub-Carpathians) etc. Such an axis appears in Figure 3, interconnecting two major transport corridors, the one grafted on Crișul Repede River, between Cluj-Napoca and Oradea, and the one that spatially relates the same important city of Transylvania with the cities of Zalău and Satu Mare. It surmounts the low ridge of the Plopiș Mountains, linking the village of Ciucea with the settlements situated in the Agrij catchment area (Buciumi, Agrij and Românași). The settlements located at the extreme points of the axis, Ciucea and Românași, play the role of local growth poles, detaching themselves from the others.

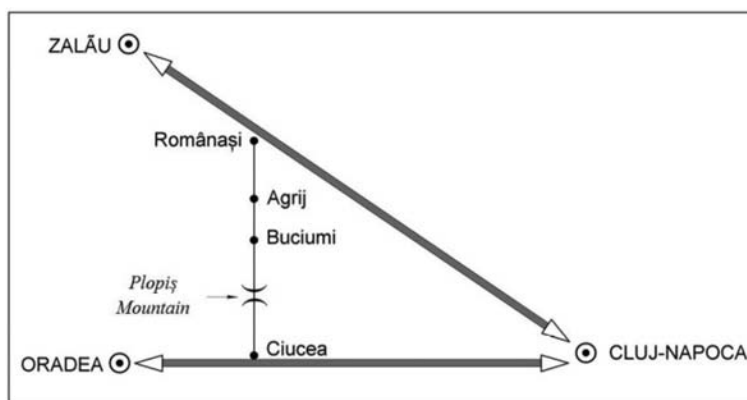


Figure 3: The open axis of Ciucea – Românași

4. Adjusting function of the heads of axes

Regardless of the type of axis, closed, pseudo-closed or open, the territories situated at the extremities have an important role in managing the entire spatial system. They are often both growth poles, with an influence propagated in close correlation with the size of their own potential, on a certain distance within it, and genuine barometers of the phenomena characteristic for that system.

If in the case of all open axes, of an important number of pseudo-closed axes, as well as of the administrative-territorial units located at the connection end of the closed axes with the higher level corridors, settlements play the role of connective nuclei (Cocean, 2010b), asserting themselves functionally as polarizing centers, the territories located at the opposite extremity of the closed axes behave totally different.

Thus, the arrangement of the axis under the form of a closed corridor transforms its extremity into a *no man's land*, into a periphery of the spatial system where the intensity of the fluxes shows a gradient continuously descending till insignificance or even extinction. Their orientation receives a univocal character, from the connection

point with the higher level axis towards the territorial unit situated at the extremity of the corridor.

In this type of axis there is the phenomenon of gradual degradation of functions, of their minimization or disappearance due to the lack of demand or logistic sustainability. The process is based on the principles of dissipative energies from the centre towards periphery, of the continuously decreasing interest of the development actors in a more remote territory classified as lacking perspectives.

Another major dysfunction of the settlements situated at the heads of closed axes (the settlements in the so-called “cul-de-sac” location) derives from their peripheral condition, from the lack of the polarizing role and from the economic, social and infrastructural disparities that characterize them. The maintenance of these entities located peripherally from a geographical viewpoint in the situation dictated by the voluntarism and the free will of the private initiatives, essentially aiming at achieving immediate benefits with minimal investments, is synonymous with the amplification of the economic and social dysfunctions, with the migration of the population and the devitalization of the entire territorial system. The phenomenon is clearly visible in the case of the commune of Târlișua, located at the extremity of such a closed axis, whose population has decreased in the last four decades from 5,981 inhabitants (in 1966) to 3,640 (in 2010), therefore by almost 42%. The phenomenon is visible in the structure of the settlement network, the villages of Costeasa and Ivăneasa having already disappeared, and others such as Cireași, Șendroaia and Oarzâna being almost extinct. At the same time, economic, educational and cultural activities have decreased.

Under these conditions, in which evolution takes place under the impulse of some random, contradictory political, economic and social factors, without clear targets and goals, the process of axis reduction will increase by the genesis of a new periphery, overlaying the territory adjacent to the one currently in decline, namely of the commune of Spermezeu and so on. Simultaneously, an expansion of the repulsive space will take place, as well as an amplification of the disparities within the regional system, of higher rank.

On the contrary, the planning of territories located at the extremities of axes has a series of long-term advantages, namely:

- provides access to the technical infrastructure of the territory (transport routes, water, gas, electricity supply networks, telecommunication networks for all the settlements located on the axis);
- stimulates, indirectly, the development of the settlements located on the axis by making permanent and by increasing the intensity of the flow of persons, raw materials, products and goods;
- capitalizes diverse soil and underground resources, generally less exploited due to the selective action of the principle of comparative advantage (that guided the initiatives for the efficient exploitation of the resources belonging to areas closer to the polarizing centers);

- valorizes and ensures the preservation of the spiritual and mental valences of the authentic ethnographic niches through rural tourism;
- the territories concerned are generally characterized by the quality of environment, soil and water, and air pollution is absent or has insignificant values;
- the transformation of these entities located in bridgeheads into outposts for the future connectivity with the neighboring spatial systems. This was foreshadowed and argued in the project entitled *Planificarea și Amenajarea Teritoriului Interjudețean* (Inter-County Spatial Plan) elaborated for the first time by the geographers at Babeș-Bolyai University of Cluj-Napoca in 1997-2000 for the contiguous territories of the seven counties in the North-Western Romania (Bihor, Bistrița-Năsăud, Cluj, Maramureș, Mureș, Satu Mare and Sălaj).

5. Solutions and intervention measures

They must be imagined, as much as possible, outside some privileged, exclusive scenarios that put at disadvantage other spatial entities, thus generating other types of disparities. We consider the following to be the most recommended solutions in this respect:

1. *Assigning the status of disadvantaged areas, with legislative, fiscal and financial facilities*, for which there are sufficient grounds in comparison with other settlements that make up the axes of gravity. It will be withdrawn in the moment in which the development of the area becomes sustainable. This measure should be taken starting from a precedent one, namely the adoption of Governmental Ordinance no. 24 of September 30, 1998 on Less Favored Areas, but their definition and especially the activities will be made on totally different criteria. Thus, if according to the respective ordinance 28 less favored areas were defined, totally overlapping some mining areas (some, such as Baia Mare, with a much higher overall development compared to other vast regions of Romania), on the grounds of mono-industrial profile, staff layoffs, unemployment, spatial isolation and equipment index, the less favored areas at the heads of axes must be delineated and defined mainly starting from the extremely low economic development and social index, from the lack or the scarcity of the technical infrastructure of the territory. The same experience has shown, in the absence of strong enforcement of laws, of the monitoring of the approximately 1,800 companies that obtained the certificate of investor in these spatial units, that the status of less favored areas, where tax incentives were granted (exemption from VAT and custom duties on imported raw materials, profit tax exemption), has become an ideal springboard for illegal activities (Moldovan, 2007), related to the import of some raw materials and products that competed with the domestic production, having a totally opposite effect to the one intended by the establishment of these territorial entities. It must be mentioned that the status of less favored areas ended for most of the areas in 2009, and for the last three in 2010.

2. *Stimulating and making local actors co-interested* by elaborating and providing some short, medium and long-term spatial plans and development strategies appropriate

for the area, in which the desiderata and the options of the community and of the individuals are found directly. The operation benefits from an appropriate scientific and technical logistics, ensured by the academic institutions located in all the eight development regions of Romania, as well as by other organisms specialized in such activities found in the structure of the county councils or independent of them (private companies). The universities from Bucharest, Cluj-Napoca, Iași, Oradea, Timișoara, Craiova, Suceava etc. have research centers focused on development and spatial planning, where such demands can find an immediate solution.

3. *Directing from the central and regional levels, at least in the initial stage of the spatial planning process, some financial resources necessary for carrying out priority projects, vital for triggering the local development phenomenon (elements of the technical infrastructure, such as water, gas, electricity supply networks, modernization of the access routes etc.).* We consider both the direct involvement of state in supporting some local development projects, at least through public-private partnership, and especially credit facilities granted to local development promoters (preferential credits with soft loans or incurred by state, VAT exemption for certain activities, elimination or significant reduction of tax on reinvested profit etc.).

4. *Supporting the trends of opening the axes by surmounting the natural obstacles (construction of road and rail tunnels, modernization of roads, interconnection of the electricity and gas supply networks) that interrupt totally or partially the connectivity with the neighboring territorial systems.* We refer, for example, to the removal from isolation of the historical Maramureș and of the Land of Lăpuș by building some road and railway tunnels under the passes of Huta, Gutâi, Băiuț, Șetref and Prislop; to the removal from isolation of Codru, of the Land of Moți, Pădureni, Almăj etc. by modernizing the road access and by reconsidering the rail access, be it even for tourism purposes (the narrow gauge railway on the Arieș being ideal for this purpose) etc.

The closing or pseudo-closing phenomena are ultimately functional thresholds of different sizes induced in the territorial system, which they influence less at the top level, where energy and influence of vectors is transported by means of major gravity axes. Their decisive action occurs at the level of their components, their subsystems or microsystems, where the generated dysfunctions can be varied and the consequences numerous.

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