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*Territorial Development and Electric Power
Endogenous Powers in Electric Power Management
The Atlantic Coast Case in the Province of Buenos Aires*

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Summary:

We are heading for an energy crunch. Energy is a key strategic area in territorial organization. Its role in territorial development should be redefined, thus acknowledging the complexity of such matter. Territorial endogenetic forces cannot stay on the sidelines. On the contrary, they can contribute to our understanding and later resolution of locally unique problems.

Key Words: *Territory, territorial development, electric power, endogeneity.*

I. The Energy Problem and the Analytical Proposal

The Industrial Revolution marks the beginning of our modern society's growing dependency on fossil fuels. By the middle of the twentieth century, oil supplants coal, and it prevails over other energy sources worldwide. By then, concentrated and cheap massive energy had clearly become the cornerstone of the capitalist model's expansion (Fernández Durán, 1996:32). However, Fernández Durán (2008:27) concludes: "the era of cheap oil is over, for we are entering the beginning of the end of the fossil fuel era." Such phenomenon, known as *Peak Oil*, is seen differently as far as placing it in time is concerned. This is the consequence of uncertainties about the dynamic level of reserves and the future global economic growth rate, although relative consensus exists on the possibility of accomplishing this by 2030. We are faced by plenty of warnings because "our world's production base and social fabric (...) would crumble without plentiful energy." (Requeijo González, 1997:245).

Despite advances in alternative energy use, a scale solution has not been provided yet. Moreover, shortage symptoms arise just as millions of inhabitants lack access to modern energy services, thus losing the possibility of meeting basic human needs. Therefore, it is necessary to increase our knowledge of energy social organization and redefine territorial levels, dimensions and actions that are involved in its management in order to respond to challenges of a different nature. This presents a task for the understanding of the territory, of its shapes, structures and functions, with the aim of facing the transition of the "energy order" in such a way that it reduces or eliminates the suddenness of such change.

Electric power is a technical mediation that is increasingly entwined with human life through objects. Urban lifestyles depend largely on it. Simultaneously, electricity generation is subject to the combustion of hydrocarbons. This varies according to its relative participation in energy matrices. In Argentina, against the grain of the revision demanded by the context, the thermoelectric role grew from 52.9% in 2004 to 59.5% in 2008 (CAMMESA website). Therefore, there is a growing dependence on fossil fuels and vulnerability to the impact of volatile international prices.

Occurring alongside, the development discussion seems to have been assessed positively by the actions coming from below for over a decade, that is, actions containing the intersubjectivity of those who inhabit, think and feel the territory on a daily basis. These actions arise as the result of the inability of national states to satisfy societies' basic needs, getting to the point that the endogenous perspective is considered as a new development paradigm.

Reasons that justify the interest in such a strategic social and economic area abound. Since “technical issues of scale and complexity can work as strong development ‘barriers to entry’...” (Boisier, 1999:21), we believe that a modest aspiration for some originality can be found in the study of one of these barriers, i.e. the electric power technical system, in relation to the possibilities offered by the endogenous conception of territorial development. Hence, this paper aims at describing and explaining articulations, scopes and challenges in the *territorial development- electric power* relationship in such a way that the exploratory resulting data proves useful to the knowledge and analysis of possible planning actions linked to the electric power management.

II. A Notion of Territory for a Notion of Territorial Development

Providing a definition of such a complex notion as that of territorial development presupposes the identification and integration of basic assumptions of what territory is. We will consider some appraisals written by authors who have reflected upon the territory along a theoretical line different from those which consider it a mere container, a receptacle, a physical or legal delimitation, a variable or a portion of land surface.

Silvina Quintero (2002) views the territory as a “socially produced space, both in terms of its material structures and of the attribution of meaning to these structures.” José Luis Coraggio (2009:1) thinks that the territory “refers to the place where things happen, where the real is directly captured, where the concrete-real is, clashing with the theoretical speculation, the abstract models that mimic reality.” To Horacio Bozzano (2009:94) it is a place of diverse scales – micro, meso, macro- where institutions – public, private, citizens and others- stimulate complex processes of interaction- complementary, contradictory, conflictive, cooperative- among action and object systems, which are constituted by countless techniques – hybrid, natural and artificial- and which can be identified by means of a territorial development process in specific occasions – time-place- and in varying degrees of integration in the local-meso global relationship. The territory is always being redefined.” Montañez Gómez and Delgado Mahecha (1998: 123) add: “the territory is not fixed, but it is mobile, mutable and unbalanced.” The centrality that power relationships and their varied spatial manifestations have is a final and important element.

Despite its wealth, literature on territorial notions is still lacking a history of its own on the concept of territorial development discussion.¹ We will refer to Bozzano (2009:97), who defines it as “the process based on the simultaneous display of actions in endogenous or local development, institutional development and land use planning – the three of them being sustainable- which refer to a concrete object of intervention (...) in concrete space, with the participation of public, private and civic institutions, fostering communication, assumption, appraisal and organization, and creating virtuous transformation circles in consciences, actions and objects.” Since institutional development and land use planning are the classic elements of the territorial development concept, the endogenous or local development notion emerges as the most remarkable innovation and as one that clarifies the form of transformation: endogeneity projected on an intervention object. The territorial agenda turns in this way into a local territoriality agenda. Even though we have not meditated on the meaning of development we will only state that “the virtuous transformation in consciences, actions and objects” that Bozzano describes is understood, broadly, as an improvement in the quality of life and living conditions.

III. Energy, Territory and Development: from Simple Relationships towards the Discovery of Complexity.

The progression to higher levels in social welfare is only possible if it starts by identifying systematically obstacles to overcome in the specific forms of needs satisfaction. Thinking of territorial development through a critical analysis of territorial components- the electricity sector in this case-, instead of the most common study of the development on the territory and its more expeditious focus on the superficiality of the resulting products rather than on the depth of interacting processes, leads to the insight of the social relationships system specific to a type of technical mediation and different from those which will be evidenced in other types of mediation. It will be very difficult to unlock territorial development’s “energy barriers” unless we thoroughly understand interrelations.

Our bibliographic review evidences that the study of the relation between electric power supply and a territorial development shaped on the terms presented above is a pending issue for scientific production. Nevertheless, there have been studies on the relations between energy, territory and development: *unilateral interpretation, multilateral interpretation and complex interpretation.*²

1. Unilateral Interpretation

Being consistent with the spread of investigations on development which started in the Post-war capitalist expansion, the first systematic papers which regarded energy as “one of the foundations of development” (Casella and Freyre, 1973:4) were written. Arnolds (1971:253) agreed with this idea. He claimed: “it is evident that where there is cheap and abundant energy, there is progress and welfare.” Dozo and Firbeda (1972:373) assured that “an effective energy growth leads to an effective economic growth, and the latter will be hindered by insufficient energy resources.” Development thinking is the orthodoxy unifying the reviewed statements. David Kullock (1998:11) points out: “such model presupposed that, by means of the implantation of dynamic activities (industry, especially in basic sectors), the rest

¹ The definitions we usually find still belong to development studies’ authors.

² The analysis proposal arose in a genealogical way, identifying three stages with increasing levels of complexity in the relationship. Owing to lack of space, we present a simplified study, turning genealogy into a classification and their genealogical moments into types of classification.

of the activities' modernization would take place..." Linear reasoning prevails in the coordination of different elements. The territory is a relatively inert setting prepared by exclusive development agents. Energy is an appendix to this setting, and, being a scale infrastructure, all aspects of its organization and design must be run by the most powerful territorial institutions (national state and large companies).

That which belongs to the sphere of the "developable" was sharply and a priori separated from the "black box" which contained the conditions for development. In this way, the energy issue was kept as the exclusive property of the powerful institutions in the national territory. Lastly, territory development is considered an aggregate of sector developments in key areas of the operation of society (industry, health, education, power, etc.), that is, a sum of coherent parts whose planning and management is done mostly by specific agencies which design their respective sectors separately. This territory development analysis' simplicity is kept almost intact. It seems that energy's own essentiality justifies its own exemption from analysis on social meanings and valuations with which it is inserted in territories.

2. Multilateral Interpretation

The study on localized problems, which complements the classic geopolitical and geo-economic dimensions, was boosted in order to discover the complexity of the relationship among energy, territory and development. The great amount of topics and dimensions tackled was helpful to detect such relationship. In economic geography and land use planning textbooks, energy was shown as a localization factor and even as an industrial localization factor. Urban geography, in addition, believed that "energy products supply emerges as one of the greatest needs in the urban space (...). Thus, it represents a particularly important aspect of the difficulties found by urban concentration." (Beaujeu-Garnier and Chabot, 1970:375). A line of social nature studies regional imbalances in the energy services territorial supply and boosts its expansion (rural electrification, basically) as a way to generate development and improve marginalized populations' living conditions. Papers on environmental and social conflicts which have arisen because of the installation and operation of energy infrastructure (PCB transformers, hydroelectric power plants, thermal power plants, natural gas pipelines, oil pipelines, etc.) have also gained importance. The thematic scope is expanding.³ The scattering of all these papers, mostly covering specific places, denotes the conception of territory as a complex construction of competing or cooperating social institutions. Interaction emerges in each discussed situation. This empirical research grouping has at least two major virtues that we would like to mention.

- a) They undermined the "black box" territorial analysis, showing the oversimplification of approaches which apparently allow to describe and explain the relations among energy, territory and development. The study of concrete energetic issues provides us with knowledge about the society- energy or territory-energy link, which we start to understand as a complex, multivariate, multidimensional and multi-scalar reality.
- b) The positive connotation of energy as a facilitator of territorial development, derived from its own presence in the territory, turns towards relative conditioning in favor of the analysis of the social relations system which is set with its own use. The introduction of conflict among

³ Many objects of study which treat specific energy topics can be cited: rational energy use, bioclimatic architecture, air pollution and environmental impacts, acceptability of non-conventional energy resources, competitive exploitation of natural resources, integrated watershed management, energy management models, among others.

social institutions eradicates the innocuous feature of energy in every territorial development process.

The “black boxes” reductionism and the positive connotation being fractured, the path towards the formation of a multilateral interpretation is cleared. The strength with which thematic diversity hatched was enough to point out new parts of the matter, but it was not enough for it to carry out holistic, systemic and integrated studies. The prevailing absence of general theories of society probably leads to the origin of such weakness.

3. Complex Interpretation

The third form of interpretation arises from the sins of the previous ones and, definitely, from the two global macro phenomena which brought about new questions: the energetic and ecological crisis taking place by the end of the sixties and beginning of the seventies. The former had such a hard impact that it acted as a contributing factor to the economic and political restructuring of the world system, which allowed for the understanding of the importance of energy to modern societies and of hydrocarbon dependence and its consequent need to preserve the resources used to produce it. The latter acknowledges the maternity of the former. David Kullock (1998) sees the energetic crisis as one of the conflicts which originated the “environmental issue” and as one which led to the reconsideration on past behaviors of resources dilapidation. Both the ecologic crisis and the climatic change denoted the birth of development models called *eco-development* or *sustainable development models* which were meant to match economic growth and social development to environmental preservation.

The new energetic agenda challenges made it necessary to frame the design, study, follow-up, control and evaluation of specific actions, programs and development strategies tasks in the full understanding of a society which transformed into a global one, since the multidimensionality of energy is always manifested in all territories and in a differential way according to the singular characteristics of each one of them⁴. There is a renewed interest in resignifying the place of energy in society so as to describe and explain the causes and consequences of real or potential state of crisis, the impacts on life and development quality, its contradictions and, above all, its purpose as a source of dispute.

Even if it is true that “in globalization times, development starts to have a strong territorial connotation” (Madoery 2008:134), it will be convenient for research on the energetic sub world to investigate more in depth life as experienced in territories. In order for this to take place; it is necessary to “fill” the dialectics between theory and practice with the portions of reality still concealed from understanding, at the same time that the sensitivity for the complex, the integrated and the systemic rises.

Among the authors who support this view, Pedro Pérez (2009), from the urban sociology field, has made a great contribution by publishing a book on the inclusion-exclusion social relationship parting from the analysis of electricity distribution in Buenos Aires’ metropolitan area. The “energy barrier to development,” which is so palpable in rural electrification issues due to its association with space frontiers which separate the rural and the urban, is transferred to the internal functioning of the city and the macro systems on which it depends, and it allows to discover institutions and its roles, conflicts and tensions and different types of social relations. To sum up, it enriches the understanding of complexity.

⁴ As Madoery (2008:64) claims: “Each place, each territory, has a unique combination of variables which makes it singular”.

The Energy, Politics and Society Studies Center's goal constitutes another enlightening proposal when considering "the interdisciplinary approach to energy and its relationship with the different cultures and civilizing forms." (Ceepys Site). The last example is illustrated by Armando Páez García's article: *Para entender el Siglo XXI: el cenit de la producción petrolera, la paradoja ecológica y la rematerialización del mundo* (2006). He departs from the limits imposed by Peak Oil to the civilizing pattern and from the consideration that society must confront an ecologic paradox (human gender multiplication in a degraded world). He asks himself: "How should the territory be organized? How can food be produced? How can water be pumped? How can waste be handled? How can land be restored and regenerated? Which is the role of the State? Which institutions and ideologies should be strengthened?" He suggests that "each region or political entity should carry out a study that allows it to become aware of its own energetic-economic-ecologic dynamic." (Páez García, 2006).

We reach now a moment of complex interpretation which aims at giving energy actual magnitude. It coexists with theories and approaches that still ignore that the typical Postwar separation between development and conditions for development is a dangerous fiction that distorts the understanding of the strategic place of energy in the organization of territories. Complex interpretation emphasizes the relational nature of energy, manifested through three critical analysis entries: multidimensionality, multi variability and multi-scalarity.

The territorial development- electric energy relation is only one of the possible intellectual reconstructions included in this type of interpretation, which intends to compromise the energetic problem with the unification current of the concepts of development and territory.

IV. The Atlantic coast of Buenos Aires as an Empirical Referent of the Electric Power Matter.

The Atlantic coast of Buenos Aires is a tourist destination which has millions of visitors every summer. The great concentration of tourists in approximately two months gives the electric consumption curve a perceptible seasonality. Electric demand rises 30% in relation to the rest of the months. This makes it necessary to have electric power reserve in the electric system during the highest peaks, either by local generation or by the transmitted energy availability. At this point, there are two structural deficiencies: local generation insufficiency and limited transport capacity. These result in a chronic energetic emergency state which is partially assisted by the subsystem operating to its fullest and locating small mobile plants in critical areas. At the highest saturation points, blackouts, programmed cuts and decrease in energetic tension take place.

Why did this situation continue? Installing thermal generators to meet the seasonal consumption without laying high voltage transmission lines to sell energy the rest of the year means that infrastructure will have a high degree of sub use. Laying such lines which would connect Mar del Plata to a nearby surplus location requires a millionaire investment and a considerable building time. These conditions establish an unfavorable environment to scale disbursement.

The Argentinean electric area transformation in 1992 produced segmentation in three types of agents: generators, transporters and distributors. Users and consumers are linked to the electric area through the distributors which are legally forced to supply all the energy required, but which are not able to generate it themselves, since electric energy is generated by other agents. The fragmentation of the area has led the different economic agents to face

the world's relative energy shortage and its local manifestation by developing particular strategies of energy rent appropriation. In 2002, Argentina faced a crisis in its macroeconomic policy which altered the profitability equations in the companies of the area. In brief, extraordinary profits from the nineties were reduced and a reasonable profitability margin was preserved. Even though the new 2003 government guaranty of modification in the privileges gained by multinationals created uncertainty, the redistributive push towards the interior of the sector created by the high tendency in fuel prices and the profit losses stopped energy development. A conflict arises between the people and the distributor, in which multiple processes and reality layers converge. They all act simultaneously in the territory and they should be taken into account when analyzing possibilities for territorial development linked to electric power. We will detail two groups of facts present in the electric consumption segment which characterize the state of the service in the already observed territory.

User-Consumer Helplessness: the intersectoral push of electric power companies in emergency times is usually transferred to users and consumers by reducing rights, making them coerce and making an impact on real salaries. The captive users' condition is a structural weakness which aggravates helplessness. Coercion forms are numerous: unauthorized tariff rises, electric tariff use as a powerful fiscal disciplinary mechanism (seven tributes are paid which impose a 48.7% raise in the value of energy), preservation of taxes for the development of constructions that have already been completed or cut out from the plans, residential seasonal tariff which forces consumption in order to pay less by encouraging waste and irrationality, program of energy rational use designed as a confiscatory device, low service quality, lack of customer care centers which violates the bidding specifications, strict electric power supply and connection rules, lack of flexibility in the paying of bills which, if not paid within 15 days, allows the company to cut the service, etc. These factors are not normally taken into account when thinking about energetic development. However, they must be considered for territorial development.

Self generation and Cooperation Project: the territory survey shows that there are small self energy supply projects based on alternative energy. Supporting its development would help to improve living conditions of small rural settlements and would provide highly valuable learning for the construction of future territorial energetic models, based on the capabilities and resources of local territories. Rural electrification is currently very expensive. This blocks access to electric service to many inhabitants and rural workers. Self generation is an adequate solution to such lack. Electric cooperative formation and support to the existing ones, together with promoting logics contrary to the capital one, may help encourage the necessary cultural change in the integral energy management.

Conclusion. Electric Energy as an Endogenous Territorial Development Project.

Accepting that the strong institutions are the ones which manage energetic development processes in the territory (unilateral interpretation), benefiting from the strength of a group of dispersed social facts which affect territorial development- electric power relation in various aspects (multilateral interpretation), we ask ourselves: is there "something" left of sensitive electric power? The issue we explore demands our movement towards complex interpretation. We did not mean to exhaust its implications; on the contrary, we only applied it to one particular objective.

We believe that, in both exemplified groups, local institutions could assume a significant intrusion by assimilating the participatory management of energy as a genuine endogenous

territorial development project. An articulation of local institutions which produces enough synergy to generate achievements is necessary. In 2009, the pressure exerted by the companies led to the approval for an abrupt rise in the tariffs, the “Tarifazo”. Generalized rejection encouraged users to organize themselves and fight against such abuse and obtain the repeal of the measure. As a result, a concealed cross-sectoral group appeared, which can be the attributor of new challenges. The events of the juncture may contribute to the institutionalizing of the new structure, to move from social reaction to territorial reaction.

At this point, it is essential to stimulate a process of decentralization in energy management by reformulating the application of the subsidiarity principle, according to which “each social organization is competent to intervene on its own context (functional or territorial), transferring “upwards” only that which social welfare or technology establishes is the responsibility of the major entity.” (Boisier, 2004:28). Many of the specific issues we have mentioned can be managed more effectively if competences and attributions are redistributed in the politico-administrative hierarchy. We insist on the fact that scale infrastructure development or the electric market price policy are functions which require centralization. Other issues that, for example, refer to the organization of the consumers segment, to rational and efficient use or self generation encouragement may become an object of local faculties. Decentralizing would imply changes in the provincial and national regulatory frameworks. Currently, the General Pueyrredón municipality (the most important one in the Atlantic coast) only has two offices which deal with technical electricity aspects (Ente Municipal de Vialidad y Alumbrado Público y Departamento Electromecánica).

The relevance of the electricity problem in an area with variable demand should imply the commitment of local institutions. The creation of a specific office for energy and/or a institutional network devoted to producing information could be useful steps to the recognition of the electricity issue in territorial development, and essential steps to the decision on territorial interventions.

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