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Geographical Axis Theory. Role and Function in Building Territorial Social Realities

Calin Cornel POP¹

Abstract

This article wants to present *the geographical axis* as an entity capable of explaining a part of the territorial social realities. The geographical axis, interpreted as a territorial social axis, becomes a convergent social space, defining for the human communities organized along certain material energies charged both informational and economic. The territorial axes acquire permanent, natural and social operation ability through the characteristic community which governs it in time. This study focuses on the spatial structure of the Geographical axes. We have a lot of flat shapes for the spatial structure: we have axes, polygons and they have a lot of different geographical extensions in territory. The aim of the research is to analyze the geometric models of territorial and social realities. The social and economic attributes of the territory are discussed in numerous studies. The aim of my research is to analyse these shapes of the axes type. The axes, they show the spatial structure of an area in a simple way that is why they are used not only in scientific researches but also in educational publishing, in education, in regional policy and the social territorial analysis. The axes is one form in territorial modelling. It is often used to symbolize development corridors, linear urban and traffic zones etc. Sometimes the axes are used to represent an area including some countries, regions which are in the same political, economic, social and natural position. The importance of structuring and balanced development of the urban settlement network through the formation, strengthening and balanced, distribution of development poles, arguing that this objective could be achieved, among others, through development and diversification of the relationships between urban centers, supported by the emergence of development axes related to the major transport axes. Geographical and social axes concentrate and spread towards and from the development poles, population flows, goods, capital and information playing thus an important role in their development and dynamic. Also, geographical and social axes facilitate the spatial diffusion process of the development from the urban centers towards the near rural settlements. This diffusion process manifests mainly along the major geographical axes. Geographical and social axes thus play an essential role and in the urban-rural relationship.

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Keywords: the axis; geographical axis; territorial axes; social realities, spatial structure.

Introduction

The theory represents for the geographical knowledge degrees of deepening (penetration) in the dimensions of the territorial social reality. An edifying example is the geographical axis, seen as a picture, as a structure, as an operation, as a dynamo and utility. The levels of geographical knowledge, seen through the social theories (Andrei, 1997) that have generally political roots and are dedicated to the human emancipation, the precarious states change, discover the mental, conceptual processes and the material practices. Finally, the knowledge levels will reflect in the “sociology of the geography”, sociology of space, of the territorial social axes. For example, a geographical axis type territory seen as a human habitat represents a social entity, seen in the environmental context represents the social space of relationship. Somehow, the geographical researches for new theories materialized through new ways to approach the surrounding reality. For example, the integrated geography led to the axis theory to express the transition from general problems to problems of territorial social reality. The study of geographical axis in specialized literature evoked the interest of many researchers. A series of towns, interconnected alignments such as the one between Jibou-Zalau-Șimleu Silvaniei-Marghita (Pop, 2003). We should make a difference between a flat shape which illustrates a part of an area (with a concrete name) and a geometric model (Apostol, 1977). In the first case there is a concrete geographical area (for example London–Bristol axis, Milan–Turin–Genoa triangle) and in the second case there is a general spatial formation. For example, the development axis or the development triangle. For example, the geographical axis theory in several studies which focus on Europe’s economic, social geographical picture we find an axis across Europe with different names, for example the Manchester–Rome urbanized axis, Europe’s vital axis from Greater London to Northern Italy, the economic axis, from London to Rome, the axis from London to Turin, a dominant urban axis from London to Milan, the great European development axis. These axes are in the same geographical zone, they extend from England to Northern Italy but these are not linear axes (Szabo, 2008). The development of the polycentric networks determines the emergence of structuring axes which, by their favorability, may attract investments and enable a superior development on the accessibility routes between development poles (Peptenatu et al., 2009). Generally, these concentration stripes, which, through spatial and functional individualization become gravity axes proper, overlay the major hydrographical corridors (the Danube, the Siret, the Olt, the Mureș, the Someșul Mare, the two Târnava rivers), the representative morphological corridors (the peripheral

depressions of the Transylvanian Depression, the sub-mountainous depressions of the Sub-Carpathians, Rucar-Bran and Timiș-Cerna intra-mountainous corridors), the contact areas between major forms of relief (plain-hills/plateaus, plain-mountain, hills/plateaus-mountainous area), where the complementarities of resources has attracted population since the beginning of the inhabitation process. In addition, a classical axis is the one superposing the interface line between two major geographical environments such as land and water in the case of the Black Sea seaside. In all these cases, the a priori achievement of a natural gravity turned into a genuine spatial matrix can be ascertained, invariably followed by human gravity and concentration (Cocean, 2010a). We can rediscover this notion as a syntagma: axis of terror, colonialist axis, axis of environmental evil etc.² The most recent example that supports this theory is *Geographic axes and the persistence of cultural diversity* (Laitin, Moortgat, & Robinson, 2012).

Methodology

Examples-supports of the geographical axis theory

The territorial social realities seen through the axis theory have as an exponent a phrase that is very publicized in the recent past called the “axis of evil”, an axis formed by the following countries: Iraq – Afghanistan – North Korea (DiFilippo, 2006). Another example is related to our country (*“The Geography of Romania. Fundamental Problems”*, 2002), where it is shown that “Romania is a country located at the intersection of the most important geo-economical axes, and also the most important geo-strategic axes of the continent”, some with a specific of euro-axes, namely: the West-East Axis: the Western Europe (predominant provider of technology) – the former Soviet space (provider of raw materials, mainly energy); the North-West – South-East Axis: the Central Europe - (having Germany as the main pawn, the country with the biggest GDP from Europe, the most developed foreign trade, and so on) – Asia Minor and the Middle East (essentially the relationship is the same as with the previous axis); the Axis of the Seas: the Caspian Sea – the Black Sea – the Mediterranean Sea, on which is centered the biggest energetic project from the start of this millennium (“The road of the Caspian energy to Europe” Drumul energiei caspice spre Europa); the rivers and canals Axis: Rhine-Main-Danube, finalized in 1992, with the realization of the Main-Rhin connection, which ensures the link between the North Sea (with the biggest port of the world, Rotterdam) and the Black Sea, with the Constanta harbor, the biggest from the Black Sea basin. For Romania, especially the last two axes are premises of a better future, because it can propel Romania at an advantageous position from the continent. After 1829, once with the trade liberalization on the Danube, the river became an important communication and

² http://www.princeton.edu/~achaney/tmve/wiki100k/docs/Axis_of_evil.html

economic exchanges axis. By making the Danube-Black Sea canal there exist two direct connecting axes between the sea and the rest of the country and between Romania and Europe. Other examples of geographical constructions axis type would be the Prahova Valley axis, the Trotuş Valley, the Black Sea coast strip, the Siret Valley, the Mureş corridor between Deva and Lipova, the Mureş and Olt Valley in depressions, the Silvania axis (Jibou - Zalău - Simleu Silvaniei - Marghita), the intercounty axes (Târgu Mureş - Aiud, Sighişoara-Blaj) and so on (Cocean, 2010b). According to these examples we manage the transition towards the terminological specifications, but also the preliminary setting of a typology and the specifics regarding the axis type constructions limits (Pop, 2004). The Americas span a much greater distance north-south (9,000 miles) than east-west; only 3,000 miles at the widest, narrowing to a mere 40 miles at the Isthmus of Panama ... In contrast, the major axis of Eurasia is east-west. This simple observation facilitates an understanding of broad historical patterns. The rapid spread of grains, animals, technologies, and empires across Eurasia is attributed to the low level of variation in latitude along the lines of settlement. Meanwhile, agricultural innovations in the Americas (treated as a single continent) and Africa were slower and less successful. These continents' north-south orientations made technological diffusion inappropriate and counter-productive. Continental axes, therefore, are one of the four important factors explaining Eurasian world domination. However, the continental axis theory has even broader contemporary relevance. One implication of the theory, is that east-west expansion of states delimits cultural diversity but north-south expansion sustains it (Laitin, Moortgat, & Robinson, 2012). The analysis of social and geographical axes aimed establishing a hierarchy depending on their capacity of structuring the territory and at indicating their existent potentials and their future development perspectives, elements which could be taken into account in the territorial planning process (Brunet, Lehotsky, & Podolak 1990).

The geographical axis-an example of an environmental territorial (natural-social) model

The functionality and the operation of a geographic system have an active and appropriate character because they have to ensure their sustainability in various impact end environment conditions, as it is known that the geographical transformations have a specific finality. In this situation, the geographical axes reason to exist, to be interpreted like geosystems in dynamic balance is given by the active and adequate character of the juxtaposed and spent intra systemic and extra systemic reactions (Draganescu, 1976). Componental, sequential, functional and structural are realities that characterizes the geographic axis geosystem, and realities which lead to a fifth major particularity, namely the behavioral improvement of the newly created geographical structure. The geographic axes operate through the integration of the constituent elements, that every point,

place, level, order of organization, secondary axes, major axes, local mesh, and so on, have their organizational laws. To name a geographic entity or not only, axis, functionality is needed. An aspect that distinguishes in the axis refers to relations (Pop, 2013). In an axis the relations are various, complex and fulfill material, energetic, informational and relational functions. The relations are under the incidence of the permanent, temporary and random type functions which otherwise influence and directs them. The relations are of synergistic, co-evolution and mutual support type. Through the relations reflection, it results at different time moments various states of fragility, degradation, stability and regression. An axis has its own identity, but being a subordinated component of the independent variables and at the same time a subordinate will have features, which will join it to the upper and lower hierarchical Holon. Also, an axis is related to the function which it fulfills. Relations in axis depends on the degree of connection, the connections hierarchy, the axis being a structure in which the communication and the cooperation between the parts strengthens the axis, resulting the fact that the axis will be integrative of an superior class. Upon the geographical axes circulate individuals, groups, living beings, generally solids, liquids, gases, energy and pieces of information, with purposes of storage, conservation (namely the reserve, distribution and consumption part), informative, suppression, elimination of entropy purposes or production by transformation, evolving cyclicity, by packaging or by any means or any other treatment. These pathways may be for collective use, available to all, and for limited use, restricted to certain products, certain exploiters or to certain consumers, in both cases with or without benefits they may be: technical (Stoica, 2004), geographical, functional, aesthetic and cultural. All these pathways form elements of programs, both at their creation level, as well as their exploitation level, causing mobile and diverse expanding or declining interferences, in the axis complex thus created. Structurally, a geographical axis is based on the present state and it also take into consideration the potential directed interventions, but not neglecting the random ones, and it take the consideration the territory evolution as well according to the co-evolution and polarization principles. The generated model of the axis has as a foundation support element, that imaginary or real line. It has the development poles in natural or social profile, but it also has components with a greater load of natural order (Klapka, Frantal, Halas, & Kunc, 2010). The main line serves to channel, to concentrate all the material, energetic and informational flows in integrative ways. In the environmental territorial model of the geographical axis identify these dynamic states: *the functional environment* with the functional state of the functional environment (*profound*), the residential state of the functional environment, the relaxing state of the functional environment and the relational state of the functional environment; *the residential environment* with the functional state of a residential environment, the residential state of a residential environment (*profound*), the relaxing state of a residential environment and the relational state of a residential environment; *the relaxing environment* with the functional state of a relaxing

environment, the residential state of a relaxing environment, the relaxing state of the relaxing environment (*profound*) and the relational state of a relaxing environment; the relational environment with the functional state of a relational environment, the residential state of a relational environment, the relaxing state of a relational environment and the relational state of a relational environment (*profound*). We mention the fact that the axis has at least the following initial priorities: it is comprised within certain limits, so it has a space, it also has duration (time), depending on the case they establish relations; it presents a certain material component, both plan-spatial and vertical, including the natural elements, the anorthic elements, the derived, the new, the visible ones even; the underground resources, and even the unmaterialised ones-the climate, which have great impact; it has a shape (geometric) which may every useful, especially for the studies of the local of great complexity (for example: transport, distances, consumption etc.); it has function (movements) which in a graphic representation would present contrast levels on the system's order.

Geographical axis-role and function in social integration

Why should we watch integrated? Why should we analyze integrated? They seem to be difficult questions but they can get logical answers, and this doesn't happen only in Geography. For example, the economists have base economic models (Scott, 2000), architects have base reference architectural styles, painters have base colors, historians work with representative periods, anthropologists work with base races, and geographers possess the use of integration levels. All these, but especially all that are to follow, are the products of combining, of together of relating. According to J. Tricart, 1972, the integrated study would represent the preservation of a "dialectic of nature" in the study or of the phenomena logical interaction respectively. Geographic integration as being the most specific principle of geography because it shows the way which leads to the purpose of geography, that being: the description and the explanation of the territorial unit (Mihailescu, 1968). In order to demonstrate the capacity of a science to integrate the multiplicity of territorial components in a unitary whole, it is sufficient to build up a unitary epistemological system, whose basis can further lead to inter and trans-subjects communication (Ianoși, 2000). If different particles have the tendency to organize into more and more complicated systems, it means that beyond the order principle and system organization, there should be a system of universal integration (Restian, 1989). Pierre Teilhard de Chardin, in his paper *Le phenomene humain* points out the matter, be it elementary or total, it is characterized by plurality, unity, integration and complication among others. Yet this reunion must be seen as a change according to both the theoretical methodological point of view and the application point of view, to the extent of the perception of all energetically-informational mechanisms through the aspects which are related to mass, polarity and geographic specificity, and also related to

the semantic charge from the terminological point of view. Integration is to be met at a micro geographic level and a macro geographic level. Working on one of the two aspects, we must understand by integration the *organized union of the diverse components which form a whole or a certain level of integration is a necessary condition in fulfilling the functioning in a geographic system*. Integration as a phenomenon and as a purpose presupposes a new structuring, it also presupposes ability and stability, but also selectivity and redimensioning. Integration represents the tendency on the process of interconnecting manifest in reciprocal relations. Geographic integration depends on the attraction among systems, it depends on both systems, on their disponibility, on their capacity to integrate and on the efficiency of integration. A geographic axis comprises elements and the mode in which these are manifest reflects the status of the functioning. For example, the social axis is a functional territorial axis, defined by the following component elements: an urban functional nucleus, structured onto four unequal segments which consists of the dominant urban localities; the territory corresponding to the urban territory (periurban), which is linked with the urban from an economic, social and natural point of view; - a rural functional nucleus, structured in accordance with the capacity of the rural geographic space of the axis, with the communal centre respectively; rural functional nuclei, the villages corresponding to the axis; the natural space, given by the vertical and plan-spaced extremities of the axis. In conclusion, territorial social system of the axis type are the beneficiaries of some memories where depending on the above characteristics, a series of essential parameters of different states, in their most efficient form accumulate so that they enrich the statuses having in view the lasting of the system (the perfection of these statuses). The axis or the referential environment of one of the axis's cities, also seen as a model geographic territorial environment, may be defined as being those segments, moments, creations or geographic constructs of a major territorial configuration (a geographic region) in which the relations between man and the natural environment he exists and multiplies in, and which refine themselves to such an extent through direct or indirect connections, that both existing realities, embodied in a single unity, that is a geographic unity (they merge into a whole), become strongly connected, one depending on the order, as a function of temporal-space scale on which this takes place. The axis as a whole, but especially the axis with its main components may be read from the point of view of integration (but also of analysis) under the following hypostasis: globalizing, meaning the major components are globalize, they are compressing parts of the axis, the same way the sub-components are integrated within the statuses superiority organized up to the level of ultra structures (Smith, 2002); *union*, of more than one sub-systems in order to the from the axis for common interests and purposes, from an economic, social and natural point of view. We return the fact even the formation of the major systems and sub-systems takes place through the union process too; *inclusion*, considering that any element of the axis belongs to the four main components, in the same way the elements

which give the major components their structure belong to the subsystems too (Albrechts & Coppens, 2003); *fusion*, understood in the case of the axis by the unification of the forms (subsystems), in the background, so that the axis becomes a unique system which functions according to the new status; *superposition*, which implies the explanation of the dichotomy, a moment in which the axis as a whole coincides with the subcomponents and reversibly, the subcomponents coincide with the axis, meaning we may speak about the axis and see it through the components or speak about components at the level of the axis; *belonging (non-belonging)*, meaning the components are constitutive subsystems of the axis system, be them considered punctually or areally, yet we retain that some of the sub/components of the four major components may not belong to the axis area, the same way they may belong totally or just to be opened to the axis.

Results and discussion

Modeling (Moser, 2009) the territory of the axis has to follow some necessary moments in the shape of an integrated approach. The first step consists in the analysis (horizontal and vertical plan) of the environment which surrounds the axis, and afterwards the levels of analysis follow the route from a micro scale to the complex. The Latin-Român Dictionary by The Scientific Publishing House in Bucharest - 1962, presents the meaning of the “axis” concept by the syntagm “Cancri axis”, which means “Cancer Tropics”. By the definition given by the respective dictionary we understand that we must accept this notion in a geographic terminology and beyond it, in the sense of accepting this reality, especially from the point of view of organization, of difference (heterogeneity) in geographic water. A closer definition to geography may be presented by the geographic axis as it being a territorial complex. The explanation derives from the semantics of the term complex and of the term of territory. To clarify the national expressivenesses of the two terms means to a certain extent to open up the terminological proportions regarding the geographic axis. The attribute complex attached to a geographic axis to a geographic axis derives from the fact that geographical axis result after multiple assemblies; genetically, a geographical axis is pluriformed ; the geographical axis turns into a polyvalent one; the axis embody different shaping; one axis is and becomes multilateral; the manifestations in an axis will have extended behaviors on evolving. *Territory*: as a concept it presents a series of meanings. Among the first wordings we accept, depending on various criteria (geographic or not), which may stand at the leases of general understanding, the notion of: Area, perimeter, area, exterior, boundary, land, district, department, enclave, exclude, camp, region etc. *Axe* - form of organization of the fluxes, a form of linkage (Andrei, 1987).; *Territory* - a concept with a large meaning, starting from that of a portion of Earth or a given space, or the area of

existence of a state or of a nation, or a space of spiritual belonging to, of economic administration or of social, political and military dispute (Mac, 2000). The geographic axis may be defined as being a force space-time line *“a line which allows space-temporally the diagnosis and prognosis of a geographic territory, a territory which may embody different geographic shaping and dimensions in accordance with the components capacity of polarization”* (Pop, 2003).

Conclusions

Geographical systems such axes are beneficiaries of some memories, where it is accumulated, according to the characteristics stated above, a number of essential parameters of the different states, in their most efficient form, to enrich the states in view of sustainability and improving the system of these states of the status. For example, integration and non integration of a new aspect in the axis would be a very important change because the axis would benefit from another state in terms of numbers, functionality, etc. Regarding previous and the subsequent evolution of an axis-system, the first moments of structural and functional changes in appearance have a coarse, primitive nature. The integration, actually the perpetuity character of integration, allows starting a process of improvement of these changes. Finalities are states defined by increasing efficiencies, yields and reducing the unnecessary loss of substance, energy, information, space and time in the axis. Geographical axes are above all systems. Systems have structures, and the structure is given by the elements. By a simple equation is clearly a geographical axis has structure, elements, relations, so it can be seen as a system. Elements have permanent potential possibilities, which by their manifestation can give positive or negative results. Items can not exist chaotic. They must be organized, creating systemic structures. The historical organization through the ages such as empires, provinces or current administrative organization (counties, regions, cantons) are based on the principle of territorial organization need (Pop & Moisuc, 2014). Geographically, we accept the natural and human elements configuration as axes. Such geographical organization, such as axes, must be guided by the principle of maximum efficiency with minimum consumption of substance and energy, so the trend of evolution of such geographical organization to go the reverse direction of increasing entropy. The a studies identify in the social territorial realities some aspects: the trends, the interruption spots, the vicinities, the territorial folding, the sustaining area, the necessities social of the territory (Marston, 2000). The placing of the charges, favorable or unfavorable, the percentages out of the total for the charges, the graphics of the areas, be them of progression or regression, occupying the space, the type and the aspects, concentration, percentages etc. We believe that this study has demonstrated the following aspects: the integrated character of social geography, the role of the

social geography study in developing territorial planning programs, because the exclusion of the social geography of a territory may cause unpleasant surprises. We can identify the necessity to create the social geography product, the application of the hierarchical methodology of analysis along this paper and in perspective studies it is necessary that there is fractionating of analysis.

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