Thoughts on territorial planning and rural dimension

Reflexões sobre o planejamento territorial e a dimensão rural

Paulo Renato Mesquita Pellegrino*, Martina Croso Mazzuco**

*Universidade de São Paulo, Brasil, prmpelle@usp.br
**Universidade de São Paulo, Brasil, martina.mazzuco@usp.br

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Abstract

Planning became a science in the 20th century. Land planning was developed as a response to the need to better organize spatial dynamics and the flow of resources in a rapidly changing world. Non-urban land planning is a field still little developed. Currently, the value of non-urban land areas, which represent a total of 97% of the land surface, is becoming more evident day by day. Non-urban land, composed of rural areas and wilderness, concentrates the largest fragments of natural ecosystems on the planet, essential for the balance of the biosphere. Land planning focused on the rural dimension requires a methodology that specifically responds to local dynamics and socioecological conditions, and is oriented towards the conservation of the local ecological and social dimension. In this article we present the origins of the science of territorial planning, mention alternative governance and management models and reflect on how land planning can contribute to a more transparent, inclusive and collaborative reality for the long run.

Resumo

O planejamento de territórios se tornou uma ciência no século XX, formalizada a partir de uma necessidade de melhor ordenar o espaço, os fluxos e recursos disponíveis em um mundo em rápida transformação. O planejamento dos territórios não urbanizados é um tópico ainda pouco explorado. Atualmente, o valor das áreas não urbanizadas se torna dia a dia mais evidente. Áreas rurais e áreas selvagens representam aproximadamente 97% da superfície terrestre, e concentram os maiores fragmentos de ecossistemas naturais no planeta, fundamentais para o equilíbrio da biosfera. O planejamento territorial com foco na rural requer uma metodologia que expresse a dinâmica e a natureza socioambiental local e seja orientada por um propósito central: a restauração dos ecossistemas naturais do planeta. Neste artigo, apresentamos as origens da ciência do planejamento territorial, mencionamos modelos alternativos de governança e gestão, e refletimos sobre como planejar territórios a partir de uma maior condição de permeabilidade, contribuindo para a estruturação de territórios mais inclusivos, transparentes e colaborativos para o longo prazo.

Introduction

Territories endowed with unique features are produced by infinite combinations of elements and processes. During billions of years the Earth planet was shaped uniquely by natural processes, promoted by the action of plants, animals, climate, geological movements. In a more recent period of its history, the Earth started counting with the transformative power of human action in the shaping of its territories. The territories we create, in its turn, determine the quality of the relations that will establish upon it.

The planning of territories is a relatively new social process, even if practices for millions of years by different societies. It is based on the values and abilities of the community that conducts it, in the techniques available in each space and time, and the local features. The planning process manifests itself through drawings, guidelines, action plans, goals, metrics, management tools. Of relevant complexity, the complete reach of the territorial planning process is still not fully understood by us (MASSIRIS, 2005). Visualization, acknowledgement, mapping, interpreting, assimilating, connecting and acting: planning is a cognitive ability based on a present reality, which will be then connected to an envisioned reality - it is an essentially transformative science. Ideation is thus one of the first steps of planning. Perhaps the first being the acknowledgement of the need for change.

Change is a marking quality of current times. The high connectivity of the planet allows information, people, ideas, goods, ecosystems, climates to transform in high speed. The science of territorial planning must accompany these movement, wired to current challenges and future forecasts, offering viable alternatives and, mainly, a clear path to action. An action at the range of each individual and communicable to different social groups.

This study proposes a reflection on territorial planning, describing the origin of this science, its purpose and the way it acts on different contexts and scales. Taking the territorial phenomenon as a starting point, the purpose of planning is to prognosticate events and propose alternatives and actions that may be useful to the most varied purposes. We shall discuss the values that are at the core of territorial planning, and its relevance as a discipline and professional practice nowadays, in a planet that is increasingly more susceptible to the pressure imposed by human society. This study focuses on rural territorial planning, discussing its importance and the multiple challenges to be observed in its practice.

Among the different spatial units of territorial planning, we describe the concept of Bioregion as a key spatial unit for with the most relevant goal of current times- the restauration of ecological and social tissues of our planet (ABRAMOVAY, 2021). The concept of Bioregion expresses the junction of concepts such as sustainable development, localization, construction of answers that are adequate to local context. One of the seeds of the Bioregion concept is the incentive of local innovation development poles, grounded in material and immaterial resources of a region, and that may contribute to the decentralization of economic systems. Decentralization presumes the creation of new structures of governance, branched and better distributed throughout the territory.

This study has the purpose of presenting a conceptual structure for an integrated methodological approach to planning, suggesting possible alternatives for a reality that may be more participative and aligned to the nature of the territories we live in.

Territorial Planning

We plan something with the purpose of structuring scenarios directed towards specific goals, foreseeing circumstances and adjusting variables that are visible and comprehensive to us, and over which we have a certain amount of control. The territorial planning activity has always been intrinsic to human development, historically essential for the transformation of the way we interact with the physical environment, and the way we manage natural resources and spatially organize infrastructure and social dynamics.

In the beginning of the 20th Century planning was formalized as a Science and field of professional action, applied to the most varied areas of knowledge, including environmental, economic and social planning (FRIEDMANN, 1987). However, the theoretical basis that grounded modern planning arose two centuries before. Understanding the context in which the planning science arose and the basic values embedding it is essential for reflecting on the relevance and the purposes which it serves.

In the XVIII Century humanity developed a new school of thought emphasizing reason above other virtues and the value of science for the resolution of social problems (MAXWELL, 2017). The Age of Enlightenment breaks with strands of thought and governance built on mysticism and religion, proposing a new order of values based on the understanding of the natural laws that govern the Universe and logic. It was believed that this was the path to the construction of predictable and stable scenarios for our society. The influence of the Age of Enlightenment was indispensable to human development on the following decades, informing decision making strategies and actions based in knowledge and technique. According to Santos, technique refers to the set of technologies as well as the amount of knowledge available to contributed to the rise of qualified professionals as central agents in the planning science.

The betterment of technique represents the growing control of the physical environment by humans, the transformation of organizational processes and the speed of information flows. The industrial development and its new productive processes, the subsequent territorial reorganization, population growth and scientific development were movements intensified in the transition between the XIX and the XX Century. Cities emerged, thus, as important central points. In Brazil, in 1940, the urban population corresponded to 26,3% (18,8 million) of the Brazilian population. In 2000, sixty years later, this percentage represented 81,2% (138 million people) (MARICATO, 2000). Modern territorial planning was developed in this period based on the urban experience perspective.

With the strengthening of the cities phenomenon, the resolution of urban conflicts and challenges were placed on the center of public discussions and policies. Thus, specific mechanisms of territorial planning were created, such as zoning, height restrictions, building ratios and coefficients, the social function of property. In the legal domain, tools such as the City Statute, Master Plan, the Building Code and the Law of Use and Occupation of Soil, were created to deal with issues such as population density, mobility, sanitation, and maximum efficiency of soil occupation. Many of these instruments, borne from the urban territorial planning itself, were transported and adapted, in the following decades, to other scales of territorial planning.

Territorial planning emerges with the purpose of rationalizing national development, potentializing the degree of efficiency of territorial processes as an answer to an ever-growing Market and capital logic. At the end of the 20th Century an overwhelming literary production arises regarding the damages caused by human action on the planet. In this period, deeper studies on the nature and dynamics of natural ecosystems are developed, increasingly addressed in different social circles, stimulating the reflection on the mechanisms and patterns of production and consumption, cultivation strategies and crop management, health, ecology, agroecology, integrative medicine, anthroposophy among many other fields of study based in a more systemic perspective. Political, social and environmental order, leveraged by the public sector, starts to gradually integrate the basis of territorial planning as a response to the growing pressure of social movements in the face of the first effects of the capitalist industrial system (FRIEDMANN, 1987).

The Purpose of Planning

The purpose of territorial planning is to contribute to local development through the strategic spatial configuration of its components. There are different definitions of territorial planning in the world, however all of them understand planning as “regulating or organizing the use, occupation and transformation of territory on behalf of its optimum utilization” (MASSIRIS, 2015).

The term “planning” finds its origins in the Italian word “pianta”, which means “architecture plant” [blueprint] a two-dimensional project drawing. The drawing is a convention that represent an ideal, a vision of destination that will motivate the participants and bring clarity, cohesion and purpose to the process (LYNCH, 1984). In effect, planning is much more that a drawing. While this process can undertake different forms, generally speaking, all planning methodologies share the same basic development stages: 1. The definition of the problem to be solved; 2. The diagnosis of local context; 3. The proposition of improvements based on a decision-making structure; 4. The selection or creation of action and monitoring mechanisms.

The first stage is the definition of the problem to be solved, the purpose of the planning, to whom and to what ends it is oriented. Such definition shall offer the tune and direction of the process (LYNCH, 1984). Following, we have the diagnosis stage, where all information on the situation we are dealing with is collected. Based on the diagnosis, in the third stage we shall define the strategies, decisions and measures to be taken towards the proposed scenario. For many, planning is interrupted at this stage. However, what would be of planning without the definition of implementation

mechanisms and a clear path towards action? Action, monitoring and adjustment are the last stages of the process.

For some schools of thoughts, planning can be summarized as a physical-spatial ordering process, whereas other understand planning as "an integral and complex process which goal is the improvement of social well-being, starting from the consideration of parameters with a physical-territorial, social, cultural, economic and political-administrative nature." (MENDÉZ, 1990 apud MASSARIS, 2015). In this sense, territorial planning does not have an end – it is a continuous process of learning and transformation. (LYNCH, 1984). It is a tool dedicated to change, becoming useful when "it deals, mainly, with providing information to the transformation of systems." (FRIEDMANN, 1987).

Planning will be more precise and reliable the larger the amount of available data on the context it proposes to plan. The process develops from a diagnostics grouped in four classes of knowledge - descriptive [what it is]; analytical [why it is]; prescriptive [what it can be] and normative [what it should be] (CAMPBELL, 2012). The first two classes regard the diagnosis activity, and the last two classes regard the proposition stage. The multiplicity of data collected is, however, less relevant than the quality of data. All data collection presumes a prior work of data selection focusing on what is really relevant to the identified problem, oriented by criteria and values preestablished and aligned with the main goal. (LYNCH, 1984). The understanding of data builds knowledge, and knowledge is essential to the planning process, without which the decisions taken [the how] would end up as isolated commands, and the central purpose [the why] that justify decisions would remain unknown, being eventually forgotten by the stakeholders.

By knowledge we understand facts, evidences, interpretation, data of scientific, experimental, intuitive, esthetical, emotional nature. What we consider knowledge will be relevant for the composition of planning, influencing the way in which decisions are taken. Currently the planning process acknowledges different sources of knowledge, welcoming perspectives of the world that are richer and more diversified, and contributing to a more inclusive and participative planning process. (CAMPBELL, 2012).

Planning for Change

In view of the current scenario of global crisis and collapse of natural and social ecosystems, different sectors of society are looking for alternatives. The recently launched IPCC Report on Climate Change (2021) asserts that the current environmental crisis is the product of human action on the planet.

"It's unquestionable that human influence has warmed up the atmosphere, the ocean and the earth. Rapid and generalized changes have taken place in the atmosphere, in the ocean, in the cryosphere and biosphere". (IPCC, SPM, 2021, p. 5)

"In 2019 the concentrations of atmospheric CO2 were higher than in any other period prior to the last 2 million years (...) Since 1750, the increase in the CO2 concentrations (47%) e CH4 (156%) have largely surpassed and the concentrations of N2O are similar (23%), to natural transformations that have taken place between the glacial and interglacial period of the last 800.000 years" (IPCC, SPM, 2021, p. 5).

The report concentrates on two core themes: the climate crisis and soil degradation. The term "soil degradation" is mentioned over 300 times in the document [in the version dedicated to policy makers] and is referred to as one of the main causes of the current climate crisis. Soil degradation can be understood as an interference in the soil's capacity to maintain natural processes such as the hydrologic cycle, carbon cycle and nutrients cycle, due to alternations of its structural and chemical conditions. The main cause of soil degradation in the world is erosion. Erosion is a process generated by specific soil use activities such as intensive grazing, soil ploughing and adoption of unsustainable agricultural practices. (BORELLI, 2012).

Still in the report, different strategies are recommended as alternatives to the environmental crisis, such as the adoption of ecological practices, the use of biochar for the carbon sequestration and reforestation. These and other strategies make up a territory management approach termed "Sustainable Land Management" or SLM, that covers the use of specific techniques for the improvement of environmental, social and economic conditions based on integrated territorial management strategies (IPCC, 2021).

Science points out that integrated territorial planning addressed to environmental conservation is currently the best acknowledged strategy for the restoration of our planet, giving emphasis to solutions that contribute to the reestablishment of natural

processes. To the extent in which we understand the relation of interdependence between the human society and natural ecosystems, the rural territory gains a new importance and its planning becomes a central activity for ecological restoration and the construction of a new narrative for the global society.

The Rural Territory

The non-urbanized areas occupy around 97% of the land surface, and concentrate the largest portions of existing natural systems (WORLD BANK, 2013). These territories are distributed between rural areas and wilderness. As a general description, rural areas can be classified as spaces "where human constructions and infrastructure occupy scattered areas of the territory, dominated mainly by fields and grazing lands, forests, water, mountain and deserts" (WIGGINS, 2001). The abundance of natural resources, in the quantitative sense and not qualitive, is a real condition of the rural land.

The definitions of rural and rurality are varied and extensive. The first studies on the rural were based on demographic density, use of soil, productive activities and governance structures data. Eventually, local culture started being acknowledged in the characterization of the territory, taking into account that culture determines values and visions of the world, as well as variation in the use of techniques. In Brazil, the IBGE utilizes three basic criteria for defining what is rural and what is urban. These are: 1. The size of population; 2. Population distribution, or demographic density; 3. Distance of main urban centers (IBGE, 2017).

At the end of the XIX century studies on the rural scenario started acknowledging the pressure generated by the urban area as a determining force for rural development. Agricultural activity is the major responsible for the configuration of rural territories, currently occupying 38% of the world's land area, being that 1/3 is used as cultivation area and 2/3 as animal's grazing area. Agriculture is held as the main responsible for the conversion of natural ecosystems (FAO, 2020).

When we look at the rural area, we realize the multiplicity of themes that build up the territory. Natural ecosystems, agricultural areas dedicated to different kinds of production, residences, industries, services, are some of the varied functions contained in the rural territory. The rural is essentially multifunctional. Differently from the urban, easily perceived by the density of its constructions and quality of its infrastructure, the rural embraces widespread variation of landscapes, including rururban spaces at the margins of the city to the territories where natural ecosystems predominate almost completely. (GALLENT, 2019). The strong presence of natural ecosystems, marked by and adaptability and self-management capacity, determines the transformative aspect of the rural area - the landscape changes according to the climatic conditions, and such variations influence the change in the use and coverage of the soil and in human behavior throughout the year. Animals move, different vegetable species go dormant, the agricultural cultivars change, leaves fall, rain ceases, and thus all the rural dynamics transforms from one season to the other. The rural is, essentially, a space of exchange and transition. Planning for impermanence may offer an enormous advantage for planning, especially when the causes of impermanence are not regular natural processes, but symptoms of extremely degraded ecological and social systems. The recognition of possible extreme factors and events allows for better adaptation strategies aimed at land conservation.

The conservation of natural ecosystems is currently subject to legal mechanisms that establish Preservation Areas such as national parks, legal reserves and smaller conservation units, distributed in fragmented portions and generally in a territory. Nevertheless, such mechanisms are insufficient for the resolution of the planet's degraded environmental scenario. (BRUNCKHORST, 2001). The definition of planning scales that support an improved management of natural resources may represent important progress in the direction of guaranteeing better ecological conditions in the rural area. (OSTRUM, E. 1990). Nowadays, rural territorial planning places a greater emphasis on the regional scale, where general development guidelines are predominant. In the scale of private property, planning limits itself to determining the use and occupancy of the soil, with a greater focus on agricultural practices and productivity rates. However, between the regional scale and the private scale, we find an intermediate spatial unit that holds the potential for more coherent actions that support the construction of cohesion between social, economic and environmental actions - this spatial unit is the Bioregion.

Bioregions

If in the 19th and 20th century the global agenda was the industrial development and the rationalization of processes, we can say that 21st Century agenda is the restoration of nature. In this context, territorial planning guidelines must be reevaluated,

ensuring that environmental conservation is not exclusive of specific spaces, but is rather present in all domains of life and society. The concept of Bioregion offers important insights.

Bioregions are areas that are delimited by a combination of unique and simultaneous phenomena: geographic spaces with similar ecological conditions in all of its extension; a community of people that share a common history, identity, and that occupy the same geographical space (BRUNCKHORST, 2017). Developed in Italy in the year of 2004, the concept of Bioregion stresses the condition of similarity between environmental and social factors for the development of an integrated territorial planning strategy. The purpose is to reduce regional disparities and divergences in the dialogue between actors and perspectives across groups., helping the construction of a participative and autonomous territory, where cohesive ecological and cultural parameters and guidelines are followed by all actors and sectors involved (WAIS-SBLUTH, 2016). Such parameters are built with common community involvement, starting from coordinated actions undertook by the stakeholders.

Bioregion works with different scales of territories with the purpose of guaranteeing coherence and alignment between actions undertaken in different contexts. The scale variation of territorial planning allows envisioning different phenomena inside a region. Smaller scales offer a good understanding of the general context and macro influences. Territorial planning at the small scale is mostly based on general guidelines and plans. Larger scales, focused on the local context, express a greater level of site-specific details. Each scale presumes the involvement of specific actors, with major participation of public entities at regional scales, and a greater participation of the private sector, civil society and citizens at local scales. The clear communication and goals alignment between scales offer coherence to territorial planning, and guarantee that decisions undertaken at a local level are not turned invalid due to disagreement with regional or federal policies. (HAAR, 1957).

The importance in the variation of scale is also supported by the theory of hierarchy, that affirms that nature organizes itself through the integration of different subsystems. (i.e., communities), located in different scales (i.e., local or regional) (WANG, 2019). The theory affirms that small biological systems tend to undergo changes more rapidly than larger systems, given that the scale of natural processes is directly proportional to its stability. (NORTON, 1992). Stability, in this case, has a strong relation with the quality of synchronicity, that is, the capacity of performing simultaneous movement in different geographic spaces (LIEBHOLD, 2004). We suggest that what promotes synchronicity is the degree of connectivity between elements and systems, allowing information exchanges to take place efficiently inside the network, thus contributing to rapid responses. In this sense, the biggest the preserved natural ecosystem, the greater its stability and health of its natural processes.

From a social point of view, synchronism can be attained is reached through some existing conditions. In a simplified way, communities that share a common history and connect each other in the same space, generally share similar values and world visions, which inform its actions. We shall not go into the details on the differences between social classes and differences in the perceptions of reality. Similarity, in this case, favors stability (WANG, 2019), and contributes to the construction of consensus, a major goal in planning and fosters the possibility of a coordinated action.

The proposition of a joint and coordinated action arises from some important findings. First, is that government agencies do not perform at their best when in charge of the management, implementation and monitoring activities in different scales of the territory. The State's centralizing role overburdens its structure and attenuates the responsibility and participation of the common citizen in the construction of a common welfare state. Through a collaborative action between different actors, a renewed and real sense of community may be built, strengthening the feeling of belonging and local democracy (GALLENT, 2019). Some examples of participative management can be found in the CPRs - Common Property Resources. Differently from public commons that are open source, the CPRs are the property of a restricted group of people, who deliberately agree in collectively undertaking the task of investing and managing natural resources, intending an improved risk management scenario and a better guarantee of success. (DASGUPTA, 2005).

For the planning of Bioregions to become a reality, the challenges present in the structuring process must be duly identified and realistically approached. Integrated territorial planning implies the creation of specific mechanisms to address mapping, monitoring, action and resolution of rural challenges. These instruments must be adaptable to different group sizes, spaces and cultures, allowing for relevant interactions on each scenario.

In this sense, we suggest here that different scenarios containing a greater permeability condition are envisioned, allowing community to benefit from the shared management of common territory, and not solely the management of the private properties held inside the territory. This implies in the flexibilization of the concept of individual property on behalf of a vaster and more cohesive territorial unit - a kind of cooperative of bioregional owners. Endless legal and social challenges will appear throughout the process, to be observed, debated and shared so that the proposition of a Bioregion is better accepted.

Conclusion

In order to have a new narrative for the planet, the human society must promote the reassessment of territorial and development planning models that have been adopted up to the present moment, reflecting on how much of the historical heritage of our institutions, including values and visions of past times, are relevant to the context in which we live today.

With a vast development of science and better understanding of the interconnected relations existing with the natural environment, we see today natural ecosystems as primary systems on the planet. All other activities - agricultural, industrial, social, services are in reality secondary systems that depend on the conservation of primary systems in order to exist. Thus, the human society starts to envisage before itself the path towards the construction of an integrated life with the territory and with other living organisms. From this renewed perspective, many are the opportunities to be collectively constructed aimed at the structuring of healthy territories and life models.

References

FRIEDMANN, John. **Planning in the Public Domain: From Knowledge to Action**. Princeton University Press. 1987.

CABEZA, Angel Massiris. **Fundamentos Conceptuales y Metodologicos del Ordenamiento Territorial.** Unievrsidad Pedagocica y Tecnológica del Colombia Tunja. 2005.

LYNCH, Kevin. **Site Planning**. The MIT Press. Cambridge, Massachusetts. 1984.

HAARS, Charles M. **Regionalism and Realism in Land Use Planning**. University of Pensilvania Law Review. 1957.

NORTON, Bryan G. et al. **Scale and Biodiversity Policy: A Hierarchical Approach**. AMBIO A Journal of the Human Environment. 1996.

SANTOS, Milton. **A Natureza do Espaço. Técnica e Tempo**. Editora da USP. São Paulo. 2003.

MARICATO, Ermínia. **Urbanismo na periferia do mundo globalizado. Metrópoles brasileiras**. São Paulo em Perspectiva. 2000.

DASGUPTA, Parta. **Common Property Resources: Economic Analysis**. 2005.

LIEBHOLD, Andrew M. **Spatial Synchrony in Populations Dynamics**. Annual Review of Ecology Evolution and Systematics. 2004.

WANG, Shaopeng et al. **Stability and synchrony across ecological hierarchies in heterogeneous metacommunities: linking theory to data**. Ecography. 2019.

WIGGINS, Steve. **How special are rural areas? The economic implications of rural development.** Development Policy Review. 2001.

GALLENT, Nick et al. **Defining rurality and the scope of rural planning**. Routledge.2019.

ABRAMOVAY, Ricardo. **Muito Além da Economia Verde**. Editora Abril. São Paulo. 2012.

ABRAMOVAY, Ricardo. **O Brasil se distancia cada vez mais da infraestrutura sustentável.** Disponível em: https://ricardoabramovay.com/2021/06/o-brasil-se-distancia-cada-vez-mais-da-infraestrutura-sustentavel/. Acesso em: 4 agosto, 2021.

MAXWELL, Nicholas. **Karl Popper, Science and Enlightment**. UCL Press. London. 2017.

BRUNCKHORST, David. **Building capital through bioregional planning and biosphere reserves**. Ethics in Science and Environmental Politics. 2001.

DALLABRIDA, Valdir R. **Territory Planning And Management: The Theory Debate In Brazil And A Prospect Of Practice According To Theoretical Contributions On Territorial Governance.** Revista Brasileira de Gestão e Desenvolvimento Regional. Taubaté.2015.

ZANON, Elisa Roberta. **Planejamento Territorial: Reflexões sobre uma cultura em construção no Brasil.** ENANPUR, Natal. 2019.

Bioregiões, Uma Estratégia integrada de desenvolvimento de territórios rurais. Website: Inovações Para a Agricultura. Disponível em: www.inovacao.rederural.pt. Acesso em: 14 agosto, 2021.

THE WORLD BANK Data. **Urban land área (Sq. Km).** Disponível em: https://data.worldbank.org/indicator/AG.LND.TOTL.UR.K2?end=2010&start=1990&view=chart. Acesso em 5 agosto, 2021.

FAO. **Land uso in agriculture by the numbers**. 2020. Disponível em: http://www.fao.org/sustainability/news/detail/en/c/1274219/. Acesso em 10 agosto, 2021.

WAISSBLUTH, Dominique. **Bioregionalism, community and environmental ethics: an approach to geofraphical borderlines**. Intus-Legere Filosofia. 2016.

IBGE. **Classification and Characterization of Rural and Urban Territories in Brazil: A First Approacho.** Estudos e Pesquisas – Informação geográfica, n. 11. Rio de Janeiro. 2017.